DECISION 5
What type(s) of river crossing best satisfies the Problem, Vision and Values Statement?

Objective:

Determine what type of new river crossing is most appropriate for the I-5 corridor. Five different types of river crossings were examined:

- Light rail only bridge

Highway bridges (each potentially could be combined with light rail on the same structure):

- 4 lane supplemental bridge for through HOV traffic and access to Hayden Island (existing Hayden Is. interchange would be closed).
- 6 lane supplemental bridge (bypasses Marine Drive, Hayden Island, and SR 14 interchanges).
- 10 lane replacement bridge.
- 4 lane supplemental tunnel (bypasses Marine Drive, Hayden Island, and SR 14 interchanges).

Summary of Results:

Key Evaluation Factors	Baseline	Compared to Baseline:				
		Light rail only bridge	4-lane supplemental bridge	6-lane supplemental bridge	10-lane replacement bridge	4-lane supplemental tunnel
Provides HOV lanes across river	No	No	Yes	Yes	Yes	Yes
Potential impacts to river navigation	None	Yes	Yes	Yes	Improves channel clearance	None
Potential impacts to Pearson Air Park air space	None	None	None	None	Encroaches on air space if constructed as high span.	None
Vehicle delays due to bridge lifts	No change	No change	No change	Fewer delays on 6-lane bridge. No change to delays on existing bridges.	Delays are eliminated	No delays for tunnel traffic

Key Evaluation Factors	Baseline	Compared to Baseline:				
		Light rail only bridge	**4-lane supplemental bridge**	**6-lane supplemental bridge**	**10-lane replacement bridge**	**4-lane supplemental tunnel**
Changes in Access	None	Improves transit access to Hayden Island and Vancouver.	New interchange improves safety and operations at Hayden Island.	None.	New interchanges improves safety and operations at Hayden Island, SR 14	None
Number of residences displaced [1]	0	0	0	0	0	0
Number of businesses displaced [1]	0	15	29-31[2]	17	15	12
Environmental impact	Impacts of a Columbia R. crossing are dependent on the type, size, location, and construction methods.					
Construction cost **without** LRT (millions in 2001 $)	--	--	$600[3]	$940[3]	$1,120[3]	$810 [4]
Construction cost **with** LRT on joint bridge (millions in 2001 $)	--	$140 [5] (Light rail only)	$740 [3,5]	$1,010 [3,5]	$1,150 [3,5]	--

[1.] Includes displacements from all project-related impacts within neighborhoods affected by bridge type and location. For example, displacements for four-lane bridge include displacements in Esther Short neighborhood in Vancouver, and Hayden Island and Kenton/Bridgeton neighborhoods in Portland.
[2.] Range includes impacts for bridges without and with LRT.
[3] Highway bridge costs include all freeway improvement costs between Mill Plain and Victory (mainline, ramps, and bridges).
[4.] Costs shown are for immersed tube tunnel option. Bored tunnel option costs are under review.
[5.] Includes light rail bridge structure costs only. Other costs, such as track and electrification, were assumed to be uniform across all bridge types.

Analysis of Strengths and Weaknesses:

Bridge Option	Strengths	Weakness
No New Bridge	• No construction-related land use or environmental impacts	• Does nothing to address major freeway bottleneck or to provide additional transit capacity across the river.
Light rail only bridge	***-see discussion of joint use bridge below-***	
4-lane supplemental bridge	• Provides HOV link across the river to provide a continuous HOV corridor, resulting in improved travel times, less delay and less congestion for HOV traffic. • Express bus option with HOV ramps at Expo provides mid-day freeway access for trucks (bypassing Marine Dr. interchange). • Improves the operation of the I-5 Columbia River crossing by separating Hayden Island access from through traffic.	• When compared to other river crossing options, results in largest number of displacements. • All traffic would still be affected by bridge lifts, at the same frequency as today. • Increases out-of-direction travel for traffic between Marine Drive and Hayden Island (difficult for commercial truck access).
6-lane supplemental bridge	• Provides an HOV link across the Columbia River. (see above). • Substantially reduces number of bridge lifts without encroaching on air space. • Improves the operation of the I-5 Columbia River crossing by separating Hayden Island access from through traffic.	• Lift span would still be required, but would be used less frequently due to higher clearance under bridge. However, the width of the bridge may require two independent bridges with lift spans, adding complexity to bridge lift operations (there would be a total of four I-5 bridges with lifts)
10-lane replacement bridge	• Provides an HOV link across the Columbia River.. (see above). • Could be build as high or mid-span bridge. If high span, would eliminate bridge lifts and traffic interruptions. Mid-height span would have fewer lifts than existing bridges.	• If built as high span would affect Pearson Air Park air space. • Removes historic bridges. • Difficult to combine with LRT on joint-use bridge if built as high span.

Bridge Option	Strengths	Weakness
4-lane supplemental tunnel	• Provides an HOV link across the Columbia River.. (see above). • Provides for uninterrupted crossing (no bridge lifts for tunnel traffic). • Least impact to existing land uses of all the options that provide for a major freeway improvement. • Improves the operation of the I-5 Columbia River crossing by separating Hayden Island access from through traffic. • Avoids any impact on historical bridges.	• Construction of a submersed tube option would need to comply with very restrictive limits on in-water construction. Bored tunnel option would avoid in-water impacts, but would be more costly. .
Joint Use versus Separate Light Rail and Highway Bridges	• Construction of a joint light rail-highway bridge could potentially reduce overall bridge costs (depending on type of bridge selected), when compared to the cost of independent light rail and highway bridges. • Construction of a joint light rail-highway bridge would potentially reduce impacts to existing land uses and impacts resulting from in-water construction, when compared with two new bridges.	• Joint-use bridge would make it more difficult to optimize alignment and station configuration for light rail. Station costs would increase for joint use bridge. • Joint use bridge would provide less flexibility to advance LRT or highway improvements independently.