

Attachment H

Preferred Alternative Evaluation Process and Results

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Attachment H. Preferred Alternative Evaluation Process and Results

Introduction

The following documents the process used to evaluate and recommend a preferred alternative for the Earthquake Ready Burnside Bridge (EQRB) Project. The recommendation was developed by the project's Community Task Force (CTF), with technical support from the project team, and input from agencies, other stakeholders and the public. The CTF recommendation was then reviewed by the public and other stakeholders, after which the CTF confirmed their recommendation, the Policy Group endorsed the recommendation on October 2, 2020, and on October 29, 2020, the Board of County Commissioners approved the recommendation. Key steps included:

- Develop Evaluation Criteria and Measures
- Refine the Range of Alternatives
- Develop Criteria Weighting
- Develop Rating Descriptions for assigning criteria scores
- Score the Alternatives
- CTF Recommend a Preferred Alternative
- Public and Stakeholders review and comment on the Recommended PA
- Policy Group and Board of County Commissioners approvals

The Community Task Force, representing community stakeholders in the immediate project area, played the central role in this process of making the initial PA recommendation. The following summarizes the process for each of the above steps or tasks, including roles played by the CTF, other project committees, agencies and the public.

Develop Evaluation Criteria and Measures

The CTF had the responsibility to identify the criteria and measures they would use to evaluate the Project alternatives and help inform their recommendation of a preferred alternative. As part of developing draft criteria, they first participated in workshops to discuss their communities' interests, values, concerns and goals related to the Project. This information informed the initial drafting of potential criteria that the CTF discussed and revised through several meetings. They also considered input from the participating agencies and the public before finally voting on and making a recommendation on the evaluation criteria. The EQRB Policy Group considered and accepted the recommendations of the CTF, followed by the Multnomah County Board of Commissioners passing a resolution on November 14, 2019 adopting the evaluation criteria to inform the selection of a preferred alternative. The criteria topics are listed below:

- Seismic Resiliency
- Community Quality of Life
- Equity and Environmental Justice
- Crime Reduction and Personal Safety
- Business and Economics

- Parks and Recreation Resources
- Historic Resources
- Visual and Aesthetics
- Natural Resources, Climate Change and Sustainability
- Pedestrians, Bicyclists and People with Disabilities
- Motor Vehicles, Freight and Emergency Vehicles
- Transit
- Fiscal Responsibility

After the criteria were approved, the CTF held meetings to consider the measures that would be used to implement those criteria. While the criteria express overall goals for specific issues (e.g., minimize temporary impacts to parks), the measures provide more specificity for applying the criteria (e.g., magnitude (square feet) of temporary parkland displacements). See Appendix 1 of this report for the complete text of the criteria and measures.

Refine the Range of Alternatives to be Evaluated

One of the early tasks of the Community Task Force was to become familiar with the range of alternatives that the EQRB Feasibility Study had recommended for further study prior to initiating an EIS. After introducing the alternatives recommended by the Feasibility Study, and information that had been gathered or developed since that Study, the project team asked the CTF to consider making revisions to the preliminary range of alternatives. Based on technical analysis and stakeholder input, the CTF recommended to dismiss the High, Fixed Bridge alternative because it could not meet the vertical navigation clearance requirements without causing extensive historic, neighborhood and community impacts, as well as adding significant construction costs, while not offering any meaningful benefits. In addition, the CTF recommended (a) adding a new Long-span Alternative to the range of bridge alternatives (based in part on public support for reducing impacts to parks), (b) further study of temporary bridge options to manage traffic during construction, and (c) specific cross sections for the build alternatives.

The Policy Group accepted the CTF's recommendation to dismiss the High Fixed Bridge alternative, add the Long-span Alternative and advance the traffic management options and cross sections related to the remaining build alternatives for further study. The Multnomah County Board of Commissioners passed a resolution to advance the range of alternatives, cross sections and traffic management options for further study during the environmental phase. In April/May 2020, the federal Cooperating Agencies concurred with the recommended range of alternatives to be studied in the DEIS.

The outcome of this additional analysis and committee actions was the recommendation to advance four permanent bridge alternatives and four construction traffic management options into the DEIS. For the alternatives evaluation purposes, each permanent bridge alternative was coupled with each of the traffic management options, resulting in 16 bridge alternative/construction option combinations to carry into the CTF's scoring and evaluation process. These alternatives and options are described in Chapter 2 of the Draft EIS.

Develop Criteria Weighting

In February 2020, the CTF developed weightings to reflect their prioritizations of the different evaluation criteria. The CTF deliberated on the relevant importance of each criterion and considered feedback from an on-line survey that allowed the public to rank different interests and values related to the criteria. Weightings

were determined by the CTF using a paired-comparison approach. Table 1 below shows the results of the CTF's weighting exercise. The CTF then voted on how to divide the total weight per topic among the criteria that evaluated long-term impacts/performance, versus those that evaluated short-term impacts/performance.

Table 1. CTF Weighting of the Criteria Groups

Group	Criteria Topics	WEIGHT
1	Seismic Resiliency	13
2	Community Quality of Life	7
3	Equity & Enviro. Justice	6.5
4	Crime Reduction & Personal Safety	1.5
5	Business and Economics	3.5
6	Park and Recreation Resources	5
7	Historic Resources	5.5
8	Visual and Aesthetics	3.5
9	Natural Resources, Climate Change & Sustainability	9.5
10	Peds, Bikes, & People with Disabilities	11
11	Motor Vehicles, Freight & Emerg. Vehicles	10
12	Transit	10
13	Fiscal Responsibility	5

Develop Rating Descriptions

When applying the measures, guidance was needed for determining what constituted a high, medium, or low score for each measure. The Rating Descriptions are the definitions of what constitutes a 5 (high), 3 (medium) or 1 (low) score. A score of 3 represented average or median performance; a 1 typically represented substantially worse than average/median performance; and a 5 typically represented notably better than average/median performance.

The project team developed the first draft of the Rating Descriptions and then invited participating and cooperating agencies as well as CTF and working group members to provide comment through two days of workshops and subsequent emails and other communication. This input led to a number of revisions to the draft Rating Descriptions before they were finalized.

Scoring

The project team assigned draft scores (5, 3 or 1) for each measure based on information and findings in the draft technical reports as well as other analysis. Scores were developed for each combination of the four build alternatives and the four construction traffic management options (for a total of 16 combinations). The City of Portland Technical Advisory Committee were invited to review and provide input on scoring.

The CTF criteria weightings were then applied to the raw scores for each measure, and the weighted scores for each measure were totaled for each alternative/option combination. These scores were then normalized (multiplied by a factor of 0.2) so that the highest possible score is equal to 100. These scores, as well as results of sensitivity tests, were provided to the CTF for their deliberation.

The scoring results are shown in Appendix 2 of this report.

CTF Recommendation

Based on scoring results and other considerations by the group, the CTF made its recommendation on a Preferred Alternative in June 2020. The nearly unanimous¹ recommendation was for the:

- Replacement Alternative with Long-span Approach
- No Temporary Bridge during construction

The Long-span Alternative scored 25 and 20 percent higher than the Retrofit Alternative and the Couch Extension Alternative, respectively, and just a little higher (about 4%) than the Short-span Alternative. In addition to the scoring, the CTF considered other factors. The primary advantages of the Long-span Alternative are:

- **Seismic Resiliency:** All the Build Alternatives would be seismically resilient but the Long-span would carry the least risk. It would place the fewest piers in the geologic hazard zones, particularly on the east side of the river. A large earthquake is expected to liquefy the soils on a portion of the western shoreline and on the entire eastern slope up to a depth of 80 feet or more, which would cause lateral spread (essentially a land/mudslide) that would exert massive lateral forces on any piers or other in-ground structures downslope. The other alternatives would include significant jet grouting to stabilize the slope but the Long-span would largely avoid the risk with a very long approach span that eliminates all but one pier in those zones. Other alternatives would have 5 to 8 piers or bents in the geologic hazard zones.
- **Parks and Recreation:** With the fewest columns under the bridge, the Long-span would open up space in Waterfront Park, create views to the river from the park space under the bridge, and improve personal security in the public spaces under the bridge. It would also protect the Burnside Skatepark that would otherwise be removed by the Retrofit Alternative and would have the shortest duration closure of the Eastbank Esplanade during construction.
- **Social Services and Equity:** Like the other Replacement Alternatives, it maintains the operations of the Portland Rescue Mission during construction (which would be temporarily displaced by the Retrofit Alternative) and it provides the greatest improvements to bicycle and pedestrian capacity, comfort and safety on the bridge.
- **Natural Resources:** The Long-span has the smallest permanent footprint in the river including avoiding placing any piers in shallow water habitat. All other alternatives would place a pier in shallow water habitat.
- **Cost:** The Long-span would be the lowest cost alternative.

Among the construction traffic management options, the Full Closure Option (No Temporary Bridge) scored higher than all of the Temporary Bridge options but only slightly higher than the Temporary Bridge that would accommodate all modes. While the Full Closure would cause more congestion and out of direction (longer) travel for some trips during construction, it has substantial advantages in other regards. The CTF expressed that the adverse travel impacts of the Full Closure Option were outweighed by its benefits including cost savings, shorter construction duration, and lower impacts on other resources. The primary advantages of the Full Closure option are:

- **Lower cost:** It would save about \$60-90 million in construction costs.

¹ One member did not fully endorse the Long-span Alternative, because of concerns about visual impacts, but did not express support for a different alternative.

- Seismic resilience: By shaving 1.5 years off the construction duration, the region would secure a seismically resilient crossing that much sooner.
- Shorter duration construction impacts: The duration of all construction-related impacts including noise, air emissions, disruption to travel, disruption to businesses and social services, would be shortened by about 1.5 years.
- Lower resource impacts: It would avoid the added physical impacts of a Temporary Bridge to Waterfront Park and the Burnside Skatepark, have less temporary impact on in-water habitat and flooding, preserve several mature trees that flank the river and the park, and have a shorter duration closure of the Eastbank Esplanade, Waterfront Park, and the Waterfront Trail.

Public and Stakeholder Review and CTF Confirmation

From January through September 2020, Multnomah County conducted the project’s second round of planned outreach and engagement activities with identified stakeholder groups and the general public for the project’s Environmental Review phase. Outreach activities during this time frame are summarized below in Table 2. The purpose of round 2 (R2) engagement was to inform the public of the status of the project and to seek input on the recommended Preferred Alternative.

Table 2. Round 2 Public Engagement Activities

70+	Briefings to agencies, individuals, and organizations
19	Diversity, Equity and Inclusion organizations reached
23,000+	Unique visitors to the online open house and survey
6,800+	Survey responses
6	In-language translations of the online open house and materials
38	Social media posts and advertisements
2,578	E-newsletter recipients
3	Project videos
2	News releases and e-newsletters
2	Banners over the Burnside Bridge
147	Businesses contacted via phone canvassing
41,901	Flyers mailed
7	Media interviews

Key Findings of the Outreach

Broad input was received encompassing a large range of perspectives. Key findings included:

- Strong public support for the Replacement Long-span as the recommended Preferred Bridge Alternative
- Strong public support for the No Temporary Bridge recommendation (to fully close the crossing during construction)

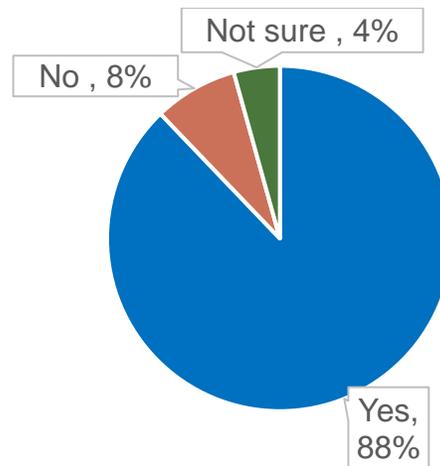
- High levels of engagement among the skating community who support the preservation of the Burnside Skatepark
- High levels of support for the recommendations among Diversity, Equity and Inclusion (DEI) respondents (very similar to the level of support from all survey respondents)

After the CTF made its PA recommendation in June 2020, the Project solicited specific input on that recommendation from multiple stakeholder groups, agencies, and the public through online open houses, an online survey, and web meetings. The survey asked several questions about the recommendation, with the two core questions asking whether people agreed with the Preferred Alternative recommendation. Those questions and the results are summarized below. In addition to the total results, the results for the more than 300 self-identified DEI respondents are also shown. The agreement rate among both populations is very high. Additional information from the survey and all of the R2 engagement can be found in the EQRB Round 2 Engagement Summary (2020).

QUESTION 1: Is the recommended Replacement Long Span option the right choice for an earthquake-ready Burnside Bridge?

88% of the 6,796 total respondents for this question agreed that the Replacement Long Span was the right choice for an earthquake-ready Burnside Bridge. (88% of the DEI respondents also agreed with this recommendation).

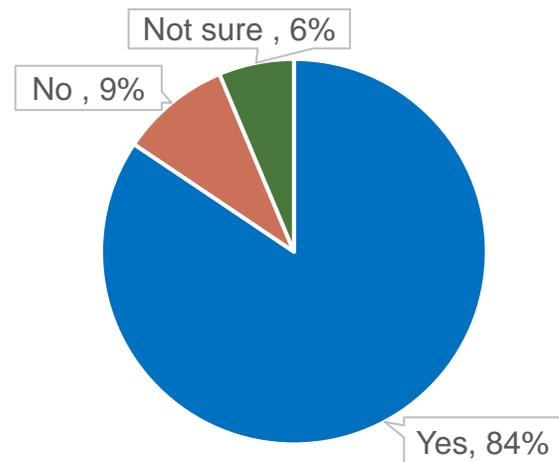
8% did not agree and 4% were not sure.



QUESTION 3: Is a full bridge closure the right choice to manage traffic during construction?

84% of the 5,111 total respondents for this question agreed that a full bridge closure is the right choice to manage traffic during construction. (85% of the DEI respondents agreed with this recommendation).

9% did not agree and 6% were not sure.



The public feedback was shared with the CTF, who then voted on September 21, 2020, to confirm their original Preferred Alternative recommendation.

Policy Committee and Board of County Commissioners Approvals

After the CTF confirmed their recommendations for the PA, it was then considered and unanimously endorsed by the voting members of the project's Policy Group on October 2, 2020. The Multnomah County Board of Commissioners then considered the recommendation and adopted a resolution on October 29, 2020 expressing approval for the recommended PA.

Next Steps

The public and agencies will have additional opportunities to comment on the preferred alternative during the DEIS comment period in early 2021. Following the DEIS comment period, the City Council of Portland will consider a resolution to endorse a preferred alternative, and Metro will initiate a process to amend the Regional Transportation Plan to include the EQRB preferred alternative before the NEPA Record of Decision is signed in late 2021.

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Appendix 1: Evaluation Criteria and Measures

The following lists all 13 criteria groups, the criteria within them, and the measures used to implement the criteria.

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Evaluation Criteria and Measures

Introduction

In June 2019, the Earthquake Ready Burnside Bridge (EQRB) Community Task Force (CTF) recommended draft evaluation criteria topics, based on information available at the time. Since then, at their July and August meetings, the CTF reviewed the draft criteria as well as draft measures for implementing them, and tentatively approved criteria and measures on 8/19/19.

The project team has since gathered input on the CTF’s draft criteria and measures from other agency staff and stakeholders. At the CTF’s 10/21/19 meeting, the input on the criteria was reviewed and approved for recommendation to the Policy Group. The Policy Group approved the criteria at their 10/28/19 meeting. The CTF then reviewed recommended changes to the measures from agency staff and stakeholders at their 12/2/19 meeting. The criteria and measures will be used to help select a Preferred Alternative during the preparation of the Draft EIS.

Notes on Measures and Scoring:

- **Net Effect and Mitigation:** Many criteria refer to “minimizing” impacts while others refer to “maximizing” benefits, whereas a few refer to “net benefits” (a combination of adverse and beneficial effects). For any criterion where the DEIS analysis reveals a meaningful “net effect” this can be included in the way that Measures are applied, even where “net effect” is not specifically mentioned in the criterion. When rating the alternatives, the scoring will consider the net effect, including the potential for, feasibility of, and level of commitment to mitigation that would avoid or reduce adverse impacts.
- **Tradeoffs across Criteria:** Minimizing adverse impacts to resources evaluated in one criterion could result in increasing adverse impacts to resources evaluated in another criterion. Each Measure for each criterion will be evaluated independently of the other criteria, so that where there are tradeoffs or conflicts, the combined effect across different criteria will be reflected in the total score for a given alternative.
- While some of the evaluation criteria are intended to measure the extent to which alternatives would implement certain regulatory objectives, the evaluation criteria are not intended to replace or supersede any relevant regulatory requirements. It is assumed that any selected alternative would need to comply with relevant regulatory requirements.



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Criteria Groups

1. Seismic Resiliency

Long Term	<p>1a.1 Maximize confidence in post-earthquake crossing operability and reparability.</p> <ul style="list-style-type: none"> • Measure: Qualitative assessment for how much reliance on original components is needed for seismic resiliency. • Measure: Ability to implement reliable seismic performance mechanisms and devices.
	<p>1a.2 Maximize ability for all modes to use the crossing post-earthquake.</p> <ul style="list-style-type: none"> • Measure: Ability to accommodate over-dimensional vehicles and loads. • Measure: Ability to simultaneously accommodate all travel modes.
	<p>1a.3 Minimize risk that adjacent buildings could damage or block the bridge after a major earthquake, and minimize risk that crossing construction could lessen the seismic resilience of adjacent buildings.</p> <ul style="list-style-type: none"> • Measure: Quantify level of risk exposure from adjacent buildings, weighting those alternatives that are at risk due to URM exposure from adjacent buildings at a higher risk.
During Const.	<p>1b.1 Minimize delay in achieving a seismically resilient crossing.</p> <ul style="list-style-type: none"> • Measure: Estimated duration of construction



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2. Community Quality of Life (includes Indirect Land Use Impacts and Community Resources)

Long Term	<p>2a.1 Minimize long-term noise and light/shadow impacts.</p> <ul style="list-style-type: none"> • <i>Measure: Qualitative assessment of light/shadow impacts due to changes in roadway alignments relative to land uses (e.g., will new alignment direct headlights at or away from residential uses; will it change sunlight/shadow on residential or community spaces?).</i> • <i>Measure: Assessment of noise impacts due to changes in roadway alignments relative to land uses.</i> <p>2a.2 Minimize long-term impacts to community facilities and events under and near the bridge (e.g., Skatepark, Saturday Market, park festivals, parades, organized runs, etc.).</p> <ul style="list-style-type: none"> • <i>Measure: Number of community facilities impacted, as well as magnitude and character of those impacts (Note: metrics for these two measures may include duration of impact, distance to temporary relocation, number of people affected, or other metrics as appropriate to the facility, event, and impact).</i> • <i>Measure: Number of community events impacted, as well as magnitude and character of those impacts. (See note for above Measure).</i>
During Const.	<p>2b.1 Minimize temporary impacts to community facilities and events under and near the bridge.</p> <ul style="list-style-type: none"> • <i>Measure: Number of community facilities impacted, as well as magnitude and duration of those impacts. (Note: metrics for these two measures may include duration of impact, distance to temporary relocation, number of people affected, or other metrics as appropriate to the facility, event, and impact).</i> • <i>Measure: Number of community events impacted, as well as magnitude and duration of those impacts. (See note for above Measure).</i>



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3. Equity and Environmental Justice (includes Social Services)

Long Term

- 3a.1 Minimize displacements of emergency beds.**
 - *Measure: Shelter beds displaced.*
- 3a.2 Maintain social service providers' long-term ability to provide current level of service and potential for enhancement.**
 - *Measure: Social service provider functions (not including beds) displaced (measured in square feet displaced, number of clients served by displaced function, and availability and quality of replacement functions; quality of replacement includes ability to replace the function within the affected service provider, transit access, walking distance/time and dependence of remaining services on being proximate to the services that would be displaced).*
 - *Measure: Permanent access impacts (number and significance), and availability and quality of alternative access (distance/convenience to alternative access).*
 - *Measure: Impact on ability of existing services to be enhanced, compared to No-build.*
- 3a.3 Avoid disproportionate adverse impacts to vulnerable and Environmental Justice communities.**
 - *Measure: Based on qualitative analysis of impacts to low income and minority populations as measured in the analysis of compliance with the Exec Order on Environmental Justice.*
 - *Measure: Based on qualitative analysis of impacts to other vulnerable populations as identified during outreach conducted for the Diversity, Equity, and Inclusion program outreach.*



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During Const.	<p>3b.1 Minimize temporary impacts to social service providers.</p> <ul style="list-style-type: none"> • Measure: Social service provider functions temporarily displaced (measured in square feet displaced, number of clients served by displaced function, and availability and quality of temporary replacement functions; quality of replacement includes ability to replace the function within the social service provider affected, transit travel time, walking distance/time and dependence of remaining services on being proximate to the services that would be temporarily displaced). • Measure: Temporary access impacts (number, duration, and significance), and availability and quality of alternative access (walking distance/time to alternative locations). <p>3b.2 Avoid temporary disproportionate adverse impacts to vulnerable and Environmental Justice communities.</p> <ul style="list-style-type: none"> • Measure: Based on qualitative analysis of impacts to low income and minority populations as measured in the analysis of compliance with the Exec Order on Environmental Justice. • Measure: Based on qualitative analysis of impacts to other vulnerable populations as identified during outreach conducted for the Diversity, Equity, and Inclusion program outreach. <p>3b.3 Ensure that design and construction approach allow ample opportunities for DBE firms to be involved in the construction/contracting process.</p> <ul style="list-style-type: none"> • Measure: Approximate percentage of the construction work that could potentially be done by DBE (small) firms, relative to DBE goals.
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4. Crime Reduction and Personal Safety

Long Term	<p>4a.1 Maximize personal safety and crime reduction by following principles of Crime Prevention Through Environmental Design (CPTED).</p> <ul style="list-style-type: none"> • Measure: Qualitative assessment of consistency with the CPTED principle of Natural Surveillance. • Measure: Ability of design to allow activated spaces and improved sightlines beneath the bridge.
During Const.	N/A



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5. Business and Economics

Long Term	<p>5a.1 Minimize business displacements and permanent access impacts.</p> <ul style="list-style-type: none"> • Measure: Number of business displacements (measured in number of businesses, square feet, or number of employees). • Measure: Qualitative assessment of permanent access impacts that do not result in full displacement of business (includes number, duration and magnitude of access impacts, and availability and quality of alternative access). <p>5a.2 Support redevelopment potential consistent with local plans.</p> <ul style="list-style-type: none"> • Measure: Qualitative assessment of the extent to which newly vacant land is able to support uses that are consistent with local plans (vs creating landlocked parcels or supporting changes in use that are not consistent with local plans).
During Const.	<p>5b.1 Minimize temporary access impacts to businesses.</p> <ul style="list-style-type: none"> • Measure: Qualitative assessment of short-term access impacts (includes number, duration and magnitude of short-term access impact, and availability and quality of alternative access). <p>5b.2 Minimize temporary regional economic impacts.</p> <ul style="list-style-type: none"> • Measure: Estimated impact of construction on regional economic indicators (e.g., jobs, income, and cost of delay). • Measure: Estimated temporary direct and indirect impacts to navigation during construction. <p>5b.3 Minimize loss of economic benefits (includes businesses and charities) from temporary impacts to major community events under and near the bridge.</p> <ul style="list-style-type: none"> • Measure: Estimated loss of participation (# of people) in community events that would be impacted; if possible/reliable, estimate the financial impact such as total loss of spending/earnings, or provide qualitative assessment).



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6. Parks and Recreation Resources

Long Term	<p>6a.1 Minimize park displacements and adverse functionality impacts (include impacts to river recreation).</p> <ul style="list-style-type: none"> • <i>Measure: Assessment of adverse impacts to parks and recreation (e.g., magnitude (square feet) and qualitative assessment of impacts on functions, events, and access (for maintenance, events, etc.).</i> • <i>Measure: Qualitative assessment of beneficial impacts (e.g., access, functions, potential to increase Parks revenues, increase resiliency, etc.).</i>
During Const.	<p>6b.1 Minimize temporary impacts to parks.</p> <ul style="list-style-type: none"> • <i>Measure: Magnitude (square feet) of temporary parkland displacements.</i> • <i>Measure: Assessment of temporary impacts to parks (e.g., magnitude (square feet) and qualitative assessment of impacts on functions, events, access (for maintenance, events, etc.).</i> • <i>Measure: Impact of displaced events on Parks revenue.</i>

7. Historic Resources

Long Term	<p>7a.1 Minimize historic resource impacts.</p> <ul style="list-style-type: none"> • <i>Measure: Number of resources displaced or damaged (include National Register resources and districts and local historic landmarks and districts) and magnitude/character of impacts.</i> • <i>Measure: Number of resources with access, and context, and indirect impacts, and magnitude/character of impacts.</i> • <i>Measure: Character and magnitude of impacts to historic districts.</i>
During Const.	<p>7b.1 Minimize temporary impacts to historic resources.</p> <ul style="list-style-type: none"> • <i>Measure: Qualitative assessment of construction-related (direct and indirect) impacts to historic resources.</i>



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8. Visual and Aesthetics

Long Term	<p>8a.1 Minimize adverse impacts to existing views and view corridors.</p> <ul style="list-style-type: none"> • Measure: Qualitative assessment of potential impacts on existing views and view corridors (consider historic districts’ design criteria and City-designated view corridors). • Measure: Qualitative assessment of potential compatibility/conflicts with existing urban design features. <p>8a.2 Maximize-aesthetic experience for all users approaching, on, and under the bridge.</p> <ul style="list-style-type: none"> • Measure: Qualitative assessment of visual and aesthetic opportunities (based on conceptual designs) for users on and under the bridge during both daytime and nighttime hours. Consider opportunities related to scale, forms and materials, viewing, wayfinding, transitions to and from public spaces, lighting/shade/shadows, and activating areas for public use (consider Portland design guidelines). <p>8a.3 Create opportunity for a crossing that provides an iconic/demonstrative visual experience.</p> <ul style="list-style-type: none"> • Measure: Qualitative assessment of potential to develop gateways, new views, processional experiences, and demonstrative and/or iconic visual experiences of and on the bridge.
During Const.	N/A



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9. Natural Resources, Climate Change and Sustainability

Long Term	<p>9a.1 Minimize impacts to water quality and flooding.</p> <ul style="list-style-type: none"> Measure: Estimated changes in treatment of stormwater generated from impervious surface compared to No-build. Measure: Estimated long-term changes in flood levels. Measure: Estimated area of disturbance of potentially contaminated river substrate. <p>9a.2 Minimize impacts to fish and wildlife.</p> <ul style="list-style-type: none"> Measure: Estimated changes to aquatic habitat (due to change in pier area below OHW and above the critical scour depth - differentiate habitat quality: higher quality (<20' deep) and lower quality (>20' deep).
During Const.	<p>9b.1 Minimize temporary impacts to water quality and flooding.</p> <ul style="list-style-type: none"> Measure: Estimated area of disturbance in proximity to the Willamette River. Measure: Estimated temporary change in flood levels during construction (reasonable worst-case during construction). <p>9b.2 Minimize temporary impacts to air quality, greenhouse gas emissions and carbon sequestration.</p> <ul style="list-style-type: none"> Measure: Qualitative assessment of effects on emissions due to traffic diversions/detours. Measure: Change in carbon sequestration (based on change in tree cover). <p>9b.3 Minimize temporary impacts to fish and wildlife.</p> <ul style="list-style-type: none"> Measure: Extent of pile driving. Measure: Size of cofferdams and extent of temporary fill in the river. <p>9b.4 Minimize resource consumption and waste production during construction.</p> <ul style="list-style-type: none"> Measure: (TBD, based on information provided by Greenroads analysis).



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10. Pedestrians, Bicyclists and People with Disabilities (ADA – Americans with Disabilities Act)

Long Term	<p>10a.1 Maximize City’s Vision Zero principles for safety and comfort for bicyclists, pedestrians, and other low-impact vehicles (e.g., scooters, skateboards).</p> <ul style="list-style-type: none"> • Measure: Width of bike path, potential for future bicycle climbing lanes, and safety at intersections and crossings. • Measure: Width and slope of pedestrian and ADA facilities on bridge. • Measure: Quality of protection from motor vehicles. <p>10a.2 Maximize access/connectivity for bicyclists and other low-impact vehicles.</p> <ul style="list-style-type: none"> • Measure: How well the bike facility on the bridge connects to existing and planned bike networks. • Measure: Quality and quantity of accesses to transit stops and other destinations. <p>10a.3 Maximize access/connectivity for pedestrians and ADA.</p> <ul style="list-style-type: none"> • Measure: How well the pedestrian and ADA facilities on the bridge connect to existing and planned pedestrian and ADA networks. • Measure: How well the pedestrian and ADA facilities on the bridge connects to social services and other frequent destinations for users. • Measure: Quality and quantity of accesses to transit stops and other destinations.
During Const.	<p>10b.1 Minimize temporary travel time and access/connectivity impacts to bicyclists.</p> <ul style="list-style-type: none"> • Measure: Extent of out-of-direction travel, or travel time change, for bicyclists during construction (reflect information, if available, on origins and destinations of trips using the Burnside Bridge; may require quantitative or qualitative assessment and professional-judgment; possibly consider the duration of temporary changes in access/connectivity). <p>10b.2 Minimize temporary travel time and access/connectivity impacts to pedestrians.</p> <ul style="list-style-type: none"> • Measure: Extent of out-of-direction travel, or travel time change, for ADA users and pedestrians during construction (reflect information, if available, on origins and destinations of trips using the Burnside Bridge; may require quantitative or qualitative assessment and professional judgment; possibly consider the duration of temporary changes in access/connectivity). <p>10b.3 Maximize City’s Vision Zero principles for safety and comfort for bicyclists, pedestrians, and other low-impact vehicles (e.g., scooters, skateboards).</p> <ul style="list-style-type: none"> • Measure: Quality of protection of bicycle and pedestrian paths from other modes. • Measure: Width of temporary bicycle and pedestrian paths. • Measure: Qualitative safety assessment of temporary ADA and pedestrian facilities. • Measure: Quality and quantity of accesses to transit connections.



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11. Motor Vehicles, Freight and Emergency Vehicles

Long Term	<p>11a.1 Maximize safety for motor vehicles and freight.</p> <ul style="list-style-type: none"> Measure: Qualitative assessment of motor vehicle safety based on design (factors including but not limited to: elements that affect operating speed such as lane width and other cross section details, curve radii, as well as potential conflicts with other modes, sideswipes, property damage, and others) <p>11a.2 Maximize emergency service operations and responsiveness.</p> <ul style="list-style-type: none"> Measure: Qualitative assessment of emergency service responsiveness independent of a major earthquake (factors including but not limited to: lane width and other cross section details, curve radii, potential conflicts with other modes, and others)
During Const.	<p>11b.1 Minimize temporary access and travel time impacts to freight and emergency vehicles.</p> <ul style="list-style-type: none"> Measure: Travel time for motor vehicles from point X to point Y (quantitative if travel model provides reliable estimate). Measure: Duration of temporary closure/capacity reduction. Measure: Quantify number and duration of temporary road closures due to construction. <p>11b.2 Minimize temporary safety, impacts to motor vehicles, freight, and emergency vehicles.</p> <ul style="list-style-type: none"> Measure: Qualitative assessment of the safety of construction phase detours and reroutes relative to existing conditions. <p>11b.3 Minimize temporary access and travel time impacts to motor vehicles.</p> <ul style="list-style-type: none"> Measure: Travel time for motor vehicles from point X to point Y (quantitative travel model provides reliable estimate). Measure: Duration of temporary closure/capacity reduction. Measure: Quantify number and duration of temporary road closures due to construction.



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12. Transit

Long Term	<p>12a.1 Maximize Streetcar readiness.</p> <ul style="list-style-type: none"> Measure: Qualitative assessment of impacts to future Streetcar and bus operations (factors including but not limited to: may include lane width and other cross section details, curve radii, potential conflict with other modes, and others).
	<p>12a.2 Maximize bus accessibility.</p> <ul style="list-style-type: none"> Measure: Qualitative scale considering presence of dedicated bus pullouts, transit stops, transfer points to other modes (LRT).
	<p>12a.3 Minimize transit collision vulnerability.</p> <ul style="list-style-type: none"> Measure: Qualitative assessment for whether the bridge options create differing intersecting geometries and lane width variations, and how those may increase or decrease the likelihood of motor vehicle collisions with bus, and northbound and southbound Streetcars on MLK and Grand Avenues. (factors including but not limited to: may include lane width, curve radii, intersection cross section, potential for conflicts between modes, anticipated weave motions, and likelihood of sideswipe collisions).
During Const.	<p>12b.1 Minimize temporary impacts to transit access, safety, travel times, and ridership.</p> <ul style="list-style-type: none"> Measure: Frequency and duration of LRT, Streetcar, and bus disruptions.

13. Fiscal Responsibility

Long Term	<p>13a.1 Minimize total Project cost.</p> <ul style="list-style-type: none"> Measure: Estimated total project cost (including design, right-of-way acquisition, construction, temporary bridge, mitigation, utility relocation, etc.).
	<p>13a.2 Minimize long-term maintenance needs/costs.</p> <ul style="list-style-type: none"> Measure: Number and cost of major maintenance projects expected over life of the bridge, including the necessary bridge repairs following a major earthquake.
During Const.	N/A



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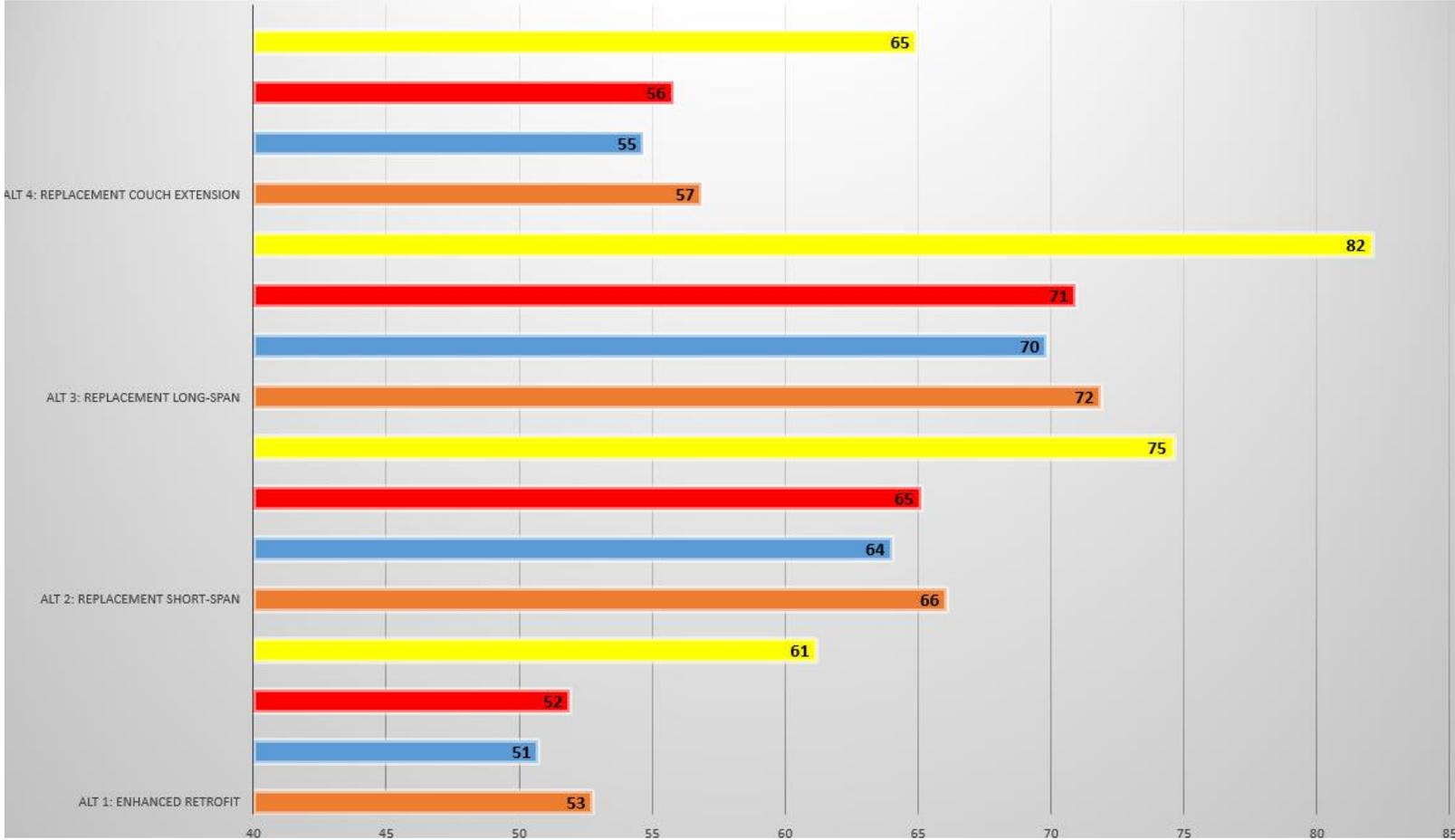
Topics for evaluation/decision-making in later project phases:

While developing the draft criteria groups, the CTF identified a number of topics that cannot be adequately or fully evaluated with the level of design and information that will be available during the DEIS phase. These are listed below with the recommendation that they be applied in later project phases such as during design or construction:

Seismic Resilience	Include equipment on bridge to create additional resilient functions after a major earthquake
Personal Safety	Maintain a safe construction site Implement design that minimizes risk of attempted suicide from the structure
Ped, ADA, Bicyclists	Maximize pedestrian/bicycle aesthetic experience on the bridge
Sustainability	Waste reduction and use of sustainable materials in design and construction. Energy sustainability in design
Navigation	Bridge lighting and signals do not adversely affect navigation safety
Aesthetics	Bridge lighting does not increase night sky impacts Provide a structure that instills a sense of community pride

Appendix 2: Scoring Results

Figure 1. Preliminary NEPA Evaluation Scoring Results – CTF Weightings (May 7, 2020)



LEGEND
Yellow = with No Temporary Bridge (full closure during construction)
Red = with Temporary Bridge for Buses, Bicyclists and Pedestrians
Blue = with Temporary Bridge for Bicyclists and Pedestrians Only
Orange = with Temporary Bridge for All Modes

Figure 2. Alternatives Evaluation Scoring Results by Alternative

