Interstate Bridge Replacement Context and Constraints

Oregon Department of Transportation

Travis Brouwer
Assistant Director

Washington State Department of Transportation

Carley Francis
Regional Administrator

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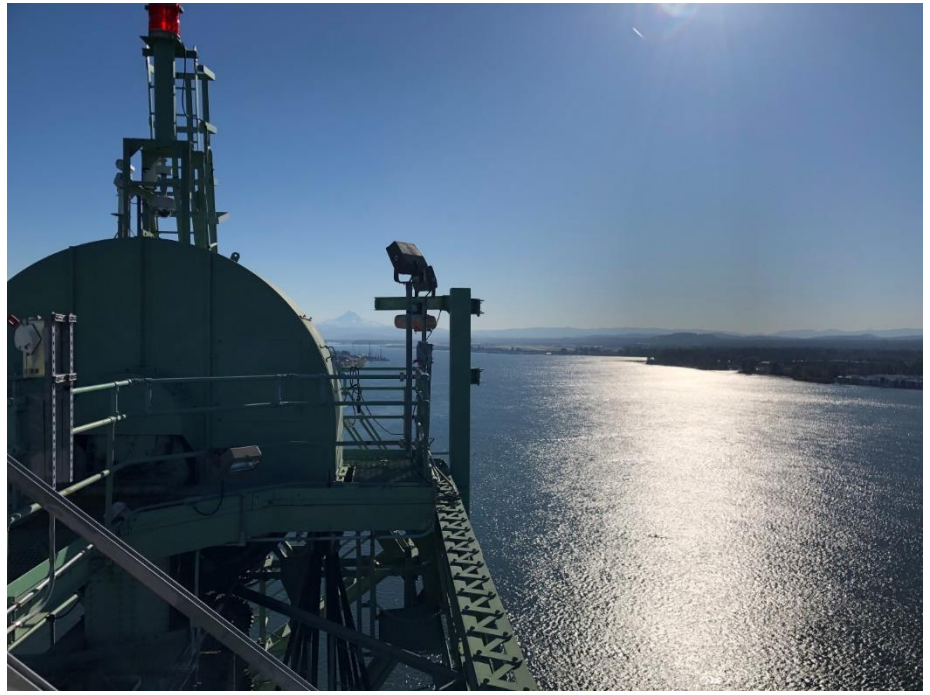
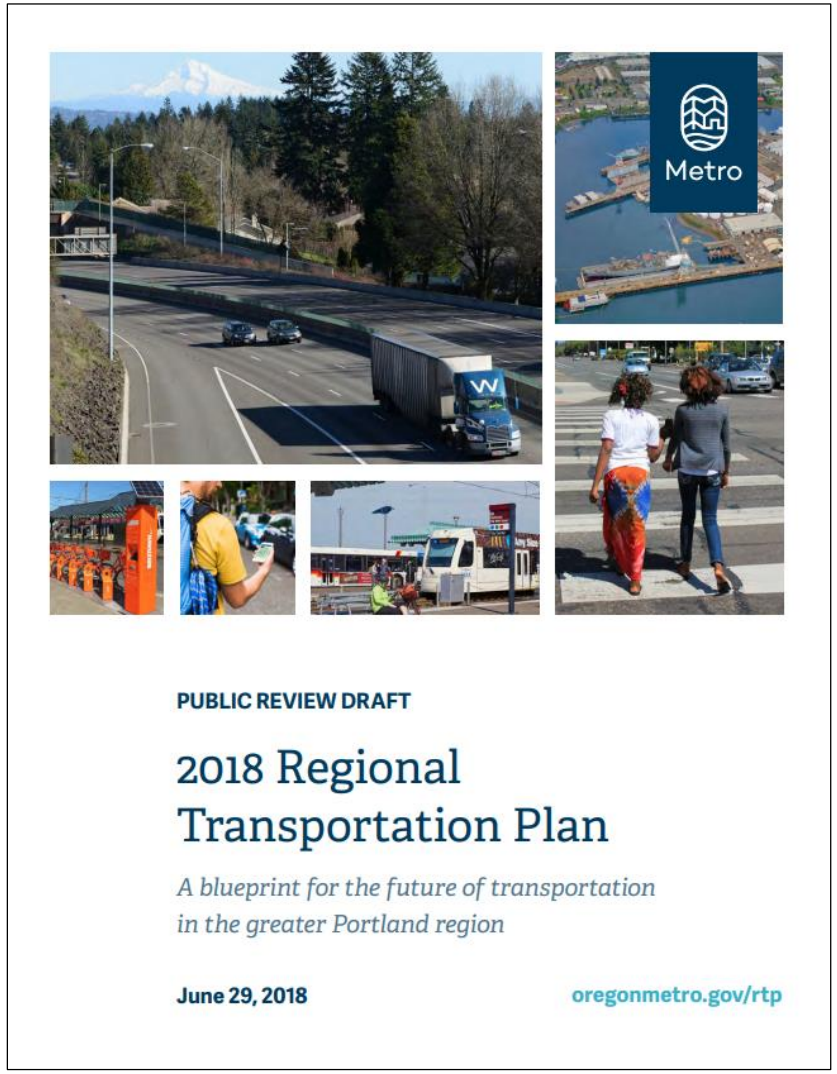
Process Overview

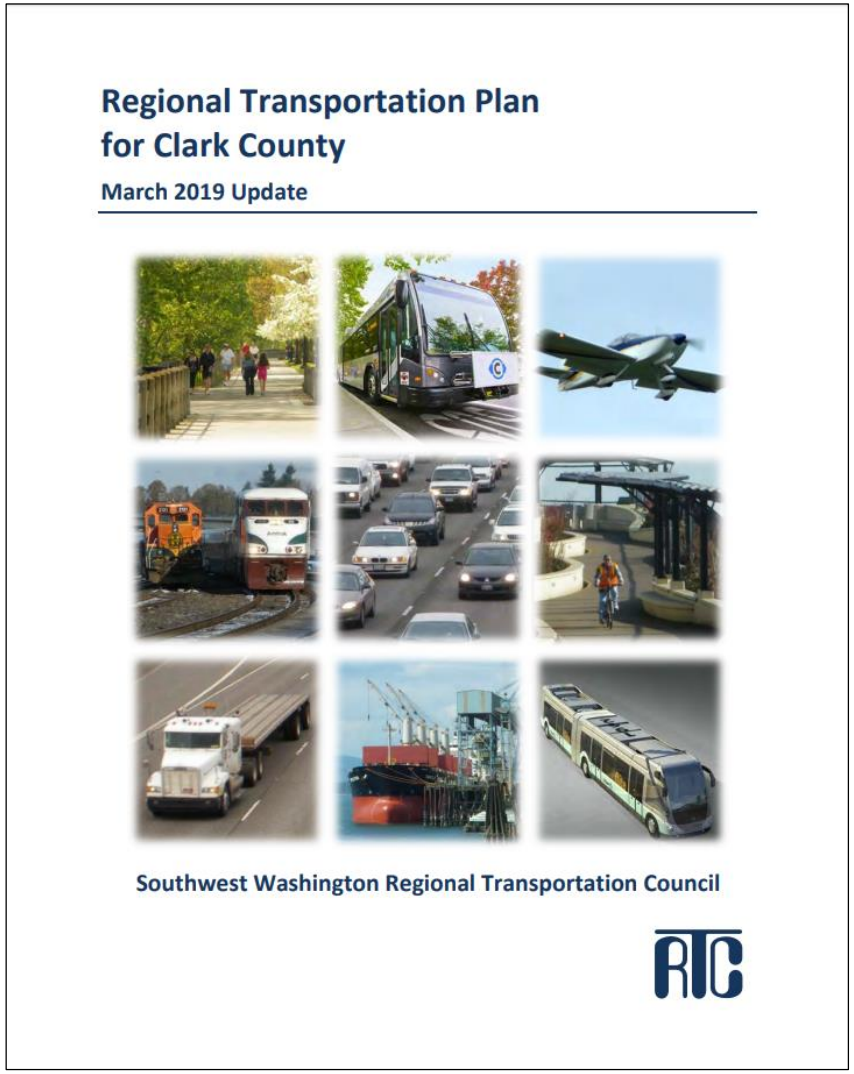
- Selection of a river crossing resulted from a multi-step process that:
  - Considered potential to meet identified and agreed upon transportation needs while:
    - Avoiding, minimizing or mitigating impacts
    - Addressing community needs
    - Developing design to identify impacts, understand performance, estimate costs and manage potential risks



Transportation Context

Identifying Regional Transportation Needs





Regional Input Identified I-5 Transportation Problems

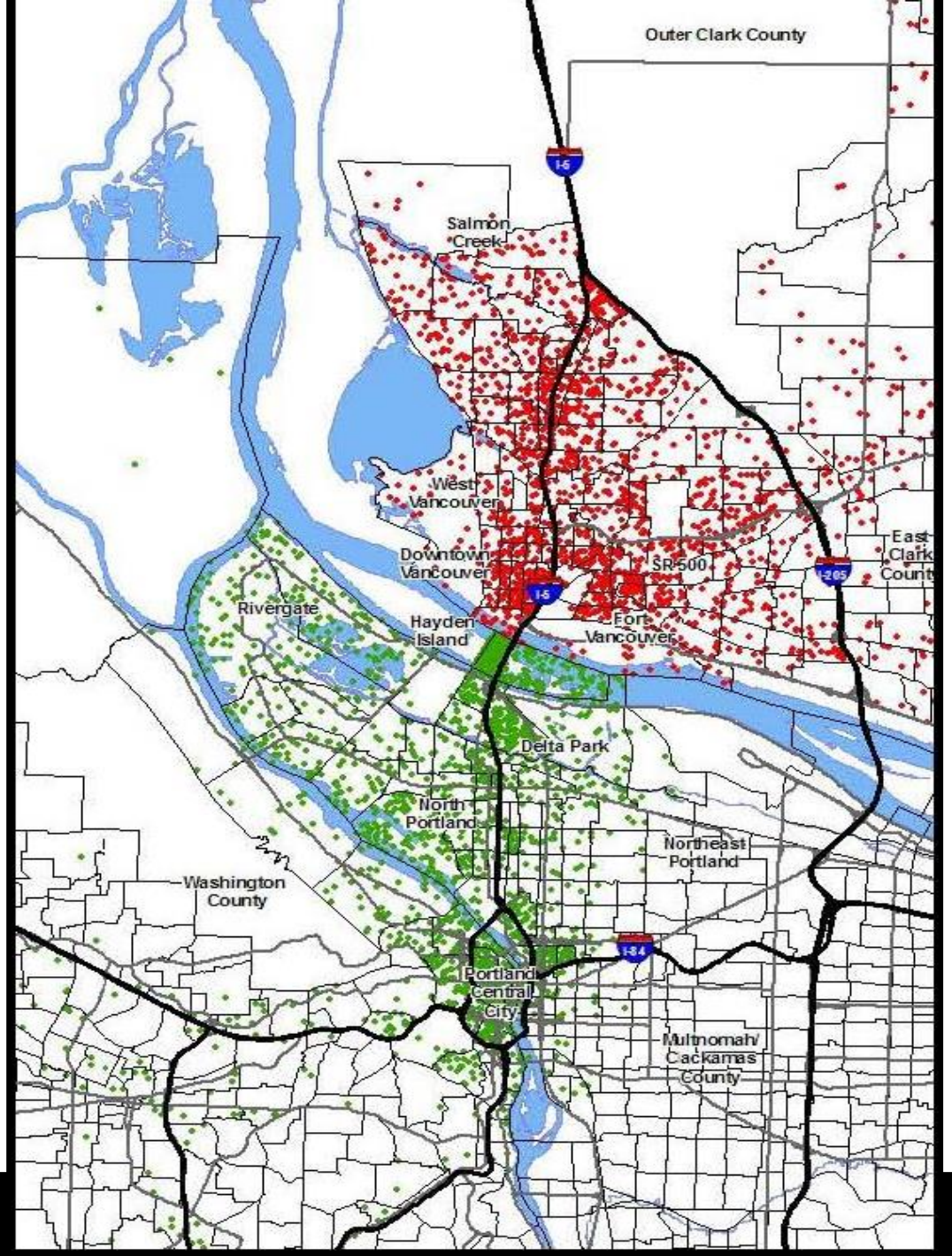
- **2002:** I-5 Transportation and Trade Partnership identified I-5 corridor from Columbia Blvd in OR to SR 500 (BIA) in WA as one of five critical projects for I-5 in this region

- **2005 – 2008:** 39-member Task Force met to identify problems in the BIA, develop evaluation criteria and select a preferred alternative

I-5 Origin and Destination

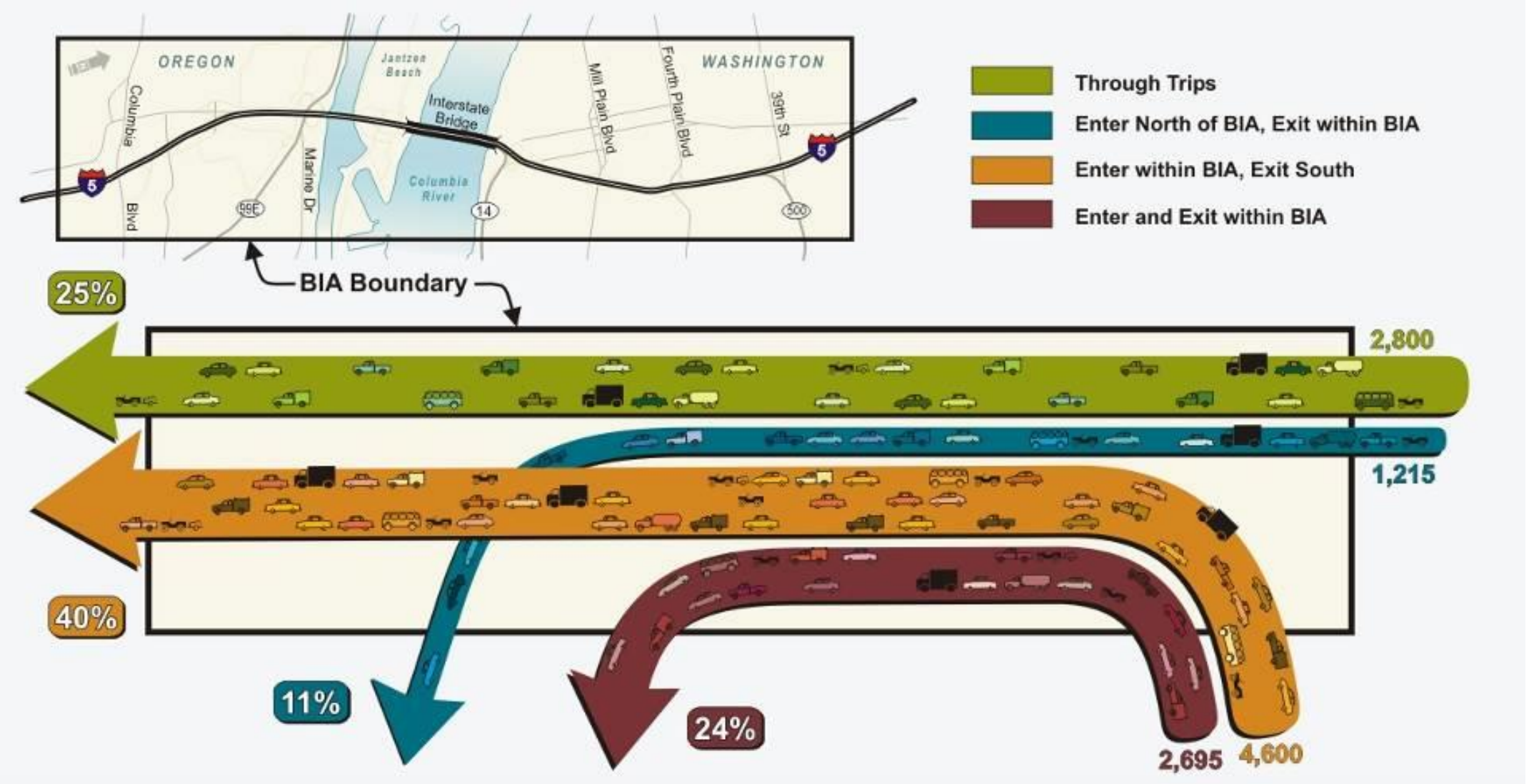
- This corridor is critical to the local, regional, and national economy

- I-5 provides the connection to:
  - Two major ports
  - Deep-water shipping
  - Up-river barging
  - Two transcontinental rail lines
  - Regional industrial land
  - Major regional roadways

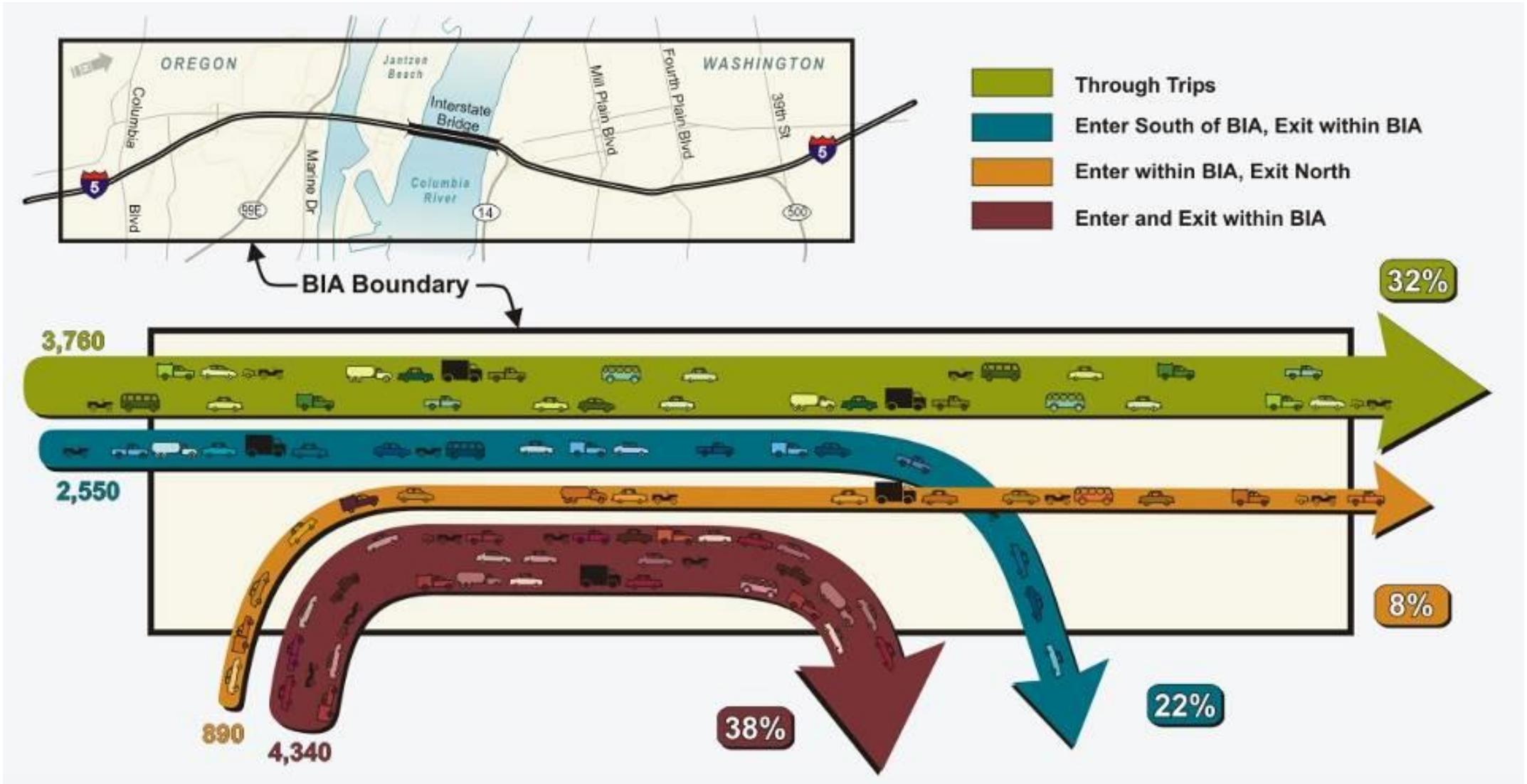


Map shows forecasted 2020 PM origins and destinations of vehicle trips using the Interstate Bridge

Southbound Vehicle Trips - 2005



Northbound Vehicle Trips - 2005

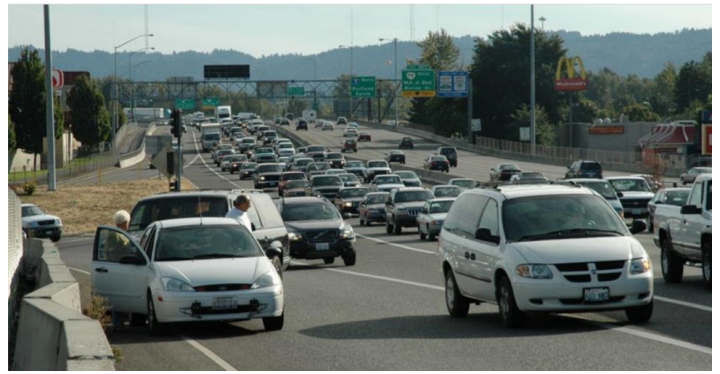


Transportation Problems Identified for I-5 Bridge Corridor

- **Safety and vulnerability to incidents**
  - Roadway constraints contribute to frequency of crashes
- **Substandard bicycle and pedestrian facilities**
  - Paths are narrow, difficult to access, close to freeway traffic
- **Seismic vulnerability**
  - Piers are susceptible to liquefaction in an earthquake

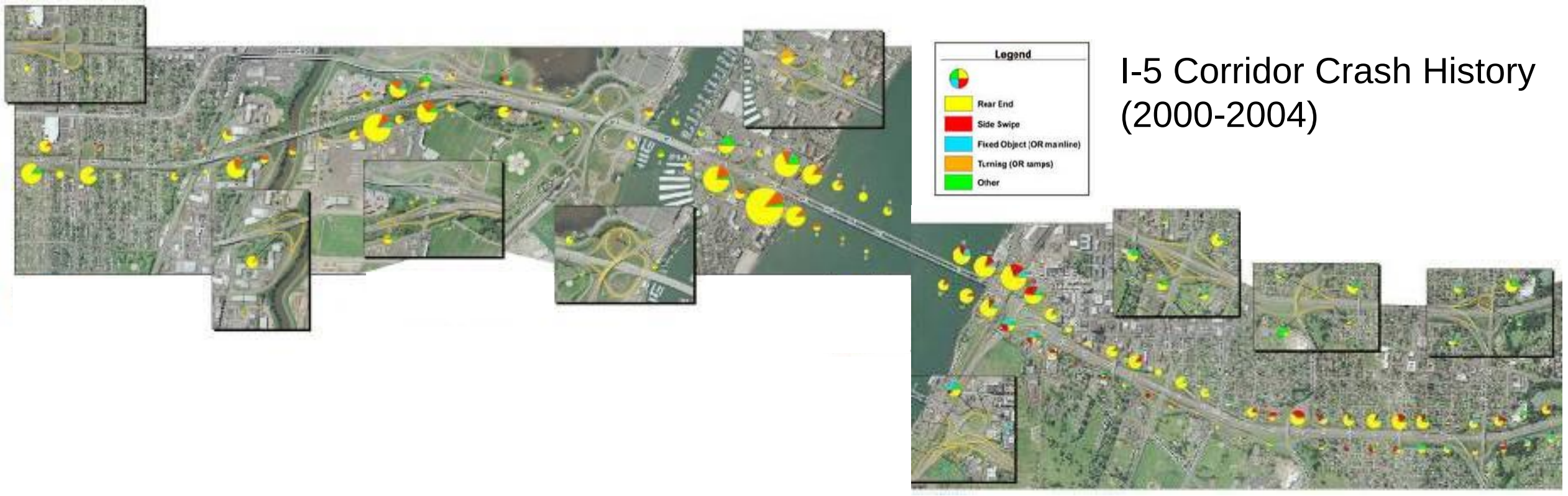
I-5 Bridge Corridor Transportation Problems Cont.

- **Growing travel demand and congestion**
  - 4 hours of congestion during a.m. commute
  - 7 hours of congestion during p.m. commute*
  - Previous forecasts expected 15 hours of congestion in 2030
- **Impaired freight movement**
  - Ranked as the 29th worst freight bottleneck in the country**
- **Limited public transportation**
  - No high-capacity transit over the Columbia River



*Source: RTC Congestion Management Report 2018
**Source: American Transportation Research Institute 2019 rankings

High Crash Rates



I-5 Corridor Crash History (2000-2004)

Portland

N

Vancouver

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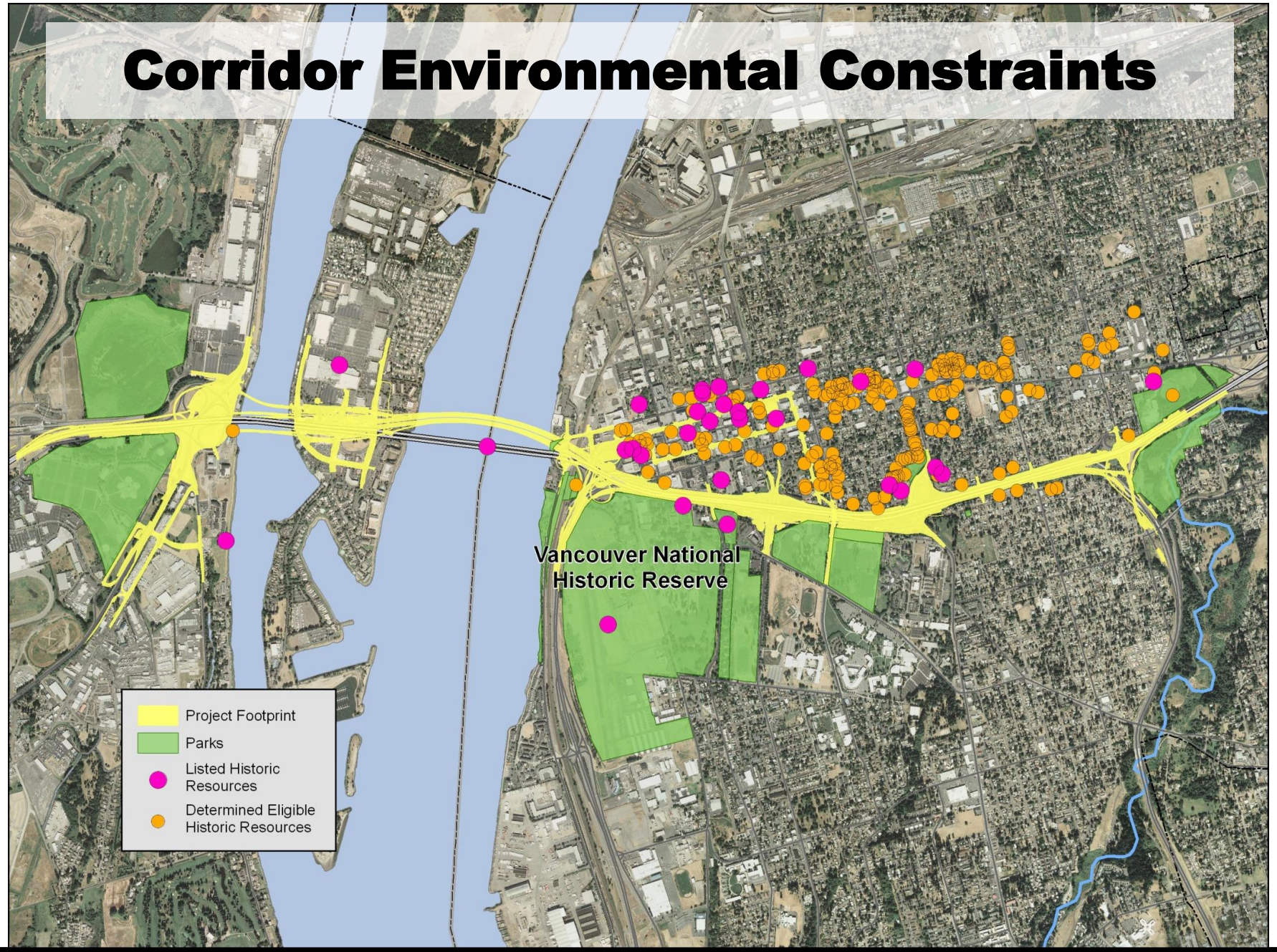
River Crossing Constraints

Corridor Environmental Constraints



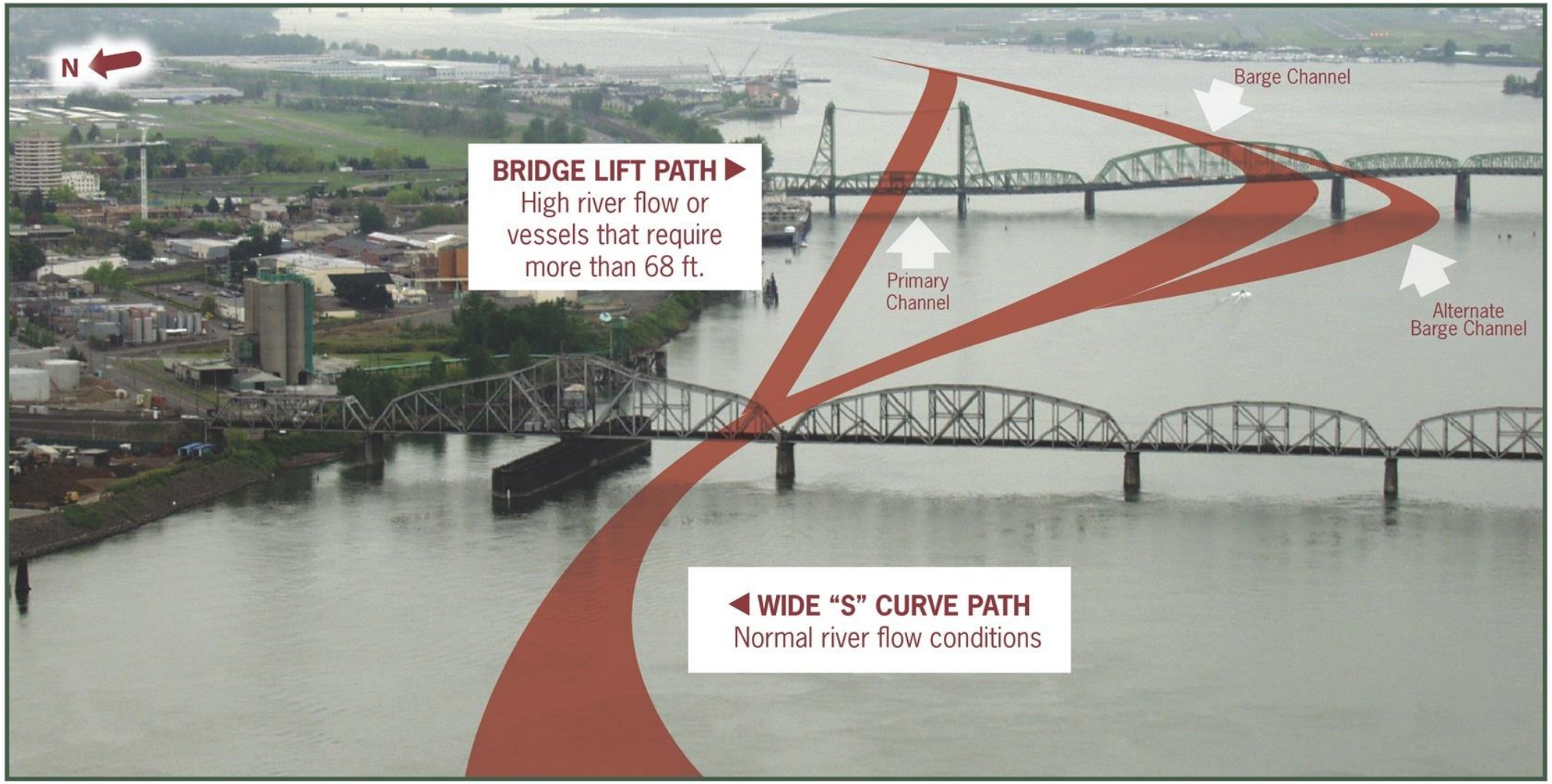
- Parks
- Historic Resources
- Archaeological Sites
- Tribal Consultation
- Wetlands
- Habitat Areas

Hayden Island Interchange

Interstate Bridge

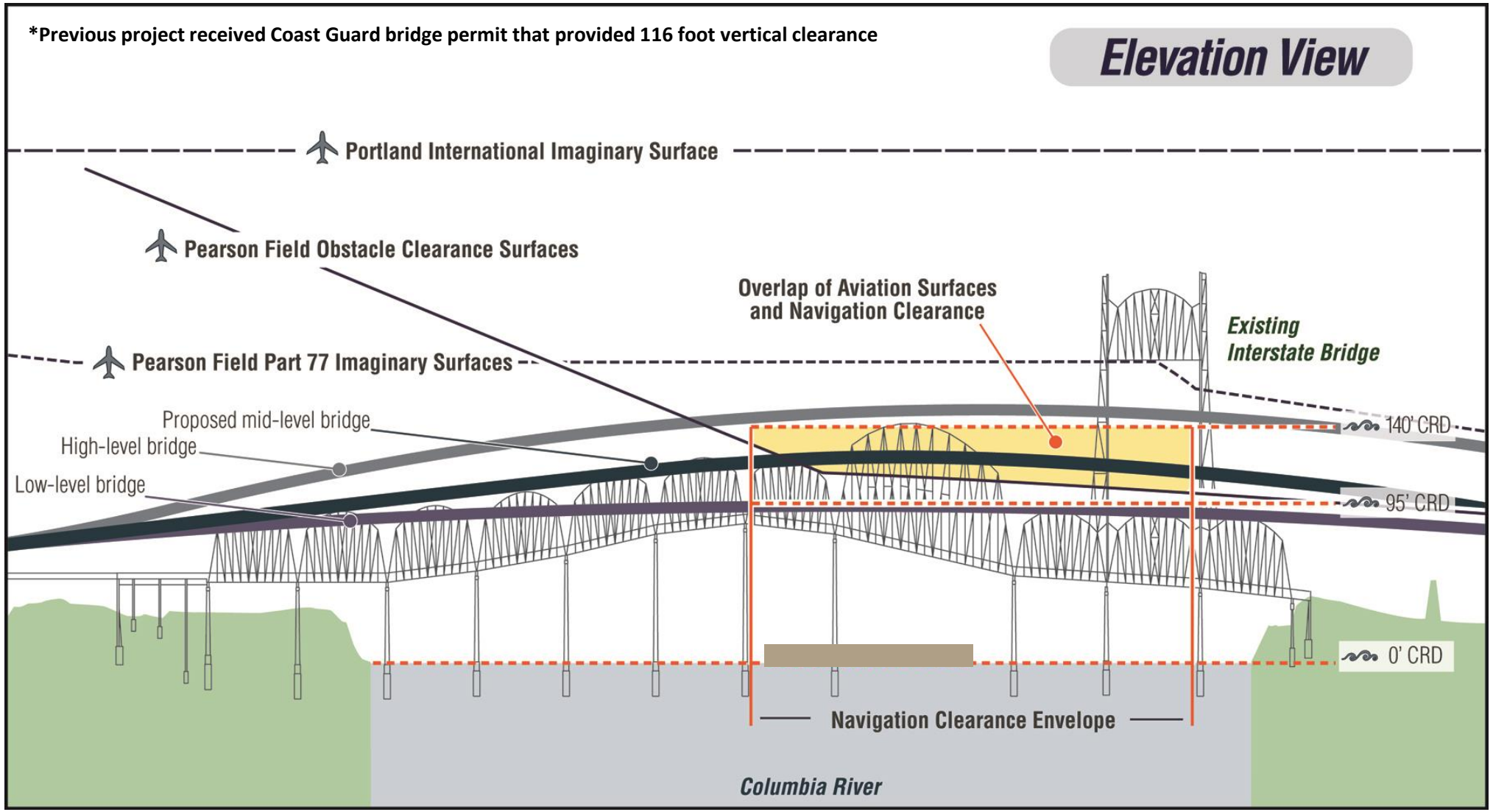
SR 14 interchange

Existing navigation channels

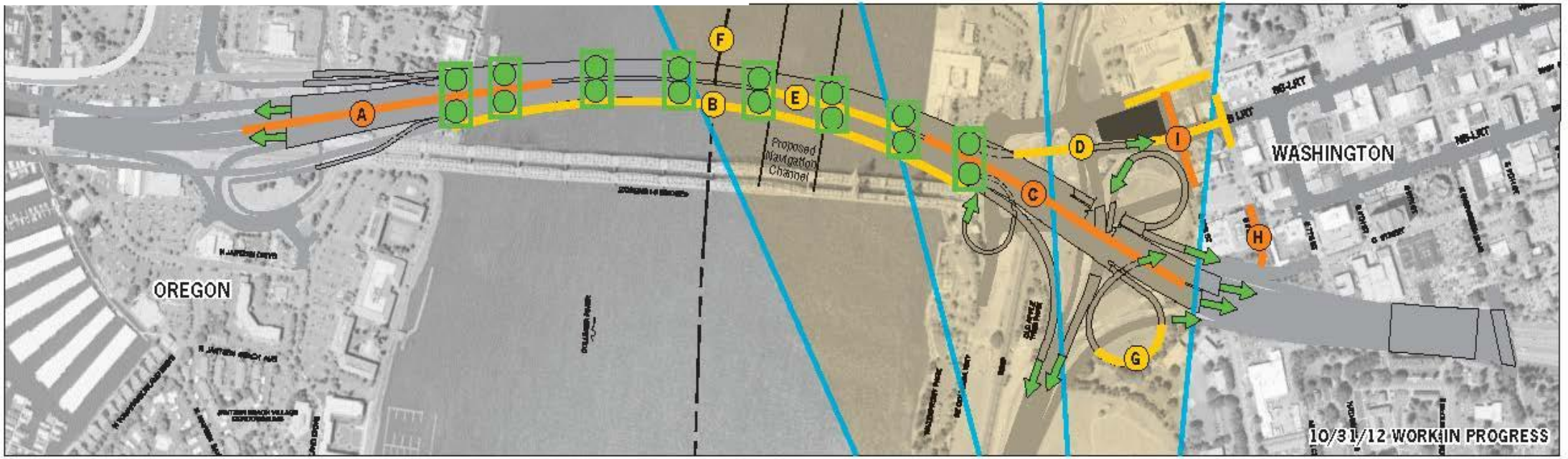


Water and Air Clearance

*Previous project received Coast Guard bridge permit that provided 116 foot vertical clearance



125 Foot River Clearance Analysis



** Based on 2011 CEVP, does not include mitigation costs.

* Potential impacts at 16 ft river stage and 10 ft air gap. Some of the vessels would pass at a lower river stage and/or with a smaller air gap. For this illustration each fabricator was represented by 1 vessel.

		Hayden Island	Main Crossing	Vancouver	TOTAL COST
Cost increase estimate over 95 feet**	60%	$24 million	$94 million	$53 million	$171 million
Highway/Transit		A In Oregon the mainline grade increases to 5% from 2.83%. This would need a design exception for a grade above 3%.	B More traffic analysis needed to address changes to traffic operations due to increased grades. E Top of roadway deck at centerline is 12' below FAA surface. F Foundation sizes may increase, however, they are still consistent with FEIS.	C In Washington the mainline grade increases to 5% from 3.40%. H 6th St. to I-5 South may be closed. G Top of roadway deck at 5N-C St. is 41' below FAA surface. D Transit grade on Washington approach is 6% for an additional 470 feet. I 6th St. Station platform grade raised resulting in 7'-9' over existing grade closing 5th St. Impacts to businesses on Washington between 5th and 6th St. Access to and from Park & Ride limited to Columbia St. Intersection at 6th and Washington requires modification. Challenging to maintain circulation in and out of parking structure.	

NOTE: Estimates of impacts and costs are preliminary and may be refined following selection of a recommended bridge height.

Cost Increase | Preliminary Findings | Significant challenge to maintain function | FAA airspace