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IBR Modified Locally Preferred Alternative Briefing Packet

May 2022

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IBR Modified Locally Preferred Alternative Briefing Packet

Prepared for:



**Washington State
Department of Transportation**

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ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
AM	Rush-hour period before noon
BIA	Bridge Influence Area
BIPOC	Black, Indigenous, and People of Color
BRT	Bus Rapid Transit
CAG	Community Advisory Group
CBO	Community-Based Organization
CRC	Columbia River Crossing
EAG	Equity Advisory Group
EIS	Environmental Impact Statement
ESG	Executive Steering Group
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HCT	High-Capacity Transit
IBR	Interstate Bridge Replacement
LPA	Locally Preferred Alternative
LRT	Light Rail Transit
MAX	Metropolitan Area Express
MPO	Metropolitan Planning Organizations
NEPA	National Environmental Policy Act
O&M	Operation and Maintenance
ODOT	Oregon Department of Transportation
PM	Rush-Hour Period After Noon
ROD	Record of Decision
RTC	Regional Transportation Council
RTP	Regional Transportation Plan
SDEIS	Supplemental Draft Environmental Impact Statement
SUP	Shared-Use Path

USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
WSDOT	Washington State Department of Transportation

1. INTRODUCTION

The Interstate Bridge Replacement (IBR) program would replace the aging Interstate 5 (I-5) bridge across the Columbia River with a modern, seismically resilient, multimodal structure. The IBR program has reinitiated work stopped nearly 10 years ago. This work, the Columbia River Crossing (CRC) project, received a Record of Decision (ROD) from the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) in 2011 and permits from multiple federal agencies. The CRC project was included in regional transportation plans on both sides of the river. Current work addresses physical, regulatory, and contextual changes that have occurred in the program area since 2013 and builds upon the previous planning efforts.

To address these changes, the IBR program, in coordination with program partners and the community, developed desired outcomes, design concepts, program transit investments, and other elements to propose a draft modified locally preferred alternative (LPA) and conduct supplemental environmental analysis. The IBR program's draft modified LPA will be evaluated in a supplemental draft environmental impact statement (SDEIS) beginning in fall 2022.

The IBR program's recommended modified LPA is based on public engagement, design, planning, and evaluation work that has occurred since the program started in 2019. In conjunction with program partners and the community, these concepts and transit investments were screened against criteria to evaluate their ability to meet the program's Purpose and Need statement and desired outcomes, including equity and climate objectives. The modified LPA helps create a framework for an environmental evaluation but does not include every element of the IBR program, which will be developed and refined over the next several years. The IBR program has relied on feedback from its Community Advisory Group (CAG), Equity Advisory Group (EAG), Executive Steering Group (ESG), Bi-State Legislative Committee, partner agency staff, and the larger community to identify a modified LPA for advancement into the SDEIS process.

This briefing book provides an overview of the work that was completed to develop the modified LPA, including the advancement of design concepts and transit investments, screening results and data, and community and advisory group engagement.

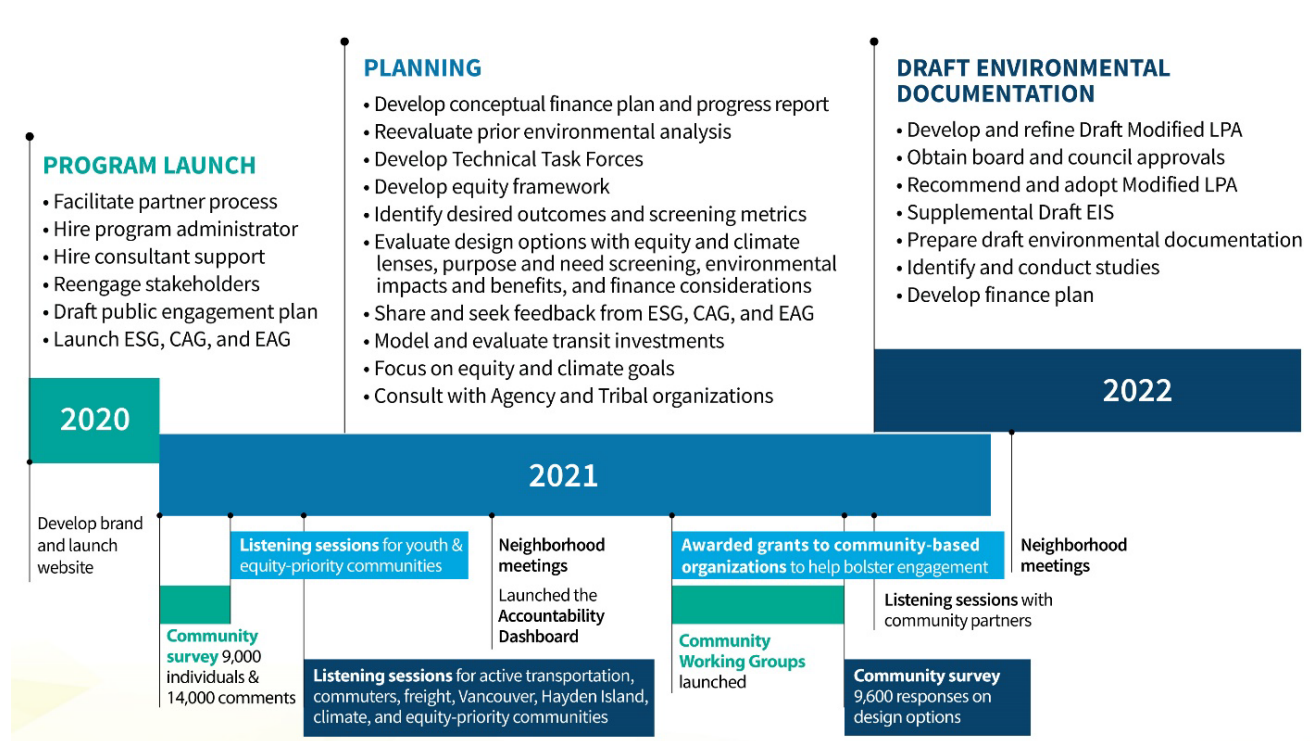
This document outlines the process and options considered in the development of the modified LPA, leading with a description of the identified Purpose and Need, and an overview of the climate and equity priorities grounding the program's work, followed by a brief overview of community and agency engagement and the screening process. Specific elements of the modified LPA include: the Hayden Island and Marine Drive interchanges, transit investments, auxiliary lanes on the river bridge, and variable rate tolling on the river bridge. Two IBR program scenarios are presented to show how the elements of the draft modified LPA could work together to support and serve local and regional goals. Finally, an outline of next steps is provided. Appendices provide additional data and background information.

2. PROGRAM MILESTONES

The IBR program team is working in collaboration with local, state, federal and tribal partners, and the community to complete the federal environmental review process over the next 18 months.

Figure 1 shows the key program milestones from program launch to the development of draft environmental documentation.

Figure 1. IBR Program Milestones



3. PURPOSE AND NEED, CLIMATE, EQUITY

The IBR program confirmed that the previous project's (CRC) Purpose and Need statement was still valid as the problems identified as part of CRC still exist. The CRC Purpose and Need can be found in [Chapter 1 of the Final EIS](#).

The purpose of the IBR program is to improve I-5 corridor mobility by addressing present and future travel demand and mobility needs in the I-5 bridge corridor, from approximately Columbia Boulevard in the south to SR 500 in the north. The IBR program is intended to meet the following objectives:

- Improve multimodal travel safety and traffic operations on the I-5 crossing's bridges and associated interchanges.
- Improve connectivity, reliability, travel times, and operations of public transportation alternatives in the bridge corridor.
- Improve highway freight mobility and address interstate travel and commerce needs in the bridge corridor.
- Improve the I-5 river crossing's structural integrity (seismic stability).

Community engagement and input from the program partners and stakeholder also confirmed that the transportation needs identified in the CRC Purpose and Need statement above remain valid, and climate and equity should also be prioritized during the process. As key program objectives, climate and equity remain focal points in the development and evaluation of program elements, and are prominent in the program's desired outcomes (Table 1 and Table 2). With partners and advisory groups, the IBR program established a process for developing and implementing "frameworks" focused on equity and climate.

3.1 Equity Framework

The IBR program is committed to centering equity by maximizing benefits and minimizing burdens for Equity-Priority Populations (i.e., Black, Indigenous, and People of Color (BIPOC); people with disabilities; communities with limited English proficiency; persons with lower income; houseless individuals and families; immigrants and refugees; young people, and older adults). By focusing benefits on the populations and communities where there is the greatest need and where the greatest harm has been done, the program will also be able to achieve the greatest overall benefits for the region.

The components of this commitment to equity are outlined in the IBR Equity Framework, which was informed by the EAG, community input, program staff, best practices and language from other projects, equity frameworks, and equity toolkits in the Pacific Northwest. The Equity Framework

guides every element of the program, from planning and design to environmental review, construction, and community engagement.

At the core of the Equity Framework are a program-specific equity definition, a set of equity principles, and six equity objectives. It focuses on equity in both process and outcomes and includes accountability mechanisms to ensure its use throughout the program. See the program website for a copy of the [Equity Framework](#).

3.2 Climate Framework

In the United States, the transportation sector is one of the largest contributors of greenhouse gases. Greenhouse gas emissions from transportation account for about 29 percent of total U.S. greenhouse gas emissions, making it the largest contributor of U.S. greenhouse gas emissions. Between 1990 and 2019, greenhouse gas emissions in the transportation sector increased more in absolute terms than any other sector (USEPA, 2022). Curbing the effects of climate change requires a collective effort to reduce dependence on fossil fuels, develop walkable communities, and provide local access to jobs, affordable housing, and essential services.

Current climate challenges within the program area include limited capacity for low-emissions travel (e.g., walking, biking, and rolling), constrained transit options, and significant congestion resulting in idling vehicles that contribute to greenhouse gas emissions. As shown in the desired outcomes (Table 2), the IBR program is committed to seeking outcomes that reduce greenhouse gas emissions within the program area, minimize operational and embodied carbon during construction, produce structures resilient to climate disruptions, and limit environmental impacts that exacerbate the effects of climate change. The program's climate framework guides program work, including desired outcomes, screening criteria, program-level performance measures, intergovernmental and community benefits agreements, and construction specifications and procurement strategies.

The IBR program aims to address climate impacts by building resilient infrastructure that contributes to the reduction of greenhouse gas emissions, in accordance with local, regional, and state goals. The IBR program supports these goals and objectives by identifying safe, efficient, and accessible multimodal solutions for people traveling across the Interstate Bridge. Climate considerations guide all areas of work, including design, construction, operations, and maintenance. Screening criteria were included in the program evaluation to address climate objectives.

See Appendix A for a policy matrix of local, regional, and state climate policies and goals, and an initial evaluation of the IBR program's consistency with and support of each agency's policies.

3.3 Desired Outcomes

Using the established Purpose and Need, and the Climate and Equity Frameworks, the IBR program developed desired outcomes and screening criteria to evaluate and refine design concepts and program transit investments – including the Hayden Island/Marine Drive interchanges, auxiliary lanes over the river crossing, and high-capacity transit (HCT) investments.

Desired outcomes are observable and measurable accomplishments that the IBR program aspires to achieve at a program level. Input from partners,¹ the public, and CAG and EAG was used to identify the program’s desired outcomes. The desired outcomes align with the program’s Purpose and Need statement, as well as with the community priorities and values adopted by the CAG, the equity objectives adopted by the EAG, and the IBR program’s climate objectives.

Table 1 identifies desired outcomes that are associated with the program’s Purpose and Need statement, and Table 2 identifies additional desired outcomes in alignment with the program values, including desired outcomes specific to equity and climate resiliency. Because equity and climate are inherently tied to transportation projects, many of the desired outcomes for the Purpose and Need statement also relate equity and climate objectives. Desired outcomes were only developed for program values that are applicable to the screening of high-level design options, (e.g., “foster leadership and cooperation” does not apply).

¹ ODOT and WSDOT’s local partner agencies include Metro, the Southwest Washington Regional Transportation Committee (RTC), TriMet, C-TRAN, the City of Portland, the City of Vancouver, the Port of Portland, and the Port of Vancouver.

Table 1. Desired Outcomes Associated with the Purpose and Need Statement

Purpose and Need for the Program	Desired Outcomes
Growing travel demand and congestion	More people can move through the program area.
	People of all ages, abilities, and incomes have access to move through the program area, regardless of mode.
	Regional trips stay on I-5.
	Travel times through the program area are faster and more predictable.
	Increase transportation choices and efficient travel patterns through coordinated land use and transportation planning.
Impaired 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.
Limited public transportation operations, connectivity, and reliability	More people have access to high-quality, affordable, and reliable transit.
	Transit connects people to their origins and destinations.
	Travel by transit is competitive with other modes.
	More people use transit.
	Travel by transit is predictable, reliable, and consistent.

Purpose and Need for the Program	Desired Outcomes
Safety and vulnerability to accidents	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.
	Safety is reflected in the design of all modes.
	Fewer diverted trips from I-5 to local streets.
Substandard bicycle and pedestrian facilities	Active transportation is an attractive mode, and more people walk and cycle, both to access transit and instead of travelling by autos.
	More people have access to high-quality active transportation facilities.
	Traveling by walking, biking, and rolling feels safe because facilities are separated from moving vehicles and the shared use path environment is visible and connected.
	The high-quality networks for walking/biking/rolling are convenient and connect destinations that are important for most trips.
Seismic	Bridges will be designed and constructed so that they will not collapse and will remain operable in a Cascadia subduction zone earthquake.

Table 2. Additional Desired Outcomes

Additional Desired Outcome Category	Desired Outcomes
Climate change and resiliency	Reduce greenhouse gas 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).
Equity	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.

Additional Desired Outcome Category	Desired Outcomes
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 program and in support of each state's climate goals.
	Ensure fiscal responsibility across the program and into the future, including new technology to solve future problems.

The draft desired outcomes were presented to the ESG on October 21, 2021, and to the Bi-State Legislative Committee on October 27, 2021. The list above reflects the suggestions and discussion from those groups. The ESG concurred on the process for developing desired outcomes.

3.4 Transportation and Land Use

As part of the IBR program's Supplemental Environmental Impact Statement a Land Use Technical Report will be prepared. The Land Use Technical Report will include an assessment of the Modified LPA's consistency with state, regional and local land use plans, including comprehensive plans, subarea plans and zoning ordinances. Specifically, the evaluation of land use consistency will evaluate how the Modified LPA is:

- Supportive of Oregon Statewide Goal Number 14, which requires defining an Urban Growth Boundary where urban-level zoning, infrastructure and development may occur.
- Supportive of Oregon Statewide Goal Number 12, Transportation Planning, which is implemented by Metro's Regional Transportation Plan.
- Supportive of Washington State's Growth Management Act, which requires local jurisdictions to define and implement a land use policy framework that reduces the conversion of land to sprawling, low-density development and encourages in-fill development in areas where urban level services and infrastructure are already in place.

Within the IBR program area, the long-range land use planning requirements of Oregon Statewide Goal Number 14 is implemented by Metro's 2040 Growth Concept and the Regional Framework Plan,

and the Growth Management Act is implemented by RTC's Regional Transportation Plan and the City of Vancouver's Comprehensive Plan.

The assessment of land use plan consistency, together with the IBR program's design for the year 2045, will support a Modified LPA that is future compatible with the long-range vision for land use in the region. Urban-level services, such as HCT stations, will be in areas where the existing and future land use density will support land use patterns such as transit-oriented development and encourage transit ridership. The Modified LPA's future compatibility with the region's long-range land use vision will also serve to meet other IBR program objectives such as a reduction in greenhouse gas emissions and equity, as more people will be in proximity to frequent and reliable public transit that would more affordably provide access to destinations throughout the region, reducing the need to rely on traveling by car.

4. COMMUNITY AND AGENCY ENGAGEMENT

The IBR program has been engaging with partner agencies, tribal governments, the community, and stakeholders. This engagement has helped shape communications strategy and implementation, the environmental process, and the development of design options—all of which are critical to identifying a multimodal bridge replacement solution that meets the needs and priorities of the region. The IBR program has solicited input and exchanged information with the public, agency, and tribal representatives. This section briefly lists the different groups that have been engaged and contributed to the advancement of the IBR program, as well as the substantial community engagement efforts that have ensured that public voices are heard and incorporated into the program.

4.1 Technical Coordination with Partner Agencies

The IBR program worked in tandem with partner agency technical staff through focused technical working groups to develop, evaluate, refine, and identify design concepts, transit investments, and modeling and analytical approaches. Descriptions of these efforts with partner agencies follow.

4.1.1 Task Forces

The IBR program's design team worked in tandem with partner agency technical staff through focused technical task forces to develop, evaluate, refine, and identify design concepts and transit investments for consideration by the community, steering and advisory groups. These meetings served as a venue for developing a shared understanding of local conditions, needs, and planned transportation improvements. The task forces identified design options for screening, contributed to desired outcomes, developed screening criteria, considered tradeoffs, and were engaged in the process of developing the modified LPA.

The task forces included technical staff from the IBR program and the following agencies:

- The Oregon Department of Transportation (ODOT)
- The Washington Department of Transportation (WSDOT)
- The local transit agencies: Clark County Public Transportation Benefit Area (C-TRAN) and Tri-County Metropolitan Transportation District (TriMet)
- The regional metropolitan planning organizations Oregon Metro (Metro) and Southwest Washington Regional Transportation Council (RTC)
- The Cities of Portland and Vancouver
- The Ports of Portland and Vancouver

4.1.2 Travel Demand Modeling Working Group

Representatives from the IBR program, C-TRAN, TriMet, the Cities of Vancouver and Portland, the Ports of Vancouver, Metro, and RTC met to review and discuss methods and assumptions related to travel demand modeling being used in support of analysis for the IBR program. This group met approximately monthly starting in June 2021 to discuss many aspects of the demand model process including data collection, land use, travel markets, big data analysis, tolling (for IBR as well as modeling coordination with the Oregon Toll Program), definition of model assumptions for screening of highway and transit options and post-processing for traffic analysis. The group also reviewed screening criteria and analysis related to modeling to support the evaluation of options.

4.1.3 Transit Options Technical Session

Representatives from the IBR program, C-TRAN, TriMet, the Cities of Vancouver and Portland, Metro, and RTC developed and refined an array of transit scenarios (including mode, alignment, stations, and operations) and their varying performance and operating measures. This technical team was convened under the name of the Transit Options Technical Session and met eight times between October 2021 and February 2022.

4.1.4 Climate Technical Working Group

The IBR program invited climate and planning staff from each of the partner agencies to join ODOT and WSDOT climate specialists to convene for discussions and strategies to support shared climate goals. The climate technical work group meetings are held monthly and cover topics such as methods to assess greenhouse gas emissions associated with the program, greenhouse gas reduction goals and targets, and the need for mutually supportive policies and programs to support shared climate goals. Future meetings will address design refinements, the environmental study, construction means and methods, and investigate potential mitigation or offsets.

4.2 Community and Equity Advisory Groups

The CAG is composed of community members from both Oregon and Washington. The IBR program shares information with the CAG, which then discusses and provides input in a public forum to help ensure program outcomes reflect community needs, issues, and concerns. CAG members and the program team engage in dialogue with a commitment to meaningful, two-way feedback. The CAG generally meets monthly. Two co-chairs, one representing each state, lead the group's diverse and inclusive membership. These co-chairs also sit on the Executive Steering Group. For more information on the CAG, see [CAG | I-5 Bridge Replacement Program \(interstatebridge.org\)](https://interstatebridge.org)

The EAG helps ensure that the Interstate Bridge Replacement (IBR) program remains centered on equity. The group refined equity-focused screening criteria and has made recommendations to IBR program leadership on the components of the modified LPA, evaluating options through an equity lens to advance the program's equity objectives. The EAG developed multiple screening criteria for the different design components (see Section 5.3). The EAG meets monthly. For more information on the EAG, see [EAG | I-5 Bridge Replacement Program \(interstatebridge.org\)](https://interstatebridge.org).

4.3 Executive Steering Group

The ESG directly supports IBR program progress. The Oregon and Washington State Departments of Transportation convened the 12-member group to provide regional leadership support on key program issues. Members of the ESG include representatives from the 10 bi-state partner agencies with direct delivery or operational roles in the integrated, multimodal transportation system around the Interstate Bridge, as well as a community representative from each state. The two community representatives serve as the co-chairs of the CAG.

4.4 Federal Agencies

The coordination between the IBR program and federal agencies is formalized through the environmental review process. Federal statute 23 United States Code (USC) 139 requires that agencies that have jurisdiction by law or a special interest in a project are provided an opportunity to formally participate in a program's environmental review process. The NEPA Coordination Plan is in development and will outline the roles and responsibilities of federal and other agency partners for the duration of the NEPA process.

4.5 Tribes

The IBR tribal consultation process is designed to encourage early and continuous feedback from, and involvement by, tribes potentially affected by the IBR program, and to ensure that their input is incorporated into the decision-making process. Although tribal coordination and government-to-government tribal consultation is being undertaken as a distinct outreach effort, tribal involvement is also occurring during agency coordination. A tribal consultation plan is currently in development and will outline consultation milestones and strategy. To date, tribal concerns are similar to those expressed on the CRC project—impacts to natural and cultural resources, in particular fisheries and habitat loss and mitigation, as well cultural sites in and around the Fort Vancouver area. Tribes have asked to be deeply engaged throughout the program lifecycle, and the IBR program is committed to that engagement.

4.6 Community Engagement

The IBR program offers continual opportunities for the community at large to provide input and feedback. Methods used to share information and solicit feedback include online open houses, digital surveys, equity-priority listening sessions, community briefings, community working groups, and public comment submission via email and phone. These opportunities are advertised via the program website, social media, mailed postcards, media advisories, in-person canvassing, multilingual community liaison outreach, program newsletters, and partnerships with local community-based organizations. Engagement efforts have resulted in nearly 30,000 touch points with the community in 2021 alone, including receiving more than 18,000 online survey responses and 16,000 comments. The program's spring 2021 community engagement efforts were recognized with a national TransComm 2021 Skills Award for Public Involvement Approach (with a consultant).

Between early February and mid-March 2021, the IBR program held a targeted period of community engagement to gather specific feedback from the public regarding the transportation problems they experience with the Interstate Bridge and to understand the community priorities and values that should help shape the program. A comprehensive [community engagement report](#) details all feedback received. Key takeaways included:

- Widespread agreement that the six previously identified transportation problems still exist: congestion and travel reliability, safety, earthquake vulnerability, impaired freight movement, inadequate bicycle and pedestrian pathways, and limited public transportation.
- Solutions that address climate change, minimize impacts on neighboring communities, and address transportation needs of low-income travelers, people with disabilities, and non-drivers are valued.
- Congestion and travel reliability consistently ranked or expressed as the highest concern, with safety and earthquake vulnerability both ranked second and mentioned frequently.
- Notable concerns about transportation safety including earthquake vulnerability and the impacts of substandard interstate design on drivers.
- Strong desire for an improved public transit connection between Portland and Vancouver.
- Concerns regarding tolling include potential impacts on equity-priority communities and the distribution of the cost burden.
- Value a cost-effective program with funding support that builds on previous work.

In the fall and winter of 2021–2022, the program held a second period of targeted community engagement to gather feedback and input on the design options and weigh in on the priorities that inform elements of the modified LPA. A comprehensive [community engagement report](#) details all feedback. Key takeaways included:

- Design options and program elements that improve travel times, relieve congestion, improve safety, and mitigate negative impacts to people and the environment are preferred.
- Equity-priority communities rely on transit for a diverse range of needs.
- Trip time is the most influential factor when choosing how to make trips in the future. Ease of trip and avoiding a toll were the second and third most influential factors, respectively.
- While preferences for how to access Hayden Island and Marine Drive is heavily influenced by a respondents' geographic location, when asked to identify the priority for any Hayden Island Interchange design, nearly 70 percent of all survey respondents agreed that congestion relief on I-5 near Hayden Island is most important.
- Survey results indicate Washington residents prefer direct access to Hayden Island from I-5, while Oregon residents prefer to access Hayden Island via Marine Drive and new arterial bridges.
- The top three preferences for transit station locations include: (1) Vancouver waterfront, (2) near Clark College, and (3) Expo Center.

The IBR program offers real-time engagement in online and in-person community meetings to address specific geographic areas, issues of concern, and program priorities. Since February 2022, the program has hosted or attended more than a dozen community engagement events, including an online Black History Month Roundtable, multiple virtual and in-person meetings with the freight community, and presentations to and discussions with program area Neighborhood Associations, including Bridgeton, Shumway, HiNoon, Arnada, and Rose Village, among others.

This feedback is important input that the IBR program will continue to consider and integrate throughout the planning and design process.

4.7 Engagement with Freight Stakeholders

4.7.1 Freight Movement Public Listening Session

On May 27, 2021, the IBR program hosted a Freight Movement Listening Session with members of the public. There were 46 participants including representatives of marine and freight interests, ports, industry associations, and the Oregon and Washington legislatures. The purpose of this engagement was to provide information regarding the IBR program and to hear from the freight community regarding their issues and concerns regarding the bridge. The key themes and takeaways included the following:

- Inability to use interstate bridge due to height and weight limitations
- Concerns regarding congestion negatively impacting freight operations around Marine Drive

- Concerns regarding unreliability, narrow turns, safety, and bridge lifts
- Desire for more freight capacity on and around the bridge
- Challenges regarding travel path and turning radius

4.7.2 Freight Leadership Meetings

In partnership with the Ports of Vancouver and Portland, the IBR program hosted two freight engagement sessions in the fall 2021 and winter 2022 with leaders of the regional freight community and IBR program leadership. Attendees from the freight community included representatives from regional ports, industry associations, freight retail, and the Oregon and Washington legislatures. The key themes and takeaways included the following:

- Unimpaired freight movement is important to the local, regional, national, and international economies.
- Congestion through the I-5 corridor increases freight operational costs and negatively impacts ability to attract and retain employees.
- Trucks avoid peak travel times if possible (6 to 9 a.m. and 3 to 9 p.m.)
- Suggestions for improvement include:
 - Truck-only lanes
 - Reduce the number of on/off-ramps
 - Remove current height restrictions and bridge lifts
- Desire that road and pathway alignment be designed with consideration for optimal freight movement.
- Consider high, wide, and heavy freight movement, including bridge and overpass heights.
- Interest in learning about impacts to freight connectivity including on/off-ramp locations and east/west access to Terminal 6 in North Portland.
- Interest in future engagement regarding alignment and number of lanes through the program area.
- Concern that current exponential freight volume growth may increase congestion connected with I-205.

5. SCREENING PROCESS

5.1 Overview of Process

The IBR program, in collaboration with agency partners and advisory groups, used an iterative process to develop the modified LPA. This involved first identifying relevant physical and contextual changes that have occurred since 2013. To address these changes in accordance with Purpose and Need and with an equity and climate lens, the IBR program developed and refined desired outcomes, screening criteria, design concepts, and transit investments. These components were developed and refined through the engagement avenues highlighted in Section 4. This development process provided a continual feedback loop to advance work while incorporating input, allowing the IBR program to arrive at a modified LPA that truly encompasses the values and priorities of partner agencies and the community.

5.2 Screening Metrics

Screening metrics that reflect the program's Purpose and Need and desired outcomes were developed in Fall 2021. Screening metrics are specific, measurable metrics that provide differentiating data between the design options for a given program component (e.g., the river crossing). The metrics were used during screening to identify the benefits and trade-offs between the design options and ultimately assessed how well a design option met the Purpose and Need and desired outcomes (see Table 1 and Table 2).

Working in collaboration with partners, the IBR design and environmental teams developed a menu of potential screening metrics for design components through an iterative process, including input from the EAG, who reviewed and identified screening metrics that could be used to advance the program's equity objectives. See Section 5.3 for a description of how equity and climate were embedded in the screening process.

To align with Purpose and Need and desired outcomes, the metrics were organized into the following categories:

- Climate Impacts/Adaptation
- Natural Environment
- Built Environment
- Active Transportation
- Transit Access
- Vehicles

- Freight
- Cost
- Seismic

As screening metrics were developed, IBR staff, partner agencies, and the EAG identified whether a metric was representative of a desired outcome, an equity objective, or a climate objective; in many cases, a metric was representative of more than one desired outcome or objective. Additional metrics were identified to help assess a design option's effects on the natural and built environment. Metrics were modified during the evaluation process if it became apparent that additional differentiators were needed or if the selected metrics were not highlighting differences among the options.

5.3 Equity and Climate Lenses

The task forces and the EAG identified whether a screening metric was related to or could be used to measure the design option's equity and/or climate performance. The following equity objectives apply to the screening of high-level design options, and were subsequently included in the screening process:

- AH – Avoid further harm: Avoid rather than simply mitigate disproportionate impacts on equity priority groups.
- CB – Community benefits: Find opportunities for and implement local community improvements in addition to required mitigations.
- EO – Economic opportunity: Ensure that economic opportunities generated by the program benefit minority and women owned firms, BIPOC workers, workers with disabilities, and young people.
- MA – Mobility and accessibility: Improve mobility, accessibility, and connectivity, especially for lower income travelers, people with disabilities, and communities who experience transportation barriers.
- PD – Integrate equity, area history, and culture into the physical design elements of the program, including bridge aesthetics, artwork, amenities, and impacts on adjacent land uses.

The IBR program's climate objectives were developed in collaboration with agency partners, advisory groups, and the community. The following climate objectives were included in the screening process for consideration of design options:

- ACT – Supports mode shift to low or no emission travel (i.e., active transportation: walking, rolling, biking)
- CC – Supports complete communities

- CONST – compatible with low carbon construction
- ITS – Supports intelligent transportation systems
- O&M – Supports low emission operations and maintenance
- RES – Improves resilience to uncertain climatic conditions
- RID – Reduces idling of vehicles (freight, single-occupancy vehicles, transit)
- TRA – Supports mode shift to transit (i.e., improves access, travel time, reliability, etc.)

During screening, each design option received a rating under the “Equity Lens” and “Climate Lens”. These ratings range from low to high and are based on how a design option scored on equity-specific and climate-specific metrics, as well as other metrics that were correlated to equity and/or climate objectives.

6. HAYDEN ISLAND AND MARINE DRIVE

The primary design considerations for Hayden Island and Marine Drive were the interchange type on Hayden Island and resulting multimodal connections with Marine Drive and I-5. The IBR program evaluated multiple concepts, ultimately advancing full, partial, and no interchange options for Hayden Island into the screening process. All design options included a full interchange at I-5/Marine Drive, an arterial bridge across North Portland Harbor to serve local traffic, a shared-use path for active transportation connecting north Portland, Hayden Island and the 40-mile loop, and the realignment of N Tomahawk Island Drive to provide an additional east-west local street connection on Hayden Island.

6.1 Identifying Changes and Community Priorities

The IBR program identified the following changes in conditions since 2013 and current community priorities related to Marine Drive and Hayden Island through advisory group input, community feedback, and input from agency partners serving on the Hayden Island/Marine Drive task force. These changes necessitated the development of design options for the Marine Drive and Hayden Island interchanges.

6.1.1 Changes since 2013

- **North Portland Harbor Bridge** – Over the past decade, the need to replace this seismically deficient structure has increased. The IBR program will replace the North Portland Harbor Bridge to improve seismic resiliency in the corridor.
- **Levee** – USACE, in partnership with the Multnomah County Drainage District, is planning improvements to the existing levee along the south side of the harbor. It is anticipated that the new levee design will require any improvements associated with the IBR program to stay above a 40-foot elevation (North American Vertical Datum of 1988).
- **Land use** – Changes in planned land use at the west end of Hayden Island (a marine terminal is no longer planned for Hayden Island).
- **Traffic** – Increased auto and freight volumes in the project area and updated the design year for the program from 2030 to 2045.

6.1.2 Community Input

Feedback from the CAG on the Hayden Island and Marine Drive interchange area changes and needs included:

- Congestion relief and safety are priorities.
- A desire for a local connection between north Portland and Hayden Island
- A need for active transportation facilities and multimodal connections in the program area between north Portland and Hayden Island and the I-5 bridge over the Columbia River
- The desire to maintain and/or improve east-west connectivity across Hayden Island.

6.1.3 Climate and Equity Considerations

6.1.3.1 Equity

To evaluate the IBR program through an equity lens, the following input was received from the EAG:

- The desire to maintain and/or improve east-west connectivity across Hayden Island.
- Access to the significant number of retail and service industry jobs located in the area.
- The high proportion of older adults and people with disabilities living on Hayden Island.
- The relationship between the program's footprint and opportunities for ancillary development.
- The need to minimize displacement or other impacts to the houseless population.

6.1.3.2 Climate

To evaluate the IBR program through a climate lens, the following changes and considerations were incorporated during development of the design options:

- The design options should raise the I-5 mainline and local streets above the 100-year flood elevation to protect them from sea-level and water rise associated with climate change.
- The North Portland Harbor bridge has aged beyond the point that seismic retrofitting is feasible as was proposed in the 2013 design. Replacing this bridge would improve the community's resiliency to sea level rise.
- The design options should improve multimodal connectivity to, from, and through Hayden Island and encourage a shift from vehicle trips to low or no emissions travel (i.e., bike, walk, roll).

Project Elements incorporated into all options:

- Replacement of the North Portland Harbor bridge

- An arterial roadway connection between North Portland and Hayden Island
- An additional east-west local connection on Hayden Island
- Separated multi-use pathway for active transportation
- An HCT station on Hayden Island
- A full interchange at I-5/Marine Drive.

6.2 Task Force Review

The purpose of the Hayden Island/Marine Drive task force was to have focused, detailed technical discussions on what transportation improvements the IBR program could make to Hayden Island and Marine Drive, and to understand local conditions, needs, and planned transportation improvements.

The Hayden Island/Marine Drive task force met 18 times between late spring 2021 and early winter 2022. There was an average of 50 participants per meeting, with staff from 10 partner agencies and technical staff from the IBR program. The task force discussions covered a wide variety of topics, including the interchange compatibility and function, integration of active transportation improvements, connections to the local street network, and reducing environmental impacts. These discussions assisted in the identification of site-specific needs and refining metrics for screening design options.

The IBR design team developed eight preliminary design concepts based on numerous design iterations and in fall 2021, completed a tradeoffs matrix with the task force to identify design options to be advanced into screening.

The IBR team developed the tradeoffs matrix with the goal of advancing one full interchange design option, one partial interchange design option, and one no-interchange design option at Hayden Island through screening. The tradeoffs matrix listed features and challenges based on design work for task forces in summer/fall of 2021. Features and challenges included footprint, safety, mobility, access & connectivity for auto, freight, transit, and active transportation, constructability, seismic resiliency, compatibility with other project components.

Each of the four full interchange design options (including the 2013 design) received a plus or minus for each feature/challenge relative to other full interchange design options (but not relative to partial and no interchange design options). This was also completed for each of the three partial interchange design options, and for the one no interchange option. Based on the features and challenges, the IBR team prepared a draft recommendation on whether to advance or not advance each design option into screening and provided supporting documentation to support each recommendation.

The IBR team received feedback from the task force on the tradeoff matrix features/challenges, pluses/minuses, and the recommendation/rationale. An additional partial interchange option was developed at this stage to address the traffic, safety, and design issues identified with the other partial interchange options.

6.3 Design Options Selected for Screening

Following agency and public input, the Hayden Island/Marine Drive task force identified five design options, in addition to the 2013 Design, to advance for screening:

- Design Option 1: Full Interchange
- Design Option 2: Partial Interchange 1
- Design Option 3: Partial Interchange 2
- Design Option 4: No Interchange
- Design Option 5: Partial Interchange 3

All options above included a full interchange at Marine Drive.

The 2013 Design was included in the screening and compared to the design options. Each design option is described and illustrated below. Following the screening process, model graphics were created for design options that advanced into LPA discussion with project partners. High-level line drawings are provided for the design options that were not advanced. The line drawings show roadway networks beyond the anticipated project limits; the extended network is provided for illustrative purposes.

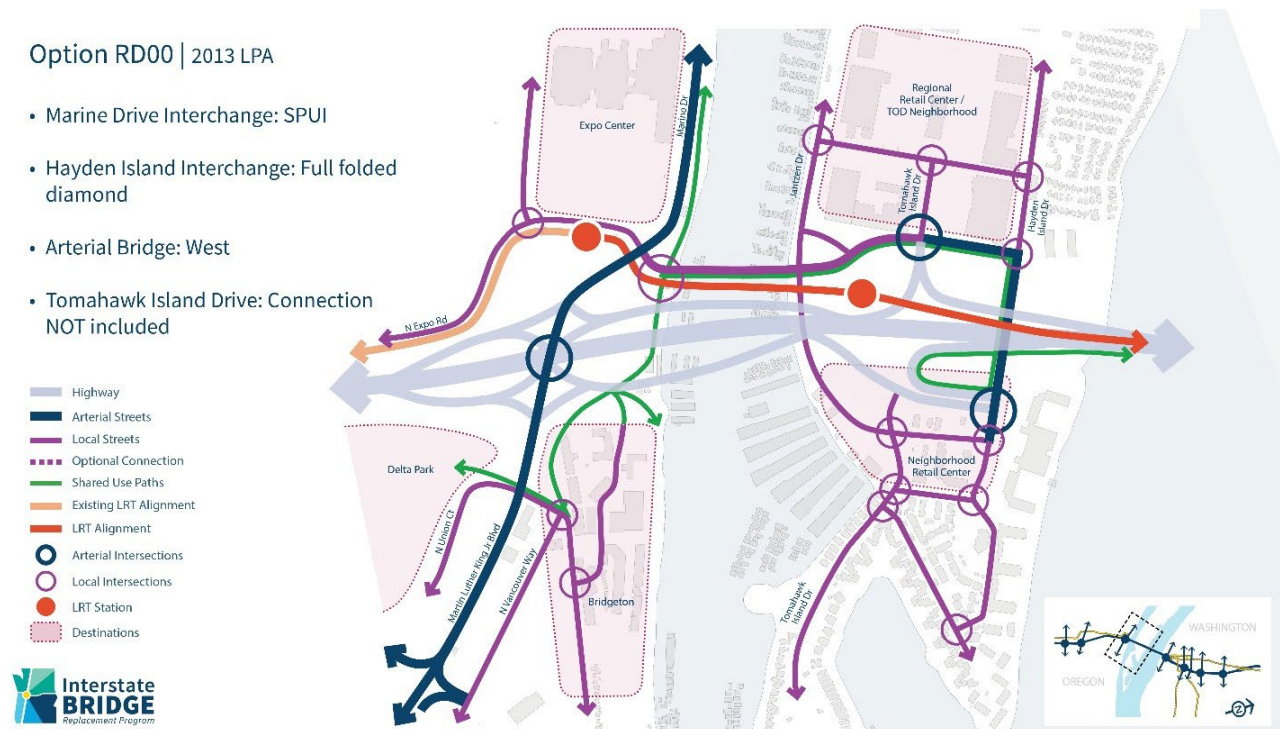
6.3.1 Design Option 0: 2013 Design

The 2013 Design, as documented in the CRC Project's Final EIS and Record of Decision, includes full interchanges on both Hayden Island and Marine Drive (Figure 2). The design includes local vehicular access between Marine Drive and Hayden Island on a local multimodal bridge.

The proposed configuration at Marine Drive was a single-point urban interchange. With this configuration, the four ramps of the interchange would converge at a single signal-controlled intersection on Marine Drive over the I-5 mainline. Local traffic between Martin Luther King Jr. Boulevard/Marine Drive and Hayden Island would travel via a local multimodal bridge over North Portland Harbor, located to the west of I-5. A shared-use path west of I-5 would connect the river-crossing bridge to the 40-mile loop trail, with connections on Hayden Island. Improvements would include realignment of Expo Road.

The Hayden Island interchange would be reconfigured to improve safety for traffic merging on I-5 by providing sufficient ramp lengths parallel to I-5. Improvements would be included for Jantzen Drive and Hayden Island Drive; the roadways would be improved from a three-lane to a five-lane configuration to facilitate traffic using the interchange.

Figure 2. Design Option 0: 2013 Design

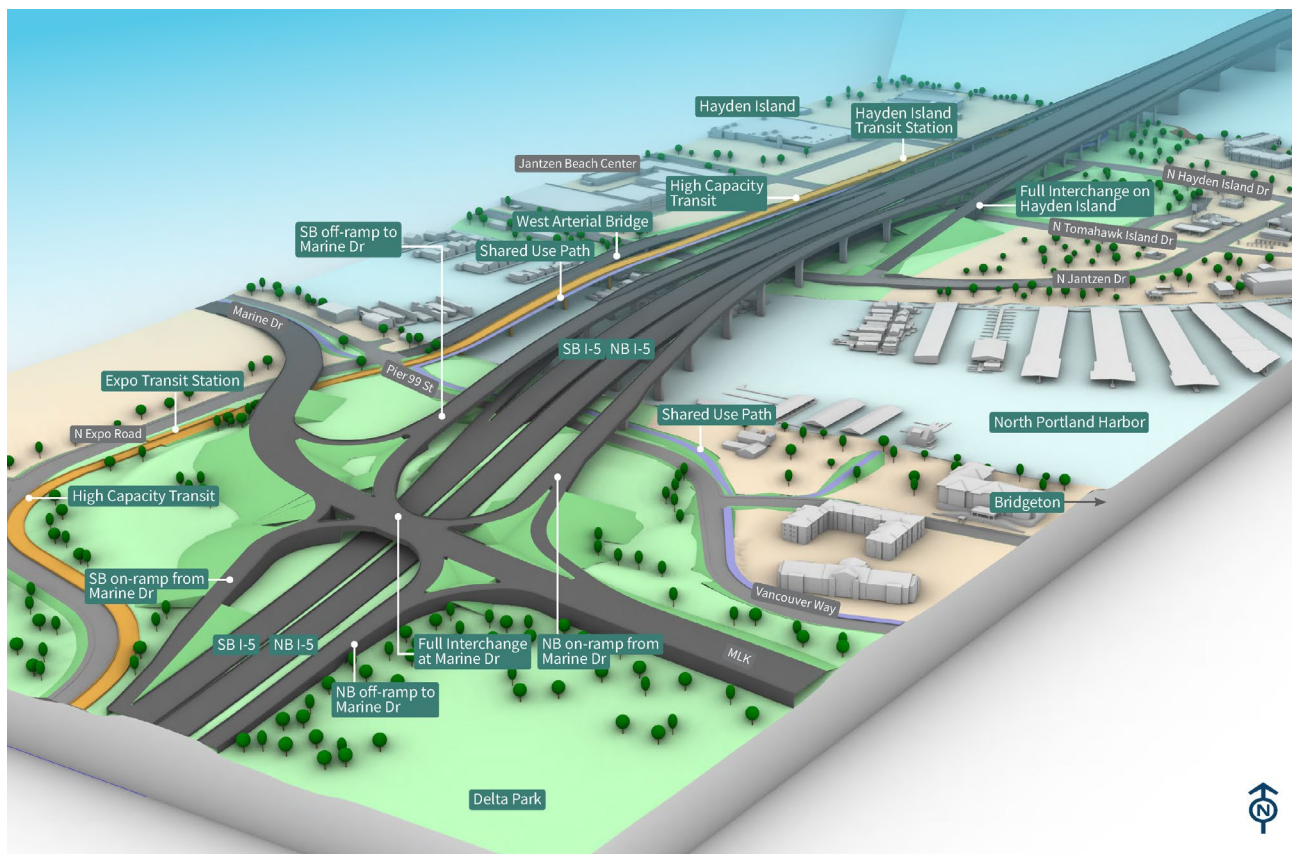


6.3.2 Design Option 1: Full Interchange

Like the 2013 LPA, Design Option 1 includes full interchanges on both Hayden Island and Marine Drive (Figure 3). This option would have a full, split tight diamond interchange at Hayden Island and a single-point urban interchange at Marine Drive. A shared-use path west of I-5 would connect the river-crossing bridge to the 40-mile loop trail, with connections on Hayden Island.

Local street connections on Hayden Island would be maintained under I-5 with some variations, including a third crossing under I-5 for Tomahawk Island Drive. An arterial bridge would connect Hayden Island to Expo Road (west of I-5) and Pier 99 Street. Roadway infrastructure would be farther west in comparison with the 2013 LPA to accommodate the replacement of the North Portland Harbor Bridge.

Figure 3. Design Option 1: Full Interchange

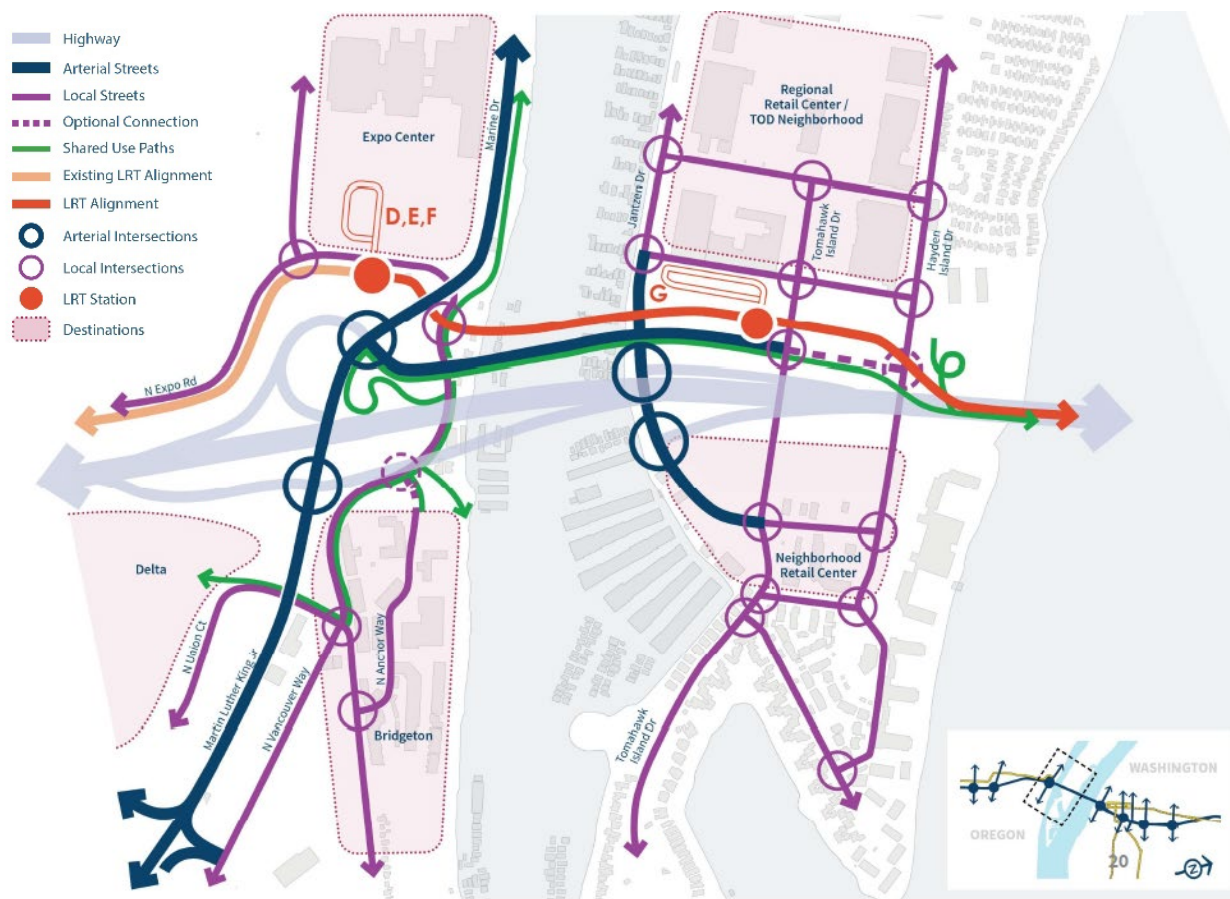


6.3.3 Design Option 2: Partial Interchange 1

Design Option 2 would include a folded diamond interchange at Marine Drive and a half diamond interchange on Hayden Island (Figure 4). The partial interchange on Hayden Island would provide direct ramp connections between Jantzen Drive and I-5 north of Hayden Island. Hayden Island traffic travelling to/from the south would access I-5 by at the Marine Drive interchange through an arterial bridge that connects Tomahawk Island Drive and Marine Drive. A shared-use path west of I-5 would connect the river-crossing bridge to the 40-mile loop trail, with connections on Hayden Island.

Local street connections on Hayden Island would be maintained under I-5 with some variations, including a third crossing under I-5 for Tomahawk Island Drive. An arterial bridge would connect Hayden Island to Expo Road (west of I-5) and Pier 99 Street. Roadway infrastructure would be farther west in comparison with the 2013 LPA to accommodate the replacement of the North Portland Harbor Bridge.

Figure 4. Design Option 2: Partial Interchange 1

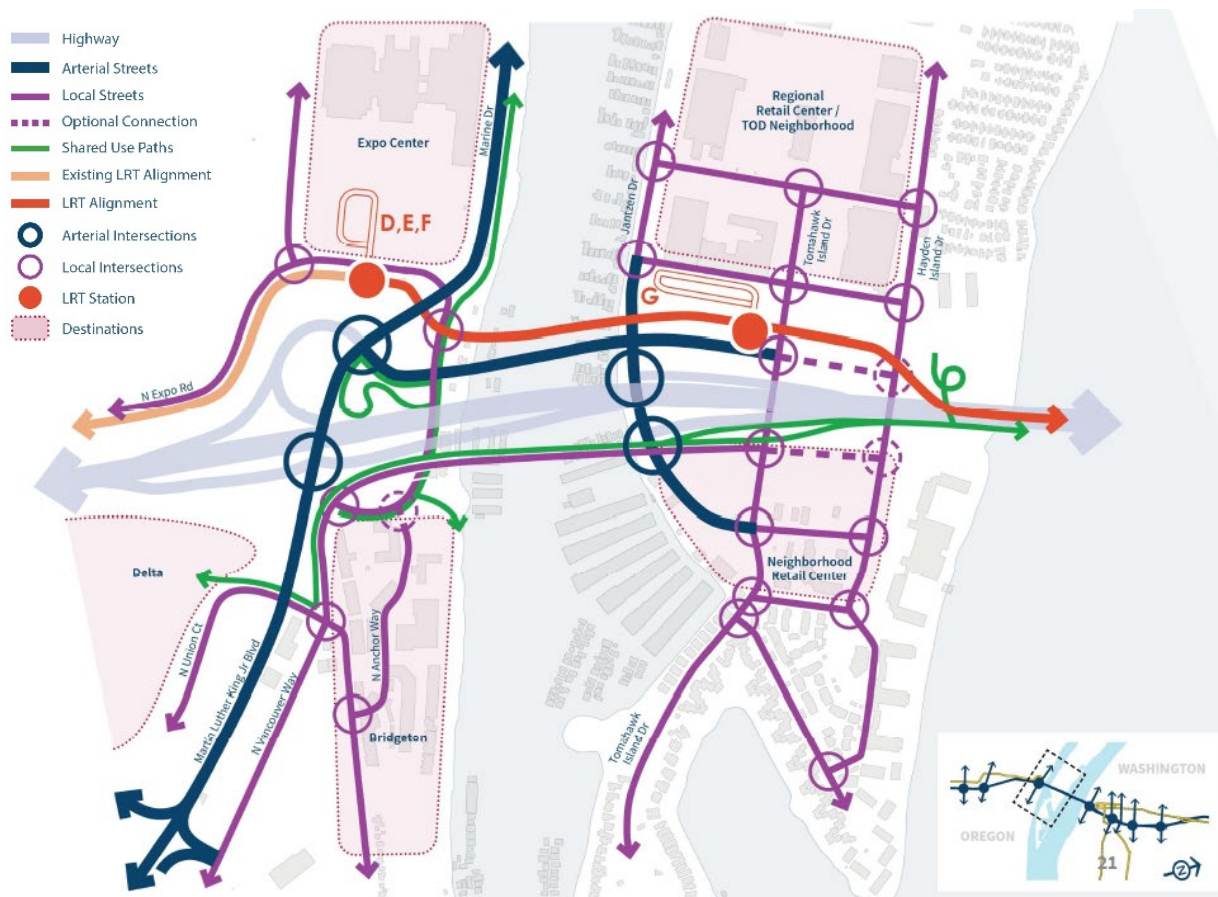


6.3.4 Design Option 3: Partial Interchange 2

Design Option 3 would also have a folded diamond interchange at Marine Drive and a half diamond interchange on Hayden Island (Figure 5). Design Option 3 would have the same west arterial bridge configuration as Design Option 2, and an additional arterial bridge east of I-5. The arterial bridge east of I-5 would provide a connection between Tomahawk Island Drive and Vancouver Way. A shared-use path would connect the river-crossing bridge to the 40-mile loop trail via the east arterial bridge, with connections on Hayden Island.

Local street connections on Hayden Island would be maintained under I-5 with some variations, including a third crossing under I-5 for Tomahawk Island Drive. An arterial bridge would connect Hayden Island to Expo Road (east of I-5) and Pier 99 Street. Roadway infrastructure would extend farther west in comparison with the 2013 LPA to accommodate the replacement of the North Portland Harbor Bridge.

Figure 5. Design Option 3: Partial Interchange 2

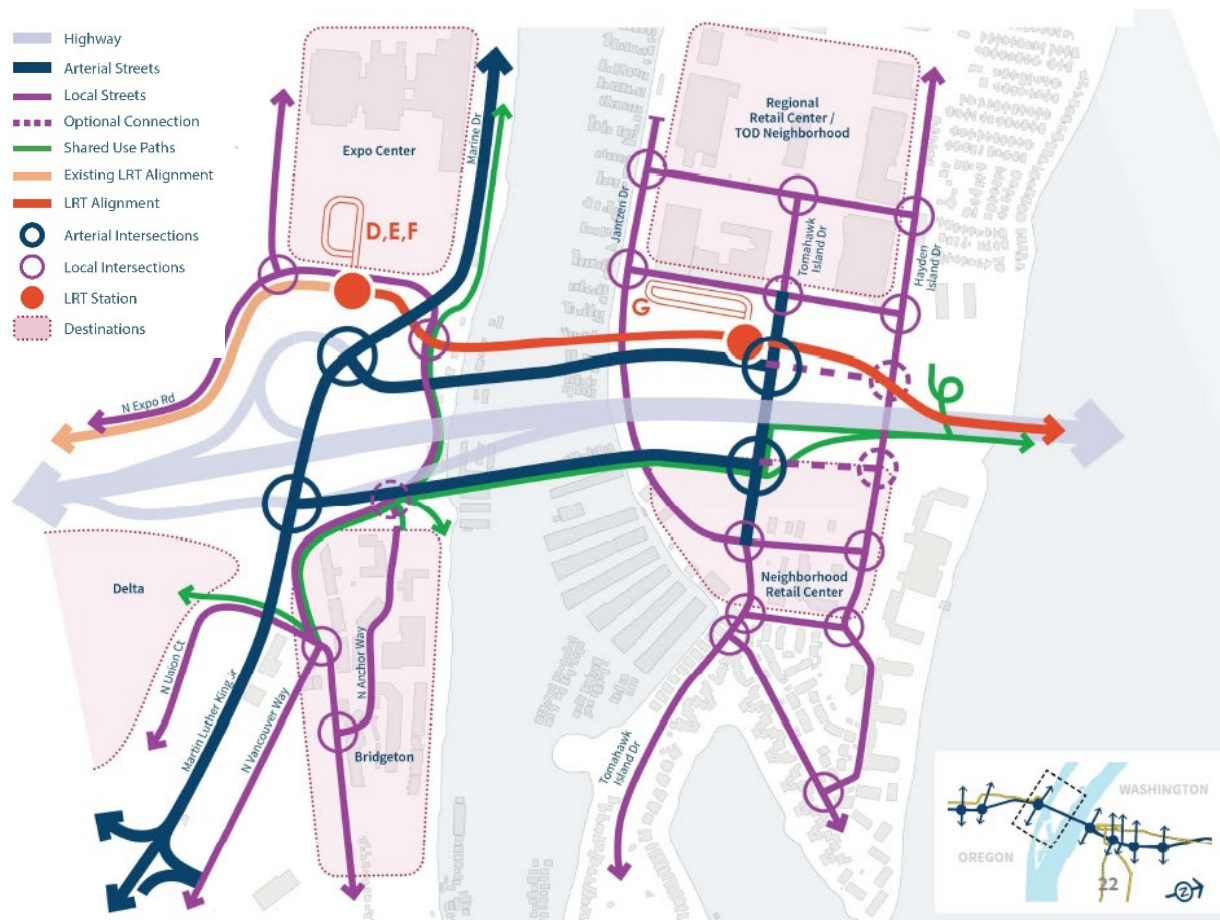


6.3.5 Design Option 4: No Interchange

Under this design option, there would be no interchange on Hayden Island (Figure 6). Similar to Design Options 2 and 3, a folded diamond interchange would be located at Marine Drive. All access to/from Hayden Island would be provided through the Marine Drive interchange with two arterial bridges that connect Tomahawk Island Drive to Marine Drive. A shared-use path would connect the river-crossing bridge to the 40-mile loop trail via the east arterial bridge, with connections on Hayden Island.

Local street connections on Hayden Island would be maintained under I-5 with some variations, including a third crossing under I-5 for Tomahawk Island Drive. An arterial bridge would connect Hayden Island to Expo Road (east of I-5) and Pier 99 Street. Roadway infrastructure would extend farther west in comparison with the 2013 LPA to accommodate the replacement of the North Portland Harbor Bridge.

Figure 6. Design Option 4: No Interchange

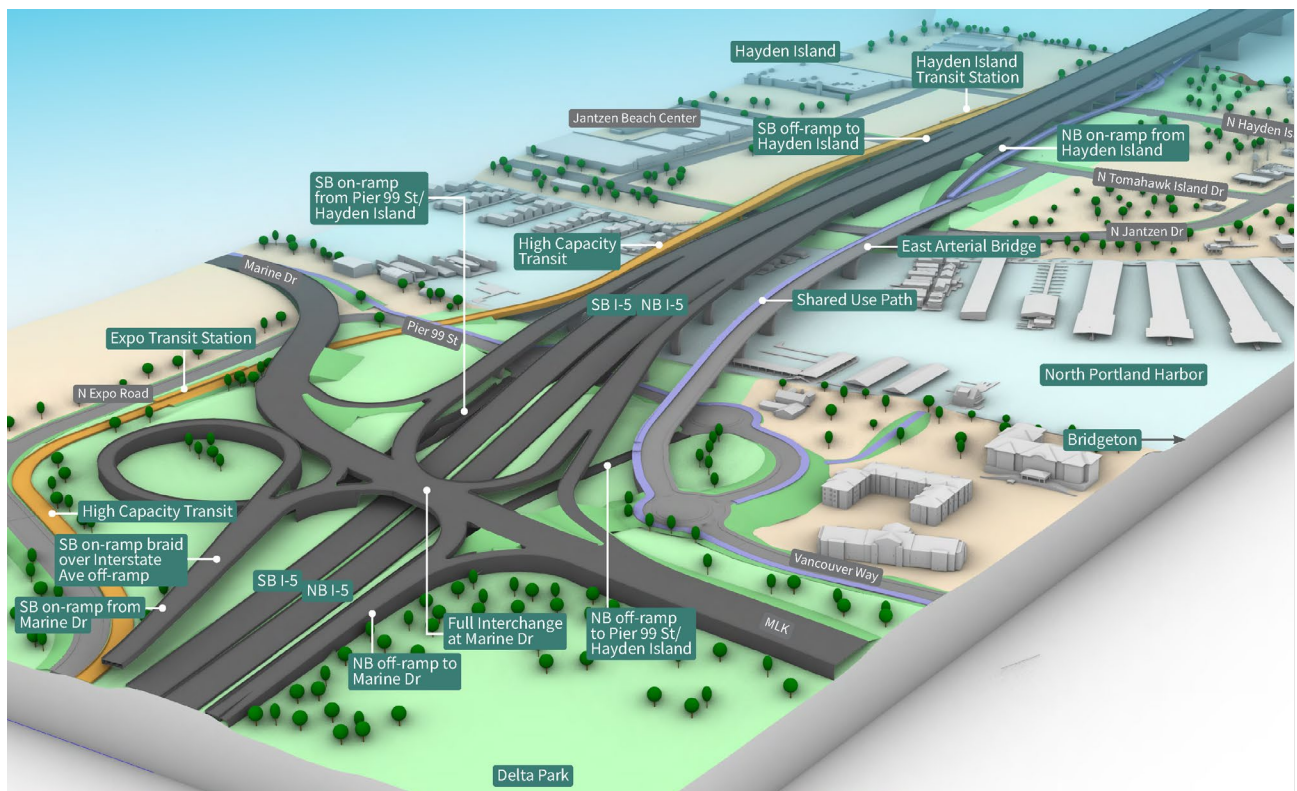


6.3.6 Design Option 5: Partial Interchange 3

During the screening process, the Hayden Island/Marine Drive task force identified design and operational flaws in Design Options 2 and 3 (Partial Interchange) that made them infeasible. In particular, routing all Hayden Island traffic to/from the south through Marine Drive folded diamond interchange resulted in heavy traffic volumes on Marine Drive ramps that could not be accommodated in a safe manner. As a result, the task force developed a new partial interchange option (Design Option 5) that would address the issues identified in Design Options 2 and 3.

Similar to Design Options 2 and 3, the partial interchange configuration under Design Option 5 would provide I-5 ramps to/from the north to Hayden Island via Jantzen Drive (Figure 7). However, Design Option 5 would use single point urban interchange at Marine Drive similar to Design Option 1 to counter some of the challenges posed by the folded diamond interchange configuration.

Figure 7. Design Option 5: Partial Interchange 3



Hayden Island traffic to/from the south would use an arterial bridge east of I-5 between Tomahawk Island Drive and Vancouver Way to connect to two new I-5 ramps. The new I-5 ramps would cross under Marine Drive and connect to the arterial bridge through new interchange ramp terminals on

Pier 99 Street. Similar to Design Option 3, a shared-use path would connect the river-crossing bridge to the 40-mile loop trail via the east arterial bridge, with connections on Hayden Island.

Local street connections on Hayden Island would be maintained under I-5 with some variations, including a third crossing under I-5 for Tomahawk Island Drive. An arterial bridge would connect Hayden Island to Expo Road (east of I-5) and Pier 99 Street. Roadway infrastructure would extend farther west in comparison with the 2013 LPA to accommodate the replacement of the North Portland Harbor Bridge.

6.4 Hayden Island and Marine Drive Results

The five design options described in Section 6.3, in addition to the 2013 design, advanced from initial task force discussions to screening. During screening, the task force collected data for approximately 90 metrics and scored each design option against each other for a given metric. As described below, the task force recommended two design options for further consideration (Sections 6.4.2 and 6.4.1) The results are based on conceptual design and intended for a high-level screening effort; more precise estimates of impacts will be developed as the design is refined further.

6.4.1 Design Options Not Recommended for Consideration in the Draft Modified LPA

6.4.1.1 Design Options 2 and 3

During the screening process, the task force identified traffic and design flaws in Design Options 2, 3, and 4. From a traffic perspective, high off-ramp volumes (1,600 to 2,000 vehicles per hour during the AM peak in 2045; 18 percent of which are trucks) would exceed the southbound I-5 loop ramp capacity under Design Options 2 and 3.

From a design perspective, the location of the loop ramp would not provide sufficient room to provide the distance required to navigate multiple lanes on a steep curve in a safe manner. The steep grade from I-5 to Marine Drive is also not preferable for freight traffic. The curve of the loop ramp, the steep grade, and limited sight distance for vehicles precluded the design from providing sufficient storage length for the high traffic volumes accessing the intersection on Marine Drive.

Design Options 2 and 3 were not advanced to the LPA discussion since they would not serve the high traffic and freight volumes in a safe manner and would not meet the Purpose and Need.

6.4.1.2 Design Option 4

Based on preliminary traffic data, Design Option 4 (No Interchange on Hayden Island) was expected to have similar issues as Design Options 2 and 3. The magnitude of the traffic impacts would be greater because all Hayden Island traffic would have to use the Marine Drive Interchange. This would result in substantial traffic/freight impacts on Marine Drive and the ramp terminal intersections. The resulting ramp queueing from Marine Drive onto I-5 would also create unsafe conditions related to speed differences in merging traffic. These findings are consistent with previous planning studies that investigated combining the Hayden Island and Marine Drive interchanges into one interchange. For these reasons, Design Option 4 would not serve the high traffic/freight volumes and would not meet the Purpose and Need. Therefore, this option was not advanced.

6.4.2 Design Options Recommended for Consideration in the Draft Modified LPA

The task force recommended Design Options 1 and 5 for Hayden Island/Marine Drive. The 2013 LPA (Design Option 0) was included in the screening for comparison to Design Options 1 and 5, but it is not recommended to be advanced for inclusion in the Draft Modified LPA. The 2013 LPA was not recommended for several reasons, including that it would retain the aging North Portland Harbor bridge, which does not meet the seismic resiliency desired across the Columbia River. Furthermore, it does not include a Tomahawk Island Drive or Vancouver Way extension and results in a larger footprint on Hayden Island.

Figure 8 shows the screening summaries side-by-side for each of the three design options.

Figure 8. Hayden Island/Marine Drive – Relative Design Option Comparison

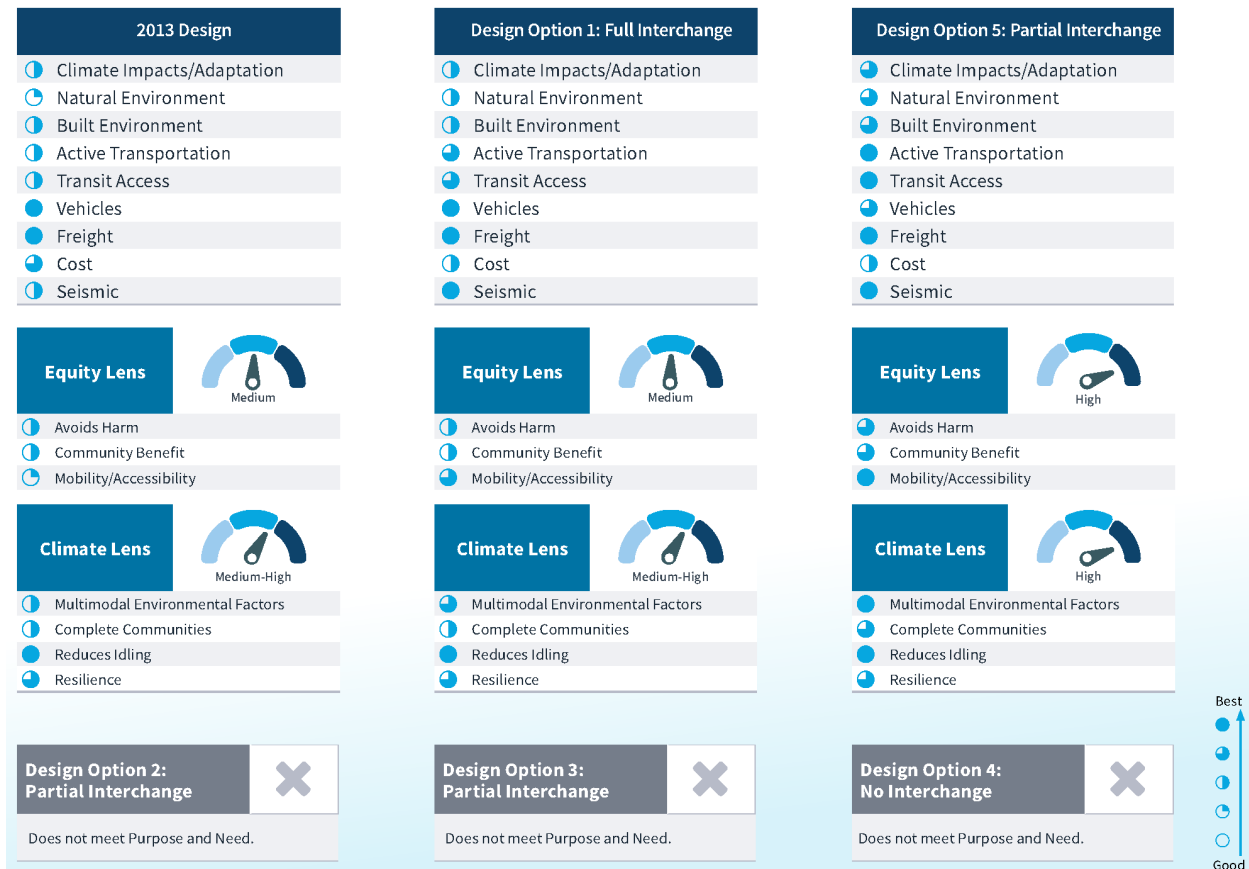


Table 3, Table 4, and Table 5 provide additional detail on the tradeoffs and benefits associated with Design Options 0, 1, and 5, respectively.

Table 3. Marine Drive/Hayden Island Design Option 0 – Screening Summary

Screening Category	Score	Design Option 0 Tradeoffs/Benefits
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 (RES)
Natural Environment	●	- Larger footprint over aquatic habitat - Larger footprint over terrestrial habitat

Screening Category	Score	Design Option 0 Tradeoffs/Benefits
Built Environment	●	• Most non-residential building impacts (AH) • More floating home displacements (AH) • Large scale and complexity of I-5 structures over Hayden Island challenge for local placemaking opportunities (AH, CB, CC) • Greater extent of local streets subject to IAMP restrictions (CC) • Does not include Tomahawk Island Drive crossing (CC)
Active Transportation	●	• Less direct north-south shared use path (MA, ME) • Lower quality of active transportation experience on east-west streets (MA, ME) • Higher number of SUP road/transit crossings (MA)
Transit Access	●	• Less east-west island connectivity because it does not include Tomahawk Island Drive (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 (RID)
Cost	●	• Lower construction cost • Higher estimated O&M cost
Seismic	●	• Seismic retrofits North Portland Harbor Bridge; does not replace

Screening Category	Score	Design Option 0 Tradeoffs/Benefits
Equity Objectives AH = Avoid further harm; CB = Community benefits; EO = Economic opportunity; MA = Mobility and accessibility; ME = Multimodal environmental		
Climate Objectives ACT = Supports mode shift to low or no emission travel (i.e., active transportation: walking, rolling, biking); CC = Supports complete communities; CONST = Compatible with low carbon construction; ITS = Supports intelligent transportation systems; O&M = Supports low emission operations and maintenance; RES = Improves resilience to uncertain climatic conditions; RID = Reduces idling of vehicles (freight, single-occupancy vehicles, transit); TRA = Supports mode shift to transit (i.e., improves access, travel time, reliability, etc.)		
Abbreviations IAMP = interchange area management plan; ODOT = Oregon Department of Transportation; O&M = operation and maintenance; SUP = shared-use path		
Scoring System Good → Best ○ ● ● ● ●		

Table 4. Marine Drive/Hayden Island Design Option 1 – Full Interchange Screening Summary

Screening Category	Score	Design Option 1 Tradeoffs/Benefits
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 (RES)
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) • Greater extent of local streets subject to IAMP restrictions (CC) • Includes Tomahawk Island Drive crossing (CC)

Screening Category	Score	Design Option 1 Tradeoffs/Benefits
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 (SUP) 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 (RID)
Freight	●	• Freight to/from Marine Drive area operates acceptably with minimal delay through the interchange (RID)
Cost	●	• Higher construction cost
Seismic	●	• Replaces North Portland Harbor Bridge

Equity Objectives

AH = Avoid further harm; CB = Community benefits; EO = Economic opportunity; MA = Mobility and accessibility; ME = Multimodal environmental

Climate Objectives

ACT = Supports mode shift to low or no emission travel (i.e., active transportation: walking, rolling, biking); CC = Supports complete communities; CONST = Compatible with low carbon construction; ITS = Supports intelligent transportation systems; O&M = Supports low emission operations and maintenance; RES = Improves resilience to uncertain climatic conditions; RID = Reduces idling of vehicles (freight, single-occupancy vehicles, transit); TRA = Supports mode shift to transit (i.e., improves access, travel time, reliability, etc.)

Abbreviations

IAMP = interchange area management plan; ODOT = Oregon Department of Transportation; O&M = operation and maintenance; SUP = shared-use path

Scoring System

Good → Best



Table 5. Marine Drive/Hayden Island Design Option 5 – Partial Interchange Screening Summary

Screening Category	Score	Design Option 5 Tradeoffs/Benefits
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 (RES)
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) • Lesser extent of local streets subject to IAMP restrictions (CC) • Includes Tomahawk Island Drive crossing (CC)
Active Transportation	●	• Most 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 (SUP) 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 (RID) • Longer routing and more challenging wayfinding for Hayden Island traffic to/from Portland via I-5 and/or Interstate Ave.

Screening Category	Score	Design Option 5 Tradeoffs/Benefits
Freight	●	Freight to/from Marine Drive area operates acceptably with minimal delay through the interchange (RID)
Cost	◐	Higher construction cost
Seismic	●	Replaces North Portland Harbor Bridge

Equity Objectives

AH = Avoid further harm; CB = Community benefits; EO = Economic opportunity; MA = Mobility and accessibility; ME = Multimodal environmental

Climate Objectives

ACT = Supports mode shift to low or no emission travel (i.e., active transportation: walking, rolling, biking); CC = Supports complete communities; CONST = Compatible with low carbon construction; ITS = Supports intelligent transportation systems; O&M = Supports low emission operations and maintenance; RES = Improves resilience to uncertain climatic conditions; RID = Reduces idling of vehicles (freight, single-occupancy vehicles, transit); TRA = Supports mode shift to transit (i.e., improves access, travel time, reliability, etc.)

Abbreviations

IAMP = interchange area management plan; ODOT = Oregon Department of Transportation; O&M = operation and maintenance; SUP = shared-use path

Scoring

Good → Best



Design Options 1 and 5 performed best out of all Design Options. They have similar freight/vehicle traffic performance on Marine Drive, including ramp terminal intersections. Design Options 1 and 5 are compatible with all transit investments currently under consideration. Table 6 shows additional benefits and tradeoffs between Design Options 1 and 5 side-by-side.

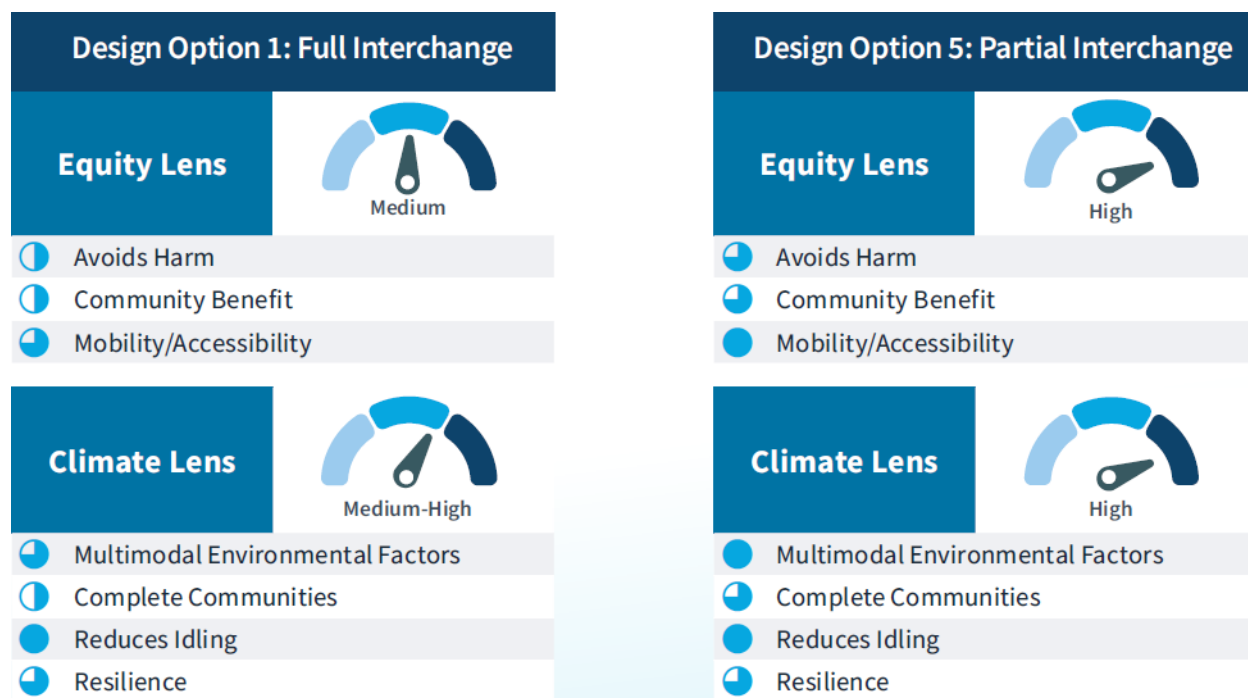
Table 6. Marine Drive/Hayden Island Interchange Design Options 1 and 5 Tradeoffs and Benefits

Design Option 1: Full Interchange	Design Option 5: Hybrid/Partial Interchange
Larger footprint over North Portland Harbor	Smaller footprint over North Portland Harbor
More floating home impacts	Fewer floating home impacts

Design Option 1: Full Interchange	Design Option 5: Hybrid/Partial Interchange
Larger scale/complexity of I-5 over Hayden Island provides lower quality experience for active transportation and transit access on east-west streets	Smaller scale/complexity of I-5 over Hayden Island provides higher quality experience for active transportation and transit access on east-west streets
Hayden Island vehicle/freight access to/from Portland via Hayden Island Drive I-5 ramps	Hayden Island vehicle/freight access to/from Portland via local roads and I-5 ramps that cross under Marine Drive
Hayden Island vehicle/freight access to/from Vancouver via Jantzen Drive I-5 ramps	Hayden Island vehicle/freight access to/from Vancouver via Jantzen Drive I-5 ramps

The screening was also considered through an equity lens and through a climate lens (Figure 9). Design Option 1 scored medium from an equity perspective and Design Option 5 scored high. Design Option 1 scored medium-high from a climate perspective and Design Option 5 scored high. The criteria that were considered in the equity and climate lenses are indicated in Table 5 and Table 6, above.

Figure 9. Hayden Island/Marine Drive Design Options 1 and 5 Equity and Climate Lens



Based on the screening results, the task force **recommended** advancing Design Options 1 and 5 for consideration in the Modified Draft LPA.

Option 5 was added later in the evaluation process, in response to preliminary screening results on the other partial interchange options. It will be further studied and refined in the environmental process. Specific areas for further study and design refinement include but are not limited to:

- Moving interchange ramp terminals onto a local street, and the associated change in access
- Implications of having Pier 99 Street levee between the east and west ramp terminals
- Lack of separation between local and interstate traffic on the proposed arterial bridge
- Safety issues associated with the I-5 southbound on-ramp loop from Hayden Island (configuration and active transportation connections)
- Wayfinding that is contrary to drive expectations (unconventional interchange splits and multiple turns)
- Additional traffic from Hayden Island on Expo Road (vehicle access, potential improvements, lack of interstate connection between Hayden Island and Victory Boulevard)
- Potential Vanport wetlands impacts from the proposed loop ramp/braid at Marine Drive
- Potential Delta Park 4(f) impacts from the proposed I-5 northbound off-ramp

6.5 Advisory Group Feedback

Feedback from the CAG and EAG on the Hayden Island and Marine Drive interchange configurations and screening results included:

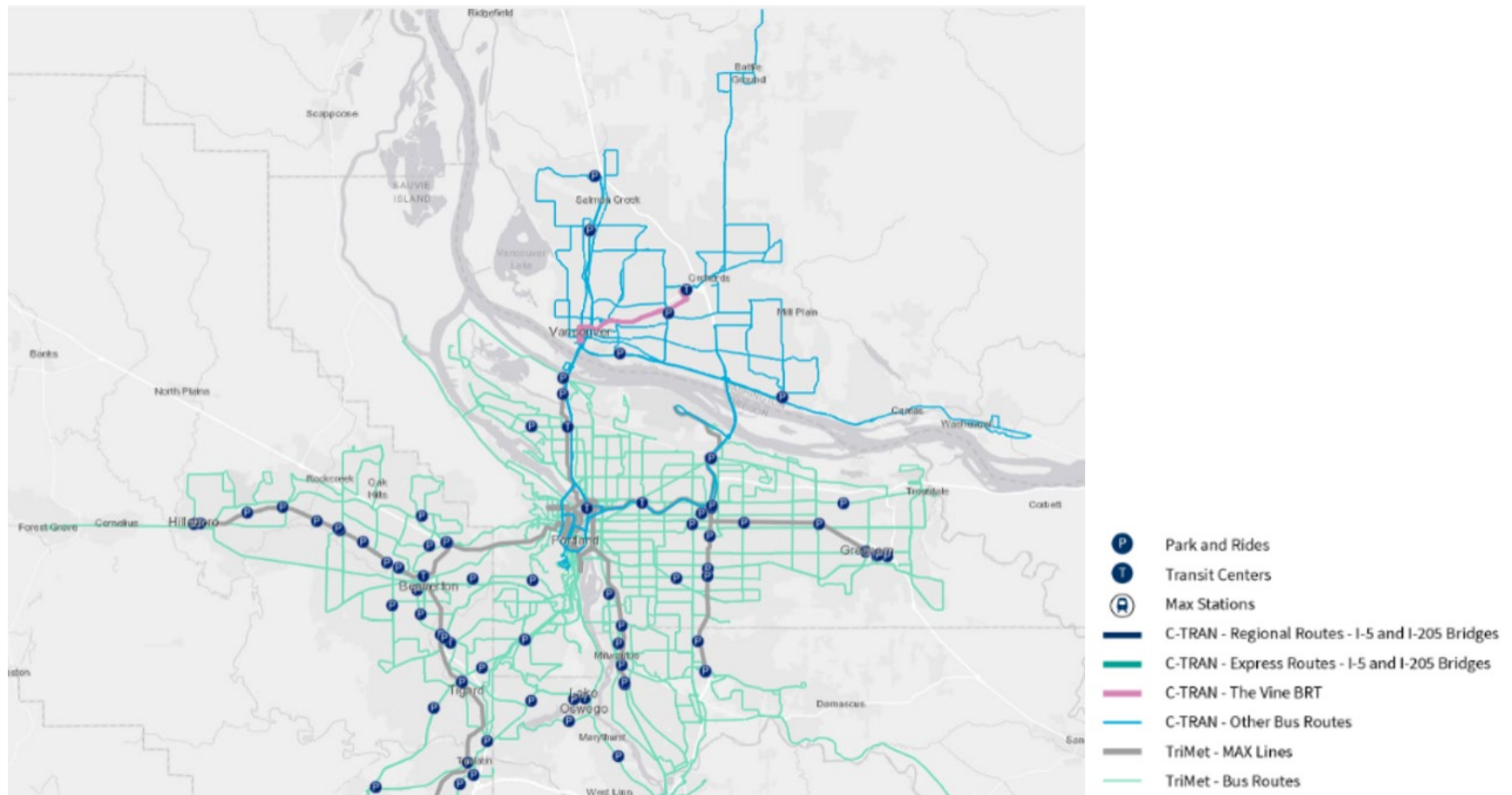
- Wayfinding signage needs to be the priority given complexity (particularly for the partial interchange).
- Crucial to focus on the human experience and impact.
- Screening summaries demonstrate equity was incorporated into the process; however, it is still difficult to understand all the information and tradeoffs.
- Making data driven decisions is important.
- The interchange option that reduces traffic congestion the most is what should be built.
- Active transportation safety and access should be considered a priority.
- Keeping the commercial/freight industry up to date and hearing their concerns should be ongoing.
- The size of the bridge footprint over Hayden Island should be considered in decision-making.
- The ability to access Hayden Island without I-5 is important.

7. TRANSIT – MODE, GENERAL ALIGNMENT, AND TERMINI

7.1 Transit Setting

In the years since the suspension of the CRC project, transit system enhancements have been advanced in both Oregon and Washington. Notably, C-TRAN has implemented bus rapid transit (BRT) service, The Vine, in Clark County that provides service from downtown Vancouver east to Vancouver Mall along Fourth Plain Boulevard. Another line is currently under construction which will also serve downtown and extend east along Mill Plain Boulevard. Figure 10 shows the regional transit network today.

Figure 10. Regional Transit Network



Source: TriMet, C-TRAN

7.2 Transit Options Evaluated

An array of potential transit investments was developed by the IBR program and the partner agency transit technical teams to better understand how different combinations of *mode* (BRT, light rail transit [LRT]), *alignment*, *station locations*, *termini* (end points), and *park and ride locations* could perform relative to each other. Each of the representative transit investments were run through the regional travel demand model to arrive at forecasts for the year 2045. Transit demand (e.g., ridership, access mode), travel time, and access for equity-priority communities are some of the transit performance measures developed for each of the potential transit investments.

Table 7 lists the 13 representative transit investments considered to help evaluate the tradeoffs associated with choices around mode, alignment, and terminus. Appendix B includes results from the modeled representative transit investments.

Table 7. Representative Transit Investment Descriptions

Representative Transit Investment	General Description
A – No Build	The No Build reflects planned systemwide increases in background transit service by both TriMet and C-TRAN as adopted by both Metro and RTC in their Regional Transportation Plans, but reflects no replacement of the current I-5 bridge, no reconstructed interchanges, no tolls on the I-5 bridge, and no extension of additional high capacity transit service north from the existing MAX Yellow Line alignment into Vancouver.
B – 2045 CRC ROD	2013 CRC LPA project assumes fully dedicated LRT guideway extending from MAX Expo station to a terminus near McLoughlin / I-5 via the Vancouver central business district. Includes five new stations and three park and rides.
C – Bus on Shoulder	Express bus operating as Bus on Shoulder in BIA (both directions). Route 60 in auxiliary lanes between the Vancouver central business district and Hayden Island, Delta Park. No new stations or park and rides.
D – BRT Turtle Place to Expo	Dedicated BRT guideway between the MAX Expo Center Station and a terminus at Turtle Place in downtown Vancouver. Includes three initial stations: Expo, Hayden Island, Turtle Place.

Representative Transit Investment	General Description
E – BRT I-5 to Kiggins	Fully dedicated BRT guideway between the MAX Expo Center Station and a terminus near McLoughlin Blvd./I-5. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a dedicated connection to Hayden Island and Expo station similar to 2013 LPA. Includes six initial stations: Kiggins, E 33rd, McLoughlin Blvd., Evergreen Blvd., Hayden Island, Expo Center.
F – BRT in ROD Alignment	Fully dedicated BRT guideway between MAX Expo Center Station and a terminus near McLoughlin Blvd./I-5 to Expo station with alignment and station locations similar to 2013 ROD project. Includes six initial stations: I-5/McLoughlin, McLoughlin and Washington St. (SB)/16th and Broadway (NB), 12th and Washington (SB)/ 13th and Broadway (NB), Turtle Place, Hayden Island, Expo Center.
G – Hybrid	Fully dedicated LRT guideway between MAX Expo Center Station and a new station at Hayden Island and fully dedicated BRT guideway between Hayden Island and Turtle Place. Includes two initial stations (Hayden Island and the Expo Center).
H – LRT One Station in Vancouver	Fully dedicated LRT guideway between the MAX Expo Center Station and a terminus near Turtle Place in downtown Vancouver. Includes two initial stations (Hayden Island and Turtle Place).
I – LRT I-5 to McLoughlin	Fully dedicated LRT guideway between the MAX Expo Center Station and a terminus near McLoughlin Blvd./ I-5. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a dedicated connection to Hayden Island and Expo Center Station similar to 2013 LPA. Includes three initial stations: I-5/McLoughlin, Evergreen, Hayden Island.
J – LRT I-5 to Kiggins	Fully dedicated LRT guideway between MAX Expo Center Station to a terminus near I-5/Kiggins Bowl. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a dedicated connection to Hayden Island and Expo Center Station similar to 2013 LPA. Includes five initial stations: Kiggins Bowl, 33rd, I-5/McLoughlin, Evergreen, Hayden Island.

Representative Transit Investment	General Description
K – LRT Delta Park to McLoughlin	Fully dedicated LRT Extension from Delta Park (Joint Hayden Island / Expo Station) to a Terminus near McLoughlin / I-5 on an I-5 Adjacent Alignment (Center / West Side of I-5). This option was infeasible and removed from consideration early in the decision process.
L – LRT I-5 to McLoughlin with Columbia	Fully dedicated LRT guideway between MAX Expo Center Station to a terminus near McLoughlin Blvd./I-5. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a dedicated connection to Hayden Island and Expo Center Station similar to 2013 LPA. Includes four initial stations: I-5/McLoughlin, Evergreen, Waterfront, Hayden Island.
M – LRT I-5 to Evergreen with Columbia	Fully dedicated LRT guideway between MAX Expo Center Station to a terminus near I-5/Evergreen. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a dedicated connection to Hayden Island and Expo Center Station similar to 2013 LPA. Includes three initial stations: Evergreen, Waterfront, Hayden Island.

Community feedback was collected in an online survey in the fall of 2021 to understand the community's values and priorities around transit improvements, and specific preferences and travel patterns of transit users. Survey participants prioritized improved travel time as the top priority for any new transit connection across the river. Reliability, safety, and ease of use were also noted as important considerations. Survey responses also indicated that access via a park and ride would make any transit option be more likely to be used. When survey participants were asked what two potential transit stations they most anticipated using in the future, transit stations near the Vancouver Waterfront, Clark College, Expo Center Transit Station, Hayden Island, and the Vancouver Library (C Street and E Evergreen Boulevard), were the five most noted locations, with the Vancouver Waterfront ranked most often. Participants showed noted interest in the topic of transit by commenting in the open-ended comment section of the survey. With over 1,700 open ended comments received, almost half of those comments mentioned public transit, and 67 percent of those comments expressed support for expanded transit options across the bridge.

7.3 Findings

The IBR team developed measures with project partners to better understand how the representative transit investments would perform relative to each other. The measures included:

- Multiple measures of ridership demand in 2045
 - Includes river crossings by mode
 - Ridership by time of day
 - Mode of access
 - Walk access
 - Transfer from other transit (bus/rail)
 - Park and ride access
- Access for equity priority communities
- Relative costs
 - Capital cost
 - Operations and maintenance cost
- Potential impacts

The IBR team found that all the build options would substantially improve transit demand over the no build option. The modeling results indicated that there is very strong demand for cross river transit service and therefore capacity, for both the representative transit investment and other routes in the program corridor, are important considerations for identifying a modified LPA To accommodate the high level of demand, it is suggested that the project include a combination of BRT, LRT, and express bus. Any option considered would include the provision of bus on shoulder capability. The high transit demand and mode diversification needed to meet that demand would require efficient and comfortable connections in the C-TRAN and TriMet systems. When comparing the same representative alignment, LRT options would have higher ridership than BRT options. When comparing the same representative alignment, LRT options would have higher capital cost and lower operations cost per rider than BRT options.

The IBR team found that representative transit investments that include more stations would serve a higher number of residents within walking distance, including BIPOC and low-income populations. All transit investments would improve access to jobs, including BIPOC and low-income populations. LRT investments would improve access to jobs to a greater degree than BRT investments. Park and ride demand is robust in all the representative transit investment scenarios, with the greatest demand attributed to those that are largest and provide the most convenient access from I-5.

7.4 Mode Considerations

The program is considering three transit modes to meet transit demand: Bus on Shoulder, BRT, and LRT. As stated above, a transit investment that serves the identified markets and attempts to serve demand, would need to include a combination of BRT, LRT, and express bus. Bus on Shoulder capability was included in all representative transit investments and was removed as a standalone transit option. When considering the specific needs of the HCT investment for the IBR program, the project recommends LRT as the locally preferred mode.

LRT provides the following benefits over BRT:

- Capacity on LRT options allows the program to maximize trips provided across the river.
- LRT allows for preservation of the C-TRAN Vine and express bus current and future system while providing convenient connections to new LRT stations.
- LRT also offers more competitive travel time compared with trips that require a transfer at Expo.
- An LRT extension of the Max Yellow Line from the Expo Center into Vancouver best integrates existing transit investment in the region.
- Projects with predominant LRT features are typically more competitive for FTA discretionary funding.

7.5 Alignment Considerations

The program needs to integrate new transit investments while considering the existing and planned transit networks of TriMet and C-TRAN. C-TRAN has developed and begun implementation of The Vine BRT network with one BRT line in operation, one is construction, and one in planning. The Vine and C-TRAN express bus service provide frequent and reliable service within Clark County and to downtown Portland, respectively. Any transit investment should be made with a desire to complement The Vine system, including existing and planned service.

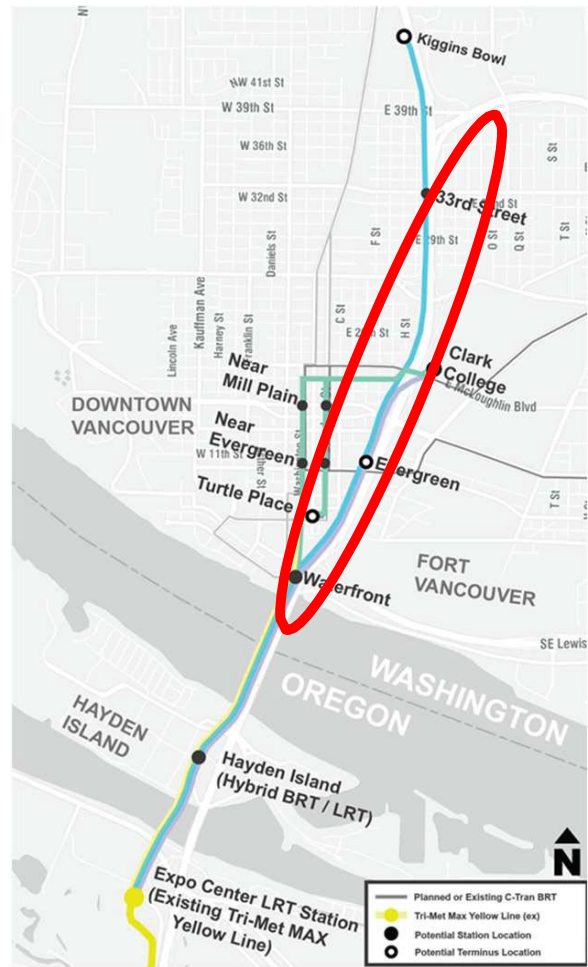
The City of Vancouver has worked with C-TRAN to design station environments for The Vine system on Broadway and Washington in the Central Business District. With these investments in mind, it is desirable to adjust the alignment to provide more efficient functionality within the larger transit network and respective operating environments. Given these considerations, the program recommends the I-5 general alignment (See Recommended General Alignment in Figure 11 below).

Figure 11. Representative Alignments and Recommended General Alignment for the IBR Program

Representative Alignments



Recommended General Alignment



To/Through Broadway/Washington Transit Couplet	I-5 Running/Adjacent
Expo to Turtle Place	Expo to Evergreen
2013 LPA (Expo to Clark College)	Expo to I-5 McLoughlin
	Expo to Kiggins

I-5 Running/Adjacent
Expo to Evergreen
Expo to I-5 McLoughlin
Expo to Kiggins

7.6 Terminus Considerations

A terminus near Evergreen Blvd. is proposed as the final of three new light rail stations connecting Portland and Vancouver. Considerations for the Evergreen terminus include:

- Evergreen terminus has fewer potential property impacts
- Connects directly to downtown library, jobs, services and amenities
- Evergreen terminus supports transit-oriented development opportunities at Library Square and on nearby City-owned parcels
- Evergreen terminus maximizes transfer opportunities given direct connections to several local routes as well as planned BRT routes
- Evergreen connects east over I-5 to the Historic Reserve, and west through downtown to Main Street and Esther Short Park via planned 9th Street pedestrian way

Figure 12 shows the proposed alignment of the LRT with the planned transit system connections.

Figure 12. Proposed LRT Alignment with Planned Transit System Connections



7.7 Advisory Group Feedback

Feedback from the CAG and EAG on the transit analysis included:

- Rely on data, especially potential rider demographics.
 - A one-seat ride is desirable, and the fewer transfers riders need to make the better, especially considering impacts on people with disabilities.
 - The Equity Framework needs to be front and center in evaluating options.
 - Gentrification and displacement are major concerns.
 - There needs to be strong coordination between TriMet and C-TRAN to ensure the functionality of the overall transit system.
- Improving travel time and reducing congestion is a priority.
- Bicycle and active transportation improvements are important.
- Seismic resiliency (of the transit mode) is important.
- More options to cross the river are needed.
- Climate considerations are important.
- Reliability of mode is important.
- Crime statistics on different transit modes would be good to see.
- Bi-state cooperation is considered when deciding a mode.
- Protect and honor cultural history when looking at impacts and design.
- Including The Vine in all transit options is a good idea.
- BRT less desirable especially if ending at Delta Park.
- LRT is most dependable and has greater ridership capacity.
- LRT is a signal of where transit-oriented development should be focused.
- From a freight perspective, the investment that leads to less traffic is best, which points to LRT.
- Predictive modeling is needed.
- Consensus for LRT is desirable.
- Having park and rides is important
- For LRT, the terminus is important.
- Equity perspective is needed – extend terminus further than Evergreen.
- Express bus is important, so glad to see that its staying.

8. AUXILIARY LANES

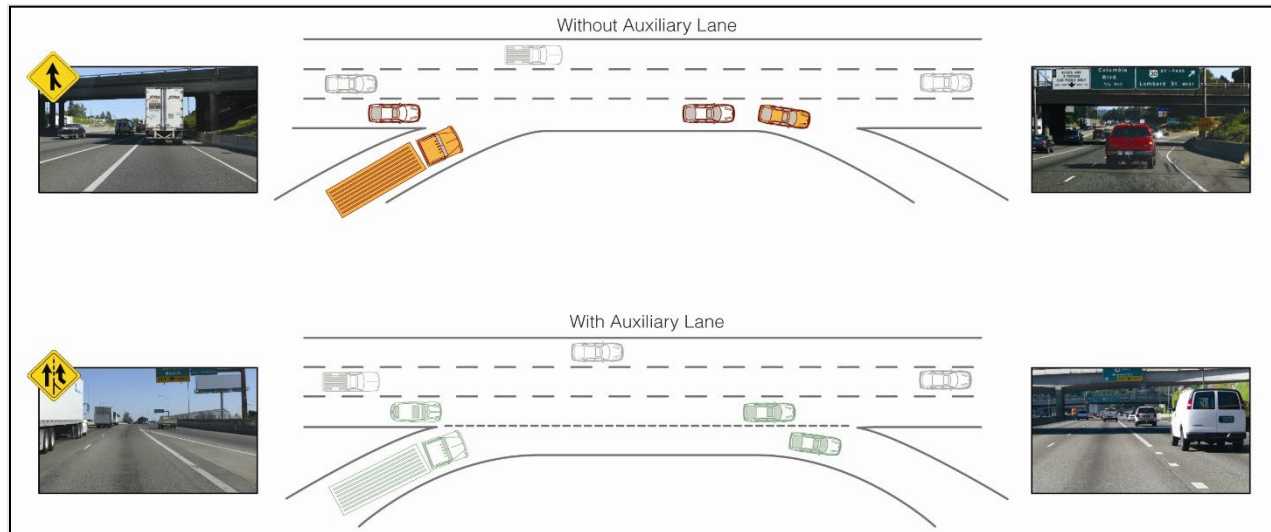
8.1 What are Auxiliary Lanes?

Auxiliary lanes are ramp-to-ramp connections that allow vehicles to enter and exit the roadway outside of through traffic lanes (see Figure 13). These connections currently exist on I-5 in the program area and various other locations in the Portland Metro region (e.g., Highway 217 off-ramp to the Lower Boones Ferry Road off-ramp near Tualatin, Oregon). For a video overview of auxiliary lanes in the Interstate Bridge program area, see: <https://www.youtube.com/watch?v=edNXrvcvAFI>.

Compared to a no build scenario, adding an auxiliary lane(s) will provide substantial safety benefits, as well as some congestion relief. Congestion relief will help reduce cars idling in traffic and associated greenhouse gas emissions. Congestion relief will also improve travel time reliability, increasing equitable outcomes for those populations that depend on cars and transit to access jobs. Auxiliary lanes also help meet freight needs to allow for better movement of goods through the program area. While the extension of HCT from Portland to Vancouver will increase transit ridership, models show that people will continue to traverse the bridge in vehicles, and auxiliary lanes are an important part of improving mobility and safety to meet the needs of current and future travelers.

The use of auxiliary lanes improves traffic safety and reliability by providing sufficient merge, diverge, and weaving lengths. Through traffic is able to maintain fuel-efficient driving speeds. Vehicles entering and exiting the highway have space to accelerate and decelerate without impeding traffic flow.

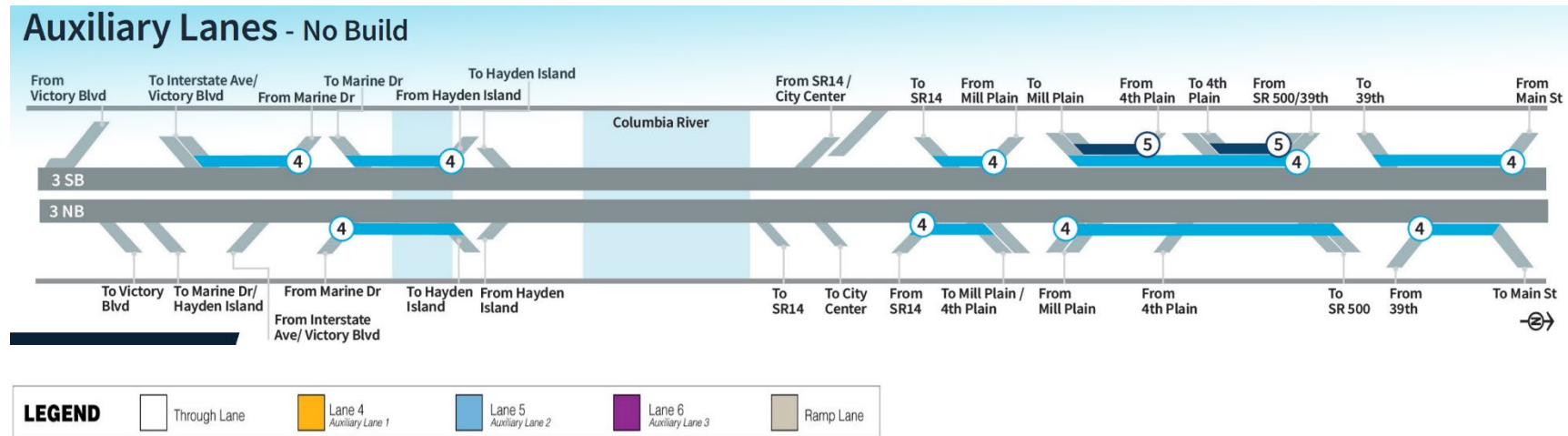
Figure 13. Auxiliary Lanes (Ramp-to-Ramp Connections)



As seen in Figure 14, auxiliary lanes are prevalent throughout the existing IBR program area. The following existing interchange locations within the IBR program area (from south to north) contain auxiliary lanes:

- To/from Interstate Avenue/ Victory Boulevard
- To/from Marine Drive
- To/from Hayden Island
- To/from SR 14
- To/from Mill Plain Boulevard
- To/From Fourth Plain Boulevard
- To/from SR 500/39th Street
- To/from 39th Street
- To/from Main Street

Figure 14. Existing Auxiliary Lanes in the IBR Program



Northbound I-5 at Marine Drive on-ramp auxiliary lane

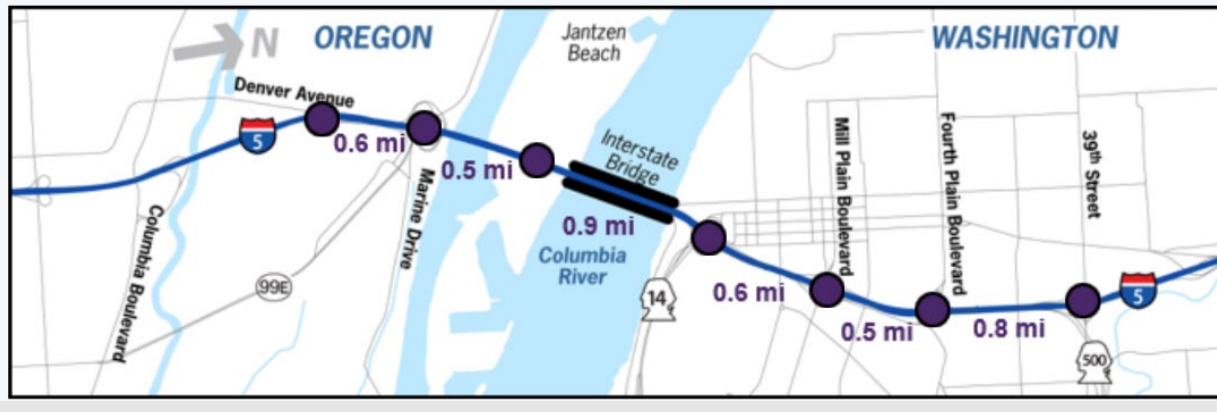


Southbound I-5 at Mill Plain Boulevard off-ramp auxiliary lane



A best practice is to space interchanges at least one mile apart in urban areas. As seen in Figure 15, all seven of the interchanges within the IBR program area are spaced below minimum standards of 1 mile between interchanges, which is the distance that safely allows for merging and diverging.

Figure 15. Existing Interchange Spacing



Standard spacing – Desirable = 2 miles, Minimum = 1 mile

From 2015 to 2019, 55 percent of vehicle crashes within the IBR program area were the result of rear-end collisions and 19 percent were sideswipe crashes. Rear-end collisions are usually a result of traffic congestion and a large difference in vehicle speeds. Short interchange spacing contributes to unsafe sideswipe crashes. Auxiliary lanes will help address these issues by providing separation between through traffic and ramp-ramp traffic, and providing sufficient acceleration and deceleration areas, resulting in a decrease in conflicts between high and low-speed traffic.

8.2 Design Options

It is assumed that IBR would maintain the existing through-lanes across the bridge to match the context of the roadway on either side of the bridge, which also has three through-lanes. As part of the modified LPA process, the program is reviewing the addition of one or two auxiliary lanes across the bridge. Future discussions will occur around possible auxiliary lanes to the north and south of the bridge. Three through-lanes will also be necessary to maintain across the bridge throughout construction to avoid further impacting mobility within the corridor and reliability for travelers on I-5.

The IBR program is investigating ways to implement auxiliary lanes to accommodate the close interchange spacing, short merges, weaves and diverges, and better accommodate high on-ramp and off-ramp volumes. These improvements would result in improved safety, a decrease in vehicle

crashes, and more balanced travel lanes. Project design solution considerations for auxiliary lanes include:

- Solutions for substandard ramp spacing include adding auxiliary lanes, collector-distributor lanes, and braided ramps
- Heavy volume ramps and lane balance
- Through traffic vs entering/exiting traffic speed differential
- Freight needs (volumes, grades, ramp design)

8.3 Auxiliary Lane Analysis for Modified LPA

Auxiliary lane analysis was completed by modeling 2045 forecast traffic volumes for the following Design Options:

- No Build in 2045
- Three through and two auxiliary lanes in 2045
- Three through and one auxiliary lane in 2045

Traffic volume modeling completed by the program shows an increase of merging vehicles in the 2045 Build Scenario. More vehicles merging onto the mainline creates more conflicts and safety issues at highway ramps. There will be a greater need for auxiliary lanes to minimize those conflicts and create safer traffic operations at the bridge.

Compared to the No Build, building a multimodal project with either one or two auxiliary lanes will provide:

- Mode choice benefits (HCT, bus on shoulder and active transportation)
- Reduces overall congestion
- Off-peak benefits, including weekends
- Less diversion to local streets
- Faster congestion recovery from crashes and incidents
- Fewer lane changes required (i.e., lane balance)
- Large safety improvements
- Lane widths to allow for current vehicle widths, turning, and comfort
- Fewer sideswipe crashes
- Anticipated greenhouse gas reduction due to less congestion

Supplemental benefits of providing one auxiliary lane include:

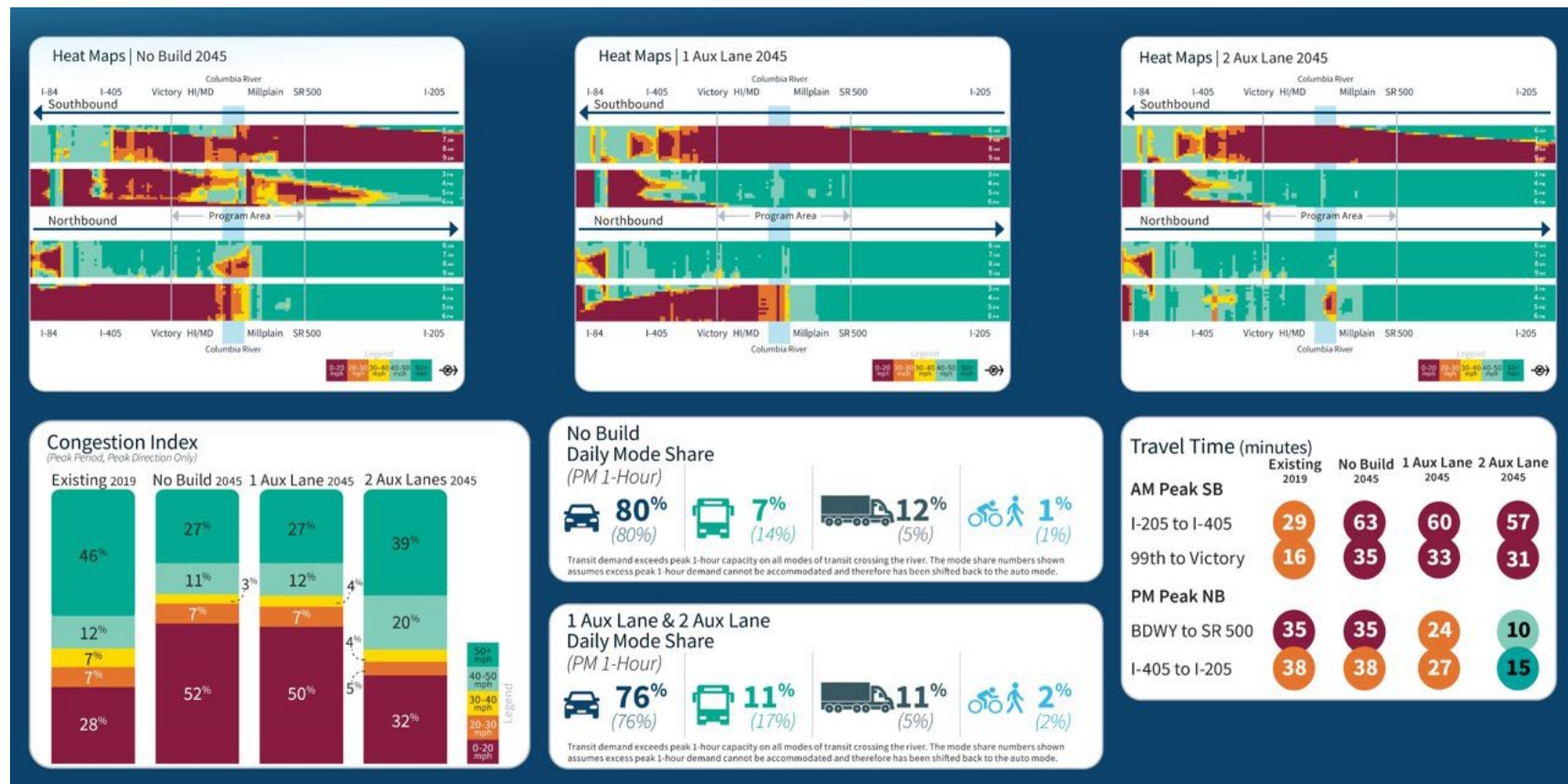
- Travel time improvements compared to No Build
 - Southbound AM travel time is reduced by 3 minutes (5 percent faster) between I-5/I-205 split and I-405.
 - Northbound PM travel time is reduced by 11 minutes (30 percent faster) between Broadway Avenue and SR 500.

Supplemental benefits of providing two auxiliary lanes include:

- Travel time improvements compared to No Build
 - Southbound AM travel time is reduced by 6 minutes (10 percent faster) between I-5/I-205 split and I-405.
 - Northbound PM travel time is reduced by 25 minutes (70 percent faster) between Broadway Avenue and SR 500.
- Reduced congestion compared to No Build
 - Congestion reduces 20 percent during the 8-hour AM/PM peak period.

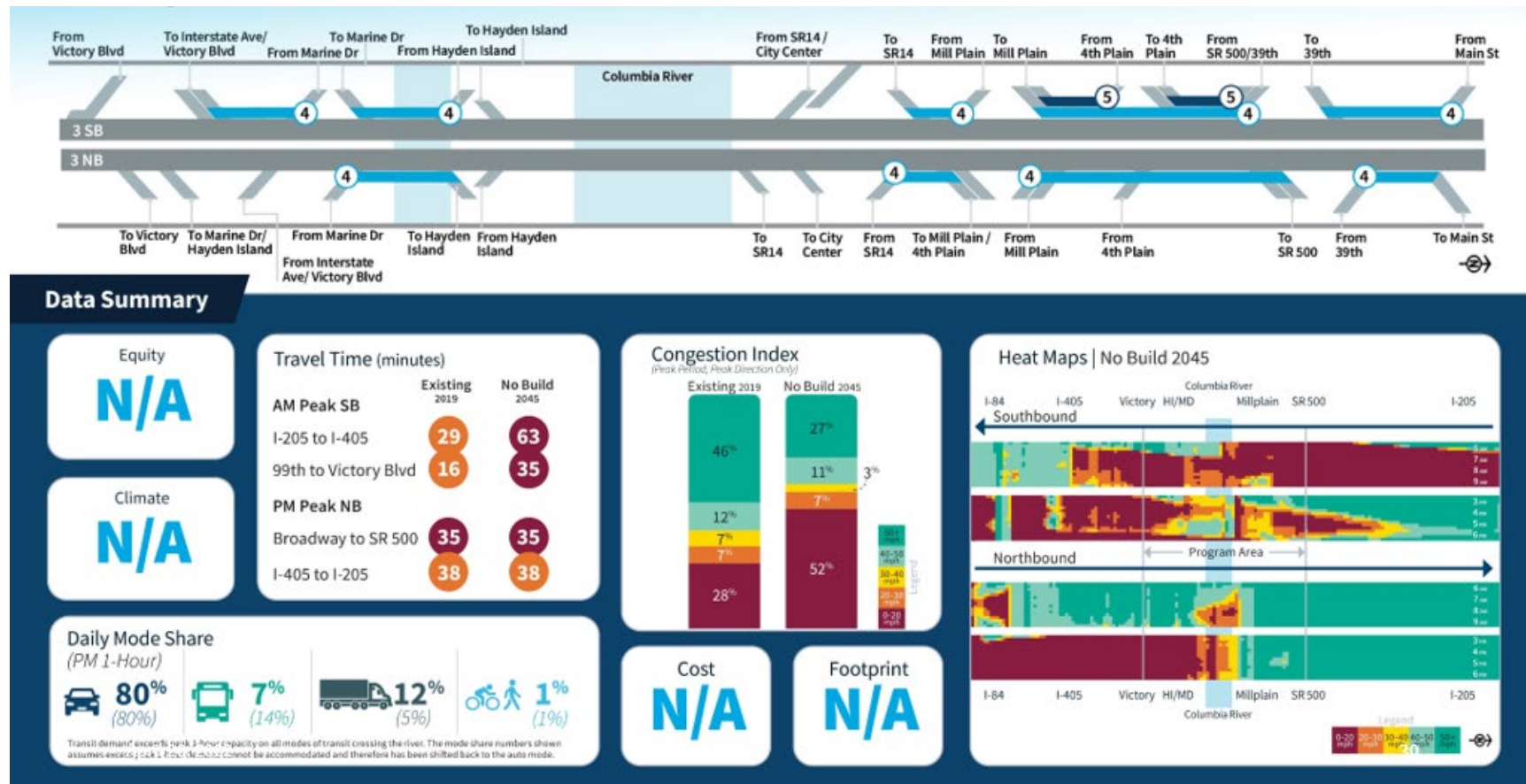
Figure 16 through Figure 19 present the results of the Auxiliary Lane analysis.

Figure 16. Auxiliary Lanes – Traffic Summary



Note: Transit demand exceeds peak 1-hour capacity on all modes of transit crossing the river. The mode share numbers shown assume excess peak 1-hour demand cannot be accommodated and therefore has been shifted back to the auto mode.

Figure 17. Auxiliary Lanes – No Build



Note: Transit demand exceeds peak 1-hour capacity on all modes of transit crossing the river. The mode share numbers shown assume excess peak 1-hour demand cannot be accommodated and therefore has been shifted back to the auto mode. Travel time pairs coincide with express bus routing providing comparable locations for travel time analysis.

Figure 18. Auxiliary Lanes – One Auxiliary Lane

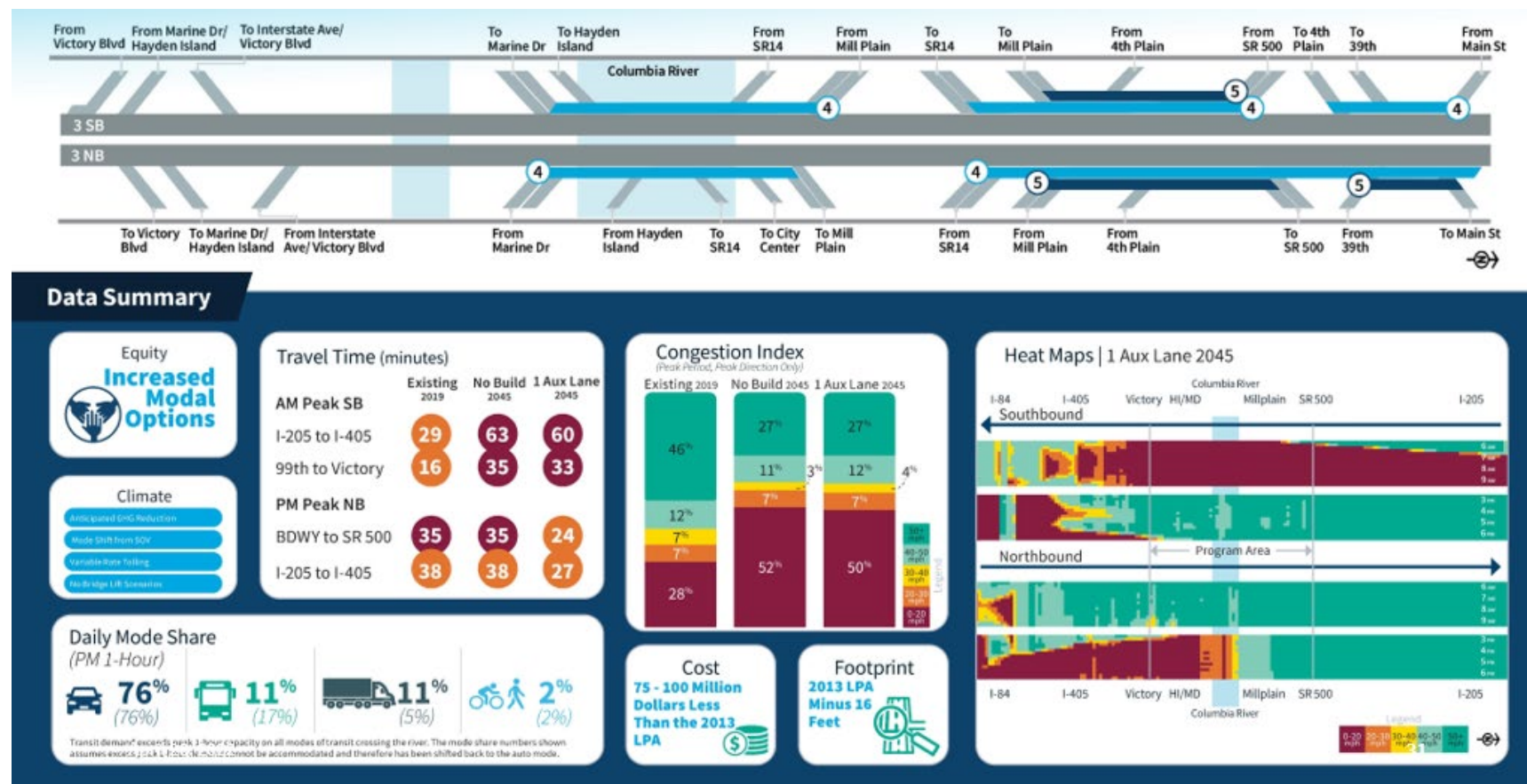


Figure 19. Auxiliary Lanes – Two Auxiliary Lanes



Note: Transit demand exceeds peak 1-hour capacity on all modes of transit crossing the river. The mode share numbers shown assume excess peak 1-hour demand cannot be accommodated and therefore has been shifted back to the auto mode. Travel time pairs coincide with express bus routing providing comparable locations for travel time analysis.

8.4 Advisory Group Feedback

Feedback from the CAG and EAG on the auxiliary lanes analysis included:

- Want to understand differences in property impacts, cultural costs, and displacements between one and two auxiliary lanes
- Both travel time and environmental impacts are important from an equity standpoint
 - Consider projected demographic changes (e.g., increasing number of seniors and people with disabilities means fewer and fewer people driving)
- How does the program measure damage to the community; cultural costs and sacrifices made for more auxiliary lanes
- Consider the safety constraints and trade-offs for merging lanes vs. auxiliary lanes
- Prefer the option that maximizes capacity and minimizes congestion
- User operation of auxiliary lanes could cause confusion and complications
- Combined with transit considerations, one auxiliary lane is appropriate
- Congestion and safety are major CAG values and priorities, having auxiliary lanes addresses these priorities
- Two auxiliary lanes address congestion and is the best value; southbound morning congestion is persistent

9. IBR TOLLING SENSITIVITY ANALYSIS

In late 2021, the program received a letter (see Appendix C) from Metro and City of Portland requesting that the program analyze the impact congestion pricing and full transit capacity would have on the holistic program design, including transportation demand and the possible mode shift achievable. To address this request, the program completed a tolling sensitivity analysis.

The purpose of the tolling sensitivity work completed during screening was to understand the high-level impacts of different toll scenarios on traffic/transit volumes on I-5 and I-205. The sensitivity testing is not to be used to generate a recommendation for toll rate structure or revenue generation along the corridor, or address toll administration. The program will complete additional analysis in the next few years to review possible toll discounts, and exemptions, and estimate possible revenue generation. Toll rates will be set by the Transportation Commissions in the 2025 timeframe. Scenarios considered in this work assumed the following:

- Tolling the Interstate Bridge only, at different levels.
- Tolling the Interstate Bridge along with a reflection of congestion pricing south of the Columbia River on I-5 and I-205 through the Portland Metro area meant to represent what is being considered ODOT's Regional Mobility Pricing Program. This program is not currently in the RTP, so was not accounted for in other modeling.

Some high-level takeaways and conclusions of this analysis are covered below. More detail on the initial results will be provided in Appendix D, anticipated to be complete by mid-May 2022. These are draft sensitivity tests that will be updated between this round of modeling (screening) and upcoming future modeling (environmental, traffic and revenue work) as additional details and refinements to assumptions are developed.

Initial takeaways of tolling sensitivity analysis:

Tolling at different rates of increase on I-5 does reduce volumes on I-5, with some trips diverting to I-205. It also results in an overall reduction in trips across the river on both I-5 and I-205. The largest reduction in cross-river travel is seen in discretionary trips rather than commute trips. There is limited impact to commute trips (e.g., home to work, or work to home, during the peak travel periods).

Tolling at any level on I-5 increases transit demand. When tolling on I-5 is added along with a representation of tolling that is being studied as part of the Oregon Regional Mobility Pricing Program, more trips stay on I-5 during peak periods, rather than diverting to I-205. The addition of congestion pricing south of the river on I-5 and I-205 also results in a reduction of discretionary trips, which primarily show up in off-peak periods.

However, since tolling, and increased rates, do not significantly reduce peak period auto trips even with higher mode shares going to transit, safety improvements that include auxiliary lanes (ramp to ramp connections) are still needed to address the numerous safety issues experienced by travelers in the corridor. These safety issues include close interchange spacing that does not allow drivers adequate time to make on/off decisions, short merge, weave, and diverge spacing that does not allow space needed to accelerate to freeway speeds, and high on and off ramp volumes all entering the freeway in short distances between ramps.

10. IBR PROGRAM DEVELOPMENT OF THE MODIFIED LPA

Following screening and evaluation of the design options and transit investments, the IBR program began to develop a modified LPA for additional design and evaluation. The first step was to begin to package together options from the screening phase that address Purpose and Need, meet equity and climate objectives, and support regional and local priorities and desired outcomes. These scenarios form a conceptual foundation for the modified LPA.

10.1 Scenarios

Following screening and modeling, multiple program elements were packaged together in scenarios to evaluate the program and support decision-making for the modified LPA. The scenarios are conceptual and demonstrate how the different program-level decisions, design components, and transit investments work together to meet the IBR program's Purpose and Need and desired objectives.

The program team developed a range of scenarios to evaluate program components using traffic modeling data, transit performance measures, and Hayden Island/Marine Drive screening results and then examined using an equity and climate lens. Key variables in the scenarios are the number of auxiliary lanes (one or two), and the Hayden Island/Marine Drive interchange (full or partial). LRT as the HCT mode and system demand management (variable rate tolling) were constants across the two scenarios. The results are captured in Figure 20 through Figure 22. Additional detail on the climate and equity outcomes anticipated for the program are included in Sections 10.3 and 10.4.

The IBR scenarios include:

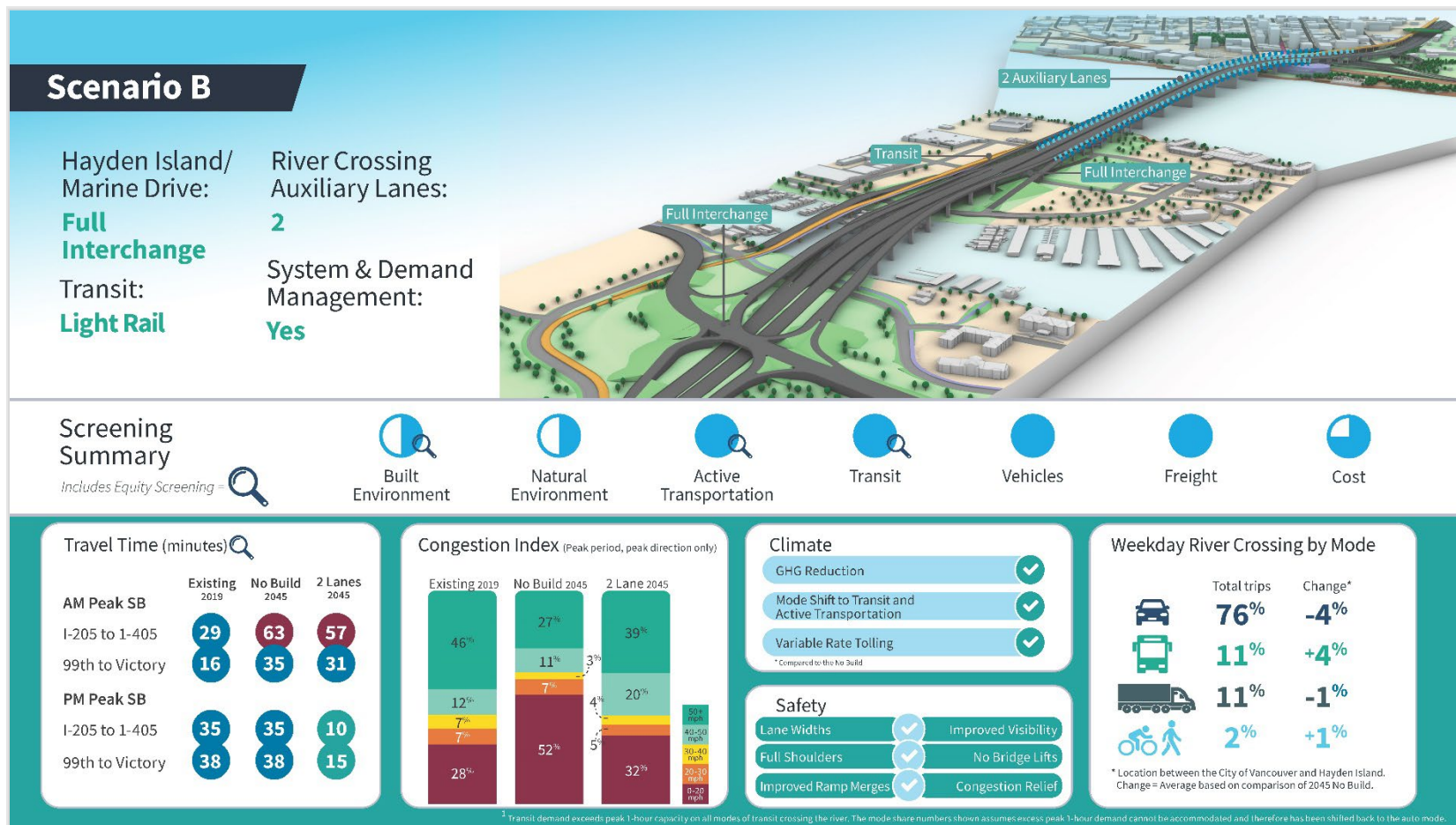
- A replacement river crossing
- Hayden Island/Marine Drive interchange (full or partial)
- LRT from Expo to Evergreen, with a station on Hayden Island and a waterfront station in Vancouver
- Bus on shoulder
- Variable rate tolling
- Auxiliary lanes across the bridge (one or two)
- Improved active transportation facilities on the bridge and associated local connections

Figure 20. Scenario A Results



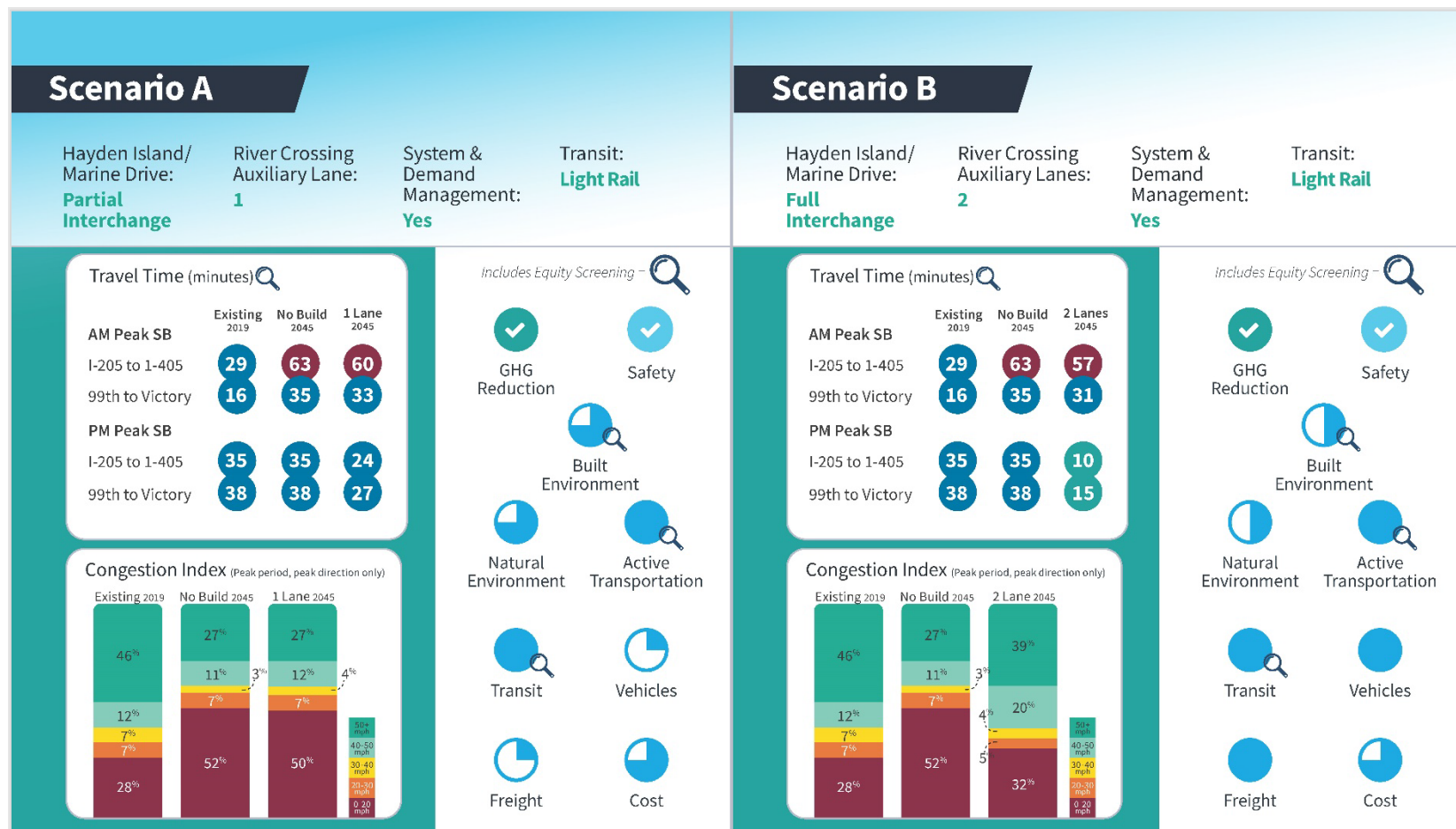
Notes: The results are based on conceptual design and intended for a high-level screening effort; more precise estimates of impacts will be developed as the design is refined further. For illustration purposes only; not representative of specific property impacts. These travel time pairs coincide with express bus routing providing comparable locations for travel time analysis.

Figure 21. Scenario B Results



Notes: The results are based on conceptual design and intended for a high-level screening effort; more precise estimates of impacts will be developed as the design is refined further. For illustration purposes only; not representative of specific property impacts. These travel time pairs coincide with express bus routing providing comparable locations for travel time analysis.

Figure 22. Comparison of Scenario A and Scenario B Results



Notes: The results are based on conceptual design and intended for a high-level screening effort; more precise estimates of impacts will be developed as the design is refined further. For illustration purposes only; not representative of specific property impacts. These travel time pairs coincide with express bus routing providing comparable locations for travel time analysis.

10.2 Desired Outcomes

Table 8 and Table 9 show how the IBR program's modified LPA would meet the desired outcomes introduced in Section 3.3.

Table 8. IBR Responses to Desired Outcomes Associated with the Purpose and Need Statement

Purpose and Need for the Program	Desired Outcomes	IBR Recommendation Meets Desired Outcomes
Growing travel demand and congestion	More people can move through the program area.	With the addition of LRT, a shared use path with many local street and existing facilities connections, and improved highway safety, more people could move through the program area more efficiently. No Build: avg. 19,400 transit crossings per weekday (8% of total crossings) LRT to Evergreen: avg. 29,500 transit crossings per weekday (13% of total crossings)
	People of all ages, abilities, and incomes have access to move through the program area, regardless of mode.	Active transportation improvements and ADA compliance will enable pedestrians, bikers, and rollers to traverse the program area easily and safely. They will also connect with existing systems and trails. With three additional transit stations and new park and rides and the addition of both LRT and bus on shoulder on the bridge, more people will be able to access

Purpose and Need for the Program	Desired Outcomes	IBR Recommendation Meets Desired Outcomes
		transit to travel between Portland and Vancouver.
	Regional trips stay on I-5.	Improved traffic flow on I-5 will reduce trips diverted to local streets and encourage regional trips to stay on I-5.
	Travel times through the program area are faster and more predictable.	Adding an auxiliary lane to both the southbound and northbound through-lanes across the bridge, moving drivers to transit, and improving Hayden Island/Marine Drive interchange configurations will reduce idling and allow vehicles to travel more reliably through the program area.
	Increase transportation choices and efficient travel patterns through coordinated land use and transportation planning.	The IBR program is working with partner agencies to confirm that transit, highway, and active transportation improvements are consistent with regional land use and transportation planning, including planned future growth.
Impaired freight movement	Freight travel through the program area is more reliable.	Freight is a primary consideration for design. All interchanges and auxiliary lane configuration will reflect freight's needs for movement and reliability.
	Freight travel times through the program area are faster.	Freight is a primary consideration for design. All Interchanges, auxiliary lane configuration, and

Purpose and Need for the Program	Desired Outcomes	IBR Recommendation Meets Desired Outcomes
		tolling will be designed to reflect the needs of freight movement.
	Accommodates high, wide, and heavy cargo in existing and future routes.	The I-5 mainline and the program area interchanges will be designed to accommodate high, wide, and heavy cargo.
Limited public transportation operations, connectivity, and reliability	More people have access to high-quality, affordable, and reliable transit.	Light rail will be extended to Evergreen.
	Transit connects people to their origins and destinations.	A combination of light rail, connecting bus service provided by partners, and park and rides will provide more access to all for better connections to origins and destinations.
	Travel by transit is competitive with other modes.	LRT to Evergreen: avg. 29,500 transit crossings per weekday (13% of total crossings)
	More people use transit.	No Build: avg 19,400 transit crossings per weekday (8% of total crossings) LRT to Evergreen: avg. 29,500 transit crossings per weekday (13% of total crossings)
	Travel by transit is predictable, reliable, and consistent.	Light rail will be provided in a dedicated alignment with a connection between Vancouver and the Expo station in Portland. Bus reliability will be improved

Purpose and Need for the Program	Desired Outcomes	IBR Recommendation Meets Desired Outcomes
		with bus-on-shoulder capabilities in the program area.
Safety and vulnerability to accidents	Reduce overall crashes on I-5, including severe injury and fatal crashes.	Highway improvements to ramp design, shoulders, and auxiliary lanes on the river crossing bridge will reduce conflicts and improve roadway safety.
	Reduce overall crashes, including severe injury and fatal crashes, on I-5 ramps, local streets, and active transportation networks in the program area.	The I-5 facility will be designed to meet current standards. Local streets and intersections will be designed to current standards for improved safety of vehicles, pedestrians, and bicycles.
	Safety is reflected in the design of all modes.	Safety is a primary consideration for all modes of travel, reflected in the design standards, addition of shoulders and improved interchanges on the highway, and provision of improved active transportation facilities.
	Fewer diverted trips from I-5 to local streets.	Improved flow on I-5 will reduce trips that are currently being diverted to local streets.
Substandard bicycle and pedestrian facilities	Active transportation is an attractive mode, and more people walk and cycle, both to access transit and instead of travelling by autos.	The IBR program is committed to improving active transportation facilities to attract more pedestrians and cyclists. A smaller interchange at Hayden Island/Marine Drive means a more comfortable pedestrian environment.

Purpose and Need for the Program	Desired Outcomes	IBR Recommendation Meets Desired Outcomes
		The shared use path will connect to existing routes in Vancouver and north Portland. Local street enhancements in the project area will provide active transportation connections to and through the program area.
	More people have access to high-quality active transportation facilities.	The shared use path will connect to existing routes in Vancouver and north Portland. Local street enhancements will provide active transportation connections to and through the program area.
	Traveling by walking, biking, and rolling feels safe because facilities are separated from moving vehicles and the shared use path environment is visible and connected.	Active transportation facilities will be separated from vehicles on separated shared use paths and protected bike lanes. Facilities design will consider user experience, including visibility and protection from the elements.
	The high-quality networks for walking/biking/rolling are convenient and connect destinations that are important for most trips.	Primary connections will include the Renaissance Trail, Columbia Way, Hayden Island, 40-mile loop, Delta Park, and Expo Road.
Seismic	Bridges will be designed and constructed so that they will not collapse and will remain operable in a Cascadia subduction zone earthquake.	The aging North Portland Harbor bridge and the Columbia River bridge will be replaced. All structures will be designed to current seismic standards, improving resiliency to a seismic event

Table 9. IBR Responses to Additional Desired Outcomes

Additional Desired Outcome Category	Desired Outcomes	IBR Recommendation meets Desired Outcomes
Climate change and resiliency	Reduce greenhouse gas emissions in support of state climate goals.	The IBR program will support mode shift, improved operations, and will employ demand management (e.g., tolling) to reduce greenhouse gas emissions in support of state goals
	Minimize operational and embodied carbon during construction.	Low-carbon materials and reduced emissions from equipment will be used in construction
	All structures are resilient to and operable following anticipated climate disruptions (e.g., heat events, flooding, sea level rise).	The project will be constructed to accommodate the higher levee elevations, will consider height and design related to sea-level rise, and will be consistent with state and federal standards.
	Program limits other environmental impacts that exacerbate effects of climate change (e.g., heat island, runoff).	The program will study these outcomes in future design; for example, by considering shading, reflectivity of the structures, and potential for increased stormwater runoff or heat events.
Equity	Fewer identity-based disparities in travel time, access, transportation costs, and exposure to air pollution, road noise, and traffic crashes.	The IBR program will improve access to HCT and active transportation facilities, and will be considering tolling programs that could reduce the cost burden on low-income travelers. Improved transit, active transportation facilities, and highway design (including the addition of auxiliary lanes) will address these desired outcomes.

Additional Desired Outcome Category	Desired Outcomes	IBR Recommendation meets Desired Outcomes
	Improved mobility, accessibility, and connectivity especially for lower income travelers, people with disabilities, and communities who experience transportation barriers.	With congestion relief from highway improvements, active transportation improvements, and the addition of three LRT stations between Expo and Evergreen, mobility, accessibility, and connectivity will improve for all modes of travel. An estimated 800 BIPOC residents and 1,000 low-income residents will be able to access these stations within a half-mile walk. Tolling programs will consider discounts for lower-income populations to reduce the cost burden on traveling by vehicle.
	Local community improvements are implemented in addition to required mitigations.	Active transportation facilities will provide local connections, and local street improvements will improve community experience. Green spaces and other community improvements will be studied as design progresses.
	Economic opportunities generated by the program benefit minority and women owned firms, BIPOC workers, workers with disabilities, and young people.	The following data represent increases relative to a no build option. Jobs accessible from the IBR program area within a 45-minute transit ride will be increased by an estimated 73% for BIPOC populations, by 59% for low-income populations, and by 71% for people with disabilities as a result of transit improvements (on average). Jobs accessible from the IBR program area within a 45-minute drive (car) will be increased by 4% for BIPOC

Additional Desired Outcome Category	Desired Outcomes	IBR Recommendation meets Desired Outcomes
		populations, by 4% for low-income populations, and by 5% for people with disabilities (on average). The program will implement strategies to promote equitable access to economic opportunities throughout design and construction, including: -Setting ambitious goals for contracting with minority- and women- owned companies -Local hiring and workforce development
	Equity priority communities have access, influence, and decision-making power throughout the program in establishing objectives, design, implementation, and evaluation of success.	Thus far the program worked to engage equity priority communities through the formation of an Equity Advisory Group, targeted communications, and partnerships with CBOs to hold a series of affinity listening sessions. The EAG will be leading the creation of program-level performance measures to gauge progress toward the six equity objectives.
	Disproportionate impacts on equity priority communities are avoided rather than simply mitigated.	The program will analyze potential property impacts during the environmental analysis with a focus on equity priority communities as defined by the IBR EAG, along with an environmental justice analysis to comply with federal requirements.

Additional Desired Outcome Category	Desired Outcomes	IBR Recommendation meets Desired Outcomes
	Pursue and leverage any and all federal, state, and other funding sources that support all modes and address long-term needs.	The program is well positioned and pursuing federal funds for transit, highway, and structures.
Cost effectiveness and financial resources	Identify equitable tolling and pricing strategies supporting multimodal construction costs and improved operations and access, in coordination with statewide tolling program and in support of each state's climate goals.	Tolling and pricing will be studied with climate and equity in mind. Equity considerations may include discounts for low-income travelers. Variable rate tolling's effects on congestion and possible revenue generation, will be studied. Congestion relief may be associated with a reduction in greenhouse gas emissions.
	Ensure fiscal responsibility across the program and into the future, including new technology to solve future problems.	The program is seeking federal and state funds, applying to federal grant programs. To supplement any gap between federal and state funding and program costs, and to support future facility operations and maintenance costs. Variable rate tolling programs will also be studied.

10.3 Anticipated Equity Outcomes

10.3.1 Understanding the Context

The population of the Portland-Vancouver Metro region is growing and diversifying. Of the four-county metro region, Clark County experienced the greatest rate of growth over the past decade. The population in Clark County increase by nearly 78,000 residents between 2010 and 2020, 76 percent of whom were people of color.

Rising costs of housing are forcing lower income people to live farther from jobs and in areas with less access to transit. This results in increased time spent commuting in and additional costs associated with accessing jobs.

10.3.2 Transit Analysis

An equity analysis of the transit investments was conducted in the Spring of 2022. The analysis looked at the total BIPOC and low-income residents within a half-mile walk from the transit alignment. (see Table 10) The analysis also looked at the number of accessible jobs within a 45-minute (midday) transit ride (see Table 11) and a 45-minute (midday) drive for people living with disabilities, BIPOC, and low-income residents (see Table 12).

Table 10. Access to HCT Service

Transit Investment	Number of Stations	Total Residents (w/in half mile walk)	BIPOC Residents (w/in half mile walk)		Low-Income Residents (w/in half mile walk)	
			Number	Percentage of Total Population	Number	Percentage of Total Population
LRT Expo to Evergreen	4	3,171	817	26	971	41

Sources: 2020 Census and 2015-2019 American Community Survey

Table 11. Average Number of Jobs Accessible from the IBR Program Area within a 45 -Minute Midday Transit Ride

Transit Investment	General Population		BIPOC Population		Low-Income Population		People with Disabilities	
No Build (Baseline) Jobs	24,951		25,717		25,894		24,5276	
LRT Expo to Evergreen Increase in Jobs	16,979	68%	14,598	73%	15,270	59%	17,392	71%

Sources: 2020 Census, 2015-2019 ACS, Metro 2045 Model

Table 12. Average Number of Jobs Accessible from the IBR Program Area within a 45-Minute Midday Drive

Transit Investment	General Population		BIPOC Population		Low-Income Population		People with Disabilities	
No Build (Baseline) Jobs	1,206,791		1,229,495		1,187,132		1,284,895	
LRT Expo to Evergreen Increase in Jobs	54,043	5%	54,650	4%	51,245	4%	57,921	5%

Sources: 2020 Census, 2015-2019 ACS, Metro 2045 Model

In every scenario analyzed, the transit improvements resulted in an increase in access to transit for BIPOC and the low-income population over what exists today or doing nothing. Access to jobs both for drivers and transit users increased for BIPOC, low-income, and people with disabilities populations. LRT options performed better than BRT options.

10.3.3 Hayden Island/Marine Drive Equity Screening Results (Half Interchange)

Equity metrics for Hayden Island/Marine Drive were developed as part of the screening process. Analysis of the partial interchange option for Hayden Island and Marine Drive performed optimally from an equity perspective. It would increase east-west connectivity on the island with the extension of Tomahawk Island Drive, and it would have a smaller interchange footprint; this would result in a more comfortable pedestrian environment on Hayden Island and provide opportunities for potential equitable development and placemaking.

10.3.4 Next Steps to Ensure Equitable Outcomes

The program is developing equity performance measures in tandem with the EAG. These measures will keep the program accountable by gauging program effectiveness at working toward the six equity objectives (see the IBR Equity Framework).

The program will implement strategies to promote equitable access to economic opportunities throughout design and construction, including:

- Setting ambitious goals for contracting with minority- and women-owned companies
- Local hiring and workforce development

A Community Benefits Agreement is being developed to ensure that the IBR program has a positive impact on surrounding communities beyond the transportation improvements. Analysis of any potential property impacts will occur during the environmental phase with a particular focus on low-income and BIPOC communities.

10.4 Anticipated Climate Outcomes

Project partners have expressed interest in tangible measured outcomes related to climate change and the IBR program. For example, Metro requested that the program contribute to state greenhouse gas emission goals by evaluating at least one program alternative that results in a substantial mode shift from cars to transit. The City of Vancouver has a Zero Emissions by 2050 initiative and seeks to understand how the IBR program supports that aim.

There are multiple ways to decrease greenhouse gas emissions associated with transportation: reduce the carbon in fuels or electricity used to move people and goods (e.g., electric vehicles, renewable diesel, green hydrogen, fuel efficiency) and change how and how far we travel and transport goods using gasoline and diesel powered-vehicles (e.g., shift to transit and electrified rail freight). Further, nearly every major auto manufacturer in the world has declared that they sell all electric vehicles by 2025–2040. The IBR program seeks to modernize a crucial link of our regional infrastructure thereby enabling shifts to a cleaner future.

Oregon and Washington, along with California and Vancouver, B.C., have laws, guidance, and policy that are requiring the transition to near zero use of greenhouse gas fuels and energy sources by 2050; the transition is underway in both the vehicle fleet and the electricity grid. The transition will not be complete until the end of the IBR modeling period. For the construction of the bridge, many advanced greenhouse gas-reducing practices will be deployed to target fuel and embodied emissions in materials, with some greenhouse gas emissions being unavoidable.

The Modified LPA includes elements that promote mode shift, reduce demand, and improve transportation network efficiencies—all of which could result in the decrease of greenhouse gas emissions in the region.

10.4.1 Greenhouse Gas Reductions from Mode Shift, Demand Reduction, and Transportation Efficiencies

Greenhouse gas reductions are anticipated from the program affecting operations in the project corridor and the region:

- Mode shift to transit.
- Demand management methods such as tolling. Variable rate tolling in the corridor could be used to promote mode shifts and reductions in travel during the peak commuting periods.
- Traffic operation improvements (e.g., ramp metering, auxiliary lanes, provision of shoulders, etc.). The reduction of congestion and disruptions due to vehicle crashes and other incidents would allow vehicles to operate more efficiently than in idling traffic.
- Mode shift from cars to active transportation options due to improvements in facilities in the corridor.

An analysis of the transit ridership potential from connecting current high-capacity transit networks across the river, by expanding LRT from Portland to Vancouver, would promote a mode shift (i.e., increase in mode share) of approximately 4 percent for trips crossing the river and would add 11,000 new transit trips on a daily basis in the system. Assuming these new transit riders were formerly driving in cars, this mode shift would result in displaced (avoided) emissions by approximately 36,000 metric tons of CO₂e per year. This is the equivalent of 4 million gallons of gas or the average energy use of 7,000 homes for one year.²

Further emission reductions are anticipated from changes that are controlled, funded, and deployed from outside the program, or could be supported by local and state policies, such as:

- Accelerated adoption of electric vehicles and decarbonization of the grid
- Changes in land use policies
- Investments in regional transit systems
- Development of housing and jobs with access to transit or otherwise reducing need for car trips

² Sources for greenhouse gas calculations: FTA model to calculate CO₂e from expanded transit systems ([FTA's Transit Greenhouse Gas Emissions Estimator v3.0 | FTA \(dot.gov\)](#)) and the EPA's [Greenhouse Gas Equivalencies Calculator | US EPA](#).

The IBR program is committed to work with partners to optimize the benefits from the program and support the progress toward local and state goals.

10.4.2 Next Steps

Climate outcomes relate to three program elements:

- Design for resilience and adaptation
- Construction and embodied greenhouse gas emissions
- Operational emissions from cars, trucks, and transit – greenhouse gas emissions

Evaluation of IBR program's performance against targets will be phased at different stages of the program's development. The Modified LPA, by including an HCT link, active transportation improvements, and commitment to variable rate tolling, will lead to reductions in operational emissions compared to the No Build. Decisions to reduce embodied emissions in construction, and continued refinement of the design of the infrastructure to be resilient and adaptable in the face of climate change, will be addressed in the NEPA and future phases of the program. In addition, the IBR program will identify third-party rating systems to document sustainability and climate outcomes.

11. NEXT STEPS

11.1 Developing the Modified LPA for the IBR Program

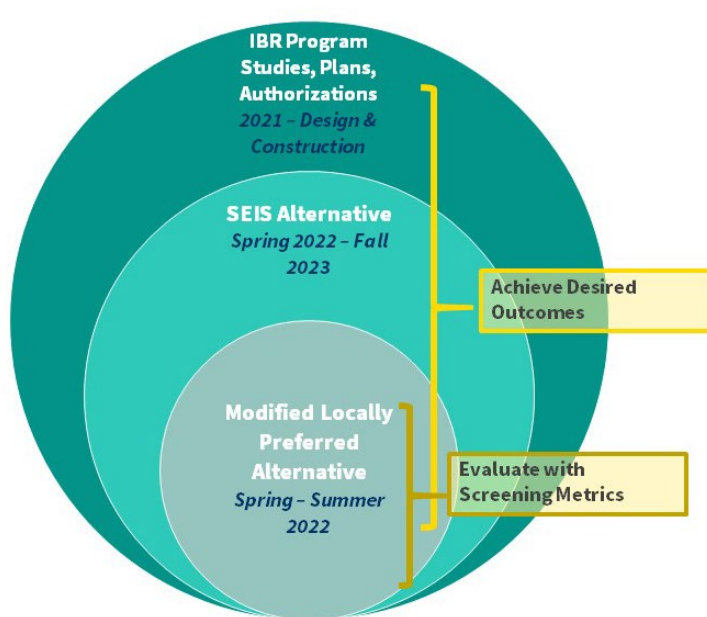
The IBR program in coordination with partners, EAG, CAG, and the public over the past 18 months, identified and considered physical and contextual changes in the program area and developed design options and transit investments with a focus on climate and equity to propose a Modified LPA. The IBR program is seeking consensus on a proposed modified LPA and to obtain approvals by Boards and Councils in summer 2022.

11.2 NEPA and Additional Studies

Adoption of a Modified LPA demonstrates regional consensus about continuing project development and refining the design of a corridor-wide program alternative. The adoption of the modified LPA by local agencies does not represent a formal decision by the federal agencies leading the NEPA process or any federal funding commitment. A formal decision by FHWA and FTA regarding the preferred alternative and its design and mitigation is formalized in a National Environmental Policy Act (NEPA) ROD. FHWA and FTA selected an LPA in the 2011 ROD for the CRC project. An amended ROD is anticipated for the IBR program upon completion of a Supplemental EIS that will evaluate a modified corridor-wide program alternative, based on the Modified LPA, in comparison to an updated No Build Alternative.

Further studies will be used to evaluate the program alternative. Figure 23 shows how the modified LPA provides the foundational elements of the program, and how future studies, plans, and authorizations will build upon that foundation. A critical part of upcoming work will be the development and distribution of a Supplemental Draft Environmental Impact Statement (SDEIS) for public review and comment. The SDEIS will include evaluation of adverse and beneficial impacts on a range of resources. As part of the NEPA evaluation, the program will work to avoid, minimize, and mitigate adverse impacts to the extent practicable. Those impacts would include displacements, noise and vibration, effects on historic and other cultural resources, impacts to ecosystem resources, and other benefits and impacts to the community and environment. After the public review of the SDEIS, a combined Supplemental Final EIS and ROD will be prepared in compliance with NEPA and other federal regulations.

Figure 23. Next Steps



11.3 Program Funding and Financing Including Tolling Analyses

In a late 2020 conceptual cost estimate created by the program, a preliminary range of costs for the program of \$3.2 to \$4.8 billion was identified. We know that transportation projects of this size require multiple sources of funding including federal, state, and tolling revenue. As of April 2022, the program has \$90 million in program development funding, with half coming from each state. In the 2022 legislative session, Washington allocated \$1 billion for their share of program funding. During the previous project, it was assumed that one third of total costs would be covered by state funding, one third from federal funding, and one third from toll revenue. However, with inflation, and the new effort to replace the bridge, the current program estimate is greater than the costs identified for the previous project. Since that time, new federal legislation has also passed, creating more potential opportunity for federal funding.

The program is well positioned to be competitive for federal grant opportunities from the Infrastructure Investment and Jobs Act. The FTA Capital Investment Grants Program, along with the FHWA Competitive Bridge Investment Program and/or the USDOT National Infrastructure Project Assistance Program appear to be the best fit for IBR to apply. IBR anticipates applying for federal grant funding in 2023. The program's cost estimate and finance plan will be refined as additional detail on grant programs is known, and as program details are determined as part of the modified LPA. Securing the local match (including state funding) is an important step to successfully secure federal grants, given the preference to be the "last dollar in." It is not yet known how much will be able to be

obtained from the new grant programs until they begin handing out awards next year. We anticipate tolling would be needed in addition to state and federal sources.

The soonest tolling would begin on the I-5 bridge is late 2025/early 2026, pending legislative authority to toll the facility. The program and local agency partners assume that IBR will include variable rate tolling with the goal to support:

- Revenue generation to fund construction and facility operations and maintenance
- Reduce congestion and manage demand
- Improve mobility through the corridor

Future tolling analysis will consider possible discounts, including those for low-income travelers, and analyze possible revenue generation. The initial traffic and revenue study completed by the program will begin in mid-2022, with the goal to complete it by mid-2023. This level 2 toll traffic and revenue study will test policies and multiple toll rate scenarios and how they affect demand in the corridor, in coordination with both state's Transportation Commissions. In past discussions, Metro Council has requested that the program complete an Investment Grade Traffic and Revenue Analysis. This analysis is needed for toll bond financing and must be completed close to the beginning of toll operations to meet the needs of investors. The program agrees that this is necessary, and anticipates completing this analysis in 2025, shortly before tolling is estimated to begin on the facility.

The Washington State Transportation and Oregon Transportation Commissions are the toll rate setting authorities in each state. The program will provide them with information to inform the rate setting decision, which is not anticipated to occur until 2025, shortly before tolling is estimated to begin on the facility. The SDEIS will include additional analysis around overall program financing, as well as toll revenue.

12. GLOSSARY OF TERMS

Term	Definition
Active Transportation	Human-powered modes of transportation, such as walking, biking, or using a wheelchair.
Auxiliary lanes	Ramp-to-ramp connections adjoining through-lanes that allow for better access to and from on-/off-ramps. This improves speed changes, turning, weaving, and truck climbing, resulting in better safety and congestion relief.
BLSC	Bi-State Legislative Committee, a panel composed of eight Washington and eight Oregon legislators who provide the IBR program guidance and feedback on key program decisions.
BRT	Bus rapid transit, a term for bus-based transit systems that deliver fast and efficient service that <i>may include</i> dedicated lanes, busways, traffic signal priority, off-board fare collection, elevated platforms and enhanced stations. They are usually larger and can carry more riders per vehicles than standard busses. Bus Rapid Transit currently runs in several corridors throughout Clark County, and is operated by C-Tran.
C-TRAN	The Clark County Public Transit Benefit Area Authority, is a public transit agency serving Clark County, Washington and an IBR program partner agency.
CAG	Community Advisory Group, a group of community members from the greater Portland and Vancouver region that provides advice and recommendations to the Executive Steering Group and IBR program administrator on issues of importance to the community.
CBO	Community-based organizations, groups representing varied local interests and concerns, such as the environment, business, labor, social services, affordable housing, recreation, transit, etc.
Central Business District	A central business district is an area of densely concentrated commercial and business activity within a city, sometimes referred to as downtown.

Term	Definition
Community engagement	The IBR program's ongoing efforts to hear community concerns, values and interests, maintain open, two-way communications, and reflect community interests in key program decisions.
Community Survey	A data-driven IBR public survey of diverse community members and organizations to assess public concerns and interests related to the region's transportation system.
CRC	Columbia River Crossing, a 2005–2014 multimodal project conducted by the states of Oregon and Washington that studied options for replacing the Interstate Bridge. The project completed the federal environmental review process and reached a Record of Decision on a locally preferred alternative. It did not move into construction due to lack of funding.
Disability	Defined by the Americans with Disabilities Act (ADA) as a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment.
Diversity	Includes all the ways in which people differ, and it encompasses all the different characteristics that make one individual or group different from one another.
Demographics	Statistical data relating to the population and particular groups within it. The IBR program uses demographic data to understand the general characteristics and geographic locations of communities potentially affected by the program, and to inform community engagement strategies.
DOT	Department of Transportation – Washington (WSDOT) and Oregon (ODOT)
EIS	Environmental Impact Statement, a document that outlines the effects a proposed project has on the surrounding natural and built environment; it describes ways to reduce or mitigate those effects.
ESG	Executive Steering Group, a panel of representatives from regional partner agency and Community Advisory Group co-chairs that provides guidance and recommendations on key IBR program development issues.

Term	Definition
EAG	Equity Advisory Group, a diverse group of community members who will make recommendations to IBR program leadership regarding processes, policies and decisions that potentially could affect historically underrepresented and underserved communities.
Equity	A core value for the IBR program centered on elevating the voices of historically marginalized communities and ensuring they can realize the program's economic and transportation benefits, and not suffer further harm from transportation decisions. Broadly, equity is achieved when one's identity cannot predict the outcome. It is the absence of inequities and injustices in social sectors that are required for all to thrive, and it is both an outcome and a process.
Equity-Priority Populations	Equity-priority populations for the IBR program include Black, Indigenous, and people of color (BIPOC), people with disabilities, communities with limited English proficiency, lower income and houseless individuals and families, immigrants and refugees, young people, and older adults
Equity vs. Equality	Equity involves trying to understand and give people what they need to enjoy full, healthy lives. Equality, in contrast, aims to ensure that everyone gets the same things in order to enjoy full, healthy lives. Like equity, equality aims to promote fairness and justice, but it can only work if everyone starts from the same place and needs the same things. <i>–Annie E. Casey Foundation</i>
Ethnicity	The fact or state of belonging to a social group that has a common national or cultural tradition.
FAA	Federal Aviation Administration, the agency that regulates air traffic in the U.S.
FEIS	The Final Environmental Impact Statement (FEIS) incorporate the draft EIS with changes made to reflect the selection of an alternative, modifications to the project, updated information on the affected environment, changes in the assessment of impacts, the selection of mitigation measures, the results of coordination, comments received on the draft EIS and responses to these comments, etc.

Term	Definition
FHWA	Federal Highway Administration, an agency that supports state and local governments in the design, construction and maintenance of the highway system.
FTA	Federal Transit Administration, an agency that provides financial and technical assistance to local public transit systems, including bus, subway, light rail, commuter rail, trolley and ferry systems. The FTA also oversees safety measures.
Greenhouse gases	Gases such as carbon dioxide, methane, nitrous oxide, and certain synthetic chemicals trap some of the Earth's outgoing energy, thus retaining heat in the atmosphere. This heat trapping alters climate and weather patterns at global and regional scales. In the United States, the transportation sector is one of the largest contributors of greenhouse gases.
HCT	High-capacity transit encompasses different transit options, such as BRT and LRT, that will be explored during alternatives development.
I-5	Interstate 5
IBR	Interstate Bridge Replacement program, a joint effort by the states of Oregon and Washington to replace the aging, structurally vulnerable Interstate Bridge over the Columbia River with a modern, seismically resilient, multimodal structure that can reliably serve the Portland-Vancouver region into the next century.
Inclusion	Elimination of barriers that prevent the full participation of all people.
LRT	Light rail transit is a form of high-capacity transit that operates in its own fixed guideway and is powered by overhead electrical current. Currently light rail connects Portland City Center with Beaverton, Clackamas, Gresham, Hillsboro, Milwaukie, North/Northeast Portland and Portland International Airport and is operated by TriMet.
LPA	Locally preferred alternative, the highest-ranked design solution for improving a transportation system; the LPA is selected with the community after a thorough, lengthy screening process of transportation options.

Term	Definition
Members of the Bi-State Committee	Washington legislative members: • Co-Chair, Senator Annette Cleveland • Representative Jake Fey • Representative Paul Harris • Senator Steve Hobbs • Senator Ann Rivers • Co-Chair, Representative Brandon Vick • Co-Chair, Senator Lynda Wilson • Co-Chair, Representative Sharon Wylie Oregon legislative members: • Co-Chair, Senator Lee Beyer • Senator Brian Boquist • Senator Lynn Findley • Senator Lew Frederick • Representative Shelly Boshart Davis • Representative Greg Smith • Co-Chair, Representative Susan McLain • Representative Karin Powers
Minimum Operable Segment (MOS)	In accordance with FTA’s Capital Investment Grants Program guidance, a project that would construct a minimum operable segment “must be able to function as a stand-alone project and not be dependent on any future segments being constructed.” (FTA Circular C-9300.1B)
Modified LPA	High-level identification of proposed changes to a previously agreed upon LPA. The 2022 Modified LPA may include elements such as: the number of auxiliary lanes over the bridge; transit mode, alignment, and stations; Hayden Island/Marine Drive interchange configuration; active transportation improvements; North Portland Harbor Bridge replacement; Variable Rate Tolling to fund and improve congestion; and a commitment to study interchanges; commitment to climate and equity.

Term	Definition
NEPA	National Environmental Policy Act, a 1970 federal law that requires federal agencies to assess and disclose the environmental effects of proposed projects or actions prior to making project decisions.
No Build Alternative	An alternative that serves as the baseline to which other alternatives are compared, as required by the National Environmental Policy Act. For the IBR program, the No Build would include the implementation of planned improvements in the region (e.g., the Rose Quarter Improvement Project and planned transit expansions) but would not include any of investments associated with the IBR program.
NOI	Notice of Intent, a published document informing the public of an upcoming environmental analysis for a proposed project.
Online Open House	A virtual “meeting,” held online, to provide the public with information and solicit public feedback on a project.
Open house	An in-person meeting for providing the public with information on a project and responding directly, one on one, to questions meeting participants may have.
OR	Highway designation in Oregon, e.g., OR 140
Project scoping	The process of identifying and documenting a project’s goals, outcomes, milestones, tasks, costs and timelines.
Purpose and Need	A written statement that identifies the key transportation problems that must be addressed by the IBR program.
Race	Race is a socially constructed system of categorizing humans largely based on observable physical features (phenotypes), such as skin color, and on ancestry. There is no scientific basis for or discernible distinction between racial categories. The ideology of race has become embedded in our identities, institutions and culture and is used as a basis for discrimination and domination. --Annie E. Casey Foundation
Range of alternatives	A set of preliminary project options that can be analyzed as part of the Supplemental Environmental Impact Statement process.

Term	Definition
RMPP	Regional Mobility Pricing Project, a project led by the Oregon Department of Transportation that would apply congestion pricing (using variable-rate tolls) on all lanes of I-5 and I-205 in the Portland metro area to manage traffic congestion and raise revenue for priority transportation projects that improve mobility.
Regulatory Agencies	Federal, state and local agencies that can monitor and enforce laws and regulations affecting a capital project. For the IBR program, key regulatory agencies include: • Washington State Department of Ecology • Oregon Department of Environmental Quality • Regional Native American tribes • Federal Highway Administration • Federal Transit Administration • Oregon and Washington State Historic Preservation Office(s) – SHPO • U.S. Fish and Wildlife Service • National Marine Fisheries Service • U.S. Army Corps of Engineers • Oregon and Washington Departments of Fish and Wildlife • Cities of Portland and Vancouver • Multnomah County • Clark County
Record of Decision or ROD	A document that records a federal agency’s decision regarding a planned project for which an environmental impact statement was prepared. For the IBR program, the Federal Highway Administration would issue the Record of Decision for a Supplemental EIS.
Agency Partners	Regional partner agencies have a direct role in any future improvements due to their position as an owner, operator, policymaker, regulatory agency or public economic development entity reliant on direct access to operations within the Interstate Bridge area. For IBR, the following regional agencies make-up our regional partners: • TriMet • C-TRAN

Term	Definition
	• Oregon Metro • Southwest Washington Regional Transportation Council • City of Portland • City of Vancouver • Port of Portland • Port of Vancouver
Screening criteria	A set of transportation components used to evaluate and score the effectiveness of various transportation improvement options, usually weighed against a no build option.
SDEIS	Supplemental Draft Environmental Impact Statement, a preliminary review of findings related to new or changed conditions or planned improvement options that have occurred, often years after the prior EIS was completed.
SEIS	Supplemental Environmental Impact Statement, a review of the findings of an existing EIS, including the introduction of new or changed conditions or planned improvement options that have occurred, often years after the prior EIS was completed.
SR	State route, a Washington state highway designation (e.g., SR 20)
Travel Demand	The amount and type of travel people would choose under specific conditions, taking account factors such as the quality of transport options available and their prices.
TDM	Transportation Demand Management, the application of strategies and policies to reduce travel demand, or to redistribute this demand in time or location to increase overall transportation efficiency
Terminus	The end of a transportation line or travel route.
Transit Dependent	Describes someone whose only means of transportation is public transit (i.e., TriMet, C-TRAN). It generally refers to those who do not have the choice to drive a personal vehicle, due to income, age, ability, access, and/or legal restrictions. Transit dependence can be a temporary circumstance.

Term	Definition
Transportation Modeling	Transportation modeling uses a computer model to estimate travel behavior and travel demand for a specific future time frame, based on empirical data and foreseeable circumstances. The transportation modeling used in the Portland metro region is peer-reviewed and validated against observed data. Metro acts as the regional clearinghouse for land information and coordinates data and research activities with government partners, academic institutions and the private sector.
Tribes	IBR program tribal consultation includes engagement with the Confederated Tribes of the Colville Reservation, Confederated Tribes of the Grand Ronde Community of Oregon, Confederated Tribes of Siletz Indians, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation, Confederated Tribes and Bands of the Yakama Nation, Cowlitz Indian Tribe, Nez Perce Tribe, Nisqually Tribe of Indians, Spokane Tribe, and Chinook Tribe.
TriMet	The Tri-County Metropolitan Transportation District of Oregon, is a public transit agency serving the Portland metropolitan area, and an IBR program partner agency.
Vision & Values	A written statement that identifies community values and goals related to potential transportation improvements.

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Appendix A. IBR Alignment with Partner Climate Goals and Policies

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IBR Climate Goals – Alignment with Partner Climate Goals and Policies

Note for Reviewers: This document provides a summary of the partners' climate planning, policies and goals and shows where and how the Interstate Bridge Replacement Program climate framework and desired outcomes (as well as other program initiatives, efforts and goals – such as equity and public engagement) are aligned.

Aligned: IBRP goals are in alignment and in some cases directly contributes to achieving this partner goal. (Full circle)

Partial: IBRP goals may not directly relate but are not in conflict. (Half circle)

No: IBRP goals are not aligned with this partner goal. (Empty circle)

Not Applicable: Partner goal does not apply to IBRP; however, IBRP is not in conflict with this goal. (N/A)

To Be Decided (TBD): IBRP has not arrived at a decision, commitment, or goal for this topic yet.

Partner Climate Plans and Policies Referenced – Updated 4/29/22

Note for Reviewers: If there are missing documents that guide your climate goals and policies, please let the team know and provide a link or file so that it can be included.

Sources		Jump Link
WSDOT	- WSDOT Secretary's Executive Order 1113: Sustainability https://wsdot.wa.gov/sites/default/files/2020/11/05/WSDOT-EO-1113.pdf - Washington State Legislature RCW 70A.45.020: Greenhouse gas emissions reductions – Reporting requirements https://app.leg.wa.gov/rcw/default.aspx?cite=70A.45.020	Page 4 WSDOT
ODOT	- Strategic Action Plan https://www.oregon.gov/odot/Pages/SAP.aspx - Climate Action Plan 2021-2026 https://www.oregon.gov/odot/Programs/Documents/Climate_Action_Plan_2021-2026.pdf - Statewide Transportation Strategy (STS) https://www.oregon.gov/odot/Planning/Pages/STS.aspx - State GHG Emission Reduction Goals https://www.oregon.gov/gov/Pages/carbonpolicy_climatechange.aspx - DRAFT: Oregon Dept of Land Conservation and Development (DLCD) -- Updated Transportation Planning Rules (Draft March 2022) https://www.oregon.gov/lcd/LAR/Pages/CFEC.aspx	Page 6 ODOT

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Interstate Bridge Replacement Program | Climate Framework Alignment with Partner Agency Goals & Plans

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Sources	Jump Link
City of Portland - Climate Action Plan (2015) https://www.portland.gov/bps/climateaction https://www.portland.gov/sites/default/files/2020-06/2015-climate-action-plan-final-progress-report-single-pages-v8.pdf - Climate Emergency Declaration (2020) https://www.portland.gov/sites/default/files/2021/climate-emergency-declaration-resolution-37494-june-30-2020.pdf - Transportation System Plan: Goals and Policies (2020) https://www.portland.gov/transportation/planning/tsp-document-downloads - Pricing Options for Equitable Mobility (2021) https://www.portland.gov/transportation/planning/pricing-options-equitable-mobility-poem	Page 8 City of Portland
Oregon Metro - Climate Smart Strategy (2014) https://www.oregonmetro.gov/climate-smart-strategy - Regional Transportation Plan (2018) and Appendix J: Climate Smart Strategy Implementation and Monitoring https://www.oregonmetro.gov/regional-transportation-plan https://www.oregonmetro.gov/sites/default/files/2019/04/02/RTP-Appendix_J_Climate_Smart_Strategy_Monitoring181206.pdf - Regional Congestion Pricing Study (2021) https://www.oregonmetro.gov/regional-congestion-pricing-study	Page 18 Metro
TriMet - Cleaner Environment & Sustainability https://trimet.org/bettertransit/environment.htm - TriMet News: TriMet announces major actions to reduce its carbon footprint https://news.trimet.org/2019/12/trimet-announces-major-actions-to-reduce-its-carbon-footprint/	Page 22 TriMet
Port of Portland - Environment: Climate Change Strategy https://www.portofportland.com/Environment - Environmental Objectives and Targets (2016-2017) http://cdn.portofportland.com/pdfs/Env_Home_16_17_ObjTrgts.pdf	Page 23 Port of Portland

Sources		Jump Link
City of Vancouver	- Vancouver City Council zero emissions goal (August 2021) <i>Climate Action Plan – anticipated in spring 2022.</i> - Sustainable Vancouver https://www.cityofvancouver.us/publicworks/page/sustainable-vancouver	Page 26 City of Vancouver
C-TRAN	Mission and Vision https://www.c-tran.com/about-c-tran/mission-and-vision	Page 31 C-TRAN
Port of Vancouver	Climate Action Plan https://www.portvanusa.com/environmental-services/climate-action-plan/	Page 32 Port of Vancouver
SW Washington Regional Transportation Council (RTC)	None.	

Partner Agency – WSDOT	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
WSDOT Secretary's Executive Order 1113: GHG Reduction Goals	GHG Reduction Target. By 2030, reduce overall emissions of greenhouse gases in the state to fifty million metric tons, or 45% below 1990 levels;	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG. In areas where emissions cannot be reduced, IBRP is considering offsets.	●
	GHG Reduction Target. By 2040, reduce overall emissions of greenhouse gases in the state to twenty-seven million metric tons, or seventy percent below 1990 levels;	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	●
	GHG Reduction Target. By 2050, reduce overall emissions of greenhouse gases in the state to five million metric tons, or ninety-five percent below 1990 levels.	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	●
	Energy efficiency	Yes – Aligned. IBRP climate goals include using a renewable power supply, high efficiency lighting, and an electric vehicle	●

Partner Agency – WSDOT	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
		maintenance fleet, all of which contribute to the IBR's energy efficiency. <i>Reducing Climate Impacts – Maintenance and Operations</i>	
	Reducing pollution	Yes – Aligned. IBRP climate goal to reduce GHG, which contributes to the reduction of pollution.	●
	Enhanced resilience	Yes – Aligned. IBRP includes climate resiliency goals, such as designing for performance in a range of environmental conditions resulting from evolving climate, and considering climate impacts to future growth and population centers	●

Partner Agency – ODOT	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
ODOT Strategic Action Plan	Equity– Prioritize diversity, equity, and inclusion by identifying and addressing systemic barriers to ensure all Oregonians benefit from transportation services and investments.	Yes – Aligned. IBRP prioritization of equity concerns will assist in advancing this goal	●
	Modern Transportation System – Build, maintain and operate a modern, multimodal transportation system to serve all Oregonians, address climate change, and help Oregon communities and economies thrive.	Yes – Aligned. IBRP purpose directly corresponds to this goal. By shifting travel demands to lower GHG modes and improving transportation efficiency the replacement bridge will fit into this goal. <i>Reducing Climate Impacts – Transportation Options</i>	●
	Sufficient and Reliable Funding – Seek sufficient and reliable funding to support a modern transportation system and a fiscally sound ODOT.	Yes – Aligned. The IBRP seeks sufficient and reliable funding.	●
ODOT Climate Action Plan (2021)	Reduce emissions from the transportation system.	Yes – Aligned. IBRP aims to reduce vehicle-based GHG emissions. <i>Reducing Climate Impacts – Transportation Options</i> <i>Reducing Climate Impacts – Construction</i>	●
	Make the transportation system more resilient to extreme weather events.	Yes – Aligned. IBRP directly addresses this, “Consider changes in environmental conditions resulting from changes in our climate” with goals to address increased weather extremes in the road surface, and expansion of the bridge. <i>Climate Resiliency- Environmental Changes</i>	●
Statewide Transportation Strategy (STS)	The Statewide Transportation Strategy: A 2050 Vision for Greenhouse Gas Reduction (STS) is Oregon’s carbon reduction roadmap for transportation and includes strategies for substantially reducing GHG emissions from the transportation sector.	Yes – Aligned. IBRP aims to lower emissions which will contribute to the goal of lowering overall state emissions. <i>Reducing Climate Impacts – Transportation Options</i> <i>Reducing Climate Impacts – Maintenance and Operations</i>	●
Governor’s Executive Order	GHG Reduction Target. Per Executive Order 20-04, achieve State greenhouse gas emission reduction goals to at least 45 percent below 1990 emissions levels by 2035, and at least 80 percent below 1990 levels by 2050.	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals	●

Partner Agency – ODOT	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
20-04: State GHG Reduction Goals		center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	
DLCD: Updated Transportation Planning Rules	Oregon Dept. of Land Conservation and Development (DLCD) is proposing updates to the statewide Transportation Planning Rules (TPR). Existing rules are not sufficient to meet the state's Metropolitan GHG Reduction Targets, so updated rules aim to reduce climate pollution. The amended rules would require local governments in metropolitan areas to: • Plan for greater development in transit corridors and downtowns, where services are located and less driving is necessary; • Prioritize system performance measures that achieve community livability goals; • Prioritize investments for reaching destinations without dependency on single occupancy vehicles, including in walking, bicycling, and transit; • Plan for and manage parking to meet demonstrated demand, and avoid over-building of parking in areas that need housing and other services; • Plan for needed infrastructure for electric vehicle charging; and • Regularly monitor and report progress.	Yes – Aligned. IBRP aims to reduce vehicle-based GHG emissions by expanding transportation options for non-auto trips. This includes high capacity transit and safe, comfortable bike and pedestrian infrastructure. It also includes an equitable tolling program. Together the elements of the bridge program contribute to the region's livability and provide alternatives to driving.	●

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
Climate Action Plan (2015)	GHG Reduction Target. Portland and Multnomah County have committed to reducing local carbon emissions by 80 percent below 1990 levels by 2050, with an interim goal of a 40 percent reduction by 2030.	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	●
	The City and County are committed to leveling this playing field. We're working to: • Increase access to transit, sidewalks, bike lanes and other transportation options. • Reduce exposure to pollution and excessive heat. • Improve access to parks and other natural resources. • Reduce burdens of housing and energy costs.	Yes – Aligned. IBRP will increase access to transit and active transportation amenities. IBRP is exploring ways to mitigate excessive heat through design and increasing tree cover. <i>Reducing Climate Impacts – Transportation Options</i> <i>Climate resiliency- Environmental Changes</i> Not applicable. IBRP climate goals do not directly address air pollution, access to parks, housing and energy costs, but there is no conflict.	●
	By 2030 Reduce the total energy use of all buildings built before 2010 by 25 percent.	Not applicable. As a new structure, this goal does not directly apply to the replacement bridge. IBRP is likely to include a renewable power supply and high efficiency lighting, allowing structures to fit within the energy efficiency parameters.	n/a
	By 2030 Achieve zero net carbon emissions in all new buildings and homes	Yes – Partial. Any buildings associated with IBRP will comply with local standards. Primary elements do not include buildings or homes.	◐
	By 2030 Supply 50 percent of all energy used in buildings from renewable resources, with 10 percent produced within Multnomah County from on-site renewable sources, such as solar.	Yes – Aligned. IBRP aims to increase renewable power supply for energy needs. IBRP will work with local utilities to access renewable energy sources. The team recognizes that the Clean Energy Transformation Act in WA will change the landscape for purchasing renewable energy; the law will require all electricity	●

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
		produced in the state to be GHG neutral by 2030 and GHG free by 2045. There may be opportunities for accessing renewable power within this timeframe. <i>Reducing Climate Impacts – Maintenance and Operations</i>	
	Create vibrant neighborhoods where 80 percent of residents can easily walk or bicycle to meet all basic daily, non-work needs and have safe pedestrian or bicycle access to transit. Reduce daily per capita vehicle miles traveled (VMT) by 30 percent from 2008 levels.	Yes – Aligned. IBRP includes reducing travel demand, shift travel demand to low GHG modes and improve transportation efficiency, which will contribute to this goal. <i>Reducing Climate Impacts – Travel Options</i>	●
	Improve the efficiency of freight movement within and through the Portland metropolitan area	Yes – Aligned. IBRP will improve transportation efficiency, which will benefit all travelers, including freight. <i>Reducing Climate Impacts – Travel Options</i>	●
	Increase the fuel efficiency of passenger vehicles in use to 40 miles per gallon and manage the road system to minimize emissions.	Yes – Partial. IBRP includes the use of electric vehicle maintenance fleet; Reducing Climate Impacts- Travel Options, improving transportation efficiency will also minimize emissions. <i>Reducing Climate Impacts – Maintenance and Operations</i>	◐
	Reduce lifecycle carbon emissions of transportation fuels by 20 percent.	Not applicable; no conflict. While none of the IBRP climate goals contribute or align directly, there is no conflict. IBRP goals to lower emissions and reduce lifecycle emissions from materials and reduce transport distances support this goal.	n/a
	Reduce consumption-related emissions by encouraging sustainable consumption and supporting Portland businesses in minimizing the carbon intensity of their supply chains.	Yes – Aligned. IBRP includes the use of local manufacturers, sourcing materials locally, and reducing transport which align well with this goal. <i>Reducing Climate Impacts -- Construction</i>	●
	Reduce food scraps sent to landfills by 90 percent.	Not applicable. As IBRP has no effect on food, this goal doesn't have correlation to IBRP climate goals; however there is no conflict.	n/a

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Recover 90 percent of all waste generated	Yes – Aligned. IBRP has a zero-waste goal for demolition. <i>Reducing Climate Impacts - Construction</i>	●
	Reduce the consumption of carbon-intensive foods and support a community-based food system.	Not applicable. As IBRP has no effect on food consumption this goal doesn't have correlation to IBRP climate goals; no conflict.	n/a
	Sequester carbon through increased green infrastructure (trees, plants, soil) and natural areas. Reduce effective impervious areas by 600 acres. Expand the urban forest canopy to cover at least one-third of the city, with a minimum canopy cover of 25 percent of each residential neighborhood and 15 percent of the central city, commercial and industrial areas	Yes – Partial. IBRP climate goal for GHG offsets will help to mitigate construction-related emissions that cannot be eliminated. Plans to create a robust landscape plan that relies on much higher than traditional tree and planting replacement rates in the public right of way could also bring Portland closer to the goal of expanding the urban forest canopy. <i>Reducing Climate Impacts- Offsets</i>	◐
	Reduce risks and impacts from heat, drought, and wildfire by preparing for hotter, drier summers with increased incidence of extreme heat days.	Yes – Aligned. IBRP climate goals for adaptive and resilient design are in alignment. <i>Climate resiliency- Environmental Changes</i>	●
	Reduce risks and impacts from flooding and landslides by preparing for warmer winters with the potential for more intense rain events.	Yes – Aligned. IBRP climate goals for adaptive and resilient design are in alignment. <i>Climate Resiliency- Environmental Changes</i> <i>Reducing Climate Impacts – Construction</i>	●
	Build City and County staff and community capacity to prepare for and respond to the impacts of climate change.	Yes – Aligned. IBRP construction and procurement will support DBE businesses in increasing capacity for climate-responsive practices. <i>Reducing Climate Impacts – Construction</i> <i>Climate Resiliency –Development and Behavioral Changes</i>	●
	Build City and County staff and community capacity to ensure effective implementation and equitable outcomes of climate action efforts.	Yes – Aligned. IBRP engagement and equity efforts are focused on equitable process and equitable outcomes, in support of this goal. <i>Climate Resiliency –Development and Behavioral Changes</i>	●
	GHG Reduction Target. Be it further resolved, that the City of Portland adopts a new target of achieving at least a 50%	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG	●

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
Climate Emergency Declaration (2020)	reduction in carbon emissions below 1990 levels by 2030 and net-zero carbon emissions before 2050. These targets will be carried forward into future Climate Action Plan updates and work plans	emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	
	GHG Reduction Target. To inform future Climate Action Plan updates and workplans, the City of Portland will analyze decarbonization pathways to achieve carbon neutrality by 2050 with clear interim goals, including a commitment to monitoring any remaining emission sources and implementing policies or mechanisms to reduce those emissions, including but not limited to the role of urban sequestration and negative carbon technologies.	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	●
Transportation System Plan: Policies (2020)	Transportation Policy: Mode share goals and vehicle miles travelled (VMT) reduction: Increase the share of trips made using active and low-carbon transportation modes. Reduce VMT to achieve targets set in the most current Climate Action Plan and Transportation System Plan, and meet or exceed Metro’s mode share and VMT targets.	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	●
	Transportation Policy: Transportation strategy for people movement: Implement a prioritization of modes for people movement by making transportation system decisions according to the following ordered list: • Walking • Bicycling • Transit	Yes – Partial. IBRP serves primarily to improve mobility and access for I-5, part of the interstate highway system, so the modal prioritization is not aligned. Even so, IBRP will improve and expand safe, direct travel options for people walking, biking/rolling and taking transit within the project area.	◐

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	- Fleets of electric, fully automated, multiple passenger vehicles - Other shared vehicles - Low or no occupancy vehicles, fossil-fueled non-transit vehicles When implementing this prioritization, ensure that: - The needs and safety of each group of users are considered, and changes do not make existing conditions worse for the most vulnerable users higher on the ordered list. - All users’ needs are balanced with the intent of optimizing the right-of-way for multiple modes on the same street. - When necessary to ensure safety, accommodate some users on parallel streets as part of a multi-street corridor. - Land use and system plans, network functionality for all modes, other street functions, and complete street policies, are maintained. - Policy-based rationale is provided if modes lower in the ordered list are prioritized.		
	Transportation Policy – GHG Reduction Target: By 2035, reduce Portland’s transportation-related carbon emissions to 50% below 1990 levels, at approximately 934,000 metric tons.	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
Pricing Options for Equitable Movement (2021)	We are in a climate crisis. The transportation sector contributes more than 40% of greenhouse gas emissions in the Portland region. Reducing transportation emissions will take a three-pronged approach: 1. Reducing driving by making other options safer and more attractive. 2. Shifting the trips that remain on the road to zero-emission vehicles (including cars, buses and freight). 3. Planning and building connected, inclusive, and complete neighborhoods to reduce the need for long trips.	Yes – Partial. IBRP is centering climate and equity outcomes that influence all stages of decision making. - Expanding transportation options is one of the most significant means that the IBR program has to reduce driving trips. - IBRP supports the transition to zero-emission vehicles. The IBR climate program will explore ways to electrify the fleet used for construction and ongoing operations and maintenance. - IBRP is contributing to building connected and complete communities in the project area.	
	The City should utilize the Equitable Mobility Framework to guide pricing policy deliberations and commit to evaluating equitable mobility impacts of the existing system and any future proposed transportation policy. This includes impacts to moving people and goods, safety, climate and health, and the economy.	TBD. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand. IBRP is committed to evaluating equitable tolling structures.	tbd
	The City must engage community stakeholders , especially those representing BIPOC communities, Portlanders living on low incomes, people with disabilities, multi-lingual and displaced communities in the next stage of pricing policy development, as well as ongoing evaluation.	Yes – Aligned. IBRP will continue to uphold its commitment to meaningfully engage the public and priority equity communities in decision making. Equity and equitable access to travel is a shared priority, and IBRP is committed to evaluating equitable tolling structures.	
	The City must advance complementary strategies alongside pricing to improve equitable mobility outcomes. Pricing is just one policy tool and not a stand-alone solution. Additional transportation demand management programs; multimodal infrastructure, operations and service investments; land use policies; affordable housing; and more must also be prioritized to create a more equitable and sustainable mobility system.	Yes – Aligned. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand. Equity and equitable access to travel is a shared priority, and IBRP is committed to evaluating equitable tolling structures.	

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Prioritize the goal of reducing traffic demand and using the existing transportation system as efficiently as possible to move people and goods in a more climate-friendly and equitable way. While pricing generates revenue and the reinvestment of revenue is a critical way to make pricing strategies equitable, revenue generation should never be the top priority.	Yes – Aligned. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand.	●
	Recognize that a pricing policy is only effective if it reduces traffic demand and/or raises enough revenue to fund effective demand management or multimodal improvements. • Setting rates or surcharges too low to affect demand or fund improvements is inequitable. • Programs should be designed to be data driven and regularly reviewed for impact. Rates and surcharges should be set to meet policy goals.	TBD. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand.	tbd
	Provide exemptions for households living on low incomes. • The City should develop one set of income-based policy standards that can be applied to current and future pricing programs to limit administrative costs and complexity. • Until a universal basic income can be guaranteed, exempting households living on low- incomes should be the highest priority to avoid exacerbating current inequities. • When exemptions are not possible, cash rebates or payments to households living on low incomes is preferred as it allows individuals to make the best transportation decisions for their personal situation.	TBD. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand. IBRP will continue to uphold its commitment to meaningfully engage priority equity communities in decision making. Equity and equitable access to travel is a shared priority, and IBRP is committed to evaluating equitable tolling structures.	tbd

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	• More evaluation and community engagement are needed to determine what specific design would be most equitable and would minimize overall burdens, while still achieving demand management outcomes. • Pricing programs should build off existing means-testing systems wherever possible to not add additional program access burdens.		
	Center climate and equity outcomes (e.g., reducing greenhouse gas emissions, reducing transportation cost burdens, expanding job access, etc.) throughout pricing program design. • This includes evaluating how different variable-rate designs, where prices change based on factors like income, time of day, congestion levels, occupancy, geography, and fuel efficiency may further advance climate and equity goals, with a bias toward equitable outcomes. • Evaluation should not unnecessarily delay implementation but should be thorough and focused on understanding impacts to BIPOC community members, Portlanders with low incomes, and people with disabilities. The City should also commit to ongoing evaluation of equity implications of policies once implemented. • To move with the urgency required by the climate crisis, pricing policies that focus on managing demand for people with the most options should be prioritized. As stated above, exemptions for drivers with low incomes are critical	Yes – Aligned. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand. IBRP centers climate and equity outcomes. Equity and equitable access to travel is a shared priority, and IBRP is committed to evaluating equitable tolling structures.	●

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Reinvest revenue generated from pricing in strategies that further expand equitable mobility. - Pricing revenue should be reinvested to support frequent, competitive and high-quality multimodal access to areas where pricing is implemented and to mitigate potential negative impacts of traffic diversion. - High-priority complementary investment areas include transit service, operations and infrastructure; biking and walking infrastructure; affordable housing near transportation options; and multimodal discounts and financial incentives, including driving options for those without access who need it. Additional investment areas include electrification infrastructure and rebates as well as maintaining the existing infrastructure necessary for multimodal mobility. - Community stakeholders should always be involved in revenue allocation decisions.	TBD. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand. IBRP is committed to evaluating equitable tolling structures. Use of the revenues has not yet been examined.	tbd
	Reduce unequal burdens of technology and enforcement. - Technology and payment systems must be designed to reduce barriers for individuals with limited access to bank accounts (e.g., by allowing use of prepaid debit cards). - Technology and payment systems should include strong privacy protections. - The location of pricing infrastructure should be considered so it doesn't overtly impact BIPOC or communities living on low incomes. - Automated enforcement mechanisms should be used to reduce the potential for enforcement bias.	TBD. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand. IBRP centers climate and equity outcomes. Equity and equitable access to travel is a shared priority, and IBRP is committed to evaluating equitable tolling structures. Technology and enforcement mechanisms have not yet been examined.	tbd

Partner Agency – City of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Tickets and fines for non-compliance should be means-based (i.e., structured by income level) to mitigate disproportionate impacts.		

Partner Agency – Metro	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
Metro Climate Smart Strategy (2014)	Implement adopted local and regional land use plans	Yes – Aligned. IBRP does not have land use authority. However, the program will be designed to align with current land use plans and solutions will be forward compatible with denser, transit-oriented communities. Additionally, IBRP climate goals support finding design solutions that foster complete and walkable communities.	●
	Make transit convenient, frequent, accessible, and affordable	Yes – Aligned. IBRP includes goals to shift travel demand to low GHG modes, which includes high-capacity transit, which will contribute to Metro’s goal. <i>Reducing Climate Impacts –Transportation Options</i>	●
	Make biking and walking safe and convenient	Yes – Aligned. IBRP includes goals to increase and improve accessibility for people who walk, bike, and roll. The IBR solution will include major improvements to bicycle and pedestrian options. <i>Reducing Climate Impacts –Transportation Options</i>	●
	Make streets and highways safe, reliable, and connected	Yes – Aligned. IBRP goals clearly align with this goal. The IBR solution will improve transportation efficiency, which aims to reduce congestion, design for traffic smoothing, and target moderate speeds. In addition to reducing emissions, it will also improve road safety. <i>Reducing Climate Impacts –Transportation Options</i>	●
	Use technology to actively manage the transportation system	Yes – Aligned. IBRP includes goals to improve transportation efficiency which includes the use of Transportation Management systems and ITS. <i>Reducing Climate Impacts –Transportation Options</i>	●
	Provide information and incentives to expand the use of travel options	Yes – Aligned. IBRP climate goals include transportation demand management strategies and increasing range of transportation options. <i>Reducing Climate Impacts –Transportation Options</i>	●

Partner Agency – Metro	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Make efficient use of vehicle parking and land dedicated to parking	Yes – Aligned. If Park and Rides are included, this goal will be applied.	●
	Support transition to cleaner, low carbon fuels and more fuel-efficient vehicles	Yes – Aligned. IBRP climate goals include an electric vehicle maintenance fleet for ongoing facility maintenance and operations. <i>Reducing Climate Impacts – Maintenance and Operations</i>	●
	Secure adequate funding for transportation investments	Yes – Aligned. IBRP is a transportation investment in itself.	●
Regional Transportation Plan (2018)	GHG Reduction Target. Reduce transportation-related greenhouse gas emissions to at least 20% below 2005 emissions levels by 2035 and 35% below 2005 levels by 2050 for the Portland metropolitan area <i>(Table 2.5: GHG emissions reduction targets)</i>	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	●
	Climate Leadership Policy 1: Implement adopted local and regional land use plans.	Yes – Aligned. IBRP recognizes the importance of local and regional land use planning, and its influence on travel patterns and climate outcomes.	●
	Climate Leadership Policy 2: Make transit convenient, frequent, accessible, and affordable.	Yes – Aligned. Existing transit options are limited. IBRP will provide high-capacity transit that improves transit service frequency and reliability.	●
	Climate Leadership Policy 3: Make biking and walking safe and convenient.	Yes – Aligned. Existing active transportation facilities are inadequate; IBRP will improve the active transportation network and make it easier for people to walk, roll and bike.	●
	Climate Leadership Policy 4: Make streets and highways safe, reliable, and connected.	Yes – Aligned. IBRP will improve safety, connectivity and reliability for I-5 and connecting streets. The program will address seismic vulnerability, safety concerns with the existing roadway design, congestion and travel time reliability, limited	●

Partner Agency – Metro	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
		public transit, impaired freight movement, and inadequate active transportation facilities.	
	Climate Leadership Policy 5: Use technology to actively manage the transportation system and ensure that new and emerging technology affecting the region’s transportation system supports shared trips and other Climate Smart Strategy policies and strategies.	Yes – Aligned. IBRP will incorporate intelligent transportation systems (ITS) and demand management tools to actively manage the roadway network.	●
	Climate Leadership Policy 6: Provide information and incentives to expand the use of travel options.	TBD. IBRP has not yet made decisions regarding information and incentives, but expanding transportation options is a key component of the IBRP climate framework, and there is no conflict.	tbd
	Climate Leadership Policy 7: Make efficient use of vehicle parking spaces through parking management and reducing the amount of land dedicated to parking.	TBD. IBRP does not yet have goals specific to parking management, but there is no conflict.	tbd
	Climate Leadership Policy 8: Support Oregon’s transition to cleaner fuels and more fuel-efficient vehicles in recognition of the external impacts of carbon and other vehicle emissions.	Yes – Aligned. IBRP supports the transition to zero-emission vehicles. The IBR climate program will explore ways to electrify the fleet used for construction and ongoing operations and maintenance.	●
	Climate Leadership Policy 9: Secure adequate funding for transportation investments that support the RTP climate leadership goal and objectives.	Yes – Aligned. IBRP is a transportation investment in itself.	●
RTP Appendix J: Climate Smart Strategy Implementation and Monitoring (2018)	The full list of RTP Climate Smart Strategy performance monitoring targets are shown on <u>page 15 of the document</u> .	TBD. IBRP is working with partners to establish GHG reduction targets. IBRP has not set climate performance targets for operations after construction. The design option screening process incorporates many climate metrics to inform design selection.	tbd

Partner Agency – Metro	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
Regional Congestion Pricing Study (2021)	<i>Best Practices for Implementing Congestion Pricing Programs in an Equitable Manner.</i> Pricing program design impact on equity outcomes: A more equitable pricing and investment strategy would include the following components: Variable pricing; Targeted exemption; focus on transit; focus on vulnerable communities. A less equitable pricing and investment strategy would include: 24-hr flat rate pricing; no supportive investments in transit; no focus on vulnerable communities Congestion pricing programs and projects can improve equity outcomes by (1) Reducing harm and increasing benefits if agencies are willing to focus engagement on historically impacted residents and other stakeholders traditionally at a disadvantage and ensure they have a role in decision making at every step in the process.	TBD. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand. IBRP will continue to uphold its commitment to meaningfully engage priority equity communities in decision making. Equity and equitable access to transportation is a shared priority, and IBRP is committed to evaluating equitable tolling structures.	tbd
	Congestion pricing programs and projects can improve equity outcomes by (2) Committing to targeted investments of net toll revenues for locally supported improvements such as improved transit infrastructure and services and traffic safety improvements.	TBD. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand. Transit investment will be key to the overall program. IBRP is currently considering a range of high-capacity transit options, all of which would greatly improve transit frequency and reliability compared to today.	tbd
	Congestion pricing programs and projects can improve equity outcomes by (3) Exploring who pays and to what degree , and considering a suite of affordability programs such as rebates or exemptions for low-income drivers, a “transportation wallet”, or other investments that address affordability.	TBD. IBRP has not established details of a pricing program yet, but variable pricing will be a key component to manage demand. Equity and equitable access to transportation is a shared priority, and IBRP is committed to evaluating equitable tolling structures.	tbd

Partner Agency – TriMet	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
TriMet Sustainability	Convert MAX to 100% wind power in 2020	Not applicable; no conflict. Does not apply to IBRP climate goals but has no conflict. Similarly, IBRP will be considering integration of renewable power generation.	n/a
	Stop diesel bus purchases after 2025	Not applicable; no conflict. Does not apply to IBRP climate goals but has no conflict.	n/a
	Convert buses to renewable diesel beginning in April 2020	Not applicable; no conflict. Does not apply to IBRP climate goals but has no conflict.	n/a
	Convert non-bus fleet to electric & non-bus heavy-duty vehicles to renewable diesel by 2030	Yes – Partial. IBRP climate goals include goals to use low emissions vehicles. Construction goal aims to use low emissions construction equipment and vehicles, and Maintenance and Operations goal aims to have an electric fleet of vehicles for maintenance. These goals support this by setting an example of other agencies using low impact vehicles. <i>Reducing Climate Impacts – Construction</i> <i>Reducing Climate Impacts - Operations and Maintenance</i>	
	Support Youth Pass Program	Not applicable; no conflict. Does not apply to IBRP climate goals but has no conflict.	n/a
	Conduct a carbon baseline analysis and develop a net zero carbon strategy	Not applicable; no conflict. Does not apply to IBRP climate goals but has no conflict.	n/a
	Develop a carbon lens	Yes - Aligned. IBRP climate framework aims to put climate at the center of the design process, similar to a “carbon lens.”	
	Support regional air quality testing	Not applicable. IBRP climate goals are not in conflict.	n/a

Partner Agency: Port of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
Climate Change Strategy	Our goal by 2020 is to lower all our carbon emissions by 15 percent below 1990 levels.	Not applicable; no conflict. Does not apply to IBRP climate goals but has no conflict.	n/a
	Reduce diesel particulate matter by 75% from Port-controlled operations from 2000 baseline levels by 2020.	Not applicable; no conflict. Does not apply to IBRP climate goals but has no conflict.	n/a
Environmental Objectives and Targets (year)	[Need document details]		
Environmental Objectives and Targets (2016-2017)	Minimize impacts to air quality: The Air Quality Program facilitates implementation of the Port's Air Quality Policy, which has a primary goal of promoting clean air for all who live in airsheds affected by Port activities. To do this, the Port utilizes emissions inventories and aspect/impact analyses of its planned and actual activities that have, or can have, a significant impact on the airshed. Recognizing that not all emission sources are under the Port's direct control, the Port seeks opportunities to improve air quality by facilitating and encouraging partnerships, education, and outreach to assist customers, tenants, and other stakeholders in reducing marine and aviation-related emissions. The Port supports efforts of the International Maritime Organization and International Civil Aviation Organization to set global standards to reduce emissions from marine vessels and aircraft	Yes – Aligned. IBRP climate goals aim to lower emissions which will contribute to the goal of lowering overall state emissions and improving air quality. <i>Reducing Climate Impacts – Transportation Options</i> <i>Reducing Climate Impacts – Construction</i>	●
	Reduce energy consumption and carbon emissions: The Port developed the Energy and Carbon Management Master Plan to reduce energy consumption and carbon emissions. The plan aligns closely with the Air Quality program and presents a six-	Yes – Aligned. IBRP climate goals aim to lower emissions which will contribute to the goal of lowering overall state emissions. <i>Reducing Climate Impacts – Transportation Options</i> <i>Reducing Climate Impacts – Construction</i>	●

Partner Agency: Port of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	point strategy for reaching the Port’s GHG reduction goal. The master plan sets the foundation for establishing targets and a portfolio of projects identified and scheduled for implementation.		
	Minimize impacts and seek opportunities to enhance natural resources: The Natural Resources Program seeks to ensure the development and maintenance of a consistent, ecosystem-based framework for all decisions involving natural resources at the Port. The Port takes a proactive approach to managing natural resources and is responsible for the long-term management of its mitigation commitments. Engaging with the community to identify opportunities has been an important aspect in target selection to support regional conservation goals and initiatives.	Yes – Aligned. IBRP climate goals aim to create a robust landscape plan that relies on much higher than traditional tree and planting replacement rates in the public right of way. This renews natural resources and supports conservation goals. IBRP additionally will take a proactive approach to natural resources protection and avoiding impacts where possible. <i>Reducing Climate Impacts – Offsets</i>	●
	Minimize impacts to water resources: The Port of Portland’s Stormwater Management Program is designed to prevent, reduce, and eliminate the discharge of polluted stormwater to the Columbia Slough and Willamette and Columbia rivers. In addition, the Port continues to set targets in support of the Water Conservation Strategy developed in 2014 that defines strategies to eliminate waste, improve efficiency and use alternative water sources across the Port. It strives to further integrate water conservation into the Port’s daily operations, business planning, maintenance, and capital projects.	Yes – Aligned. IBRP design will include elements that managing stormwater due to increased storm intensities, this will have an overall impact in reducing water pollution. Additionally, the program will be designing additional stormwater treatment beyond what is provided by current facilities. <i>Climate Resiliency- Environmental Changes</i>	●
	Reduce waste generation and hazardous materials use: Five Years to Zero Waste is the Port of Portland’s ambitious plan developed in 2014 to create a guidance framework for the actions necessary to reach “Zero-Waste” status, which the EPA defines as landfill waste diversion of 90% or greater. This plan	Yes – Aligned. IBRP climate goals include zero waste goals for demolition, helping to directly support this goal. <i>Reducing Climate Impacts – Construction</i>	●

Partner Agency: Port of Portland	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	has been developed through an ongoing partnership with Portland State University’s Community Environmental Services, as part of the Port’s commitment to innovative, industry-leading waste minimization efforts within the broader framework of the Port’s EMS. This plan sets out a framework to achieve Zero Waste status by implementing broad strategies in key areas, with specific actions, priorities, and targets. The Port has made great strides toward Zero Waste at Port-owned properties.		

Partner Agency – City of Vancouver	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
Climate Action Plan: Goals and Policies (2022)	[Plan forthcoming August 2022]		
City Council Statement on GHG Reduction	GHG Reduction Target. The City will be carbon neutral by 2050. - an 80% reduction in GHG emissions by municipal operations by 2025 - an 80% reduction in GHG emissions by the Vancouver community by 2030 - and the achievement of carbon neutrality by both municipal operations and the Vancouver community by 2040.	Yes – Aligned. IBRP is working with partners to establish GHG reduction targets. IBRP has a goal to contribute to reducing GHG emissions. The goals associated with transportation options aim to shift travel demand to low GHG modes, constructions goals center around reducing construction-based emissions, goals for maintenance and operations are all aiming to reduce GHG, and in areas where emissions cannot be reduced goals are included to offset the emissions.	●
Sustainability Plan	Greenhouse gas emissions meet existing and emerging state and federal requirements.	Yes – Aligned. IBRP desired outcomes include reducing GHG emissions and will met all state and federal requirements.	●
	Environmental health is protected or improved by minimizing and where possible, eliminating: - The use of hazardous or toxic materials by residents, businesses, and City operations. - The levels of pollutants entering the air, soil, and water. - The risks that environmental problems pose to human and ecological health.	Yes – Aligned. IBRP has set goals for low emissions construction methods, equipment, and vehicles which align with the goals of reducing hazardous or toxic materials. IBRP Climate Resiliency goals consider the impacts that climate change can have on the bridge and the communities around the bridge. These goals are aligned with reducing the risks that environmental problem s pose to human and ecological health. <i>Reducing Climate Impacts – Construction</i> <i>Climate Resiliency – Development and Behavior Change</i>	●

Partner Agency – City of Vancouver	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	No one geographic or socioeconomic group in the City is being unfairly or disproportionately impacted by environmental pollution	Yes – Aligned. IBRP environmental justice and equity commitments to avoid disproportionate harms are aligned with this goal.	●
	Consumption of fresh, locally produced, organic produce and foods increases to promote public health and to minimize resource consumption and negative environmental impacts.	Not applicable; no conflict.	n/a
	City and community consumption - specifically consumption on non-local, nonrenewable, non-recyclable and non-recycled materials, water, energy, and fuels - decrease. City takes a leadership role in encouraging sustainable or green procurement and considers ways to become a zero-waste city over the long term.	Yes – Aligned. IBRP sets the goal to use local manufacturers and source materials locally, this directly aligns and supports this goal. <i>Reducing Climate Impacts – Construction</i>	●
	The use of local, non-polluting, renewable, and recycled resources is encouraged	Yes – Aligned. IBRP sets the goal to use local manufacturers and source materials locally, this directly aligns and supports this goal. Additionally, IBRP climate goals include lifecycle analysis for environmental impacts of materials, which will help to support this goal by ensuring that materials used are sustainable. <i>Reducing Climate Impacts – Construction</i> <i>Reducing Climate Impacts – Maintenance and Operations</i>	●
	A multi-modal transportation system exists that minimizes and, where possible, eliminates pollution and motor vehicle congestion while ensuring safe mobility and access for all without compromising our ability to protect public health and safety.	Yes – Aligned. IBRP will contribute to this goal. Reducing travel demand, shifting travel demand to low GHG modes, and improving transportation efficiency will all contribute to the outcomes desired in this goal. <i>Reducing Climate Impacts – Transportation Options</i>	●

Partner Agency – City of Vancouver	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Auto dependency is reduced and affordable alternative, sustainable modes of travel are increased.	Yes – Aligned. IBRP will contribute to this goal. IBRP aims to minimize auto travel demand and shift travel demand to low GHG modes such as walking, biking, or transit. <i>Reducing Climate Impacts – Transportation Options</i>	●
	Vancouver has a diverse, vibrant, stable, local economy that supports the basic needs of all segments of the community.	Yes – Aligned. IBRP supports this goal by setting a goal to use local manufacturers. <i>Reducing Climate Impacts – Construction</i>	●
	Businesses, organizations, and non-profits within the city work with the City of Vancouver to increase efficient use of resources through sustainable business practices.	Yes – Aligned. IBRP supports this goal by setting a goal to use local manufacturers and provide support for small firms and DBE firms to increase capacity for sustainable practices. <i>Reducing Climate Impacts – Construction</i>	●
	Sustainable or “green” businesses are encouraged to locate in the City of Vancouver.	Yes – Aligned. IBRP plans to utilize local and sustainable manufactures and will act as a reliable transportation option for local businesses but should otherwise have no negative impact on this goal.	●
	A sufficient open-space system is developed and maintained so that it is diverse in uses and opportunities and includes natural functions/wildlife habitat, as well as passive and active recreation with equitable distribution of parks, trees, pathways throughout the City.	Yes – Aligned. IBRP includes a goal to create a robust landscape plan that relies on much higher than traditional tree and planting replacement rates in the public right of way. Assisting this goal in that it will increase greenspace and tree cover in the area that mitigation is done. <i>Reducing Climate Impacts – Offsets</i>	●
	Land use and transportation planning and policies create compact, mixed-use projects, forming urban villages designed to maximize affordable housing and encourage walking, bicycling and the use of existing or future public transit options.	Yes – Aligned. IBRP includes the goal to minimize travel demand and increase the walkability of the area, and shift travel demand to low GHG modes such as biking, or transit. These goals will support Vancouver’s goals by expanding walkability and bikeability within the program area of impact and beyond. <i>Reducing Climate Impacts – Transportation Options</i>	●

Partner Agency – City of Vancouver	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Residents recognize that we all share the local ecosystem with other living things that warrant respect and responsible stewardship. Vancouver uses land efficiently in order to minimize the need to expand the urban footprint to accommodate growth.	Yes – Partial. IBRP does not have land use authority; however, the program will prioritize transportation solutions that are compatible with more compact, walkable and transit-oriented communities. <i>Reducing Climate Impacts – Transportation Options</i> <i>Reducing Climate Impacts – Offsets</i>	
	All development meets the 2030 Challenge in urban growth areas. Clark County and cities have an integrated approach to achieving sustainability.	Yes – Partial. IBRP is considering options for sustainability certification from third parties such as Greenroads, Envision (ISI), and Living Building Challenge (Living Future). These are similar to the 2030 Challenge, but specifically for infrastructure projects.	
	A mix of affordable, livable, and green housing types is achieved and maintained throughout the City of Vancouver for people of all socio-economic/cultural/household groups, including seniors, singles and the disabled.	Not applicable; no conflict. The IBRP goals will have no negative impacts on the housing types in the City of Vancouver.	n/a
	LEED-certified or equivalent commercial new buildings are encouraged and promoted.	Yes – Aligned. While IBRP is not focused on building construction it does have goals that include using low emissions methods, materials, equipment, and vehicles during construction. IBRP is looking at infrastructure sustainability rating systems that match or exceed LEED standards	
	All residents of Vancouver are able to meet their basic needs and are empowered to enhance their quality of life.	Yes – Partial. IBRP climate goals will have no negative impact on this goal. However, having a new sustainable bridge may facilitate this goal. IBRP prioritization of equity concerns will assist in advancing this goal.	
	Community members have access to housing, health and social services, education, economic opportunity, and cultural and recreational resources.	Yes – Aligned. IBRP will increase transportation options and broaden access for people walking, rolling, and taking transit.	

Partner Agency – City of Vancouver	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
		The bridge provides a necessary avenue for access to the listed resources.	
	There is respect and appreciation of the value added to the community by differences among its members in race, religion, gender, age, economic status, sexual orientation, disabilities, immigration status and other special needs.	Yes – Aligned. The IBRP equity program will assist in advancing this goal.	●
	Community members of all ages participate actively and effectively in civic affairs and community improvement efforts.	Yes – Aligned. IBRP equity and engagement programs are in alignment and will assist in advancing this goal.	●
	An actively engaged community helps the City of Vancouver to carry out and improve Vancouver’s Sustainability Plan	Yes – Partial. IBRP climate goals will have no negative impact on this goal. IBRP prioritization of equity concerns, process equity, and inclusive engagement will assist in advancing this goal.	◐
	Community members of all ages and cultures understand the basic principles of sustainability and use them to guide their decisions and actions, personally and collectively.	Yes – Partial. IBRP supports community education in sustainability and will have no negative impact on this goal.	◐

Partner Agency – C-TRAN	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
C-TRAN	C-TRAN services contribute positively to the region’s sustainability, livability, and economic vitality by helping manage traffic congestion, reduce dependence on foreign oil, lower carbon emissions, contain transportation costs for employers and employees, enable denser land use and development of urban areas, and provide essential transport to persons with no other means of travel.	Yes – Aligned. IBRP climate goals aim to shift travel demand to low GHG modes this includes increasing access and connection for high-capacity transit, supporting this goal. <i>Reducing Climate Impacts – Transportation Options</i>	●

Partner Agency – Port of Vancouver	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
Port of Vancouver Climate Action Plan	Apply sustainability standards to new construction projects	Yes – Aligned. IBRP is evaluating adherence to several sustainability rating systems for substantial project elements.	●
	Develop sustainable construction standards such as low-carbon concrete and asphalt, low-emission construction vehicles, construction waste reduction, and materials reuse	Yes – Aligned. IBRP climate goals include sustainable materials selection. <i>Reducing Climate Impacts – Construction</i>	●
	Continue lighting retrofits	Not applicable; no conflict. Does not apply to IBRP but has no conflict. Similarly, IBRP will be designing for energy efficient lighting.	n/a
	Install occupancy sensors, building controls, programmable thermostats and smart meters	Not applicable; no conflict. IBRP assets will be designed including sensors for smart operations	n/a
	Replace aging HVAC units with energy efficient technology	Not applicable; no conflict. IBRP assets will be designed including energy efficient technology	n/a
	Explore renewable energy opportunities including onsite solar power generation, small-scale wind generation, geothermal energy, and replacement of natural gas	Not applicable; no conflict. IBRP assets will be designed to optimize access to renewable energy sources.	n/a
	Electrify or hybridize diesel and gasoline powered vehicles and equipment	Yes – Aligned. Reducing emissions associated with maintenance and operations includes a goal to utilize an electric vehicle maintenance fleet, the use of an electric vehicle maintenance fleet by a public agency often increases the support/accessibility for other agencies to switch as well.	●
	Install EV charging infrastructure	Yes – Aligned. IBRP is looking at integrating charging needs into the transportation system.	●
	Replace use of diesel with low carbon fuels such as renewable diesel	Yes – Aligned. Reducing emissions associated with maintenance and operations includes a goal to utilize a renewable power supply and to use electric vehicles for the maintenance fleet, this goal aligns with that.	●

Partner Agency – Port of Vancouver	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Work with C-Tran to provide transit service to the Port and provide transit subsidies to employees	Not applicable; no conflict.	n/a
	Install bicycle infrastructure such as secure parking and showers to promote bicycle commuting	Yes – Aligned. IBRP includes goals to reduce vehicle-based emissions and shifting to transit and active transportation, including bicycles. If routes that commuters use are accessible to bicycles, it will support this goal.	●
	Support effective carpool options	Yes – Aligned. IBRP includes goals to reduce vehicle-based emissions and shifting to transit and active transportation, including a carpool/HOV lane.	●
	Promote telecommuting through enhanced virtual work infrastructure and policies	Not applicable; no conflict.	n/a
	Offset emissions from business travel	Not applicable; no conflict.	n/a
	Promote use of low-carbon ground transport options for business travel	Yes – Aligned. IBRP will include high-capacity transit that can serve business travelers across the region. <i>Reducing Climate Impacts – Transportation Options</i>	●
	Provide recycling services and infrastructure	Not applicable; no conflict.	n/a
	Develop a waste reduction plan	Yes – Aligned. The IBRP has zero waste goals for demolition, these goals don't support each other, but show an alignment in the area.	●
	Promote the use of green infrastructure to manage stormwater	Yes – Aligned. IBRP design will incorporate sustainable stormwater management strategies.	●
	Explore water system efficiencies	Yes – Aligned. IBRP design will incorporate sustainable design practices, such as water efficiency.	●
	Develop sustainability standards for new construction projects on port property	Not applicable; no conflict.	n/a

Partner Agency – Port of Vancouver	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Develop sustainable construction standards such as low-carbon concrete and asphalt, low-emission construction vehicles, construction waste reduction, and materials reuse for projects occurring on port property	Yes – Aligned. IBRP aims to reduce construction-related emissions and support	●
	Explore carbon reduction during collaborations on agreements with tenants/customers	Not applicable; no conflict.	n/a
	Pursue partnerships, incentives, and grant opportunities to support tenant/customer energy efficiency, equipment electrification and other carbon reduction initiatives	Yes – Partial. IBRP climate goals aim for similar expansion of energy efficient systems.	◐
	Emphasize and increase marketing efforts to pursue innovative business opportunities and renewable, clean energy projects	Not applicable; no conflict.	n/a
	Promote lighting retrofits by tenants	Not applicable; no conflict.	n/a
	Promote installation of occupancy sensors, building controls, programmable thermostats and smart meters by tenants	Not applicable; no conflict.	n/a
	Promote replacement of aging HVAC units with energy efficient technology in tenant facilities	Not applicable; no conflict.	n/a
	Support onsite renewable energy generation by tenants	Not applicable; no conflict.	n/a
	Encourage tenants to replace natural gas use with low carbon/renewable alternatives	Not applicable; no conflict.	n/a
	Promote the electrification and hybridization of diesel and gasoline powered vehicles and equipment	Yes – Aligned. Reducing emissions associated with maintenance and operations includes a goal to utilize an electric vehicle maintenance fleet, the use of an electric vehicle maintenance fleet by a public agency often increases the support/accessibility for other agencies to switch as well.	●
	Install common use EV charging infrastructure	Yes – Aligned. IBRP is looking at integrating charging facilities into the design.	●

Partner Agency – Port of Vancouver	Partner Agency – Specific Goal	Alignment with Interstate Bridge Replacement Program (IBRP) Goals	Match
	Promote the replacement of diesel with low carbon fuels such as biodiesel, renewable diesel, and hydrogen	Yes – Aligned. Reducing emissions associated with maintenance and operations includes a goal to utilize an electric vehicle maintenance fleet, the use of an electric vehicle maintenance fleet by a public agency often increases the support/accessibility for other agencies to switch as well.	●
	Evaluate the use of fuel cells for heat and power, mobile equipment, and locomotives	Not applicable; no conflict.	n/a
	Promote the use of clean trucks and low carbon drayage vehicles	Yes – Aligned. Reducing emissions associated with maintenance and operations includes a goal to utilize an electric vehicle maintenance fleet, the use of an electric vehicle maintenance fleet by a public agency often increases the support/accessibility for other agencies to switch as well.	●
	Evaluate the use of shore power options for vessels visiting the Port	Not applicable; no conflict.	n/a
	Facilitate the development of a terminal equipment inventory to help target new investments and grant opportunities	Not applicable; no conflict.	n/a
	Encourage visits by cleaner or more fuel-efficient vessels	Not applicable; no conflict.	n/a
	Explore partnerships to promote shipping via the river system for eastbound cargo	Not applicable; no conflict.	n/a
	Promote idle reduction by rail vehicles/equipment (including locomotives)	Not applicable; no conflict.	n/a
	Evaluate the development of infrastructure to support electric locomotives for on-port switching operation	Not applicable; no conflict.	n/a

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Appendix B. Transit Data

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	Option B	Option C	Option D	Option E	Option F	Option G	Option H	Option I	Option J	Option L	Option M
	2045 CRC Locally Preferred Alternative	Bus on Shoulder	Extend Vine(s) BRT on a Dedicated Guideway from Turtle Place to Expo Center	Dedicated BRT - Kiggins Bowl to Expo Center on an I-5 Adjacent Dedicated Guideway	Dedicated BRT - McLoughlin/I-5 to Expo Center in a Dedicated Guideway on the 2013 Transit Alignment	Extend Vine(s) BRT on a Dedicated Guideway from Turtle Place to Hayden Island, Extend Yellow Line from Expo Center to Hayden Island	LRT Extension from Expo Center to a terminus near Turtle Place	LRT Extension from Expo Center on an I-5 Adjacent Dedicated Guideway to a Terminus near McLoughlin/I-5	LRT Extension from Expo on an I-5 Adjacent Dedicated Guideway to a Terminus near Kiggins Bowl	LRT Extension from Expo Center on an I-5 Adjacent Dedicated Guideway to a Terminus Near McLoughlin/I-5 with Waterfront Station	LRT Extension from Expo Center on an I-5 Adjacent Dedicated Guideway to a Terminus Near Evergreen/I-5 with Waterfront Station
Alignment Description	2013 CRC LPA project assumes fully dedicated LRT guideway extending from Expo Center to a terminus near McLoughlin/I-5 via Vancouver CBD.	Express bus operating as Bus on Shoulder in BIA (both directions). Route 60 in auxiliary lanes between Vancouver CBD and Hayden Island, Delta Park.	Fully dedicated Bus Rapid Transit (BRT) guideway between Expo Center and a terminus at Turtle Place in downtown Vancouver.	Fully dedicated Bus Rapid Transit (BRT) guideway between Expo Center and a terminus Near McLoughlin Blvd. / I-5. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a connection to Hayden Island and Expo Center similar to 2013 LPA.	Fully dedicated Bus Rapid Transit (BRT) guideway between Expo Center and a terminus near McLoughlin/I-5 with station locations similar to 2013 CRC LPA project.	Fully dedicated LRT guideway between Expo Center and a new station at Hayden Island and fully dedicated Bus Rapid Transit (BRT) guideway between Hayden Island and Turtle Place.	Fully dedicated LRT guideway between Expo Center and a terminus near Turtle Place in downtown Vancouver.	Fully dedicated LRT guideway between Expo Center and a terminus near I-5/McLoughlin. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a connection to Hayden Island and Expo Center similar to 2013 LPA.	Fully dedicated LRT guideway between Expo Center and a terminus near I-5/Kiggins Bowl. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a connection to Hayden Island and Expo Center similar to 2013 LPA.	Fully dedicated LRT guideway between Expo Center and a terminus near I-5/McLoughlin. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a connection to Hayden Island and Expo Center similar to 2013 LPA.	Fully dedicated LRT guideway between Expo Center and a terminus near I-5/ Evergreen. Dedicated guideway on Vancouver segment will be adjacent to I-5 with a connection to Hayden Island and Expo station similar to 2013 LPA.
Proposed Initial Stations	Five(5) - same as 2013 CRC LPA alignment; I-5/McLoughlin, Washington/ Broadway & 15th, Washington/Broadway & Evergreen, Washington/5th, Hayden Island	None	Three (3) - Turtle Place, Hayden Island, Expo Center	Six (6) - Kiggins. E 33rd, McLoughlin Blvd., Evergreen Blvd., Hayden Island, Expo Center	Six (6) - similar to 2013 CRC LPA alignment; I-5/McLoughlin, McLoughlin & Washington St (SB)/16t & Broadway (NB), 12th & Washington (SB)/ 13th & Broadway (NB), Turtle Place, Hayden Island, Expo Center	Two (2) - Hayden Island, Expo Center	Two (2) - Hayden Island, Turtle Place	Three (3) I-5/McLoughlin, Evergreen, Hayden Island	Five (5) Kiggins Bowl, 33rd, I-5/McLoughlin, Evergreen, Hayden Island	Four (4) I-5/ McLoughlin, Evergreen, Waterfront, Hayden Island	Three (3) I-5/ Evergreen, Waterfront, Hayden Island
Park & Ride Locations (and Size)	Same as 2013 CRC LPA alignment locations and sizes; I-5/McLoughlin (1,910 spaces), Mill District (420 spaces), 5th/ Washington (570 spaces)	None	SR-14 Loop (570)	Kiggins (1,400), I-5/ McLoughlin (1,910), I-5/ Evergreen Blvd. (700)	Same as 2013 CRC LPA alignment locations and sizes; I-5/McLoughlin (1,910 spaces), Mill District. (420 spaces), 5th/ Washington (570 spaces)	SR-14 Loop (570)	SR-14 Loop (570)	I-5/McLoughlin (1,910 spaces), Evergreen (700 spaces)	Kiggins Bowl (1,400 spaces), I-5/ McLoughlin (1,910 spaces), Evergreen (700 spaces)	McLouglin / I-5 (1,910 spaces), Evergreen (700 spaces), SR-14 Loop (570 spaces)	I-5/Evergreen (700 spaces), SR-14 Loop (570 spaces)
Northern Terminus	Near I-5/McLoughlin	N/A	Turtle Place	Near I-5/Kiggins Bowl Station	Near I-5/McLoughlin	LRT = Hayden Island BRT = Turtle Place	Turtle Place	Near I-5/McLoughlin	Near I-5/Kiggins Bowl	Near I-5/McLoughlin	Near I-5/Evergreen
Transfer Location	No transfer required - extension of Yellow Line	N/A	Expo Center	Expo Center	Expo Center	Hayden Island	No transfer required - extension of Yellow Line	No transfer required - extension of Yellow Line	No transfer required - extension of Yellow Line	No transfer required - extension of Yellow Line	No transfer required - extension of Yellow Line
Initial Peak Frequency	Yellow Line: 7.5 min peak/15 min off-peak	Route 101: 15 min peak/30 min off-peak Route 105: 10 min peak only Route 190: 10 min peak only Route 60: 10 min peak/10 min off-peak	Hwy 99 BRT: 20 min peak/20 min off-peak Mill Plain/Fourth Plain BRT clockwise: 20 min peak/20 min off-peak Mill Plain/Fourth Plain BRT counterclockwise: 20 min peak/20 min off-peak Combined frequency on dedicated alignment: 6.6 min peak/6.6 min off-peak	Hwy 99 BRT: 20 min peak/20 min off-peak Mill Plain/Fourth Plain BRT clockwise: 20 min peak/20 min off-peak Mill Plain/Fourth Plain BRT counterclockwise: 20 min peak/20 min off-peak Frequency between Kiggins Bowl - Evergreen: 20 min peak/20 min off-peak Combined frequency on dedicated alignment south of Evergreen Station: 6.6 min peak/6.6 min off-peak	Hwy 99 BRT: 20 min peak/20 min off-peak Mill Plain/Fourth Plain BRT clockwise: 20 min peak/20 min off-peak Mill Plain/Fourth Plain BRT counterclockwise: 20 min peak/20 min off-peak Frequency between Kiggins Bowl - Evergreen: 20 min peak/20 min off-peak Combined frequency on dedicated alignment south of Evergreen Station: 6.6 min peak/6.6 min off-peak	Yellow Line:7.5 min peak/15 min off-peak Hwy 99 BRT: 20 min peak/20 min off-peak Mill Plain/Fourth Plain BRT clockwise: 20 min peak/20 min off-peak Mill Plain/Fourth Plain BRT counterclockwise: 20 min peak/20 min off-peak Frequency between Kiggins Bowl - Evergreen: 20 min peak/20 min off-peak Combined frequency on dedicated alignment south of Evergreen Station: 6.6 min peak/6.6 min off-peak	Yellow Line: 7.5 min peak/15 min off-peak	Yellow Line: 7.5 min peak/15 min off-peak	Yellow Line: 7.5 min peak/15 min off-peak	Yellow Line: 7.5 min peak/15 min off-peak	Yellow Line: 7.5 min peak/15 min off-peak
Peak Frequency Needed to Meet Demand	Yellow Line: 5 min	Route 101: 5 min Route 105: 5 min Route 190: 10 min	Same as initial frequencies	Hwy 99 BRT: 9 Min Mill Plain/Forth Plain BRT Counter Clockwise: 16 min	Same as initial frequencies	Yellow Line: 8 min BRT: Same as initial frequencies	Yellow Line: 7 min	Yellow Line: 5 min	Yellow Line: 4 min	Yellow Line: 5 min	Yellow Line: 6 min
Project Length	Northbound, 2.76 miles Southbound, 2.77 miles	N/A	1.67 miles	3.85 miles	Northbound 2.87 miles Southbound 2.89 miles	LRT - .45miles BRT - 1.23 miles	1.62 miles	2.45 miles	3.85 miles	2.45 miles	1.87 miles
Travel Time	Northbound 9.1 minutes, Southbound 8.2 minutes	N/A	3.98 min	7.65 min	Northbound 9.64 minutes, Southbound 9.51 minutes	LRT - 1.73 min BRT 2.95 min	3.82 minutes	5.76 minutes	8.53 minutes	6.39 minutes	4.68 minutes

Measure 1 Project Ridership	Project ridership will be developed as an output from the Regional Travel Demand Model. Project ridership is measured as the number of daily linked trips (complete trips from origin to destination including transfers) using any part of the proposed project. Project is defined as routes or portions of routes that include capital and/or service investments funded by the IBR Program. These may include infrastructure or service enhancements. The definition of a project trip will be clearly identified for each option to allow for a better understanding of what is being measured. For example, an option that includes the operation of a new HCT route in its own right-of-way that also allows for Express Bus use of the right-of-way would capture Project ridership from both the HCT route as well as the Express routes that benefit from the capital investment. Project trips will be summarized for both and combined to arrive at a total for the option.
Measure 2 New System Ridership	New system riders will be developed as an output from the Regional Travel Demand Model. This measure is calculated using total daily linked transit trips for each build option as compared to total daily linked transit trips from the no build option.
Measure 3 Station Activity & Mode of Access / Egress	Total boardings at each station will be developed as an output from the Regional Travel Demand Model. A boarding is defined as a single passenger who boards a transit vehicle. Boardings are counted each time a passenger boards a vehicle no matter how many vehicles they use to travel from their origin to their destination.
Measure 4 / Measure 5 / Measure 6 I-5 Columbia River Transit Crossings	Average weekday person trips crossing the Columbia River will be developed using select link and segment assignments as an output from the Regional Travel Demand Model. The specific location of this assignment will be on I-5 at the Columbia River crossing between the City of Vancouver and Hayden Island. Person trips will be reported by mode. A person trip is defined as a trip made by one person between an origin and destination. Measuring the average weekday crossings will illustrate the demand for the I-5 Columbia River crossing throughout the entire day and capture non-commute trips that may be missed by only looking at peak period demand. Project volumes of transit person trip origins and destinations, including park and rides, will be mapped.
Measure 7 Corridor Transit Trips	Transit person trips for the IBR corridor will be developed as an output from the Regional Travel Demand Model. This measure will be calculated as a comparison against the 2045 No Build condition. Transit person trips are a subset of all person trips, focusing only on those trips for which transit is the mode. Corridor transit trips are generally defined as trips that have a trip end within the project area including portions of Clark County, City of Vancouver, north Portland, and the Portland Central City (see Map 1). The transit trip productions will be summarized in aggregate and mapped at a Transportation Analysis Zone (TAZ) level for the region with the corridor outlined to show changes compared to the No Build option. Reported at the corridor level for totals and mapped at the TAZ level.
Measure 9 Park & Ride Demand	Total park and ride demand will be developed as an output from the Regional Travel Demand Model. This measure will be reported as average weekday vehicle demand at each lot location in the project corridor. Park and ride demand will also be mapped to show origins of users of each assumed parking facility. Reported and mapped at the station level.
Measure 12 Capital Cost	This measure is a quantitative analysis of the capital cost of the design option. The methodology for developing this measure is TBD based on available cost information at the time of developing the option summary.
Measure 13 Operating & Maintenance Costs	In coordination with TriMet and C-TRAN operations staff, operating costs will be estimated. Reported at the project level.

Numbers below represent raw data from high-level analysis of scenarios using a regional travel demand model. The model used to develop this information does not account for things such as displacements, more detailed transit operations and transit connectivity along with a number of other important considerations that will be developed in more detail through the use of other tools and analysis during the environmental process.

		Option A	Option B	Option C	Option D	Option E	Option F	Option G	Option H	Option I	Option J	Option L	Option M
		2045 No Build	2045 CRC Locally Preferred Alternative	Bus on Shoulder	Extend Vine(s) BRT on a Dedicated Guideway from Turtle Place to Expo Center	Dedicated BRT - Kiggins Bowl to Expo Center on an I-5 Adjacent Dedicated Guideway	Dedicated BRT - McLoughlin/I-5 to Expo Center in a Dedicated Guideway on the 2013 Transit Alignment	Extend Vine(s) BRT on a Dedicated Guideway from Turtle Place to Hayden Island, Extend Yellow Line from Expo Center to Hayden Island	LRT Extension from Expo Center to a terminus near Turtle Place	LRT Extension from Expo Center on an I-5 Adjacent Dedicated Guideway to a Terminus near McLoughlin/I-5	LRT Extension from Expo Center on an I-5 Adjacent Dedicated Guideway to a Terminus near Kiggins Bowl	LRT Extension from Expo Center on an I-5 Adjacent Dedicated Guideway to a Terminus Near McLoughlin/I-5 with Waterfront Station	LRT Extension from Expo Center on an I-5 Adjacent Dedicated Guideway to a Terminus Near Evergreen/I-5 with Waterfront Station
Measure 1 Project Ridership		N / A	26,600	N / A	7,400	15,300	20,600	10,300	12,100	21,100	24,700	24,600	15,900
Measure 2 New System Ridership		N / A	15,600	4,400	7,700	11,40	11,100	7,600	8,700	13,300	15,300	15,200	11,000
Measure 3 Station Activity & Mode of Access / Egress (Average Weekday Boardings + Alightings at New High Capacity Transit Stations)		N / A	29,100	N / A	12,300	23,250	27,800	13,400	12,300	22,000	26,300	26,300	16,300
Measure 4 Average Weekday I-5 Columbia River Crossings	Transit Crossings*	19,400	33,300	23,900	26,900	30,000	28,700	26,100	27,100	31,500	33,200	33,200	29,500
	Percentage of Total Crossings	8%	15%	11%	12%	13%	13%	12%	12%	14%	15%	15%	13%
Measure 5 Peak I-5 Columbia River Crossings (PM 1-Hour)	Transit Crossings*	3,600	5,600	4,300	4,700	5,200	5,000	4,700	4,800	5,400	5,700	5,600	5,100
	Percentage of Total Crossings	20%	29%	24%	26%	28%	27%	26%	26%	29%	30%	29%	27%
Measure 6 Peak I-5 Columbia River Crossings (PM 4-Hour)	Transit Crossings*	7,900	13,000	9,700	10,700	11,800	11,400	10,500	10,800	12,400	12,900	12,900	11,700
	Percentage of Total Crossings	12%	20%	16%	17%	19%	18%	17%	18%	20%	20%	20%	19%
Measure 7 Corridor Transit Ridership (Average Weekday)	Transit Riders	454,700	469,500	458,900	461,800	465,400	464,200	461,800	462,800	467,200	469,200	469,200	465,200
	Change vs. No Build	N / A	14,700	4,200	7,100	10,700	10,400	7,000	8,100	12,500	14,500	14,500	10,400
Measure 8 Station Mode of Access / Egress (Average Weekday)	Walk	N / A	(37%) 10,700	N / A	(33%) 4,100	(21%) 4,900	(29%) 8,200	(34%) 4,500	(39%) 4,800	(29%) 6,300	(32%) 8,300	(30%) 8,000	(37%) 6,000
	Transfer	N / A	(42%) 12,200	N / A	(64%) 7,900	(59%) 13,700	(58%) 16,200	(66%) 8,900	(52%) 6,400	(44%) 9,700	(33%) 8,800	(46%) 12,100	(49%) 8,000
	Park & Ride	N / A	(22%) 6,300	N / A	(2%) 300	(20%) 4,600	(13%) 3,500	-	(9%) 1,100	(27%) 6,000	(35%) 9,200	(24%) 6,200	(14%) 2,300
	Total	N / A	29,100	N / A	12,300	23,300	27,900	13,400	12,300	22,000	26,300	26, 300	16,300
Measure 9 Park & Ride Demand		N / A	3,060	N / A	620	4,330	2,850	620	620	2,780	4,460	3,470	1,400
Measure 12 Capital Cost		N / A	Medium	N / A	Low	Medium-Low	Low	Low	Medium-Low	Medium	High	Medium-High	Medium
Measure 13 Operating & Maintenance Costs**		N / A	High	Low	Low	Low	Low	Low	Medium	Medium-High	High	Medium-High	Medium

*Transit numbers presented in these tables assume that demand can be met by the service being provided. Given assumed headways and capacities in the network for these options, some of the demand generated by the model would not be served. Therefore, these numbers reflect more transit demand than could be accommodated based on service levels in the options.

When considering operations and maintenance costs **per rider, LRT is typically less expensive than BRT because LRT vehicles can carry more than 2.5 times as many passengers than BRT vehicles.

Appendix C. City of Portland and Metro Modeling Request and Program Response

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October 21, 2021

Greg Johnson, Program Administrator
Interstate Bridge Replacement Program

Re: October 21, 2021 Executive Steering Group Meeting

Dear Mr. Johnson:

Thank you for providing materials for the October 21st Executive Steering Group meeting. We appreciate the hard work you and the team have put into advancing the Interstate Bridge Replacement Program for the region. Given what a critical stage we are in and the items of concurrence proposed on the Agenda, we wanted to provide feedback in writing.

We recognize the goal to identify an IBRP Solution by early 2022. However, we are concerned about the design options analysis. As previously expressed, to get to the IBR Solution we cannot maintain the same highway and toll rate assumptions from the Columbia River Crossing – which is currently the case in the preliminary design options. To understand the effect of holistic design, analysis must include a review of the potential for high quality transit paired with congestion pricing at similar rates to other cities to effect transportation demand. This change in demand should inform bridge and highway design options. We urge the team to fully consider a holistic modeling and analysis approach, to ensure we can advance our shared goals as articulated in the Desired Outcomes, and to produce an evaluation supportive of the needs of decision-makers. Without this analysis, we do not feel we will have enough information to identify the best IBR solution nor answer the questions from our councils. ***We need to see analysis that looks at what is possible if we fully invest in transit capacity and access and integrate equitable congestion pricing.*** Our staff have previously shared the need for this modeling, analysis, and evaluation and remain prepared to engage and support the effort.

We want to be very clear about what we and our colleagues on the Metro Council and Portland City Council will need to make and support the necessary decisions to get us there:

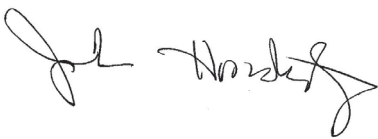
- **Design Options:** We support the technical work underway to develop and explore individual design options. However, we are concerned that under the current work plan elements will only be analyzed individually as if they do not influence each other (i.e., highway design, tolling, and transit options). Further, the modeling underway is critical to make informed decisions about the IBRP Solution and some significant base assumptions have not been adequately revisited. This will not produce the information we need to make decisions on major elements such as the number of lanes crossing the river. As mentioned above, we need to see analysis that looks at what is possible if we fully invest in transit capacity and access and integrate equitable congestion pricing.

- **Desired Outcomes:** we appreciate the collaboration between the IBR program and partners to gain consensus on Desired Outcomes. These statements are foundational to the work ahead and we look forward to incorporating any additional feedback provided by the Equity Advisory Group.
- **Screening Criteria:** we look forward to seeing how the screening criteria relate and support our ability to measure success against Desired Outcomes. We will need data from modeling, equity, and climate technical analysis to understand how options perform relative to screening criteria metrics and to identify tradeoffs.

In sum, to reach an IBRP Solution together we need to develop and agree on screening criteria, develop and agree on alternatives, analyze and measure the alternatives against the criteria, and conduct an inclusive public outreach effort - one that gives the public sufficient time to weigh in on the results of the analysis. And agency partners need sufficient time for briefings with elected officials and public boards.

This project is very important to meet our region's needs. We look forward to partnering to move the project forward.

Sincerely,



Jo Ann Hardesty
Commissioner, City of Portland



Lynn Peterson
President, Metro Council

Cc: John Willis
Frank Green
Ray Mabey
Chris Regan
Debra Nudelman
Millicent Williams
Johnell Bell

November 12, 2021

Dear Commissioner Hardesty and President Peterson,

Thank you for your letter dated October 21, 2021. The IBR team is committed to meeting the needs of our partners and diligently assessing each request with the utmost seriousness as we collectively work to find an IBR solution. We are committed to use the best practices and taking an innovative approach to studying, designing and building a multi-modal Interstate I-5 Bridge. This is a complex project that aims to meet the diverse needs of two busy Ports, commuters, shoppers, students and families across interstate lines.

We understand the important role modeling plays in helping our partners reach important decisions and we commit to working with you to strike the right balance to achieve this mutual goal. To this end, I have directed our team to do the following:

- Develop modeling that looks at what is possible if we fully optimize transit capacity and access and integrate equitable congestion pricing.
- Develop an analysis that considers more dense land use patterns in regard to affordable housing and denser employment options in the North Portland area.
- Provide data from modeling, equity, and climate technical analysis to understand how options perform relative to screening criteria metrics and to identify tradeoffs.
- Develop modeling scenarios that deliver the requested information in a timely manner for decision making by all partners

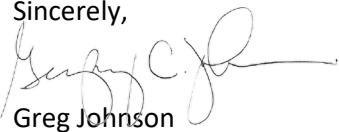
We understand from your letter that,

“...in order to reach an IBR Solution we need to develop and agree on screening criteria, develop and agree on alternatives, analyze and measure the alternatives against the criteria, and conduct an inclusive public outreach effort...”

We are committed to keeping equity and climate as a goal and a measure of our success on this project, with your input and partnership. We agree with this approach and our teams will continue to work with you to achieve the result that balances the collective needs and expectations of all partners.

Again, we appreciate your willingness to offer your ideas and recommendations, and we look forward to working with you to find a mutually agreeable path forward.

Sincerely,



Greg Johnson
Program Administrator

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Appendix D. Tolling Sensitivity Analysis [Pending]

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