

## MEMORANDUM

Date:	August 24, 2021
To:	Chris Regan, Environmental Manager, IBR program
From:	Emma Johnson, Environmental Coordinator, IBR program Angela Findley, Environmental Lead, IBR program
Subject:	Screening and Evaluation of High-Speed Rail

### 1. INTRODUCTION

This memorandum summarizes the evaluation of a high-speed rail project as a potential option to address the transportation problems in the Interstate Bridge corridor. Recently, high-speed rail has been advocated by members of the public as a possible solution that should be considered by the Interstate Bridge Replacement (IBR) program. A high-speed rail line was considered during the Columbia River Crossing (CRC) screening process but was ultimately dismissed from study in the Environmental Impact Statement (EIS) (CRC 2006a, 2006b). While the feasibility of high-speed rail for intercity passenger service is being looked at for the Pacific Northwest region, it remains a separate project from the IBR program.

The purpose of this memorandum is to (1) summarize the past work to evaluate a high-speed rail option during the CRC screening process and (2) explain why a high-speed rail alternative would not meet the Purpose and Need statement, and why high-speed rail does not warrant further study under the IBR program.

### 2. ABOUT HIGH-SPEED RAIL IN THE PACIFIC NORTHWEST

The Pacific Northwest Rail Corridor was first identified in 1992 by the Federal Railroad Administration (FRA) and is one of eleven federally-designated high-speed rail corridors in the U.S. The corridor extends from Vancouver, B.C. to Eugene, OR where it could potentially merge with a California high speed rail line. The feasibility of high-speed rail on this corridor has more recently been studied by the Washington State Department of Transportation (WSDOT), the Oregon Department of Transportation (ODOT), the Province of British Columbia (B.C.), Canada and several advocacy groups.

#### Studies by WSDOT

WSDOT, supported by ODOT, British Columbia and Microsoft, have completed several studies evaluating the potential for an ultra-high-speed ground transportation (UHSGT) connection from Vancouver, B.C. to Portland, OR. In 2017-2018, WSDOT performed a high-level feasibility study, which estimated the costs and ridership demand for the project. In 2019, WSDOT conducted a business case study, which, in addition to forecasting ridership demand for multiple scenarios, defined the potential benefits of the project including economic growth and new jobs. The most recent study, submitted to the Washington State Legislature in 2020, established a governance, planning and funding and financing framework to advance the project

beyond the initial concept phase, position the project for future federal, state and private funding, and track planning efforts throughout the region that would be required to advance a UHSGT alignment (WSDOT 2020).

The UHSGT project remains in the conceptual stage - without defined or preferred alignments - and will require potential federal, state and private funding to move ahead. Ridership forecasts performed during the feasibility and business case studies were not of sufficient detail to determine quantitatively how a potential mode shift from automobile to rail due to a future UHSGT project would impact congestion and travel demand on the I-5 corridor.

## Studies by ODOT

As part of their Oregon Corridor Investment Plan, ODOT evaluated ways to improve intercity passenger rail service between Portland, OR and Eugene, OR. ODOT worked with the FRA to analyze and select a route, station locations, and service characteristics for improving frequency, convenience, speed and reliability. A preferred alternative for the alignment was selected, which follows the existing Amtrak Cascades passenger rail route and would improve infrastructure while increasing service from two to six daily round trips. The preferred alternative would improve travel time and reliability, while maintaining the current maximum speed of 79 miles per hour (ODOT and FRA 2021). The Tier 1 Final Environmental Impact Statement and Record of Decision were signed on April 14, 2021, and the state is now eligible to compete for infrastructure grants to improve passenger rail service between Eugene and Portland (ODOT n.d.).

## Advocacy Group Proposals

Because the Pacific Northwest Rail Corridor is within the general vicinity of the CRC/IBR program area, some community members have advocated to include a high-speed rail line in the IBR program or are proposing high-speed rail as an alternative to the replacement bridge. Two advocacy groups in particular are pursuing development of high-speed rail: Cascadia Rail and Cascadia High Speed Rail LLC (CHSR LLC). Cascadia Rail's focus is gaining support for high-speed rail in the Pacific Northwest corridor based on its climate benefit, job creation, and other economic factors (Cascadia Rail n.d.). CHSR LLC developed a potential alignment for their vision of high-speed rail, which includes stations in Vancouver, WA, and Portland, OR. The CHSR LLC proposal has not been funded for detailed planning or construction (CHSR LLC n.d.). For the Vancouver, WA, and Portland, OR connection, CHSR LLC proposes the construction of a new bridge, one mile west of I-5 and parallel to the BNSF Railway swing bridge. CHSR LLC also recommends seismically upgrading the existing Interstate Bridge, which would remain in use (CHSR LLC n.d.).

## 3. PREVIOUS ALTERNATIVES SCREENING

This section summarizes the screening process and reasons for dismissal of high-speed rail during the CRC screening process. During early screening, various types of river crossings and transit options (known as "components") were evaluated to identify a reasonable range of alternatives. High-speed rail was evaluated as a potential transit component but was ultimately dismissed from further study in the EIS. The current proposal for high-speed rail by CHSR LLC is different than the version evaluated under CRC, which focused on screening high-speed rail as a possible transit component of the CRC solution rather than a specific alignment

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on a third bridge (WSDOT has not identified an alignment for UHSGT). However, CRC’s reasons for dismissing high speed rail as a component are also valid when looking at whether high-speed rail is a viable alternative to a replacement bridge.

The initial screening effort in April 2006 (known as the Step A screening) evaluated 37 river crossing and transit components using a pass/fail test designed to eliminate ideas beyond the scope of the project and/or ideas that clearly could not address the project’s Purpose and Need statement (CRC 2006b). The components were evaluated by asking six pass/fail questions:

*“Does the component...”*

1. Increase vehicular capacity or decrease vehicular demand?
2. Improve transit performance?
3. Improve freight mobility?
4. Improve safety and decrease vulnerability to incidents?
5. Improve bicycle and pedestrian mobility?
6. Reduce seismic risk of the I-5 Columbia River Crossing?

River crossings and transit components that passed the test questions were recommended to advance for further considerations and screenings, while components that failed were recommended to be dropped from further consideration. As shown in Table 1, high speed rail failed the Step A screening and was not recommended to advance for further study in Step B. The details of why high speed rail failed are detailed below.

**Table 1 – Step A Component Screening Results**

Component	Q1 Traffic	Q2 Transit	Q3 Freight	Q4 Safety	Q5 Bike/Ped	Q6 Seismic	Overall Score
High Speed Rail	Fail	Fail	NA	Unknown	NA	NA	Fail

For question 1, high speed rail failed as the operating speed of more than 175 miles per hour is most compatible with long distance inter-city and inter-state transit with at most one stop in each metropolitan area. This one transit station would only serve transit trips arriving from or destined to locations outside the region, and thus would not attract the ridership necessary to notably reduce vehicular demand within the CRC Bridge Influence Area, which extends from approximately Columbia Boulevard in the south to SR 500 in the north.

For question 2, high speed rail failed as it is not feasible to integrate high speed rail with the existing regional transit system while both 1) taking advantage of the operational features of high speed rail and 2) providing

service to identified transit markets within the Bridge Influence Area. High speed rail could not advantageously serve many of the identified regional travel markets (e.g., downtown Vancouver, Hayden Island) because it could not achieve high travel speeds between stations that may be located only a few miles apart. A local high speed rail service would likely have very few stops or stations, and perhaps no stops within the Bridge Influence Area, and would not actually carry many passengers for local trips. Thus, it would not appreciably improve transit performance within the I-5 Bridge Influence Area.

Based on failing questions (1) and (2), high speed rail was not advanced to a second round of screening as failing the questions meant it would not address key aspects of the Purpose and Need statement.

#### 4. ADDITIONAL EVALUATION OF A SUPPLEMENTAL BRIDGE

In 2006, the CRC project team prepared a memorandum summarizing the benefits and negatives of replacing versus keeping the existing I-5 bridge (CRC Project Team 2006). The findings of this memorandum apply to any concept of a supplemental bridge, including the bridge envisioned by CHSR LLC. The project team found that alternatives that replace the existing bridge performed better on nearly all the project values than alternatives that supplement and reuse the existing bridge. Replacement options performed better for transit, traffic, navigation, community resources, natural resources, transportation equity, and seismic safety. The following are the key findings related to the supplemental crossing options (CRC Project Team 2006):

- **Traffic:** Keeping interstate traffic on the existing interstate bridge would not meet the project's purpose and need related to traffic safety. Traffic on the existing bridge would continue to be affected by frequent bridge lifts.
- **Transit:** The bridge lifts would have substantial operational disadvantages for both Light Rail Transit (LRT) and/or Bus Rapid Transit (BRT), interrupting service and reliability.
- **Cost/Active Transportation:** The lifecycle cost of using one or both of the existing bridge spans for bicycles and pedestrians would likely be substantially higher than the cost of accommodating bikes and pedestrians on a new highway and transit bridge.
- **Land Use:** Adverse land use and right-of-way impacts would be greater for supplemental options.
- **Natural resources:** Natural resource impacts are greater for supplemental versus replacement alternatives, especially from a long-term perspective.
- **Marine navigation:** The supplemental options would result in nearly 3 times as many piers in the water (compared to the replacement options). This would result in impacts to river navigation as well as fish and wildlife habitat.
- **Seismic:** All of supplemental options would also require a major seismic upgrade to the existing bridge (discussed in the following section).

#### 5. SEISMIC RETROFITTING THE EXISTING BRIDGE

As CHSR LLC proposes building an additional bridge, the seismic safety of the existing bridge is also called into question. Subsequent evaluations have determined that seismic retrofits would be prohibitively expensive and would incur additional impacts to the environment (due to the need for expansion in the Columbia River). In addition, seismic retrofits may not be sufficient to reliably ensure that the bridge could handle a 500-year

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earthquake (with little to no damage) or a 2,500-year earthquake (with no collapse). Therefore, any alternative that involves the seismic retrofitting of the existing bridge does not meet the program's Purpose and Need statement.

## 6. CONCLUSION

As described in this memorandum, the CRC's component screening process evaluated high speed rail as a potential component of the river crossing. The Step A screening determined that high speed rail would not meet the Purpose and Need statement for the program, specifically the needs for traffic and transit within the I-5 corridor. At its core, high speed rail is designed for long distance travel, which Portland to Vancouver is not. This along with high speed rail's incompatibility with existing rail and transit networks make high speed rail inadvisable for the IBR program.

These concerns remain when looking at the current proposal from CHSR LLC, and further concerns include seismic upgrades to the current Interstate Bridge, which are cost prohibitive. The prior evaluations and screening done under CRC remain valid. The needs for the program have not changed and high-speed rail, in any form, would not meet the Purpose and Need statement and is not a reasonable alternative for the IBR program. While the discussion of high speed rail on the West Coast is an important conversation for the region, it does not address the problems on I-5 associated with the Interstate Bridge. Any advancement of the high-speed rail would be an independent project from the IBR program and require a separate environmental compliance effort.

For these reasons, high-speed rail does not warrant further study under the IBR program and no additional analysis will be conducted as part of the program. Advancement of the IBR program will not negatively impact the advancement of high-speed rail, they are simply different projects.

## 7. REFERENCES

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