Columbia River CROSSING

A long-term, comprehensive solution

Interim Joint Legislative Oversight Committee Hearing

December 7, 2011




Oregon Department of Transportation

Washington State Department of Transportation

Federal Transit Administration • Federal Highway Administration
City of Vancouver • City of Portland • SW Washington Regional Transportation Council • Metro • C-TRAN • TriMet

Public identifies needs and solutions

- 2001 – 2003 26 member I-5 Transportation and Trade Partnership identified bridge influence area as one of 3 critical projects in this region

- 2005 – 2008 39-member CRC Task Force identified six problems of local, bi-state and national significance, developed criteria, and selected preferred alternative

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Existing Physical Conditions

CRC project area

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Marine Drive interchange

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Hayden Island interchange

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Columbia River Bridge

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Vancouver interchanges

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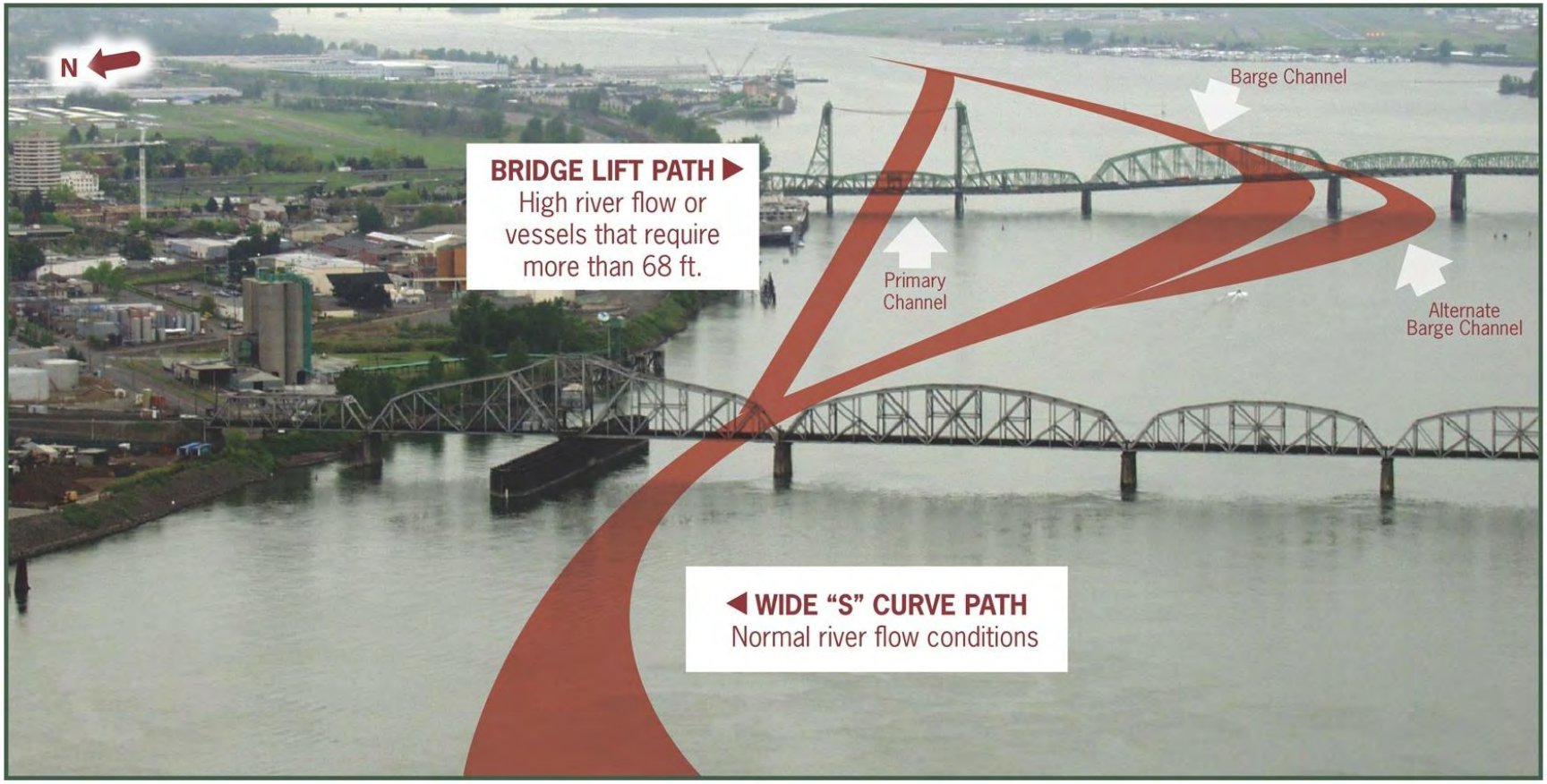
Existing navigation channels



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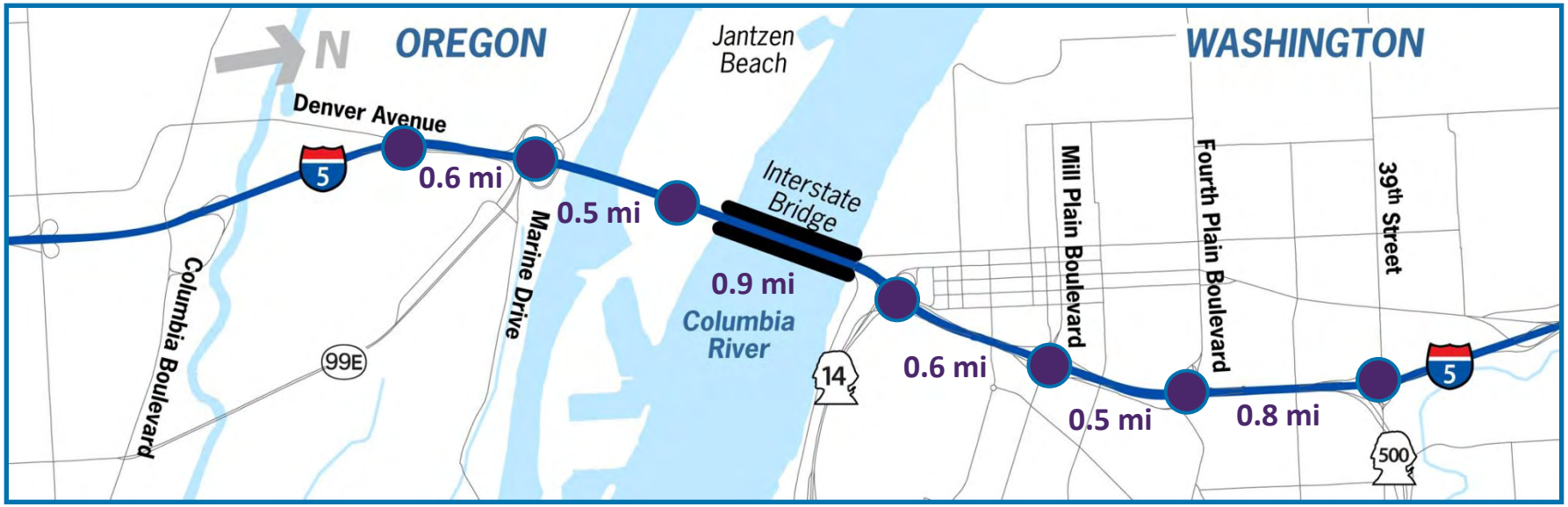
Existing Traffic Conditions

Seven closely spaced interchanges



Standard Spacing: Desirable = 2 Miles
Minimum = 1 Mile

Existing traffic volumes

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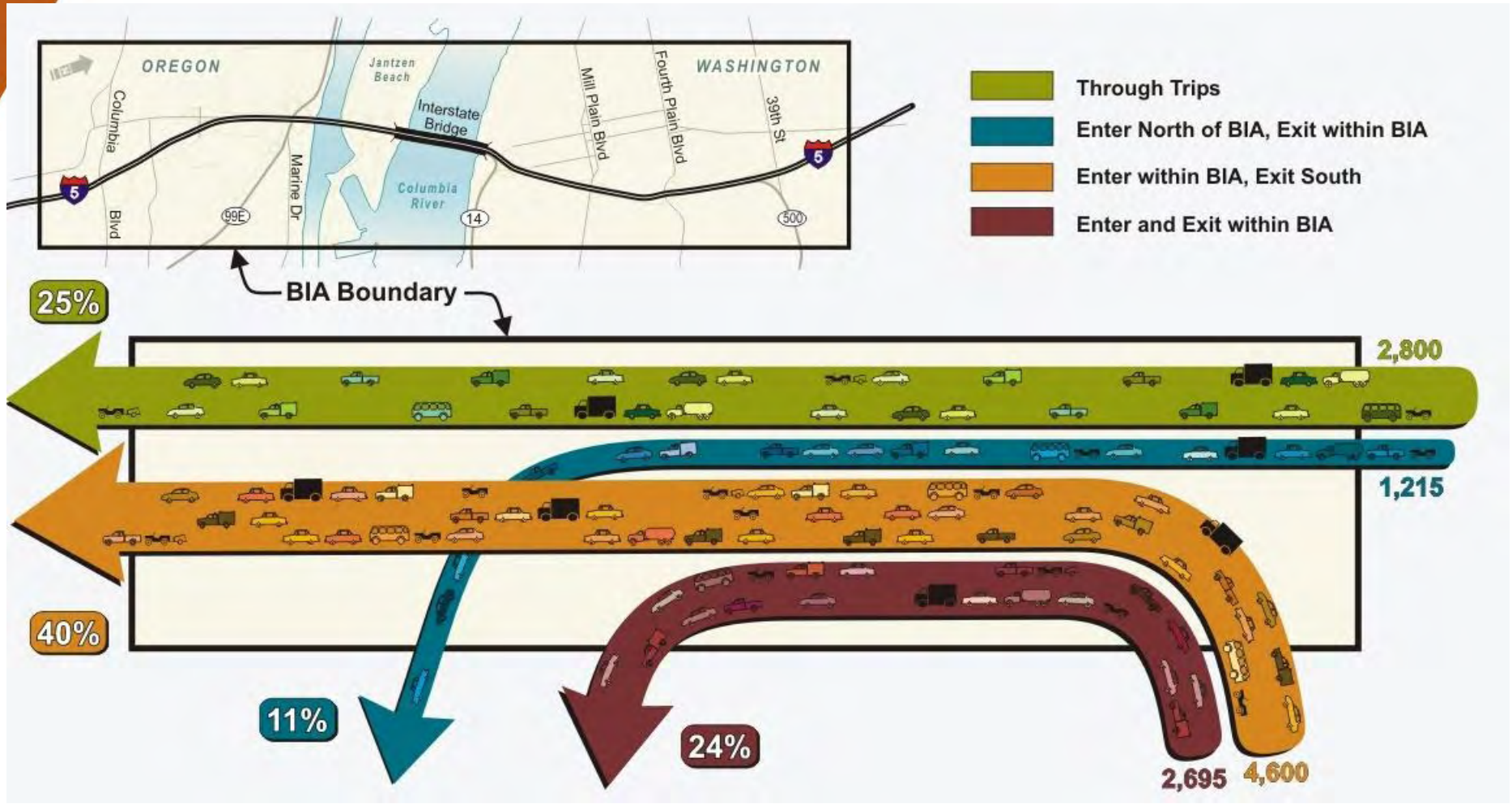
75% of southbound traffic to/from 7 interchanges



Source: CRC Traffic Technical Report, 2011

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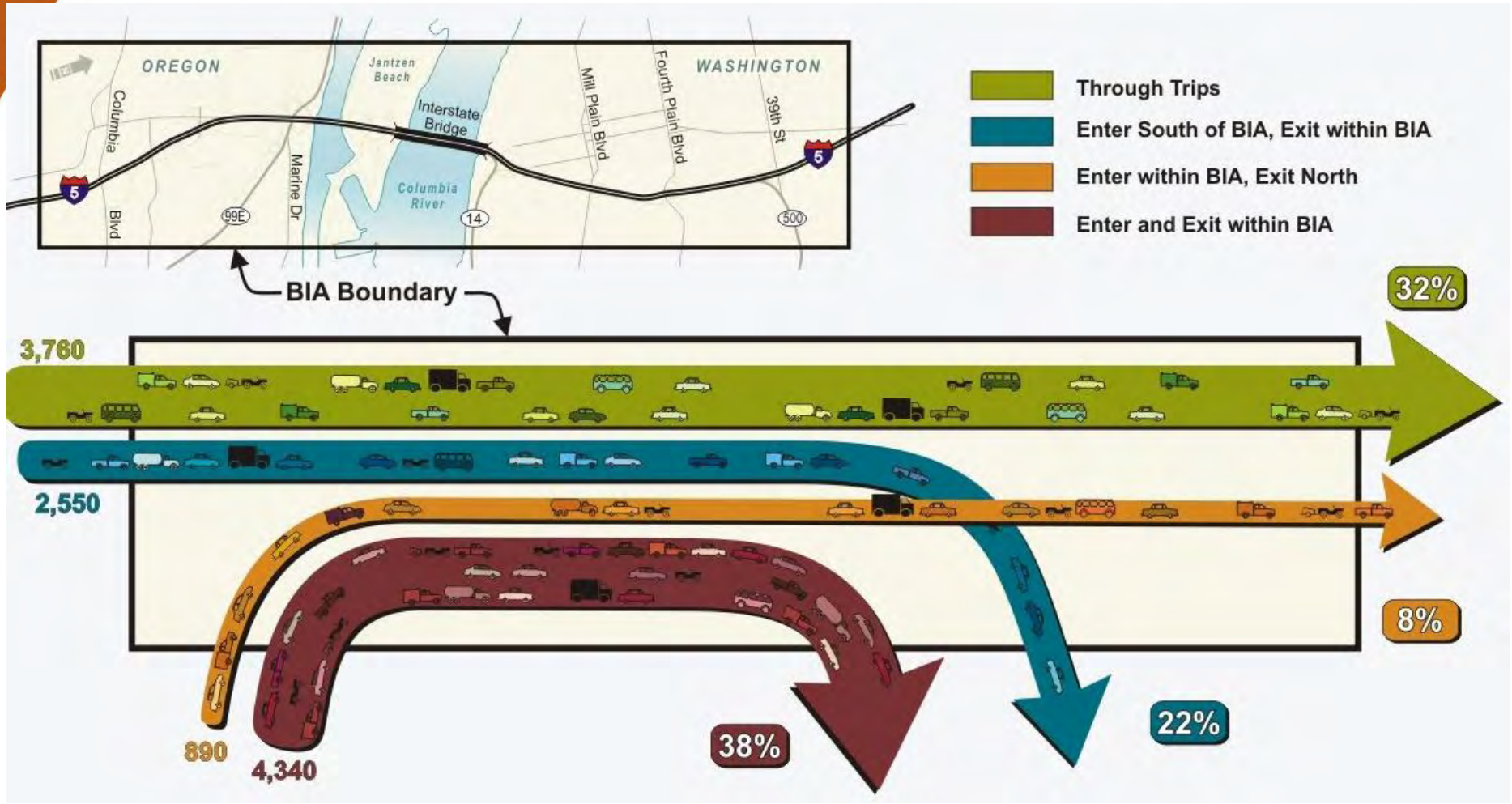
68% of northbound traffic to/from 7 interchanges



Source: CRC Traffic Technical Report, 2011

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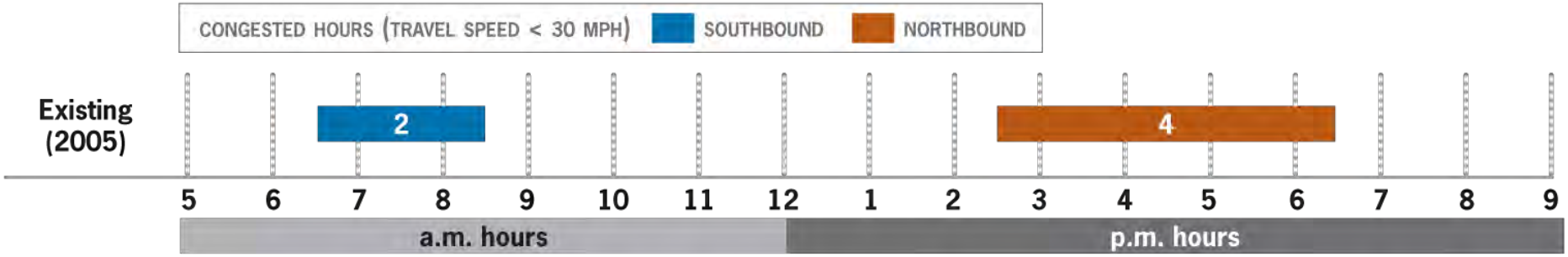
Daily congestion levels



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High number of collisions

- Collision rate on I-5 within 5-mile study area is twice the average rate experienced on similar urban interstate facilities

- The following features all contribute to the high number of collisions and collision rate within the I-5 study area
  - Short merges, diverges, and weaving sections
  - Presence and duration of congested traffic conditions
  - Bridge lifts/traffic stops

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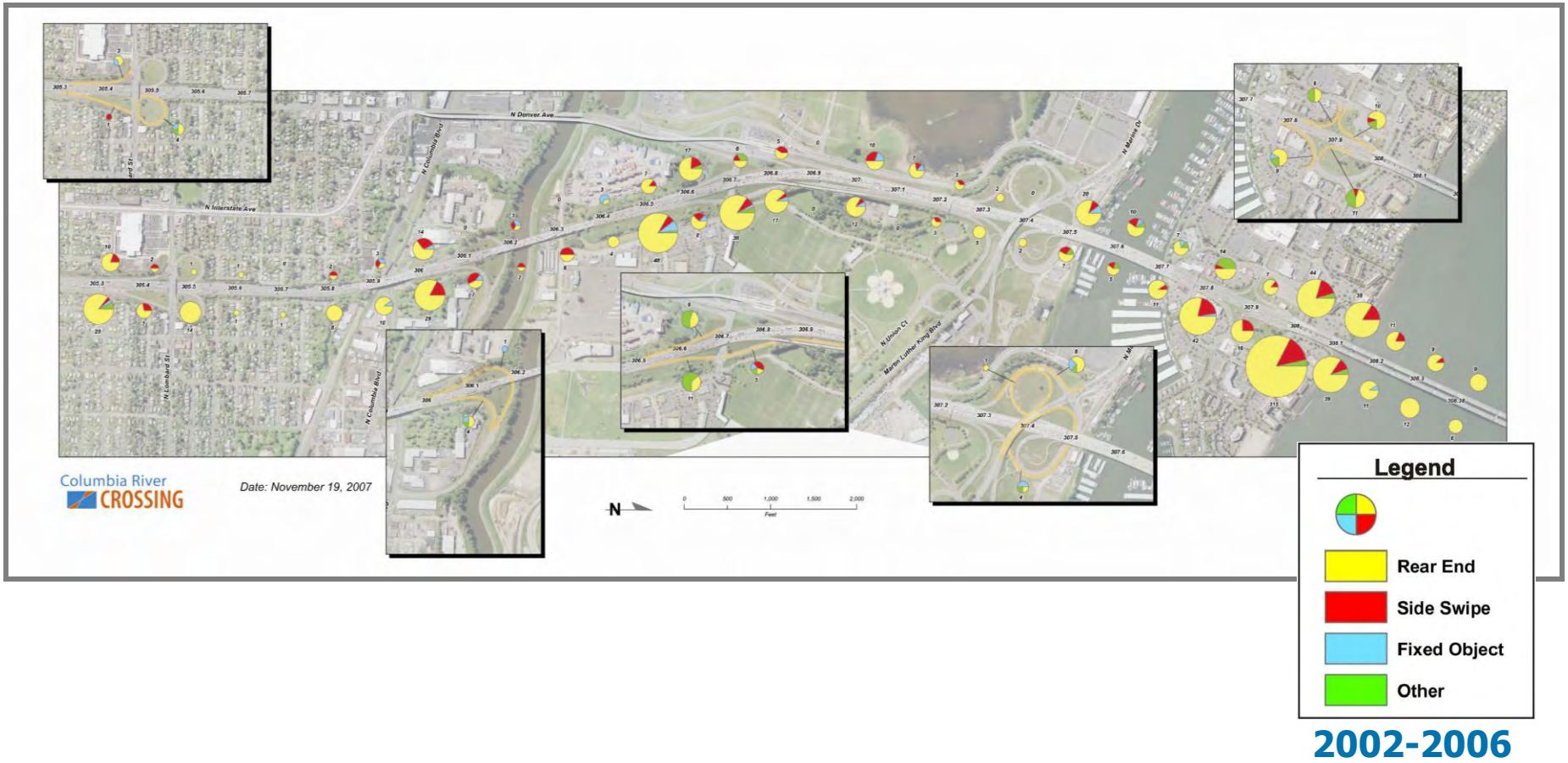
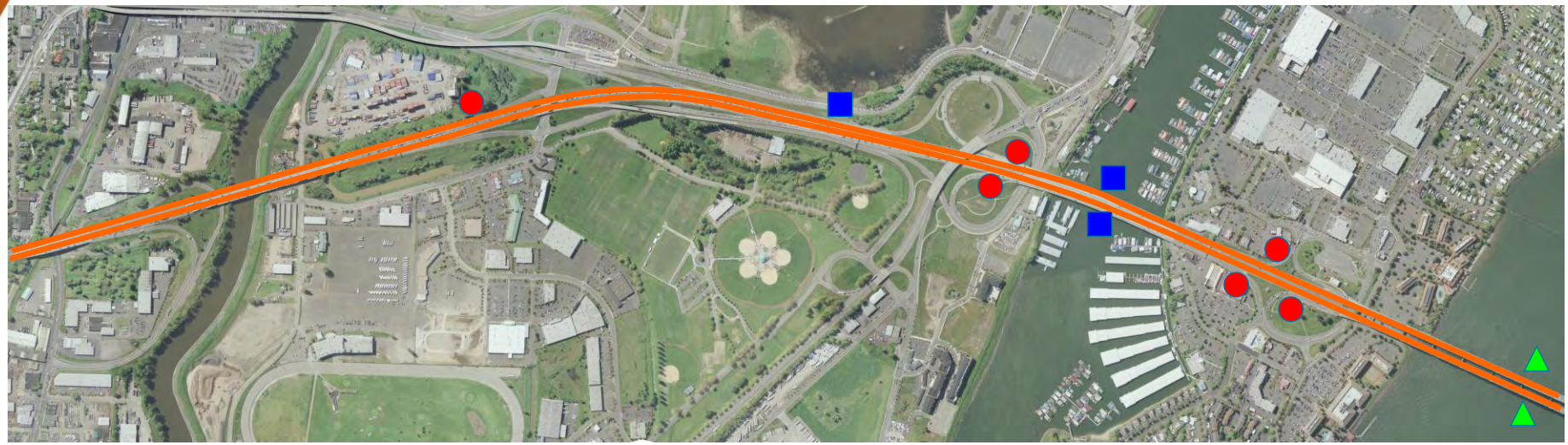
Vehicle collisions by type on I-5 in Oregon



Non-standard, outdated geometric design elements in Oregon



- Ramp-to-highway acceleration lane length
- Highway-to-ramp deceleration lane length
- Ramp-to-ramp separation lengths
- Highway weaving area lane length
- Highway horizontal alignment
- Highway vertical alignment
- Highway shoulder width

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Crashes during bridge lifts and traffic stops

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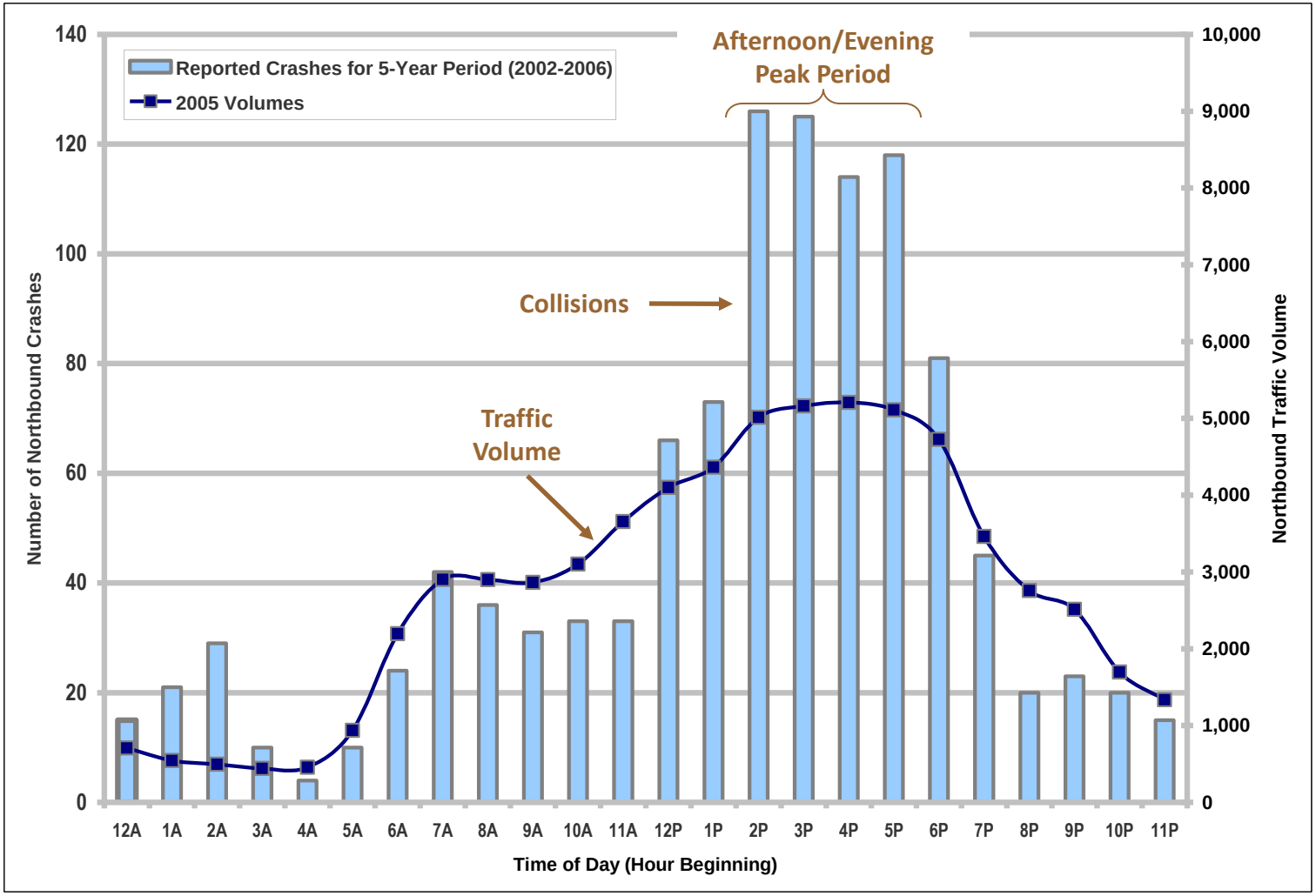
Collisions increase during congestion



2002-2006

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Truck-related crashes

- In 5-year period, 255 crashes involving trucks on I-5 mainline and ramps
- On a per vehicle basis, trucks are involved in 50% more crashes compared to autos
- 39% of truck crashes involved sideswipes, compared to 14% for all vehicles

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MINI STORAGE NOW RENTING

Purpose and Need: Address six critical I-5 problems

- Crashes
- Congestion
- Freight immobility
- Limited transit options
- Poor ped./bike access/connectivity
- Earthquake risk

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Interstate Collaborative Environmental Process signatories

- FHWA & FTA
- EPA, NMFS & USFWS
- Oregon & Washington DOT
- Oregon Department of State Lands
- Oregon State Historic Preservation Office
- Oregon Department of Fish and Wildlife
- Oregon Department of Land Conservation and Development
- Oregon Department of Environmental Quality
- Washington DOE, DFW, DAHP

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Tribal consultation

Federally Recognized Tribes:

- Colville
- Cowlitz
- Grand Ronde
- Nez Perce*
- Nisqually
- Siletz
- Spokane
- Umatilla*
- Warm Springs*
- Yakama*

Non-federally recognized tribe:

- Chinook

**** Tribes with court adjudicated treaty fishing rights on Columbia River***

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Major steps in screening:

1. **Gather ideas (transit, river crossing, interchanges, bike/ped)**
2. **Develop Evaluation Framework**
   - Pass/Fail criteria (Step A) - purpose and need
   - Detailed Screening Criteria (Step B)
3. **Apply Steps A and B to ideas (70 components)**
4. **Package remaining ideas into a "reasonable range" of alternatives (12)**
5. **Evaluate alternatives against the screening criteria**
6. **Carry forward promising alternatives into the DEIS**

Where did component ideas come from?

- Task Force
- Transportation Partnership
- South/North Corridor EIS
- Public scoping meetings
- InterCEP
- Public comments submitted via web, email or mail
- Staff

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Step A pass/fail questions

Does the component:

Q1- Increase vehicular capacity or decrease vehicular demand within the BIA?

Q2- Improve transit performance within the BIA?

Q3- Improve freight mobility within the BIA?

Q4- Improve safety and decrease vulnerability to incidents within the bridge influence area?

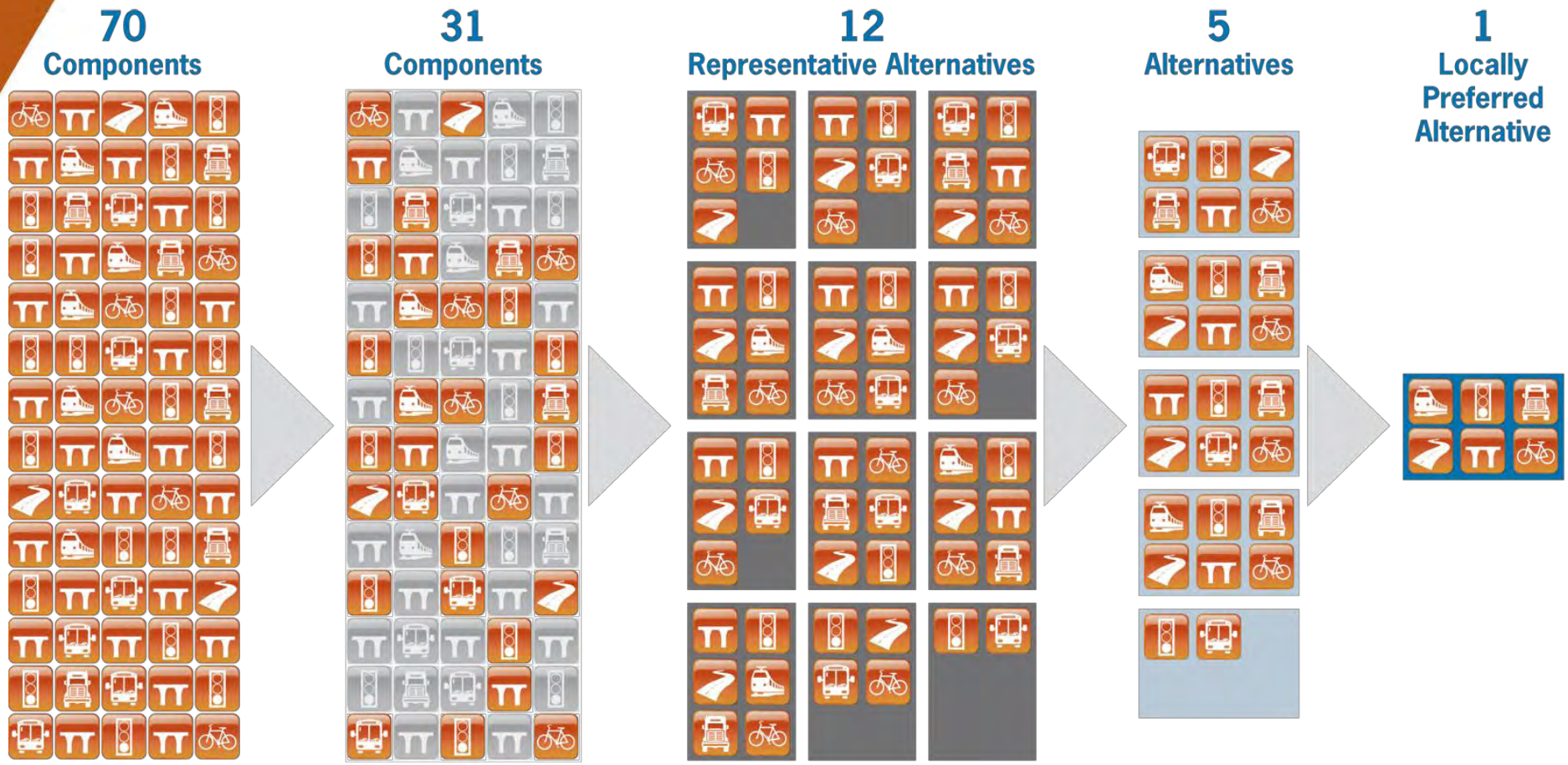
Q5- Improve bicycle and pedestrian mobility within the BIA?

Q6- Reduce seismic risk of the I-5 Columbia River Crossing?

Step B: Screening Criteria

1. Community Livability and Human Resources
2. Mobility, Reliability, Accessibility, Congestion Reduction, and Efficiency
3. Modal Choice
4. Safety
5. Regional Economy/Freight Mobility
6. Stewardship of Natural Resources
7. Distribution of Benefits and Impacts
8. Cost Effectiveness and Financial Resources
9. Growth Management and Land Use
10. Constructability

Overview of screening process



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Component categories

- River Crossing - 23
- Transit - 14
- Bicycle/pedestrian - 6
- Roadways north/south - 3
- TDM/TSM – 18
- Freight - 6

70 project components considered

CROSSINGS

- Replacement Bridge – Upstream
  - Low-level/Movable
  - Mid-level
  - High-level
- Replacement Bridge – Downstream
  - Low-level/Movable
  - Mid-level
  - High-level
- Supplemental Bridge – Upstream
  - Low-level/Movable
  - Mid-level
  - High-level
- Supplemental Bridge – Downstream
  - Low-level/Movable
  - Mid-level
  - High-level
- Tunnel to Supplement I-5
- New Corridor Crossing (adjacent to BNSF, west of existing I-5 bridges)
- New Corridor Crossing plus widen existing I-5 Bridges
- New Western Highway (I-605)
- New Eastern Columbia River Crossing
- I-205 Improvements
- Arterial Crossing to Supplement I-5
- Replacement Tunnel
- 33rd Avenue Crossing
- Non-Freeway multi-modal CRC
- Arterial Crossing with I-5 Improvements

TRANSPORTATION DEMAND/ SYSTEM MANAGEMENT

- Northern I-5 Managed Lane Through Re-striping
- Northern I-5 Transit-Only Lane Through Re-striping
- I-5 Managed Lane within the Bridge Influence Area
- I-5 Transit-Only Lane within the Bridge Influence Area
- Reversible Express Managed Lane
- Direct Access Ramps to Managed Lanes
- Preferential Managed Lane Merge(s)
- Ramp Queue Bypass Lanes
- Increased Bus Service
- Enhanced Park and Ride Capacity
- Enhanced Intelligent Transportation System Technology
- Improve Employer and Government Demand Management Policies
- Reduce Passenger Travel Time on Interstate MAX
- Transit Priority Signal System
- Congestion Pricing on I-5
- Highway On-Ramp Metering
- Arterial Managed Lanes
- Ramp Terminal Improvements

FREIGHT

- I-5 Mainline Freight-Only Lanes
- Interchange Ramp Freight Bypass Lanes
- Peak Period Truck Freight Restrictions
- Allow Increased Freight Truck Size and Weight
- Freight Direct Access Ramps at Select Interchanges
- Enhanced highway design for freight mobility

TRANSIT

- Express Bus in General Purpose Lanes
- Express Bus in Managed Lanes
- Bus Rapid Transit (BRT) – Light
- Bus Rapid Transit (BRT) – Full
- Light Rail Transit (LRT)
- Streetcar
- High Speed Rail
- Ferry Service
- Monorail System
- Magnetic Levitation Railway
- Commuter Rail in BNSF Trackage
- Heavy Rail
- Personal Rapid Transit
- People Mover/Automated Guideway Transit (AGT)

PED/BIKE

- Enhance Existing Pathway
- New I-5 Bridge and Pathway
- New I-5 Pathway-Only Bridge
- Enhanced Vancouver Connectivity
- Enhanced Hayden Island Connectivity
- New North Portland Pathway (Hayden Island to Marine Dr)

ROADWAYS NORTH AND SOUTH

- Interchange improvements
- Arterial improvements
- I-5 safety improvements

Components carried forward:

- River Crossing – 4/23
- Transit – 5/14
- Bicycle/pedestrian – 6/6
- Roadways north/south – 3/3
- TDM/TSM – 10/18
- Freight – 3/6

31 project components passed

CROSSINGS

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  - ~~Low-level/Movable~~
  - Mid-level
  - ~~High-level~~
- Replacement Bridge – Downstream
  - ~~Low-level/Movable~~
  - Mid-level
  - ~~High-level~~
- ~~Supplemental Bridge – Upstream~~
  - ~~Low-level/Movable~~
  - ~~Mid-level~~
  - ~~High-level~~
- Supplemental Bridge – Downstream
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ROADWAYS NORTH AND SOUTH

- Interchange improvements
- Arterial improvements
- I-5 safety improvements

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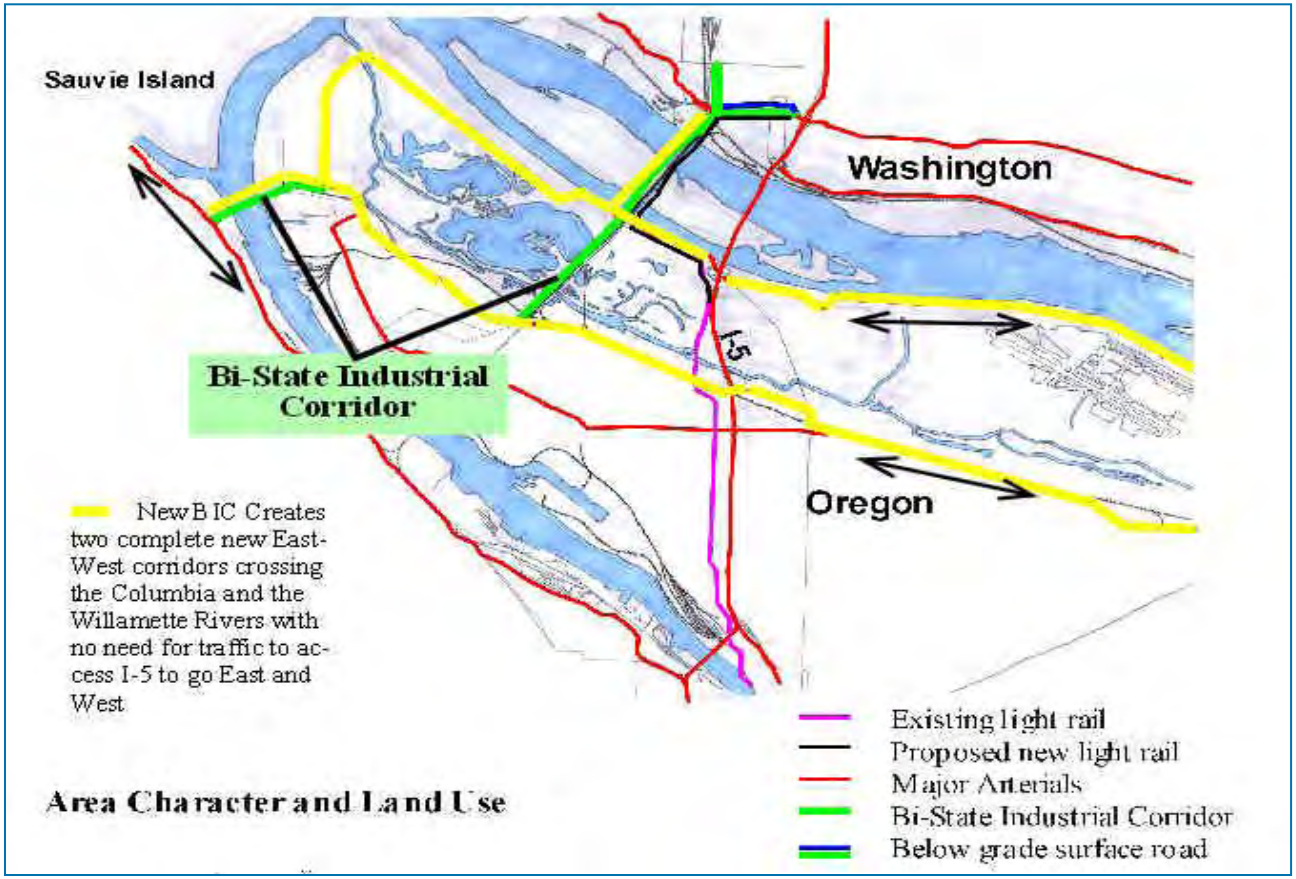
RC-14 new corridor crossing near BNSF rail crossing

Advance:

Yes ☐

No ☑



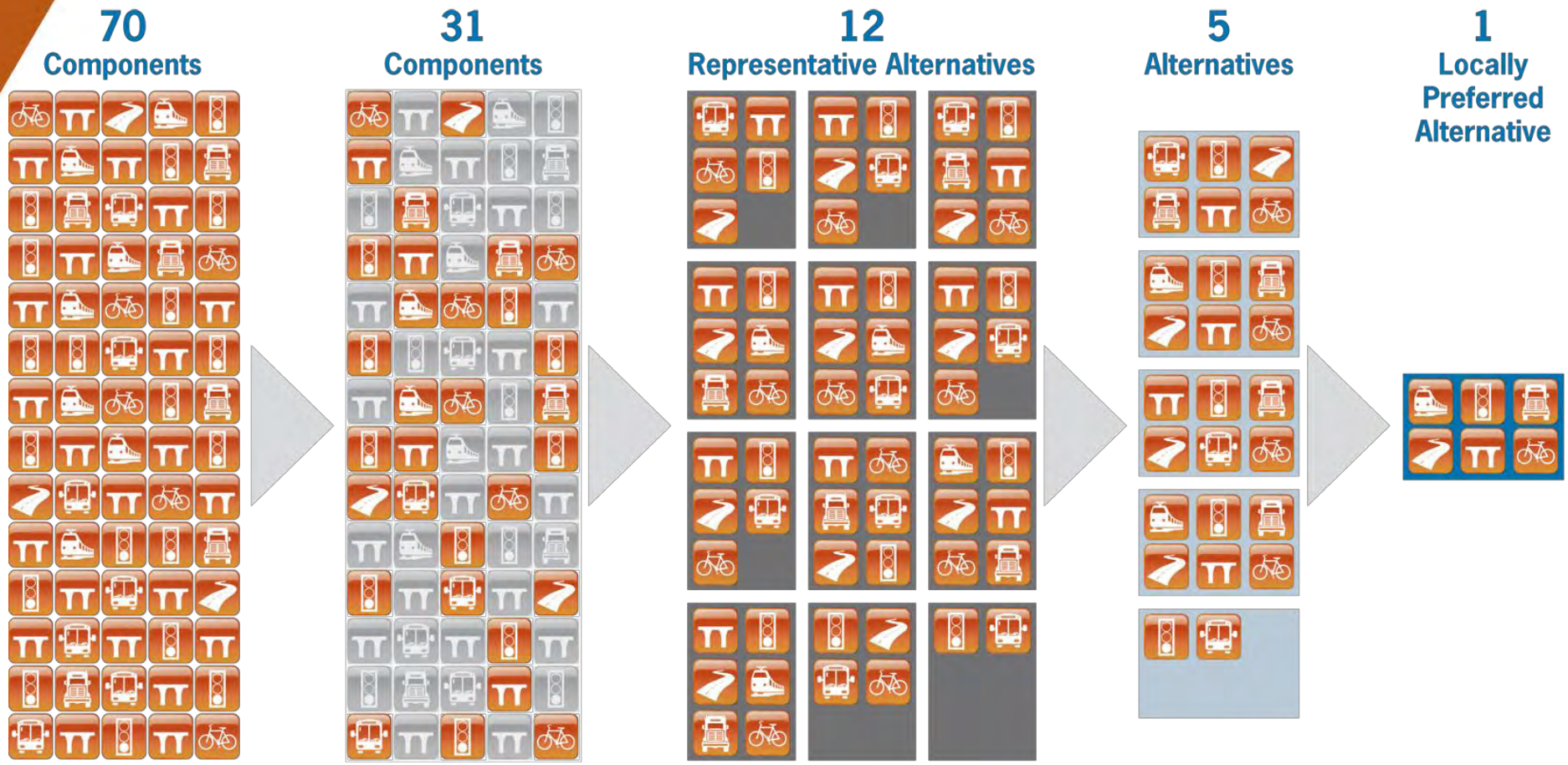
RC-14 new corridor crossing near BNSF rail crossing

- **Does not satisfy Questions 2, 4, 5 and 6**
- **Q2 – Does not provide service to population centers on Hayden Island. Out of direction travel times for trips between Salmon Creek and downtown Portland. Does not improve transit performance within the Bridge Influence Area.**
- **Q4 – Maintains known I-5 non-standard design features that contribute to vehicular collisions. Future I-5 safety would be expected to worsen as demand increases.**

RC-14 new corridor crossing near BNSF rail crossing

- **Q5 – Does not improve or provide new multi-use pathway across Columbia river in the I-5 corridor or improve I-5 related bicycle/pedestrian connections.**
- **Q6 – Investment in an alternative corridor does not reduce the seismic risk of the I-5 Columbia River crossing.**

Overview of screening process



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12 representative alternatives

- Consider all components that pass Step A
- Alternatives organized by theme – what is (are) the key feature(s)?
- Alternatives represent a full range of potential transportation solutions
- Use alternatives to identify strengths and weaknesses of individual components
- High-performing components may be re-packaged with other alternatives for the DEIS

12 representative alternatives

Representative Alternatives			Existing bridges only		Supplemental bridge with existing bridges					Replacement bridge				
			1	2	3	4	5	6	7	8	9	10	11	12
			No action	TSM/TDM	Supplemental bridge for arterial traffic with LRT	Supplemental bridge for I-5; LRT on existing bridge	Supplemental bridge for I-5; BRT on existing bridge	Supplemental bridge for I-5; BRT-lite on existing bridge	Supplemental bridge for I-5 and express bus	Replacement bridge for I-5 with LRT and express bus	Replacement bridge for I-5 with LRT	Replacement bridge for I-5 with BRT	Replacement bridge for I-5 with BRT-lite	Replacement bridge for I-5 with express bus
River Crossing Components	RC-3	Replacement/Down/Mid								■	■		■	
	RC-4	Replacement/Up/Mid										■		■
	RC-9	Supplemental/Down/Mid												
	RC-23	Arterial (new bridge)												
Roadways North/South	RSN-1	Interchange improvements								■	■	■	■	■
	RSN-2	Arterial improvements								■	■	■	■	■
	RSN-3	I-5 Safety Improvements								■	■	■	■	■
Transit Components	TR-1	Express bus in general purpose[2]												■
	TR-2	Express bus in managed lanes								■				
	TR-3	BRT-lite											■	
	TR-4	BRT-full										■		
	TR-5	LRT								■	■			
Bicycle/ Pedestrian Components	B/P-1	Enhance existing												
	B/P-2	Path on new bridge								■	■	■	■	■
	B/P-4	Vancouver connectivity								■	■	■	■	■
	B/P-5	Hayden Island connectivity								■	■	■	■	■
	B/P-6	North Portland pathway								■	■	■	■	■
Freight Components	F-1	Freight in managed lanes									■	■		
	F-2	Freight bypass lanes									■	■		
	F-3	Freight direct access ramp										■		
TSM/TDM Components	T-B	Basic												
	T-A	Aggressive								■	■	■	■	■

1. Assumes no managed lane beyond the existing northbound I-5 HOV lane in Portland.
2. Includes use of existing northbound HOV lane in Portland.

TSM = Transportation System Management TDM = Transportation Demand Management LRT=Light Rail Transit BRT=Bus Rapid Transit

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Alternatives for Draft Environmental Impact Statement

1. No build
2. Replacement bridge with bus rapid transit
3. Replacement bridge with light rail
4. Supplemental bridge with bus rapid transit
5. Supplemental bridge with light rail

All “build” alternatives include interchange, freight, and pedestrian/bicycle improvements between SR-500 and Delta Park.

Draft EIS technical reports

Built environment
- Acquisitions and displacements
- Air quality
- Cumulative effects (includes climate change**)
- Economics
- Electric and magnetic fields
- Energy
- Environmental justice
- Land use
- Neighborhoods and populations
- Noise and vibration
- Public services
- Utilities
- Visual quality and aesthetics

Cultural environment
- Archaeology
- Historic resources
- Parks

Natural environment
- Ecosystems
- Geology
- Hazardous materials
- Wetlands and jurisdictional waters
- Water quality

Transportation
- Aviation
- Navigation
- Traffic
- Transit

How was the Locally Preferred Alternative (LPA) selected?

- Review of the DEIS technical findings
- Public comments review
- Project sponsor boards and council resolutions
- Task Force vote

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LPA: replacement bridge

- Better congestion relief (4-6 hours vs. 11 hours)
- Better for safety
- Improved navigation
- Improved fish habitat with fewer piers
- Less wetland impacts
- No lift span

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LPA: light rail transit

- One seat ride between Vancouver and Portland
- Quicker, more direct access to key destinations
- Lower operation costs
- More daily peak period transit riders

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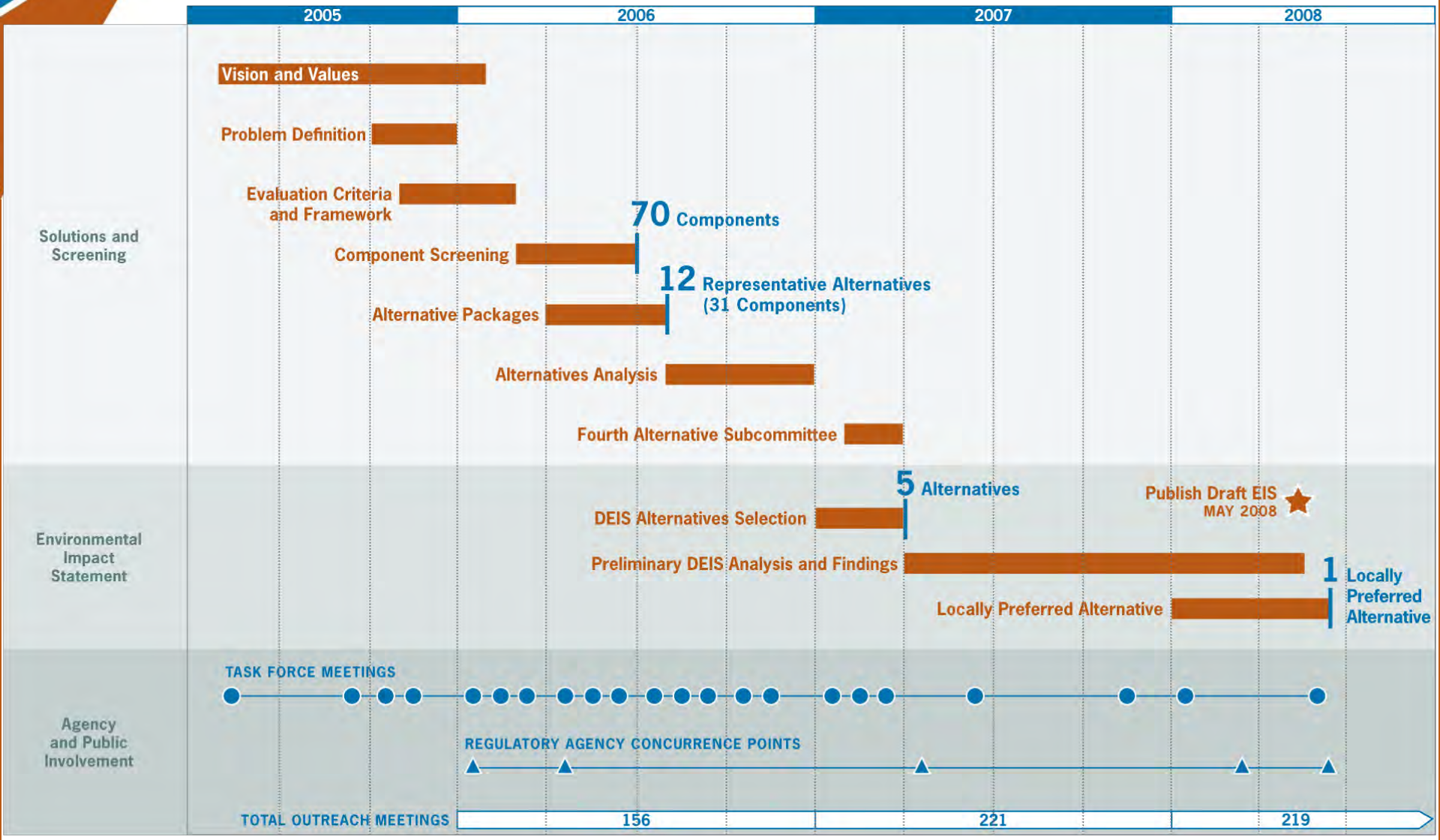
Early alternatives and screening timeline



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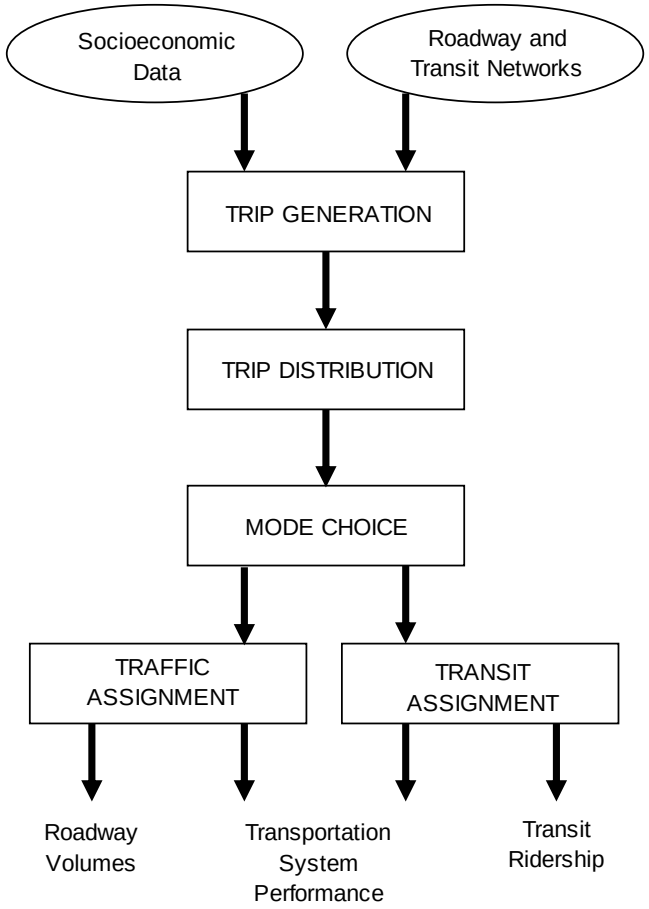
Locally Preferred Alternative

Critical I-5 transportation problems

- **Crashes**: 400 per year increasing to 750 by 2030
- **Congestion**: 4 to 6 hrs. per day increasing to 15 hrs. by 2030
- **Freight mobility**: Subject to I-5 congestion
- **Limited transit options**: Subject to I-5 congestion
- **Poor bike and pedestrian access**: 4 ft. wide shared path

Portland-Vancouver travel demand model

- **Metro/RTC's Travel Demand Model:**
  - Multi-modal (auto, transit, bike, pedestrian)
  - 2005 Base Year
  - 2030 Forecast Year
  - Bi-State land use allocation agreement occurred in February 2007



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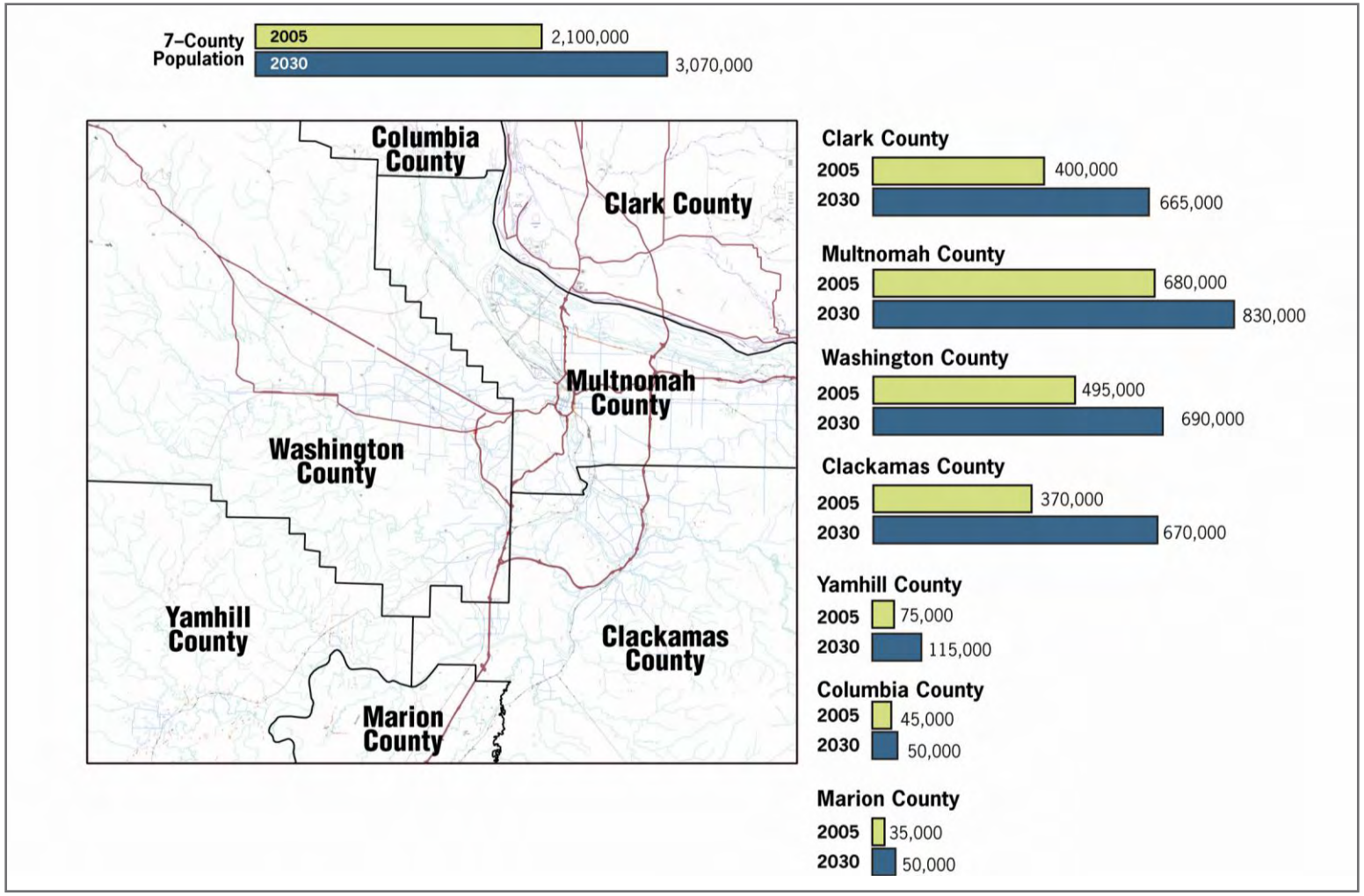
Population expected to increase 46%



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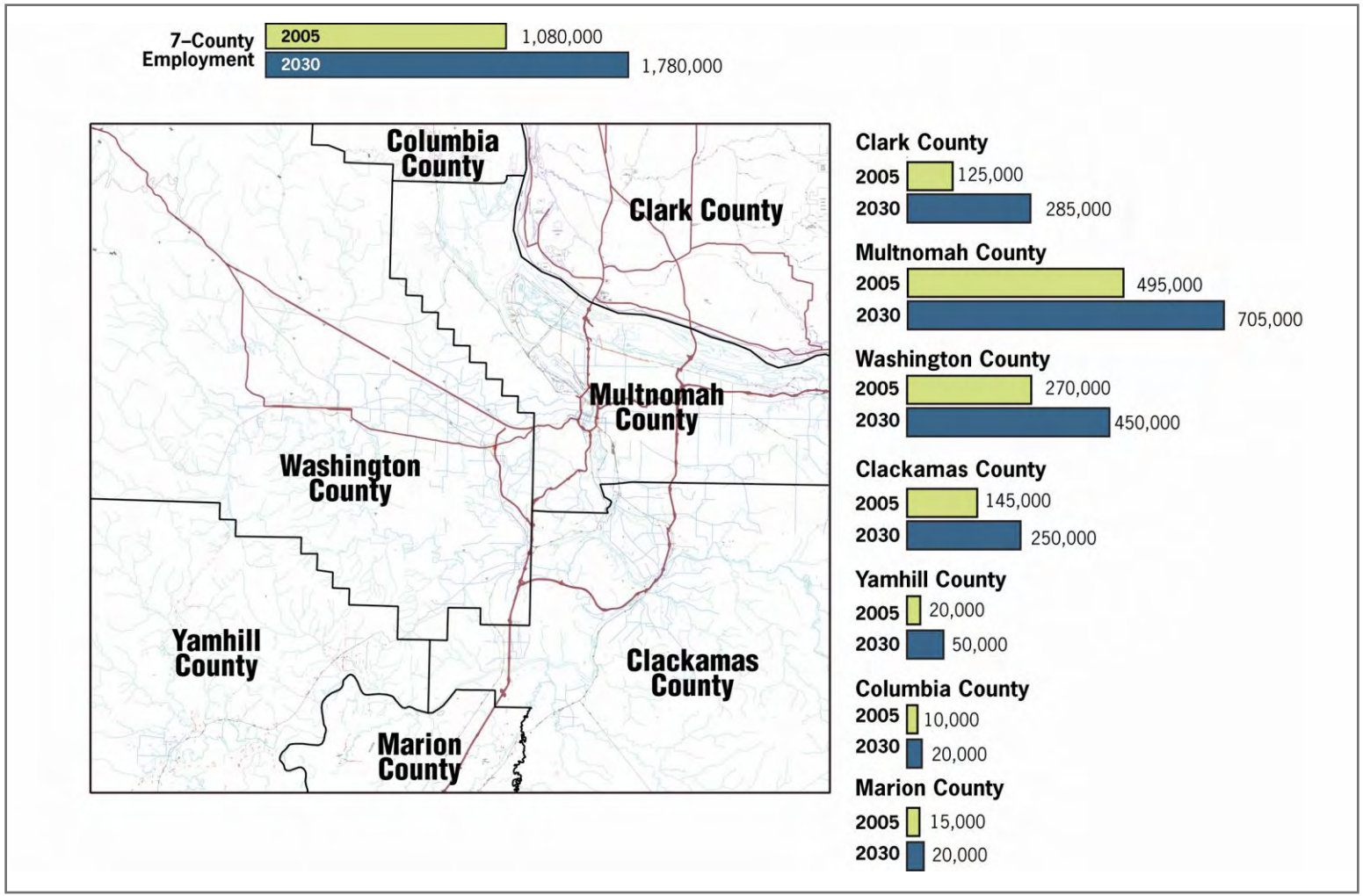
Employment estimated to increase 65%



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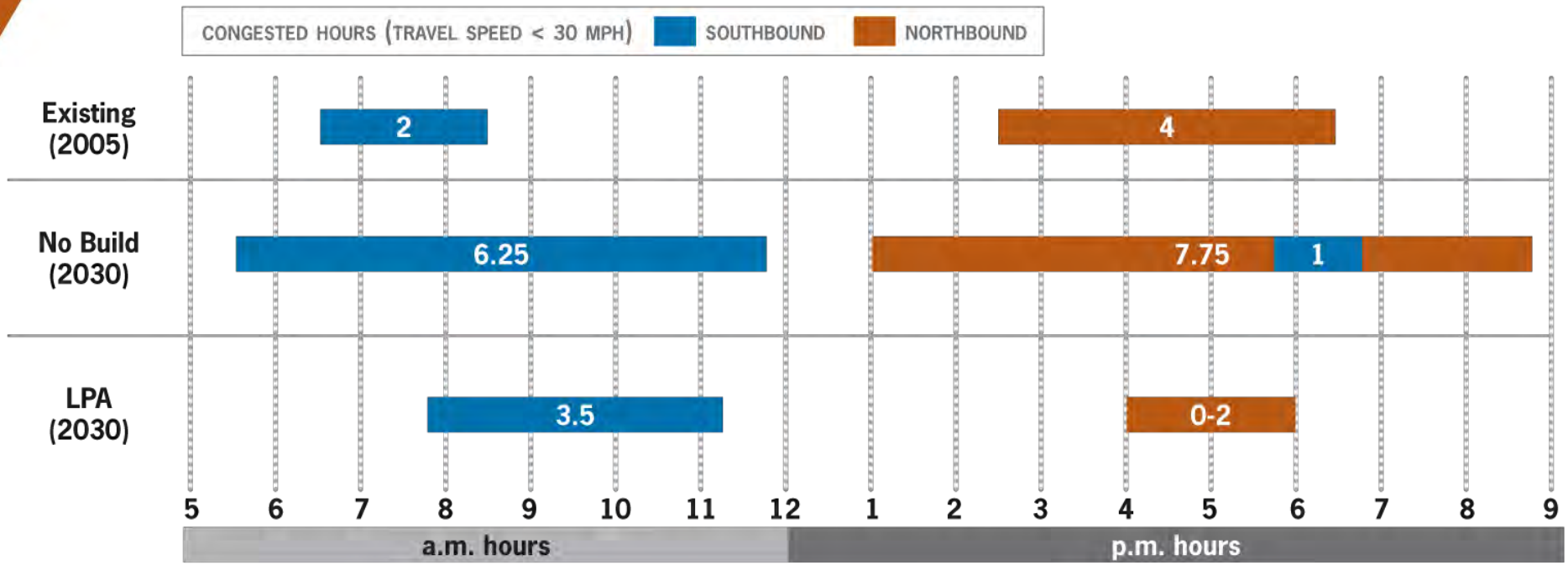
Daily congestion levels



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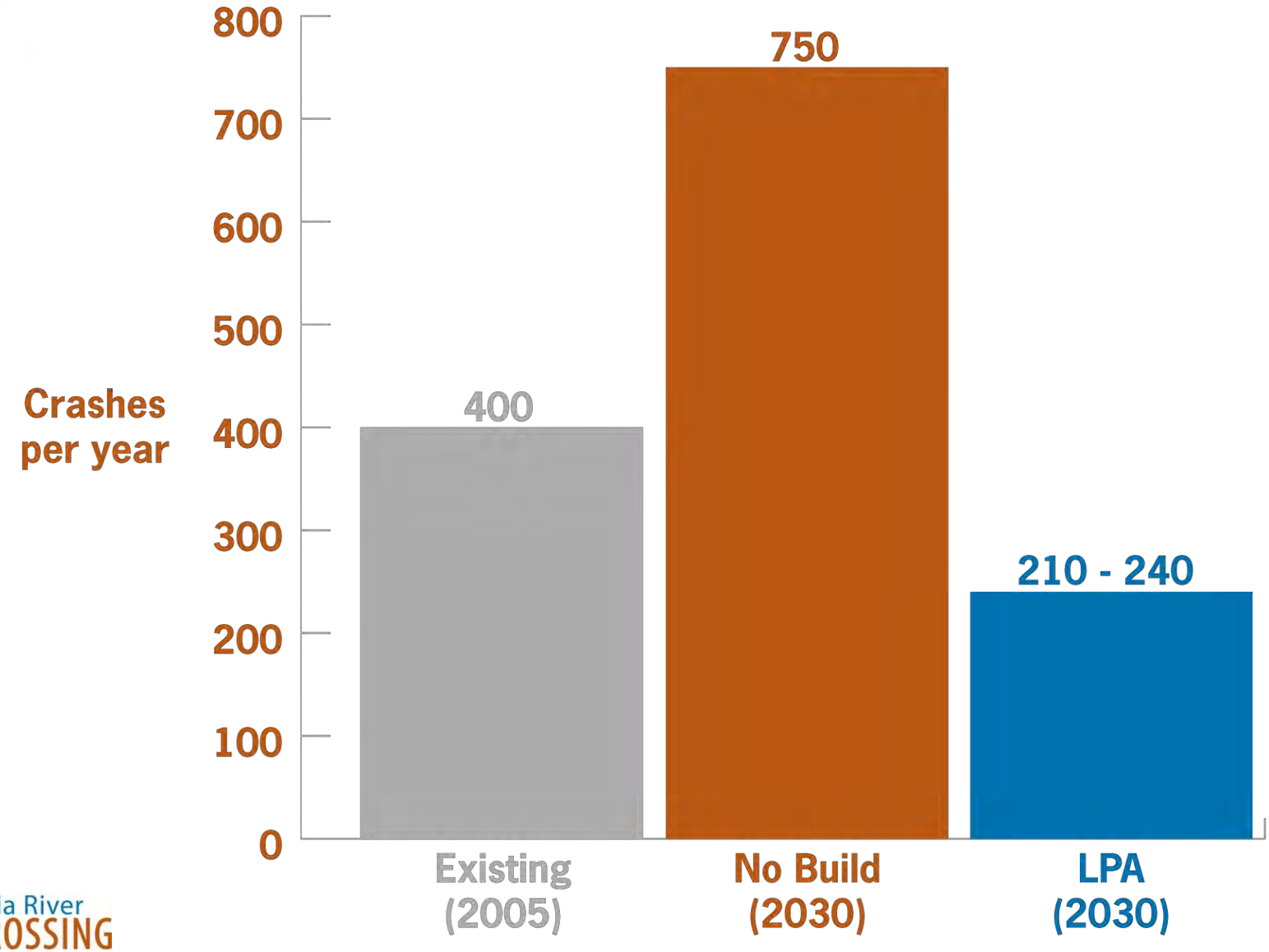
Annual collisions



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Project transportation benefits

Problem	Solution
Close interchange spacing and high volumes of merging, diverging, and weaving traffic	Auxiliary lanes, collector-distributor systems, braided ramps
Non-standard, outdated geometric design	Modern standards and safety shoulders
Bridge lifts	Higher bridge
Increased congestion	Variable tolling, travel choices, geometric improvements including auxiliary lanes, collector-distributor systems, and braided ramps
Decreased travel reliability for freight and businesses	Larger freight travel window outside of congestion
Limited transit options	Light rail and bus

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Cost Estimation Process

CEVP® background

- **WSDOT recognized the need to develop accurate estimates early and effectively communicate them to the public**
- **CEVP® was developed in 2002 to:**

✓ **Improve estimate and schedule accuracy**

✓ **Establish project budgets**

✓ **Manage risks**

✓ **Communicate with public and other stakeholders**

CEVP® process

- Structured peer review analysis of project
- Facilitated workshop
- Includes project team, independent experts, and independent reviewers
- Two primary objectives:

✓ Validate cost and schedule

✓ Identify and quantify risks

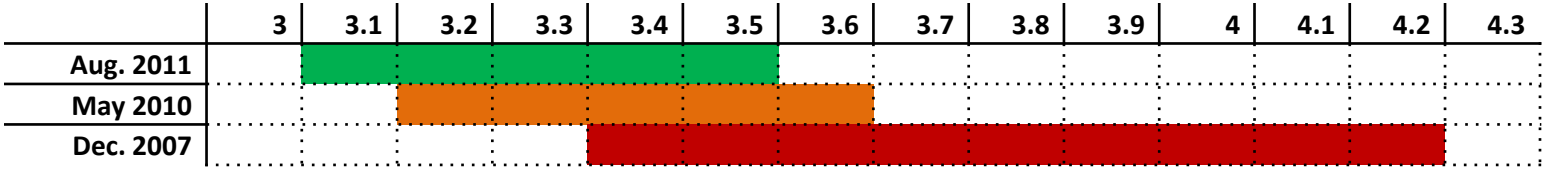
CEVP® benefits

- Consistent with industry best practices
- Independent review and validation of estimates
- Enhanced forecasting
- Improved ability to make key project decisions
- Improved focus for risk management
- Enhanced communication

CRC cost estimates have been refined through CEVP®

- **Cost estimate range has narrowed as alignment and design have been refined and certainty about schedule has increased**

Date	Project Status	Cost Estimate
Dec. 2007	Pre-LPA	$3.4 to $4.2 billion
May 2010	Post-LPA	$3.2 to $3.6 billion
Aug. 2011	Bridge type known, Biological Opinion	$3.1 to $3.5 billion



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Finance Plan Development

Funding major transportation projects

- **Establish project scope and benefits**
  - Identify potential funding partners
- **Identify promising funding sources**
- **Assess revenue potential from sources**
- **Align requirements of funding options**
- **Assemble into comprehensive cash-flow plan**
- **Propose to funding partners**
- **Reiterate based on new information**

Identify legal/regulatory requirements

- **For each promising source:**
  - Identify required steps to secure commitment/receive funds
  - Identify prerequisites to secure commitments
  - Estimate timing

Establish comprehensive finance plan

- Match revenue availability with legal/regulatory schedule
- Match revenue by source with project cash flow by expense
- Refine as project cost/schedule is refined
- Refine based on new information from stakeholders

Example: Westside light rail

- **$963M project costs**
- **Funding plan "set" 1988**
  - Finance plan refined 1990
- **GO Bonds approved 1990**
- **Lottery Bonds approved 1991**
- **Full Funding Grant Agreement: Phased project**
  - Downtown to 185th Street – 1992: Refined plan
  - 185th to Hillsboro – 1995: Refined plan
  - Added low floor cars – 1996: Refined plan
- **On-time, on-budget opening - 1998**

Federal funds sought by CRC

- **$850M of FTA New Starts Funds**
  - Amount leveraged by statutory provision
  - Current FTA rating supportive
- **At Least $500M of TIFIA financing assistance**
  - Financing program, not grant
  - Leverages funding capacity from tolls
  - CRC extremely well positioned to meet funding criteria
- **$400M of Discretionary Highway Funding**
  - Amount consistent with historic allocations to OR+WA
  - CRC extremely well positioned to meet funding criteria
- **Key requirement for federal programs:**
  - Local funds must be committed to secure federal funds

Toll-backed financing

- **Net revenue for debt service excludes O&M costs**
- **Borrowing combines TIFIA loan and bonds**
- **Current financing assumptions based on principles from treasurers**
  - Uses “Low” estimate of toll revenues
  - Borrowing does not require toll rate increases after 2018
  - Conservative financing assumptions: Interest rate, coverage
- **Borrowings will be based on investment-grade study**

Integrated, multi-modal finance plan

• Spent to date	$136 Million
• Toll Revenue/Bonding	$1.2 Billion
• New Start Funds	$850 Million
• Oregon + Washington	$900 Million
• Federal Discretionary Funds	$400 Million

Columbia River CROSSING

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Next Steps

Governance

WSDOT, ODOT, state DOJs and CRC are identifying key legal issues to inform future intergovernmental agreements

- Reviewing existing bi-state agreements, decision matrix and supporting documents
- Reviewing state authority for Oregon and Washington
- Developing proposals and options for governing structure for toll setting and administration
- Developing proposals for debt allocation including identification of needed legislation
- Identifying issues that may need resolution through new state or federal legislation

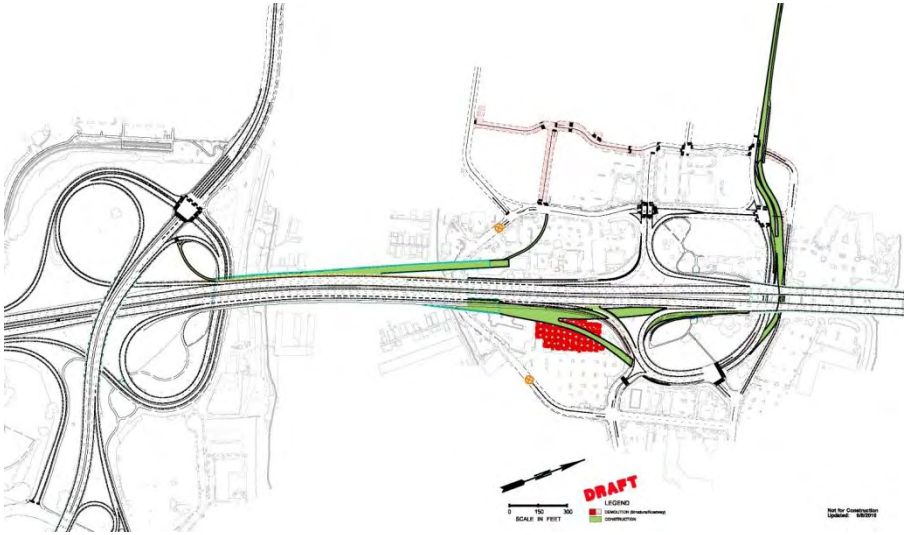
Sequencing criteria

- **Finish transit elements as soon as possible**
- **Maintenance of traffic (3 lanes each direction)**
- **Stages are completed when needed for subsequent stages**
- **The staging plan was developed to begin at the Columbia River Bridge**
- **Maintain**
  - Business access
  - Ports/freight movements
  - River navigation

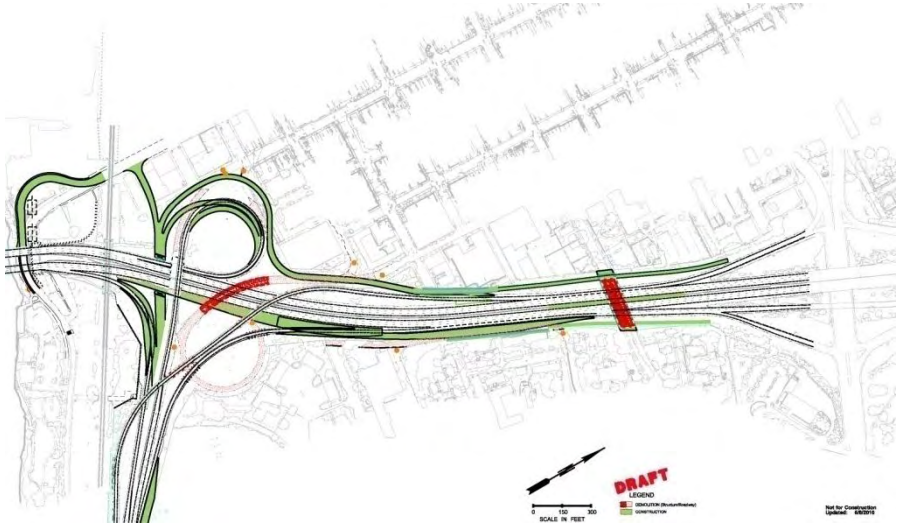
Staging overview

- Stage 0 – Begin construction of the Columbia River Bridge
- Stage 1 – NB I-5 shifted to the east
- Stage 2 – SB I-5 shifted to the east
- Stage 3 – Shift SB I-5 onto new SB Columbia River Bridge
- Stage 4 – Shift NB I-5 onto new SB Columbia River Bridge
- Stage 5 – Shift NB I-5 onto new NB Columbia River Bridge
- Stage 6 – Finish ramp tie-ins, paving, striping, signing

Stage 1 – Construct temporary widening to the east



Hayden Island / Marine Drive



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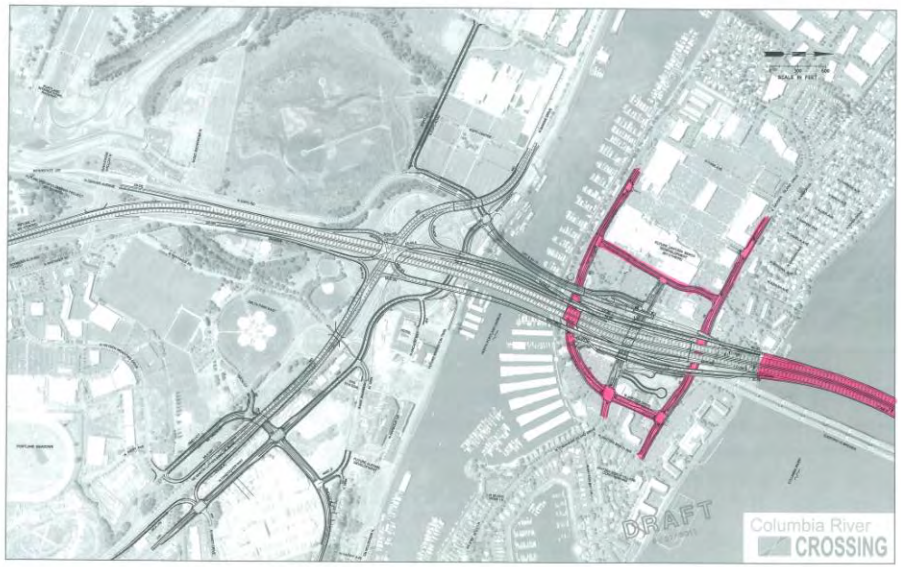
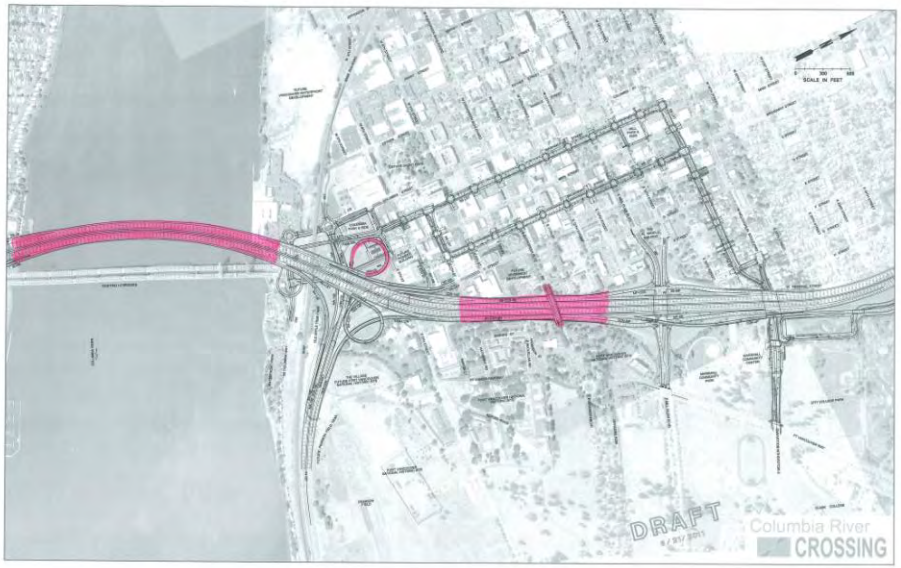
Stage 1 – Construct temporary widening to the east



Hayden Island / Marine Drive



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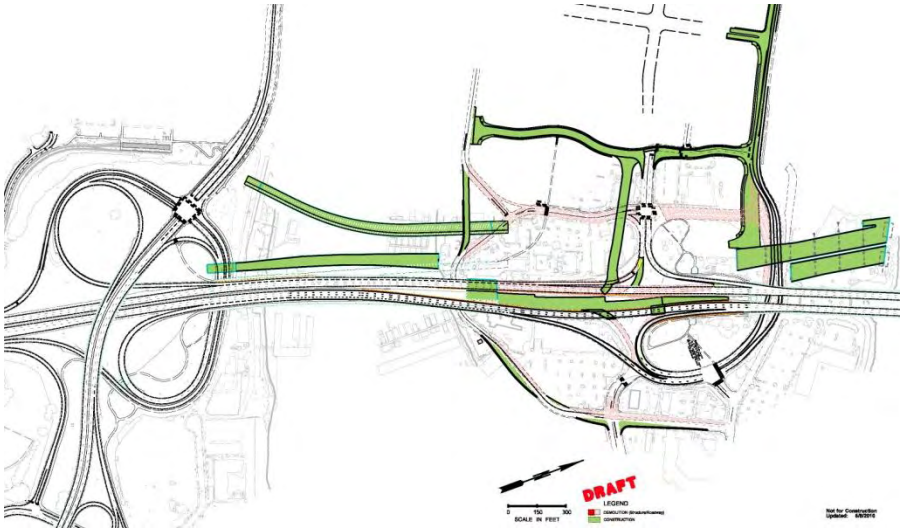
Stage 2 – Shift mainline traffic to the east onto temporary widening



Hayden Island / Marine Drive

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Stage 2 – Shift mainline traffic to the east onto temporary widening

Hayden Island / Marine Drive

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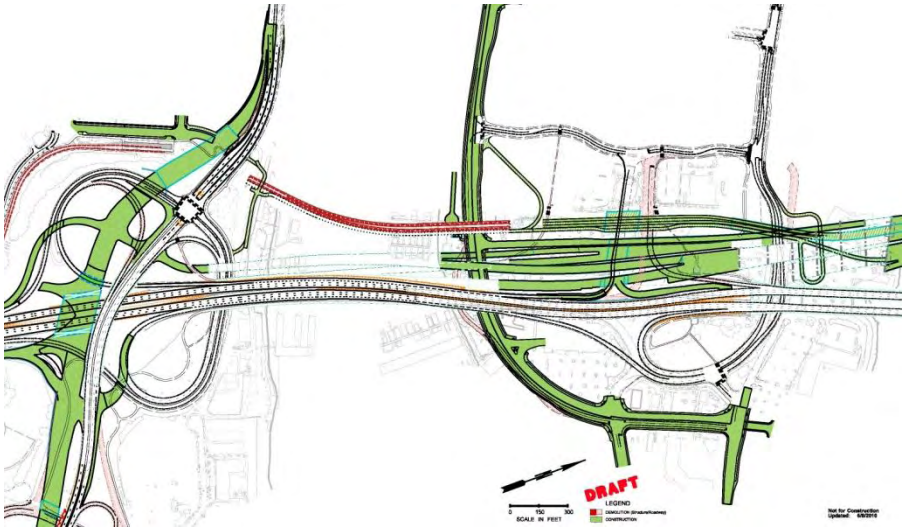
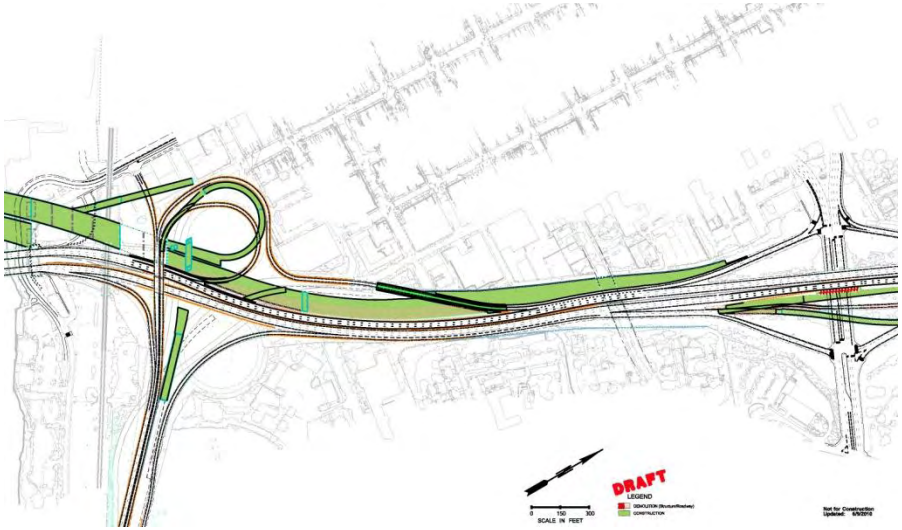
Stage 3 – Construct SB Approach to the new Columbia River Bridge



Hayden Island / Marine Drive



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Columbia River CROSSING

Stage 3 – Construct SB Approach to the new Columbia River Bridge

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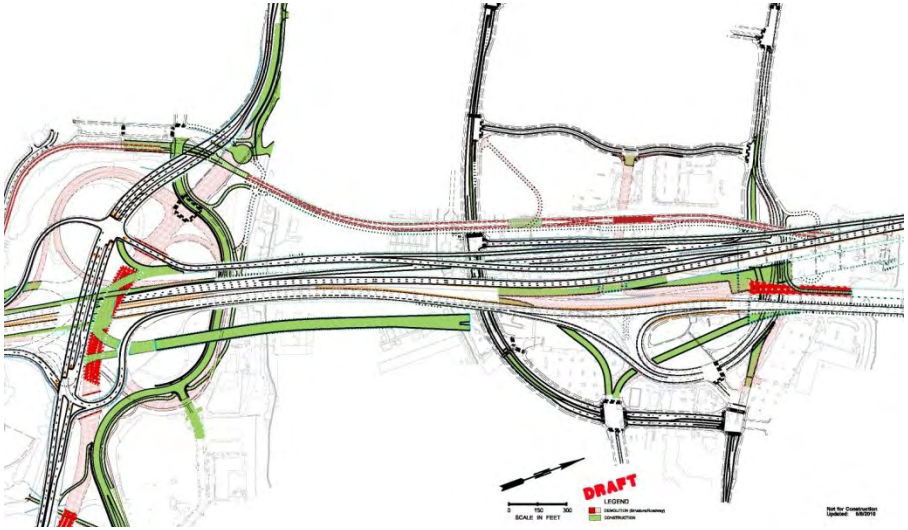
Stage 4 – Shift mainline traffic onto the new SB Columbia River Bridge



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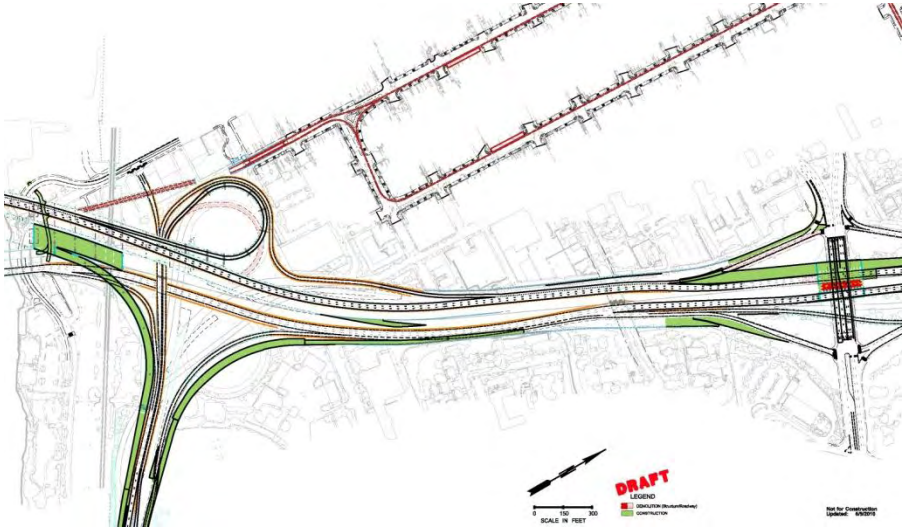

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Columbia River CROSSING

Stage 4 – Shift mainline traffic onto the new SB Columbia River Bridge

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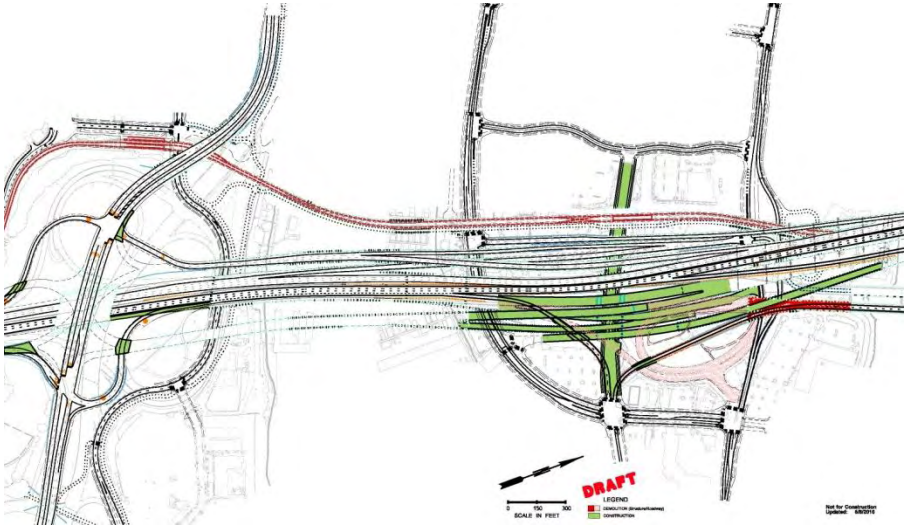
Stage 5 – Construct NB Approach to the new Columbia River Bridge



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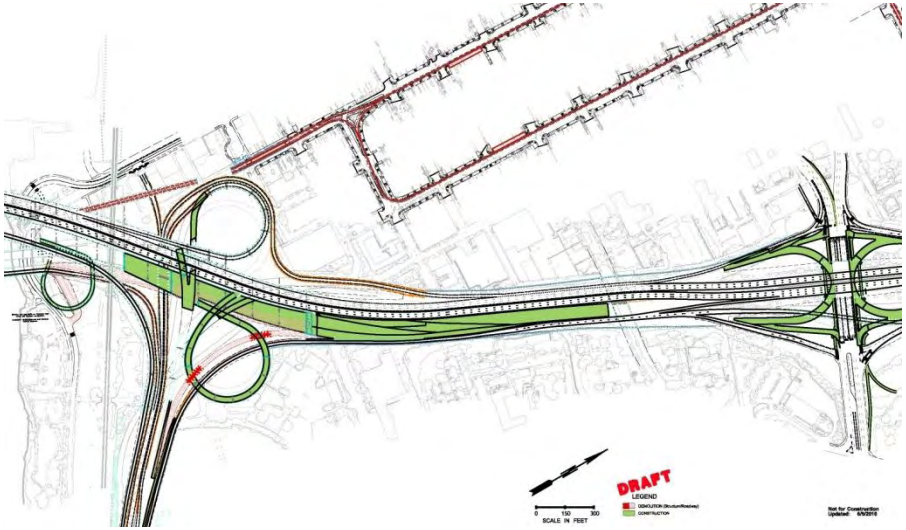

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Columbia River CROSSING

Stage 5 – Construct NB Approach to the new Columbia River Bridge

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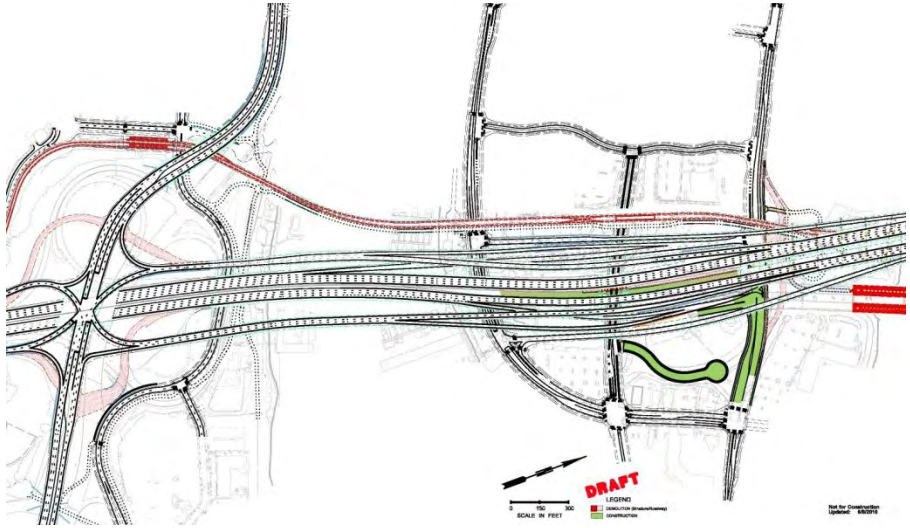
Stage 6 – Shift NB mainline traffic onto the new NB Columbia River Bridge / finish ramps



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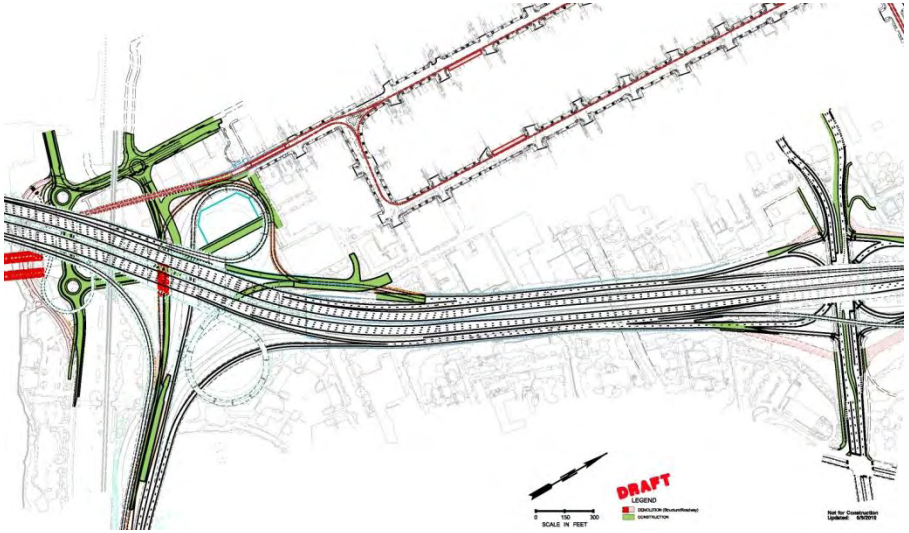

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Columbia River CROSSING

Stage 6 – Shift NB mainline traffic onto the new NB Columbia River Bridge / finish ramps

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Summary

- The work north of Mill Plain has schedule flexibility
- The staging required to maintain traffic operations will dictate the sequencing of work
- Identifying sequences provides the ability to determine smaller construction packages

Next Steps

- Develop construction phases based on constrained funding
- Using sequencing to develop contract packages
- Determine delivery method for packages

Columbia River CROSSING

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