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ALTERNATIVES EVALUATION

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7. Alternatives Evaluation

The following sections present the preliminary evaluation of the five alternatives against the Tier III criteria. Additional evaluations will be available upon completion of the transit benefits analysis that will address measures related transit ridership and benefits available to current and future transit riders.

7.1. Mobility Criteria

The BRT alternatives increase local mobility within and between communities in the corridor. The current analysis shows the PM peak transit travel time between the ferry terminal and SR 3 increasing from 38 minutes in 2008 to 59.5 minutes in 2030 under the No Action alternative.

Figure 7-1 illustrates the transit travel time savings from the ferry terminal to Suquamish Way resulting from each build alternative. The travel times between Suquamish Way and SR 3 are identical for each of the five alternatives. The figure shows the greatest benefits come from the Reversible Center Lane and Northbound Transit Lane alternatives. These transit travel time improvements will make transit an attractive and competitive option, influencing some travelers to make a mode shift away from automobile use.

Figure 7-3 illustrates that only the Reversible Center Lane alternative negatively impacts traffic circulation while the other alternatives only have minor affects. The increased signal cycle times for Alternative 2 will increase the already high delays at congested intersections as reflected in Figure 7-4.

Figure 7-1 Transit Travel Time - Winslow Ferry Terminal to Suquamish Way NE

Direction	Alt. 1 No Action	Alt. 2 Center Lane	Alt. 3 Select Intersection	Alt. 4 Northbound Transit Lane	Alt. 5 Agate Pass
2030 AM Peak Hour					
Northbound	18 Minutes	17.5 Minutes	16 Minutes	15.5 Minutes	16.5 Minutes
Southbound	26.5 Minutes	14 Minutes	19 Minutes	19 Minutes	25 Minutes
2030 PM Peak Hour					
Northbound	37.5 Minutes	16.5 Minutes	30.5 Minutes	19.5 Minutes	33.5 Minutes
Southbound	21.5 Minutes	22 Minutes	18 Minutes	18 Minutes	20.5 Minutes

Figure 7-2 Automobile Travel Time - Winslow Ferry Terminal to Suquamish Way NE

Direction	Alt. 1 No Action	Alt. 2 Center Lane	Alt. 3 Select Intersection	Alt. 4 Northbound Transit Lane	Alt. 5 Agate Pass
2030 AM Peak Hour					
Northbound	13.5 Minutes	14.5 Minutes	13.5 Minutes	13 Minutes	13.5 Minutes
Southbound	22.5 Minutes	24 Minutes	20.5 Minutes	20.5 Minutes	22.5 Minutes
2030 PM Peak Hour					
Northbound	34 Minutes	35.5 Minutes	32 Minutes	31.5 Minutes	32 Minutes
Southbound	18 Minutes	20 Minutes	17.5 Minutes	17.5 Minutes	18 Minutes

Figure 7-3 Impact on Traffic Circulation in the SR 305 Corridor

Alternative	Qualitative Ranking	Comments
Alternative 1 No Action	O	Minimal change to traffic circulation.
Alternative 2 Reversible Center Lane	- - -	The transit center lane will restrict SR 305 north/south left-turn movements and the left-turn and through movements out of unsignalized streets/driveways between the Winslow Ferry Terminal and the Agate Pass Bridge. Drivers wanting to make these movements would need to travel to the next signalized intersection and make a U-turn. The restriction of these movements will increase travel time and distance, and congestion at signalized intersections.
Alternative 3 Select	O	Minimal change to traffic circulation.
Alternative 4 Northbound	O	Minimal change to traffic circulation.
Alternative 5 Agate Pass	O	Minimal change to traffic circulation.

Key: + + + is highest rating, - - - is lowest rating, and O is neutral.

Figure 7-4 2030 PM Peak Hour Intersection Level of Service and Delay (Seconds)

#	Intersection with SR 305	Control Type	Alt. 1 No Action	Alt. 2 Center Lane	Alt. 3 Select Intersection	Alt. 4 Northbound Transit	Alt. 5 Agate Pass
1	SR 3 Southbound Ramps/Olhava Way NW	Signal	B (19)	Intersection LOS and delay are the same as Alternative 1.			
2	SR 3 Northbound Ramps	Signal	D (39)				
3	Viking Way NW	Signal	D (35)				
4	Bond Road NE	Signal	F (103)				
5	NE Forest Rock Lane	Signal	E (79)				
6	NE Liberty Road	Signal	D (46)				
7	NE Lincoln Road	Signal	D (48)				
8	NE Hostmark Street	Signal	D (50)				
9	Johnson Way NE	Signal	A (6)				
10	Noll Road	TWSC	F (99)				
11	Seminole Road NE	TWSC	F (99)				
12	Totten Road NE	TWSC	F (>100) ¹				
13	George Lane NE	TWSC	D (26)				
14	Sandy Hook Road NE	TWSC	D (32)				
15	Suquamish Way NE	Signal	F (179) ²	F (234) ²	F (144) ²	F (144) ²	F (144) ²
16	Agatewood Road NE	TWSC	E (38)	³	E (38)	E (38)	E (38)
17	West Port Madison	TWSC	F (>100) ¹	³	F (>100) ¹	F (>100) ¹	F (>100) ¹
18	NE Hidden Cove Road	TWSC	F (>100) ¹	³	F (>100) ¹	F (>100) ¹	F (>100) ¹
19	NE Day Road	Signal	F (139)	F (190)	F (131)	F (131)	F (139)
20	NE Lovgreen Road	TWSC	F(64)	³	F(64)	F(61))	F(64)
21	NE Koura Road	TWSC	E (41)	³	E (41)	E (41)	E (41)
22	Sportsman Club Road NE	Signal	F (94)	F (108)	F (94)	F (94)	F (94)
23	Madison Avenue	Signal	E (69)	E (69)	E (69)	E (63)	E (69)
24	High School Road NE	Signal	D (51)	D (51)	D (51)	D (50)	D (51)
25	Winslow Way	Signal	E (67)	E (67)	E (67)	E (64)	E (67)
26	Harborview Drive NE	Signal	A (3)	A (3)	A (3)	A (3)	A (3)

¹ HCM software does not accurately report unsignalized intersection delays over 100 seconds.

² HCM 2000 methodology is used to calculate LOS and delay for all intersections except Suquamish Way NE. SimTraffic simulation is used for Suquamish Way NE because HCM methodology is not accurate due to high westbound right-turn volumes and only a 100 foot right-turn lane.

³ The exclusive transit center lane in Alternative 2 restricts side street traffic to right-in and right-out movements and north/south SR 305 traffic to through movements and right turns.

7.2. Reliability Criteria

All the BRT alternatives provide speed and reliability attributes to move transit around congested intersections. Figure 7-5 shows the amount of dedicated transit runaway provide by each alternative with Alternatives 2 and 4 having the greatest amount. In all cases, including the No Action, all signalized intersections have Transit Signal Priority to move buses through intersections.

Figure 7-5 Miles of Dedicated Lanes

Alternative	Distance
Alternative 1 No Action	0 Miles
Alternative 2 Reversible Center	6.74 Miles
Alternative 3 Select Intersections	0.51 Miles
Alternative 4 Northbound Transit	4.28 Miles
Alternative 5 Agate Pass	0.39 Miles

Note: New lanes may be exclusive transit right-of-way or shared with general traffic.

Figure 7-6 Number of Signalized Intersections with TSP

Alternative	Signalized Intersections
Alternative 1 No Action	16
Alternative 2 Reversible Center	16
Alternative 3 Select Intersections	16
Alternative 4 Northbound Transit	16
Alternative 5 Agate Pass	17 ¹

Note: All signals in the SR 305 corridor have transit priority/preemption.

¹ New signal would be added south of the Agate Pass Bridge.

7.3. Safety

The Reversible Center Lane alternative raises some safety concerns for all modes, mostly due to the complexity and uniqueness of the BRT operation at intersections. The Dedicated Northbound Transit Lane reduces vehicle merging and slightly improves safety. The other alternatives do not greatly affect safety.

Figure 7-7 Impact on the Safety of Autos, Pedestrians, Bikes and Transit

Alternative	Qualitative Ranking	Comments
Alternative 1 No Action	O	<ul style="list-style-type: none"> Minimal change to auto, pedestrian, bike, and transit facilities or operations.
Alternative 2 Reversible Center Lane	--	<ul style="list-style-type: none"> The transit center lane restricts emergency vehicle access and increases response time. The Alternative increases the number of vehicles making u-turns at the signalized intersections which increases the potential for collisions. The complexity of the system may lead to confusion and possible safety issues. The directional change of the buses and the location of BRT stations either in the center of the roadway or on the side of roadway may confuse drivers and transit riders. The Alternative improves auto safety by restricting turning movements at unsignalized intersections. This minimizes the potential for right angle collisions of vehicles entering and exiting the side streets. The Alternative reduces the number of locations where transit merges with general traffic. Riders traveling in the peak direction need to access and wait on platform in median of highway
Alternative 3 Select Intersections	O	<ul style="list-style-type: none"> Minimal change to auto, pedestrian, bike, and transit facilities or operations.
Alternative 4 Northbound Transit Lane	+	<ul style="list-style-type: none"> The northbound transit lane from the Winslow Ferry Terminal to NE Day Road reduces the number of locations where transit merges with general traffic. The northbound transit lane also serves as a right-turn lane at intersections for safer deceleration.
Alternative 5 Agate Pass Improvements	O	<ul style="list-style-type: none"> Minimal change to auto, pedestrian, bike, and transit facilities or operations.

Key: + + + is highest rating, - - - is lowest rating, and O is neutral.

7.4. Costs

Figure 7-8 Cost Comparison

Direction	Alt. 1 No Action	Alt. 2 Center Lane	Alt. 3 Select Intersection	Alt. 4 Northbound Transit Lane	Alt. 5 Agate Pass
Annual Operating Costs					
Operating Cost	\$1,674,000	\$4,387,000	\$4,692,000	\$4,387,000	\$4,692,000
Implementation Capital Costs					
Capital Cost	\$36,800,000	\$67,203,000	\$23,018,000	\$41,925,000	\$21,948,000

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