

**Build a Better Bridge Faster  
White Paper  
Provided to Governors Christine O. Gregoire and John A. Kitzhaber, M.D.  
By the members of the  
CRC Urban Design Advisory Group  
March 11, 2011**

**G-001-001**

With the report of the Independent Review Panel and the follow-up Bridge Review Panel Report (BRP), the local and state governments of Oregon and Washington, the CRC project, and the public are at a critical juncture in the development of the new I-5 bridge across the Columbia River. Work on the open-web box girder design (previously called the Locally Preferred Alternative--LPA) has been halted, and three reasonable alternatives have been recommended by 16 world class bridge designers on the Bridge Review Panel.

Although positioned by the departments of transportation and CRC staff as a false choice between a bridge that stays on schedule and a bridge that requires more planning, the decision facing the Governors is actually "what bridge will overall be the most easily funded, affordable, environmentally friendly and buildable? Of the three bridge designs presented by the Bridge Review Panel, the Tied-Arch design is the most expensive of the three and has little public support, so it will not be considered in this paper. The choice is between the cable-stayed bridge type and the composite deck-truss bridge type.

Based on all the analysis of criteria that follows, the best bridge option is also the one that offers the two states a landmark: The cable-stayed bridge.



To be clear, this decision does not require any more planning; the decision can and should be based on existing information that supports the specific criteria the Governors directed be used to evaluate the three bridge alternatives.

**G-001-001**

Since this letter was written, the Independent Review Panel and Bridge Expert Review Panel reports have been published and thoroughly reviewed and considered. Chapter 2 of the FEIS outlines what the CRC project has done with these recommendations and how they have affected the project. See below for responses to specific comments.

G-001-001

Subsequently, at the Portland City Club on Friday, March 4, Governor Kitzhaber amended the list, stating the current criteria as:

1. Affordability
2. Staying on schedule
3. Environmental commitments
4. Builds on resources to date
5. Least impact on the river
6. Encourages bids from multiple contractors
7. Aesthetics
8. Best path forward

**1. Affordability**

G-001-002

The Bridge Review Panel report showed that all three of their bridge types saved money over the original design. The cable-stayed saved \$40 million. If the Truss is built in a straight alignment and unadorned it would save another \$50 million. The DOTs recommendation seems to equate that the cheapest base cost possible is the only affordable option. A true comparison of the options shows little difference, making both bridge options affordable.

Comparative Cost

Cable-Stayed	\$390,000,000
Deck-truss w/straight alignment	\$340,000,000
Deck-truss w/ curved alignment, 12 piers + Add-ons	\$375,000,000 (UDAG Est.)

The CRC staff has acknowledged that aesthetics will be added onto the deck-truss design at a later point. For purposes of more equitable comparison, let's suppose it will take at least \$15 million to make the improvements and keep the DOTs' promise to spend extra on design.

If the Truss bridge type is shifted back to the original LPA curved alignment, as alluded to in the draft recommendation (*WDOT/ODOT KEY FINDINGS AND RECOMMENDATION RELATED TO BRIDGE TYPE, p. 7 "depending on the alignment" and p. 8, rendering showing 12 piers*), it will add an extra 10% length and 10% more piers in the water. This can be expected to increase the Truss option costs by 10%, an estimated additional \$34 million, plus any extra engineering and construction costs for complexities from working on a curved bridge.

**G-001-002**

Further analysis of these bridge types clarified greater differences in costs than assumed by the Bridge Expert Review Panel and the notably higher risks with the cable-stayed and deck truss bridges.

G-001-002

The bottom line: **both alternates save money over the rejected LPA design; the likely final cost difference is very small, making both options affordable.**

## 2. Staying on schedule

G-001-003

First, the Columbia River Crossing is not on schedule now. Design has been stopped. The EIS continues to be delayed even without the change in bridge type. Public confidence in the CRC's technical staff and leadership is low given the failure of their LPA bridge design, increasing study costs, and delayed schedule. At the same time, it is critical to look at the elements that keep a project on schedule.

**In a memo dated March 11, 2011, Bridge Review Panel chair Tom Warne, stated: "Most of the environmental work that has been done to date on this project is of use and value regardless of the bridge type selected.**

**"Some additional environmental work would be required for both bridge types due to their different configurations.** Even though the composite deck truss has fewer piers in the water (10 versus 12) and would require a revisit of the Biological Assessment and the maybe the issuance of a new Biological Opinion. The cable-stayed bridge would require both of those actions as well. In either case this is not about starting over but rather augmenting or amending what has already been done.

"As of last summer there was substantial environmental work yet to be done based on the report of the IRP. **The IRP found that the project was not as close to a ROD as they said they were during the public testimony given during that review.** Note that their original date of January 2011 for the ROD has now slipped to later this year. This delay had nothing to do with the outcome of the BRP report but was **related to the substantial work that remained to be done as noted by the IRP.** Given where the project was on the environmental process last year the January 2011 date was unrealistic and the IRP pointed that out." (Tom Warne email 1, March 11, 2011)

**Senator Murray said in a speech January 19, 2011, in Vancouver that successful project delivery on a timely basis requires:**

- **Public consensus** sufficient to motivate our state legislators and congressional delegations
- A regional commitment to a **finance plan** including tolls and state funding of \$450 million from both Washington and Oregon. (The December 2010 status report to FTA says less than 5% of the non-Section 5309 New Starts funds are committed to the project.)
- **Public support for Light Rail**, including long term operating cost commitments by local agencies.
- **Avoidance of delays from legal challenges** to the FEIS / ROD or to other project decisions.

## G-001-003

Since UDAG prepared this letter, consensus has developed among the project partners and both governors around the composite deck truss bridge, which is now part of the locally preferred alternative. Through a NEPA re-evaluation, FTA and FHWA have considered the impacts of this bridge type and have concluded that it fits within the design and impact parameters evaluated in the DEIS. It does not require a supplemental DEIS. See Chapter 2 of the FEIS for a discussion of both of these topics. Through discussions with federal resource agencies it has also been determined that the composite deck truss bridge is covered by the existing Biological Opinion.



**Public Consensus**

The fastest and surest path to start the bridge project is the cable-stayed option. The deck-truss option has much less consensus, making it vulnerable to further legal delay and riskier for funding. To date, the following groups and organizations supporting a process to move the project forward quickly among those supporting the cable-stayed bridge type over a deck-truss bridge type: Hayden Island Manufactured Home Community, Hayden Island Livability Project, Hayden Island HiNooN, Bicycle Transportation Alliance, Architecture Foundation of Oregon, and the American Institute of Architects chapters in both Portland and Seattle.

**Finance Plan and Light Rail Support**

Key federal, state, and regional funding is dependent on strong public support. The cable-stayed option has much broader support, including elected leaders on both sides of the river, neighborhood associations, bike advocates, and more. Public support from Vancouver and Clark County is especially important since their public officials seem reluctant to fully support tolls and light rail costs. Members of the Vancouver City Council, in a meeting February 14, 2011, indicated encouraging interest in the cable-stayed option.

**Legal Challenges and Delays**

Key to meeting schedule requirements is making sure the permitting rules are being followed properly. Ignoring these rules to attempt to fast-track the deck-truss decision will likely cause delays due to legal challenges.

**NEPA**

As none of the three current bridge options on straight alignments have gone through the NEPA evaluation process, any option will likely need additional NEPA evaluation, so the cable-stayed option will not add delays that other options won't. A NEPA "evaluation must be done for all reasonable alternatives" before selecting any one option, according to NEPA requirements. (*A Citizens Guide to NEPA, p. 16*)

If the deck-truss option is chosen before this evaluation is done, the decision is highly vulnerable to legal challenges, severely delaying the start of the project. Furthermore, a Supplemental EIS is needed to document the environmental considerations in the choice of a preferred alternative given the three new options. (*A Citizens Guide to NEPA, p. 20*) Selecting an option because it is cheaper or re-uses more existing information does not satisfy NEPA. Environmental analysis, documentation, disclosure and public review is necessary for decisions involving significantly different major alternatives such as those identified by the BRP—regardless of the option that is ultimately chosen.

G-001-004

**FAA delays for Pearson Field**

Every bridge option impacts the Pearson Airfield to some degree, but all result in safety improvements over the existing 1-5 lift bridge towers. However, air space safety requirements for PDX flights already prevent Pearson Field flight conflicts with the Interstate Bridge, making this a non-issue for all three bridge options. (*Columbia River Crossing Bridge Review Panel Final Report, pp. 81-82*)

The cable-stayed option is a safety improvement over existing Interstate towers currently allowed by FAA; the Interstate towers have never had an airplane/bridge accident. The BRP report says: "the cable-stayed tower and arch rib... will be substantial improvements to the operational safety of Pearson Field as compared to the existing bridge with its vertical lift towers." (*Bridge Review Panel Final Report, p. 82 & Figure 37*) and FAA "documentation... and coordination with the FAA... do not represent insurmountable barriers." (*Bridge Review Panel Final Report, p. 81*) These points were repeatedly reinforced by Tom Warne during his public presentations in Portland and Vancouver following release of the report.

At their March 8, 2011, meeting, the Vancouver Aviation Advisory Committee, which, in concert with the airport manager and the Federal Aviation Administration, participates in the assessment of proposed structures that might impact Pearson Field's airspace, reviewed the concepts for the three bridge designs and stated that, "if the designs remain as shown, which is within or lower than the dimensional envelope currently in place for the existing Interstate bridge, that any of the three structures will provide a better operating environment for departing and arriving aircraft than currently exists."

With strong regional consensus, the FAA/ Pearson Airfield issue is not a significant risk for the cable-stayed option and could be resolved in a couple of months of the locally preferred option's selection. The CRC draft flow chart shows an initial FAA Determination within 40 working days of submission of the evaluation form. If necessary, further FAA review may take up to 60 days for a decision that would be issued for public comment. (*FAA Hazard Determination process, as distributed at February 18, 2011, CRC Project Sponsors Council meeting*)

The concern that there would be more liability for public agencies if the cable-stayed bridge is built near Pearson Airfield seems unjustified. The airport and pilots who use the field have testified publically that any of the new bridges will improve safety compared to the existing bridge towers, and the existing towers do not appear to be an active liability issue for the agencies. (*Vancouver Aviation Advisory Committee letter to Vancouver City Council, March 8, 2011*)

**3. Environmental/Community Commitments**

G-001-005

As none the three new bridge alternatives have gone through the NEPA process, the choice of any alternative will likely need supplemental evaluation. As a result, at least some environmental decisions will need to be properly reconsidered. (*A Citizens Guide to NEPA, p. 16*)

**G-001-004**

The cable-stayed bridge may well be permissible, but it would have a greater impact on aviation safety and risk than the composite deck truss. It would be more costly and would not reduce overall environmental impacts.

**G-001-005**

See response above to comment G-001-003 regarding NEPA review and why no supplemental DEIS is required for the composite truss bridge.

G-001-006

Fortunately, the three BRP alternatives all have a smaller footprint and fewer piers in the water than the LPA used in the Biological Assessment. Earlier work can be used and applied to this new review speeding the environmental process needed for all bridge types.

In their recommendations the DOTs have neglected to respond to the BRP's supplemental recommendation about replacement of the existing I-5 North Portland Harbor, (*Bridge Review Panel Final Report, p. 14*) so commitments related to the Marine Drive and Hayden Island Interchanges need not change.

The DOTs have told elected officials that it is not possible to have a cable-stayed bridge and keep the Hayden Island Ramps configuration. This is not accurate. There are straightforward ways to hook up the road lanes from a cable-stayed bridge to the already agreed-to Hayden Island Ramps Design, known as Concept D. There would need to be some minor reworking of ramps because there are differences with the bike path and light rail alignments. These are easily solvable minor design details. The Island community has pledged to work diligently with the CRC engineers to facilitate fast integration of any design details that need to be worked out to integrate the cable-stayed bridge into the community.

In an email dated March 11, 2011, BRP Chair Tom Warne stated, "The CRC project engineers did all of the geometric work on the straight alignment on behalf of the BRP. It was a considerable effort and they produced the plan sheets found in the BRP report. That work refined the alignment and, **according to the CRC engineers who did this work, the connections at either end of the bridge were not a problem and that they met all of the AASHTO design standards in terms of curvature**, etc. The BRP was surprised by statements made by Don Wagner about all the problems with the straight alignment after our report was published since this was a point of significant discussion and review between the BRP and the CRC staff to make sure that a straighter alignment was possible and acceptable. Since it was the CRC engineers who came up with the new alignment it is puzzling why they are so critical of it today." (*Tom Warne email, March 11, 2011*)



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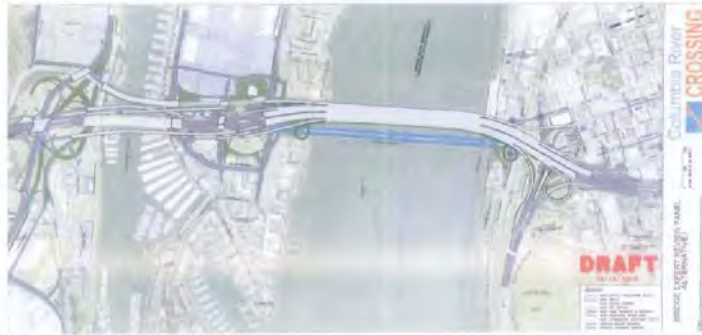
### G-001-006

It is unknown whether the BO would have needed revisions with the cable-stayed or deck truss bridges as these bridge types were not selected. NMFS confirmed that revisions were not necessary to cover the selected bridge type - the composite deck truss.

For cost savings purposes, the project has elected to keep the North Portland Harbor bridges rather than replace them.



G-001-006



If the recommendation by the Bridge Review Panel to replace the Harbor Bridge (*Bridge Review Panel Final Report, p. 103*) was recognized, then there would need to be additional Island ramp reconfiguration. That would have likely impacted the Jantzen Super Center parking lot.

Without consideration of the Bridge Review Panel recommendation on the Harbor Bridge, Marine Drive and Hayden Island Interchanges, it is straightforward to hook up the cable-stayed bridge to the existing design of the ramps and absolutely keep the agreement with the Hayden Island Community and the Jantzen Beach Super Center.

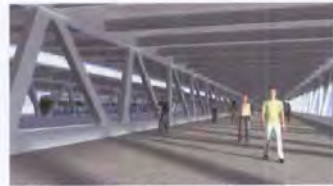
**Better for Bikes and Pedestrians**

G-001-007

A commitment the CRC has made to the community is the bike facility will be World-Class. (*CRC Pedestrian and Bicycle Advisory Committee (PBAC) memorandum to Columbia River Crossing Task Force, June 17, 2008*) The bike community expects that commitment to be honored. The cable-stayed bridge type honors that commitment the best.



Cable-stayed bike pedestrian path



Deck-truss bike pedestrian path

The Truss bridge and the original open web design may at first glance seem like the same bike/ped experience. They are not. The open web cross-section allowed the bikes and pedestrian corridor to be

**G-001-007**

As discussed in the FEIS, a replacement bridge over the Columbia River will include dramatically improved bicycle and pedestrian facilities by providing:

- A new 16- to 20-foot multi-use pathway over the Columbia River completely separated from vehicle traffic due to the design of the Stacked Transit Highway Bridge;
- Protections from traffic noise, exhaust, and debris for pedestrians and bicyclists on the river crossing;
- More direct connections on each side of the river, consisting of stairs, ramps, and elevators, as well as pathway extensions that connect in with existing or planned facilities and public transit; and
- Many new or enhanced sidewalks, bike lanes, and crosswalks near the bridge and throughout the project area.

Since the publication of the DEIS in May 2008, and the selection of the LPA in July 2008, the CRC project team has continued to work with the Pedestrian and Bicycle Advisory Committee and project partners to refine route and facility design. The updated design, as described in Chapter 2 (Section 2.2) of the FEIS, is the outcome of a long collaboration process.

The Governors led a decision-making process regarding bridge type that resulted in the selection of the composite truss bridge type. The selection was understood to be driven largely by constructability and cost issues. The bike/pedestrian pathway remains largely unchanged in this design from that of the open web box. Designers will work to incorporate overlooks/belvederes into the truss design.

G-001-007

closer to the road edge and the natural light. The Open Web design had belvederes in the middle of the bridge to allow a way for people to get out from underneath the bridge and enjoy the view. The composite deck-truss will be in shadow most the day due to the 28 foot roadway overhang on both sides.

While the Truss bike cell would provide protection from the rain while crossing the river, the cover doesn't compensate for the feeling of danger that concerns a lot of existing bike riders and pedestrian users. The Bicycle Transportation Alliance withdrew support for the underneath bike cell proposed by the Open Web over security concerns. They also show no support for the Truss bridge type.

**The cable-stayed bridge does provide a world class bicycle and pedestrian experience.**

The elevated pathway on the cable-stayed bridge will provide full 360-degree views all across the bridge. Though there will be noise from the traffic lanes on each side, the cable-stayed path will be safer for users because they will be visible from the road ways and not isolated below deck. It will serve the local bicycle and pedestrian needs as well as draw tourists. Rain exposure is really not a consideration, as it will exist on both sides of the river, anyway.

The cable-stayed bridge is favored by the Bicycle Transportation Alliance and Cycle Oregon over the deck-truss bridge type (*Bicycle Transportation Alliance letter to Governor John Kitzhaber, February 23, 2011*). **The cable-stayed bridge best keeps the commitment to the community for a world-class bike and pedestrian facility.**

#### **Seismic Performance**

G-001-008

While not addressed in the DOTs' recommendation, the Bridge Review Panel made it abundantly clear that the deck-truss bridge type has a higher seismic (predicted behavior) risk factor/risk ranking than the cable-stayed (*Bridge Review Panel Final Report, page 87*), surely an essential consideration in this location.

#### **4. Builds on resources to date**

G-001-009

Since all of the environmental work that has been done to date applies to the bridge that has a larger footprint in the water than either the cable-stayed or the deck-truss both of these designs should be able to re-use the previous work in an equal manner.

In his email of March 11, 2011, Tom Warne confirmed: "... there has been over \$100 million spent on this project to date. It would be a mistake to believe that this total is focused solely on the bridge structure itself. **Much of this amount has been spent on related environmental issues that must be addressed in order to prepare a complete and comprehensive Final EIS and not specifically on the bridge.**

He further stated: "Most of the \$100 million will be useful regardless of the bridge type selected. Some additional expenditure will be required for any of the new bridge types being considered. This

#### **G-001-008**

While the Bridge Review Panel report does rank the cable-stayed bridge as a "1" and the composite deck truss as a "2", this is simply a comparative risk analysis, and seismic predicted behavior was just one of 15 factors ranked. It is not clear from the chart if the composite deck truss would actually be more vulnerable to seismic events than the cable-stayed bridge. The composite deck truss bridge would be built to current seismic standards.

#### **G-001-009**

Mr. Warne is correct that much of the environmental work done through 2010 continued to be applicable to the project even after the bridge type changed.

Also much of the concern regarding in-water work impacts on salmon is not just about the area of the footprint. The more important issue that affects impacts to salmon and other species is the duration and type of in-water work that would occur. Please see the response above to comment G-001-003 regarding NEPA compliance.



G-001-009

would have to be examined in greater detail and discussions held with resource agencies and their management to determine just what the impact would be. Absent those discussions (particularly at the executive level of these organizations) **it would be premature to predict how much additional time and money would be required for either bridge type.**" (Tom Warne email 1, March 11, 2011)

**5. Least impact on the river**

G-001-010

With fewer pylons in the water (3 vs. 10-12) and with longer spans (830 ft vs. 500 ft) the cable-stayed bridge provides **safer commercial and private marine traffic** on the river compared to the deck-truss.

As can be seen in the following table, both the cable-stayed and the deck-truss have a smaller footprint than the original open web LPA design. The cable-stayed bridge has a significant advantage of fewer piers in the water.

In-Water Impacts	# of Piers	Footprint
Open-web LPA Design	12	58,500
Cable-Stayed	3	52,000
Deck-truss- Curved	12	52,800
Deck-truss-Straight	10	44,000

With footprint compacted into only three piers (vs. 10-12), the cable-stayed bridge most likely requires fewer temporary construction piles, reducing pile-driving noise and vibration impacts on fish and nearby neighborhoods.



Cable-stayed's three piers



Deck-truss' 12 piers

For comparison and background information, the CRC's previous LPA design with 12 piers required 2 near-shore cofferdams and 1224 temporary piles. Pile-driving would go on over 7 months per year for 6 years per the BiologicalOpinion. (Endangered Species Act Section 7 Biological Opinion, January 29, 2011, p. 6) Impact-driving would be limited to one hour per day, up to 142 days total so it would be a few days per month. Vibratory pile driving could go on any time during the year.

CRC staff has claimed that the cable-stayed bridge will require additional permanent pile supports in the sensitive shallow water near shore. However, the highly-qualified BRP, with much more cable-

**G-001-010**

Additional analysis of these bridge types identified more in-water work for the cable-stayed bridge than was assumed by the Bridge Expert Review Panel. The Panel also did not include any fish biologists or other environmental experts so the Panel's report assumptions regarding environmental impacts were not based on review or opinions by relevant experts.

The project partners developed consensus to move forward with the Selected Alternative in the ROD, which includes the composite deck truss bridge.

G-001-010

stayed bridge design and construction experience than the DOT staffs, has confirmed that in-water supports are NOT needed. Their report says, "Due to the low span-to-depth ratio...the end spans can be larger than would be expected with the standard cable-stayed bridges and the hold-down piers shifted apart from the last stays. The optimum ratio needs to be developed in the final design stages." (*Bridge Review Panel Final Report, p. 34*)

#### 6. Encourages bids from multiple contractors

G-001-011

The Chair of the BRP, Tom Warne, indicated in his public presentation in Portland on February 17, 2011, that a cable-stayed bridge of this significance and size will easily attract several highly qualified bidders. Further, he indicated that any of the bridge types would not be likely to receive more than 3 or 4 bids because of the high cost of bid preparation. He noted that potential bidders will not spend the money if the number of competitors is too high. Note that TriMet only pre-qualified 3 bidders for the new cable-stayed Willamette River Transit Bridge, while the record shows 7 bidders responded to the Willamette River Transit Bridge RFQ. (*TriMet Resolution No. 10-12-65, authorizing construction contract for WRTB*)

#### 7. Aesthetics

G-001-012

As mentioned in the BRP report, the "challenge facing the CRC team is to advance an option that offers aesthetic value, as determined by the communities, while still achieving the cost objectives of the project." It has been repeatedly noted in public forums that the public does not want another stripped down Glen Jackson-style bridge. From the onset of the Urban Design Advisory Group process, CRC leaders stated repeatedly their commitment was to building a better bridge than the I-205 crossing. As noted in the BRP Final Report (p. 47), a cable-stayed bridge would be "perceived as a landmark by virtue of its basic form and scale." This is highly compatible with the stated objective of building a bridge that would be appropriate for crossing the Columbia River, a natural resource with deep meaning for regional history and identity.

A landmark bridge, best achieved by the above deck structure of cable-stayed option, will make future development of the Vancouver and Hayden Island waterfronts more desirable, as often cited by the local communities adjacent to the river in Oregon and Washington. This bridge type is a more context sensitive design, making historical reference to our vital maritime past while also reinforcing our regional livability and sustainability planning goals.

There are practical as well as aesthetic reasons for embracing this design. With the cable-stayed option, the towers are visible from a distance as you approach the crossing. This marks the river and places one in a broader context to one's surroundings. The towers offer a strong visual impact which naturally helps with wayfinding. With the above-deck orientation for bicycles and pedestrians, the cable-stayed bridge solution is safer and also presents a more desirable opportunity for public use and special events such as the Seattle to Portland Classic, one of the top ten recreational bike rides in the country, not to mention events like Bridge Pedal, Sunday Parkways, Cycle Oregon, Portland Marathon, etc. As the Bicycle Transportation Alliance has stated, world-class bike facilities would not include a below deck orientation.

#### G-001-011

This appears to be an accurate account of the presentation.

#### G-001-012

The bridge type selected by the two Governors will still provide opportunities for place-making and compelling aesthetics. The two Governors chose the composite truss design because it is a more appropriate bridge type for the engineering context, because it will not interfere with Pearson Airfield or Portland International Airport, and because it saves many millions of dollars.

As discussed in the FEIS, a replacement bridge over the Columbia River will include dramatically improved bicycle and pedestrian facilities by providing:

- A new 16- to 20-foot multi-use pathway over the Columbia River completely separated from vehicle traffic due to the design of the Stacked Transit Highway Bridge, and
- Protections from traffic noise, exhaust, and debris for pedestrians and bicyclists on the river crossing.

While there are some who would prefer the unobstructed views of an "above deck" bike facility, others prefer the under deck option which buffers riders from vehicular noise and spray, and protects riders from rain.



G-001-012

The architectural design of the bridge should stem from the engineered response to the inherent structural needs particular to the bridge type. Of the two options, the cable-stayed bridge offers the best opportunity to maximize structural efficiency and exploit the natural advantages of the various cable-stayed bridge elements, in other words, funders will 'get more design bang for the buck'. The long, thin horizontal bridge deck punctuated by three slender towers is an efficient and elegant design solution in contrast to the more massive piers of the Deck-Truss. The cable-stayed bridge will appear to float above the river, and with its more sculpted forms and delicate cables, create an ever-changing display of dappled light and shadow. This is a more holistic approach to design and doesn't rely on superfluous add-ons to try to "mitigate" or "improve" the design of the more ubiquitous deck-truss option.

As the expert Bridge Review Panel stated, "... it would be very difficult to develop a composite deck-truss or any other girder bridge to a form that could readily be perceived as having a similar signature appearance to the cable-stayed and arch alternatives. As a result, it is difficult to present any truss bridge as an architectural solution that would be appropriate for this special crossing of the Columbia River." (*Bridge Review Panel Final Report*, p. 69)

Perhaps most important, as has already been observed, this design helps galvanize public support for the project. Selecting the right design now will bring the region together in a way that will finally make the bridge a reality.

#### 8. Best path forward

G-001-013

The best path forward is to build the bridge that creates the largest buy-in for the project, with the least legal vulnerability, at an affordable cost.

The fastest and surest path to start the bridge project is the cable-stayed bridge type.

The deck-truss option has much less consensus, making it vulnerable to further legal delay and riskier for funding. The reluctant support (due to the fears of delay) for the Truss design is not the kind of support that will motivate the region or the congressional delegations.

Key federal funding is dependent on strong support, a message reinforced by the BRP chair and Senator Murray. The cable-stayed option has much broader support, including from elected leaders, neighborhood associations near the river, CRC Advisory groups, and bike advocates. This support is based on the excitement of a good design, and the ability of the cable-stayed option to meet all of the stated criteria in an overall better way.

The Truss bridge is likely to have little long-term public support. Without support from affected neighborhoods, costly and lengthy project delays will occur. While the Truss bridge is a simpler construction, it is visually indistinguishable from the former, flawed Open Web LPA design. Likewise, the apparent short-term benefit of lower cost is negated if efforts to maintain the current curved alignment are retained.

#### G-001-013

The project is currently planning to use the Design-Build process for bridge construction and potentially for construction of other elements.

The cable-stayed bridge was considered but not advanced, as discussed in Chapter 2 of the FEIS. This UDAG comment has outlined some reasons that it should have been selected. Each is addressed as follows:

- it would not speed the beginning of construction compared to the composite truss type;
- it's not clear that it has more support for funding;
- it provides no obvious advantage in terms of duration of construction;
- it would not have lower permitting and environment risks; and
- it would not be less expensive to construct than the composite truss.



The Bridge Review Panel experts were correct in stating that significant cost-savings to the project can be achieved overall without compromising the bridge structure itself. There is only one chance to build the structure over the river, while other project components can be phased or redesigned.

Use Design/Build Process

According to BRP chair, Tom Warne, the best path forward is for a change of approach to a Design/Build process for the bridge and adjacent interchanges on each shoreline. The cable-stayed construction period can easily fit the schedule through a Design/Build process, a construction process any of the three options can use. Further, a design/build process for the bridge would eliminate many of the design, procurement, and construction risk differences claimed between the deck-truss and cable-stayed options. This process has recently been or is currently being utilized for projects including the Tacoma Narrows Bridge, the Alaska Viaduct replacement and the new 620 Floating Bridge in Seattle.

Cable-stayed Bridge: Build a Better Bridge. Faster.

- It's faster to begin construction with broader support for funding.
- It's possible to build on time.
- It has fewer permitting and environmental risks.
- All options need FAA review but issues can be resolved with broad support.
- Is affordable.
- Cable-stayed is better for commerce and livability.
- Cable-stayed Bridge is the best path forward.

The Bridge Review Panel Final Report is correct in stating, "the new Columbia River crossing represents the most dramatic river structure in the northwest and may be one of the last major crossings ever to be built along the West Coast."

Citations throughout this white paper are from the following attached documents:

- Washington Department of Transportation and Oregon Department of Transportation KEY FINDINGS AND RECOMMENDATION RELATED TO BRIDGE TYPE, February 25, 2011 - [http://www.columbiarivercrossing.org/FileLibrary/GeneralProjectDocs/DOTs\\_Draft%20Recommendation.pdf](http://www.columbiarivercrossing.org/FileLibrary/GeneralProjectDocs/DOTs_Draft%20Recommendation.pdf)
- Columbia River Crossing Bridge Review Panel Final Report, February 3, 2011 - [http://www.columbiarivercrossing.com/FileLibrary/GeneralProjectDocs/BRP\\_Report.pdf](http://www.columbiarivercrossing.com/FileLibrary/GeneralProjectDocs/BRP_Report.pdf)
- Council on environmental quality, executive office of the president: A Citizen's Guide to the NEPA - [http://ceq.hss.doe.gov/nepa/Citizens\\_Guide\\_Dec07.pdf](http://ceq.hss.doe.gov/nepa/Citizens_Guide_Dec07.pdf)
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