Chapter 11–Cumulative Transportation Effects

What is in this chapter?

Chapter 11 identifies cumulative effects of the project alternatives with transportation improvements currently planned for future implementation but not funded. Cumulative effects are an estimate of anticipated travel demand and capacity throughout the region, taking into account other projects that may be constructed during the same time frame as the Medina to SR 502: Eastside Transit and HOV Project.

Did you know?

The cumulative effects discussed in this chapter will show some shifts in transit person trips resulting from the inclusion of the expanded Light Rail Transit (LRT) service that was part of the ST2 program. Total vehicle trips across SR 520 showed little change (less than 2%) as a result of including the ST2 program.

The following terms and assumptions are used throughout this section:

- **Cumulative Effects Scenario—**This is a traffic analysis scenario that assumes future implementation of an extended regional package of transportation capacity improvements in addition to the Medina to SR 202: Eastside Transit and HOV Project Build Alternative
- **Build Alternative –** This option includes the following elements:
  - A 6-lane SR 520 corridor from the eastern shore of Lake Washington to SR 202
  - Improved interchange configurations at 84th Avenue NE, 92nd Avenue NE, and Bellevue Way/108th Avenue NE

Comparing forecasted travel demand and travel patterns from the project alternatives to cumulative effects results in the following conclusions.

When compared to the No Build and Build Alternatives, the cumulative effects scenario shows a substantial increase in HOV use on SR 520. The scenario also shows slightly lower total cross-lake vehicle volumes than either the No Build or Build Alternative, indicating that the analysis conducted for the Medina to SR 202: Eastside Transit and HOV Project environmental assessment represents a conservative estimate of traffic and associated impacts.

The following sections describe the methods used to determine the regional transportation improvements included in the cumulative effects scenario, as well as how those scenarios were modeled. The results of the analysis are presented primarily in terms of screenline and cross-lake travel demand for both daily and afternoon peak periods. Screenline results include the following major regional corridors: I-5, I-405, I-90, SR 522, and SR 520. The evaluation of cross-lake travel specifically compares travel demand and mode choice between SR 520 and I-90. The No Build and Build Alternatives were evaluated against the cumulative effects scenario for both the screenline and cross-lake travel demand assessments.

What planned future transportation projects were included in the cumulative effects scenario?

WSDOT decided that the transportation system modeled for the year 2030 cumulative effects scenario should include:

- I-5 to Medina: SR 520 Bridge Replacement and HOV Project:
- Regional high-priority projects, including the I-405 Corridor Congestion Relief and Bus Rapid Transit Projects Implementation Plan (WSDOT 2003)
- High-priority local arterial projects within the study area that have either undergone or are currently undergoing some form of environmental review
- All components of the ST2 program that were approved by the voters in November 2008. Major elements of the program include:
    - Extension of light rail south to Star Lake/Redondo, north to Lynnwood and east to Overlake Transit Center via I-90
    - Modifications to Sound Transit bus routes currently serving the Eastside that will be replaced by expansion of light rail
    - Additional service on Sound Transit commuter rail service

WSDOT also requested that additional highway projects be included in the cumulative effects analysis. These projects, part of the I-405 Master Plan, are currently not funded but could be completed by 2030. They include:

- Add two new lanes in each direction on I-405 from SR 169 to I-90
- Extend HOV direct access to 120th Ave NE from the Northeast 6th Street Extension on I-405
- Southbound braided ramps between SR 520 and Northeast 8th Street on I-405, including ramp connections to Northeast 10th Street

Local Street Network

Exhibit 11-1 identifies local street projects included in the cumulative effects analysis. These projects are currently not funded but could be complete by 2030.

Exhibit 11-1. Local Street Projects Currently Not Funded to Include in Cumulative Effects Scenario

Project	Location
Mercer Corridor Improvements	Seattle
Spokane Street Viaduct Project	Seattle
118th Ave NE Road Ext – north of NE 116th (new) to NE 118th Street	Kirkland
NE 132nd St Road Improvements – 100th Avenue to 132nd Avenue	Kirkland
119th Avenue NE Road Ext – NE 128th to NE 130th	Kirkland
NE 130th Street Road Ext – Totem Lake Boulevard to 120th Avenue NE	Kirkland
NE 120th Street Road Improvements – extend NE 120th to 120th Place	Kirkland
120th Avenue NE Road Ext – NE 116th to NE 120th	Kirkland
NE 4th Street Ext – 116th Avenue NE to 120th Avenue NE – Construct new 3- to 5-lane roadway	Bellevue

Transit Network

Exhibit 11-2 identifies Sound Transit ST2 Plan projects included in this cumulative effects analysis. The projects were not included in the EA because the ST2 Plan had not yet been approved by voters.

Exhibit 11-2. Sound Transit 2 Plan Components Included In Cumulative Effects Scenario

Project	Notes
ST2 – Light rail extension from SeaTac to Redondo/Star Lake (Federal Way)	Included in ST2 Plan, which was approved by voters on the November 2008 ballot
ST2 – Light rail extension on I-90 from Downtown Seattle to Downtown Bellevue and Overlake Transit Center	Same as above
ST2- Light rail extension from University of Washington to Northgate and Lynnwood	Same as above
ST2 – Commuter Rail: 9 additional trips per day	Same as above
100,000 additional annual hours of Sound Transit Express service beginning in 2009, 49,000 hours of which will be implemented in East King County	Same as above

How was the travel modeling conducted?

The transportation discipline team used the SR 520 travel demand model to analyze potential future cumulative effects throughout the region, and specifically their effect on cross-lake travel demand. The cumulative effects scenario was modeled by providing a background network assumption to match the project description and validating the results against actual data for this corridor. The team then compared the cumulative effects scenario with the No Build and Build Alternatives for both daily and peak periods. The primary measures used to make the comparisons included vehicle trips and person trips.

Inclusion of the ST2 light rail extension on I-90 from Downtown Seattle through Downtown Bellevue to the Overlake Transit Center has a substantial effect on transit travel patterns throughout the region. To understand the resulting travel behavior, it is necessary to consider several key factors in demand modeling for transit trips, including:

- Time spent waiting for the transit vehicle (bus or train) to arrive
- Boarding and alighting times (which differ for buses and trains due to their physical configuration)
- Walk time to the final destination or transfers to different modes

- Travel time (which may or may not be impacted by local street traffic, traffic signals, or congestion depending on route and mode)

Depending on the origin and destination of a trip, one transit mode may travel a longer distance, but the total travel time—taking into account the above key factors—may be less than another transit mode traveling a shorter distance. The travel modeling process accounts for all these factors to generate travel demand estimates by mode and other components of travel behavior such as population, employment, and parking costs.

The steps to develop cumulative effects scenario model runs included:

1. The cumulative effects package of other regional projects was added to the project travel demand model with the Build Alternative and the model was run to obtain output for the scenario.
2. The output results from the transportation model run for the cumulative effects scenario were then compared to the results of the model runs for the project alternatives.

To compare results from the model runs, the team developed six screenlines at the following locations:

- Screenline ❶: Mid-span bridge (Evergreen Point and I-90 bridges)
- Screenline ❷: East of I-405 (between SR 520 and I-90)
- Screenline ❸: North of SR 520 (between Lake Washington Boulevard NE and 148th Avenue NE)
- Screenline ❹: Lake Washington Ship Canal (Fremont Bridge to Montlake Bridge, a combination of Seattle screenlines 5.12, 5.13, and 5.16)
- Screenline ❺: South of I-90 (East Marginal Way to Rainier Avenue S, a combination of Seattle screenlines 9.12 and 9.13)
- Screenline ❻: South of I-90 (118th Avenue SE, I-405, Factoria Boulevard SE, and 150th Avenue SE)

What are the modeling results?

The transportation discipline team consolidated and summarized extensive data from the travel demand modeling. The results are

presented in several formats to provide insight into travel behavior of autos and transit riders under the No Build Alternative, Build Alternative, and the cumulative effects scenario. Specifically, screenlines were used to present the differences in cross-lake and north-south travel between the different alternatives and cumulative effects scenario.

The team conducted additional analysis to isolate the behavior associated with transit transfers and access to park-and-ride facilities. The following discussion presents results from both the screenline data and more specific cross-lake travel trends that the team observed.

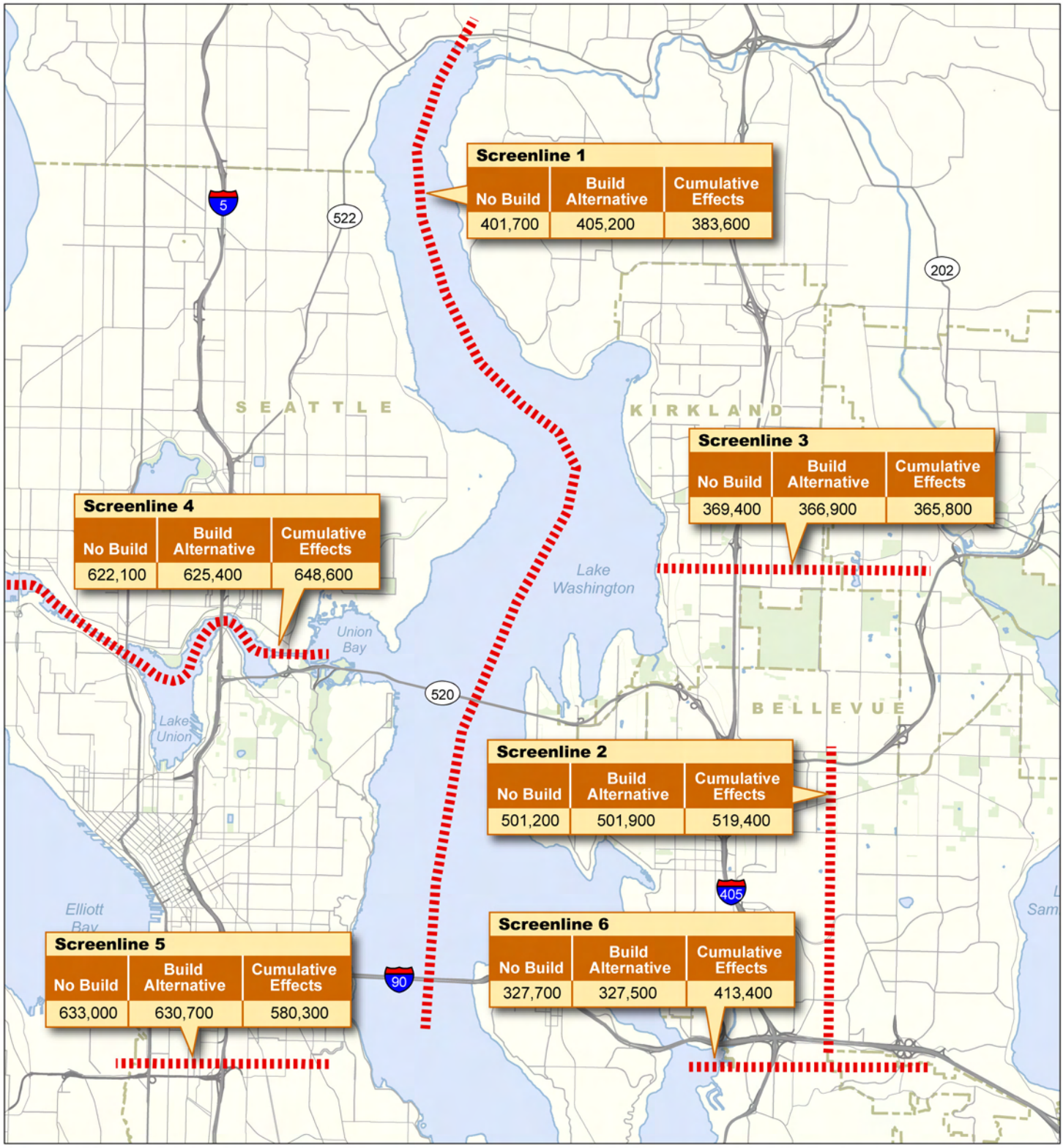
What are the findings for the screenlines?

We developed several exhibits that compare the results of the cumulative effects modeling to the project alternatives model output. Both daily and afternoon peak period screenlines were developed for vehicle and person trips. Exhibits 11-3 and 11-4 present daily screenline results for vehicle and person trips, respectively. Exhibits 11-5 and 11-6 present afternoon peak period screenline results for vehicle and person trips, respectively.

The screenline exhibits show the different forecasted vehicle and person trips for the No Build Alternative, the Build Alternative, and the cumulative effects scenario. The No Build Alternative results from the travel demand model were compared to both the Build Alternative and cumulative effects model runs.

General observations are as follows:

- On the Eastside (see screenlines 2 and 6), the increased roadway capacity provided in the cumulative effects scenario would allow both vehicle and person trips to increase. This is particularly true for north-south trips, and is likely because increased capacity on I-405 and SR 167 would create a more attractive regional north-south route in comparison to I-5.



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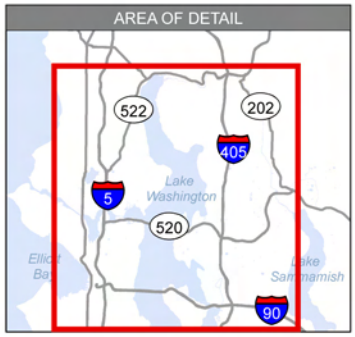

Screenline

Source: King County (2008) GIS Data (Streams, Streets, Water Bodies), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

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Exhibit 11-3. **Screenline Daily Vehicle Trips**

Medina to SR 202: Eastside Transit and HOV Project

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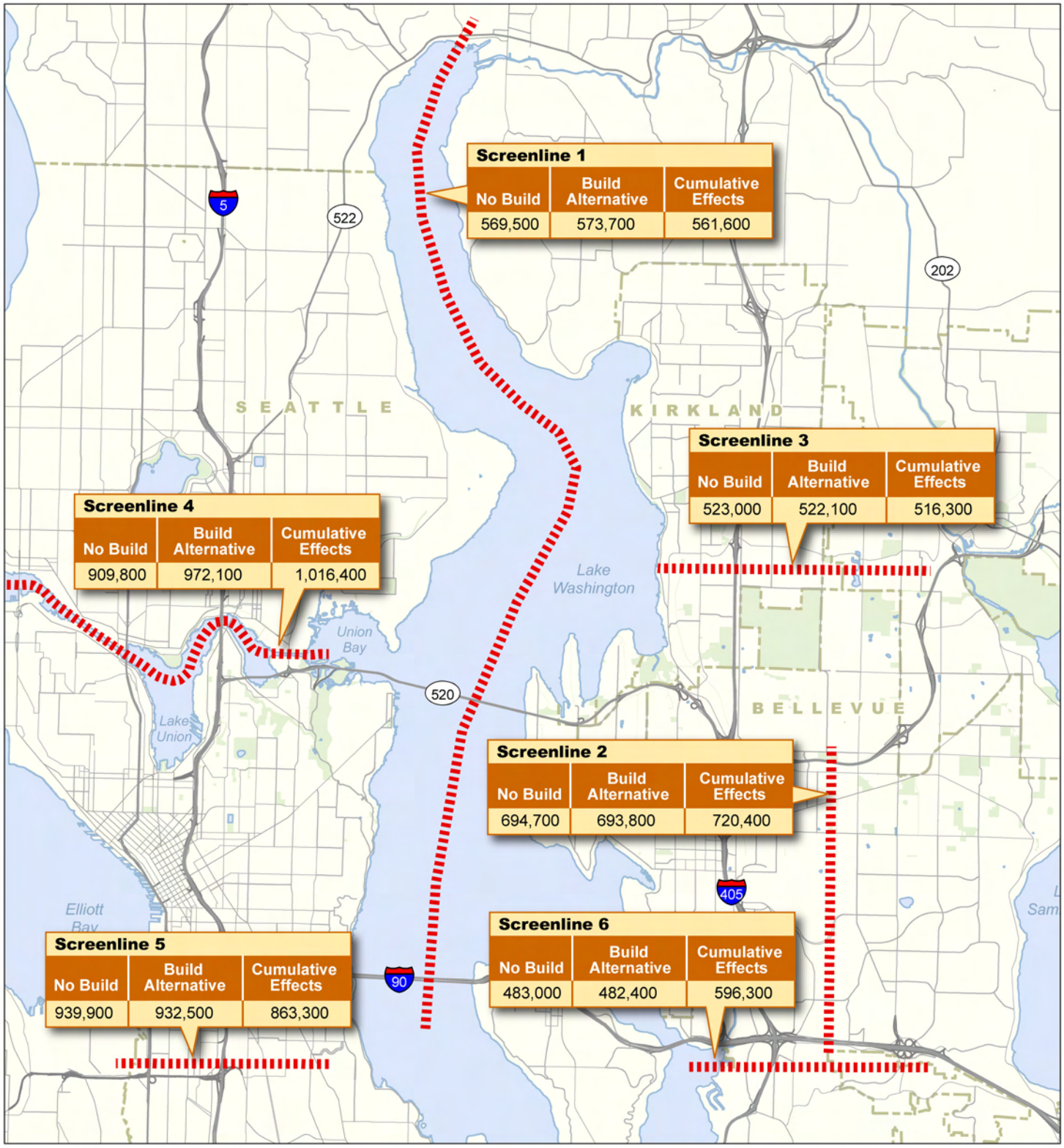

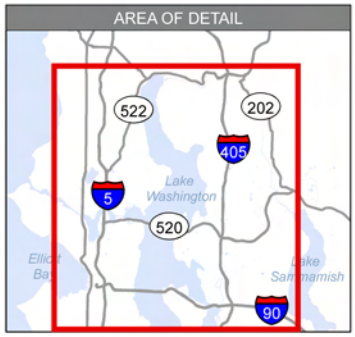

Screenline

Source: King County (2008) GIS Data (Streams, Streets, Water Bodies), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

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Exhibit 11-4. **Screenline Daily Person Trips**

Medina to SR 202: Eastside Transit and HOV Project

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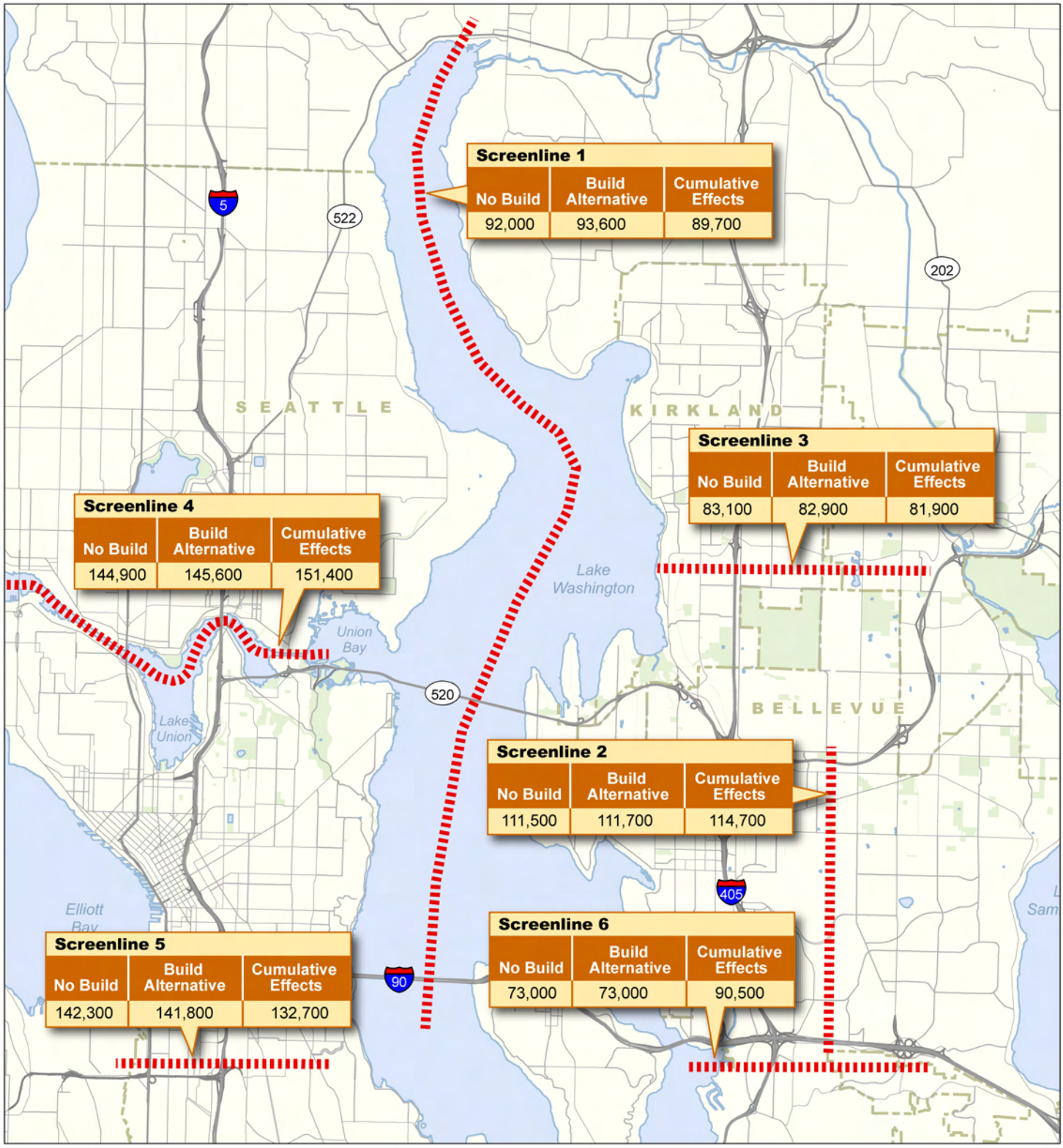

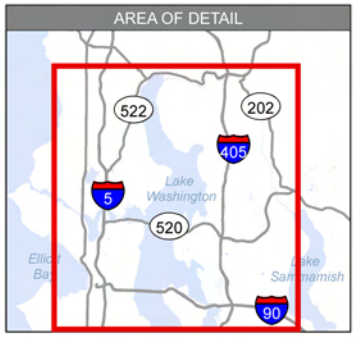

Screenline

Source: King County (2008) GIS Data (Streams, Streets, Water Bodies), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 1 2 Miles

Exhibit 11-5. **Screenline P.M. Peak Period Vehicle Trips**

Medina to SR 202: Eastside Transit and HOV Project

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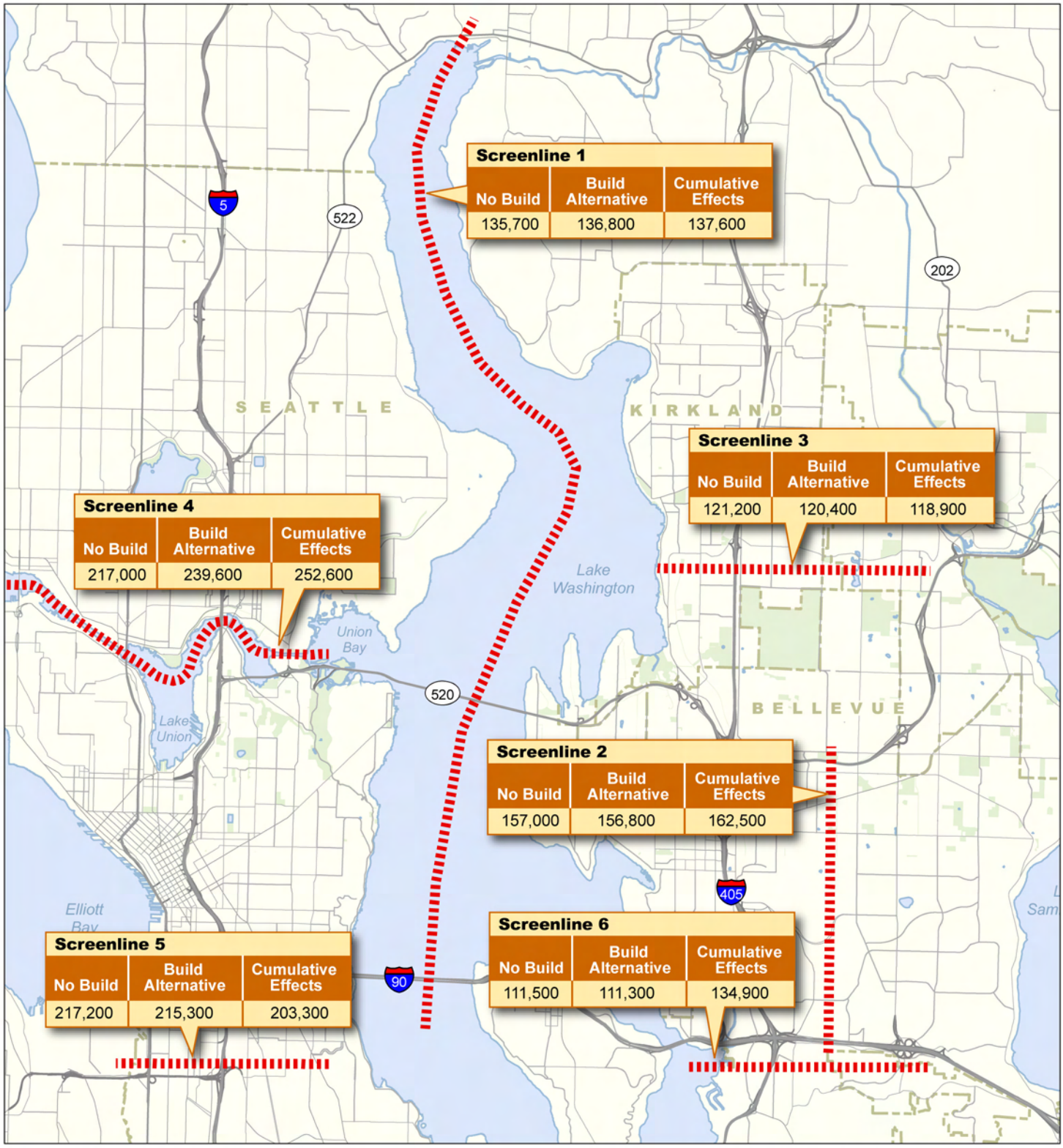

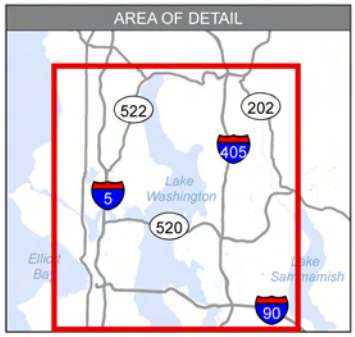

Screenline

Source: King County (2008) GIS Data (Streams, Streets, Water Bodies), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 1 2 Miles

Exhibit 11-6. **Screenline P.M. Peak Period Person Trips**

Medina to SR 202: Eastside Transit and HOV Project

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- Cross-lake vehicle and person trips (see screenline 1) would be reduced in the cumulative effects scenario compared to the project alternatives. This is likely due to increased north-south capacity on Eastside facilities (e.g., I-405), which would improve Eastside traffic circulation and make it more attractive for more trips to stay on the Eastside rather than travel across the lake.

  Seattle screenlines show a mix of results. The screenline south of I-90 (screenline 5) shows a relatively uniform decrease in north-south trips caused by the cumulative effects scenario. This is likely due to the diversion of trips between south King County and the Eastside away from the I-5/I-90 route. The Seattle screenline north of SR 520 (screenline 4) does not show a similar decrease in north-south trips. It appears that the net effect of the cumulative effects scenario in this area would be relatively minimal for vehicle trips. Total person trips, however, are higher in this screenline for the cumulative effects scenario due to the extension of Sound Transit's light rail line north to Northgate and Lynnwood.

Cross-Lake Travel Demand

The screenline of cross-lake travel demand for cumulative effects shows similar trends in both vehicle and person trips between the No Build Alternative, Build Alternative, and the cumulative effects scenario in both the daily and afternoon peak periods. The behavior of the cumulative effect scenario with respect to cross-lake travel demand shows a slight decrease (approximately 5 percent) in daily vehicle demand compared to the No Build Alternative and the Build Alternative. This slight decrease in vehicle trips can be attributed primarily to several regional corridor capacity improvements on the east side of Lake Washington that were included in the cumulative effects scenario. However, the vehicular demand to use SR 520 would still remain substantial, with or without the added regional corridor improvements.

The same pattern is exhibited for daily person trips when comparing the cumulative effects scenario with the No Build and Build Alternatives. The cumulative effects scenario shows lower cross-lake person trips than either the No Build or Build Alternatives, although the percent difference is less than it is in vehicle trips.

Another observation that can be made regarding cross-lake travel is a general increase in the ratio of person trips to vehicle trips. The

combination of higher 3+ person HOV usage on SR 520 due to the introduction of HOV lanes on the bridge and HOV exempt tolling, and transit usage on I-90 with the inclusion of light rail, increases the overall person-carrying efficiency of the two bridges.

The model results suggest that several specific capacity improvements, in combination with tolling on the Evergreen Point Bridge, would encourage some cross-lake trips to remain on the Eastside. Incorporation of the 10- to 15-year Implementation Plan for I-405 assumes an increase in capacity on I-405 between I-5 in Tukwila and SR 522 in Bothell. Additional capacity is also planned for SR 167 (from Southeast 180th Street to I-405) and SR 522 (bus lane); both regional facilities connect to I-405 and would provide a viable alternative to the cross-lake bridges, given the additional capacity on these facilities and the requirement to pay a toll to cross the SR 520 Bridge.

North-South Travel Demand

The north-south travel demand screenlines for the cumulative effects scenario show similar trends in both vehicle and person trips in the daily and afternoon peak periods. Exhibits 11-3 through 11-6 show the increase in north-south trips on the Eastside south of I-90 (screenline 6). The cumulative effects scenario shows daily trips south of I-90 increasing by 26 percent in vehicle trips and 23 percent for person trips compared to the No Build and Build Alternatives. This reflects the capacity improvements assumed along I-405 and SR 167. I-5 would also be affected by the change in roadway capacity on the Eastside. In fact, given that I-405 would become more attractive with its additional capacity, travel demand on the I-5 corridor south of I-90 would decrease by approximately 8 percent on a daily basis.

The north-south screenline north of SR 520 and east of Lake Washington (screenline 3) shows minimal differences among the No Build Alternative, the Build Alternative, and the cumulative effects scenario. Differences among the alternatives, both in terms of vehicle trips and person trips, are all less than 2 percent. In general, this is a reflection of improvements included in the cumulative effects scenario that are primarily located to the south and west of SR 520, affecting travel patterns in those corridors.

East-west demand would slightly increase east of I-405 (screenline 2) in the cumulative effects scenario. The daily increase compared to either the No Build or Build Alternatives would be about 4 percent for both

daily vehicle and daily person trips. Given the increased attractiveness of the I-405 corridor due to additional capacity in the cumulative effects scenario and the fact that more trips would remain on the Eastside, an increase in trips along this stretch of SR 520 is reasonable.

What happens to cross-lake mode choice?

The transportation discipline team compared cross-lake travel demand between HOVs, general-purpose vehicles, and transit across the SR 520 and I-90 bridges. The following paragraphs discuss the key findings from that analysis.

When evaluating cross-lake mode choice for the Build Alternative and the cumulative effects scenario, it is necessary to isolate the impacts to cross-lake vehicle demand to avoid erroneous conclusions. Capacity improvements in the SR 167/I-405 corridor contained in the cumulative effects scenario would cause a substantial number of trips that would be traveling along I-5 and I-90 to divert to the I-405 corridor. As a result, the cross-lake vehicular traffic would be substantially less in the cumulative effects scenario than the No Build and Build Alternatives. The difference is about 18,000 and 22,000 daily vehicles, respectively. More than 90 percent of the decrease in vehicle trips occurs on I-90. Decreases in daily vehicle trips also occur on SR 520 under the cumulative effects scenario, and vehicle trips increase slightly on SR 522 over No Build and Build conditions.

Transit ridership changes are also associated with the cumulative effects scenario when compared to the No Build and Build Alternatives. Total cross-lake transit ridership for both bus and light rail transit increases by approximately13,000 passengers daily (about 33 percent) for the cumulative effects scenario. The distribution of this ridership shifts toward the I-90 corridor with the introduction of light rail transit service and the accompanying higher frequency of service.

In general, transit ridership on SR 520 is about 8,000 to 9,000 daily passengers (about 85 to 94 percent) lower under the cumulative effects scenario than it is under the No Build and Build Alternatives. However, this difference is offset by a 136 to 145 percent increase in transit ridership on I-90 (approximately 22,000 to 23,000 daily transit riders). The remainder of the difference in cross-lake transit ridership is the result of slightly diminished ridership on SR 522. Even though there is a

decrease in transit ridership on the SR 520 corridor with the cumulative effects scenario, there are still nearly 10,000 transit riders per day and an increased number of people in carpools who would benefit from a continuous SR 520 HOV lane between I-5 and SR 202.

Exhibits 11-7 through 11-10 present cross-lake daily and afternoon peak-period vehicle and person trips.

Exhibit 11-7. 2030 Cross-Lake Daily Vehicle Trips

2030 No Build			
	Daily Vehicle Volumes		
Roadway Facility	Total Non-HOV[1]	HOV (3+)	Total
SR 522 (west of 61st Ave NE)	68,970	1,020	69,990
SR 520 (Lk Wash Bridge)—GP Lanes	129,920	2,370	132,290
SR 520 (Lk Wash Bridge)—HOV Lanes	—	—	—
I-90 (West Bridge)—GP Lanes	191,640	120	191,760
I-90 (West Bridge)—HOV Lanes	—	7,660	7,660
Total Cross-Lake	390,530	11,170	401,700
2030 Build			
	Daily Vehicle Volumes		
Roadway Facility	Total Non-HOV[1]	HOV (3+)	Total
SR 522 (west of 61st Ave NE)	69,240	1,020	70,260
SR 520 (Lk Wash Bridge)—GP Lanes	132,650	2,350	135,000
SR 520 (Lk Wash Bridge)—HOV Lanes	—	—	—
I-90 (West Bridge)—GP Lanes	191,990	120	192,110
I-90 (West Bridge)—HOV Lanes	—	7,780	7,780
Total Cross-Lake	393,880	11,270	405,150
2030 Cumulative Effects (Tolled)			
	Daily Vehicle Volumes		
Roadway Facility	Total Non-HOV[1]	HOV (3+)	Total
SR 522 (west of 61st Ave NE)	73,030	720	73,750
SR 520 (Lk Wash Bridge)—GP Lanes	121,810	—	121,810
SR 520 (Lk Wash Bridge)—HOV Lanes	—	8,940	8,940
I-90 (West Bridge)—GP Lanes	174,370	200	174,570
I-90 (West Bridge)—HOV Lanes	—	4,530	4,530
I-90 (West Bridge)—Rail	—	—	—
Total Cross-Lake	369,210	14,690	383,600

[1] Includes non-HOV vehicles and commercial vehicles.

Note: Model results are bi-directional and for comparison purposes.

The model was validated for the SR 520 corridor. Other regional facilities included in the model were validated as part of the regional modeling process.

GP = general purpose

Exhibit 11-8. 2030 Cross-Lake Daily Person Trips

2030 No Build Alternative					
	Daily Person Trip Volumes				
Roadway Facility	Non-HOV	HOV (3+)	Commercial	Transit	Total
SR 522 (west of 61st Ave NE)	78,910	3,230	9,650	4,040	95,830
SR 520 (Lk Wash Bridge)—GP Lanes	131,790	7,470	30,830	18,820	188,910
SR 520 (Lk Wash Bridge)—HOV Lanes	—	—	—	—	—
I-90 (West Bridge)—GP Lanes	212,730	390	31,700	120	244,940
I-90 (West Bridge)—HOV Lanes	—	24,140	—	15,650	39,790
Total Cross-Lake	423,430	35,230	72,180	38,630	569,470
2030 Build					
	Daily Person Trip Volumes				
Roadway Facility	Non-HOV	HOV (3+)	Commercial	Transit	Total
SR 522 (west of 61st Ave NE)	79,190	3,230	9,710	4,290	96,420
SR 520 (Lk Wash Bridge)—GP Lanes	134,460	7,410	31,550	17,900	191,320
SR 520 (Lk Wash Bridge)—HOV Lanes	—	—	—	—	—
I-90 (West Bridge)—GP Lanes	212,940	390	31,900	140	245,370
I-90 (West Bridge)—HOV Lanes	—	24,520	—	16,170	40,690
Total Cross-Lake	426,590	35,550	73,160	38,500	573,800
2030 Cumulative Effects					
	Daily Person Trip Volumes				
Roadway Facility	Non-HOV	HOV (3+)	Commercial	Transit	Total
SR 522 (west of 61st Ave NE)	83,440	2,280	10,300	3,150	99,170
SR 520 (Lk Wash Bridge)—GP Lanes	118,490	—	32,720	—	151,210
SR 520 (Lk Wash Bridge)—HOV Lanes	—	28,180	—	9,680	37,860
I-90 (West Bridge)—GP Lanes	183,000	650	36,790	20	220,460
I-90 (West Bridge)—HOV Lanes	—	14,290	—	2,120	16,410
I-90 (West Bridge)—Rail	—	—	—	36,450	36,450
Total Cross-Lake	384,930	45,400	79,810	51,420	561,560

Note: Model results are bi-directional and for comparison purposes.

The model was validated for the SR 520 corridor. Other regional facilities included in the model were validated as part of the regional modeling process.

Exhibit 11-9. Cross-Lake P.M. Peak Period Vehicle Trips (GP and HOV)

2030 No Build			
	PM Peak Period Vehicle Volumes		
Roadway Facility	Total Non-HOV[1]	HOV (3+)	Total
SR 522 (west of 61st Ave NE)	16,850	240	17,090
SR 520 (Lk Wash Bridge)—GP Lanes	28,880	350	29,230
SR 520 (Lk Wash Bridge)—HOV Lanes	—	—	—
I-90 (West Bridge)—GP Lanes	43,390	10	43,400
I-90 (West Bridge)—HOV Lanes	—	2,430	2,430
Total Cross-Lake	89,120	3,030	92,150
2030 Build			
	PM Peak Period Vehicle Volumes		
Roadway Facility	Total Non-HOV[1]	HOV (3+)	Total
SR 522 (west of 61st Ave NE)	16,990	250	17,240
SR 520 (Lk Wash Bridge)—GP Lanes	29,400	320	29,720
SR 520 (Lk Wash Bridge)—HOV Lanes	—	—	—
I-90 (West Bridge)—GP Lanes	43,570	10	43,580
I-90 (West Bridge)—HOV Lanes	—	2,500	2,500
Total Cross-Lake	89,960	3,080	93,040
2030 Cumulative Effects (Tolled)			
	PM Peak Period Vehicle Volumes		
Roadway Facility	Total Non-HOV[1]	HOV (3+)	Total
SR 522 (west of 61st Ave NE)	17,910	130	18,040
SR 520 (Lk Wash Bridge)—GP Lanes	27,670	—	27,670
SR 520 (Lk Wash Bridge)—HOV Lanes	—	2,490	2,490
I-90 (West Bridge)—GP Lanes	40,130	70	40,200
I-90 (West Bridge)—HOV Lanes	—	1,290	1,290
I-90 (West Bridge)—Rail	—	—	—
Total Cross-Lake	85,710	3,980	89,690

[1] Includes non-HOV vehicles and commercial vehicles.

Note: PM peak period represents 3 hours.

GP = general purpose

Model results are bi-directional and for comparison purposes.

Exhibit 11-10. Cross-Lake P.M. Peak Period Person Trips (GP and HOV)

2030 No Build					
	PM Peak Period Person Trip Volumes				
Roadway Facility	**Non-HOV**	**HOV (3+)**	**Commercial**	**Transit**	**Total**
SR 522 (west of 61st Ave NE)	18,600	760	2,870	1,510	23,740
SR 520 (Lk Wash Bridge)—GP Lanes	26,670	1,110	8,830	6,980	43,590
SR 520 (Lk Wash Bridge)—HOV Lanes	—	—	—	—	—
I-90 (West Bridge)—GP Lanes	46,010	40	8,800	60	54,910
I-90 (West Bridge)—HOV Lanes	—	7,660	—	5,820	13,480
Total Cross-Lake	91,280	9,570	20,500	14,370	135,720
2030 Build					
	PM Peak Period Person Trip Volumes				
Roadway Facility	**Non-HOV**	**HOV (3+)**	**Commercial**	**Transit**	**Total**
SR 522 (west of 61st Ave NE)	18,760	790	2,890	1,660	24,100
SR 520 (Lk Wash Bridge)—GP Lanes	27,160	1,010	8,980	6,440	43,590
SR 520 (Lk Wash Bridge)—HOV Lanes	—	—	—	—	—
I-90 (West Bridge)—GP Lanes	46,110	40	8,910	70	55,130
I-90 (West Bridge)—HOV Lanes	—	7,880	—	6,120	14,000
Total Cross-Lake	92,030	9,720	20,780	14,290	136,820
2030 Cumulative Effects (Tolled)					
	PM Peak Period Person Trip Volumes				
Roadway Facility	**Non-HOV**	**HOV (3+)**	**Commercial**	**Transit**	**Total**
SR 522 (west of 61st Ave NE)	19,720	410	3,090	1,280	24,500
SR 520 (Lk Wash Bridge)—GP Lanes	24,220	—	9,460	—	34,130
SR 520 (Lk Wash Bridge)—HOV Lanes	—	7,850	—	3,720	11,570
I-90 (West Bridge)—GP Lanes	39,820	230	10,190	10	50,250
I-90 (West Bridge)—HOV Lanes	—	4,070	—	830	4,900
I-90 (West Bridge)—Rail	—	—	—	12,680	12,680
Total Cross-Lake	83,760	12,560	22,740	18,520	137,580

Note: PM peak period represents 3 hours.

Model results are bi-directional and for comparison purposes.

GP = general purpose

What are the conclusions of the cumulative effects evaluation?

Several conclusions are apparent in comparing the cumulative effects scenarios to the project alternatives. These conclusions are summarized below.

- The cumulative effects scenario is expected to result in fewer person and vehicle trips across Lake Washington on SR 520 compared with the No Build and Build Alternatives. This means that the analysis conducted for the Medina to SR 202: Eastside Transit and HOV Project Environmental Assessment represents a conservatively high estimate of traffic and associated traffic effects. If the regional projects assumed in the cumulative effects scenario are implemented in conjunction with the Medina to SR 202: Eastside Transit and HOV Project, traffic conditions within the project corridor are expected to be similar or better than those estimated and documented in the EA.
- Because the SR 520 Program completes the HOV lane system between Redmond and Seattle, and because transit and HOV would not be required to pay a toll, a considerable increase in carpool/transit demand would occur along SR 520 with the cumulative effects scenario compared to the No Build and Build Alternatives. The combination of reduced travel time and cost avoidance is a powerful incentive for HOV and transit use. Very little change in carpool/transit demand is expected between the No Build and Build Alternatives.
- Total cross-lake vehicle travel with the cumulative effects scenario would be lower compared to the No Build and Build Alternatives. The sizeable decrease in general-purpose trips would be somewhat offset by an increase in carpool, transit, and commercial vehicle trips.
- Vehicle trips decrease at a higher rate than person trips. This means that more people would be moved by fewer vehicles with the cumulative effects scenario than with the No Build and Build Alternatives.
- Total cross-lake transit and HOV travel would increase with the cumulative effects scenario compared to the No Build and Build Alternatives. This is due to the increased ridership associated with

implementation of the East Link rail service on I-90 and the addition of a continuous HOV lane on both directions of SR 520 between I-5 and SR 202.

- Internal traffic circulation would improve and more trips would likely remain on the Eastside due to capacity improvements along regional corridors such as I-405, SR 167, and SR 522. Therefore, the volume across the cross-lake screenline is expected to decrease with the cumulative effects scenario, while volumes across screenlines on the Eastside are projected to increase.

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