

Submitted to the Joint Oregon Washington I-5 Committee
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<https://cityobservatory.org/risky-bridges-deja-vu-all-over-again/>

Needed: An independent review of technical mistakes that could cost billions

The proposed [multi-billion dollar Interstate Bridge Replacement](#) is shaping up a repeat of the Columbia River Crossing (CRC) fiasco because the two states haven't done anything to independently verify the work of their staff.

Oregon DOT and WSDOT are repeating all the key mistakes that caused the Columbia River Crossing (CRC) to fail a decade ago:

- Designing an oversized project
- Kicking the can down the road on hard financial decisions
- Ignoring engineering and regulatory warning signs
- Not developing a plan to break the project into affordable phases
- Rebuilding too many closely spaced interchanges.
- Not getting Coast Guard approval of bridge height until after spending tens of millions designing a bridge

Critically, the Interstate Bridge Replacement project is **not** being independently reviewed to determine whether its engineering design, traffic plans, travel projections, revenue forecasts and budget are reasonable. In the case of the CRC, a series of outside experts were called in, and spotted problems that were created or ignored by state DOT staff. Project officials for the IBR project are making the same errors, but haven't been subjected to any real scrutiny from disinterested, outside experts.

In the case of the Columbia River Crossing, **four different times**, outside experts were called in to independently examine the work of the Oregon and Washington transportation departments:

- 2010: Independent Review Panel
- 2011: Bridge Review Panel
- 2010: Bain Traffic & Revenue Forecast Review
- 2013: CDM Smith Investment Grade Analysis

Every time, they found costly errors that could have potentially doomed the project that needed to be fixed. The two states spent millions of dollars on these independent reviews (\$1.2 million

for the two independent review panels, and another \$1.5 million for independent traffic and toll revenue projections). These expenditures were money well-spent because they avoided even costlier mistakes. (We detail each of these reports below).

Say you're looking at buying a used car. While the owner assures you it's in good shape, you'd definitely want to check things out. You'd be well-advised to spend a few bucks and get an independent mechanic to look it over, and you'd probably spend a few bucks getting a "CarFax" report to see the vehicle's history. Same thing about buying a house: you'd want to have a thorough inspection by an impartial expert.

Oregon and Washington leaders would be well-served by taking similarly prudent steps to check out the validity of the work being done for the Interstate Bridge Replacement project. The history of the project clearly shows why: The failed Columbia River Crossing collapsed in significant part because of errors and sloppy work done by the two state departments of transportation. A decade ago, reviews by independent experts hired by the two states show that the traffic and financial projects were flawed, the schedule was unreliable, the chosen bridge design was "unbuildable;" plus the initial design for the bridge was too low to qualify for Coast Guard approval. Independent experts also found that the project was making overly optimistic financial assumptions, failed to create a reasonable contingency plan (including phasing the project), and was perpetuating traffic problems (and driving up costs) by not removing one or more interchanges.

Before Oregon and Washington move forward with the latest version of the CRC, now called the "Interstate Bridge Replacement," (IBR) this project, which current estimates say could cost as much as \$5 billion (and which past history has shown to be a significant [understatement](#)), they would be wise to hire some independent experts to check out the quality of the work done. So far, [decision-makers are being asked to simply trust the two agencies](#), something that led to the epic failure of the Columbia River Crossing a decade ago. As we pointed out, ODOT pre-construction cost estimates for major highway projects have routinely been way too low, with the typical project ending up costing more than [twice as much as its initial estimate](#).

The proposed IBR would be more expensive, more complex, and more financially risky than any other project ODOT has ever undertaken. The likelihood of errors is high, and the necessity for quality control checks on ODOT and WSDOT is critical. And recall, these are agencies that have repeatedly made false claims about key project issues, for example, [falsely saying](#) that if the two states didn't move forward with the project they'd have to repay the federal government the \$140 million spent planning the failed Columbia River Crossing.

1. Independent Review Panel findings: "unbuildable," "not accurate", "problematic", "seriously suspect"

In 2010, Governors John Kitzhaber and Christine Gregoire appointed an [Independent Review Panel](#) (IRP) to audit every aspect of the Columbia River Crossing project. The panel spent months studying the project, meeting with project staff, carefully studied the "open web" bridge structure the two DOTs designed, and in their report declared it "unbuildable" and directed that a

new design be selected. The Panel of experts from around the country looked at every aspect of the project's design, management, and financing had issued a [317-page report](#)

INDEPENDENT REVIEW PANEL
Columbia River Crossing



PO Box 11351
Olympia, WA 98508

July 27, 2010

Governor Christine O. Gregoire
Office of the Governor
PO Box 40002
Olympia, WA 98504-0002

Governor Theodore R. Kulongoski
160 State Capitol
900 Court Street
Salem, Oregon 97301-4047

Columbia River Crossing Independent Review Panel Final Report

The Independent Review Panel warned that the project finances were tenuous and uncertain, just as they are with today's IBR. The panel of national experts warned:

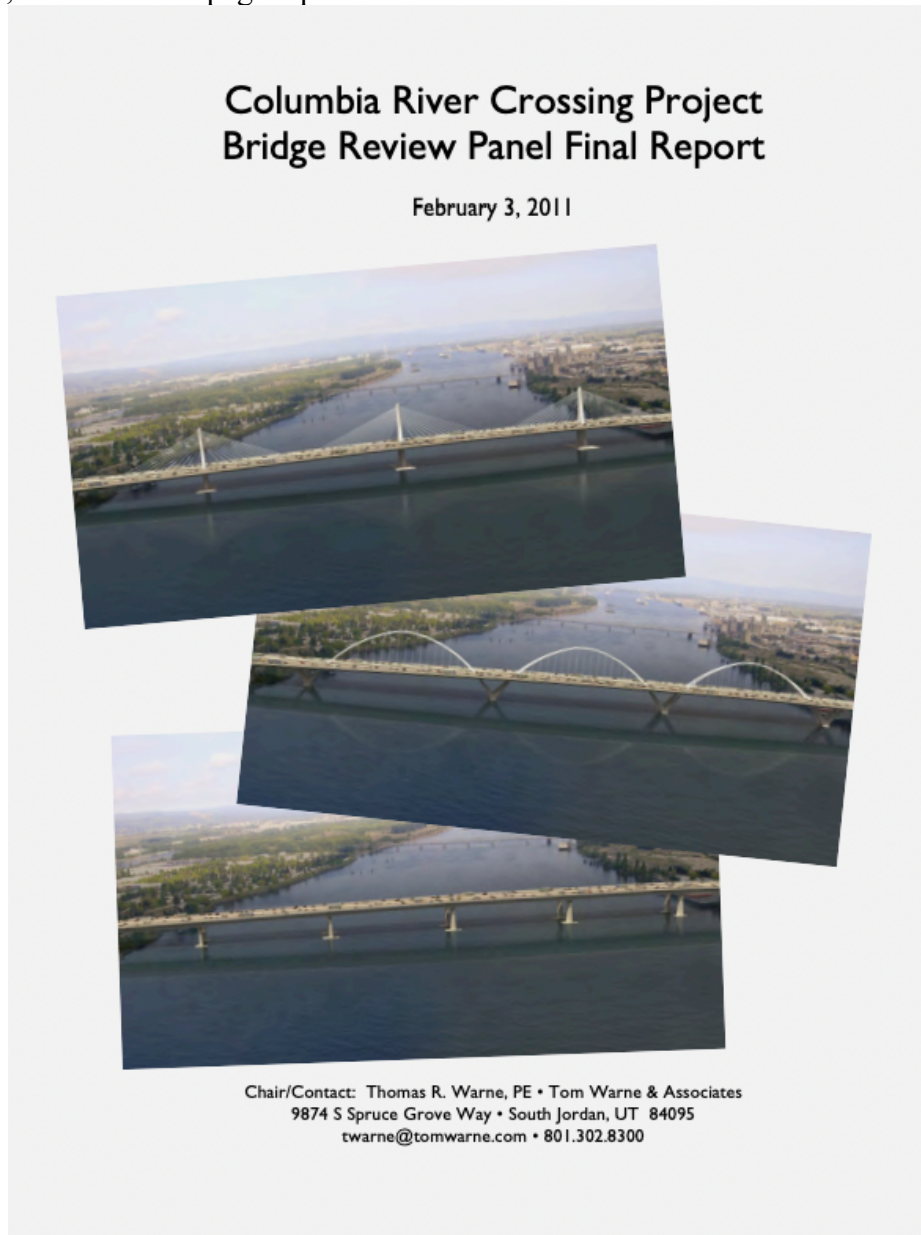
“As currently envisioned development of the CRC is counting on full funding from multiple sources, including tolling which will be new to the community and unproven in its revenue generating potential. Failure to achieve one or more major sources of funding can make the entire project unmanageable or unaffordable in the present.”

The IRP had harsh criticism of the sketchy and inconsistent project budget and schedule. Their report flagged numerous problems, saying the budget and schedule had:

- “significant risk”
- “not accurate enough”
- “the reliability of the final outputs for cost and schedule are seriously suspect”
- “the credibility of the cost basis is . . . problematic”

2. Bridge Review Panel: A totally new bridge design

One direct outcome of the 2010 IRP was a determination that the proposed "open-web" design for the river crossing was "unbuildable." That led the two governors to appoint another panel, the [bridge review panel](#), to come up with an alternative design. That panel, also chaired by Tom Warne, issued its 146-page report in



2011.

The Bridge Review Panel described themselves and their work as follows:

This 16 member panel was comprised of national and international bridge experts, plus key representatives from federal, state and local partner transportation agencies. The mission of the BRP was to examine the current design and potential bridge types given current project constraints and including scenarios where constraints are relaxed or

modified. Issues such as meeting current environmental project commitments, sound technical and engineering approaches, aesthetic statements and cost effectiveness were also key considerations.

The panel's report concluded that any of three different bridge designs could work, including both a cable-stayed and tied-arch designs, which would be considerably taller than the design selected for the IBR. They determined that these taller designs had no insurmountable conflicts with aviation at Pearson field.

In all, Oregon and Washington spent nearly \$1.2 million on consultant services specifically for the two panels. This doesn't include the costs of staff time for the two state transportation departments, or the time of other consultants already hired for other tasks, who provided information to the panels.

Independent Review Panel and Bridge Review Panel Expenses

Consultant	Amount	Description (per CRC)
John Clark	210,003.56	Participated on Bridge Expert Review Panel
Tom Warne	184,745.20	Led Independent Review Panel & Bridge Review Panel
Public Knowledge	141,921.40	Governors Expert Review Panel Administrator
Pegasus Global Holdings	99,439.44	Participated on CRC Independent Review Panel
Cascadia Law Group	85,825.52	Participated on CRC Independent Review Panel
Lenhardt, Andra & Partner	82,643.64	Participated on Bridge Review Panel
ERF	79,711.36	Participated on CRC Independent Review Panel
Aecom Technical Services	68,547.57	Participated on CRC Independent Review Panel
TY Lin International	58,367.04	Participated on Bridge Review Panel; CEVP
URS	47,191.48	Participated on Bridge Review Panel
Ralls Newman	45,522.99	Participated on Bridge Review Panel
Stephan Thoman Consulting	41,121.30	Participated on Bridge Review Panel
Mary Lou Ralls	26,012.50	Participated on CRC Independent Review Panel
Michael Meyer	16,983.50	Governors Expert Review Panel Member
Total	1,188,036.50	

Source: Columbia River Crossing

<https://projects.oregonlive.com/crc/spending/>

3. The Bain Report: Flawed traffic projections

Accurate traffic projections are crucial for designing the correct size for the bridge and approaches, and for correctly estimating potential revenue from tolling. The Oregon and

Washington transportation departments have poor track records in traffic projections. Washington's state treasurer raised alarms about CRC toll financing after revenues for the newly built Tacoma Narrows toll bridge came in well under WSDOT projections. In 2010, concerns about the inadequacy of ODOT and WSDOT's CRC travel projections led Oregon State Treasurer Ted Wheeler to hire international toll finance expert Robert Bain to review their work. Bain's review found:

- Traffic and revenue analyses prepared for the CRC were “not suitable” for credit analysis
- CRC traffic projections were “confusing” and “outdated”
- Authors of the traffic projections failed to examine historical data or verify their models against actual trends
- Diversion estimates to I-205 were “worrying.”
- Overall, the CRC appears to have overestimated traffic.

Final Note

Columbia River Crossing

Review of Traffic & Revenue Reports and Related Material
Summary Report
RBCONSULT Ltd, London
4 July, 2011

This Final Note marks the conclusion of my initial review of the traffic and revenue forecasts prepared for the Columbia River Crossing (CRC). It builds on material already submitted to the Oregon State Treasury and summarises the key findings to date¹.

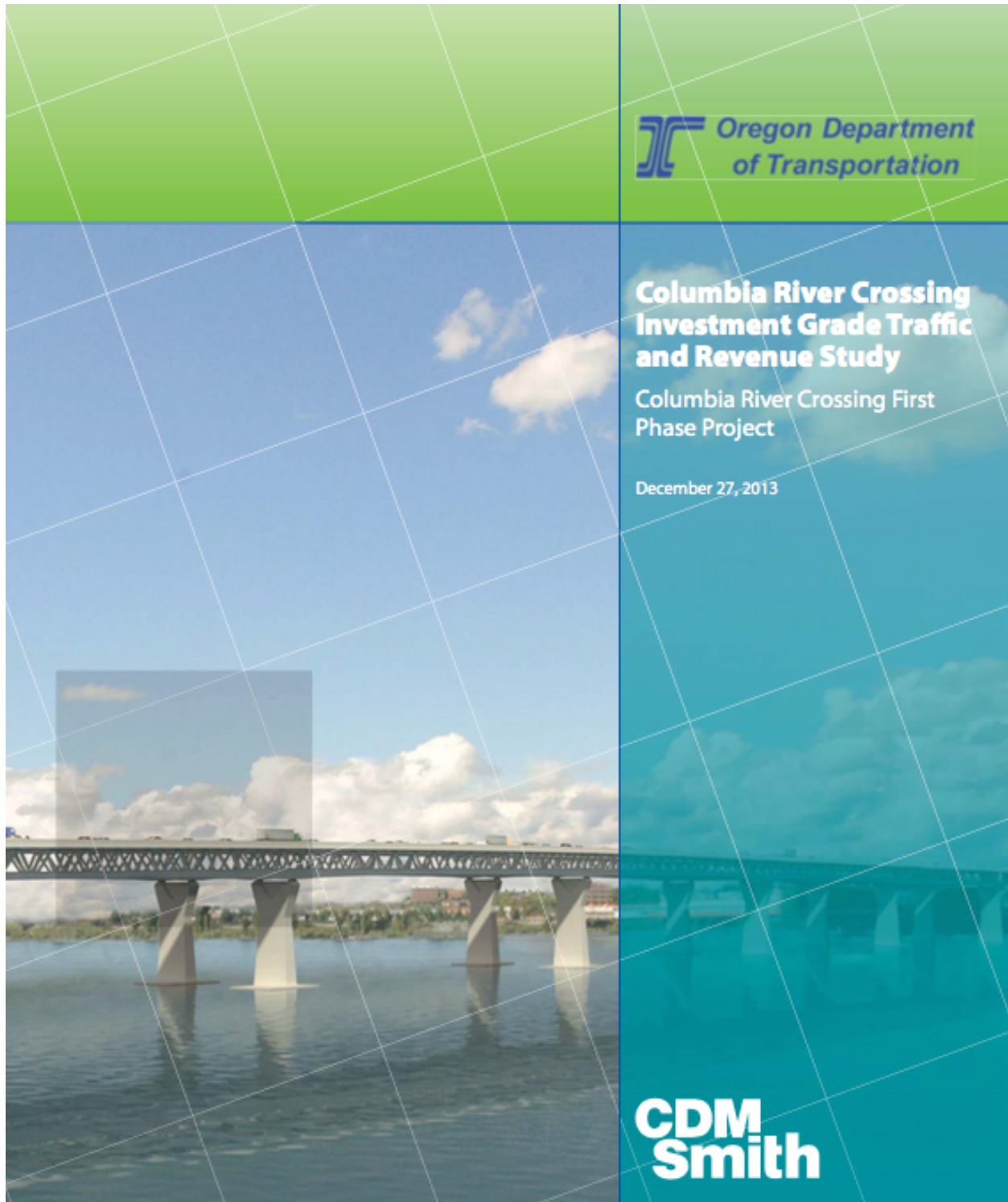
Summary

- Forecasting demand for the new, tolled CRC is not a trivial undertaking. It is not simply a matter of independently sourcing the socio-demographic input variables, cranking the handle and blindly trusting the model outputs (future-year traffic volumes). The study area – almost exclusively urban in nature – is characterised by a

4. The CDM Smith Investment Grade Analysis: FEIS Toll Traffic & Revenue Analysis Wrong

In 2013, two years after the issuance of the Final Environmental Impact Statement and the Record of Decision, the Columbia River Crossing finally got the results of the Investment Grade Analysis (IGA) prepared by its consultants, CDM Smith. The Oregon and Washington Departments of Transportation paid CDM Smith [more than \\$1.5 million](#) to develop their traffic modeling for the Investment Grade Analysis. The results were dramatically different than portrayed in the FEIS, and confirmed the flaws that the Bain report identified in the earlier modeling. The CDM Smith report said tolls would have to be at least twice as high (a minimum

of \$2.60, rather than \$1.35) and that the level of traffic that could be expected on the new widened I-5 bridge would be perpetually lower than that volume carried on the old I-5 bridge, because tolls would reduce and divert traffic. In short, the investment grade analysis confirmed what critics had been saying all along: that a tolled bridge would need no more capacity than the existing structure.



That history should be powerful proof to current decision-makers that they should insist on seeing an investment grade analysis before deciding on the size of the "replacement" bridge. But project manager Greg Johnson obstinately told the Metro Council in January 2022 that the investment grade analysis would not be used to size the bridge.

... the question regarding the investment grade traffic study. That's one that we're going to have our folks look deeply into as far as the timing, but I do want to want to correct a misnomer. That investment grade traffic study is not to size the bridge. What sizes the bridge is the data that we take from the regional models that are a part of Metro and RTC
...

Reflect for a moment what that means: Johnson is saying he'll disregard objective expert third-party information about how much money (and traffic) a tolled bridge will generate in deciding how big the bridge should be. But economics and practical experience tells us a tolled bridge will have dramatically less traffic than the current structure. Louisville, Kentucky's tolled I-65 bridges, identical in many respects to the IBR, [resulted in a 50 percent decline in traffic](#)—and a [huge revenue shortfall](#). The IGA prepared for the Columbia River Crossing by ODOT's own consultants, CDM Smith, said a tolled I-5 bridge would carry only about half as many vehicles when finished as did ODOT's less sophisticated (and frankly, biased) models.

Coast Guard Rejection of the low fixed spans

Even with two independent external reviews that considered engineering, and a much trumpeted "Cost Estimate Validation Process" designed to catch and prevent risks, the project failed to adequately address a key issue: navigation clearance. A crucial element of any river crossing on a navigable waterway is allowing sufficient room for shipping traffic, a determination that is made by law, by the US Coast Guard. The current I-5 bridges have a 178 foot river clearance under their lift span. Then, as now, the state transportation departments are Ignoring or downplaying the Coast Guard's sweeping authority to regulate bridge heights.

A decade ago, with the CRC, ODOT and WSDOT willfully ignored [early advice from the Coast Guard that a 95-foot navigation clearance would be insufficient](#). As early as 2006, the Coast Guard signaled it would need 115 or 125 feet of navigation clearance; the CRC project decided on its own that 95 feet ought to be enough. The two state DOTs attempted to bludgeon their way to Coast Guard approval, but since the USCG has clear and independent statutory authority to regulate all structures over navigable waterways, it held firm and in 2011, reached its own determination that the CRC would have to clear at least 116 feet. That led to a year of delays and tens of millions in additional costs to re-engineer the bridge to have a higher clearance. Importantly, this was not a risk that was identified or provided for in the projects schedule or cost management system, showing a clear failure to manage risks on this large project.

The IBR seems hell-bent on repeating this blunder once again. A Coast Guard [preliminary determination](#) has found that a new bridge over the Columbia needs to have a navigation clearance of 178 feet. Despite the Coast Guard's ruling, the project is proceeding with its proposal for a 116 foot navigation clearance, and steadfastly refusing to look at [alternatives](#), like

a moveable bridge span or a tunnel, that would enable a lower and far less expensive and disruptive crossing. WSDOT and ODOT would like to pretend that the preliminary determination doesn't really mean anything, but under the agreement between the US DOT and the Coast Guard, alternatives that don't meet the preliminary determination are supposed to be excluded from further NEPA review. When the two state DOTs disregard the 178-foot clearance determination, interagency agreement says they are "proceeding at their own risk."

Deja vu all over again

The same errors that doomed the CRC are being repeated now by the Oregon and Washington transportation departments. They've designed their bridge with a 116 foot clearance, assuming that this will meet approval by the Coast Guard. But their USCG-bridge permit expired years ago, and they will need to apply for a new one, and go through an entirely new permitting process, which will likely end up mandating an even taller bridge—one that the project hasn't considered.

Even the IBR's proposed 116' high bridge poses major and as yet unanswered questions. To reach that height, the bridge will require extremely steep approaches on the Oregon and Washington sides of the river. In Oregon, the roadway grade exceeds the design standard for Interstate freeways, and will require an exception. The steep bridge grades have led one local engineer to argue that the bridge will be particularly dangerous in icy weather. The project calls for rebuilding every one of the seven closely spaced interchanges that cause congestion, contrary to federal design standards and the recommendations of the bridge review panel. Unlike with the CRC, there hasn't been any independent review of this design.

The project has yet to produce a definitive financial plan. The project hasn't developed any contingency plans if one or more of the project revenue sources doesn't materialize. It hasn't prepare a plan for project phasing. In fact, the selected high bridge design may be difficult or impossible to phase, because the extreme height of the proposed new river crossing will make it impossible to access the new structure from existing approach ramps.

The project has no plans to undertake an independent, investment grade analysis of the project until 2025. Just as before, the project makes optimistic assumptions about toll revenues—its current traffic forecast uses minimum tolls of \$1.35—only half of what the 2012 CDM Smith Study said would be necessary to provide a \$1.3 billion tolling contribution to the project's finance plan.

Now, as before, the project is proposing to rebuild every single interchange in the project area, even though outside experts (and their own problem statement) show that's a substandard design approach that leads to traffic problems and needlessly increases the cost of the project.

In many ways, the re-named IBR project is a scene-for-scene remake of the disaster film that was the Columbia River Crossing. A key difference to date is that its controversial and questionable engineering, traffic forecasting and financial decisions simply haven't been vetted by outside experts, as was done with the CRC. The rush to move forward to a decision to select a "locally preferred alternative" without getting this kind of professional advice magnifies the risks that like

its predecessor, the IBR project will also collapse when one or more of these unexamined risks strikes.

Eyes wide shut

The proposed IBR project is a big and risky endeavor. What's lacking is any independent verification of the assertions made by the project staff. Last time around, with the Columbia River Crossing, state leaders took the prudent steps of asking a few basic questions before moving forward with the project. They hired independent engineers and experts to assess the project design, budget, schedule and phasing. They hired an international toll bond expert to study its traffic projections. They conducted an investment grade analysis. The federal government hired a "project management oversight consultant" to ride shotgun on the project. With the IBR, none of these safety steps have been taken.

Even the Legislature has been complicit in this failure to put in place basic safeguards and oversight. In 2017, as part of its major transportation funding legislation, the Legislature created a "Megaprojects Task Force" and directed it to study and report on the state's process for selecting and managing large projects.

SECTION 121. (1) The Task Force on Mega Transportation Projects is established. For the purposes of this section, a "mega transportation project" includes transportation projects, as defined in ORS 367.010, that cost at least \$360 million to complete, that attract a high level of public attention or political interest because of substantial direct and indirect impacts on the community or environment or that require a high level of attention to manage the project successfully. . . . (11) The task force shall submit a report in the manner provided by ORS 192.245, and may include recommendations for legislation, to the Joint Committee on Transportation established under section 26 of this 2017 Act no later than September 15, 2018.

The legislation set a September 2018 deadline for the Task Force to file its report, but the task force met only twice (after its deadline), never filed any report, and sunsetted, at the end of 2018. It turns out that even the Legislature, which is expected to make up the shortfalls and pay for the overages when ODOT makes a mistake, isn't willing to try and learn from past experience. In the case of the \$5 billion (and probably much more) Interstate Bridge Project, that could be a very expensive outcome.

References

Bain Report, [pdf-embedder url="http://cityobservatory.org/wp-content/uploads/2022/06/Bain_CRC_Report_July4.pdf"]

Independent Review Panel Report [pdf-embedder url="http://cityobservatory.org/wp-content/uploads/2022/06/IRP_Report_July30.pdf"]

Bridge Review Panel Report

https://www.wsdot.wa.gov/accountability/ssb5806/docs/6_Project_Development/ExternalReviewValidation/Bridge_Review_Panel/BRP_Report.pdf

CDM Smith Report[[pdf-embedder url="http://cityobservatory.org/wp-content/uploads/2022/06/CDM_SMith_2013.pdf"](http://cityobservatory.org/wp-content/uploads/2022/06/CDM_SMith_2013.pdf)]

[Coast Guard Bridge Permit](#)