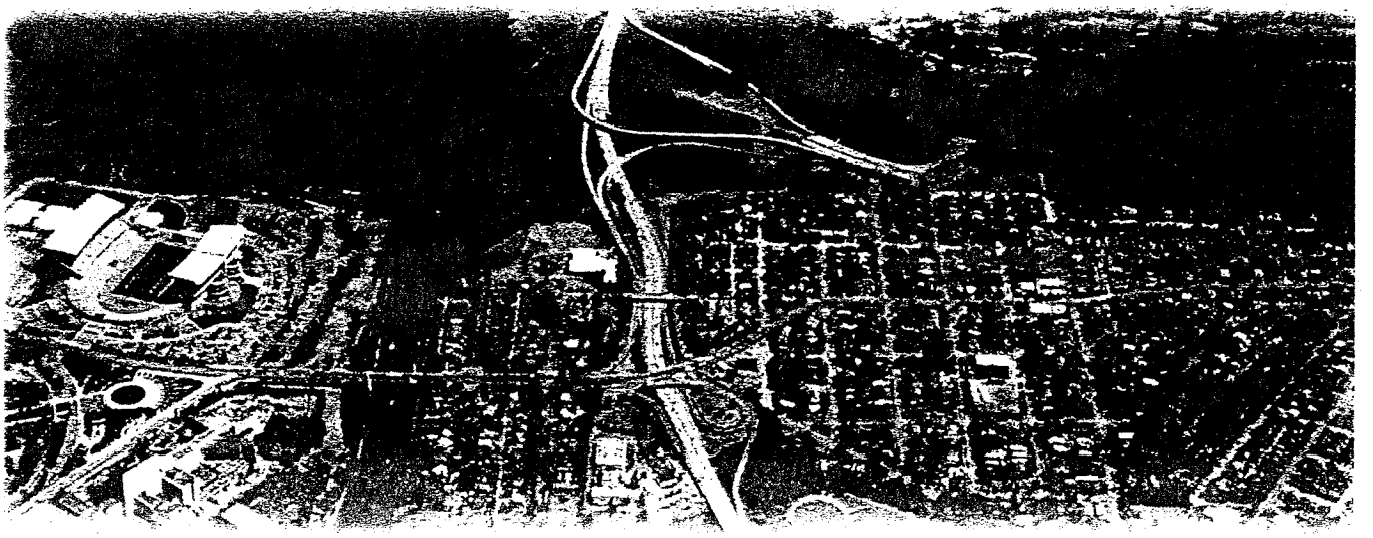
Trans-Lake Washington Study

Appendix 4
Travel Forecasting Methodology and Results



Introduction

The following provides an overview of the methods and procedures which were used to forecast travel demand for the alternatives evaluated as part of the Trans-Lake Washington Study which was undertaken by the Washington State Department of Transportation's Office of Urban Mobility. This technical memorandum outlines how the Puget Sound Regional Council's (PSRC's) model was validated to 1995 conditions for the Trans-Lake study area prior to applying the model to forecast 2020 conditions. The starting point for the model validation process was the Puget Sound Regional Council's (PSRC's) model, using the most recent population and employment forecasts available. This memorandum documents some of the major underlying assumptions of the PSRC model as well as any limitations in applying the model or interpreting the results for the evaluation of corridor alternatives.

Model Background

The PSRC's four-county travel demand forecasting model was selected as the appropriate tool for forecasting auto, carpool and transit demand for transportation alternatives in the Trans-Lake Washington Study Area and from which to develop a number of different performance measures, including such measures as weighted average travel times between activity centers, modes shares, vehicle miles of travel (VMTs) and vehicle hours of travel (VHTs). The PSRC model is multimodal and captures both regional and corridor level tripmaking. At a later stage in an environmental impact statement on selected alternatives, more detailed traffic operational modeling and analysis may be conducted to assess more localized traffic impacts as well as to identify ways to mitigate potential negative impacts.

Version of PSRC Model Used

For the Trans-Lake Washington Study, the most current version of the PSRC model available for general use was used. PSRC has been in the process of revising their model, including making changes to their mode choice model. This revised version was not used for the phase of the Trans-Lake study because it had not yet been released for general use. PSRC is still in the process of validating their revised model and it may be available for subsequent phases of the alternatives analysis.

There were some refinements made to the (current) PSRC model which were undertaken as part of the Trans-Lake Washington Study model validation process. Refinements included:

- Checking the transit network against 1995 bus schedules and adding transit network detail for cross-lake travel;
- Validating the model estimation of cross-lake trips to 1995 conditions (previously only a 1990 validation had been performed by PSRC);
- Making adjustments to the modal constants in the PSRC mode choice model in order to match the estimates of transit trips in King, Snohomish and Pierce Counties to the three-county estimate from the Sound Transit model. This step was done because the ST model was based on actual on-board transit surveys, is a more detailed transit model, and underwent substantial model validation when developed;

- Making adjustments to the relative speeds between freeways and arterials to arrive at a better traffic assignment between the two facility types at the screenline level.

This model validation step is described in more detail below.

Model Validation for the Trans-Lake Washington Study

Prior to using the PSRC model for forecasting for the Trans-Lake Washington Study, network refinement and model validation was completed for 1995. As part of the validation, the model was tested to assess how well it replicated existing travel patterns in the study area, including confirming that it makes reasonable estimates of auto and transit trips at the corridor and screenline level. For the 1995 model validation, the validation focused on the cross-lake screenline. (Note: A screenline is an imaginary line which cuts across a group of transportation facilities, typically representing potential alternative routes which serve a particular market or markets. For example, a screenline which captures travel crossing or going around Lake Washington would be comprised of SR 522, SR 520 and I-90.)

Based on these screenlines, output from the 1995 PSRC model was compared (at the screenline level) to actual traffic counts and transit ridership information gathered from various agencies or jurisdictions, including the Washington State Department of Transportation (WSDOT), King County, and the various cities. To be considered "validated," the model estimates should be within $\pm$10 percent of the observed counts at the screenline level. Daily vehicle trips and transit (passenger) trips were compared to actual counts, as available. For example, traffic counts from WSDOT and local agencies and transit ridership data from Metro and Community Transit were compared to 1995 model estimates.

If estimated versus observed volumes across screenlines were not within $\pm$10 percent, potential sources for the differences were explored and reconciled to the extent possible. This did not include any changes to land use or to the trip generation steps in the PSRC mode but focused on trip distribution, mode choice and traffic assignment. The 1995 land use assumptions have gone through considerable review by local jurisdictions and were therefore used as provided by PSRC. The trip generation rates are based on the home interview survey as well as survey data at employment sites and are also well established. Thus, this effort was not a complete validation of each step in the PSRC model but focused on producing more realistic travel patterns within the study corridor by refining:

- relative speeds/capacities assumed on major facilities;
- peak/off-peak service levels in transit network;
- modal constants in mode choice.

The following describes the steps that were specifically taken.

Trip Distribution

The trip distribution results were checked as part of the model validation process. With high levels of forecasted congestion, there can be a wide variation in the trip distribution results, depending upon the number of iterations the gravity model is run. As part of the Trans-Lake Washington Study model validation and on the advice of PSRC staff, it was found that during trip distribution there was a large variation in the number of trips across Lake Washington from one iteration to the next, caused by the high levels of congestion on cross-lake facilities in 2020. This effect is due to

the nature of the gravity model used for trip distribution and the nature of cross-lake travel with high travel demand and limited freeway capacity. PSRC's policy in this regard has been to report the results with the cross-lake travel demand on the high end of variation.

Highway Network Refinements

For the highway network, the validation process included checking that major facilities such as HOV lanes are coded properly. The capacities of the freeways and arterials were reviewed and adjusted as appropriate to arrive at a reasonable appropriate distribution of traffic among facility types to replicate existing (1995) conditions.

No major changes to the highway network were made. A decision was made not to add interchange details to the network for this study whose purpose was to arrive at a set of reasonable and feasible alternatives for further analysis.

Transit Network Refinements

As part of the validation effort, all the transit routes coded in the 1995 PSRC model were reviewed with a focus on cross-lake routes. The headway, route, and stops were checked to make sure they are consistent with the itineraries and schedules published by Metro and other transit agencies. Both AM peak and off-peak transit networks were reviewed.

Transit Assignment

Refinements made to the transit assignments for use on the Trans-Lake Washington Study included increasing the maximum effective headway from 12 to 60 minutes. The maximum effective headway places an upper limit on the wait time experienced by a transit user. For the Trans-Lake Study, the wait time factor was changed from 1 to 0.5. The wait time factor is used for modeling different perceptions of waiting time, or different distributions of inter-arrival times of the transit vehicles. A value of 0.5 corresponds to a regularly spaced service which results in a wait time of half the combined headway of the attractive lines. These two elements influence the time passengers wait to board a transit line. These transit assignment parameters were changed so that the PSRC model would be more sensitive to variations in transit service levels, as was necessary for modeling the Trans-Lake Washington Study Alternatives. The refined combination of transit assignment parameters influences the mode choice and route assignments for an alternative which includes changes to the transit network, whereas the previously used transit assignment parameters would result in minimal variation.

Also as part of the Trans-Lake model validation step, it was decided to run separate AM peak and off-peak transit assignments in order to more accurately capture the effects of their respective service levels. The daily (24 hour) transit volumes were reported by combining the results from the AM peak and off-peak transit assignments.

Modal Constants for Work and Non-Work Mode Choice Models

In the Trans-Lake Washington model validation process, the cross-lake transit volumes from the PSRC model at the screenline level were below both existing and 1992 transit counts (the base year for the Sound Transit model). To correct this underestimation and to account for the decreased number of transit trips due to changes in the transit assignment parameters, the modal constants in the mode choice model were adjusted to be consistent with the Sound Transit model. These changes increased the number of regional transit trips to meet the cross-lake screenline

requirements as well as being consistent with the transit trips for the base year of the Sound Transit Model developed from an on-board origin-destination survey.

Estimating Daily Vehicular Volumes

For the purpose of comparing among alternatives, total daily traffic volumes are useful since they capture the phenomenon of peak spreading. That is, total daily travel demand will continue to grow on a facility or within a corridor despite there being peak hour or even peak period capacity constraints as people adjust their time of travel. A good example of this is the SR 520 bridge where daily volumes have continued to grow over the past 10 years despite peak hour capacity constraints.

Running a daily assignment using the PSRC model results in having the daily traffic volumes equally distributed throughout the day. To get more accurate estimates of the daily variation in traffic volumes, separate AM, PM and off-peak traffic assignments were run and added together to arrive at the daily volumes. This resulted in a better match between the estimated and observed traffic volumes at the screenline level than running a daily assignment only.

Note that in addition to using the total daily vehicle volumes for comparison among alternatives, the peak period forecasts were also used as inputs into different performance measures. In addition, these peak period forecasts were used to provide input into a bottleneck analysis conducted as part of the study.

Applying the Validated Model to Produce 2020 Forecasts

Once the model had been validated to 1995 conditions, the model was applied to produce future year (2020) baseline forecasts as well as forecasts for the alternatives. The future baseline forecast against which the other alternatives are compared is referred to as the "No Action" or "No Build" alternative. The No Action alternative typically includes only those transportation improvements which have committed funding. From a network perspective, the PSRC has a coded network which includes only those projects in the region which have committed funding. This network was developed based on their review of the PSRC's Six-Year Action Strategy in the fall of 1998 at which time they identified which projects in the region had funding and which ones did not within the region's Six-Year Action Strategy. This network was the starting point for the Trans-Lake No Build network and was reviewed to make sure projects with committed funding were reflected in this network, including Phase One of Sound Transit's *Sound Move* regional transit plan.

The population and employment forecasts used to produce the 2020 forecasts were the "Working Forecasts" which had recently been released by PSRC. These forecasts had undergone extensively review by local jurisdictions and were being generally used for transportation studies in the region at the time Trans-Lake was getting started.

Future highway and transit networks representing each of the alternatives were developed using the same coding conventions as used in the 1995 network. The assumptions for bus and rail transit, HOV and highway speeds were based on the relative degree of grade separation from one alternative to the next.

Major Underlying Assumptions

The PSRC model has many underlying assumptions which have been documented elsewhere. One of the key inputs are the population and employment forecasts. The forecasts used for this study are included in the appendix to this technical memorandum. A description of PSRC trip generation rates, gravity model parameters/factors, and the mode choice model structure and coefficients were not included here since no major changes were made to them for use on this study. The main differences among the alternatives were captured by changes in the highway and transit networks.

For each alternative for which forecasts were developed, the major assumptions which were included in the alternatives definition were:

- Number of lanes, speeds, capacities, type of roadway facility, as well as the length of the improvements for proposed new highway or HOV facilities;
- Changes to the transit system, including new routes or modifications to existing routes, as well as changes to operating speeds and/or headways. The degree of grade separation of any proposed rail lines was also specified.
- Any changes to auto operating or parking costs, proposed tolls, changes in transit fares, etc.

Model Limitations or Caveats in Interpreting Model Results

The PSRC is a regional model which produces reasonable forecasts at the corridor and screenline level which can be used for the comparative analysis of system performance across major alternatives. Direct model output at the arterial and intersection level of detail must always be used with caution. The forecasting results were reviewed carefully for reasonableness and consistency for each of the alternatives and the model does a good job in producing forecasts to compare among alternatives. More detailed forecasts will be needed at the next phase for traffic operational analysis, design, and the development of mitigation.

APPENDIX A

Table 1
Summary of PSRC 1995 Land Use Estimates
(PSRC Working Forecasts)
Total Population and Total Employment at 32 District Level

District Number	District Name	Population 1995	Total Employment 1995
1	Downtown Seattle	34,567	203,600
2	East Central Seattle	56,477	38,169
3	West Central Seattle	49,848	28,589
4	Northwest Seattle	138,252	54,519
5	Northeast Seattle	61,159	13,650
6	University District	22,273	49,923
7	Northgate	5,673	1,679
8	South Seattle	164,661	99,352
9	Shoreline	72,686	22,160
10	Lynnwood/Edmonds	144,290	56,910
11	Bothell	52,699	15,228
12	North Bothell	28,384	8,500
13	Woodinville	38,747	11,971
14	Kirkland/Totem Lake	39,261	31,897
15	Redmond	32,966	22,212
16	Overlake	12,411	28,293
17	Downtown Bellevue	1,343	26,543
18	Northwest Bellevue	14,837	4,473
19	East Bellevue	72,553	68,912
20	South Bellevue	40,930	9,693
21	Mercer Island	21,741	6,401
22	East Sammamish	38,472	6,089
23	Issaquah	9,450	6,562
24	Renton	78,107	29,644
25	East King County	53,672	7,205
26	South King County	490,486	253,459
27	Pierce County	608,401	242,681
28	West of Puget Sound	282,832	96,752
29	Northeast Snohomish Co.	352,931	139,449
	Total	**3,020,109**	**1,584,515**

Notes :
- The land use data shown was summarized from PSRC 1995 land use forecasts.
- Data is not available for districts 30, 31 and 32 which comprise of TAZ's external to the PSRC model and hence are not accounted for in the model.
- PSRC 1995 validation run was based on using working forecast for land use obtained from PSRC in January, 1999.

Table 2
Comparative Analysis of PSRC MTP Land Use Data
(PSRC 1995 Adopted Land Use Forecasts)
Total Population and Total Employment at 32 District Level

District Number	District	Population				Total Employment			
		1990	1995	2010	2020	1990	1995	2010	2020
1	Downtown Seattle	30,958	34,567	49,312	61,159	220,632	222,648	281,368	295,717
2	East Central Seattle	54,937	56,477	61,454	66,045	32,057	32,971	37,737	39,726
3	West Central Seattle	48,329	49,848	53,372	57,391	24,236	26,461	29,400	30,196
4	Northwest Seattle	134,667	138,252	147,281	160,582	57,388	58,160	80,485	89,123
5	Northeast Seattle	60,005	61,159	63,696	66,495	13,806	14,275	17,557	18,505
6	University District	21,953	22,273	24,220	25,793	47,936	47,873	55,245	59,490
7	Northgate	5,460	5,673	5,832	6,145	1,620	1,630	2,696	2,886
8	South Seattle	159,981	164,661	175,423	192,175	103,236	100,559	124,469	127,065
9	Shoreline	70,231	72,686	74,449	77,871	25,296	23,593	27,933	29,161
10	Lynnwood/Edmonds	133,900	144,290	187,946	215,680	46,126	53,045	74,034	89,766
11	Bothell	48,865	52,699	55,841	59,627	11,035	14,951	15,634	16,679
12	North Bothell	25,946	28,384	41,288	48,085	5,598	7,601	12,745	14,450
13	Woodinville	36,070	38,747	47,010	55,340	9,751	11,358	12,754	13,119
14	Kirkland/Totem Lake	36,672	39,261	45,159	49,483	23,259	27,460	31,750	36,394
15	Redmond	29,777	32,966	46,111	54,380	17,449	22,713	37,784	44,788
16	Overlake	11,578	12,411	16,845	19,768	20,959	27,828	27,851	31,133
17	Downtown Bellevue	1,182	1,343	8,292	15,965	22,257	26,470	35,904	47,262
18	Northwest Bellevue	14,272	14,837	15,173	15,362	5,204	4,833	5,319	5,374
19	East Bellevue	69,116	72,553	73,198	73,375	65,105	72,242	76,790	80,531
20	South Bellevue	36,779	40,930	50,411	54,917	7,703	9,622	12,222	13,047
21	Mercer Island	20,816	21,741	22,056	22,341	5,468	6,401	7,578	7,706
22	East Sammamish	31,851	38,472	53,630	61,631	3,627	5,572	8,392	9,741
23	Issaquah	8,578	9,450	12,217	13,614	6,273	7,099	9,071	9,925
24	Renton	73,428	78,107	87,982	97,447	38,119	34,076	54,871	63,218
25	East King County	46,063	53,672	76,721	87,621	6,246	7,582	13,910	14,966
26	South King County	446,443	490,486	579,246	662,394	253,960	255,089	344,475	383,957
27	Pierce County	535,613	608,401	749,018	832,802	229,328	252,264	316,507	355,336
28	West of Puget Sound	239,631	282,832	349,045	407,538	90,852	105,885	123,752	143,239
29	Northeast Snohomish Co.	305,796	352,931	477,728	569,895	125,026	137,324	185,674	206,587
	Total	**2,738,897**	**3,020,109**	**3,649,956**	**4,130,921**	**1,519,552**	**1,617,585**	**2,063,907**	**2,279,087**

Notes : - The land use data shown in this table was summarized from PSRC 1995 adopted land use forecasts.

- Data is not available for districts 30, 31 and 32 which comprise of TAZ's external to the PSRC model and hence are not accounted for in the model.

Table 3

Sources of Traffic Counts.

Number	Source
1	1995 (AADT) Annual Traffic Report, WSDOT
2	1995 (AADT) Traffic Counts, City of Seattle
3	1997 (AWDT) Traffic Counts, Bellevue Transportation Dept.
4	1994 and 1996 (AWDT) Ramp and Roadway Report, WSDOT
5	King County Counts (AADT). Different years (specified when available)
6	Final Transportation Technical Report, South Sammamish Plateau Access Rd/Sunset Interchange EIS, Parsons Brinckerhoff, 1997

Highway and Transit Networks Defined on Each Translake Facility

Base Year (1995)

Highway Network

SR - 522 (West of 61st Ave NE)

General Purpose Lanes

Number of lanes (per direction)	2

Bus Lanes

Number of lanes (per direction)	N/A

HOV Lanes

Number of lanes (per direction)	N/A

SR - 520 (Lake Washington Bridge)

HOV Lanes

Time of Day Operation

direction AM Peak	N/A
direction PM Peak	N/A
direction Off Peak	N/A

Other modes allowed

Buses	N/A
Rail	N/A

General Purpose Lanes

Number of lanes (per direction)	2

I - 90 (West Bridge)

HOVs (on 2 center lanes)

Time of Day Operation

direction AM Peak	WB only
direction PM Peak	EB only
direction Off Peak	WB and EB

Other modes allowed

Buses	YES
Rail	NO
GP vehicles from Mercer Island	NO

General Purpose Lanes

Number of lanes (per direction)	3

Transit Network

SR - 522 (West of 61st Ave NE)

Buses

# of Local Routes	Peak	9
	Off Peak	4
Peak Frequency (min)		15-45
Off Peak Frequency (min)		25-30
Operating on		GP Lanes

Regional Express Routes	N/A
Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A
Operating on	N/A

Transit Signal Priority

Savings per mile (min/mile)	N/A
Corridor length (miles)	N/A

SR - 520 (Lake Washington Bridge)

Buses

# of Local Routes	Peak	35
	Off Peak	10
Peak Frequency (min)		15-20
Off Peak Frequency (min)		15-90
Operating on		GP Lanes

Regional Express Routes	N/A
Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A
Operating on	N/A

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

I - 90 (West Bridge)

Buses

# of Local Routes	Peak	26
	Off Peak	7
Peak Frequency (min)		15-25
Off Peak Frequency (min)		15-20
Operating on		GP & HOV Lanes

Regional Express Routes	N/A
Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A
Operating on	N/A

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

Highway and Transit Networks Defined on Each Translake Facility

2020 No-Action Alternative

Highway Network

SR - 522 (West of 61st Ave NE)

General Purpose Lanes

Number of lanes (per direction)	2

Bus Lanes

Number of lanes (per direction)	N/A

HOV Lanes

Number of lanes (per direction)	N/A

SR - 520 (Lake Washington Bridge)

HOV Lanes

Time of Day Operation

direction AM Peak	N/A
direction PM Peak	N/A
direction Off Peak	N/A

Other modes allowed

Buses	N/A
Rail	N/A

General Purpose Lanes

Number of lanes (per direction)	2

I - 90 (West Bridge)

HOVs (on 2 center lanes)

Time of Day Operation

direction AM Peak	WB only
direction PM Peak	EB only
direction Off Peak	WB and EB

Other modes allowed

Buses	YES
Rail	NO
GP vehicles from Mercer Island	NO

General Purpose Lanes

Number of lanes (per direction)	3

Transit Network

SR - 522 (West of 61st Ave NE)

Buses

# of Local Routes	Peak	8
	Off Peak	3
Peak Frequency (min)		18-45
Off Peak Frequency (min)		30-60
Operating on		GP Lanes
Regional Express Routes		N/A
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A

Transit Signal Priority

Savings per mile (min/mile)	N/A
Corridor length (miles)	N/A

SR - 520 (Lake Washington Bridge)

Buses

# of Local Routes	Peak	18
	Off Peak	3
Peak Frequency (min)		15-60
Off Peak Frequency (min)		30-60
Operating on		GP Lanes
Regional Express Routes		3 (F,G2,I)
Peak Frequency (min)		12.5-15
Off Peak Frequency (min)		30
Operating on		HOV Lanes

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

I - 90 (West Bridge)

Buses

# of Local Routes	Peak	17
	Off Peak	3
Peak Frequency (min)		8-90
Off Peak Frequency (min)		15-180
Operating on		GP & HOV Lanes
Regional Express Routes		G1
Peak Frequency (min)		7.5
Off Peak Frequency (min)		15
Operating on		HOV Lanes

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

Draft - Table 2a

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Eastbound Direction

Alternative: 2020 No-Action

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	4,100	N/A	1,700	2,700	0.63	15,600	N/A	5,900	2,700	2.19
SR 520 (L. Wash. Bridge)	10,000	N/A	4,000	3,700	1.08	16,900	N/A	6,400	3,700	1.73
I-90 (West Bridge)	11,100	N/A	4,500	5,100	0.88	23,800	3,700	9,000	5,100	1.76
Total Trans-Lake	25,200	N/A	10,200	11,500	0.89	56,300	3,700	21,300	11,500	1.85

Draft - Table 2b

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Westbound Direction

Alternative: 2020 No-Action

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	10,300	N/A	4,200	2,700	1.56	8,200	N/A	3,100	2,700	1.15
SR 520 (L. Wash. Bridge)	13,200	N/A	5,300	3,700	1.43	16,100	N/A	6,100	3,700	1.65
I-90 (West Bridge)	18,400	3,500	7,400	5,100	1.45	20,500	N/A	7,700	5,100	1.51
Total Trans-Lake	41,900	3,500	16,900	11,500	1.47	44,800	N/A	16,900	11,500	1.47

Draft - Table 2c

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Both Directions

Alternative: 2020 No-Action

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	14,400	N/A	5,900	5,400	1.09	23,800	N/A	9,000	5400	1.67
SR 520 (L. Wash. Bridge)	23,200	N/A	9,300	7,400	1.26	33,000	N/A	12,500	7400	1.69
I-90 (West Bridge)	29,500	3,500	11,900	10,200	1.17	44,300	3,700	16,700	10200	1.64
Total Trans-Lake	67,100	3,500	27,100	23,000	1.18	101,100	3,700	38,200	23,000	1.66

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- HOVs represent auto vehicles with 3 or more occupants.
- Capacity per lane figures used in the PSRC model were used to calculate V/C ratios.

Draft - Table 1b
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 1995

Roadway Facility	Daily Vehicle Volumes				Daily Person Trip Volumes					
	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	52,400	200	N/A	52,600	69,700	700	N/A	2,100	N/A	72,500
Modal Share (%)					96.1%	1.0%	N/A	2.9%		100.0%
SR 520 (L. Wash. Bridge)	101,500	500	N/A	102,000	135,000	1,600	N/A	8,200	N/A	144,800
Modal Share (%)					93.2%	1.1%	N/A	5.7%		100.0%
I-90 (West Bridge)	120,700	800	N/A	121,500	160,600	2,600	N/A	7,800	N/A	171,000
Modal Share (%)					93.9%	1.5%	N/A	4.6%		100.0%
Total Trans-Lake	274,600	1,500	N/A	276,100	365,300	4,900	N/A	18,100	N/A	388,300
Modal Share (%)					94.1%	1.3%	N/A	4.7%		100.0%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles (including commercial vehicles) with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips.

Draft - Table 1a
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 2020 No-Action

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	67,800	800	10,700	79,300	90,200	2,600	10,700	3,400	N/A	106,900
Modal Share (%)					84.4%	2.4%	10.0%	3.2%		
SR 520 (L. Wash. Bridge)	86,900	3,800	30,800	121,500	115,600	12,000	30,800	17,100	N/A	175,500
Modal Share (%)					65.9%	6.8%	17.5%	9.7%		
I-90 (West Bridge)	122,200	11,400	37,400	171,000	162,600	36,000	37,400	19,500	N/A	255,500
Modal Share (%)					63.6%	14.1%	14.6%	7.6%		
Total Trans-Lake	276,900	16,000	78,900	371,800	368,400	50,600	78,900	40,000	N/A	537,900
Modal Share (%)					68.5%	9.4%	14.7%	7.4%		

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips.
- Note that the 3+ elegible HOVs predicted under the No-Action Alternative are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 10 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 No-Action Alternative , respectively.

Draft - Table 3a

Peak Period Person Trip Through-Put by Mode and for Eastbound Direction

Alternative: 2020 No-Action

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	5,350	400	120	5,870	20,600	100	1,000	21,700
SR 520 (L. Wash. Bridge)	12,300	1,900	1,650	15,850	21,450	1,000	4,450	26,900
I-90 (West Bridge)	13,900	1,300	1,600	16,800	31,000	11,700	4,850	47,550
Total Trans-Lake	31,550	3,600	3,370	38,520	73,050	12,800	10,300	96,150

Draft - Table 3b

Peak Period Person Trip Through-Put by Mode and for Westbound Direction

Alternative: 2020 No-Action

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	13,450	800	1,000	15,250	11,800	700	120	12,620
SR 520 (L. Wash. Bridge)	15,900	3,400	4,450	23,750	20,650	2,300	1,650	24,600
I-90 (West Bridge)	24,150	11,100	4,850	40,100	27,700	2,300	1,600	31,600
Total Trans-Lake	53,500	15,300	10,300	79,100	60,150	5,300	3,370	68,820

Draft - Table 3c

Peak Period Person Trip Through-Put by Mode and for Both Directions

Alternative: 2020 No-Action

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	18,800	1,200	1,120	21,120	32,400	800	1,120	34,320
SR 520 (L. Wash. Bridge)	28,200	5,300	6,100	39,600	42,100	3,300	6,100	51,500
I-90 (West Bridge)	38,050	12,400	6,450	56,900	58,700	14,000	6,450	79,150
Total Trans-Lake	85,050	18,900	13,670	117,620	133,200	18,100	13,670	164,970

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger.
- HOVs represent auto vehicles with 3 or more occupants.
- Transit includes both bus and rail.
- Note that PSRC model does not produce trnasit patronage for PM peak period. For the sake of comparison, however

Draft - Table 4

Weighted Average PM Peak Period Travel Time (minutes) Between Designated Districts

Alternative: 2020 No-Action

Districts	1995		2020		% Change to 1995	
	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane
Downtown Seattle to Bellevue	22.7	19.9	36.2	20.6	59.5%	3.4%
Downtown Seattle to Redmond	30.2	25.7	51.3	29.9	70.0%	16.4%
Downtown Seattle to Issaquah	32.1	28.0	48.4	33.7	50.6%	20.4%
Downtown Seattle to Kirkland	25.2	21.8	43.0	23.4	70.6%	7.4%
Redmond to North Seattle	30.6	29.0	47.3	39.4	54.7%	36.0%
University District to Redmond	27.8	25.9	49.6	39.7	78.4%	53.3%
Downtown Seattle to Bothell	33.1	28.8	58.5	33.4	76.9%	16.1%
Overall Weighted Average	25.8	24.3	42.7	26.3	65.2%	8.2%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- PSRC model assigns general purpose (GP) and commercial traffic to GP lanes thus can't distinguish travel time between them.
- HOV's represent auto vehicles with 3 or more occupants under both 1995 and 2020 conditions.

Draft - Table 1b
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 1995

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	52,400	200	N/A	52,600	69,700	700	N/A	2,100	N/A	72,500
Modal Share (%)					96.1%	1.0%	N/A	2.9%		100.0%
SR 520 (L. Wash. Bridge)	101,500	500	N/A	102,000	135,000	1,600	N/A	8,200	N/A	144,800
Modal Share (%)					93.2%	1.1%	N/A	5.7%		100.0%
I-90 (West Bridge)	120,700	800	N/A	121,500	160,600	2,600	N/A	7,800	N/A	171,000
Modal Share (%)					93.9%	1.5%	N/A	4.6%		100.0%
Total Trans-Lake	274,600	1,500	N/A	276,100	365,300	4,900	N/A	18,100	N/A	388,300
Modal Share (%)					94.1%	1.3%	N/A	4.7%		100.0%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles (including commercial vehicles) with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips.

Draft - Table 1a

Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split

Alternative: 2020 MTP Revised

Roadway Facility	Daily Vehicle Volumes				Daily Person Trip Volumes					
	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	67,700	500	10,600	78,800	90,100	1,600	10,600	10,100	N/A	112,400
Modal Share (%)					80.2%	1.4%	9.4%	9.0%	N/A	
SR 520 (L. Wash. Bridge)	95,500	14,200	33,400	143,100	127,100	44,800	33,400	21,100	N/A	226,400
Modal Share (%)					56.1%	19.8%	14.8%	9.3%	N/A	
I-90 (West Bridge)	124,300	2,000	38,200	164,500	165,400	6,300	38,200	600	17,100	227,600
Modal Share (%)					72.7%	2.8%	16.8%	0.3%	7.5%	
Total Trans-Lake	287,500	16,700	82,200	386,400	382,600	52,700	82,200	31,800	17,100	566,400
Modal Share (%)					67.5%	9.3%	14.5%	5.6%	3.0%	

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips. HOV values represent HOVs on GP and HOV lanes if one exists. HOV volumes assigned to GP lanes are negligible.
- Note that the 3+ eligible HOVs predicted under the MTP Alternative are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 20 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 MTP Alternative, respectively.

Draft - Table 1b

Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split

Sensitivity Test on MTP Alternatives using HOV Lane on SR520 as Bus Only Lane

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	67,900	700	10,650	79,250	90,400	2,300	10,650	9,900	N/A	113,250
Modal Share (%)					79.8%	2.0%	9.4%	8.7%	N/A	
SR 520 (L. Wash. Bridge)	93,200	4,400	33,150	130,750	124,000	13,900	33,150	23,700	N/A	194,750
Modal Share (%)					63.7%	7.1%	17.0%	12.2%	N/A	
I-90 (West Bridge)	122,600	6,700	38,100	167,400	163,100	21,200	38,100	1,000	16,900	240,300
Modal Share (%)					67.9%	8.8%	15.9%	0.4%	7.0%	
Total Trans-Lake	283,700	11,800	81,900	377,400	377,500	37,400	81,900	34,600	16,900	548,300
Modal Share (%)					68.8%	6.8%	14.9%	6.3%	3.1%	

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips. HOV values represent HOVs on GP and HOV lanes if one exists. HOV volumes assigned to GP lanes are negligible.
- Note that the 3+ eligible HOVs predicted under the Sensitivity Test are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 20 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 Sensitivity Test, respectively.

Draft - Table 1c

Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split

% Change relative to MTP

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	0.3%	40.0%	0.5%	0.6%	0.4%	126.0%	0.5%	-2.0%	N/A	0.8%
SR 520 (L. Wash. Bridge)	-2.4%	-69.0%	-0.7%	-8.6%	-3.2%	-217.4%	-0.7%	12.3%	N/A	-14.0%
I-90 (West Bridge)	-1.4%	235.0%	-0.3%	1.8%	-1.8%	740.3%	-0.3%	66.7%	-1.2%	5.6%
Total Trans-Lake	-1.3%	-29.3%	-0.4%	-2.3%	-1.3%	-29.0%	-0.4%	8.8%	-1.2%	-3.2%

Draft - Table 2a

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Eastbound Direction

Alternative: 2020 MTP Revised

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	4,300	N/A	1,800	2,700	0.67	16,000	N/A	6,000	2,700	2.22
SR 520 (L. Wash. Bridge)	9,900	800	4,000	3,700	1.08	18,200	4,300	6,900	3,700	1.86
I-90 (West Bridge)	10,700	N/A	4,300	5,100	0.84	24,700	N/A	9,300	5,100	1.82
Total Trans-Lake	24,900	800	10,100	11,500	0.88	58,900	4,300	22,200	11,500	1.93

Draft - Table 2b

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Westbound Direction

Alternative: 2020 MTP Revised

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	10,500	N/A	4,200	2,700	1.56	8,200	N/A	3,100	2,700	1.15
SR 520 (L. Wash. Bridge)	13,100	4,200	5,300	3,700	1.43	16,100	1,800	6,100	3,700	1.65
I-90 (West Bridge)	18,900	N/A	7,600	5,100	1.49	20,500	N/A	7,700	5,100	1.51
Total Trans-Lake	42,500	4,200	17,100	11,500	1.49	44,800	1,800	16,900	11,500	1.47

Draft - Table 2c

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Both Directions

Alternative: 2020 MTP Revised

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	14,800	N/A	6,000	5,400	1.11	24,200	N/A	9,100	5400	1.69
SR 520 (L. Wash. Bridge)	23,000	5,000	9,300	7,400	1.26	34,300	6,100	13,000	7400	1.76
I-90 (West Bridge)	29,600	N/A	11,900	10,200	1.17	45,200	N/A	17,000	10200	1.67
Total Trans-Lake	67,400	5,000	27,200	23,000	1.18	103,700	6,100	39,100	23000	1.70

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- HOVs represent auto vehicles with 3 or more occupants.
- Capacity per lane figures used in the PSRC model were used to calculate V/C ratios.

Draft - Table 3a

Peak Period Person Trip Through-Put by Mode and for Eastbound Direction

Alternative: 2020 MTP Revised

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	5,550	200	450	6,200	21,100	100	3,650	24,850
SR 520 (L. Wash. Bridge)	12,900	2,600	2,350	17,850	23,550	13,400	4,900	41,850
I-90 (West Bridge)	13,500	800	1,400	15,700	31,900	700	4,000	36,600
Total Trans-Lake	31,950	3,600	4,200	39,750	76,550	14,200	12,550	103,300

Draft - Table 3b

Peak Period Person Trip Through-Put by Mode and for Westbound Direction

Alternative: 2020 MTP Revised

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	13,650	500	3,650	17,800	11,050	300	450	11,800
SR 520 (L. Wash. Bridge)	17,050	13,300	4,900	35,250	21,750	5,700	2,350	29,800
I-90 (West Bridge)	24,300	1,200	4,000	29,500	27,300	700	1,400	29,400
Total Trans-Lake	55,000	15,000	12,550	82,550	60,100	6,700	4,200	71,000

Draft - Table 3c

Peak Period Person Trip Through-Put by Mode and for Both Directions

Alternative: 2020 MTP Revised

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	19,200	700	4,100	24,000	32,150	400	4,100	36,650
SR 520 (L. Wash. Bridge)	29,950	15,900	7,250	53,100	45,300	19,100	7,250	71,650
I-90 (West Bridge)	37,800	2,000	5,400	45,200	59,200	1,400	5,400	66,000
Total Trans-Lake	86,950	18,600	16,750	122,300	136,650	20,900	16,750	174,300

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger.
- HOVs represent auto vehicles with 3 or more occupants.
- Transit includes both bus and rail.
- Note that PSRC model does not produce trnasit patronage for PM peak period. For the sake of comparison, however

Draft - Table 4

Weighted Average PM Peak Period Travel Time (minutes) Between Designated Districts

Alternative: 2020 MTP Revised

Districts	1995		2020		% Change to 1995	
	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane
Downtown Seattle to Bellevue	22.7	19.9	35.5	23.2	56.4%	16.4%
Downtown Seattle to Redmond	30.2	25.7	49.4	23.6	63.7%	-8.1%
Downtown Seattle to Issaquah	32.1	28.0	48.5	36.3	50.9%	29.6%
Downtown Seattle to Kirkland	25.2	21.8	44.0	20.2	74.5%	-7.3%
Redmond to North Seattle	30.6	29.0	44.6	29.5	45.8%	1.8%
University District to Redmond	27.8	25.9	48.2	24.5	73.4%	-5.4%
Downtown Seattle to Bothell	33.1	28.8	58.9	29.0	78.1%	0.8%
Overall Weighted Average	25.8	24.3	41.9	24.5	62.2%	0.9%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- PSRC model assigns general purpose (GP) and commercial traffic to GP lanes thus can't distinguish travel time between them.
- HOV's represent auto vehicles with 3 or more occupants under both 1995 and 2020 conditions.

Highway and Transit Networks Defined on Each Translake Facility

2020 MTP Flipped Revised Alternative

Highway Network

SR - 522 (West of 61st Ave NE)

General Purpose Lanes

Number of lanes (per direction)	2

Bus Lanes

Number of lanes (per direction)	1

HOV Lanes

Number of lanes (per direction)	N/A

SR - 520 (Lake Washington Bridge)

HOV Lanes (2 lanes)

Time of Day Operation

direction AM Peak	WB and EB
direction PM Peak	WB and EB
direction Off Peak	WB and EB

Other modes allowed

Buses	YES
Rail	NO

General Purpose Lanes

Number of lanes (per direction)	2

I - 90 (West Bridge)

HOVs (on 2 center lanes)

Time of Day Operation

direction AM Peak	WB and EB
direction PM Peak	WB and EB
direction Off Peak	WB and EB

Other modes allowed

Buses	YES
Rail	NO
GP vehicles from Mercer Island	NO

General Purpose Lanes

Number of lanes (per direction)	3

Transit Network

SR - 522 (West of 61st Ave NE)

Buses

# of Local Routes	Peak	9
	Off Peak	4
Peak Frequency (min)		20-90
Off Peak Frequency (min)		60-90
Operating on		GP Lanes
Regional Express Routes		N/A
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A

Transit Signal Priority

Savings per mile (min/mile)	N/A
Corridor length (miles)	N/A

SR - 520 (Lake Washington Bridge)

Buses

# of Local Routes	Peak	8
	Off Peak	3
Peak Frequency (min)		40-60
Off Peak Frequency (min)		60-90
Operating on		HOV Lanes
Regional Express Routes		NONE
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A

Rail

Peak Frequency (min)	8
Off Peak Frequency (min)	10

I - 90 (West Bridge)

Buses

# of Local Routes	Peak	19
	Off Peak	6
Peak Frequency (min)		8-90
Off Peak Frequency (min)		15-180
Operating on		GP & HOV Lanes
Regional Express Routes		G1
Peak Frequency (min)		7.5
Off Peak Frequency (min)		15
Operating on		HOV Lanes

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

Matrix-definition 11/11/99 4:19 PM

Draft - Table 1a
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 2020 MTP Flipped Revised

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	67,800	500	10,700	79,000	90,200	1,600	10,700	10,300	N/A	112,800
Modal Share (%)					80.0%	1.4%	9.5%	9.1%	N/A	
SR 520 (L. Wash. Bridge)	95,900	10,700	33,500	140,100	127,600	33,800	33,500	2,700	20,400	218,000
Modal Share (%)					58.5%	15.5%	15.4%	1.2%	9.4%	
I-90 (West Bridge)	125,000	6,800	38,600	170,400	166,300	21,500	38,600	19,600	N/A	246,000
Modal Share (%)					67.6%	8.7%	15.7%	8.0%	N/A	
Total Trans-Lake	288,700	18,000	82,800	389,500	384,100	56,900	82,800	32,600	20,400	576,800
Modal Share (%)					66.6%	9.9%	14.4%	5.7%	3.5%	

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips. HOV values represent HOVs on GP and HOV lanes if one exists. HOV volumes assigned to GP lanes are negligible.
- Note that the 3+ elegible HOVs predicted under the MTP Flipped Alternative are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 20 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 MTP Flipped Alternative, respectively.

Draft - Table 2a

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Eastbound Direction

Alternative: 2020 MTP Flipped

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	4,300	N/A	1,800	2,700	0.67	16,000	N/A	6,000	2,700	2.22
SR 520 (L. Wash. Bridge)	9,900	700	4,000	3,700	1.08	18,300	3,100	6,900	3,700	1.86
I-90 (West Bridge)	10,800	N/A	4,400	5,100	0.86	24,600	1,900	9,300	5,100	1.82
Total Trans-Lake	25,000	700	10,200	11,500	0.89	58,900	5,000	22,200	11,500	1.93

Draft - Table 2b

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Westbound Direction

Alternative: 2020 MTP Flipped

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	10,500	N/A	4,200	2,700	1.56	8,200	N/A	3,100	2,700	1.15
SR 520 (L. Wash. Bridge)	13,100	3,100	5,300	3,700	1.43	16,100	1,200	6,100	3,700	1.65
I-90 (West Bridge)	18,600	1,900	7,500	5,100	1.47	20,500	N/A	7,700	5,100	1.51
Total Trans-Lake	42,200	5,000	17,000	11,500	1.48	44,800	1,200	16,900	11,500	1.47

Draft - Table 2c

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Both Directions

Alternative: 2020 MTP Flipped

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	14,800	N/A	6,000	5,400	1.11	24,200	N/A	9,100	5400	1.69
SR 520 (L. Wash. Bridge)	23,000	3,800	9,300	7,400	1.26	34,400	4,300	13,000	7400	1.76
I-90 (West Bridge)	29,400	1,900	11,900	10,200	1.17	45,100	1,900	17,000	10200	1.67
Total Trans-Lake	67,200	5,700	27,200	23,000	1.18	103,700	6,200	39,100	23000	1.70

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- HOVs represent auto vehicles with 3 or more occupants.
- Capacity per lane figures used in the PSRC model were used to calculate V/C ratios.

Draft - Table 3a

Peak Period Person Trip Through-Put by Mode and for Eastbound Direction

Alternative: 2020 MTP Flipped

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	5,550	200	380	6,130	21,100	100	3,800	25,000
SR 520 (L. Wash. Bridge)	12,800	2,300	3,000	18,100	23,550	9,700	4,450	37,700
I-90 (West Bridge)	13,900	1,300	1,300	16,500	31,950	6,000	5,300	43,250
Total Trans-Lake	32,250	3,800	4,680	40,730	76,600	15,800	13,550	105,950

Draft - Table 3b

Peak Period Person Trip Through-Put by Mode and for Westbound Direction

Alternative: 2020 MTP Flipped

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	13,650	500	3,800	17,950	11,050	300	380	11,730
SR 520 (L. Wash. Bridge)	17,100	9,700	4,450	31,250	21,850	3,800	3,000	28,650
I-90 (West Bridge)	24,350	6,000	5,300	35,650	27,650	3,400	1,300	32,350
Total Trans-Lake	55,100	16,200	13,550	84,850	60,550	7,500	4,680	72,730

Draft - Table 3c

Peak Period Person Trip Through-Put by Mode and for Both Directions

Alternative: 2020 MTP Flipped

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	19,200	700	4,180	24,080	32,150	400	4,180	36,730
SR 520 (L. Wash. Bridge)	29,900	12,000	7,450	49,350	45,400	13,500	7,450	66,350
I-90 (West Bridge)	38,250	7,300	6,600	52,150	59,600	9,400	6,600	75,600
Total Trans-Lake	87,350	20,000	18,230	125,580	137,150	23,300	18,230	178,680

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger.
- HOVs represent auto vehicles with 3 or more occupants.
- Transit includes both bus and rail.
- Note that PSRC model does not produce trnasit patronage for PM peak period. For the sake of comparison, however

Draft - Table 4

Weighted Average PM Peak Period Travel Time (minutes) Between Designated Districts

Alternative: 2020 MTP Flipped Revised

Districts	1995		2020		% Change to 1995	
	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane
Downtown Seattle to Bellevue	22.7	19.9	35.5	19.6	56.4%	-1.7%
Downtown Seattle to Redmond	30.2	25.7	49.7	22.9	64.7%	-10.8%
Downtown Seattle to Issaquah	32.1	28.0	48.6	31.7	51.3%	13.2%
Downtown Seattle to Kirkland	25.2	21.8	44.1	19.5	74.9%	-10.5%
Redmond to North Seattle	30.6	29.0	44.9	29.5	46.8%	1.8%
University District to Redmond	27.8	25.9	48.5	24.1	74.5%	-6.9%
Downtown Seattle to Bothell	33.1	28.8	58.9	28.4	78.1%	-1.3%
Overall Weighted Average	25.8	24.3	42.1	22.3	63.1%	-8.1%

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- PSRC model assigns general purpose (GP) and commercial traffic to GP lanes thus can't distinguish travel time between them.
- HOV's represent auto vehicles with 3 or more occupants under both 1995 and 2020 conditions.

Highway and Transit Networks Defined on Each Translake Facility

2020 MTP Revised Alternative

Highway Network

SR - 522 (West of 61st Ave NE)

General Purpose Lanes

Number of lanes (per direction)	2

Bus Lanes

Number of lanes (per direction)	1

HOV Lanes

Number of lanes (per direction)	N/A

SR - 520 (Lake Washington Bridge)

HOV Lanes (2 lanes)

Time of Day Operation

direction AM Peak	WB and EB
direction PM Peak	WB and EB
direction Off Peak	WB and EB

Other modes allowed

Buses	YES
Rail	NO

General Purpose Lanes

Number of lanes (per direction)	2

I - 90 (West Bridge)

HOVs (on 2 center lanes)

Time of Day Operation

direction AM Peak	N/A
direction PM Peak	N/A
direction Off Peak	N/A

Other modes allowed

Buses	NO
Rail	YES
GP vehicles from Mercer Island	NO

General Purpose Lanes

Number of lanes (per direction)	3

Transit Network

SR - 522 (West of 61st Ave NE)

Buses

# of Local Routes	Peak	9
	Off Peak	4
Peak Frequency (min)		20-90
Off Peak Frequency (min)		60-90
Operating on		BUS ONLY LANES

Regional Express Routes	N/A
Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A
Operating on	N/A

Transit Signal Priority

Savings per mile (min/mile)	N/A
Corridor length (miles)	N/A

SR - 520 (Lake Washington Bridge)

Buses

# of Local Routes	Peak	28
	Off Peak	9
Peak Frequency (min)		20-90
Off Peak Frequency (min)		30-180
Operating on		GP & HOV Lanes

Regional Express Routes	3 (F,G2,I)
Peak Frequency (min)	12.5-15
Off Peak Frequency (min)	30
Operating on	HOV Lanes

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

I - 90 (West Bridge)

Buses

# of Local Routes	Peak	3
	Off Peak	0
Peak Frequency (min)		45-90
Off Peak Frequency (min)		N/A
Operating on		GP Lanes

Regional Express Routes	N/A
Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A
Operating on	N/A

Rail

Peak Frequency (min)	8
Off Peak Frequency (min)	10

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Highway and Transit Networks Defined on Each Translake Facility

2020 Roadway / Bus

Highway Network

SR - 522 (West of 61st Ave NE)

General Purpose Lanes

Number of lanes (per direction)	2

Bus Lanes

Number of lanes (per direction)	N/A

HOV Lanes

Number of lanes (per direction)	1

SR - 520 (Lake Washington Bridge)

HOV Lanes (2 lanes)

Time of Day Operation

direction AM Peak	EB & WB
direction PM Peak	EB & WB
direction Off Peak	EB & WB

Other modes allowed

Buses	YES
Rail	N/A

General Purpose Lanes

Number of lanes (per direction)	3

I - 90 (West Bridge)

HOVs (on 2 center lanes)

Time of Day Operation

direction AM Peak	EB & WB
direction PM Peak	EB & WB
direction Off Peak	EB & WB

Other modes allowed

Buses	YES
Rail	NO
GP vehicles from Mercer Island	NO

General Purpose Lanes

Number of lanes (per direction)	3

Transit Network

SR - 522 (West of 61st Ave NE)

Buses

# of Local Routes	Peak	11
	Off Peak	4
Peak Frequency (min)		15-90
Off Peak Frequency (min)		45-68
Operating on		HOV
Regional Express Routes		N/A
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A

Transit Signal Priority

Savings per mile (min/mile)	N/A
Corridor length (miles)	N/A

SR - 520 (Lake Washington Bridge)

Buses

# of Local Routes	Peak	17
	Off Peak	6
Peak Frequency (min)		15-68
Off Peak Frequency (min)		23-68
Operating on		HOV
Regional Express Routes		G2
Peak Frequency (min)		15 (also F,I)
Off Peak Frequency (min)		23
Operating on		HOV

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

I - 90 (West Bridge)

Buses

# of Local Routes	Peak	21
	Off Peak	8
Peak Frequency (min)		8--90
Off Peak Frequency (min)		15-180
Operating on		HOV
Regional Express Routes		G1
Peak Frequency (min)		7.5
Off Peak Frequency (min)		15
Operating on		HOV

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

New Freeway

HOVs (on 2 center lanes)

Time of Day Operation

direction AM Peak	EB & WB
direction PM Peak	EB & WB
direction Off Peak	EB & WB

Other modes allowed

Buses	YES
Rail	NO

General Purpose Lanes

Number of lanes (per direction)	2

I - 90 (West Bridge)

Buses

# of Local Routes Peak	7
Off Peak	3
Peak Frequency (min)	23-68
Off Peak Frequency (min)	45-60
Operating on	HOV
Regional Express Routes	F,I
Peak Frequency (min)	N/A
Off Peak Frequency (min)	23
Operating on	HOV

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

Draft - Table 1b
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 1995

Roadway Facility	Daily Vehicle Volumes				Daily Person Trip Volumes					
	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	52,400	200	N/A	52,600	69,700	700	N/A	2,500	N/A	72,900
Modal Share (%)					95.6%	1.0%	N/A	3.4%		100.0%
SR 520 (L. Wash. Bridge)	101,500	500	N/A	102,000	135,000	1,600	N/A	8,100	N/A	144,700
Modal Share (%)					93.3%	1.1%	N/A	5.6%		100.0%
I-90 (West Bridge)	120,700	800	N/A	121,500	160,600	2,600	N/A	7,800	N/A	171,000
Modal Share (%)					93.9%	1.5%	N/A	4.6%		100.0%
Total Trans-Lake	274,600	1,500	N/A	276,100	365,300	4,900	N/A	18,400	N/A	388,600
Modal Share (%)					94.0%	1.3%	N/A	4.7%		100.0%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles (including commercial vehicles) with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips.

Draft - Table 1a
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 2020 Roadway/Bus

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	56,300	5,345	7,600	69,245	74,900	16,900	7,600	7,300	N/A	106,700
Modal Share (%)					70.2%	15.8%	7.1%	6.8%	N/A	
New Freeway (W. of Sand Point)	116,100	4,600	30,000	150,700	154,500	14,500	30,000	5,400	N/A	204,400
Modal Share (%)					75.6%	7.1%	14.7%	2.6%	N/A	
Bus-Ferry (Sand Point to Kirkland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	200	N/A	200
Modal Share (%)					N/A	N/A	N/A	100.0%	N/A	
SR 520 (L. Wash. Bridge)	89,500	6,300	27,600	123,400	119,100	19,900	27,600	20,900	N/A	187,500
Modal Share (%)					63.5%	10.6%	14.7%	11.1%	N/A	
I-90 (West Bridge)	104,600	6,500	32,300	143,400	139,200	20,500	32,300	21,200	N/A	213,200
Modal Share (%)					65.3%	9.6%	15.2%	9.9%	N/A	
Total Trans-Lake	366,500	22,745	97,500	486,745	487,700	71,800	97,500	55,000	N/A	712,000
Modal Share (%)					68.5%	10.1%	13.7%	7.7%	N/A	

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips. HOV values represent HOVs on GP and HOV lanes if one exists. HOV volumes assigned to GP lanes are negligible.
- Note that the 3+ eligible HOVs predicted under the Roadway/Bus Alternative are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 20 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 Roadway/Bus Alternative, respectively.
- The Bus-Ferry runs only on the AM and PM peaks with a 45 minute headway. Walk-ons are allowed.

Draft - Table 2a

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Eastbound Direction

Alternative: 2020 Roadway/Bus

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	3,600	100	1,500	2,700	0.56	14,400	2,000	5,400	2,700	2.00
New Freeway (W. of Sand Point)	8,600	700	3,500	4,000	0.88	20,700	800	7,800	4,000	1.95
SR 520 (L. Wash. Bridge)	11,200	300	4,500	5,550	0.81	19,300	1,700	7,300	5,550	1.32
I-90 (West Bridge)	8,800	400	3,600	5,100	0.71	20,600	1,900	7,800	5,100	1.53
Total Trans-Lake	32,200	1,500	13,100	17,350	0.76	75,000	6,400	28,300	17,350	1.63

Draft - Table 2b

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Westbound Direction

Alternative: 2020 Roadway/Bus

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	8,500	300	3,400	2,700	1.26	6,900	1,000	2,600	2,700	0.96
New Freeway (W. of Sand Point)	12,900	1,500	5,200	4,000	1.30	16,600	800	6,300	4,000	1.58
SR 520 (L. Wash. Bridge)	14,700	2,600	5,900	5,550	1.06	18,300	500	6,900	5,550	1.24
I-90 (West Bridge)	15,400	1,600	6,200	5,100	1.22	18,200	1,000	6,900	5,100	1.35
Total Trans-Lake	51,500	6,000	20,700	17,350	1.19	60,000	3,300	22,700	17,350	1.31

Draft - Table 2c

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Both Directions

Alternative: 2020 Roadway/Bus

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	12,100	400	4,900	5,400	0.91	21,300	3,000	8,000	5,400	1.48
New Freeway (W. of Sand Point)	21,500	2,200	8,700	8,000	1.09	37,300	1,600	14,100	8,000	1.76
SR 520 (L. Wash. Bridge)	25,900	2,900	10,400	11,100	0.94	37,600	2,200	14,200	11,100	1.28
I-90 (West Bridge)	24,200	2,000	9,800	10,200	0.96	38,800	2,900	14,700	10,200	1.44
Total Trans-Lake	83,700	7,500	33,800	34,700	0.97	135,000	9,700	51,000	34700	1.47

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- HOVs represent auto vehicles with 3 or more occupants.
- Capacity per lane figures used in the PSRC model were used to calculate V/C ratios.

Draft - Table 3a

Peak Period Person Trip Through-Put by Mode and for Eastbound Direction
Alternative: 2020 Roadway/Bus

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	4,750	200	130	5,080	18,950	6,300	2,600	27,850
New Freeway (W. of Sand Point)	11,250	2,300	30	13,580	27,100	2,600	1,400	31,100
SR 520 (L. Wash. Bridge)	14,500	1,000	2,900	18,400	24,850	5,400	4,500	34,750
I-90 (West Bridge)	11,400	1,300	1,600	14,300	26,800	6,000	5,200	38,000
Total Trans-Lake	41,900	4,800	4,660	51,360	97,700	20,300	13,700	131,700

Draft - Table 3b

Peak Period Person Trip Through-Put by Mode and for Westbound Direction
Alternative: 2020 Roadway/Bus

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	11,200	900	2,600	14,700	9,000	3,200	130	12,330
New Freeway (W. of Sand Point)	16,900	4,800	1,400	23,100	21,500	2,400	30	23,930
SR 520 (L. Wash. Bridge)	19,100	8,100	4,500	31,700	23,600	1,500	2,900	28,000
I-90 (West Bridge)	20,150	5,100	5,200	30,450	23,400	3,200	1,600	28,200
Total Trans-Lake	67,350	18,900	13,700	99,950	77,500	10,300	4,660	92,460

Draft - Table 3c

Peak Period Person Trip Through-Put by Mode and for Both Directions
Alternative: 2020 Roadway/Bus

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	15,950	1,100	2,730	19,780	27,950	9,500	2,730	40,180
New Freeway (W. of Sand Point)	28,150	7,100	1,430	36,680	48,600	5,000	1,430	55,030
SR 520 (L. Wash. Bridge)	33,600	9,100	7,400	50,100	48,450	6,900	7,400	62,750
I-90 (West Bridge)	31,550	6,400	6,800	44,750	50,200	9,200	6,800	66,200
Total Trans-Lake	109,250	23,700	18,360	151,310	175,200	30,600	18,360	224,160

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger.
- HOVs represent auto vehicles with 3 or more occupants.
- Transit includes both bus and rail.
- Note that PSRC model does not produce transit patronage for PM peak period. For the sake of comparison, however, w

Draft - Table 4

Weighted Average PM Peak Period Travel Time (minutes) Between Designated Districts

Alternative: 2020 Roadway/Bus

Districts	1995		2020		% Change to 1995	
	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane
Downtown Seattle to Bellevue	22.7	19.9	28.7	19.4	26.4%	-2.7%
Downtown Seattle to Redmond	30.2	25.7	39.8	23.7	31.9%	-7.7%
Downtown Seattle to Issaquah	32.1	28.0	42.5	31.0	32.3%	10.7%
Downtown Seattle to Kirkland	25.2	21.8	33.9	20.0	34.5%	-8.2%
Redmond to North Seattle	30.6	29.0	27.5	21.0	-10.1%	-27.5%
University District to Redmond	27.8	25.9	31.3	21.1	12.6%	-18.5%
Downtown Seattle to Bothell	33.1	28.8	51.5	27.3	55.7%	-5.1%
Overall Weighted Average	25.8	24.3	33.0	22.1	27.8%	-9.1%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- PSRC model assigns general purpose (GP) and commercial traffic to GP lanes thus can't distinguish travel time between them.
- HOV's represent auto vehicles with 3 or more occupants under both 1995 and 2020 conditions.

Highway and Transit Networks Defined on Each Translake Facility

Roadway / Rail

Highway Network

SR - 522 (West of 61st Ave NE)

General Purpose Lanes

Number of lanes (per direction)	2

Bus Lanes

Number of lanes (per direction)	1

HOV Lanes

Number of lanes (per direction)	N/A

SR - 520 (Lake Washington Bridge)

HOV Lanes (NONE)

Time of Day Operation

direction AM Peak	N/A
direction PM Peak	N/A
direction Off Peak	N/A

Other modes allowed

Buses	N/A
Rail	N/A

General Purpose Lanes

Number of lanes (per direction)	3

I - 90 (West Bridge)

HOVs (NONE)

Time of Day Operation

direction AM Peak	NO
direction PM Peak	NO
direction Off Peak	NO

Other modes allowed

Buses	NO
Rail	NO
GP vehicles from Mercer Island	NO

General Purpose Lanes

Number of lanes (per direction)	3

Transit Network

SR - 522 (West of 61st Ave NE)

Buses

# of Local Routes Peak	9
Off Peak	4
Peak Frequency (min)	20-90
Off Peak Frequency (min)	60-90
Operating on	BUS ONLY
Regional Express Routes	N/A
Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A
Operating on	N/A

Transit Signal Priority

Savings per mile (min/mile)	N/A
Corridor length (miles)	N/A

SR - 520 (Lake Washington Bridge)

Buses

# of Local Routes Peak	3
Off Peak	1
Peak Frequency (min)	60-90
Off Peak Frequency (min)	90
Operating on	GP Lanes
Regional Express Routes	N/A
Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A
Operating on	N/A

Rail

Peak Frequency (min)	8
Off Peak Frequency (min)	12

I - 90 (West Bridge)

Buses

# of Local Routes Peak	3
Off Peak	1
Peak Frequency (min)	45-90
Off Peak Frequency (min)	120
Operating on	GP Lanes
Regional Express Routes	N/A
Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A
Operating on	N/A

Rail

Peak Frequency (min)	8
Off Peak Frequency (min)	12

Draft - Table 1b
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 1995

Roadway Facility	Daily Vehicle Volumes				Daily Person Trip Volumes					
	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	52,400	200	N/A	52,600	69,700	700	N/A	2,500	N/A	72,900
Modal Share (%)					95.6%	1.0%	N/A	3.4%		100.0%
SR 520 (L. Wash. Bridge)	101,500	500	N/A	102,000	135,000	1,600	N/A	8,100	N/A	144,700
Modal Share (%)					93.3%	1.1%	N/A	5.6%		100.0%
I-90 (West Bridge)	120,700	800	N/A	121,500	160,600	2,600	N/A	7,800	N/A	171,000
Modal Share (%)					93.9%	1.5%	N/A	4.6%		100.0%
Total Trans-Lake	274,600	1,500	N/A	276,100	365,300	4,900	N/A	18,400	N/A	388,600
Modal Share (%)					94.0%	1.3%	N/A	4.7%		100.0%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles (including commercial vehicles) with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips.

Draft - Table 1a
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 2020 Roadway/Rail

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	66,200	800	10,400	77,400	88,100	2,600	10,400	9,900	N/A	111,000
Modal Share (%)					79.4%	2.3%	9.4%	8.9%	N/A	
SR 520 (L. Wash. Bridge)	123,600	8,000	40,400	172,000	164,400	25,200	40,400	2,100	18,800	250,900
Modal Share (%)					65.5%	10.0%	16.1%	0.8%	7.5%	
I-90 (West Bridge)	118,700	6,000	36,400	161,100	157,900	18,900	36,400	2,800	17,500	233,500
Modal Share (%)					67.6%	8.1%	15.6%	1.2%	7.5%	
Total Trans-Lake	308,500	14,800	87,200	410,500	410,400	46,700	87,200	14,800	36,300	595,400
Modal Share (%)					68.9%	7.8%	14.6%	2.5%	6.1%	

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips. HOV values represent HOVs on GP and HOV lanes if one exists. HOV volumes assigned to GP lanes are negligible.
- Note that the 3+ elegible HOVs predicted under the Roadway/Rail Alternative are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 20 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 Roadway/Rail Alternative, respectively.

Draft - Table 2a

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Eastbound Direction

Alternative: 2020 Roadway/Rail

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	10,200	N/A	4,100	2,700	1.52	8,300	N/A	3,200	2,700	1.19
SR 520 (L. Wash. Bridge)	20,100	N/A	8,100	5,550	1.46	23,000	N/A	8,700	5,550	1.57
I-90 (West Bridge)	18,900	N/A	7,600	5,100	1.49	20,700	N/A	7,800	5,100	1.53
Total Trans-Lake	49,200	-	19,800	13,350	1.48	52,000	-	19,700	13,350	1.48

Draft - Table 2b

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Westbound Direction

Alternative: 2020 Roadway/Rail

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	4,200	N/A	1,700	2,700	0.63	15,700	N/A	5,900	2,700	2.19
SR 520 (L. Wash. Bridge)	13,400	N/A	5,400	5,550	0.97	26,000	N/A	9,800	5,550	1.77
I-90 (West Bridge)	10,600	N/A	4,300	5,100	0.84	24,400	N/A	9,200	5,100	1.80
Total Trans-Lake	28,200	-	11,400	13,350	0.85	66,100	-	24,900	13,350	1.87

Draft - Table 2c

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Both Directions

Alternative: 2020 Roadway/Rail

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	14,400	N/A	5,800	5,400	1.07	24,000	N/A	9,100	5400	1.69
SR 520 (L. Wash. Bridge)	33,500	N/A	13,500	7,400	1.82	49,000	N/A	18,500	7400	2.50
I-90 (West Bridge)	29,500	N/A	11,900	10,200	1.17	45,100	N/A	17,000	10200	1.67
Total Trans-Lake	77,400	-	31,200	23,000	1.36	118,100	-	44,600	23000	1.94

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- HOVs represent auto vehicles with 3 or more occupants.
- Capacity per lane figures used in the PSRC model were used to calculate V/C ratios.

Draft - Table 3a

Peak Period Person Trip Through-Put by Mode and for Eastbound Direction
Alternative: 2020 Roadway/Rail

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	5,450	200	400	6,050	20,700	100	3,600	24,400
SR 520 (L. Wash. Bridge)	16,550	2,100	2,450	21,100	31,100	5,900	4,550	41,550
I-90 (West Bridge)	13,350	1,300	1,700	16,350	30,150	4,100	4,600	38,850
Total Trans-Lake	35,350	3,600	4,550	43,500	81,950	10,100	12,750	104,800

Draft - Table 3b

Peak Period Person Trip Through-Put by Mode and for Westbound Direction
Alternative: 2020 Roadway/Rail

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	13,250	800	3,600	17,650	10,600	500	400	11,500
SR 520 (L. Wash. Bridge)	22,850	8,100	4,550	35,500	28,650	2,900	2,450	34,000
I-90 (West Bridge)	22,700	4,900	4,600	32,200	25,750	2,600	1,700	30,050
Total Trans-Lake	58,800	13,800	12,750	85,350	65,000	6,000	4,550	75,550

Draft - Table 3c

Peak Period Person Trip Through-Put by Mode and for Both Directions
Alternative: 2020 Roadway/Rail

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	18,700	1,000	4,000	23,700	31,300	600	4,000	35,900
SR 520 (L. Wash. Bridge)	39,400	10,200	7,000	56,600	59,750	8,800	7,000	75,550
I-90 (West Bridge)	36,050	6,200	6,300	48,550	55,900	6,700	6,300	68,900
Total Trans-Lake	94,150	17,400	17,300	128,850	146,950	16,100	17,300	180,350

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger.
- HOVs represent auto vehicles with 3 or more occupants.
- Transit includes both bus and rail.
- Note that PSRC model does not produce trnasit patronage for PM peak period. For the sake of comparison, however assumed PM peak transit volumes to be same as AM peak.

Draft - Table 4

Weighted Average PM Peak Period Travel Time (minutes) Between Designated Districts

Alternative: 2020 Roadway/Rail

	1995		2020		% Change to 1995	
Districts	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane
Downtown Seattle to Bellevue	22.7	19.9	34.5	31.7	52.0%	59.1%
Downtown Seattle to Redmond	30.2	25.7	46.5	35.6	54.1%	38.6%
Downtown Seattle to Issaquah	32.1	28.0	47.9	42.0	49.1%	50.0%
Downtown Seattle to Kirkland	25.2	21.8	41.6	31.8	65.0%	46.0%
Redmond to North Seattle	30.6	29.0	42.5	35.5	39.0%	22.5%
University District to Redmond	27.8	25.9	45.2	34.4	62.6%	32.8%
Downtown Seattle to Bothell	33.1	28.8	57.3	37.8	73.3%	31.3%
Overall Weighted Average	25.8	24.3	40.5	33.7	56.9%	38.8%

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- PSRC model assigns general purpose (GP) and commercial traffic to GP lanes thus can't distinguish travel time between them.
- HOV's represent auto vehicles with 3 or more occupants under both 1995 and 2020 conditions.

Highway and Transit Networks Defined on Each Translake Facility

2020 New Crossing

Highway Network

SR - 522 (West of 61st Ave NE)

General Purpose Lanes

Number of lanes (per direction)	2

Bus Lanes

Number of lanes (per direction)	1

HOV Lanes

Number of lanes (per direction)	

SR - 520 (Lake Washington Bridge)

HOV Lanes (2 lanes)

Time of Day Operation

direction AM Peak	EB & WB
direction PM Peak	EB & WB
direction Off Peak	EB & WB

Other modes allowed

Buses	YES
Rail	NO

General Purpose Lanes

Number of lanes (per direction)	2

I - 90 (West Bridge)

HOVs (on 2 center lanes)

Time of Day Operation

direction AM Peak	NO
direction PM Peak	NO
direction Off Peak	NO

Other modes allowed

Buses	NO
Rail	NO
GP vehicles from Mercer Island	NO

General Purpose Lanes

Number of lanes (per direction)	3

Transit Network

SR - 522 (West of 61st Ave NE)

Buses

# of Local Routes	Peak	9
	Off Peak	4
Peak Frequency (min)		20-90
Off Peak Frequency (min)		60-90
Operating on		BUS ONLY LANE
Regional Express Routes		N/A
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A

Transit Signal Priority

Savings per mile (min/mile)	N/A
Corridor length (miles)	N/A

SR - 520 (Lake Washington Bridge)

Buses

# of Local Routes	Peak	10
	Off Peak	5
Peak Frequency (min)		23-90
Off Peak Frequency (min)		60-90
Operating on		HOV Lane
Regional Express Routes		N/A
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

I - 90 (West Bridge)

Buses

# of Local Routes	Peak	N/A
	Off Peak	N/A
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A
Regional Express Routes		N/A
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A

Rail

Peak Frequency (min)	8
Off Peak Frequency (min)	12

New Crossing

Time of Day Operation

direction AM Peak	NO
direction PM Peak	NO
direction Off Peak	NO

Other modes allowed

Buses	YES
Rail	NO

General Purpose Lanes

Number of lanes (per direction)	2

New Crossing

Buses

# of Local Routes	Peak	5
	Off Peak	1
Peak Frequency (min)		30-60
Off Peak Frequency (min)		180
Operating on		GP Lanes

Regional Express Routes	N/A
Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A
Operating on	N/A

Rail

Peak Frequency (min)	8
Off Peak Frequency (min)	12

Draft - Table 1b
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 1995

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	52,400	200	N/A	52,600	69,700	700	N/A	2,500	N/A	72,900
Modal Share (%)					95.6%	1.0%	N/A	3.4%		100.0%
SR 520 (L. Wash. Bridge)	101,500	500	N/A	102,000	135,000	1,600	N/A	8,100	N/A	144,700
Modal Share (%)					93.3%	1.1%	N/A	5.6%		100.0%
I-90 (West Bridge)	120,700	800	N/A	121,500	160,600	2,600	N/A	7,800	N/A	171,000
Modal Share (%)					93.9%	1.5%	N/A	4.6%		100.0%
Total Trans-Lake	274,600	1,500	N/A	276,100	365,300	4,900	N/A	18,400	N/A	388,600
Modal Share (%)					94.0%	1.3%	N/A	4.7%		100.0%

NOTES:
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- Non-HOVs represent auto vehicles (including commercial vehicles) with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips.

Draft - Table 1a

Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split

Alternative: 2020 New Crossing

Roadway Facility	Daily Vehicle Volumes				Daily Person Trip Volumes					
	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	58,400	500	8,200	67,100	77,700	1,600	8,200	8,500	N/A	96,000
Modal Share (%)					80.9%	1.7%	8.5%	8.9%	N/A	
New Crossing (W. of Sand Point)	48,300	500	10,300	59,100	64,300	1,600	10,300	400	11,250	87,850
Modal Share (%)					73.2%	1.8%	11.7%	0.5%	12.8%	
SR 520 (L. Wash. Bridge)	86,800	13,700	30,200	130,700	115,500	43,200	30,200	6,300	N/A	195,200
Modal Share (%)					59.2%	22.1%	15.5%	3.2%	N/A	
I-90 (West Bridge)	118,700	2,300	36,300	157,300	157,900	7,300	36,300	N/A	21,550	223,050
Modal Share (%)					70.8%	3.3%	16.3%	N/A	9.7%	
Total Trans-Lake	312,200	17,000	85,000	414,200	415,400	53,700	85,000	15,200	32,800	602,100
Modal Share (%)					69.0%	8.9%	14.1%	2.5%	5.4%	

NOTES:

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- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips. HOV values represent HOVs on GP and HOV lanes if one exists. HOV volumes assigned to GP lanes are negligible.
- Note that the 3+ eligible HOVs predicted under the New Crossing Alternative are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 20 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 New Crossing Alternative, respectively.

Draft - Table 2a
Peak Period and Hourly Vehicular Traffic Volume Forecasts for Eastbound Direction
Alternative: 2020 New Crossing

Roadway Facility	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	3,900	N/A	1,600	2,700	0.59	14,600	N/A	5,500	2,700	2.04
New Crossing (W. of Sand Point)	2,700	N/A	1,100	2,800	0.39	12,000	N/A	4,500	2,800	1.61
SR 520 (L. Wash. Bridge)	9,600	800	3,900	3,700	1.05	16,300	4,300	6,200	3,700	1.68
I-90 (West Bridge)	10,600	N/A	4,300	5,100	0.84	23,300	N/A	8,800	5,100	1.73
Total Trans-Lake	26,800	800	10,900	14,300	0.76	66,200	4,300	25,000	14,300	1.75

Draft - Table 2b
Peak Period and Hourly Vehicular Traffic Volume Forecasts for Westbound Direction
Alternative: 2020 New Crossing

Roadway Facility	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	9,100	N/A	3,700	2,700	1.37	7,100	N/A	2,700	2,700	1.00
New Crossing (W. of Sand Point)	8,100	N/A	3,300	2,800	1.18	7,100	N/A	2,700	2,800	0.96
SR 520 (L. Wash. Bridge)	12,000	4,000	4,800	3,700	1.30	15,700	1,700	5,900	3,700	1.59
I-90 (West Bridge)	17,900	N/A	7,200	5,100	1.41	20,400	N/A	7,700	5,100	1.51
Total Trans-Lake	47,100	4,000	19,000	14,300	1.33	50,300	1,700	19,000	14,300	1.33

Draft - Table 2c
Peak Period and Hourly Vehicular Traffic Volume Forecasts for Both Directions
Alternative: 2020 New Crossing

Roadway Facility	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	13,000	N/A	5,300	5,400	0.98	21,700	N/A	8,200	5,400	1.52
New Crossing (W. of Sand Point)	10,800	N/A	4,400	5,600	0.79	19,100	N/A	7,200	5,600	1.29
SR 520 (L. Wash. Bridge)	21,600	4,800	8,700	7,400	1.18	32,000	6,000	12,100	7,400	1.64
I-90 (West Bridge)	28,500	N/A	11,500	10,200	1.13	43,700	N/A	16,500	10,200	1.62
Total Trans-Lake	73,900	4,800	29,900	28,600	1.05	116,500	6,000	44,000	28600	1.54

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- HOVs represent auto vehicles with 3 or more occupants.
- Capacity per lane figures used in the PSRC model were used to calculate V/C ratios.

Draft - Table 3a

Peak Period Person Trip Through-Put by Mode and for Eastbound Direction
Alternative: 2020 New Crossing

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	5,100	200	250	5,550	19,150	100	3,200	22,450
New Crossing (W. of Sand Point)	3,550	200	600	4,350	15,700	100	3,250	19,050
SR 520 (L. Wash. Bridge)	12,500	2,600	1,300	16,400	20,950	13,600	900	35,450
I-90 (West Bridge)	13,450	800	1,900	16,150	30,050	700	4,850	35,600
Total Trans-Lake	34,600	3,800	4,050	42,450	85,850	14,500	12,200	112,550

Draft - Table 3b

Peak Period Person Trip Through-Put by Mode and for Westbound Direction
Alternative: 2020 New Crossing

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	11,800	700	3,200	15,700	9,200	300	250	9,750
New Crossing (W. of Sand Point)	10,550	300	3,250	14,100	9,000	500	600	10,100
SR 520 (L. Wash. Bridge)	15,600	12,500	900	29,000	20,200	5,200	1,300	26,700
I-90 (West Bridge)	22,600	2,300	4,850	29,750	26,000	800	1,900	28,700
Total Trans-Lake	60,550	15,800	12,200	88,550	64,400	6,800	4,050	75,250

Draft - Table 3c

Peak Period Person Trip Through-Put by Mode and for Both Directions
Alternative: 2020 New Crossing

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	16,900	900	3,450	21,250	28,350	400	3,450	32,200
New Crossing (W. of Sand Point)	14,100	500	3,850	18,450	24,700	600	3,850	29,150
SR 520 (L. Wash. Bridge)	28,100	15,100	2,200	45,400	41,150	18,800	2,200	62,150
I-90 (West Bridge)	36,050	3,100	6,750	45,900	56,050	1,500	6,750	64,300
Total Trans-Lake	95,150	19,600	16,250	131,000	150,250	21,300	16,250	187,800

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger.
- HOVs represent auto vehicles with 3 or more occupants.
- Transit includes both bus and rail.
- Note that PSRC model does not produce transit patronage for PM peak period. For the sake of comparison, however, w assumed PM peak transit volumes to be same as AM peak.

Draft - Table 4

Weighted Average PM Peak Period Travel Time (minutes) Between Designated Districts

Alternative: 2020 New Crossing

Districts	1995		2020		% Change to 1995	
	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane
Downtown Seattle to Bellevue	22.7	19.9	32.7	23.1	44.1%	15.9%
Downtown Seattle to Redmond	30.2	25.7	44.3	23.5	46.8%	-8.5%
Downtown Seattle to Issaquah	32.1	28.0	46.0	36.2	43.2%	29.3%
Downtown Seattle to Kirkland	25.2	21.8	37.6	20.1	49.1%	-7.7%
Redmond to North Seattle	30.6	29.0	32.9	28.9	7.6%	-0.3%
University District to Redmond	27.8	25.9	38.8	24.0	39.6%	-7.3%
Downtown Seattle to Bothell	33.1	28.8	52.9	29.3	60.0%	1.8%
Overall Weighted Average	25.8	24.3	37.3	24.5	44.4%	0.8%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- PSRC model assigns general purpose (GP) and commercial traffic to GP lanes thus can't distinguish travel time between them.
- HOV's represent auto vehicles with 3 or more occupants under both 1995 and 2020 conditions.

Highway and Transit Networks Defined on Each Translake Facility

Maximize Alternatives

Highway Network

SR - 522 (West of 61st Ave NE)

General Purpose Lanes

Number of lanes (per direction)	2

Bus Lanes

Number of lanes (per direction)	1

HOV Lanes

Number of lanes (per direction)	N/A

SR - 520 (Lake Washington Bridge)

HOV Lanes (2 lanes)

Time of Day Operation

direction AM Peak	EB & WB
direction PM Peak	EB & WB
direction Off Peak	EB & WB

Other modes allowed

Buses	YES
Rail	NO

General Purpose Lanes

Number of lanes (per direction)	1

I - 90 (West Bridge)

HOVs (NONE)

Time of Day Operation

direction AM Peak	NO
direction PM Peak	NO
direction Off Peak	NO

Other modes allowed

Buses	NO
Rail	NO
GP vehicles from Mercer Island	NO

General Purpose Lanes

Number of lanes (per direction)	3

Transit Network

SR - 522 (West of 61st Ave NE)

Buses

# of Local Routes	Peak	9
	Off Peak	4
Peak Frequency (min)		20-90
Off Peak Frequency (min)		60-90
Operating on		BUS ONLY
Regional Express Routes		N/A
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A

Transit Signal Priority

Savings per mile (min/mile)	N/A
Corridor length (miles)	N/A

SR - 520 (Lake Washington Bridge)

Buses

# of Local Routes	Peak	13
	Off Peak	6
Peak Frequency (min)		15-68
Off Peak Frequency (min)		30-180
Operating on		HOV Lanes
Regional Express Routes		I
Peak Frequency (min)		15
Off Peak Frequency (min)		30
Operating on		HOV Lanes

Rail

Peak Frequency (min)	N/A
Off Peak Frequency (min)	N/A

I - 90 (West Bridge)

Buses

# of Local Routes	Peak	1
	Off Peak	1
Peak Frequency (min)		45
Off Peak Frequency (min)		136
Operating on		GP Lanes
Regional Express Routes		N/A
Peak Frequency (min)		N/A
Off Peak Frequency (min)		N/A
Operating on		N/A

Rail

Peak Frequency (min)	8
Off Peak Frequency (min)	12

Draft - Table 1b
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 1995

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	52,400	200	N/A	52,600	69,700	700	N/A	2,500	N/A	72,900
Modal Share (%)					95.6%	1.0%	N/A	3.4%		100.0%
SR 520 (L. Wash. Bridge)	101,500	500	N/A	102,000	135,000	1,600	N/A	8,100	N/A	144,700
Modal Share (%)					93.3%	1.1%	N/A	5.6%		100.0%
I-90 (West Bridge)	120,700	800	N/A	121,500	160,600	2,600	N/A	7,800	N/A	171,000
Modal Share (%)					93.9%	1.5%	N/A	4.6%		100.0%
Total Trans-Lake	274,600	1,500	N/A	276,100	365,300	4,900	N/A	18,400	N/A	388,600
Modal Share (%)					94.0%	1.3%	N/A	4.7%		100.0%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles (including commercial vehicles) with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips.

Draft - Table 1a
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 2020 Maximize Alternatives

Roadway Facility	Daily Vehicle Volumes				Daily Person Trip Volumes					
	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	49,000	500	8,000	57,500	65,200	1,600	8,000	14,500	N/A	89,300
Modal Share (%)					73.0%	1.8%	9.0%	16.2%	N/A	
SR 520 (L. Wash. Bridge)	19,500	21,500	10,850	51,850	26,000	67,800	10,850	18,850	N/A	123,500
Modal Share (%)					21.1%	54.9%	8.8%	15.3%	N/A	
I-90 (West Bridge)	34,100	300	10,650	45,050	45,400	1,000	10,650	N/A	29,700	86,750
Modal Share (%)					52.3%	1.2%	12.3%	N/A	34.2%	
Total Trans-Lake	102,600	22,300	29,500	154,400	136,600	70,400	29,500	33,350	29,700	299,550
Modal Share (%)					45.6%	23.5%	9.8%	11.1%	9.9%	

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips. HOV values represent HOVs on GP and HOV lanes if one exists. HOV volumes assigned to GP lanes are negligible.
- Note that the 3+ eligible HOVs predicted under the Maximize Alternatives are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 20 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 Maximize Alternatives, respectively.

Draft - Table 1a
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
Alternative: 2020 Maximize Alternatives

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	49,000	500	8,000	57,500	65,200	1,600	8,000	14,500	N/A	89,300
Modal Share (%)					73.0%	1.8%	9.0%	16.2%	N/A	
SR 520 (L. Wash. Bridge)	19,500	21,500	10,850	51,850	26,000	67,800	10,850	18,850	N/A	123,500
Modal Share (%)					21.1%	54.9%	8.8%	15.3%	N/A	
I-90 (West Bridge)	34,100	300	10,650	45,050	45,400	1,000	10,650	N/A	29,700	86,750
Modal Share (%)					52.3%	1.2%	12.3%	N/A	34.2%	
Total Trans-Lake	102,600	22,300	29,500	154,400	136,600	70,400	29,500	33,350	29,700	299,550
Modal Share (%)					45.6%	23.5%	9.8%	11.1%	9.9%	

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips. HOV values represent HOVs on GP and HOV lanes if one exists. HOV volumes assigned to GP lanes are negligible.
- Note that the 3+ eligible HOVs predicted under the Maximize Alternatives are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 20 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 Maximize Alternatives, respectively.

Draft - Table 2a

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Eastbound Direction

Alternative: 2020 Maximize

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	3,000	N/A	1,200	2,700	0.44	13,100	N/A	5,000	2,700	1.85
SR 520 (L. Wash. Bridge)	1,400	1,500	600	1,850	0.32	4,900	5,700	1,900	1,850	1.03
I-90 (West Bridge)	1,800	N/A	800	5,100	0.16	9,000	N/A	3,400	5,100	0.67
Total Trans-Lake	6,200	1,500	2,600	9,650	0.27	27,000	5,700	10,300	9,650	1.07

Draft - Table 2b

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Westbound Direction

Alternative: 2020 Maximize

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	6,000	N/A	2,400	2,700	0.89	6,000	N/A	2,300	2,700	0.85
SR 520 (L. Wash. Bridge)	3,400	6,000	1,400	1,850	0.76	3,700	2,800	1,400	1,850	0.76
I-90 (West Bridge)	7,500	N/A	3,000	5,100	0.59	4,800	N/A	1,800	5,100	0.35
Total Trans-Lake	16,900	6,000	6,800	9,650	0.70	14,500	2,800	5,500	9,650	0.57

Draft - Table 2c

Peak Period and Hourly Vehicular Traffic Volume Forecasts for Both Directions

Alternative: 2020 Maximize

	AM Peak Period		AM Peak Hour			PM Peak Period		PM Peak Hour		
Roadway Facility	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C	GP Lanes	HOV Lane	GP Lanes	Capacity	V/C
SR 522 (West of 61st Ave.NE)	9,000	N/A	3,600	5,400	0.67	19,100	N/A	7,300	5,400	1.35
SR 520 (L. Wash. Bridge)	4,800	7,500	2,000	3,700	0.54	8,600	8,500	3,300	3,700	0.89
I-90 (West Bridge)	9,300	N/A	3,800	10,200	0.37	13,800	N/A	5,200	10,200	0.51
Total Trans-Lake	23,100	7,500	9,400	19,300	0.49	41,500	8,500	15,800	19300	0.82

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- HOVs represent auto vehicles with 3 or more occupants.
- Capacity per lane figures used in the PSRC model were used to calculate V/C ratios.

Draft - Table 3a

Peak Period Person Trip Through-Put by Mode and for Eastbound Direction
Alternative: 2020 Maximize

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	3,900	200	550	4,650	17,200	100	5,300	22,600
SR 520 (L. Wash. Bridge)	1,800	4,600	2,500	8,900	6,300	18,000	3,500	27,800
I-90 (West Bridge)	2,200	100	2,300	4,600	11,650	500	7,000	19,150
Total Trans-Lake	7,900	4,900	5,350	18,150	35,150	18,600	15,800	69,550

Draft - Table 3b

Peak Period Person Trip Through-Put by Mode and for Westbound Direction
Alternative: 2020 Maximize

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	7,650	700	5,300	13,650	7,700	300	550	8,550
SR 520 (L. Wash. Bridge)	4,400	18,800	3,500	26,700	4,650	8,700	2,500	15,850
I-90 (West Bridge)	9,750	300	7,000	17,050	6,200	100	2,300	8,600
Total Trans-Lake	21,800	19,800	15,800	57,400	18,550	9,100	5,350	33,000

Draft - Table 3c

Peak Period Person Trip Through-Put by Mode and for Both Directions
Alternative: 2020 Maximize

	AM Peak Period				PM Peak Period			
Roadway Facility	Non-HOV	HOV	Transit	Total	Non-HOV	HOV	Transit	Total
SR 522 (West of 61st Ave.NE)	11,550	900	5,850	18,300	24,900	400	5,850	31,150
SR 520 (L. Wash. Bridge)	6,200	23,400	6,000	35,600	10,950	26,700	6,000	43,650
I-90 (West Bridge)	11,950	400	9,300	21,650	17,850	600	9,300	27,750
Total Trans-Lake	29,700	24,700	21,150	75,550	53,700	27,700	21,150	102,550

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger.
- HOVs represent auto vehicles with 3 or more occupants.
- Transit includes both bus and rail.
- Note that PSRC model does not produce transit patronage for PM peak period. For the sake of comparison, however, w assumed PM peak transit volumes to be same as AM peak.

Draft - Table 4

Weighted Average PM Peak Period Travel Time (minutes) Between Designated Districts

Alternative: 2020 Maximize Alternatives

Districts	1995		2020		% Change to 1995	
	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane	On GP Lanes	On HOV Lane
Downtown Seattle to Bellevue	22.7	19.9	36.7	24.5	61.7%	22.9%
Downtown Seattle to Redmond	30.2	25.7	49.5	25.0	64.1%	-2.6%
Downtown Seattle to Issaquah	32.1	28.0	49.3	37.9	53.4%	35.4%
Downtown Seattle to Kirkland	25.2	21.8	44.0	21.6	74.5%	-0.8%
Redmond to North Seattle	30.6	29.0	46.7	28.2	52.7%	-2.7%
University District to Redmond	27.8	25.9	47.8	24.8	71.9%	-4.2%
Downtown Seattle to Bothell	33.1	28.8	58.5	30.6	76.9%	6.3%
Overall Weighted Average	25.8	24.3	44.5	25.5	72.1%	5.0%

NOTES:
- The information presented in this table was directly produced by the model without any post-processing analysis.
- PSRC model assigns general purpose (GP) and commercial traffic to GP lanes thus can't distinguish travel time between them.
- HOV's represent auto vehicles with 3 or more occupants under both 1995 and 2020 conditions.

Draft - Table 1b

Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split

Sensitivity Test on Maximize Alternatives Using Toll Only

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	46,300	550	7,400	54,250	61,600	1,800	7,400	12,900	N/A	83,700
Modal Share (%)					73.6%	2.2%	8.8%	15.4%	N/A	
SR 520 (L. Wash. Bridge)	29,400	2,350	13,400	45,150	39,200	7,500	13,400	10,450	N/A	70,550
Modal Share (%)					55.6%	10.6%	19.0%	14.8%	N/A	
I-90 (West Bridge)	30,250	1,900	8,700	40,850	40,300	6,000	8,700	N/A	29,350	84,350
Modal Share (%)					47.8%	7.1%	10.3%	N/A	34.8%	
Total Trans-Lake	105,950	4,800	29,500	140,250	141,100	15,300	29,500	23,350	29,350	238,600
Modal Share (%)					59.1%	6.4%	12.4%	9.8%	12.3%	

NOTES:

- The information presented in this table was directly produced by the model without any post-processing analysis.
- Non-HOVs represent auto vehicles with driver or one passenger. An average occupancy factor of 1.33 was used to convert vehicle volumes to person volumes for Non-HOV trips.
- HOVs represent auto vehicles with 3 or more occupants. An average occupancy factor of 3.15 was used to convert vehicle volumes to person volumes for HOV trips. HOV values represent HOVs on GP and HOV lanes if one exists. HOV volumes assigned to GP lanes are negligible.
- Note that the 3+ eligible HOVs predicted under the Sensitivity Test are relatively higher than the 1995 estimate of 3+ HOVs. This is caused due to congestion on general purpose lanes parallel to nearly free flow HOV lanes. The PSRC model estimates overall average travel time savings of about 4 and 20 minutes for using HOV lanes over general purpose lanes in 1995 and 2020 Sensitivity Test, respectively.

Draft - Table 1c
Daily Trans-Lake Vehicle and Person Trip Volumes and Modal Split
% Change relative to Maximize Alternatives

	Daily Vehicle Volumes				Daily Person Trip Volumes					
Roadway Facility	Non-HOV	HOV	Commercial	Total	Non-HOV	HOV	Commercial	Bus Transit	Rail Transit	Total
SR 522 (West of 61st Ave.NE)	-5.5%	10.0%	-7.5%	-5.7%	-5.5%	12.5%	-7.5%	-11.0%	N/A	-6.3%
SR 520 (L. Wash. Bridge)	50.8%	-89.1%	23.5%	-12.9%	50.8%	-88.9%	23.5%	-44.6%	N/A	-42.9%
I-90 (West Bridge)	-11.3%	533.3%	-18.3%	-9.3%	-11.2%	500.0%	-18.3%	N/A	-1.2%	-2.8%
Total Trans-Lake	3.3%	-78.5%	0.0%	-9.2%	3.3%	-78.3%	0.0%	-30.0%	-1.2%	-20.3%

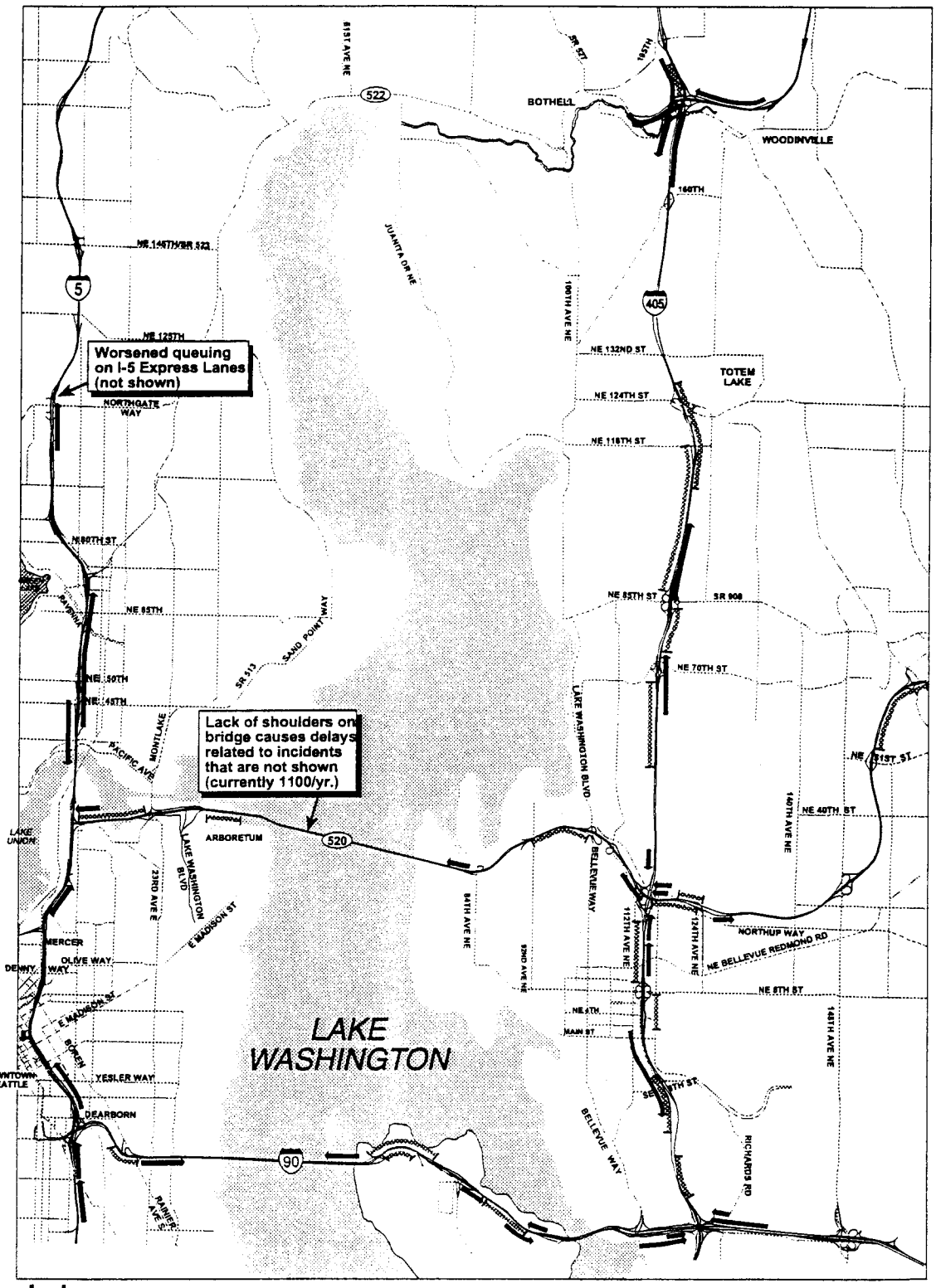
Trans-Lake Washington Study

Appendix 5
Bottleneck Analysis

Introduction to Transportation Bottlenecks Analysis

As part of the solution set evaluations, the project team provided graphic illustrations of expected bottlenecks and queuing for each of the solution sets, based on model forecasts. The graphic technique used was based on the analyses of current system congestion conducted by TRAC, the Washington State Transportation Center, and available through its website at http://depts.washington.edu/trac/. TRAC provides a transportation analysis link between the government, university researchers, and the private sector. Much of TRAC's research is funded by the Washington State Department of Transportation (WSDOT). TRAC acts as a liaison connecting WSDOT's applied research needs to research sources at the University of Washington and Washington State University.

The committee received presentation-level graphics of the bottleneck analysis during its June 2, 1999 meeting, which covered model results, sensitivity analyses, and background information on effectiveness measures. The bottleneck analysis was used in determining aspects of the ratings for the highway system compatibility and congestion measures. The committee graphics are provided on the following pages, in graphics A9-1 through 7. The technical team's working graphics, which are more detailed and based on additional calculations of model forecasts, are provided in graphics A9-8 though 14. The primary difference between the two sets of graphics is the level of detail provided. In both sets of graphics, the lines indicating the length of queues are not drawn to scale, but instead are meant to convey the relative magnitude of queuing exected. The graphics also do not attempt to combine current conditions with future conditions for queuing. They are intended to indicate the comparative magnitude of the queue compared to other solution sets, and they show the relative additional queuing that would be expected beyond the queues found currently.



Trans-Lake Washington Study

Parametrix, Inc., CH2M Hill, Parsons Brinckerhoff 21-1631-16 (A17) (S)

LEGEND:

Bottlenecks and Queues Significantly Worsened Beyond Current Conditions

Links Near or Over Capacity

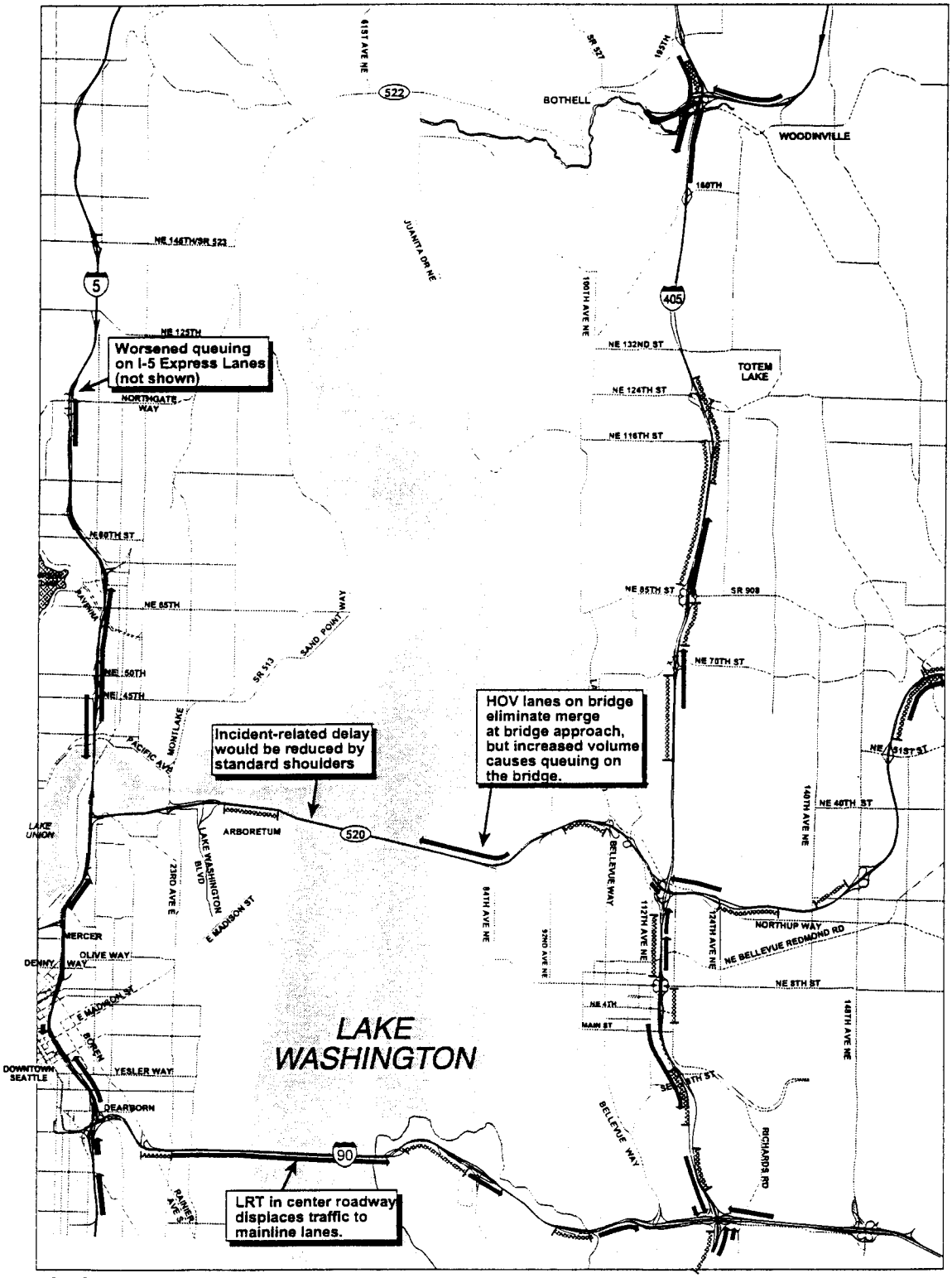
(Arterial traffic impacts not shown.)

NOT TO SCALE

N

NOTE: Existing traffic backups are not shown; traffic impacts shown here are above and beyond those experienced today.

Figure A9.1
No Action Solution Set
PM Peak Hour Freeway "Bottleneck" Analysis



Trans-Lake Washington Study

Parametrix, Inc., CH2M Hill, Parsons Brinckerhoff 21-1631-16 (A17) (S)

LEGEND:

- Bottlenecks and Queues Significantly Worsened Beyond Current Conditions
- Links Near or Over Capacity

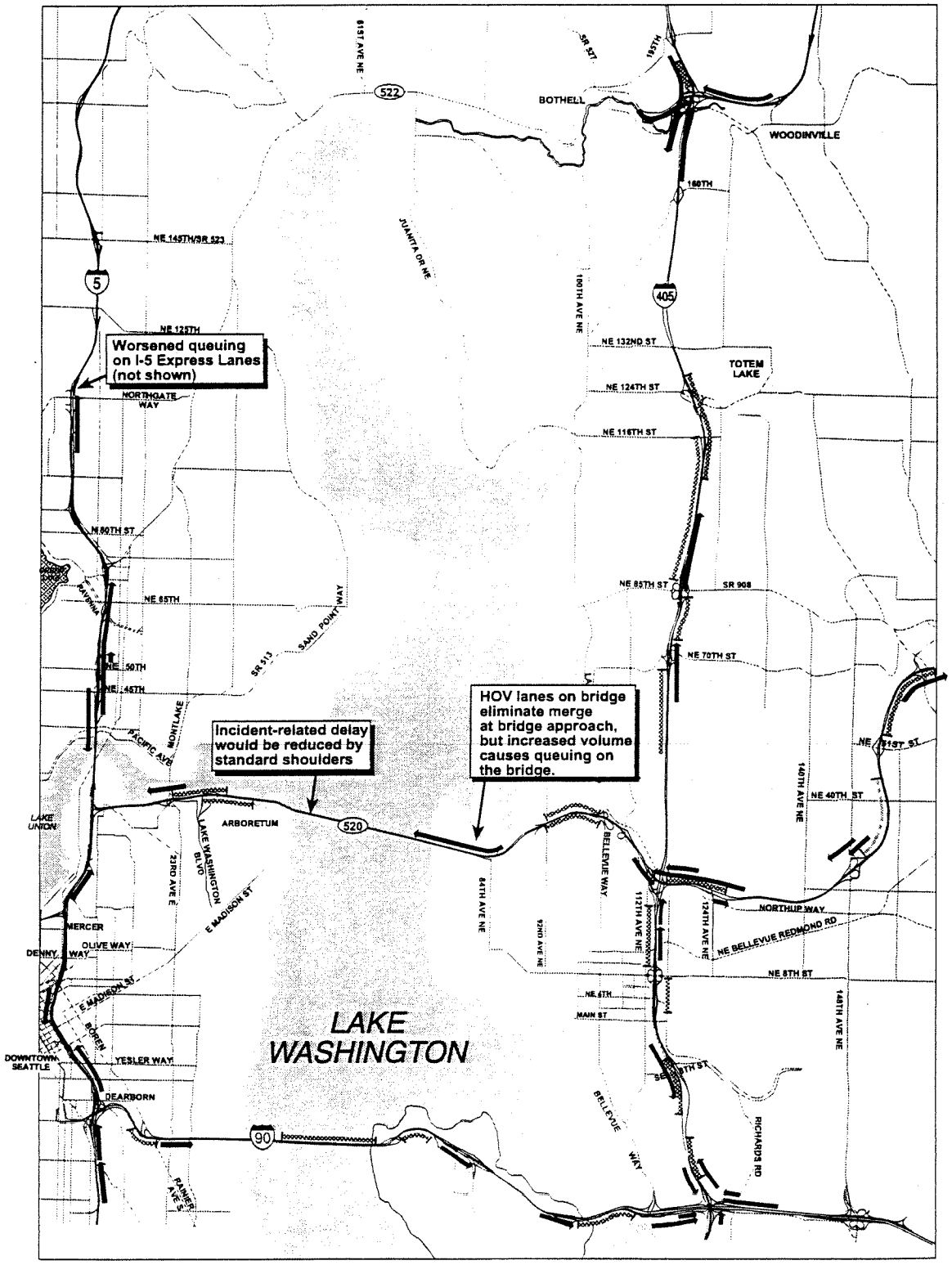
(Arterial traffic impacts not shown.)

NOT TO SCALE

N

NOTE: Existing traffic backups are not shown; traffic impacts shown here are above and beyond those experienced today.

Figure A9.2
MTP '98 Solution Set
PM Peak Hour Freeway
"Bottleneck" Analysis



Trans-Lake Washington Study

Parametrix, Inc., CH2M Hill, Parsons Brinckerhoff 21-1631-16 (A17) (S)

LEGEND:

- Bottlenecks and Queues Significantly Worsened Beyond Current Conditions
- Links Near or Over Capacity

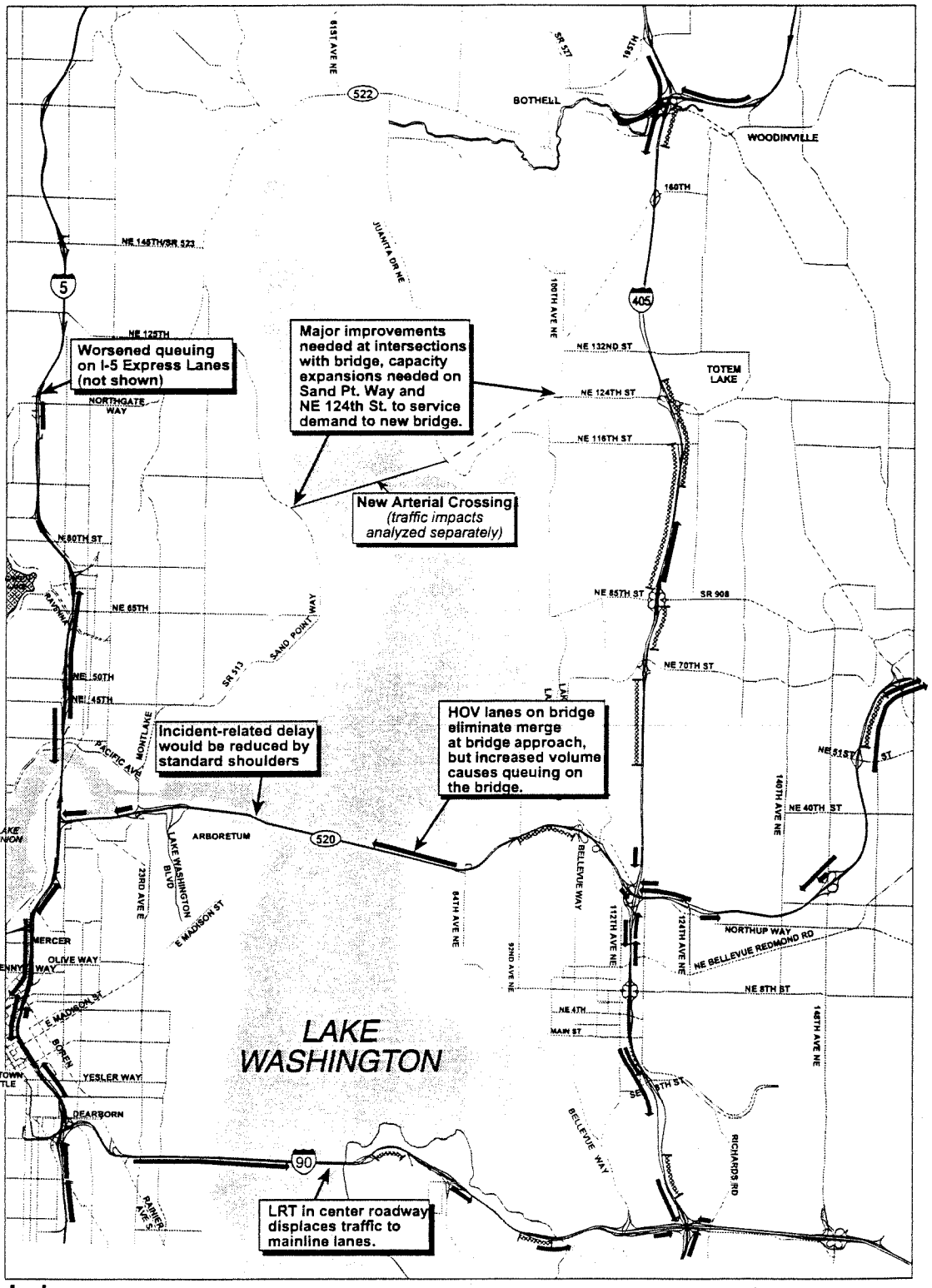
(Arterial traffic impacts not shown.)

NOT TO SCALE

N

NOTE: Existing traffic backups are not shown; traffic impacts shown here are above and beyond those experienced today.

Figure A9.3
MTP "Flipped" Solution Set
PM Peak Hour Freeway "Bottleneck" Analysis



Trans-Lake Washington Study

Parametrix, Inc., CH2M Hill, Parsons Brinckerhoff 21-1631-16 (A17) (S)

LEGEND:

- Bottlenecks and Queues Significantly Worsened Beyond Current Conditions
- Links Near or Over Capacity

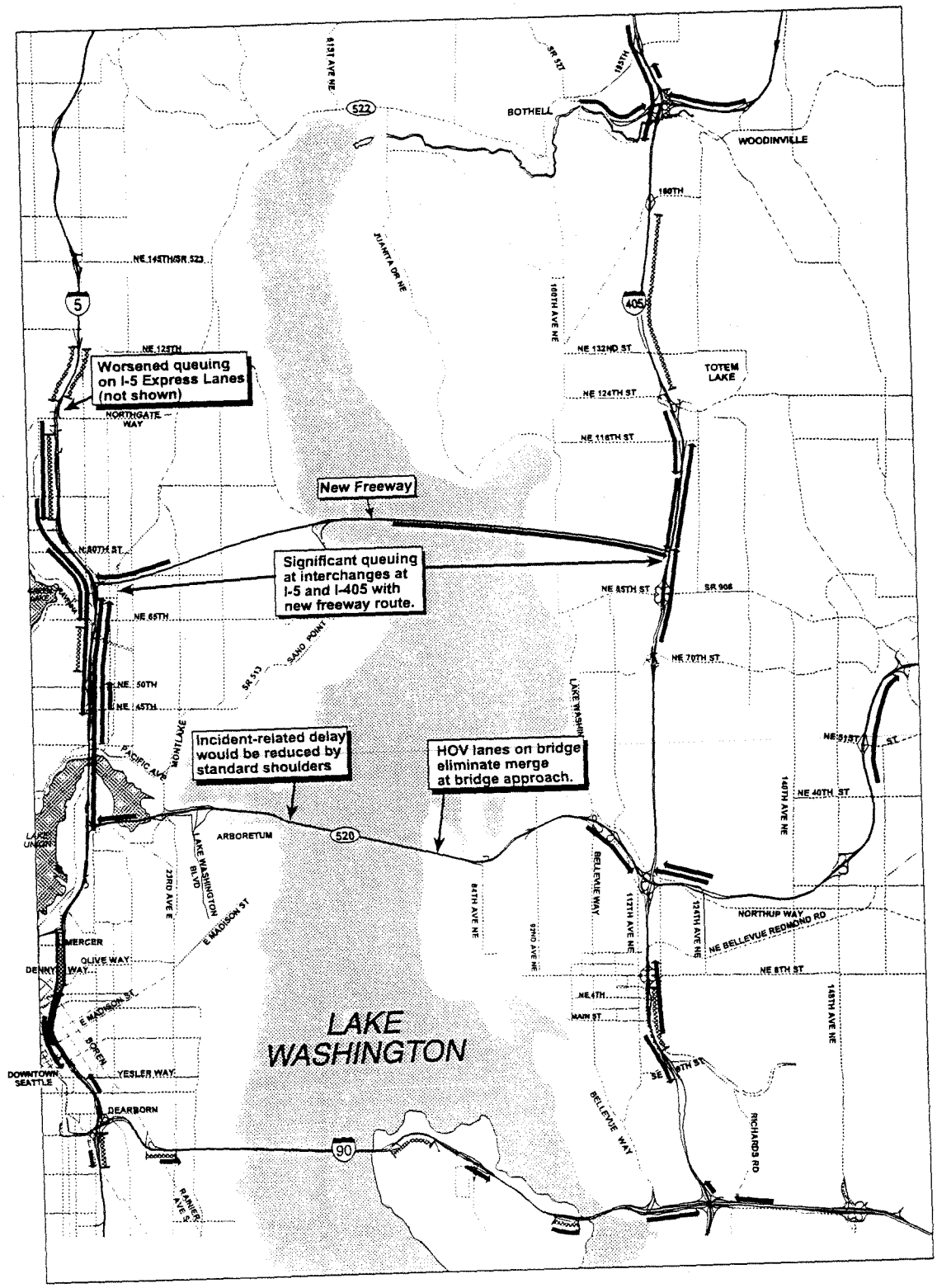
(Arterial traffic impacts not shown.)

NOT TO SCALE

N

NOTE: Existing traffic backups are not shown; traffic impacts shown here are above and beyond those experienced today.

Figure A9.4
New Crossing Solution Set
PM Peak Hour Freeway
"Bottleneck" Analysis



Trans-Lake Washington Study

Parametrix, Inc., CH2M Hill, Parsons Brinckerhoff 21-1631-16 (A17) (S)

LEGEND:

Bottlenecks and Queues Significantly Worsened Beyond Current Conditions

Links Near or Over Capacity

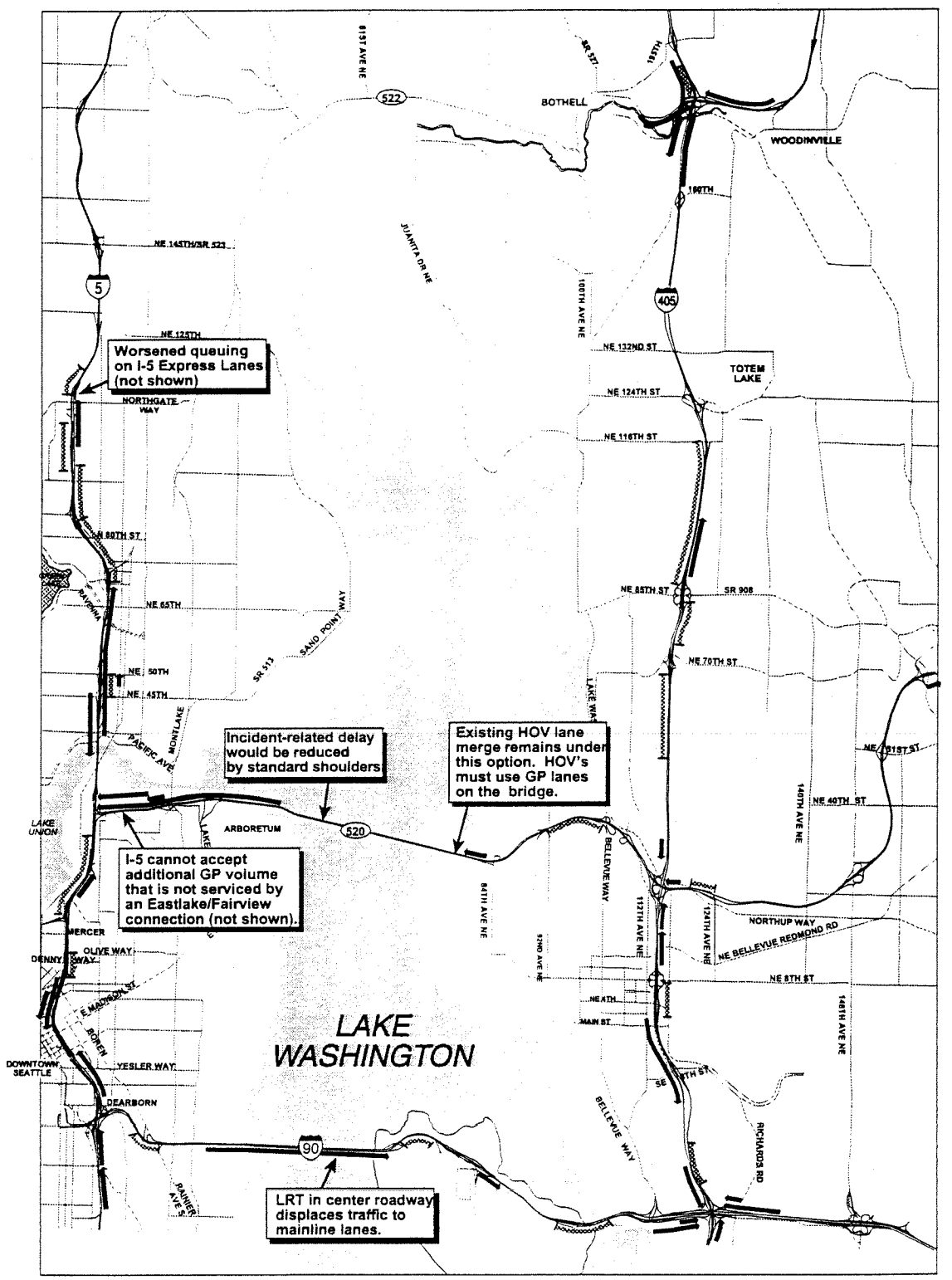
(Arterial traffic impacts not shown.)

NOT TO SCALE

N

NOTE: Existing traffic backups are not shown; traffic impacts shown here are above and beyond those experienced today.

Figure A9.5
Roadway/Bus Solution Set
PM Peak Hour Freeway "Bottleneck" Analysis



Trans-Lake Washington Study

Parametrix, Inc., CH2M Hill, Parsons Brinckerhoff 21-1631-16 (A17) (S)

LEGEND:

- Bottlenecks and Queues Significantly Worsened Beyond Current Conditions
- Links Near or Over Capacity

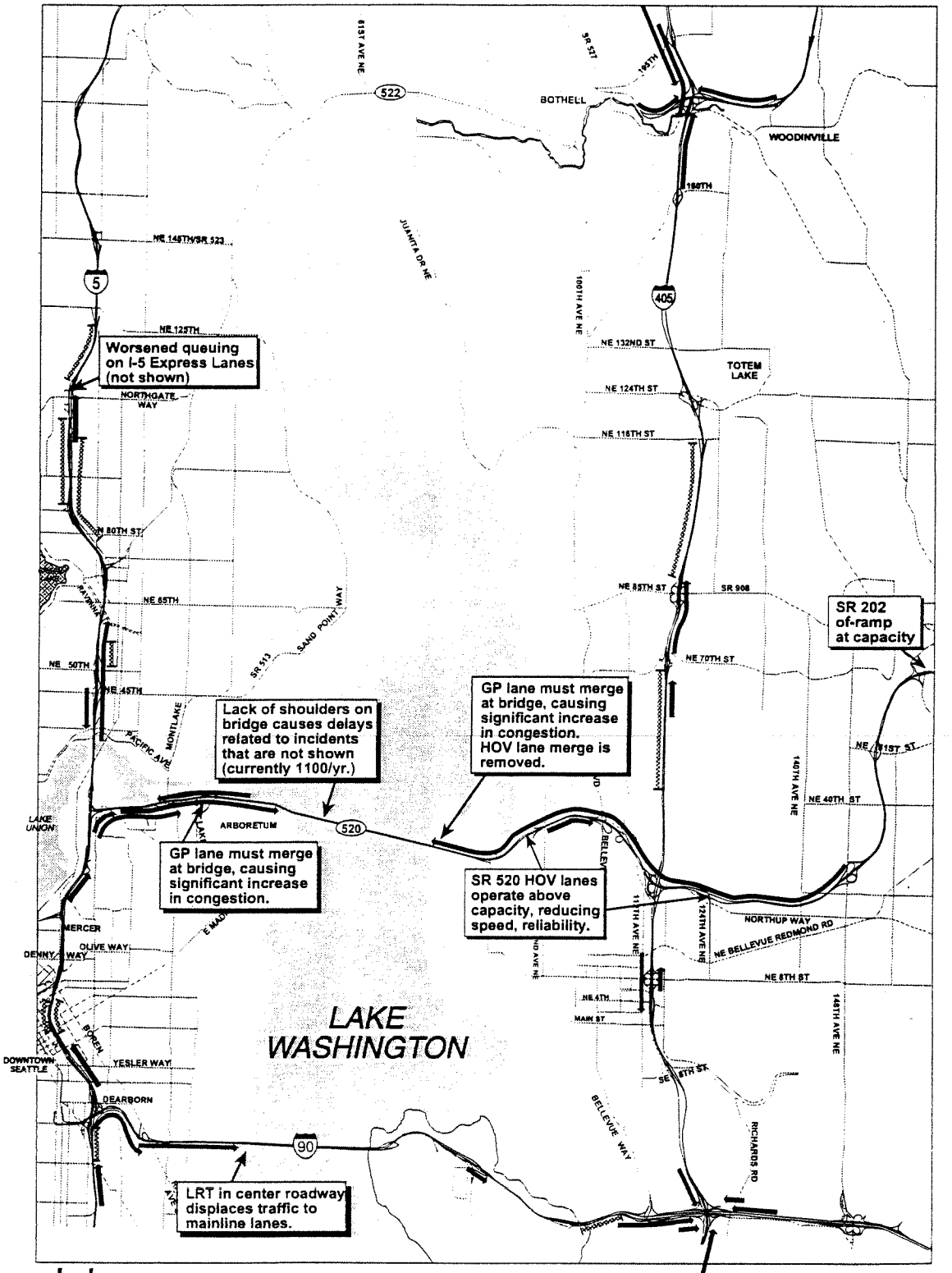
(Arterial traffic impacts not shown.)

NOT TO SCALE

N

NOTE: Existing traffic backups are not shown; traffic impacts shown here are above and beyond those experienced today.

Figure A9.6
Roadway/Rail Solution Set
PM Peak Hour Freeway "Bottleneck" Analysis



Trans-Lake Washington Study

Parametrix, Inc., CH2M Hill, Parsons Brinckerhoff 21-1631-16 (A17) (S)

LEGEND:

- Bottlenecks and Queues Significantly Worsened Beyond Current Conditions
- Links Near or Over Capacity

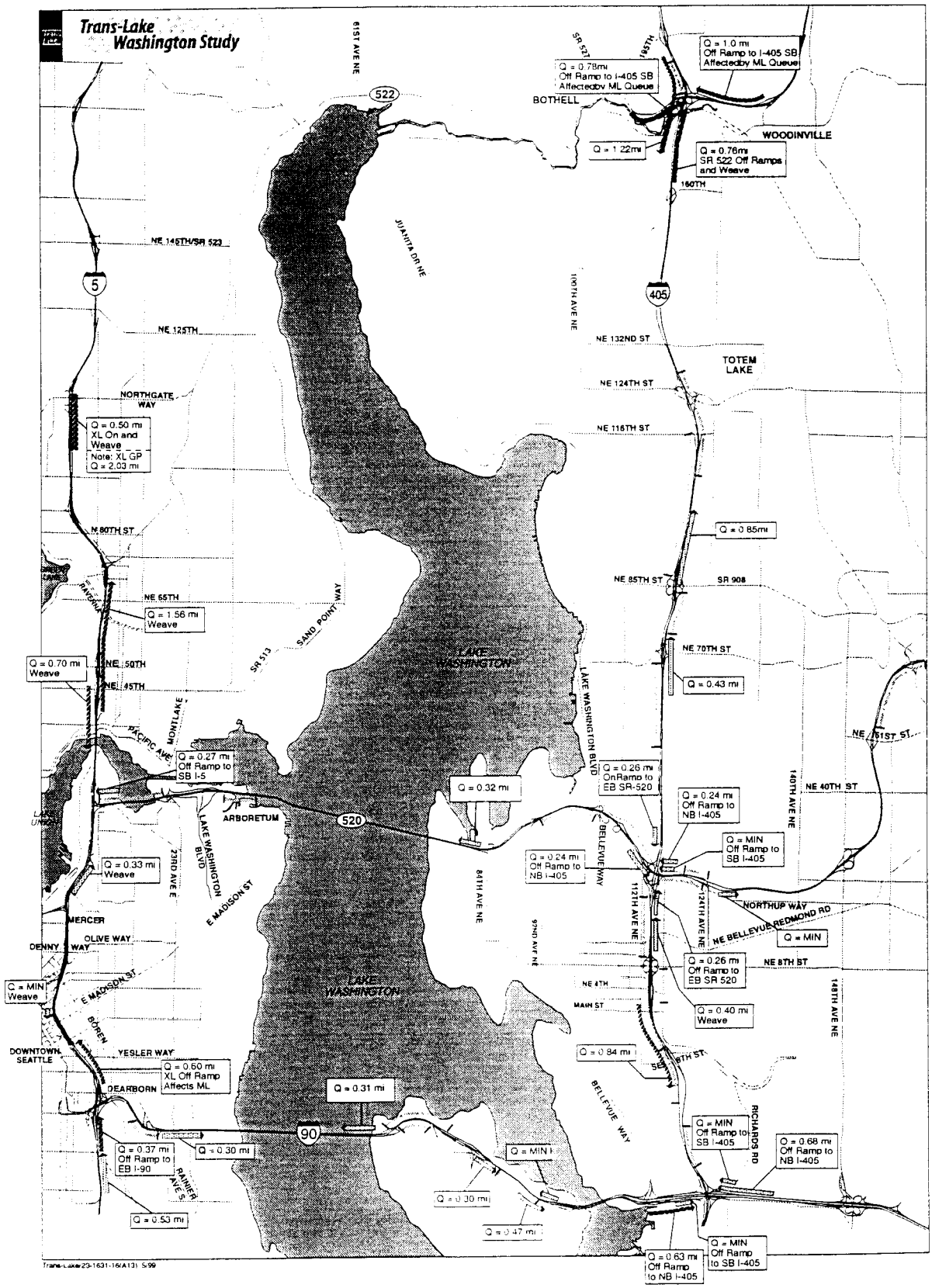
(Arterial traffic impacts not shown.)

NOT TO SCALE

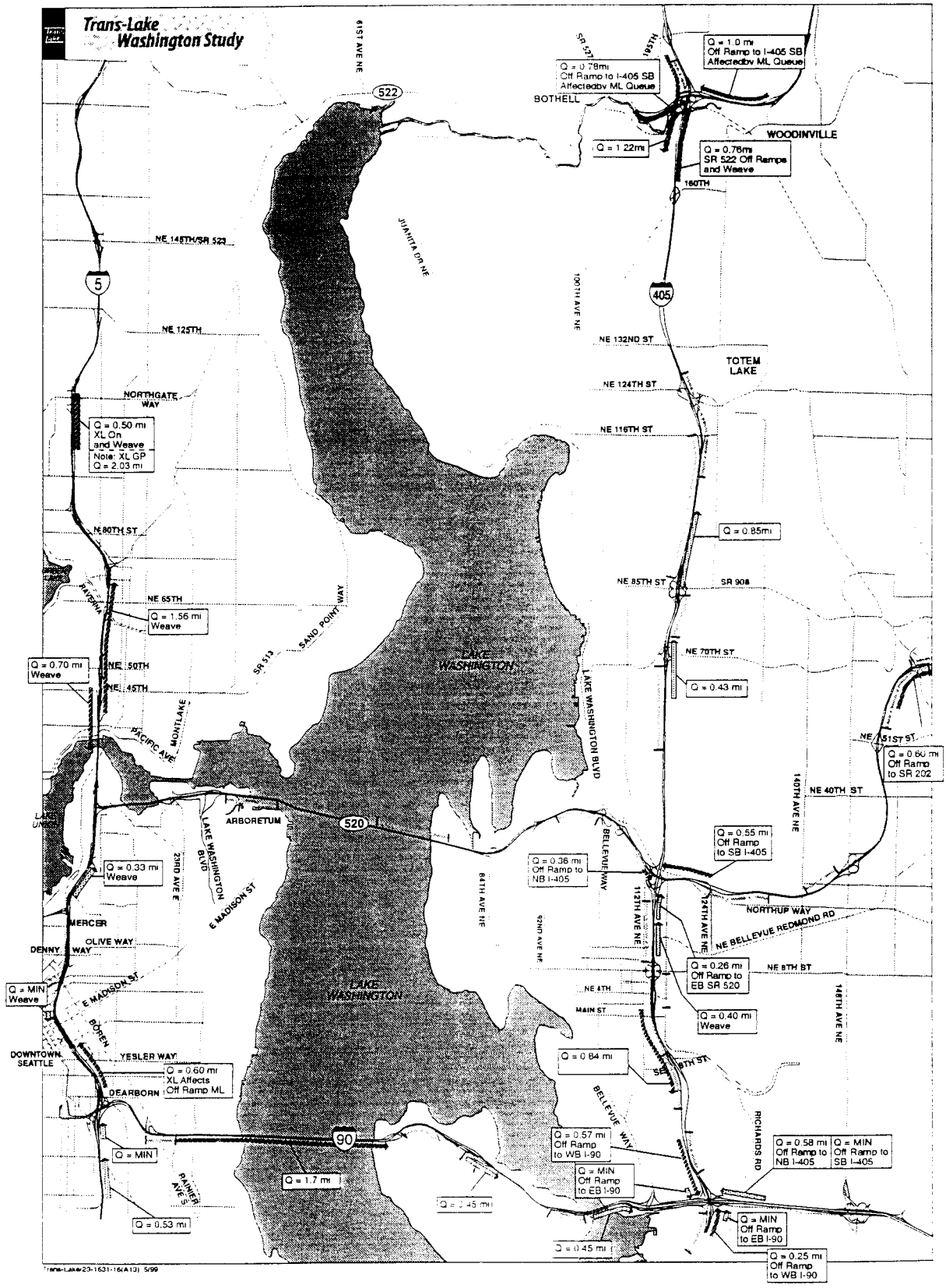
N

NOTE: Existing traffic backups are not shown; traffic impacts shown here are above and beyond those experienced today.

Figure A9.7
Maximize Alternatives Solution Set
PM Peak Hour Freeway "Bottleneck" Analysis



Technical Team Worksheet
Figure A9.8
No Action Freeway
PM Peak Hour "Bottleneck" Analysis



SCALE IN MILES

0 1.0

N

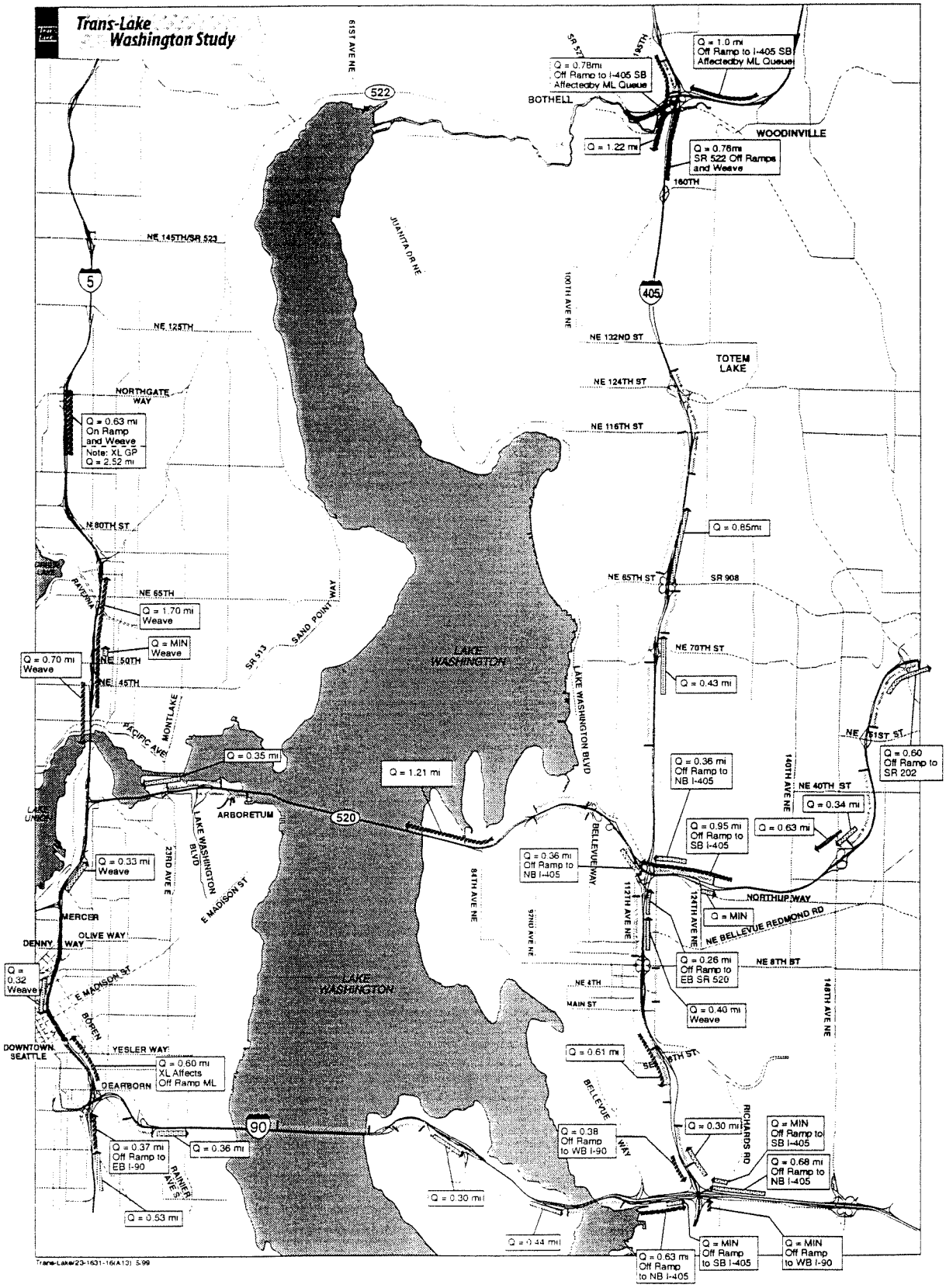
Facility Above Capacity

Facility at Capacity

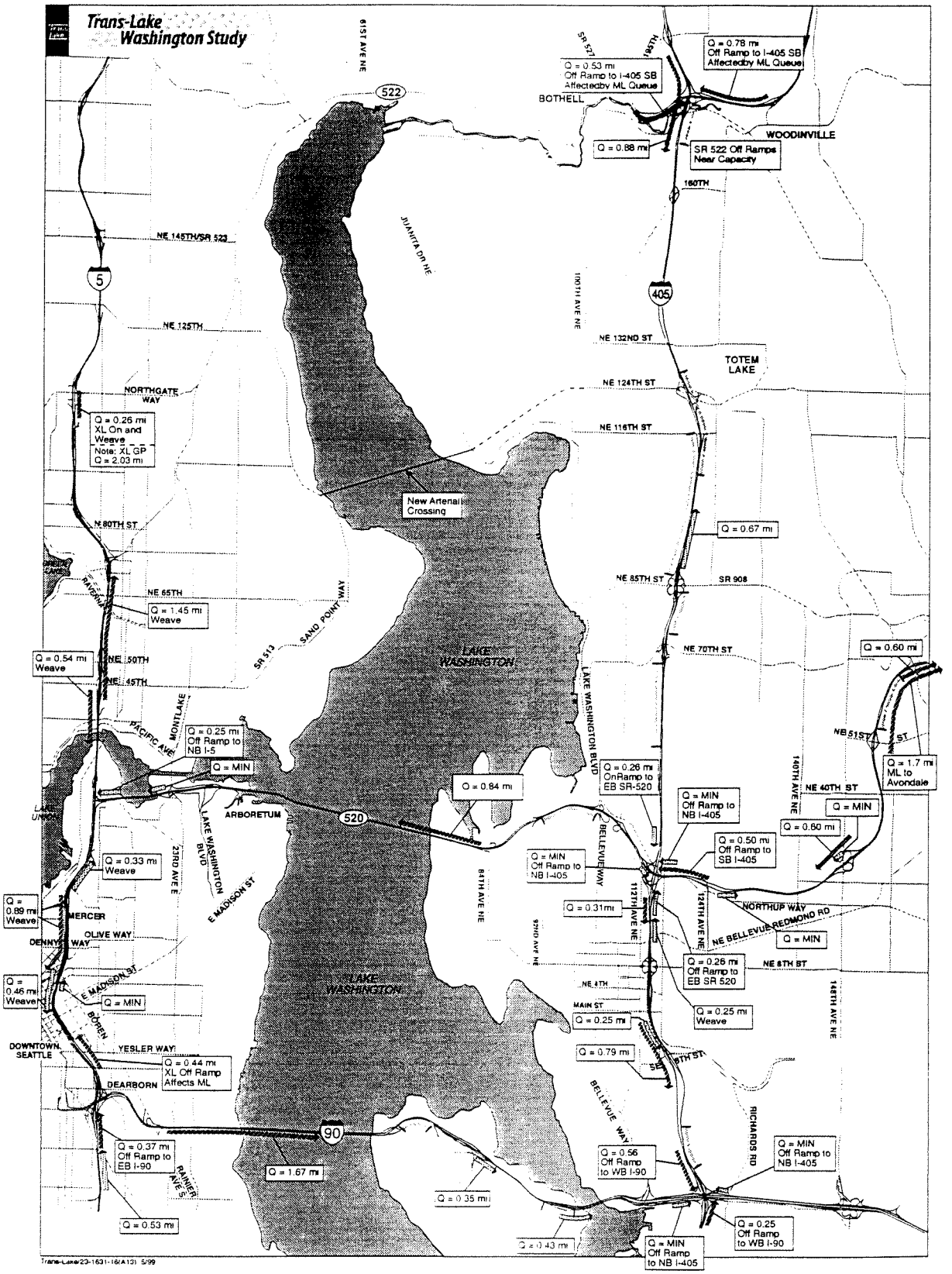
Link Near Capacity

Q Queue length in miles

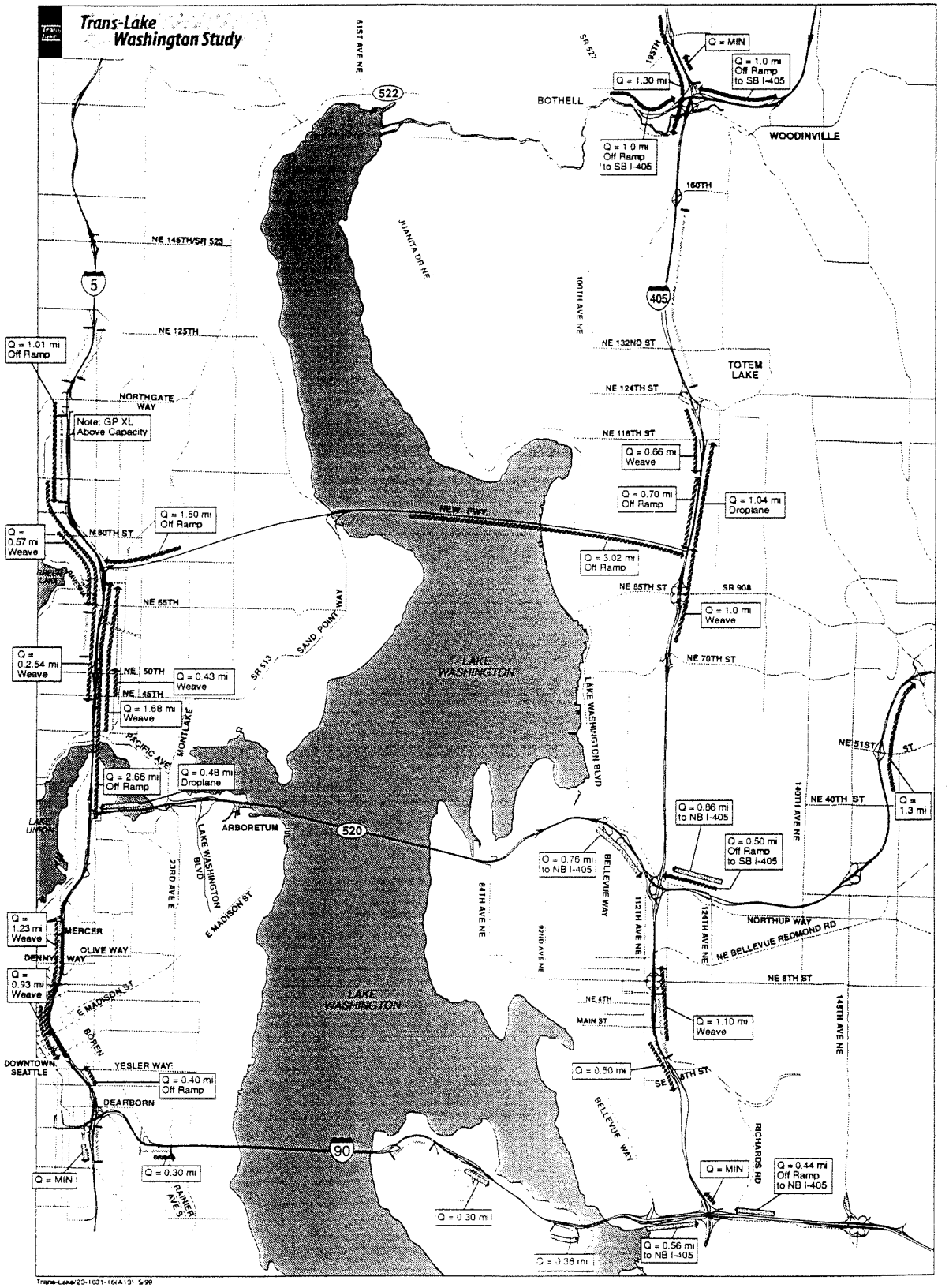
Technical Team Worksheet
Figure A9.9
MTP '98 Freeway
PM Peak Hour "Bottleneck" Analysis



Technical Team Worksheet
Figure A9.10
MTP "Flipped" PM Peak Hour "Bottleneck" Analysis



Technical Team Worksheet
Figure A9.11
New Crossing Freeway
PM Peak Hour "Bottleneck" Analysis



SCALE IN MILES

0 1.0

N

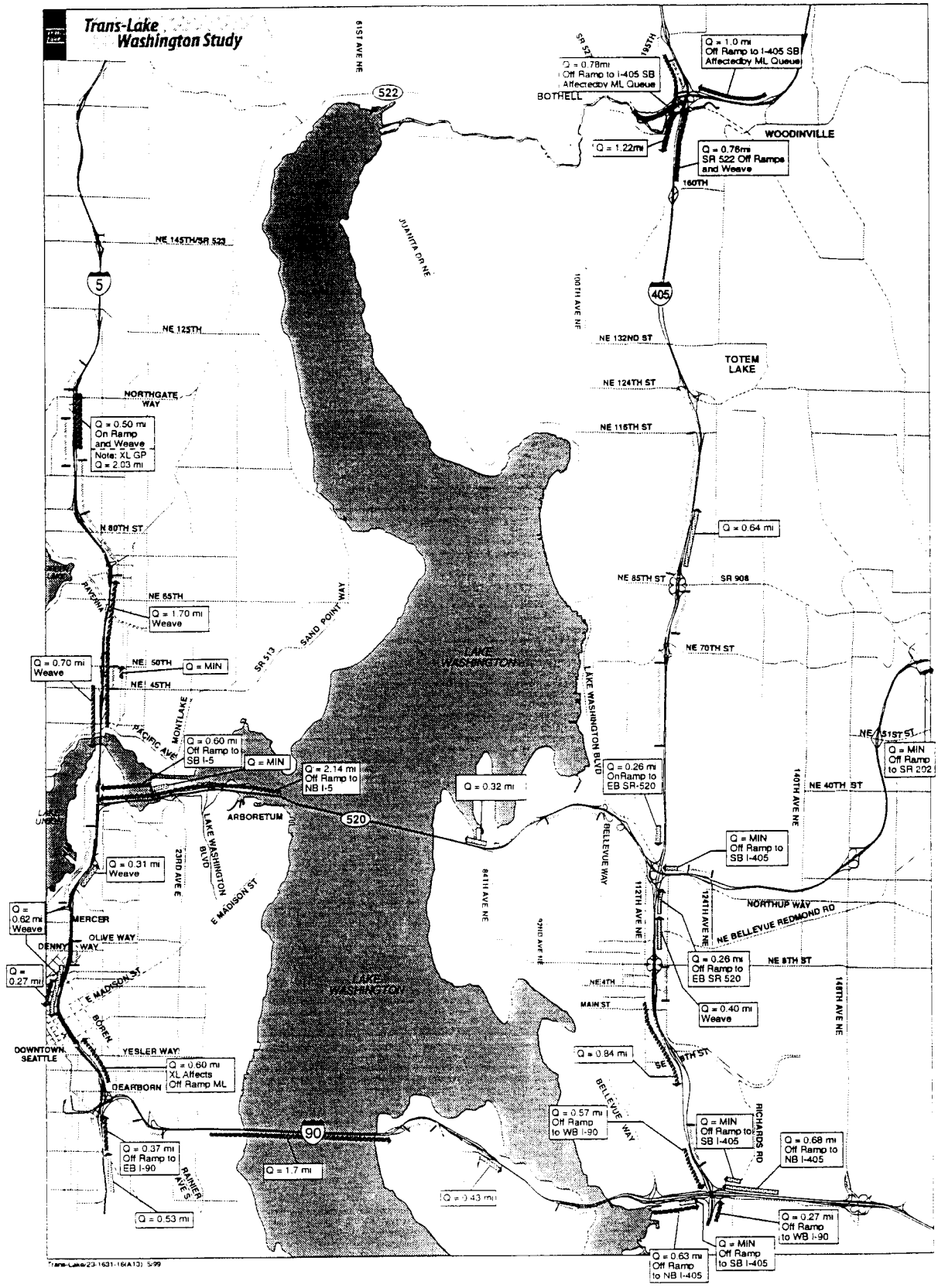
Facility Above Capacity

Facility at Capacity

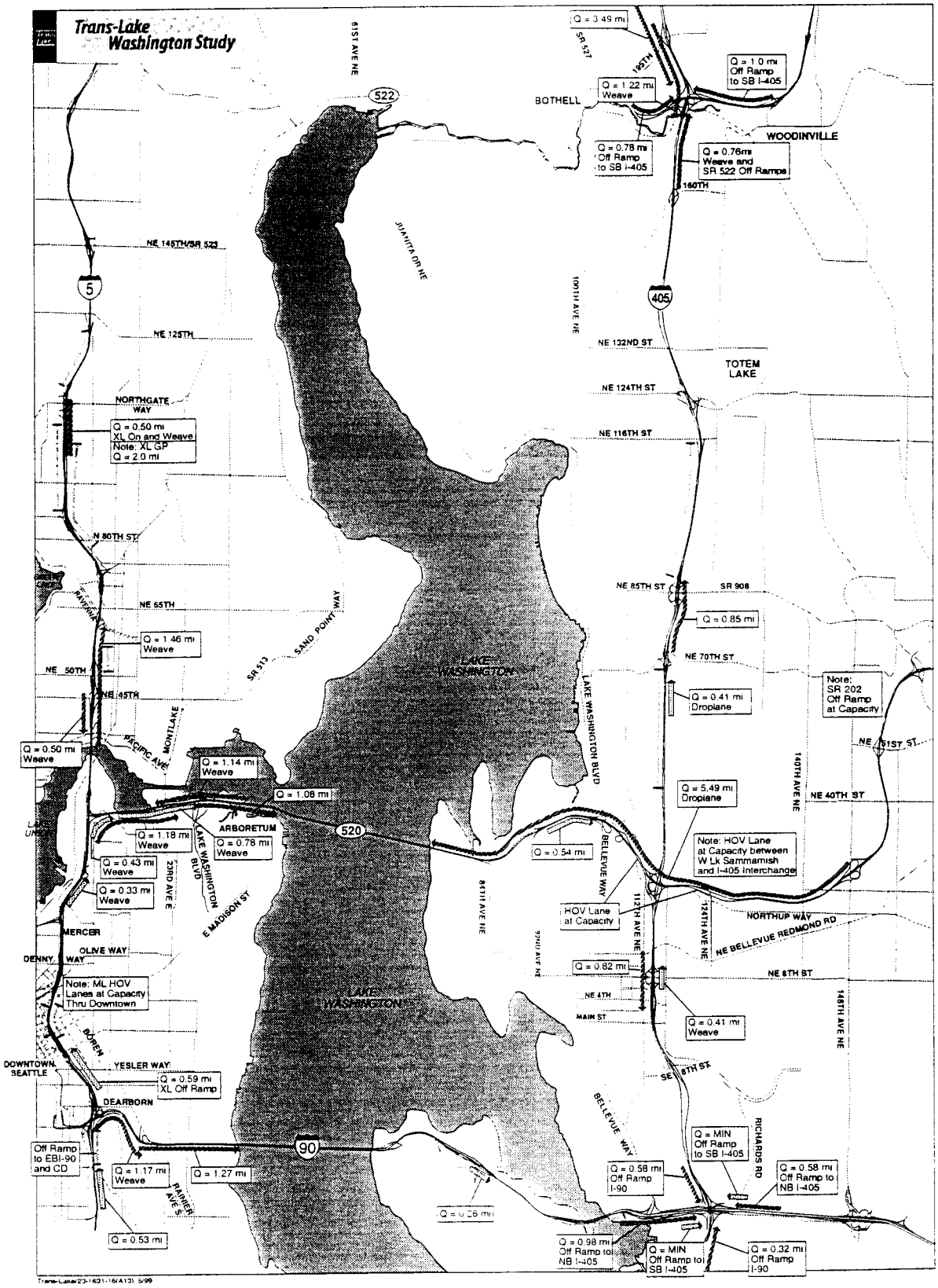
Link Near Capacity

Q Queue length in miles

Technical Team Worksheet
Figure A9.12
Road/Bus Freeway
PM Peak Hour "Bottleneck" Analysis



Technical Team Worksheet
Figure A9.13
Road/Rail Freeway
PM Peak Hour "Bottleneck" Analysis



Technical Team Worksheet
Figure A9.14
Maximize Alternatives
PM Peak Hour "Bottleneck" Analysis

Trans-Lake Washington Study

Appendix 7
Public Survey Methods and Summary Reports

TRANS-LAKE WASHINGTON COMMUNITY SURVEY

SUMMARY REPORT

OCTOBER 5, 1999

Prepared for

THE TRANS-LAKE WASHINGTON STUDY COMMITTEE
AND
THE WASHINGTON DEPARTMENT OF TRANSPORTATION

Prepared by
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GRAPHS AND TABLES

I. STUDY OBJECTIVES

The purpose of the Trans-Lake Washington Study is to explore and evaluate a set of solutions to improve mobility across and/or around Lake Washington. Elements of this study process include technical and impact analysis, as well as extensive outreach with area interest groups and the general public.

As part of the public involvement effort, Pacific Rim Resources (PRR) was contracted on behalf of the Washington State Department of Transportation and the Trans-Lake Washington Study Committee to conduct a random telephone community survey. The goal of the survey was to provide Committee members with representative information about public opinion on issues pertaining to the Trans-Lake Washington Study Problem Statement.

The survey aimed to assess two primary issues that are likely to be uppermost on Committee members' minds: the community's perspectives on Trans-Lake area traffic-related problems, and the level of favorableness toward the various transportation improvements under consideration. Specifically, the survey addressed the following[1]:

- Perceived significance of the problem
- Travel frequency and most typical mode of transportation
- Purpose of trips
- Favorableness toward transportation improvement options
- Likelihood to use transportation improvement
- Values influencing decision-making of most favored transportation improvements

II. SURVEY METHODOLOGY AND ASSUMPTIONS

Pacific Rim Resources interviewed over the course of ten days 1,068 people who reside within the Trans-Lake Study area.[2] Each interview averaged 11.5 minutes. To obtain the most representative sample, telephone numbers were randomly selected in proportion to households within 39 zip codes of the study area.[3] To account for unlisted telephone numbers, PRR conducted "Plus-1" dialing; a method that adds one onto the last digit of the phone numbers provided in the sample list.

Data was analyzed using commonly accepted univariate measures of central tendency and bivariate measures of association.

Findings of this report are assumed to be "generalizable" to the entire Trans-Lake community. The margin of error of the findings is ±3 percent at the 95 percent confidence level. This means that had *all* individuals within the Trans-Lake Study area

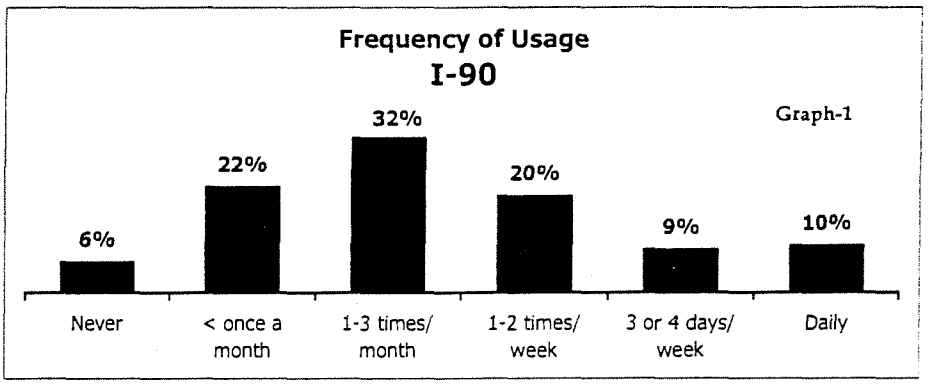
[1] A copy of the survey can be found in Appendix A.
[2] See Appendix B for a of map the study area.
[3] See Appendix C for a list of zip codes used for the survey.

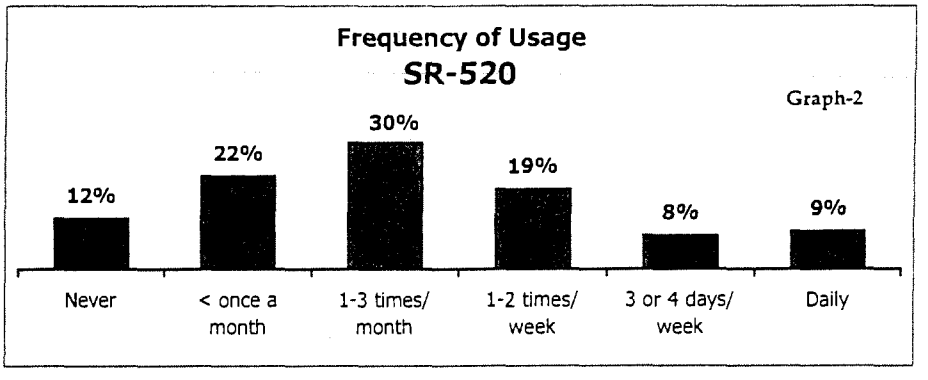
been interviewed, 95% of the time the results would have differed by no more than ± 3 percent points from what was obtained in the study conducted by PRR.

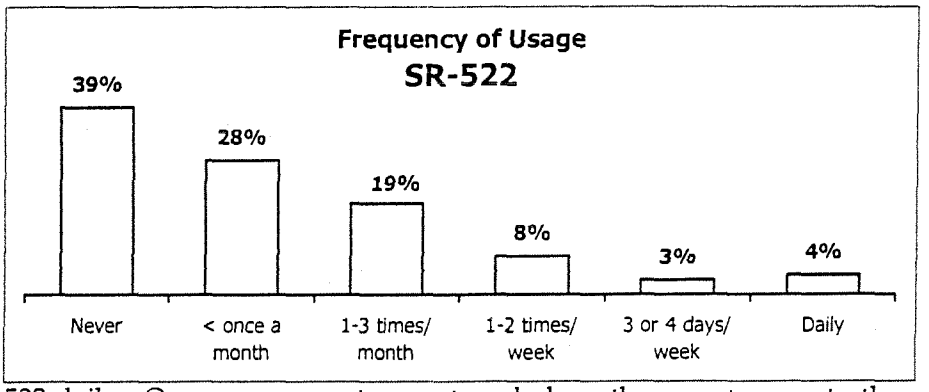
III. TRAVEL CHARACTERISTICS

A. ROUTE USAGE

Respondents were asked how frequently they use I-90, SR-520, and SR-522. As the graphs below depict, approximately ten percent of all respondents state that they use I-90 on a daily basis; nine percent use SR-520 daily; and only four percent of respondents







use SR-522 daily. On average, most users travel along these routes one to three times per month or less.

When asked to choose which of the three corridors they use most frequently, 50% of respondents indicated I-90; 39% indicated SR-520; and 7% indicated SR-522. (Nearly four percent are non-users.)

B. Purpose of Trips

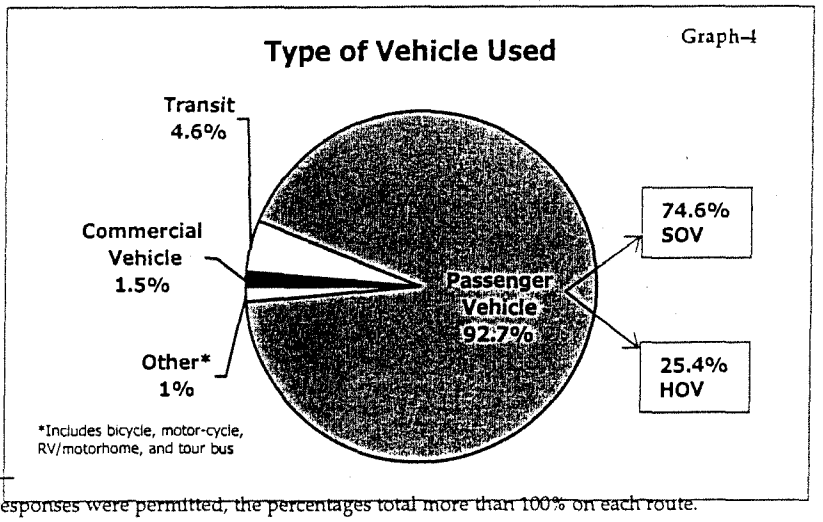
Respondents were asked to list the reasons for using the route that they travel along most frequently.[4] As Table-1 shows, the two most common reasons, for any route, are recreation/social activities and errands/shopping. In addition, just under one third of respondents (29.4%) stated that they use their corridor to commute to work.

Table-1: *Purposes of Trips along Route Used Most Frequently*

Trip Purposes	I-90 Used Most Frequently	SR-520 Used Most Frequently	SR-522 Used Most Frequently	All Routes Combined
Recreation/Social Activity	52.2%	48.3%	67.1%	51.7%
Errands/Shopping	40.5%	45.5%	50.7%	43.3%
Commuting to Work	30.8%	29.0%	21.9%	29.4%
Business Appointment	23.7%	24.8%	19.2%	23.8%
Medical/Health Appointment	13.0%	12.1%	13.7%	12.7%
School/College	7.5%	6.2%	9.6%	7.1%

C. Vehicle Types

As Graph-4 illustrates, of the respondents who use at least one of the Trans-Lake corridors, nine-out-of-ten travel in a passenger vehicle (car, van, SUV, or truck). One fourth of these people report that they travel in HOV lanes (carpool lanes).



[4] Because multiple responses were permitted, the percentages total more than 100% on each route.

D. CORRIDOR ACCESS

Respondents were also asked to indicate their usual method of accessing the corridor they use most frequently. As Table-2 shows, of the four alternatives possible (I-5, I-405, Local Street and "Other,") via a "Local Street" was the most common access route.[3] However, large percentages of respondents report using I-5 as an access method.

Table-2: *Access to Route Used Most Frequently*

Route Most Frequently Used	Via I-5	Via I-405	Local Street	Via "Other"
I-90	40.8%	14.6%	44.2%	.4%
SR-520	32.5%	16.4%	50.4%	.7%
SR-522	8.1%	17.6%	74.3%	-

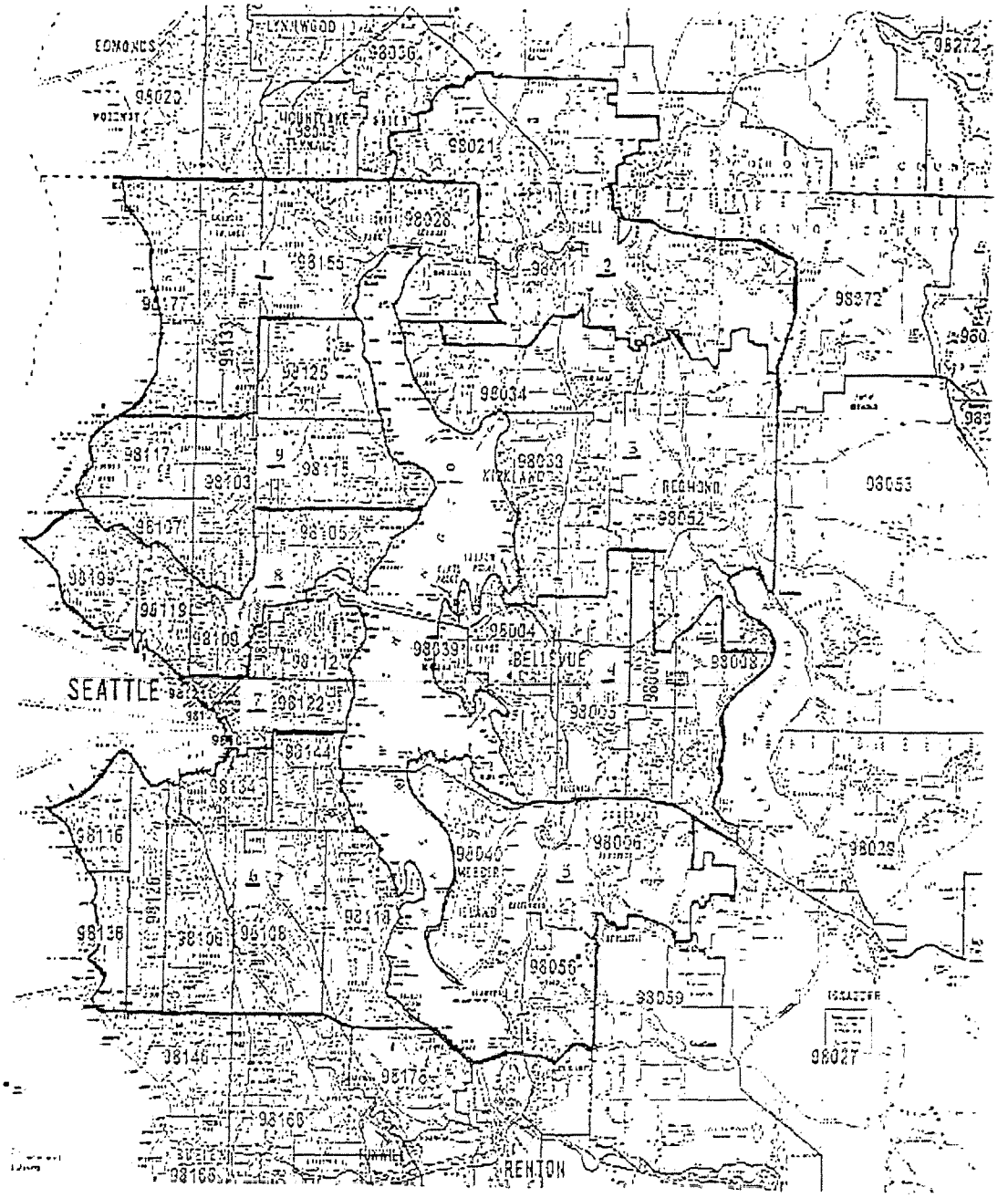
In order to compare any differences in method of access by the area of residence, the data was also analyzed geographically by aggregating the zip codes of the Trans-Lake Study Area into nine regions. The map on the following page delineates the boundaries of each region used in obtaining the results presented in Table-3.

Table-3: *Access to Route Used by Region*

Region	Via I-5	Via I-405	Local Street	Via "Other"
1	54.3%	8.7%	37.0%	-
2	2.3%	68.2%	29.5%	-
3	2.5%	41.7%	55%	0.8%
4	1.0%	12.9%	86.1%	-
5	3.7%	49.4%	46.9%	-
6	52.9%	2.6%	43.9%	-
7	33.3%	4.2%	61.7%	0.8%
8	58.7%	2.9%	38.5%	-
9	59.4%	1.6%	38.0%	1.1%

[3] A possible explanation for the large differences between accessing through I-5 rather than I-405 is the fact that people are more likely to respond to this question based on where they *begin* their trip. Since the Trans-Lake Study area comprises more residents from the West side, I-405 is not an option for the majority of respondents.

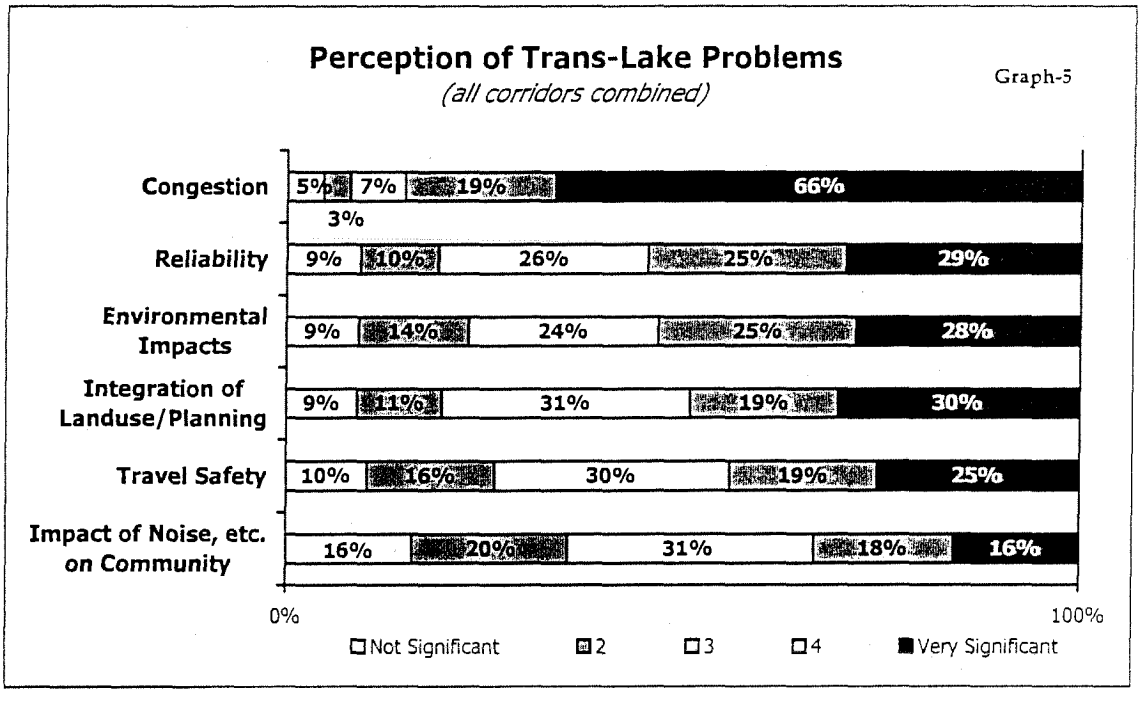
Geographic Analysis Areas



IV. PROBLEM PERCEPTION

A key goal of the survey was to assess the community's perception of the six elements defined through the Trans-Lake Washington Study Committee Problem Statement. Respondents were asked to consider the significance of traffic congestion, roadway safety, travel reliability, the integration of land use and transportation planning, environmental impacts, noise and other impacts on neighborhoods and businesses, and to rate these six factors on a 1 to 5 scale, where 1 is "Not Significant" and 5 is "Very Significant."

As Graph-5 illustrates, nearly all the problem elements rated as somewhat significant: combined percentages of "4" and "5" ratings given in each category range between 34 and 85 percent. Most striking, however, is the fact that congestion is perceived as a serious enough of a problem so that two thirds of respondents give it a "5" ("Very Significant") on the 5-point scale.



A study conducted for the Regional Transit Authority (Sound Transit) in July 1997 also found widespread recognition of congestion as a significant problem.[6] In fact, one-out-of-six respondents (16%) in that study identified traffic congestion as *the most* important problem facing the Puget Sound.[7]

[6] Based on a survey of 500 registered voters within the Puget Sound region.
[7] *The Regional Transit Authority Communications Report*. The Cocker Company. July 1997, p.4-5

PRR further analyzed whether or not there is any relationship between the degree to which respondents consider congestion significant and the frequency with which they use any of the Trans-Lake corridors.[8]

As Table-4 shows, frequent users of the corridors are no more likely to perceive congestion as a significant problem than are those who use the corridors the least.[9]

Table-4: *Perceived Significance of Traffic Congestion v. Frequency of Use (all routes)*

Frequency of Use	"Not Significant"	2	3	4	"Very Significant"
Never	5.3%	3.4%	8.2%	14.6%	68.4%
Less than 1 time month	6.2%	4.1%	6.6%	22.6%	60.5%
1-3 times month	4.4%	2.9%	7.5%	17.7%	67.5%
1-2 times week	2.8%	3.4%	5.2%	20.1%	68.4%
3 or 4 times week	3.8%	4.3%	4.8%	19.2%	67.8%
Daily	2.1%	2.5%	7.6%	20.7%	67.1%

Similarly, analysis conducted comparing the degree to which congestion is perceived as a significant problem and the *route* used most frequently reveals no statistically significant association.[10] (See Table-5.)

Table-5: *Perceived Significance of Traffic Congestion v. Route Used Most Frequently*

Route Used Most Frequently	"Not Significant"	2	3	4	"Very Significant"
I-90	4.8%	3.4%	7.1%	21.2%	63.5%
SR-520	3.7%	3.5%	5.7%	16.6%	70.5%
SR-522	1.4%	1.4%	8.1%	18.9%	70.3%
Non-Users	12.1%	3.0%	18%	6.0%	60.6%

[8] Similar analyses were conducted on the other five problem statement elements.

[9] Significance testing using Kendall's tau-c shows no statistical differences (tau-c =.03 at the .15 significance level). [Kendall's tau-c is a number between -1 and +1 that measures the strength and direction of the relationship between two variables; -1 or +1 indicate a stronger inverse or direct relationship, respectively.] Note: none of the cross tabulation analyses conducted on the other five problem elements shows a relationship between the degree to which the problem is seen as significant and the frequency of corridor usage.

[10] At first glance it may appear that Non-Users are more likely to see traffic congestion as a less significant problem than users. However, this is a very weak correlation and should not be considered important. (Cramer's V = .085, at the.04 significance level.) [Cramer's V is a measure of association similar to Kendall's tau-c, but is used on nominal variables—those variables that have no intrinsic order.] A cross-tabulation excluding Non-Users from the analysis also indicates no relationship between perception of traffic congestion and frequency of use (Cramer's V = .064 at the .408 significance level).

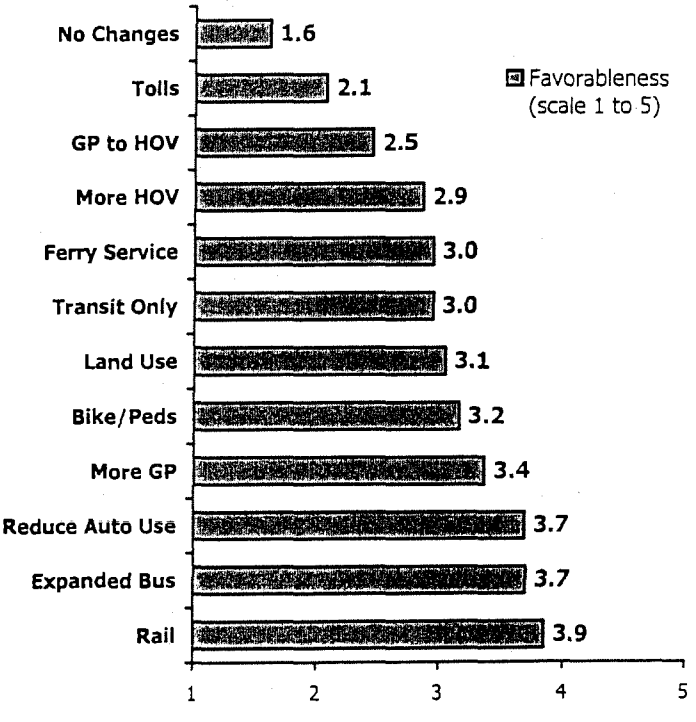
V. FAVORABLENESS OF IMPROVEMENTS

In order assess the preferences of the Trans-Lake community with regard to the transportation improvements under consideration, respondents were asked to rate, on a scale of 1 to 5—where 1 is "Very Unfavorable" and 5 is "Very Favorable"—their level of favorableness with each option. The following is a list of improvements given to each respondent of the survey:

- Convert some general-purpose lanes to HOV lanes (carpool)
- Expand bus service
- Implement land use changes to encourage density near transit
- Implement tolls to discourage auto trips
- Make no changes
- Make bike and pedestrian improvements
- More general-purpose lanes
- Add ferry service
- Additional HOV lanes
- Rail
- Additional transit-only lanes
- Implement/encourage measures to reduce auto usage

How did respondents rate these improvements overall? As Graph-6 illustrates, "No Changes" and "Tolls" are the improvements with the lowest average preference, with 2.1 and 1.6 respectively. While the highest average is 'Rail", with an average of 3.9, "Bus" and "More General-Purpose Lanes" followed closely with 3.7.[11]

Average Ratings for Transportation Improvements Graph-6



[11] For more details, a breakdown showing the percentages within each "favorableness" category can be found in Appendix D.

When survey respondents were asked to select *one* improvement as their most favorable, over one-third chose "Rail" (37.8%), and slightly over one-fifth (21.6%) chose "More General-Purpose Lanes." No other transportation improvement was favored by more than ten percent of respondents.

The top four most favored transportation improvements are:[12]

- Rail (37.8%)
- More General-Purpose Lanes (21.6%)
- Expanded Bus Service (8.9%)
- Additional HOV lanes (7.9%)

Table-6 demonstrates that regardless of the route used most frequently, the order of the top two preferences is identical—"Rail" followed by "More General-Purpose Lanes." Non-Users, however, chose "Expanded Bus Service" as their second most favored (after "Rail"). Nonetheless, this difference is not statistically significant.[13]

Table-6: *Top Four Most Favored Transportation Improvements by Route*

Non-Users Top 4	I-90 Users Top 4	SR-520 Users Top 4	SR-522 Users Top 4
Rail (48.3%)	Rail (39.7%)	Rail (35.5%)	Rail (35.5%)
Expanded Bus Service (17.2%)	More GP Lanes (19.7%)	More GP Lanes (24.8%)	More GP Lanes (30.1%)
More HOV (6.9%)	Expanded Bus Service (9.7%)	More HOV (9.3%)	Bike/Peds (11%)
Bike/Peds (6.9%)	More HOV (7.9%)	Ferry Service & Expanded Bus Service (7.3%)	Ferry Service (6.8%)

Respondents were also asked to indicate which transportation improvement they favored *least*. By far the least preferred, even before "Make No Changes," was "Tolls", followed by "Additional HOV lanes."[14]

The four least favored transportation improvements are:

- Tolls (19.6%)
- Additional HOV Lanes (14%)
- More General-Purpose Lanes (11%)
- Make No Changes (10.2%)

[12] Analyses were also conducted to determine any relationships or differences between the most favored improvement and region of residence using the nine regions. While a very weak association appeared (people in the Kirkland/Redmond area, for example, preferred "More General-Purpose Lanes" as their number one choice—Cramer's V = .116 at the .046 significance level), the top two most favored options, regardless of region, remained "Rail" and "More General-Purpose Lanes." See Appendix E for the crosstabulation results.

[13] Cramer's V = .116 at the .158 significance level.

[14] See Appendix D for further details on the least favored transportation improvement option.

VI. FACTORS CONSIDERED IMPORTANT

The survey also asked respondents to rate on scale of 1 to 5—where 1 is "Not Important" and 5 is "Very Important"—the aspects people consider important when making choices about the transportation improvements. While nearly all factors appear to have some influence on decision-making (see Table-7 for additional details), the top three relate most directly to traffic issues. They include:

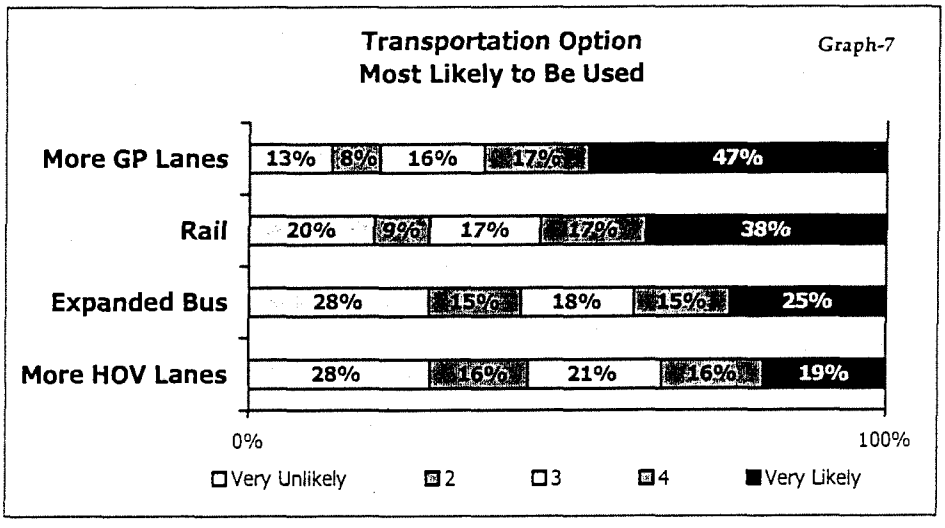
- Allows for the Movement of the Most People
- Improves Travel Time
- Provides a Choice other Than a Passenger Vehicle

Table-7: *Factors Considered Important (in order of "Very Important")*

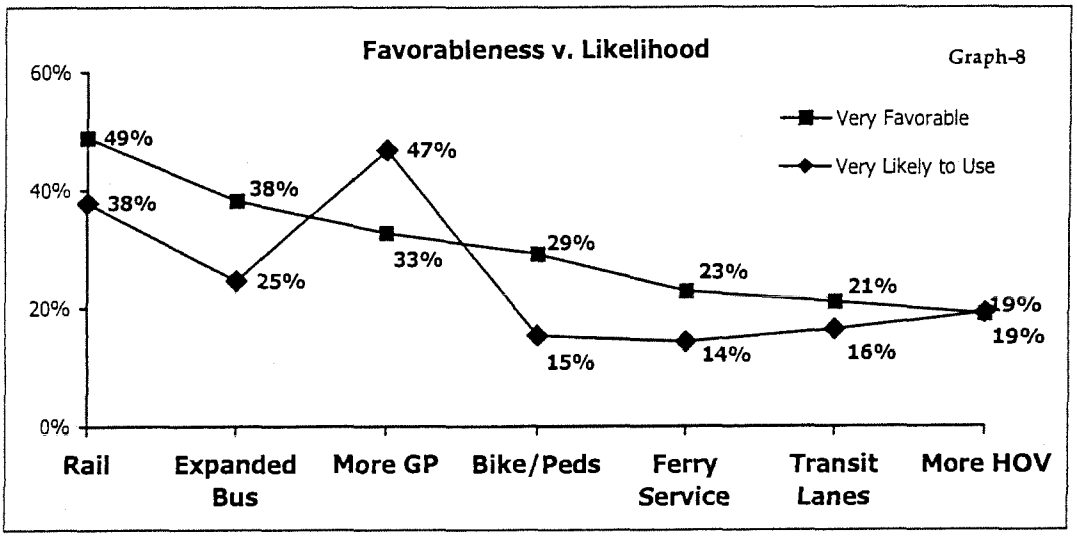
	"Not Important"	2	3	4	"Very Important"
Allows for the Movement of the Most People	2.6%	3.8%	11.7	23.6%	58.2%
Improves Travel Time	3.3%	4.3%	15.3%	23.6%	53.4%
Provides a Choice other Than a Passenger Vehicle	6.9%	5.5%	14.4%	21.1%	52.1%
Better Safety	4.6%	7.8%	20.9%	22.5%	44.2%
Better Access to Transit	5.7%	5.7%	18.7	27.5%	42.4%
Least Impact on Environment	6.0%	8.6%	22.6%	22.2%	40.7%
Most Cost-efficient	4.0%	7.7%	29.8%	19.5%	38.9%
Allows for Improvements in Land Usage	7.0%	10.5%	28.7%	22.3%	31.5%
Least Impact on Neighborhoods/Businesses	6.6%	10.3%	29.5%	23.0%	30.7%

VII. LIKELIHOOD TO USE TRANSPORTATION IMPROVEMENTS

How likely are people to use the transportation improvements they most favor? As Graph-7 depicts, more than one-third (38%) express a very high likelihood of using rail (the most favored improvement), although nearly one-half (47%) are very likely to use additional general-purpose lanes.



Such discrepancy between the likelihood to use and the favorableness of the transportation option is best depicted in Graph-8.



The two lines represent the percentage of people giving a 5 on the favorableness of the transportation improvement scale ("Very Favorable"), and the percentage of respondents giving a 5 on the likelihood scale ("Very Likely" of *using* the transportation improvement).

VIII. SUMMARY OF RESULTS

- While users and non-users were included in the interviewing process, most people in the Trans-Lake Washington area use at least one of the three corridors on average, two to three times per month. Daily commuters along I-90 and SR-520 make up about 20 percent of the respondents interviewed.

- Approximately four percent of the respondents *never* use any of the corridors. More than one third of respondents (39%) say they *never* use SR-522.

- Nearly five percent of respondents use transit buses along the route they use most frequently.

- Respondents use local streets as the most common way to access the route they use most frequently.

- The majority of people, regardless of their usage patterns, see congestion around the Trans-Lake Washington area as a very significant problem. In fact, factors that relate to congestion, such traffic volume and commute time, have a greater influence on the choice of most favored transportation option than factors such as the environment and costs.

- More than one-third (38%) of respondents choose rail as their *most* favorable transportation improvement.

- While expanded bus service ranked relatively high as a favorable solution, nearly one-half of the people stated that they are more likely to use general-purpose lanes.

- Respondents clearly stated that doing nothing and tolls were not favorable solutions.

APPENDICES

TRANSLAKE COMMUNITY SURVEY

HELLO, THIS IS ____. I AM CALLING ON BEHALF OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION. WE'RE TALKING TODAY/TONIGHT WITH PEOPLE ABOUT WHAT SHOULD BE DONE TO HELP WITH TRANSPORTATION NEEDS ACROSS AND AROUND LAKE WASHINGTON. THIS IS NOT A SALES CALL. WE WOULD VERY MUCH LIKE TO INCLUDE YOUR HOUSEHOLD'S OPINIONS. FOR THIS SURVEY I WOULD LIKE TO SPEAK WITH A RESIDENT OF THE HOUSEHOLD WHO IS 18 YEARS OF AGE OR OLDER. WOULD THAT BE YOU? *(If not a household resident, ask if there is someone over the age of 18 who lives in the house, then read the above again. If not 18 years old, ask to speak with someone 18 years old or older, then read the above again.)*

During this survey I will be talking about I-90, SR520, and SR522, (Lake City Way, Bothell Way). I will refer to this area as the TransLake area or the TransLake transportation system.

1. Would you confirm your zip code?_____

2. The following are some problem areas related to the TransLake transportation system that have been identified by others. Please rate the areas on a scale of 1 to 5, where 1 is Not a Significant Problem and 5 is a Very Significant Problem (ROTATE):

Problem Area	1 Not Significant	2	3	4	5 Very Significant	Don't Know/ Refuse
Traffic congestion						
Travel reliability						
Integration of land use and transportation planning						
Environmental impacts of transportation system						
Noise and other impacts on neighborhoods and business centers						
Roadway safety						

3. How frequently do you travel along the following three routes to get around or across Lake Washington? 1=(less than once per month); 2=(1-3 times per month); 3=(1-2 times per week); 4=(3 or 4 days per week); 5= daily

❑	**I-90**	**1**	**2**	**3**	**4**	**5**	**NA**	**DK/refuse**
❑	**SR-520**	**1**	**2**	**3**	**4**	**5**	**NA**	**DK/refuse**
❑	**SR-522**	**1**	**2**	**3**	**4**	**5**	**NA**	**DK/refuse**

Skip to Q6

3a. Where do you usually get onto ____(most frequently used route from Q3 above)? (READ OPTIONS IN ORDER.)

- ❑ **I-5**
- ❑ **I-405**
- ❑ **Local Street**
- ❑ **Other**
- ❑ **Don't know/refuse**

4. For what purpose(s) do you most often travel along _____(the most frequent from Q3 above)? (READ AND ROTATE.) (ACCEPT AS MANY AS APPLY.)

- ❑ **Business appointment**
- ❑ **Commuting to work**
- ❑ **Medical/health appointment**
- ❑ **Personal appointment/shopping/errands**
- ❑ **Recreation/social activity**
- ❑ **School/college**
- ❑ **Other_____**
- ❑ **Don't know/refuse**

5. What mode of transportation do you use most frequently when traveling along the corridor you use most (from Q3 above)...? (DO NOT READ.) (ACCEPT ONLY ONE.) (IF AUTOMOBILE, ASK IF CARPOOL OR SOV.)

- ❑ **Automobile, sport utility vehicle, passenger van or pick-up**
  - ❑ **Carpool?**
  - ❑ **SOV?**
- ❑ **Bicycle**
- ❑ **Commercial vehicle**
- ❑ **Motorcycle**
- ❑ **Recreational vehicle/motorhome**
- ❑ **Tour bus**
- ❑ **Transit bus**
- ❑ **Walking**
- ❑ **Other_____**
- ❑ **Don't know/refuse**

6. I have a list of transportation improvements to read as they relate to the improvements being considered for the TransLake area. Please listen to the list. (READ AND ROTATE LIST).

I am now going to ask you on a scale of a 1 to 5, where 1 is Very Unfavorable and 5 is Very Favorable, the degree to which you *favor* the improvement.

Transportation Improvement	Degree I Am in Favor of Transportation Improvement						
Bike and pedestrian improvements	1	2	3	4	5	DK	NA
Additional general purpose lanes	1	2	3	4	5	DK	NA
Ferry service	1	2	3	4	5	DK	NA
Additional HOV lanes (car pool and bus lanes)	1	2	3	4	5	DK	NA
Rail	1	2	3	4	5	DK	NA
Additional transit-only lanes	1	2	3	4	5	DK	NA
Measures to reduce need for auto usage	1	2	3	4	5	DK	NA
Convert some general purpose lanes to HOV (carpool and bus lanes)	1	2	3	4	5	DK	NA
Expanded bus service	1	2	3	4	5	DK	NA
Land use changes to encourage density near transit	1	2	3	4	5	DK	NA
Tolls to discourage auto trips around and across Lake Washington	1	2	3	4	5	DK	NA
Make no changes	1	2	3	4	5	DK	NA

7. Of the options that you just heard about, which improvement (from Q6 above) do you favor */east*?_____(ACCEPT ONLY ONE.) (CAN READ LIST AGAIN.)

8. Which one do you favor *most*?_____

9. On a scale of 1 to 5, where 1 is Not At All Important and 5 is Very Important, how important are the following in selecting the improvement you favor most? (ROTATE LIST.) That it...

Element	1 Not at all Important	2	3	4	5 Very Important	NA/ Don't Know
Improves travel time						
Provides for improved land use planning						
Provides choices other than the automobile						
Improves safety						
Is most cost efficient						
Allows for movement of the most people						
Reduces impacts on neighborhoods						
Improves access to transit						
Has the least impact on natural/physical environment						

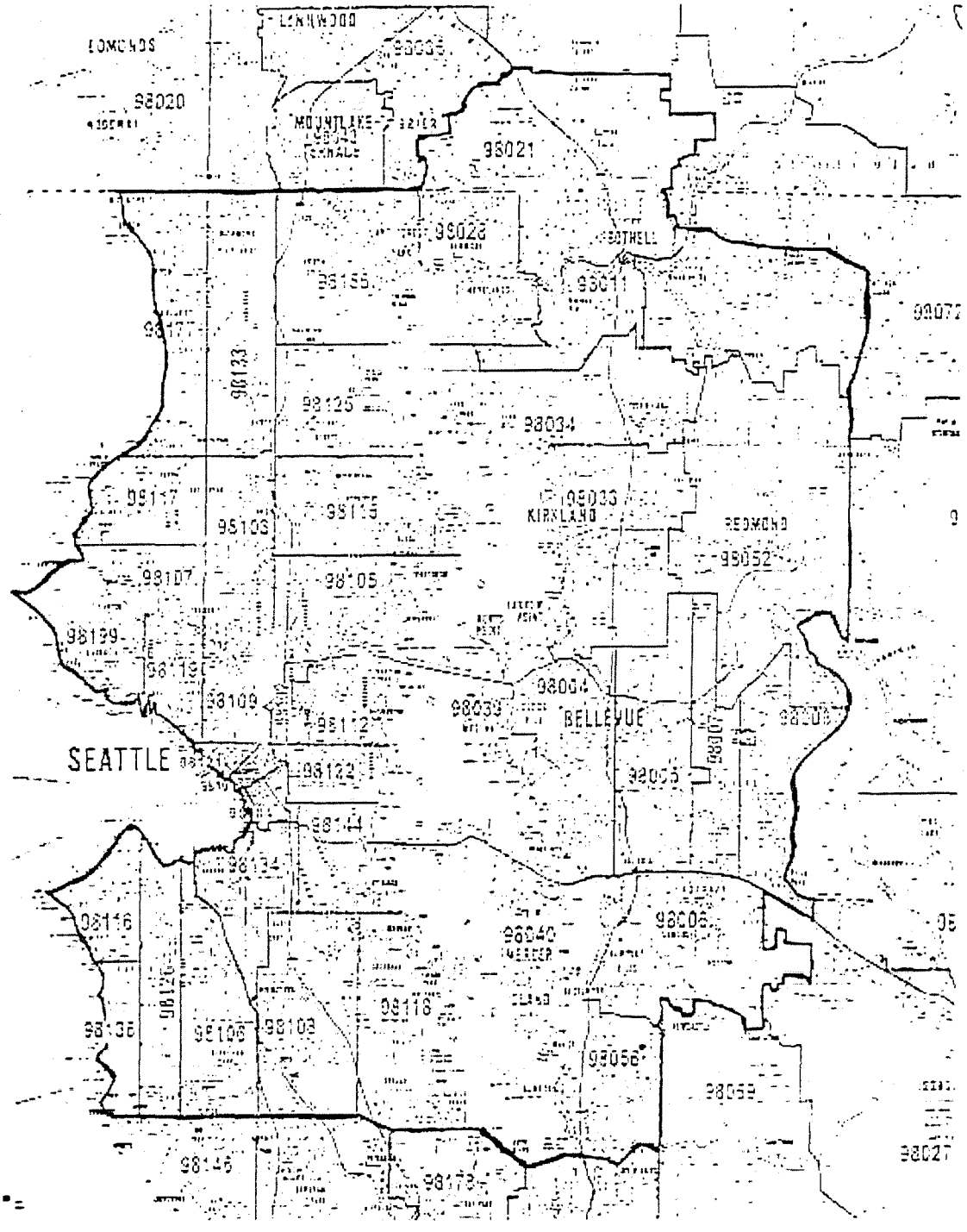
10. You said _____(most favorable from Q6 above) was your most favorite option, on which of the following routes would you most likely want that option available?

- ❑ **I-90**
- ❑ **SR-520**
- ❑ **SR-522**

11. Now using a similar list of options, I would like you to indicate, on a scale of 1 to 5, where 1 is Very Unlikely and 5 is Very Likely, your likelihood to *use* the option I mention:

Transportation Options	Likelihood I Would Use the Transportation Option						
Bike and pedestrian improvements	1	2	3	4	5	DK	NA
Additional general purpose lanes	1	2	3	4	5	DK	NA
Ferry service	1	2	3	4	5	DK	NA
Additional HOV lanes	1	2	3	4	5	DK	NA
Rail	1	2	3	4	5	DK	NA
Additional transit-only lanes	1	2	3	4	5	DK	NA
Expanded bus service	1	2	3	4	5	DK	NA

APPENDIX B – *Study Area Map*



APPENDIX C – *Zip Codes within Study Area*

Zip	# of Households in Zip	% of Total Population	Number of Interviews	% of Interviews	Difference betweeen Actual & Study
98004	10493	2.5%	32	3.0%	-0.5%
98005	7574	1.8%	18	1.7%	0.1%
98006	12709	3.0%	32	3.0%	0.0%
98007	10831	2.5%	27	2.5%	0.0%
98008	9024	2.1%	25	2.3%	-0.2%
98011	10342	2.4%	26	2.4%	0.0%
98033	14269	3.4%	31	2.9%	0.4%
98034	16382	3.8%	39	3.7%	0.2%
98039	1082	0.3%	3	0.3%	0.0%
98040	8759	2.1%	22	2.1%	0.0%
98052	20653	4.8%	52	4.9%	0.0%
98056	11174	2.6%	28	2.6%	0.0%
98072	7456	1.8%	19	1.8%	0.0%
98101	6509	1.5%	16	1.5%	0.0%
98102	12936	3.0%	32	3.0%	0.0%
98103	20786	4.9%	53	5.0%	-0.1%
98104	5615	1.3%	14	1.3%	0.0%
98105	14482	3.4%	36	3.4%	0.0%
98106	8555	2.0%	21	2.0%	0.0%
98107	9835	2.3%	25	2.3%	0.0%
98108	7023	1.6%	21	2.0%	-0.3%
98109	9397	2.2%	24	2.2%	0.0%
98112	9841	2.3%	25	2.3%	0.0%
98115	19639	4.6%	49	4.6%	0.0%
98116	10899	2.6%	27	2.5%	0.0%
98117	13606	3.2%	34	3.2%	0.0%
98118	14630	3.4%	35	3.3%	0.2%
98119	10714	2.5%	27	2.5%	0.0%
98121	5311	1.2%	13	1.2%	0.0%
98122	14439	3.4%	36	3.4%	0.0%
98125	16133	3.8%	40	3.7%	0.0%
98126	8376	2.0%	21	2.0%	0.0%
98133	18884	4.4%	47	4.4%	0.0%
98134	217	0.05%	0	0.0%	0.05%
98136	7020	1.6%	18	1.7%	0.0%
98144	10151	2.4%	25	2.3%	0.0%
98155	13231	3.1%	32	3.0%	0.1%
98177	7596	1.8%	20	1.9%	-0.1%
98199	9283	2.2%	23	2.2%	0.0%
SUM:	**425856**	**100.0%**	**1068**	**100%**	**0%**

APPENDIX D – *Breakdown of Favorableness toward Transportation Improvement*

	Bike/Peds	More GP	Ferry Service	More HOV	Rail	Transit Only
Very Unfavorable	21.3%	17.4%	25.9%	27.4%	12.5%	24.0%
2	14.2%	10.5%	13.3%	16.2%	6.0%	15.9%
3	19.9%	22.1%	23.0%	18.8%	14.0%	22.1%
4	15.5%	17.3%	15.0%	18.6%	18.6%	17.0%
Very Favorable	29.2%	32.7%	22.8%	19.0%	48.9%	21.0%

	Measures for Less Auto Use	GP to HOV	Expanded Bus Service	Land Use	Tolls	No Changes
Very Unfavorable	10.9%	38.6%	9.6%	20.1%	55.7%	74.0%
2	9.6%	16.5%	9.4%	13.1%	11.4%	8.5%
3	18.9%	19.8%	20.6%	28.4%	14.4%	7.3%
4	20.3%	11.4%	22.3%	18.2%	7.3%	2.8%
Very Favorable	40.3%	13.7%	38.2%	20.1%	11.2%	7.4%

APPENDIX E – *Region * Most Favorable Improvement Crosstabulation*

Most Favorable Improvement

		bike/ pedestrians	more gp lanes	ferry service	more HOV lanes	rail	more transit only lanes	measures to reduce auto usage	some gp to HOV	expanded bus service	land use changes	tolls	make no changes	
ZIP Region	1	8	29	5	7	34	2	3	2	4	1	2	1	98
		8.2%	29.6%	5.1%	7.1%	34.7%	2.0%	3.1%	2.0%	4.1%	1.0%	2.0%	1.0%	100%
	2		15	5	1	15	1			4	1	2		44
			34.1%	11.4%	2.3%	34.1%	2.3%			9.1%	2.3%	4.5%		100%
	3	4	40	4	12	36	7	4	3	8	3			121
		3.3%	33.1%	3.3%	9.9%	29.8%	5.8%	3.3%	2.5%	6.6%	2.5%			100%
	4	4	24	6	6	40	2		3	12	2	2	1	102
		3.9%	23.5%	5.9%	5.9%	39.2%	2.0%		2.9%	11.8%	2.0%	2.0%	1.0%	100%
	5	1	19	3	5	31	1	1	1	15	3		2	82
		1.2%	23.2%	3.7%	6.1%	37.8%	1.2%	1.2%	1.2%	18.3%	3.7%		2.4%	100%
	6	5	26	14	14	65	8	6	4	11	3	2	2	160
		3.1%	16.3%	8.8%	8.8%	40.6%	5.0%	3.8%	2.5%	6.9%	1.9%	1.3%	1.3%	100%
	7	5	17	9	11	53	5	8	3	10	4	5	2	132
		3.8%	12.9%	6.8%	8.3%	40.2%	3.8%	6.1%	2.3%	7.6%	3.0%	3.8%	1.5%	100%
	8	2	19	8	8	46	3		5	12	3	2		108
		1.9%	17.6%	7.4%	7.4%	42.6%	2.8%		4.6%	11.1%	2.8%	1.9%		100%
	9	12	35	12	18	73	11	8	1	16	3	1	1	191
		6.3%	18.3%	6.3%	9.4%	38.2%	5.8%	4.2%	0.5%	8.4%	1.6%	0.5%	0.5%	100%
Total		41	224	66	82	393	40	30	22	92	23	16	9	1038
		3.9%	21.6%	6.4%	7.9%	37.9%	3.9%	2.9%	2.1%	8.9%	2.2%	1.5%	0.9%	100%

Trans-Lake Washington Study

Appendix 8
1999 Trans-Lake Washington Origin and Destination Survey: Methods and Results Report

1999 Trans-Lake Washington Origin and Destination Survey

Summary Report - July 1999

Prepared for

Washington State Department of Transportation
and
Trans-Lake Washington Study Committee

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Executive Summary

Introduction

The Washington State Department of Transportation (WSDOT) and the Trans-Lake Washington Study Committee are involved in planning transportation improvements in the Lake Washington region. As part of that effort, Pacific Rim Resources (PRR) was contracted to conduct an origin and destination survey to identify travel patterns of motorists who use SR 520, I-90, and/or SR 522 (Lake City Way, Bothell Way). The general purpose of the survey was to provide information to be used in the prioritization of future transportation improvements in these corridors. This report presents data analysis highlights that will be incorporated into efforts currently underway assessing various transportation improvement solution sets.

Survey Preparation and Data Collection

Origin & Destination Survey

PRR worked with WSDOT and the Trans-Lake Washington Study Committee to design the survey. The survey consisted of twenty questions (see Attachment A). The questions addressed:

- Trip origin and destination
- Trip purpose
- Trip frequency
- Number of vehicle occupants
- Type of vehicle
- Ratings of trip safety, reliability, and congestion
- Typical methods of dealing with traffic congestion
- Alternate route use
- Use of employer sponsored trip-reduction benefits
- Type of business respondent is employed in
- Respondent's employment category

Video License Plate Survey

To ensure accuracy and a high level of public input, the origin and destination survey used an automated license plate reading technology. The videotaping was conducted during two consecutive weekdays (Tuesday, May 4th and Wednesday, May 5th) from 6:30 AM to 8:30 AM (AM Peak Period) and from 4:00 PM to 6:00 PM (PM Peak Period).

The exact locations and number of lanes that were recorded are indicated below:

- SR 520 (at Evergreen Point Road) - all four general purpose lanes, two eastbound and two westbound
- I-90 (at 80th Ave. SE) - one general purpose lane eastbound, one general purpose lane westbound, one reversible express lane
- SR 522 (at 64th Ave.) - one general purpose lane eastbound, one general purpose lane westbound

License Plate Data Transfer

Procedures were employed to insure very rapid turn-around time in processing the videotaped license plate data and mailing of the survey. *Transfomation Systems, Inc.*[1] sent all completed videotapes to *Computer Recognition Systems*[2], Inc. each evening via overnight delivery. Videotapes were then processed by *Computer Recognition Systems* using optical character recognition software and an AASCII file of license plate number information (as well as route, date, time, and direction information) was transferred to PRR via an internet File Transfer Protocol (FTP) site. A total of 59, 415 license plates were videotaped. PRR eliminated any duplicate license plate records (n = 11,587; to ensure that only one survey was sent per vehicle), as well as any out of state license plate records (n = 1,064; because it is not possible to obtain addresses for out-of-state license plates). PRR sent the files to the Department of Transportation by 3:30 PM each day. This resulted in a total of 46,764 unique license plate numbers being sent to the Department of Licensing (DOL). These license plates were matched against the DOL registration database. The DOL processed the data overnight and had an address file ready by the next morning. The DOL was able to match addresses to 42,691 license plate numbers. PRR then matched the returned addresses with the trip information (route, date, time, and direction) provided by *Computer Recognition Systems.*

Sampling

A stratified random sample of 16,000 address-matched cases was selected and forwarded to the *AFTS*[3] mail house. The mail house imprinted each survey with the name and address of the vehicle owner along with the route, date, time and direction their vehicle was observed. In addition, the vehicle owner's home zip code was printed on the survey. The 16,000 surveys were mailed out within seven days of the recorded trip. The sample was stratified proportionately by route in regard to actual traffic proportions provided by WSDOT. Recipients filled out the survey and mailed it back with prepaid postage. Returned surveys were then electronically scanned by *Consumerdata International*[4], who created a data file ready for statistical analysis.

Response Rate

A total of 2,370 surveys were used in the analysis.[5] The response rate was sixteen percent.[6] This was calculated by dividing the number of returned surveys that arrived before the data analysis deadline (2,470) by the number of respondents that received a survey (15,520).[7]

Statistical Validity

A key question when conducting survey research is: *"How confident can we be that the sample represents commuters on these routes?"* In this study there are four sources of information that support the representativeness of the sample.

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[1] Transfomation Systems, Inc., 2537 South Gessner, Suite 212, Houston, Texas, 77063
[2] Computer recognition Systems, Inc., P.O. Box 391380, Cambridge, MA, 02139
[3] Automated Funds Transfer System, 401 Fourth Avenue, Suite 800, Seattle, WA 98121
[4] Consumerdata International, #310 – 1681 Chestnut St., Vancouver, B.C. Canada V6J 4M6.
[5] One hundred surveys were eliminated from the analysis because the respondent indicated that they were not on the specific route at the time and/or date indicated. Another 528 were not included in the analysis because they arrived after the deadline for data analysis.
[6] When considering all returned surveys, including those that arrived after the deadline for data analysis, the response rate is currently nineteen percent. Surveys continue to be returned as of the date of this report, but at a very low rate of approximately five to ten per day.
[7] Approximately three percent of the surveys were non-deliverable by the postal service. Reasons for non-deliverable status include: incorrect/non-existent addresses, or registered owners of vehicles no longer live at that address.

1. Everyone traveling on the routes and lanes videotaped, during the times of videotaping, had an equal chance of being videotaped and being sent a survey.

2. The number of surveys returned by route is proportional to actual traffic count proportions.

3. The margins of error are within acceptable limits, whether looking at all routes combined or each route separately.

4. There is no known significant response bias. As measured by response bias relative to returns from geographic areas, the responses are proportional to the number of surveys mailed out to specific zip code areas.

Weighting the Data

To determine if weighting of the data was necessary, an approach was devised that provided a higher weight to respondents who reported more than one trip per week. However, when comparing weighted and unweighted analysis results, the findings remained essentially the same. This is due to the fact that such a high percentage of respondents (86%) reported using these corridors more than one time per week.

Results

All results refer to all three routes, for both peak time periods, and for both directions, unless otherwise specified. Also, because of the low number of commercial vehicles and buses in the sample, these results refer primarily to personal vehicles.

Trip and Respondent Characteristics

In an effort to present an overall picture of the respondents and their trips, the following characteristics are presented. There were no significant differences in these characteristics by route or direction traveled. Differences in peak travel period are indicated as appropriate.

- Most respondents (93%) were on their usual route.
- Most respondents (95%) were on part of a round-trip.
- Most respondents (82%) used the same route on the second half of their trip.
- Most respondents (98%) were in an automobile, SUV, passenger van, or pick-up.
- Most respondents were in single occupancy vehicles (89% in the AM Peak; 82% in the PM Peak).
- Most respondents were traveling to or from work (88% in AM Peak; 69% in PM Peak).

Consequently, most began their AM peak trips at home (93.1%) and most ended their AM peak trips at work (82.6%). Similarly, most began their PM peak trips at work (59.1%) and most ended their PM peak trips at home (67.5%).

- Most respondents (especially those traveling to or from work) reported traveling five times a week on the route and direction on which their license plate was videotaped (61% in AM Peak; 43% in PM Peak).

- Most respondents work in *service* industries (36.6%), followed by *finance/insurance/real estate* (11.5%), *transportation/communications/utilities* (10.8%), and *manufacturing* (9.2%).

- Most respondents are professional/technical employees (57%) or managers/administrators (28%). These categories and the others are associated with income and education, and consequently function as a measure of social class. Therefore, 79% of the respondents are in the employment categories associated with the highest levels of income and education.

Where Are Most People Coming From and Going?

The origin and destination maps appear on pages 12 through 23. Corresponding trip share tables appear in Attachment C. In addition, the following table summarizes the major origins and destinations for all routes and all peak periods.

Major Origins and Destinations by Route, Peak Period, and Direction

Route	Time/Direction	Major Origins	Major Destinations
SR 520	AM/West	Redmond/Overlake (24.4%) Kirkland/Totem Lake (21.1%) Bothell/Woodinville (17.4%) Downtown/NW Bellevue (11.7%)	Downtown Seattle (35.2%) Central Seattle (20.7%) University District (16.9%) North Seattle (15.5%)
	AM/East	North Seattle (44.1%) Central Seattle (32.6%) Downtown Seattle (8.8%) University District (7.5%)	Redmond/Overlake (43.6%) Downtown/NW Bellevue (22.5%) Kirkland/Totem Lake (15.9%) East Bellevue (15.9%)
	PM/West	Kirkland/Totem Lake (28.6%) Redmond/Overlake (23%) Downtown/NW Bellevue (20.5%) East Bellevue (11.8%)	North Seattle (34.2%) Central Seattle (23%) Downtown Seattle (16.8%) University District (13.7%)
	PM/East	Downtown Seattle (28.1%) Central Seattle (26%) North Seattle (20.9%) University District (17.9%)	Kirkland/Totem Lake (25.5%) Downtown/NW Bellevue (20.9%) Redmond/Overlake (19.9%) East Bellevue (9.7%) Bothell/Woodinville (8.7%)
I-90	AM/West	Renton/South Bellevue (33.2%) Greater Issaquah (20.7%) East Bellevue (19.3%) East King Co./External (6.4%)	Downtown Seattle (46.8%) South Seattle (20.3%) Central Seattle (13.2%) North Seattle (8.8%)
	AM/East	South Seattle (27.9%) Central Seattle (24.3%) North Seattle (21.1%) South King/Pierce Co. (11.3%) Downtown Seattle (6.9%)	East Bellevue (29.1%) Downtown Bellevue (17.4%) Renton/South Bellevue (16.2%) Redmond/Overlake (13.4%) Greater Issaquah (11.7%)
	PM/West	East Bellevue (28.7%) Renton/South Bellevue (19.5%) Downtown Bellevue (12.3%) Redmond/Overlake (11.8%)	South Seattle (22.6%) North Seattle (21%) Downtown Seattle (19%) Central Seattle (18.5%)
	PM/East	South Seattle (34.9%) Downtown Seattle (34.5%) Central Seattle (12.9%) University District (6.1%) South King/Pierce Co. (5.8%)	Renton/South Bellevue (27.7%) East Bellevue (19.4%) Greater Issaquah (18.3%) Redmond/Overlake (9.7%) Downtown/NW Bellevue (5.4%)
SR 522	AM/West	Bothell/Woodinville (62.3%) North Snohomish/External (12.3%) Kirkland/Totem Lake (9.4%) Lynnwood/Edmonds/Shoreline (9.4)	Lynnwood/Edmonds/Shoreline (28.3%) North Seattle (25.5%) Downtown Seattle (17%) University District (10.4%) Central Seattle (6.6%)
	AM/East	Lynnwood/Edmonds/Shoreline (52.5%) North Seattle (36.2%)	Bothell/Woodinville (35.5%) Kirkland/Totem Lake (30.5%) Redmond/Overlake (19.1%)
	PM/West	Bothell/Woodinville (48.5%) Kirkland/Totem Lake (12.1%) Lynnwood/Edmonds/Shoreline (12.1%) Redmond/Overlake (10.1%)	Lynnwood/Edmonds/Shoreline (47.5%) North Seattle (22.2%) Bothell/Woodinville (8.1%) University District (6.1%) Downtown Seattle (5.1%)
	PM/East	North Seattle (36.1%) Lynnwood/Edmonds/Shoreline (21.3%) University District (13%) Downtown Seattle (8.3%) Central Seattle (8.3%)	Bothell/Woodinville (57.4%) North Snohomish Co./External (13.9%) Kirkland/Totem Lake (12%)

Which Routes Are Perceived as Safest, Most Reliable, & Most Congested?

I-90 is perceived as the safest, most reliable, and least congested of the three routes. SR 520 is perceived as the least reliable and most congested. SR 522 is perceived as the least safe. There are no significant differences in the perceptions of route safety, reliability, or congestion when comparing the AM and PM peak periods. Perceptions of safety, reliability, and congestion have implications for which routes people chose to use and especially for what routes they divert themselves to when their usual route is congested.

How Do People Deal With Congestion?

Respondents indicated a number of methods that they use to deal with congestion on their usual route. The most frequent method of dealing with such congestion is to *leave earlier.* This is somewhat more likely in the AM peak period (62.3%) than in the PM peak period (50.7%), and is the case for all three routes. The second most frequent method is to *do nothing* (especially on SR 522). The third most frequent method is to *use an alternate route* (especially for those whose usual route is SR 520 or SR 522; and somewhat more likely in the PM peak period [25.9%] than in the AM peak period [21.2%]). The fourth most frequent method is to *leave later* (especially on I-90 and SR 520; and somewhat more likely in the PM peak period [25%] than in the AM peak period [16.8%]). No doubt, the combination of *leaving earlier* and *leaving later* has contributed to the expansion of the "peak commute" time periods.

When travelers use alternate routes to deal with congestion on their usual routes, they not only contribute to increased congestion on the other routes (SR 520, I-90, and SR 522), but also impact congestion on I-405, I-5, and side streets, as they navigate from their usual routes to alternate routes.

The frequency with which respondents use alternate routes when their usual route is congested does not differ appreciably by route. However, in the AM peak period about a fifth (19.7%) report using an alternate route one time a week, with another 6.9% reporting doing so two times a week. During the PM peak period, the percentages of those using alternate routes to deal with congestion increases to about a quarter (23.5%) doing so one time a week and another 9% doing so two times a week.

Employer Sponsored Trip Reduction Plan Benefits

One opportunity to address traffic demands on these three corridors is to have those commuting to and from work (the majority of travelers during AM and PM peak periods) make use of employer sponsored trip reduction benefits. In the current sample of travelers:

- Most (63%) don't have an employer sponsored trip reduction benefit
- Among those who do, most (75%) do not use the benefit
- The major reasons for not using employer sponsored trip reduction benefits among those who have such benefits are:
  - The bus doesn't meet their travel needs (51%)
  - Pre/post work errands require use of their car (48%)
  - They prefer driving their car (30%)
  - They have inflexible work hours (26%)
  - They can't get home in an emergency (21%)
  - Other reasons (19%)
  - They already carpool (18%)
  - They need to use their car for work (10%)

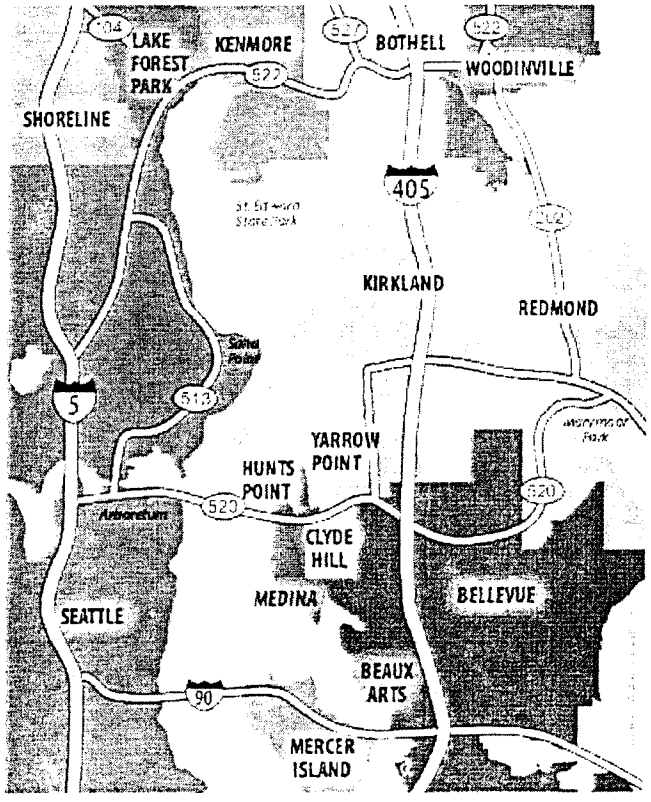
I. Introduction[8]

During much of the day and especially at peak commute periods, transportation across and around Lake Washington and routes feeding those trans-lake routes is heavily congested. When congestion occurs on trans-lake routes, it backs up onto major north-south corridors and adjacent arterials, congesting those routes as well. Those dependent on these routes for regional access, safe travel, and the movement of freight, experience travel delays and a corresponding loss of economic productivity and quality of life.

The transportation system around and across Lake Washington is vulnerable to incident caused conditions. Minor incidents generate significant delays throughout the entire system; more significant incidents cause gridlock conditions as vehicles avoid blocked routes only to crowd others.

The evolution of our transportation system has not kept pace with rapid job and residential growth. Transit development, demand management, and additional roadway capacity have not been sufficient to keep pace with the trips generated by this growing population. Neighborhoods, local arterial streets and smaller residential streets in the vicinity of trans-lake routes are negatively impacted by congestion. The worsening congestion levels we are currently experiencing in the Trans-Lake Study Area (see Map 1 below) are projected to get worse over the next ten to twenty years.

Map 1: Trans-Lake Study Area



[8] Adapted from September 1, 1998 Trans-Lake Washington Study Committee draft of "Framing the Problem."

The Washington State Department of Transportation (WSDOT) and the Trans-Lake Washington Study Committee are involved in planning transportation improvements in the Lake Washington region. As part of that effort, Pacific Rim Resources (PRR) was contracted to conduct an origin and destination survey to identify travel patterns of motorists who use SR 520, I-90, and/or SR 522 (Lake City Way, Bothell Way). The general purpose of the survey was to provide information to be used in the prioritization of future transportation improvements in these corridors. This report presents data analysis highlights that will be incorporated into efforts currently underway assessing various transportation improvement solution sets.

II. Survey Preparation and Data Collection

A. Origin & Destination Survey

PRR worked with WSDOT and the Trans-Lake Washington Study Committee to design the survey (see Attachment A). The survey was designed with a tear-off home address panel so respondents could assure their anonymity. Every effort was made to assure recipients that the data would be used only for the purpose of studying trip patterns and that personal information, including the list of addresses of registered vehicle owners would be destroyed upon completion of the study. Due to time constraints, the survey was pre-tested with approximately 15 PRR in-house staff. None of these staff were familiar with the Trans-Lake study and were a useful source of feedback before the final survey was printed and distributed.

The survey consisted of twenty questions (see Attachment A). The questions addressed:

- Trip origin and destination
- Trip purpose
- Trip frequency
- Number of vehicle occupants
- Type of vehicle
- Ratings of trip safety, reliability, and congestion
- Typical methods of dealing with traffic congestion
- Alternate route use
- Use of employer sponsored trip-reduction benefits
- Type of business respondent is employed in
- Respondent's employment category

The questions regarding trip origins and destinations were answered by having respondents give complete street intersection information for both the origin and destination, as well as indicating which of the 31 traffic analysis zones (TAZ) on the survey map corresponded to their respective origin and destination zones.[9]

[9] For the purposes of analysis, the 31 traffic analysis zones (TAZ) were collapsed into the 18 TAZ's used by the Puget Sound Regional Council in its traffic flow models. See Attachment B for the TAZ conversion table. Complete trip share tables are presented in this report for both the 18 TAZ version (see Attachment C) and the 31 TAZ version (see Attachment D).

B. Video License Plate Survey

To ensure accuracy and a high level of public input, the origin and destination survey used an automated license plate reading technology. The videotaping was conducted during two consecutive weekdays (Tuesday, May 4th and Wednesday, May 5th) from 6:30 AM to 8:30 AM (AM Peak Period) and from 4:00 PM to 6:00 PM (PM Peak Period).

Transfomation Systems, Inc.[10] was contracted to conduct the videotaping of license plates. They were very familiar with the Trans-Lake study area and had worked on previous projects of a similar nature in the Puget Sound area. The exact locations and number of lanes that were recorded are indicated below:

- SR 520 (at Evergreen Point Road) - all four general purpose lanes, two eastbound and two westbound
- I-90 (at 80th Ave. SE) - one general purpose lane eastbound, one general purpose lane westbound, one reversible express lane
- SR 522 (at 64th Ave.) - one general purpose lane eastbound, one general purpose lane westbound

The origin and destination data collection and analysis procedure was designed to provide an unbiased sample of trips across and around Lake Washington using one of the three corridors. All videotaped license plate images collected during the survey period were processed using *Transfomation's* automated license plate reading equipment.

C. License Plate Data Transfer

Procedures were employed to insure very rapid turn-around time in processing the videotaped license plate data and mailing of the survey. *Transfomation Systems, Inc.* sent all completed videotapes to *Computer Recognition Systems*[11], Inc. each evening via overnight delivery. Videotapes were then processed by *Computer Recognition Systems* using optical character recognition software and an AASCII file of license plate number information (as well as route, date, time, and direction information) was transferred to PRR via an internet File Transfer Protocol (FTP) site. A total of 59, 415 license plates were videotaped. PRR eliminated any duplicate license plate records (n = 11,587; to ensure that only one survey was sent per vehicle), as well as any out of state license plate records (n = 1,064; because it is not possible to obtain addresses for out-of-state license plates). PRR sent the files to the Department of Transportation by 3:30 PM each day. This resulted in a total of 46,764 unique license plate numbers being sent to the Department of Licensing (DOL). These license plates were matched against the DOL registration database. The DOL processed the data overnight and had an address file ready by the next morning. The DOL was able to match addresses to 42,691 license plate numbers. PRR then matched the returned addresses with the trip information (route, date, time, and direction) provided by *Computer Recognition Systems*. See Table 1 below for additional details regarding the videotaping and license plate data transfer process.

[10] Transfomation Systems, Inc., 2537 South Gessner, Suite 212, Houston, Texas, 77063
[11] Computer recognition Systems, Inc., P.O. Box 391380, Cambridge, MA, 02139

Table 1: Videotape License Plate Summary Data

Number of vehicles using routes and lanes during videotaping[12]	117,524
Number of license plates read	59,415
Percent of plates read to vehicles during videotaping	51%
Number of unique WA license plates	46,764
Percent of unique WA plates to number read	79%
Number of addresses from DOL	42,691
Percent of DOL address match to unique WA license plates	91%

D. Sampling

A stratified random sample of 16,000 address-matched cases was selected and forwarded to the *AFTS*[13] mail house. The mail house imprinted each survey with the name and address of the vehicle owner along with the route, date, time and direction their vehicle was observed. In addition, the vehicle owner's home zip code was printed on the survey. The 16,000 surveys were mailed out within seven days of the recorded trip. The sample was stratified proportionately by route in regard to actual traffic proportions provided by WSDOT. These proportions appear below in Table 2:

Table 2: Mailed Sample Percentages vs. Actual Traffic Percentages

Route	Percentage of Actual Traffic from WSDOT	Number in Mailed Sample	Percentage in Mailed Sample
SR 520	33%	5,233	33%
I-90	47%	7,532	47%
SR 522	20%	3,235	20%

Recipients filled out the survey and mailed it back with prepaid postage. Returned surveys were then electronically scanned by *Consumerdata International*[14], who created a data file ready for statistical analysis. However, before statistical analysis was begun, the data file was checked to insure the data was clean. This was accomplished by conducting appropriate logic checks and performing response range checks on quantitative variables in order to check for miscoded variables. The final data were in an SPSS (Statistical Package for the Social Sciences) data file. Statistical analysis was conducted with SPSS version 8.0.2.

[12] Based on actual traffic counts provided by WSDOT.
[13] Automated Funds Transfer System, 401 Fourth Avenue, Suite 800, Seattle, WA 98121
[14] Consumerdata International, #310 – 1681 Chestnut St., Vancouver, B.C. Canada V6J 4M6.

E. Response Rate

A total of 2,370 surveys were used in the analysis.[15] The response rate was sixteen percent.[16] This was calculated by dividing the number of returned surveys that arrived before the data analysis deadline (2,470) by the number of respondents that received a survey (15,520).[17] The response rate, although typical for mailed surveys, was lower than had been anticipated. There are several possible reasons for this:

- The media coverage of the study, although overall fairly objective, may have raised concerns of some respondents regarding the "right" of WSDOT to be videotaping license plate numbers and acquiring registered owner addresses, thereby reducing the response rate.

- Compared to previous origin and destination surveys conducted in the Northwest, this survey was longer, including an additional eight or so questions that dealt with attitudinal issues. This additional length may have contributed to the lower than expected response rate.

- Two of these additional questions asked about the respondent's type of employment and their occupational title. Questions that can be construed as "personal information", especially when appearing on a survey that has involved the videotaping of vehicle license plates, can reduce response rates.

F. Statistical Validity

A key question when conducting survey research is: *"How confident can we be that the sample represents commuters on these routes?"* In this study there are four sources of information that support the representativeness of the sample.

1. Everyone traveling on the routes and lanes videotaped, during the times of videotaping, had an equal chance of being videotaped and being sent a survey. There is no known bias in the videotape reading of license plates. Once a list of all license plate numbers was generated, potential respondents were randomly selected to receive a survey.

2. The number of surveys returned by route is proportional to actual traffic count proportions. As can be seen in Table 3, the returns are almost identical to the actual traffic count proportions on the specific routes as reported by WSDOT.

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[15] One hundred surveys were eliminated from the analysis because the respondent indicated that they were not on the specific route at the time and/or date indicated. Another 528 were not included in the analysis because they arrived after the deadline for data analysis.

[16] When considering all returned surveys, including those that arrived after the deadline for data analysis, the response rate is currently nineteen percent. Surveys continue to be returned as of the date of this report, but at a very low rate of approximately five to ten per day.

[17] Approximately three percent of the surveys were non-deliverable by the postal service. Reasons for non-deliverable status include: incorrect/non-existent addresses, or registered owners of vehicles no longer live at that address.

Table 3: Returned Sample Percentages vs. Actual Traffic Percentages

Route	Percentage of Actual Traffic from WSDOT	Number of Usable Surveys Returned	Percentage in Sample
SR 520	33%	829	35%
I-90	47%	1071	45%
SR 522	20%	470	20%

4. The margins of error are within acceptable limits, whether looking at all routes combined or each route separately (see Table 4 below). This means that we can be 95% confident that the sample survey results would be identical (within a margin of error of, for example +/- 3.40 percentage points for SR 520) compared to the results that would have been obtained had every traveler on SR 520 received and completed the survey. It should be noted that when the data is further sub-divided by peak periods and/or travel direction, the margins of error do increase. However, even the smallest sub-group (SR 522, PM Peak, Westbound, n = 99) yields results that are accurate to +/- 9.85.

Table 4: Sample Margin of Error by Route

Route	Number of Usable Surveys Returned	Margin of Error
All routes combined	2,370	+/- 2.01
SR 520	829	+/- 3.40
I-90	1,071	+/- 2.99
SR 522	470	+/- 4.52

4. There is no known significant response bias. As measured by response bias relative to returns from geographic areas, the responses are proportional to the number of surveys mailed out to specific zip code areas. Surveys were mailed to 400 zip code areas. When the returned surveys were tallied by home zip code, only one (Kenmore) had returns that differed by 1 percent or more. Kenmore differed by only 2.12%.

G. Weighting the Data

To determine if weighting of the data was necessary (in order to account for the fact that PRR eliminated duplicate license plates and sent only one survey to each person), the following weighting approach (see Table 5 below) was implemented. This approach provides a higher weight to respondents who reported more than one trip per week.

Table 5: Weighting Factor Calculations

a.	Percent of unique license plates in survey	81%
b.	Percent of duplicate plates eliminated	19%
c.	Surveys reporting multiple trips per week	1,951
d.	Total surveys used in the analysis	2,370
e.	Adjusted survey total (d/a)	2,926
f.	Percent of multiple trips per week (c + [e-d]/e)	86%
g.	Weighting factor (1 + [e-d]/c)	1.29

However, when comparing weighted and unweighted analysis results, the findings remained essentially the same. This is due to the fact that such a high percentage of respondents (86%) reported using these corridors more than one time per week. In circumstances where the weighted and unweighted analyses produce essentially the same results it is preferable to present unweighted analysis results. Therefore, all results presented in this report are for unweighted data.

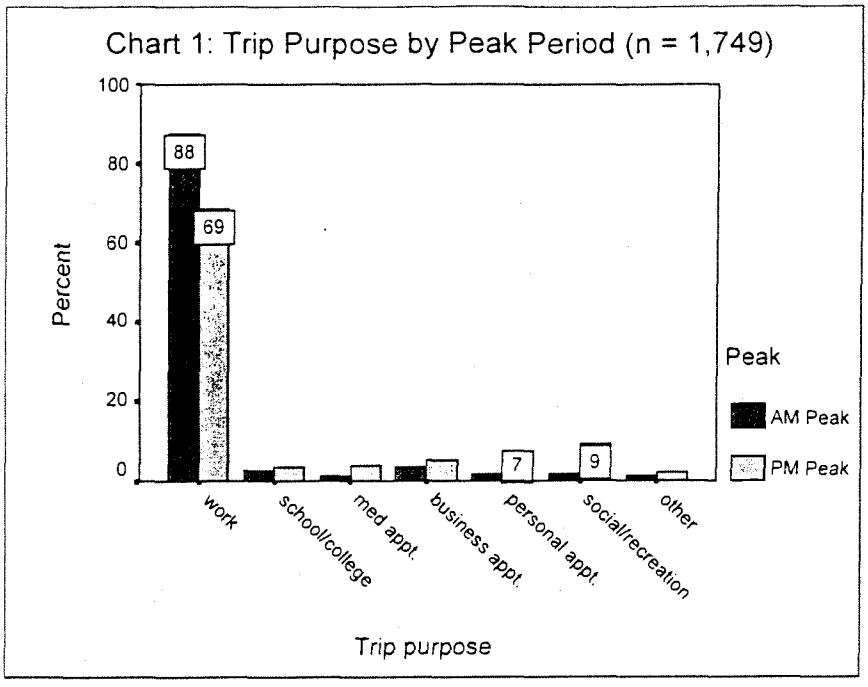
III. Results

All results refer to all three routes, for both peak time periods, and for both directions, unless otherwise specified. Also, because of the low number of commercial vehicles and buses in the sample, these results refer primarily to personal vehicles.

A. Trip and Respondent Characteristics

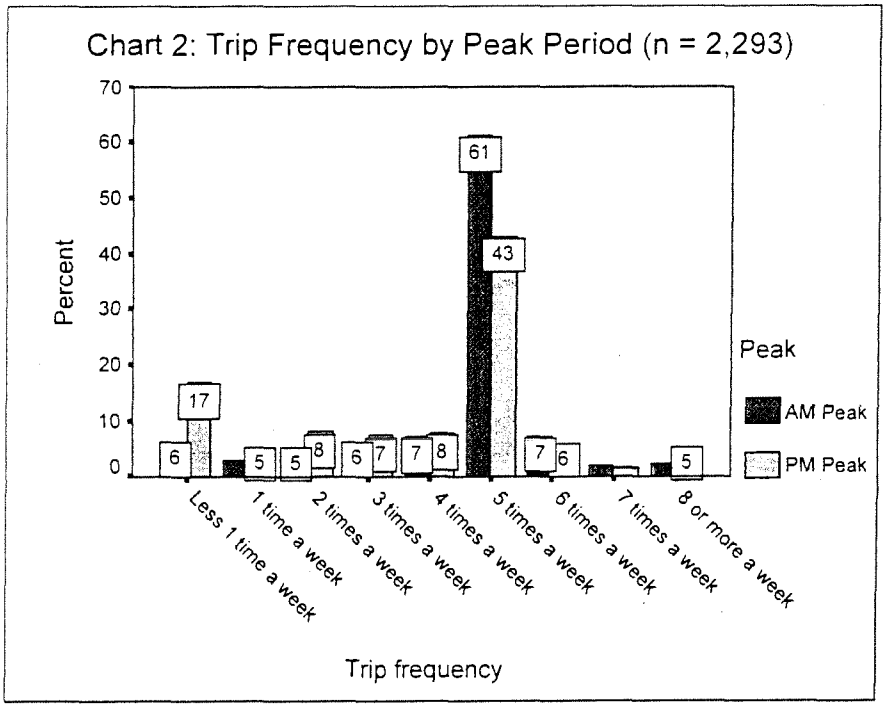
In an effort to present an overall picture of the respondents and their trips, the following characteristics are presented. There were no significant differences in these characteristics by route or direction traveled. Differences in peak travel period are indicated as appropriate.

- Most respondents (93%) were on their usual route.
- Most respondents (95%) were on part of a round-trip.
- Most respondents (82%) used the same route on the second half of their trip.
- Most respondents (98%) were in an automobile, SUV, passenger van, or pick-up .
- Most respondents were in single occupancy vehicles (89% in the AM Peak; 82% in the PM Peak).
- Most respondents were traveling to or from work (88% in AM Peak; 69% in PM Peak).



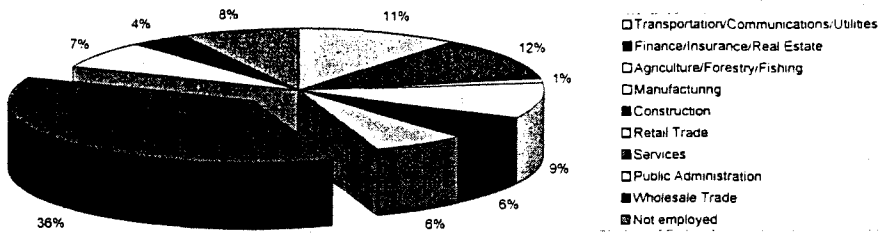
Consequently, most began their AM peak trips at home (93.1%) and most ended their AM peak trips at work (82.6%). Similarly, most began their PM peak trips at work (59.1%) and most ended their PM peak trips at home (67.5%).

- Most respondents (especially those traveling to or from work) reported traveling five times a week on the route and direction on which their license plate was videotaped (61% in AM Peak; 43% in PM Peak)



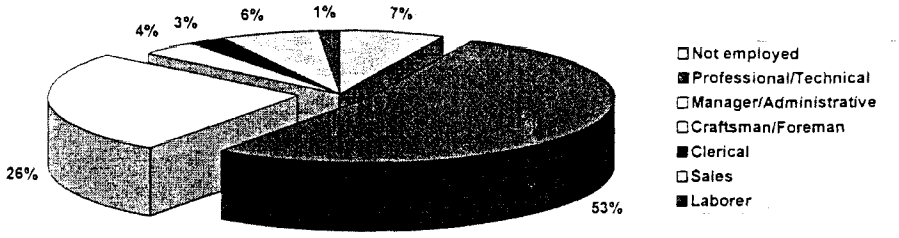
- Most respondents work in *service* industries (36.6%), followed by *finance/insurance/real estate* (11.5%), *transportation/communications/utilities* (10.8%), and *manufacturing* (9.2%). See Chart 3 below for additional details on business types.

Chart 3: Types of Businesses (n = 2,227)



- Most respondents are professional/technical employees (57%) or managers/administrators (28%). These categories and the others (see Chart 4 below) are associated with income and education, and consequently function as a measure of social class. Therefore, 79% of the respondents are in the employment categories associated with the highest levels of income and education.

Chart 4: Employment Category (n = 2,299)



B. Where Are Most People Coming From and Going?

The origin and destination maps appear on pages 13 through 24. Corresponding trip share tables appear in Attachment C. The information that appears in the marginals (or column totals and row totals) in each trip share table is the information that appears on its accompanying map. For information regarding trip shares from specific TAZ's to other specific TAZ's, the reader is directed to the individual cells within the body of the trip share tables. For example, for SR 520, AM Peak, Westbound, we know that 21.1% of all trips originate in the Kirkland/Totem Lake area. However, if we want to know how many of the trips originating there go to a specific TAZ, say North Seattle, we would read the appropriate cell within the table and find that the answer is 5.6%. In addition, Table 6 (see page 12), summarizes the major origins and destinations for all routes and all peak periods.

The trip share tables and maps are presented as information for use by the Trans-Lake Washington Study Committee and WSDOT. Because it is the responsibility of these two bodies to use this information in evaluating and recommending particular solution sets, no attempt has been made by PRR to interpret the origin and destination maps and tables relative to the solution sets under consideration. It is our belief that this objective presentation of the origin and destination results is the best way that we can serve our clients for this aspect of the project.[18]

It should be noted that Map 2 (SR 520, AM Peak, Westbound) and Map 3 (SR 520, AM Peak, Eastbound) also present information from the Puget Sound Regional Council (PSRC) traffic flow model. This was done only for these two maps to provide information regarding how the survey origin and destination data compared with the PSRC model data.

For the most part there is a very close comparison, with the exception of the Redmond/Overlake, Bothell/Woodinville, and East Bellevue areas. The survey origin and destination data indicates that larger percentages of westbound travelers (relative to the PSRC model) originate trips from the Redmond/Overlake and Bothell/Woodinville areas. Correspondingly, the survey origin and destination data indicates smaller percentages of westbound trips (relative to the PSRC model) originating in the East Bellevue area.

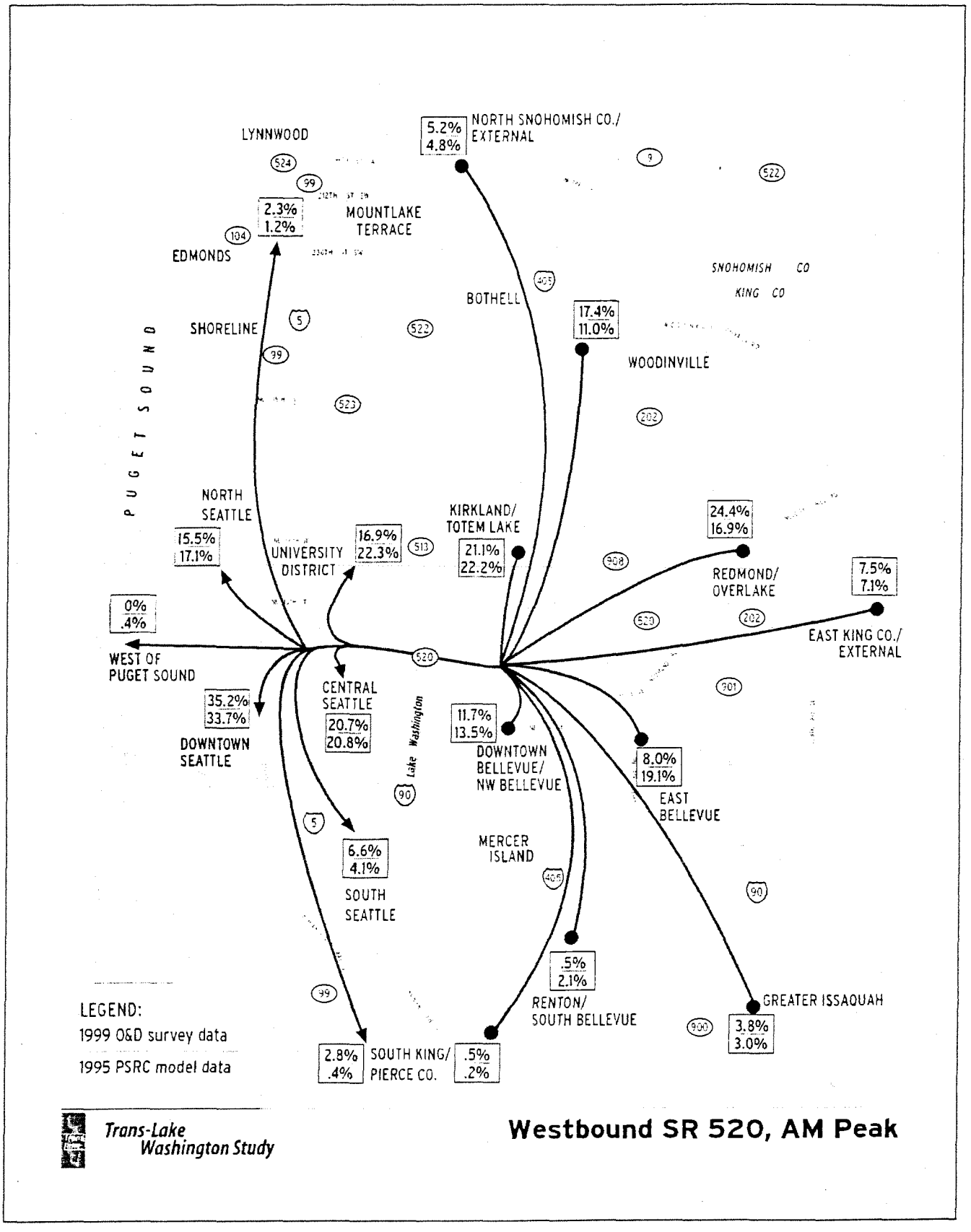
Similarly, for eastbound trips on SR 520, the survey origin and destination data indicates larger percentages (relative to the PSRC model) destined for the Redmond/Overlake area and smaller percentages (relative to the PSRC model) destined for the East Bellevue area. These discrepancies between the PSRC model and the survey origin and destination data may reflect both employment and residential growth in the Redmond/Overlake and Bothell/Woodinville areas since the PSRC model was developed in 1995.

[18] In response to a question from a specific Trans-Lake Study Committee member, the percentage of respondents traveling eastbound on both SR 520 and I-90 from the City of Seattle (defined by zip code areas 98101, 98102, 98104, 98109, 98112, 98122, 98134, and 98144) is 15.7% in the AM peak period and 7.9% in the PM peak period.

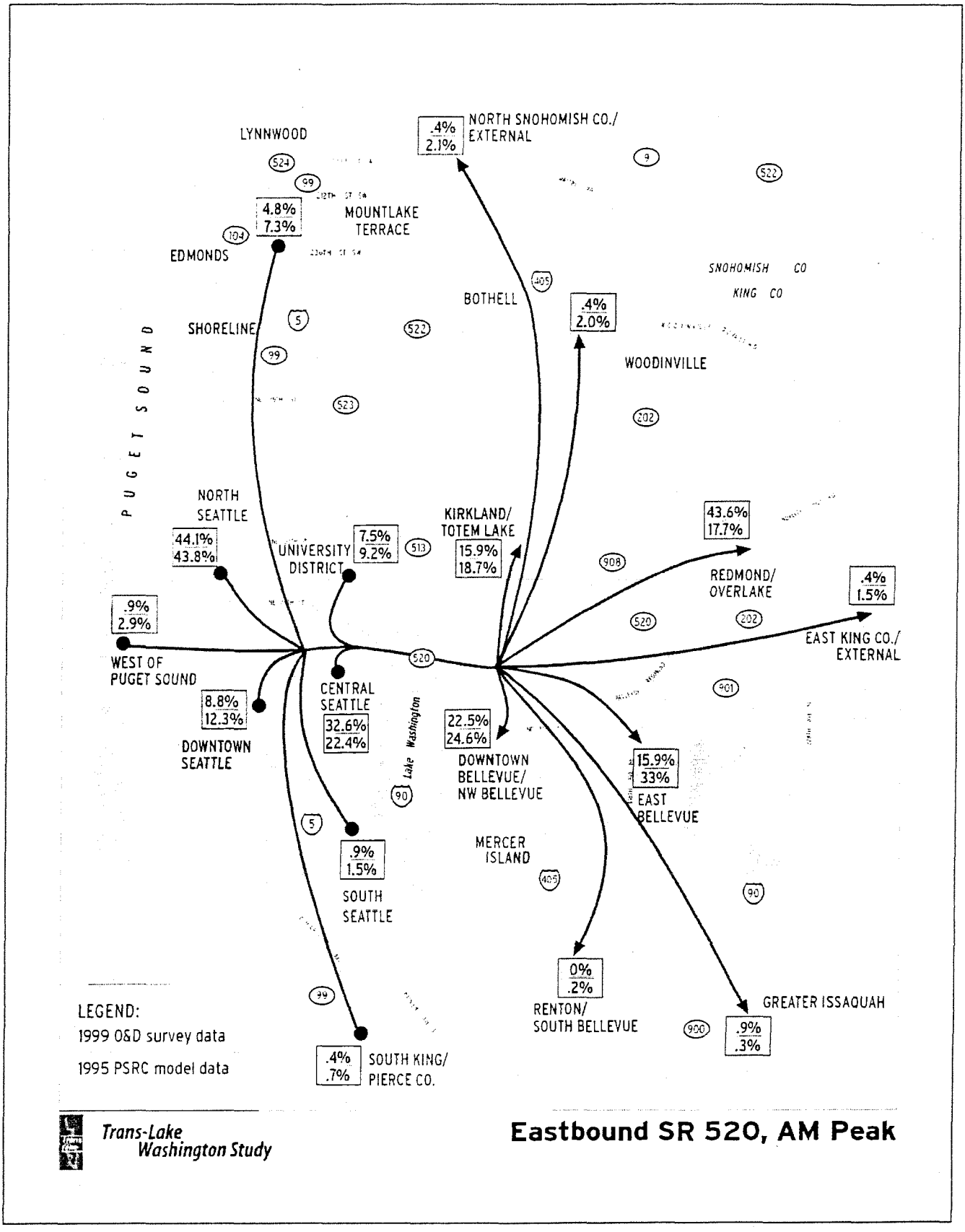
Table 6: Major Origins and Destinations by Route, Peak Period, and Direction

Route	Time/Direction	Major Origins	Major Destinations
SR 520	AM/West	Redmond/Overlake (24.4%) Kirkland/Totem Lake (21.1%) Bothell/Woodinville (17.4%) Downtown/NW Bellevue (11.7%)	Downtown Seattle (35.2%) Central Seattle (20.7%) University District (16.9%) North Seattle (15.5%)
	AM/East	North Seattle (44.1%) Central Seattle (32.6%) Downtown Seattle (8.8%) University District (7.5%)	Redmond/Overlake (43.6%) Downtown/NW Bellevue (22.5%) Kirkland/Totem Lake (15.9%) East Bellevue (15.9%)
	PM/West	Kirkland/Totem Lake (28.6%) Redmond/Overlake (23%) Downtown/NW Bellevue (20.5%) East Bellevue (11.8%)	North Seattle (34.2%) Central Seattle (23%) Downtown Seattle (16.8%) University District (13.7%)
	PM/East	Downtown Seattle (28.1%) Central Seattle (26%) North Seattle (20.9%) University District (17.9%)	Kirkland/Totem Lake (25.5%) Downtown/NW Bellevue (20.9%) Redmond/Overlake (19.9%) East Bellevue (9.7%) Bothell/Woodinville (8.7%)
I-90	AM/West	Renton/South Bellevue (33.2%) Greater Issaquah (20.7%) East Bellevue (19.3%) East King Co./External (6.4%)	Downtown Seattle (46.8%) South Seattle (20.3%) Central Seattle (13.2%) North Seattle (8.8%)
	AM/East	South Seattle (27.9%) Central Seattle (24.3%) North Seattle (21.1%) South King/Pierce Co. (11.3%) Downtown Seattle (6.9%)	East Bellevue (29.1%) Downtown Bellevue (17.4%) Renton/South Bellevue (16.2%) Redmond/Overlake (13.4%) Greater Issaquah (11.7%)
	PM/West	East Bellevue (28.7%) Renton/South Bellevue (19.5%) Downtown Bellevue (12.3%) Redmond/Overlake (11.8%)	South Seattle (22.6%) North Seattle (21%) Downtown Seattle (19%) Central Seattle (18.5%)
	PM/East	South Seattle (34.9%) Downtown Seattle (34.5%) Central Seattle (12.9%) University District (6.1%) South King/Pierce Co. (5.8%)	Renton/South Bellevue (27.7%) East Bellevue (19.4%) Greater Issaquah (18.3%) Redmond/Overlake (9.7%) Downtown/NW Bellevue (5.4%)
SR 522	AM/West	Bothell/Woodinville (62.3%) North Snohomish/External (12.3%) Kirkland/Totem Lake (9.4%) Lynnwood/Edmonds/Shoreline (9.4)	Lynnwood/Edmonds/Shoreline (28.3%) North Seattle (25.5%) Downtown Seattle (17%) University District (10.4%) Central Seattle (6.6%)
	AM/East	Lynnwood/Edmonds/Shoreline (52.5%) North Seattle (36.2%)	Bothell/Woodinville (35.5%) Kirkland/Totem Lake (30.5%) Redmond/Overlake (19.1%)
	PM/West	Bothell/Woodinville (48.5%) Kirkland/Totem Lake (12.1%) Lynnwood/Edmonds/Shoreline (12.1%) Redmond/Overlake (10.1%)	Lynnwood/Edmonds/Shoreline (47.5%) North Seattle (22.2%) Bothell/Woodinville (8.1%) University District (6.1%) Downtown Seattle (5.1%)
	PM/East	North Seattle (36.1%) Lynnwood/Edmonds/Shoreline (21.3%) University District (13%) Downtown Seattle (8.3%) Central Seattle (8.3%)	Bothell/Woodinville (57.4%) North Snohomish Co./External (13.9%) Kirkland/Totem Lake (12%)

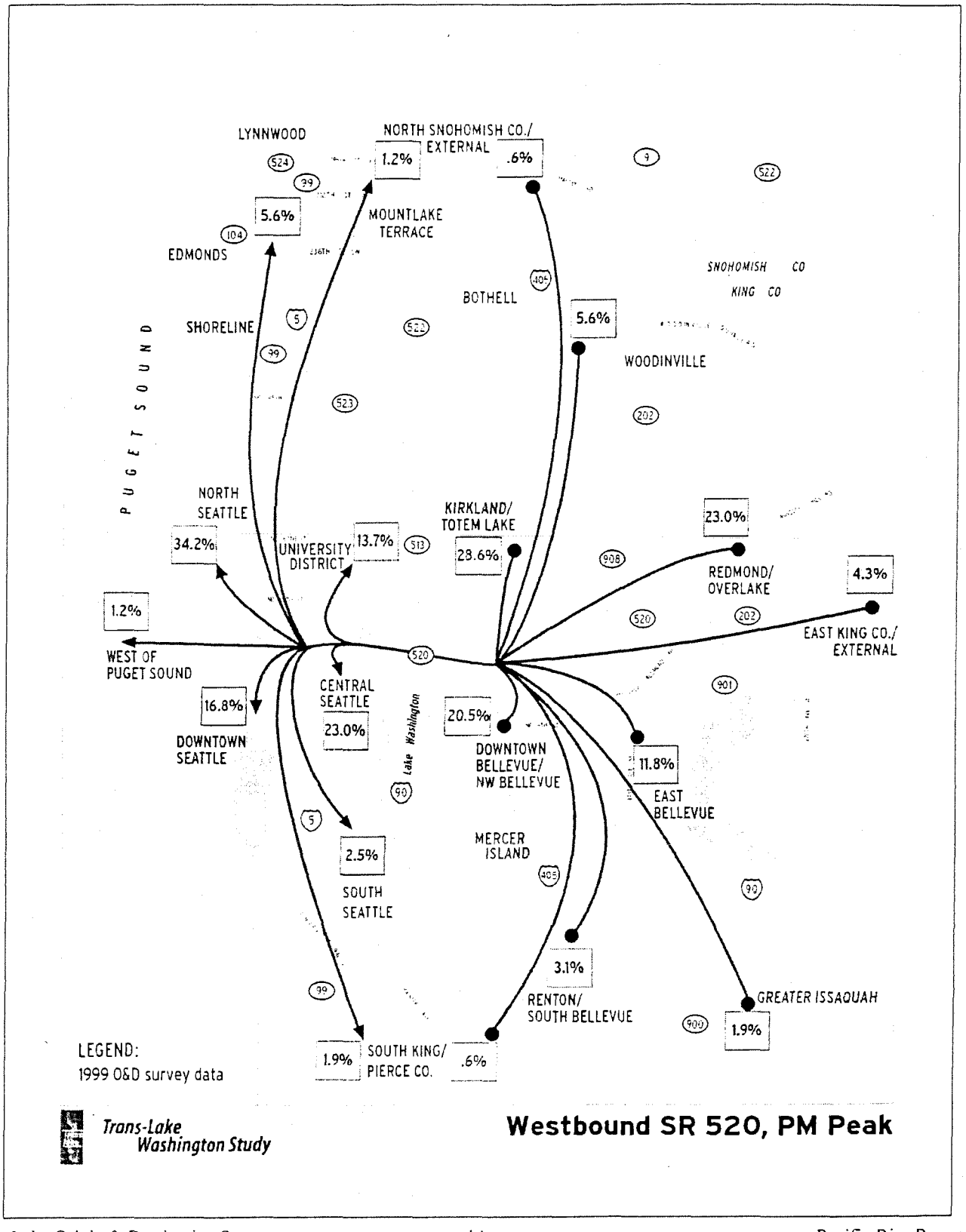
Map 2: SR 520, AM Peak, Westbound



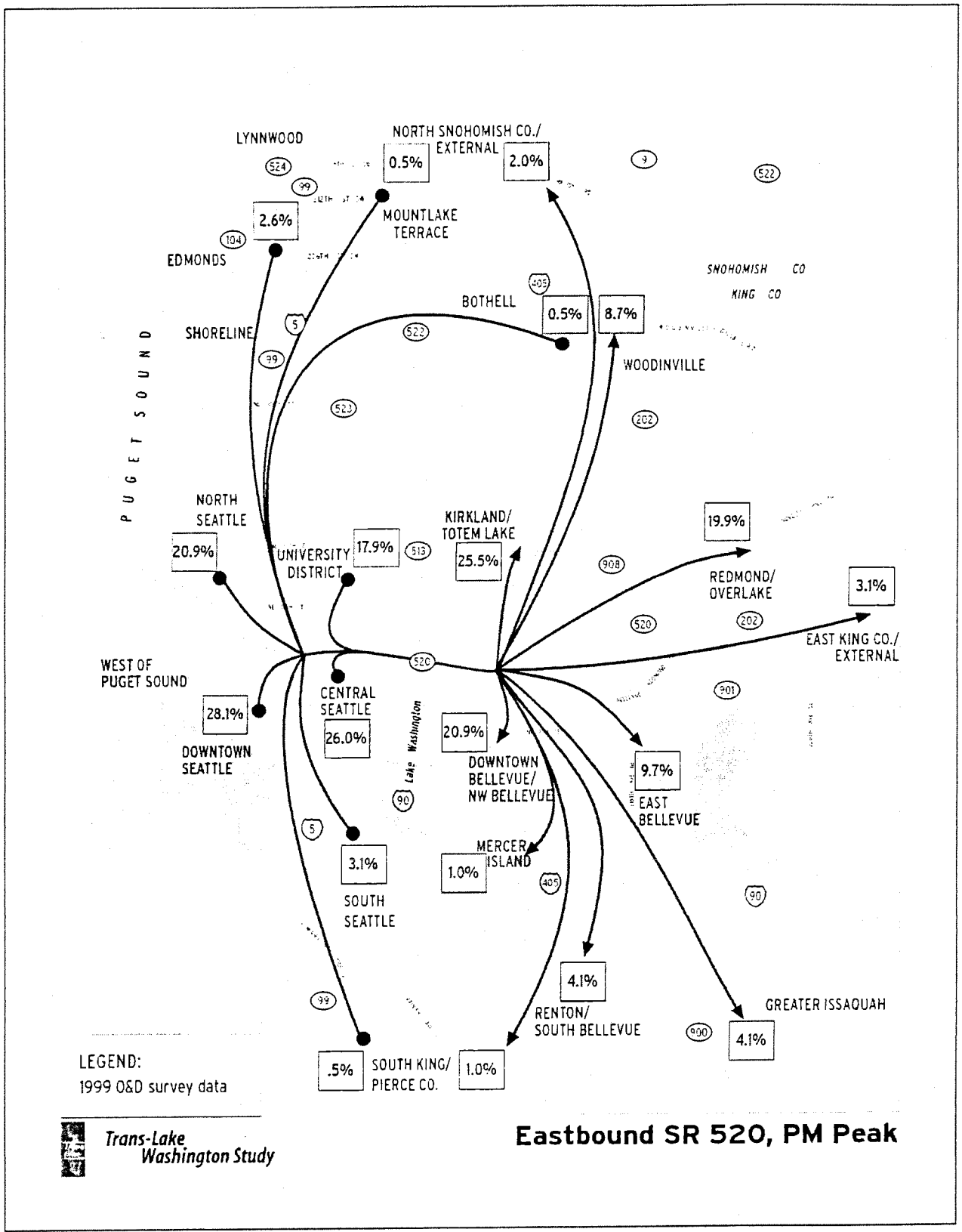
Map 3: SR 520, AM Peak, Eastbound



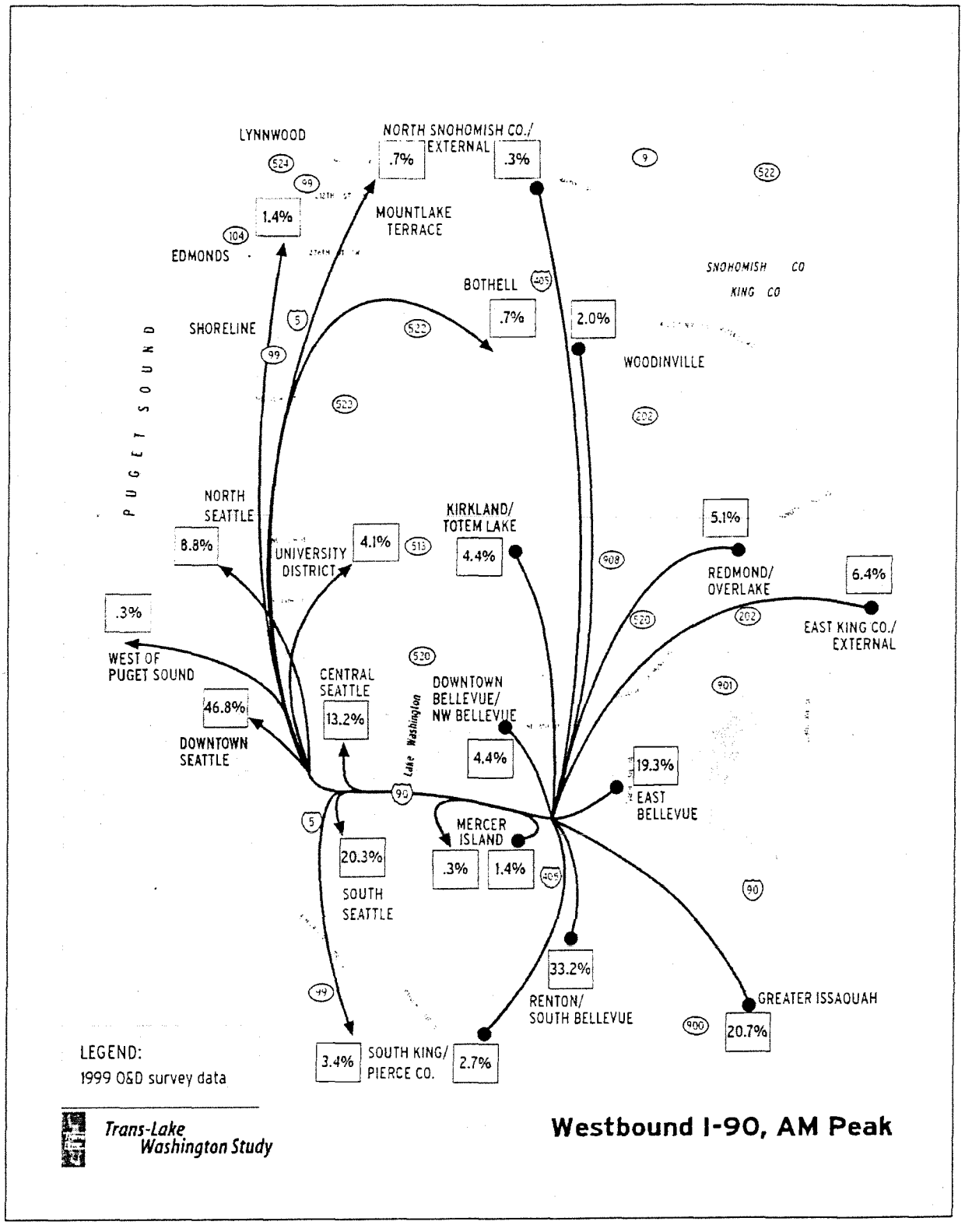
Map 4: SR 520, PM Peak, Westbound



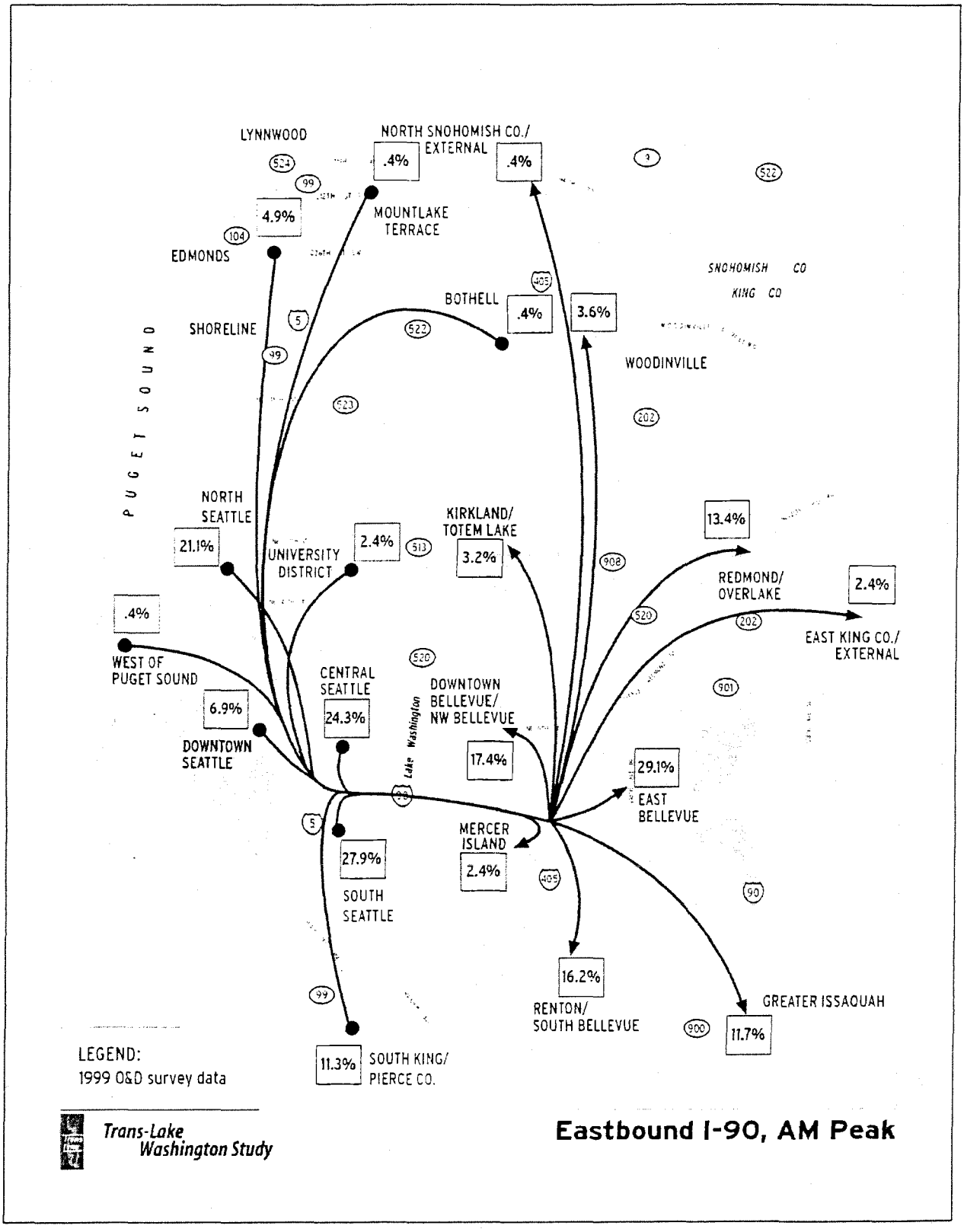
Map 5: SR 520, PM Peak, Eastbound



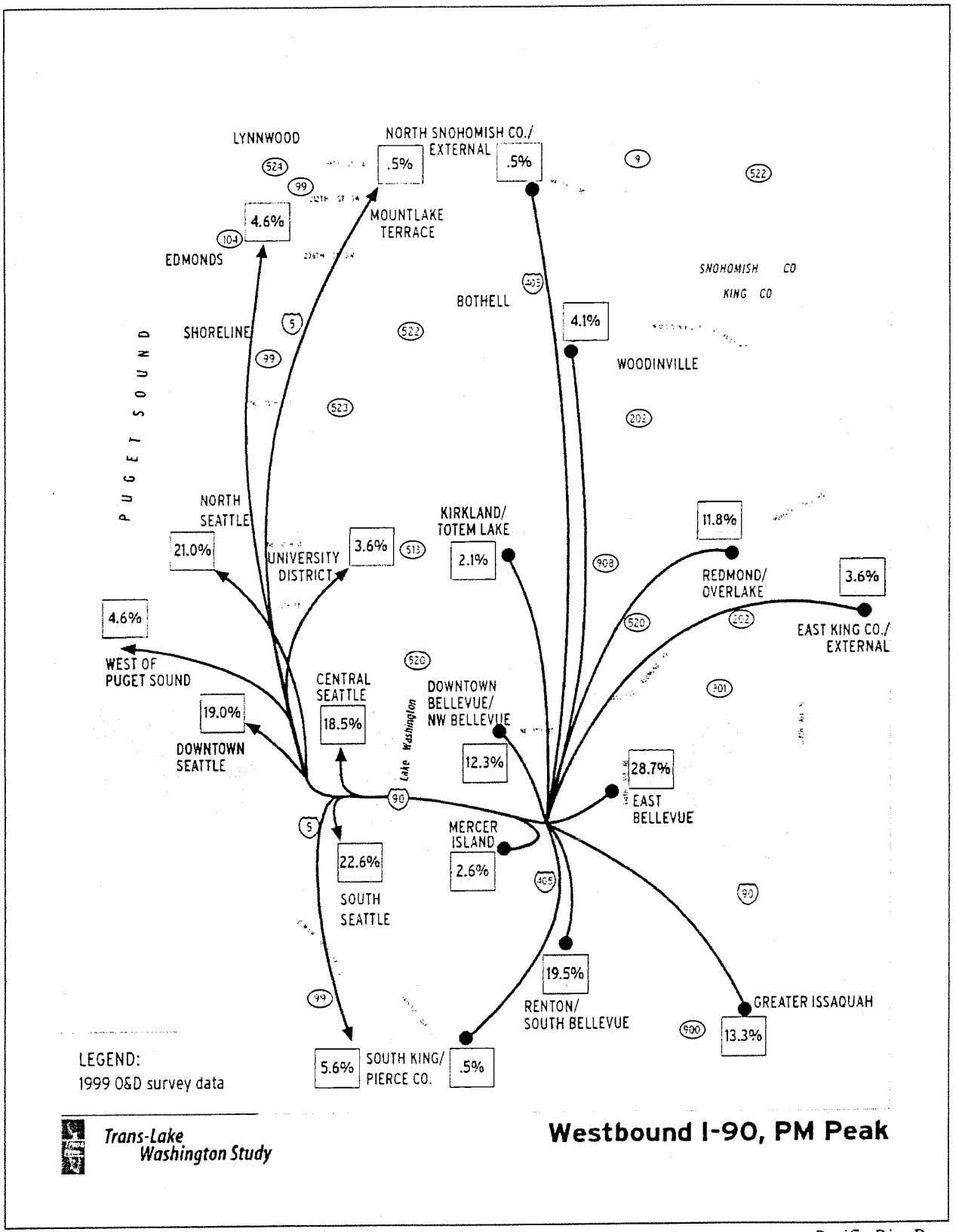
Map 6: I-90, AM Peak, Westbound



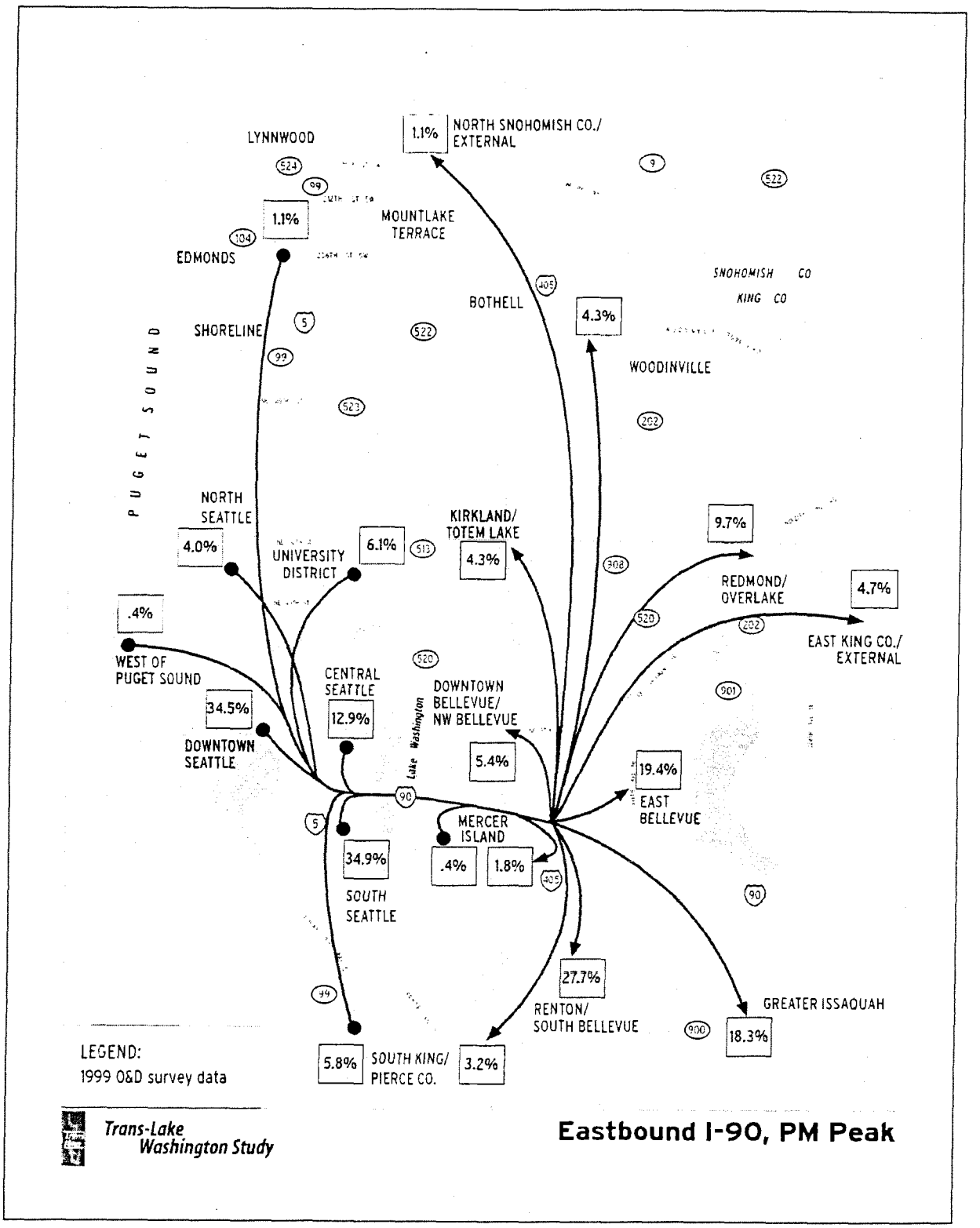
Map 7: I-90, AM Peak, Eastbound



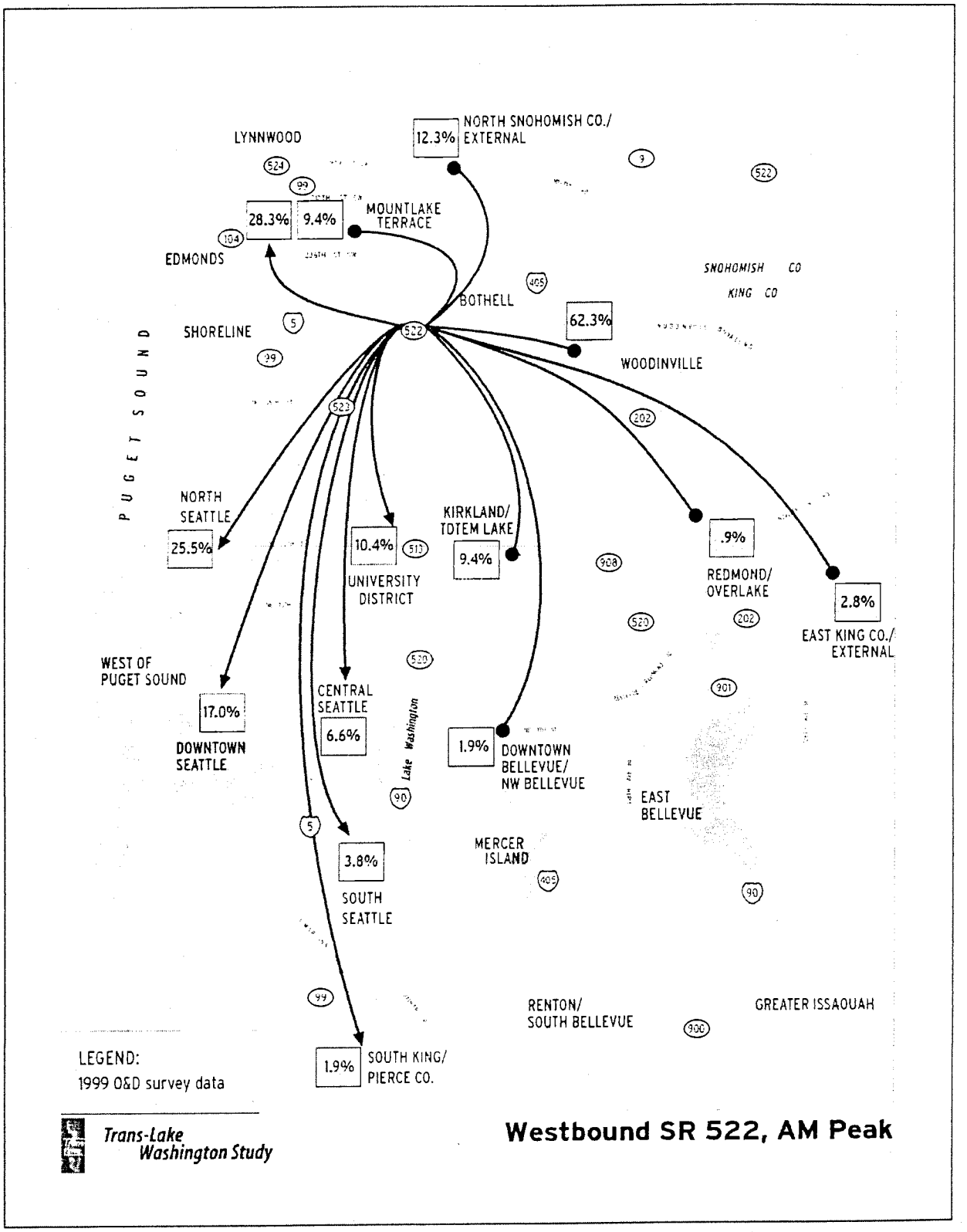
Map 8: I-90, PM Peak, Westbound



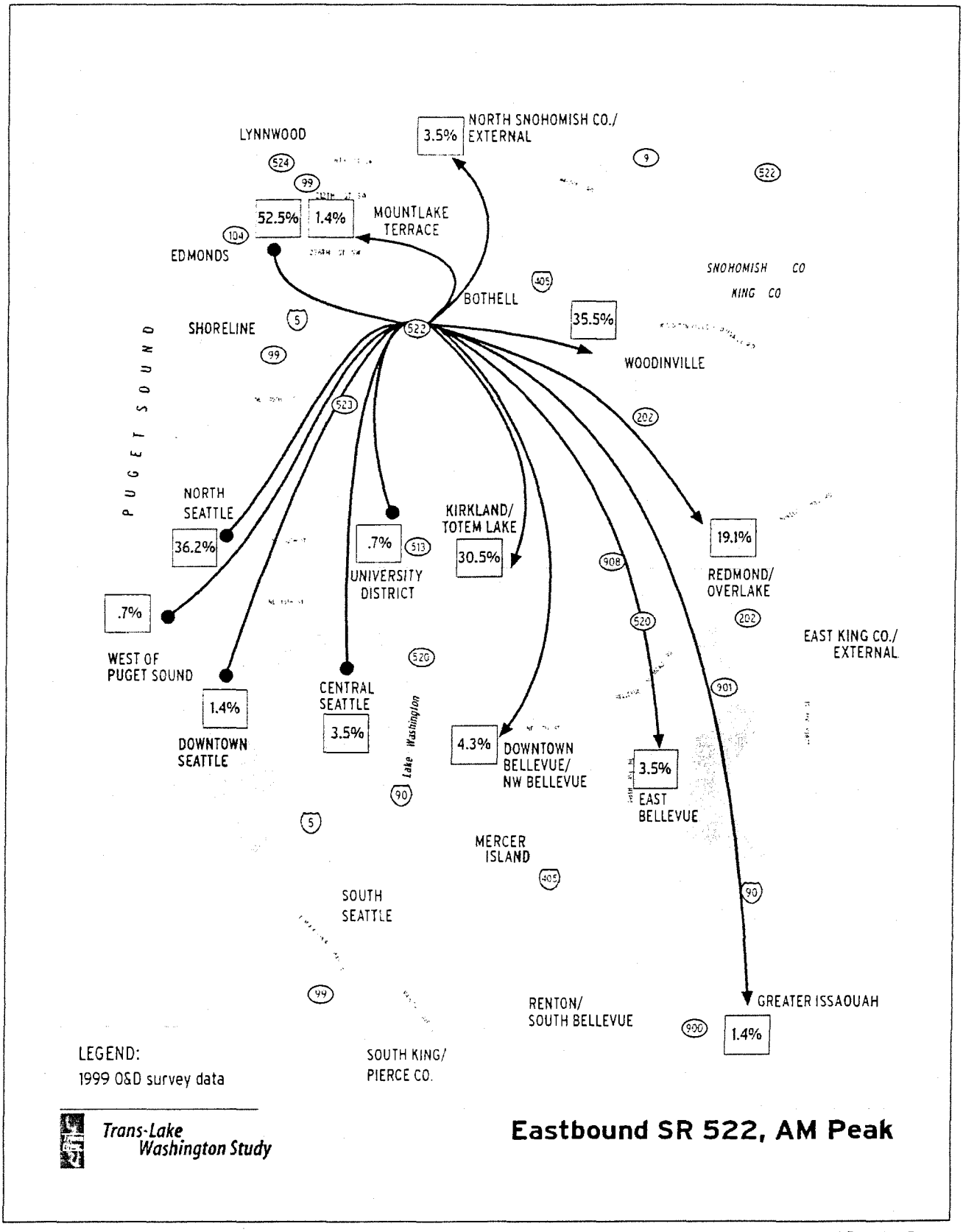
Map 9: I-90, PM Peak, Eastbound



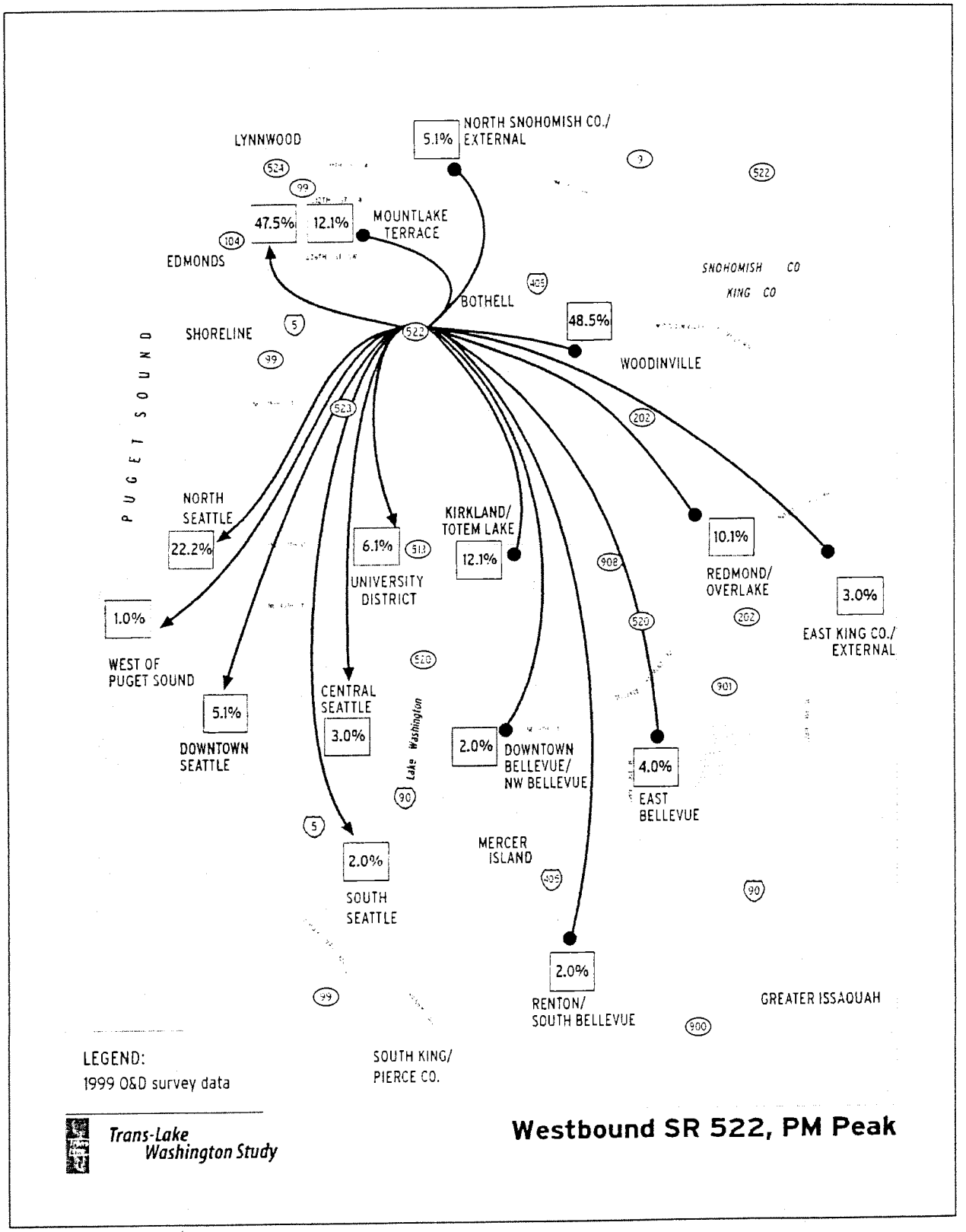
Map 10: SR 522, AM Peak, Westbound



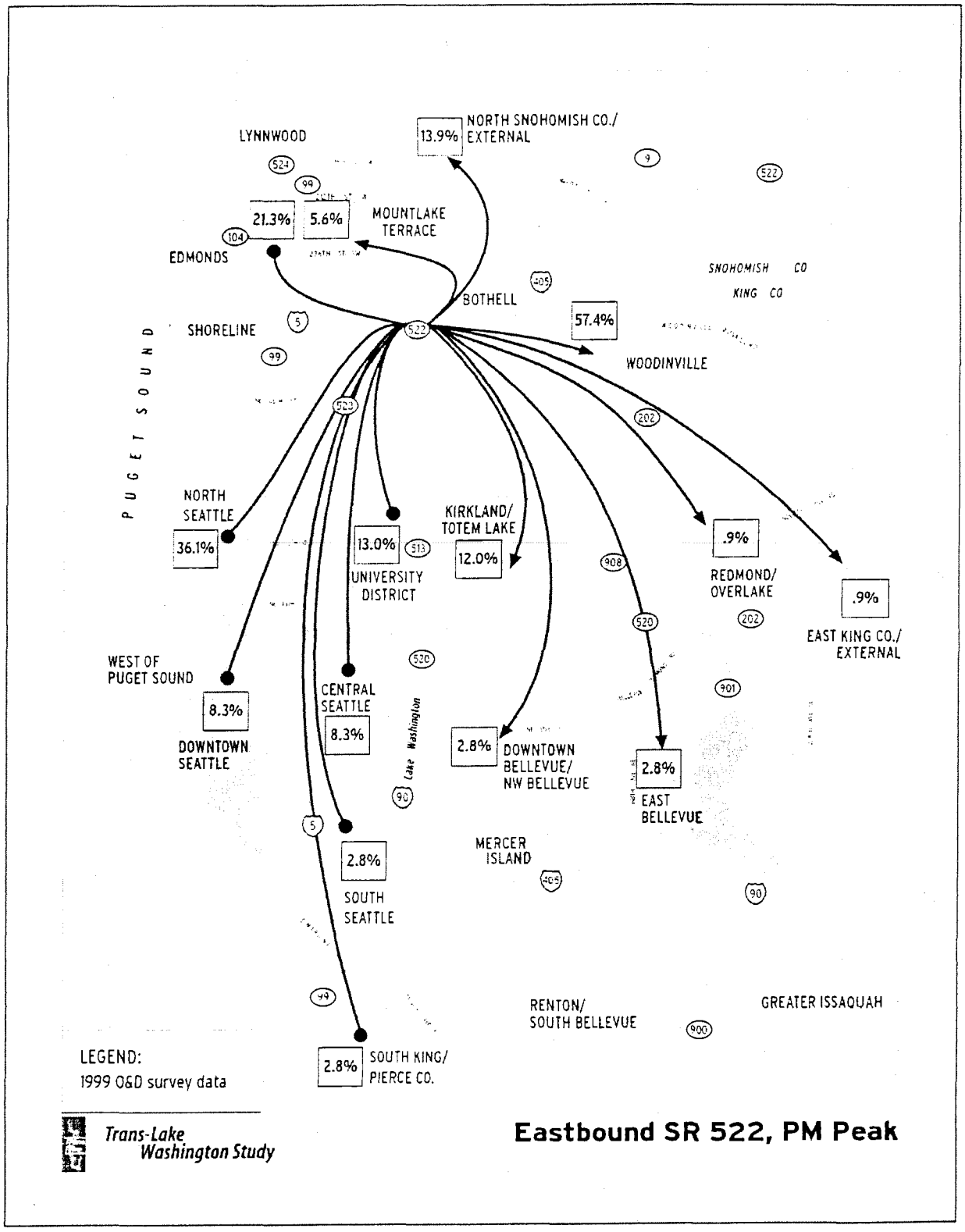
Map 11: SR 522, AM Peak, Eastbound



Map 12: SR 522, PM Peak, Westbound

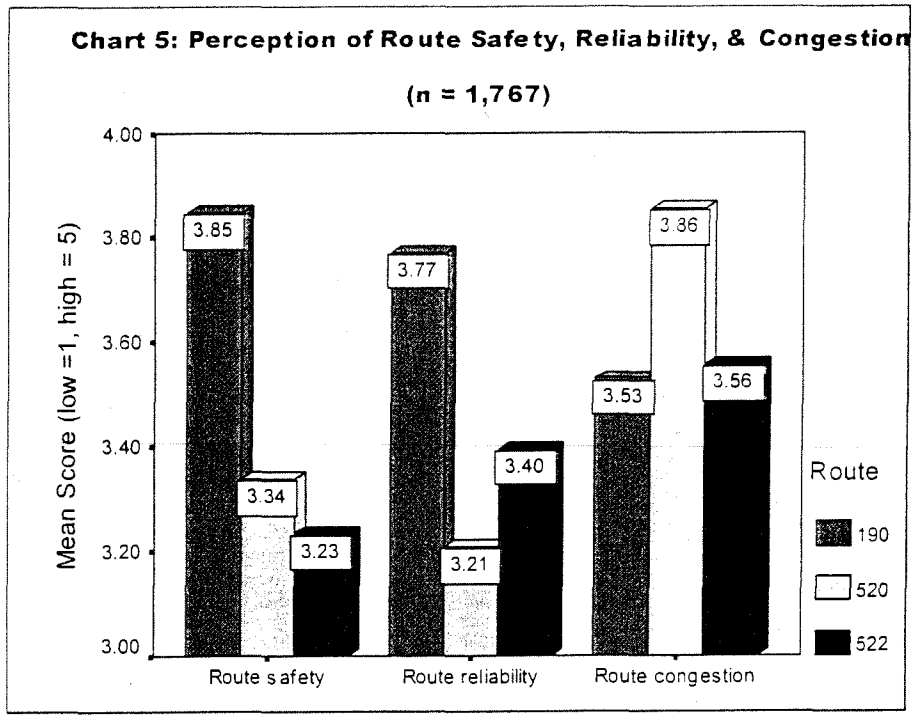


Map 13: SR 522, PM Peak, Eastbound



C. Which Routes Are Perceived as Safest, Most Reliable, & Most Congested?

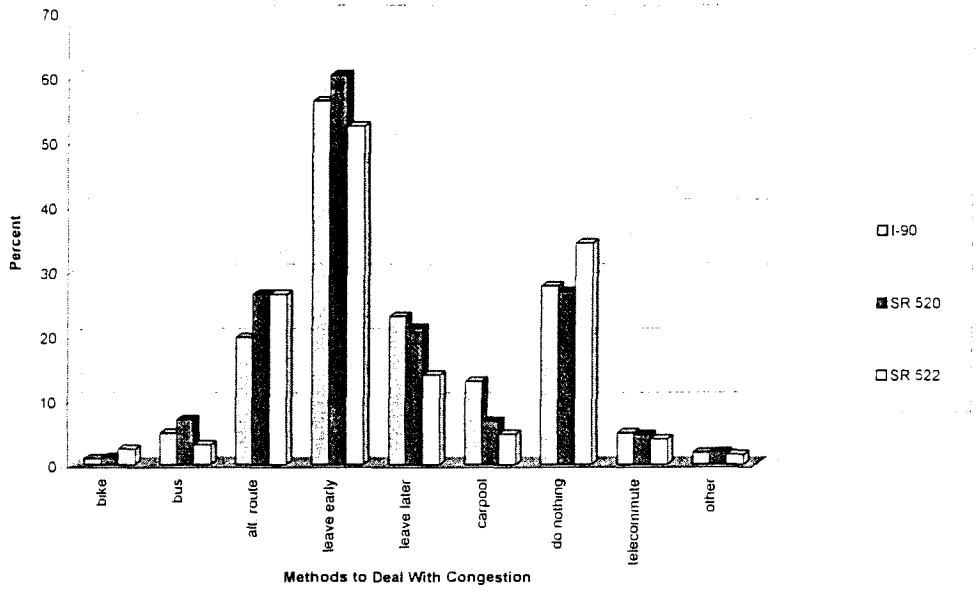
As can be seen in Chart 5 below, I-90 is perceived as the safest, most reliable, and least congested of the three routes. SR 520 is perceived as the least reliable and most congested. SR 522 is perceived as the least safe. There are no significant differences in the perceptions of route safety, reliability, or congestion when comparing the AM and PM peak periods. Perceptions of safety, reliability, and congestion have implications for which routes people chose to use and especially for what routes they divert themselves to when their usual route is congested.



D. How Do People Deal With Congestion?

Respondents indicated a number of methods that they use to deal with congestion on their usual route. Chart 6 below indicates that the most frequent method of dealing with such congestion is to *leave earlier*. This is somewhat more likely in the AM peak period (62.3%) than in the PM peak period (50.7%), and is the case for all three routes. The second most frequent method is to *do nothing* (especially on SR 522). The third most frequent method is to *use an alternate route* (especially for those whose usual route is SR 520 or SR 522; and somewhat more likely in the PM peak period [25.9%] than in the AM peak period [21.2%]). The fourth most frequent method is to *leave later* (especially on I-90 and SR 520; and somewhat more likely in the PM peak period [25%] than in the AM peak period [16.8%]). No doubt, the combination of *leaving earlier* and *leaving later* has contributed to the expansion of the "peak commute" time periods.

Methods to Deal with Congestion by Route (n = 2,348)



When travelers use alternate routes to deal with congestion on their usual routes, they not only contribute to increased congestion on the other routes (SR 520, I-90, and SR 522), but also impact congestion on I-405, I-5, and side streets, as they navigate from their usual routes to alternate routes. For example:

- If I-90 is congested, 56% report diverting to SR 520
- If SR 520 is congested, 70% report diverting to I-90
- If SR 522 is congested, 37% report diverting to side streets and another 27% report diverting to SR 520

The frequency with which respondents use alternate routes when their usual route is congested does not differ appreciably by route. However, in the AM peak period about a fifth (19.7%) report using an alternate route one time a week, with another 6.9% reporting doing so two times a week. During the PM peak period, the percentages of those using alternate routes to deal with congestion increases to about a quarter (23.5%) doing so one time a week and another 9% doing so two times a week.

E. Employer Sponsored Trip Reduction Plan Benefits

One opportunity to address traffic demands on these three corridors is to have those commuting to and from work (the majority of travelers during AM and PM peak periods) make use of employer sponsored trip reduction benefits. In the current sample of travelers:

- Most (63%) don't have an employer sponsored trip reduction benefit
- Among those who do, most (75%) do not use the benefit

- The major reasons for not using employer sponsored trip reduction benefits or for not using them more often among those who have such benefits are:
  - The bus doesn't meet their travel needs (60.6%)
  - Pre/post work errands require use of their car (54.1%)
  - They prefer driving their car (32.6%)
  - They have inflexible work hours (29.2%)
  - They can't get home in an emergency (22%)
  - Other reasons (16.2%)
  - They already carpool (15.3%)
  - They need to use their car for work (8%)

Attachment A: Origin & Destination Survey

Dear Lake Washington Traveler

The Washington State Department of Transportation (WSDOT) is involved in planning transportation improvements in the Lake Washington region. As part of that effort, called the Trans-Lake Washington Study, WSDOT will perform an Origin and Destination Study to identify travel patterns of motorists who use I-90, SR 520 and SR 522 (Lake City Way, Bothell Way). This video license plate and mailback survey will help us prioritize future transportation improvements in these corridors.

We have scanned randomly selected license plates of vehicles traveling on these routes and are mailing out survey forms to the registered vehicle owners. Your vehicle was one of those identified in the sample. Please take a few minutes to complete the survey and return it promptly. No postage is necessary.

If you have any questions regarding the survey please contact Rob Fellows, Project Manager, Washington State Department of Transportation, 401 Second Avenue S, Suite 300, Seattle, WA 98104-2887, telephone (206) 464-6234, fax (206) 464-6084, e-mail fellowsr@wsdot.wa.gov

Your prompt completion and return of the survey is greatly appreciated. On behalf of WSDOT, we appreciate your participation in this survey.

Sincerely,

Renee Montgelas
Director, Office of Urban Mobility

TRANS-LAKE TRAVEL PATTERN SURVEY

Please indicate your choice(s) with a cross ☒

Dear Motorist

Your vehicle was randomly selected while traveling on one of the following routes (I-90, SR 520, SR 522 [Lake City Way, Bothell Way]) on the date, time, and direction shown right above the map on the other side of this page. Please have the driver of the vehicle answer the following questions about that specific one-way trip. When required, please print numbers and letters IN CAPITALS neatly. To ensure your anonymity, you may cut off the panel with your name and address before mailing. After completing the survey, please refold with the *Pacific Rim Resources* address on the outside and with all the questions on the inside, tape closed, and mail back to us. The postage is already paid. Thank you for your prompt response.

1. If none of the members of your household were traveling as shown in the trip information right above the map, *please check this box and return the survey to us uncompleted* (postage is already paid) ☐

2. What was the closest street intersection where you started the above-referenced **one-way** trip? (Please give the closest intersection, including complete street name and street type. For example: 104 Ave NE & NE 12 St, Bellevue 98004.)
   CLOSEST STREET INTERSECTION ________
   CITY ________
   ZIP CODE ________

3. Was this **starting** place? (Check just one) Your home ☐ Your place of work ☐ Other place ☐

4. Using the map on the back of this page, please write the zone number in this box where you **started** the above-referenced **one-way** trip ☐

5. The **main** purpose of this trip was transportation to/from? (Check just one)
   Work ☐ Medical appointment ☐
   School/College ☐ Business appointment ☐
   Personal appointment/shopping/errands ☐
   Social/recreation activity (visiting, go to a movie, restaurant, hiking, etc) ☐
   Other (please specify) ________ ☐

6. What was the closest street intersection where you **ended** the above-referenced **one-way** trip? (Please give the closest intersection, including complete street name and street type. For example: 104 Ave NE & NE 12 St, Bellevue 98004.)
   CLOSEST STREET INTERSECTION ________
   CITY ________
   ZIP CODE ________

7. Was this **ending** place? (Check just one) Your home ☐ Your place of work ☐ Other place ☐

8. Using the map on the back of this page, please write the zone number in this box where you **ended** the above-referenced one-way trip ☐

9. How many times per week do you use the route identified above the map in this one-way direction? (Check just one)
   Less than 1 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 or more ☐

10. *Including yourself*, how many people were in your vehicle? (Check just one)
    1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 or more ☐

11. Please identify the type of vehicle you were driving (Check just one)
    Automobile, sport utility vehicle, passenger van or pick-up ☐
    Recreational vehicle/motorhome ☐
    Motorcycle ☐ Single unit commercial vehicle ☐
    Transit or tour bus ☐ *Multi unit commercial vehicle* ☐
    Other (please specify) ________ ☐

12. Please rate this **one-way** trip in regard to *safety, route reliability*, and congestion. Do this by checking the appropriate box in the table below that best corresponds to your experience, with "1" = low and "5" = high

	Low 1	2	3	4	High 5	Don't know
Route safety	☐	☐	☐	☐	☐	☐
Route reliability	☐	☐	☐	☐	☐	☐
Route congestion	☐	☐	☐	☐	☐	☐

13. Is the route identified above the map the route you **usually** take for this **one-way** trip? Yes ☐ No ☐
    IF NO - What route do you **usually** take? (Check just one)
    I-90 ☐ SR 522 (Lake City Way, Bothell Way) ☐
    SR 520 ☐ Other ________ (please specify) ☐

14. What do you **usually** do to deal with traffic congestion on your **usual** route for this trip? (Check all that apply)
    Ride a bicycle ☐ Leave earlier ☐ Carpool ☐
    Take the bus ☐ Leave later ☐ Do nothing ☐
    Take an alternate route ☐ Work at home/telecommute ☐
    Other (please specify) ________ ☐

15. How many times per week do you take an **alternate** route in order to avoid traffic congestion on your **usual** route for this trip? (*Check just one*)
    Never ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 or more ☐

16. If you use an **alternate** route to avoid congestion on your **usual** route, which alternate route do you use most often? (Check just one)
    I-90 ☐ SR 522 (Lake City Way, Bothell Way) ☐
    SR 520 ☐ Other ________ (please specify) ☐

17. Was this one-way trip part of a same-day round trip? Yes ☐ No ☐
    IF YES - What route did you take on the other part of this same day round trip?
    I-90 ☐ SR 522 (Lake City Way, Bothell Way) ☐
    SR 520 ☐ Other ________ (please specify) ☐

18. Does your employer offer a benefit to encourage a reduction in employee commuter trips (such as subsidized bus passes, van pools, etc.)? Yes ☐ No ☐
    IF YES - How often do you participate in this program? (Check just one)
    Very often (3 or more days/week) ☐ Often (1-2 days/week) ☐
    Sometimes (1-3 times/month) ☐ Never ☐
    IF "SOMETIMES" OR "NEVER" - *Please tell us why by* checking all reasons below that apply
    I carpool ☐ I prefer driving my car ☐
    Bus service does not meet my travel needs ☐
    I could not get home easily in case of emergency ☐
    My work hours are not flexible enough to take the bus ☐
    I have other places to go before and/or after work that require use of my car ☐
    Other (please specify) ________ ☐

19. Please tell us the type of business you are employed in (Check just one)
    Not employed ☐ Wholesale trade ☐ Construction ☐
    Mining ☐ Retail trade ☐ Manufacturing ☐
    Services ☐ Agriculture, Forestry, Fishing ☐
    Public administration ☐ Finance, Insurance, Real Estate ☐
    Transportation, Communications, Utilities ☐

20. Which of the following best describes your employment category? (Check just one)
    Not employed ☐ Clerical workers ☐
    Professional and technical workers ☐ Sales workers ☐
    Managers and administrative workers ☐ Laborers ☐
    Craftsmen and foremen ☐

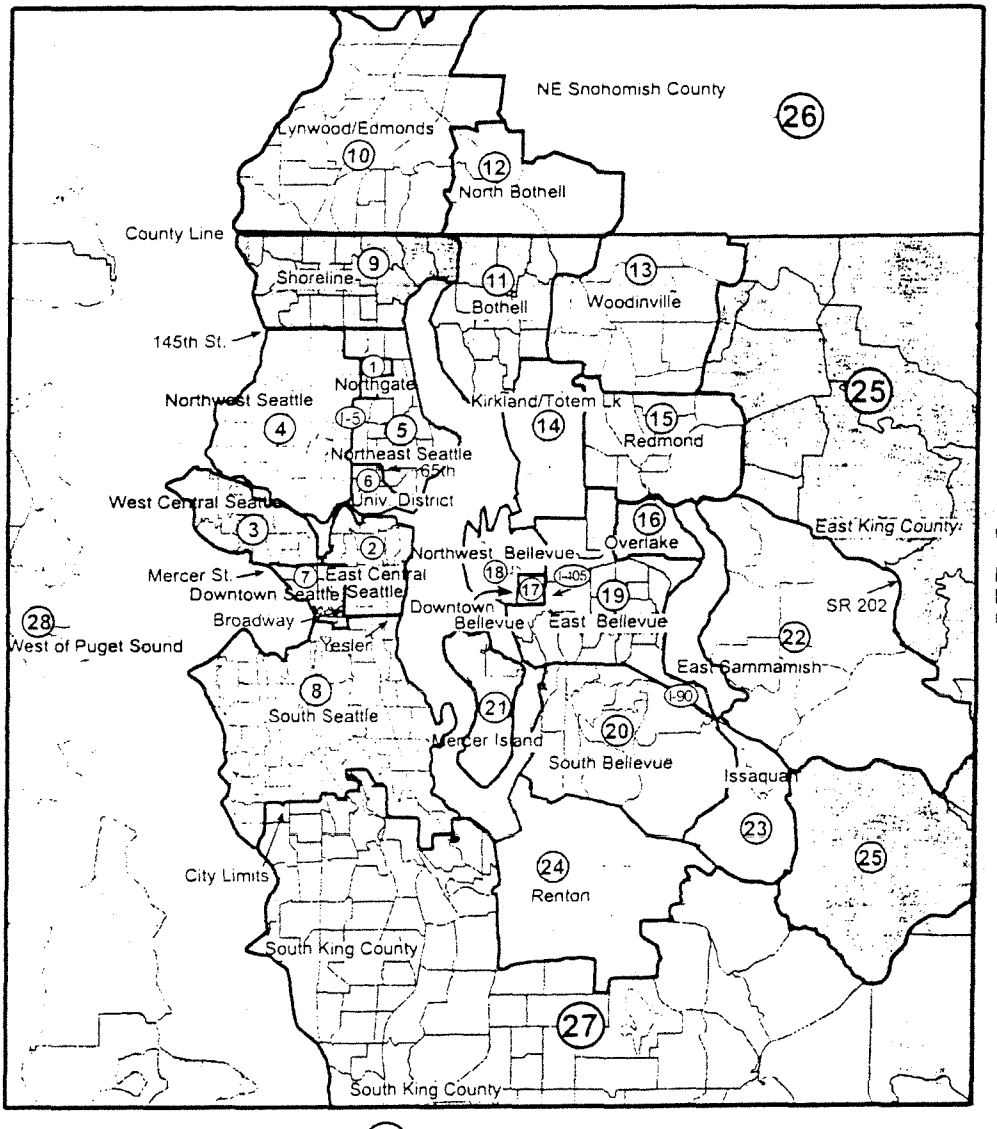
If you would like to be placed on a mailing list for information about the Trans-Lake Washington Study, check this box ☐ and do NOT detach the panel of the survey that has your name and address on it. Also below is an area for you to indicate if you would be interested in participating in future transportation surveys. This information will not be part of your survey record. Your answers will be anonymous and used for planning purposes only.

I'm interested in participating in future transportation surveys: Yes ☐ No ☐

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 742 SEATTLE, WA
POSTAGE WILL BE PAID BY ADDRESSEE

PACIFIC RIM RESOURCES
1109 1ST AVE STE 300
SEATTLE WA 98101-9956



Attachment B: Conversion Table From 31 TAZ's to 18 TAZ's

31 TAZ Districts from Survey Map			Aggregated to 18 TAZ Districts from PSRC Model
Bothell 11	=	1	Bothell/Woodinville
North Bothell 12	=	1	Bothell/Woodinville
Woodinville 13	=	1	Bothell/Woodinville
Downtown Bellevue 17	=	2	Downtown Northwest Bellevue
Northwest Bellevue 18	=	2	Downtown Northwest Bellevue
East Bellevue 19	=	3	East Bellevue
Renton 24	=	4	Renton/South Bellevue
South Bellevue 20	=	4	Renton/South Bellevue
East Sammamish 22	=	5	Greater Issaquah
Issaquah 23	=	5	Greater Issaquah
Overlake 16	=	6	Redmond/Overlake
Redmond 15	=	6	Redmond/Overlake
Kirkland/Totem Lake 14	=	7	Kirkland/Totem Lake
Mercer Island 21	=	8	Mercer Island
Lynnwood/Edmonds 10	=	9	Lynnwood/Edmonds/Shoreline
Shoreline 9	=	9	Lynnwood/Edmonds/Shoreline
Northeast Seattle 5	=	10	North Seattle
Northgate 1	=	10	North Seattle
Northwest Seattle 4	=	10	North Seattle
University District 6	=	11	University District
Downtown Seattle 7	=	12	Downtown Seattle
East Central Seattle 2	=	13	Central Seattle
West Central Seattle 3	=	13	Central Seattle
South Seattle 8	=	14	South Seattle
South of King County 31	=	15	South King/Pierce County
South King County 27	=	15	South King/Pierce County
External North 29	=	16	North Snohomish Co./External
Northeast Snohomish Co. 26	=	16	North Snohomish Co./External
East King County 25	=	17	East King County/External
External East 30	=	17	East King County/External
West of Puget Sound 28	=	18	West of Puget Sound

Attachment C: "18" Traffic Analysis Zone Trip Share Tables

Origin * Destination Trip Share TAble (SR 520, AM Peak, Westbound)

			Destination							
			Lynnwood/Edmonds.Shoreline	North Seattle	University District	Downtown Seattle	Central Seattle	South Seattle	South King/Pierce Co.	Total
Origin	Bothell/Woodinville	Count		4	7	15	8	1	2	37
		% of Total		1.9%	3.3%	7.0%	3.8%	.5%	.9%	17.4%
	Downtown/NW Bellevue	Count		1	1	14	5	2	2	25
		% of Total		.5%	.5%	6.6%	2.3%	.9%	.9%	11.7%
	East Bellevue	Count	1	2	4	5	3	2		17
		% of Total	.5%	.9%	1.9%	2.3%	1.4%	.9%		8.0%
	Renton/South Bellevue	Count			1					1
		% of Total			.5%					.5%
	Greater Issaquah	Count		2	3	1	2			8
		% of Total		.9%	1.4%	.5%	.9%			3.8%
	Redmond/Overlake	Count	2	8	12	16	12	1	1	52
		% of Total	.9%	3.8%	5.6%	7.5%	5.6%	.5%	.5%	24.4%
	Kirkland/Totem Lake	Count	1	12	1	15	10	6		45
		% of Total	.5%	5.6%	.5%	7.0%	4.7%	2.8%		21.1%
	South King/Pierce Co.	Count			1					1
		% of Total			.5%					.5%
	North Snohomish Co./External	Count		1	2	4	3		1	11
		% of Total		.5%	.9%	1.9%	1.4%		.5%	5.2%
	East King Co./External	Count	1	3	4	5	1	2		16
		% of Total	.5%	1.4%	1.9%	2.3%	.5%	.9%		7.5%
Total		Count	5	33	36	75	44	14	6	213
		% of Total	2.3%	15.5%	16.9%	35.2%	20.7%	6.6%	2.8%	100.0%

Origin * Destination Trip Share Table (SR 520, AM Peak, Eastbound)

			Destination								
			Bothell/Woodinville	Downtown/NW Bellevue	East Bellevue	Greater Issaquah	Redmond/Overlake	Kirkland/Totem Lake	North Snohomish Co./External	East King Co./External	Total
Origin	Lynnwood/Edmonds/Shoreline	Count		4	2		4	1			11
		% of Total		1.8%	.9%		1.8%	.4%			4.8%
	North Seattle	Count		24	18		44	15			101
		% of Total		10.6%	7.9%		19.4%	6.6%			44.5%
	University District	Count		4	1	1	8	2	1		17
		% of Total		1.8%	.4%	.4%	3.5%	.9%	.4%		7.5%
	Downtown Seattle	Count		4	4		7	5			20
		% of Total		1.8%	1.8%		3.1%	2.2%			8.8%
	Central Seattle	Count	1	15	10	1	33	13		1	74
		% of Total	.4%	6.6%	4.4%	.4%	14.5%	5.7%		.4%	32.6%
	South Seattle	Count			1		1				2
		% of Total			.4%		.4%				.9%
	West of Puget Sound	Count					1	1			2
		% of Total					.4%	.4%			.9%
Total		Count	1	51	36	2	98	37	1	1	227
		% of Total	.4%	22.5%	15.9%	.9%	43.2%	16.3%	.4%	.4%	100.0%

Origin * Destination Trip Share Table (SR 520, PM Peak, Westbound)

			Destination									Total
			Lynnwood/Edmonds.Shoreline	North Seattle	University District	Downtown Seattle	Central Seattle	South Seattle	South King/Pierce Co.	North Snohomish Co./External	West of Puget Sound	
Origin	Bothell/Woodinville	Count		2	2		5					9
		% of Total		1.2%	1.2%		3.1%					5.6%
	Downtown/NW Bellevue	Count	2	15	5	2	9					33
		% of Total	1.2%	9.3%	3.1%	1.2%	5.6%					20.5%
	East Bellevue	Count	2	6	4	1	5			1		19
		% of Total	1.2%	3.7%	2.5%	.6%	3.1%			.6%		11.8%
	Renton/South Bellevue	Count	1	2	1				1			5
		% of Total	.6%	1.2%	.6%				.6%			3.1%
	Greater Issaquah	Count			2		1					3
		% of Total			1.2%		.6%					1.9%
	Redmond/Overlake	Count	2	13	4	9	6		1		2	37
		% of Total	1.2%	8.1%	2.5%	5.6%	3.7%		.6%		1.2%	23.0%
	Kirkland/Totem Lake	Count	1	15	2	13	10	4	1			46
		% of Total	.6%	9.3%	1.2%	8.1%	6.2%	2.5%	.6%			28.6%
	South King/Pierce Co.	Count								1		1
		% of Total								.6%		.6%
	North Snohomish Co./External	Count				1						1
		% of Total				.6%						.6%
	East King Co./External	Count	1	2	2	1	1					7
		% of Total	.6%	1.2%	1.2%	.6%	.6%					4.3%
Total		Count	9	55	22	27	37	4	3	2	2	161
		% of Total	5.6%	34.2%	13.7%	16.8%	23.0%	2.5%	1.9%	1.2%	1.2%	100.0%

Origin * Destination Trip Share Table (SR 520, PM Peak, Eastbound)

			Destination											
			Bothell/Woodinville	Downtown/NW Bellevue	East Bellevue	Renton/South Bellevue	Greater Issaquah	Redmond/Overlake	Kirkland/Totem Lake	Mercer Island	South King/Pierce Co.	North Snohomish Co./External	East King Co./External	Total
Origin	Bothell/Woodinville	Count		1										1
		% of Total		.5%										.5%
	Lynnwood/Edmonds/Shoreline	Count		1	1		1		2					5
		% of Total		.5%	.5%		.5%		1.0%					2.6%
	North Seattle	Count		11	5	1	3	7	13			1		41
		% of Total		5.6%	2.6%	.5%	1.5%	3.6%	6.6%			.5%		20.9%
	University District	Count	2	5	5	4	3	4	7	1	1		3	35
		% of Total	1.0%	2.6%	2.6%	2.0%	1.5%	2.0%	3.6%	.5%	.5%		1.5%	17.9%
	Downtown Seattle	Count	10	12	6	1	1	13	10			1	1	55
		% of Total	5.1%	6.1%	3.1%	.5%	.5%	6.6%	5.1%			.5%	.5%	28.1%
	Central Seattle	Count	4	11	2	2		15	16				1	51
		% of Total	2.0%	5.6%	1.0%	1.0%		7.7%	8.2%				.5%	26.0%
	South Seattle	Count							2	1		2	1	6
		% of Total							1.0%	.5%		1.0%	.5%	3.1%
	South King/Pierce Co.	Count	1											1
		% of Total	.5%											.5%
	North Snohomish Co./External	Count									1			1
		% of Total									.5%			.5%
Total		Count	17	41	19	8	8	39	50	2	2	4	6	196
		% of Total	8.7%	20.9%	9.7%	4.1%	4.1%	19.9%	25.5%	1.0%	1.0%	2.0%	3.1%	100.0%

Origin * Destination Trip Share Table (I-90, AM Peak, Westbound)

			Destination											
			Bothell/Woodinville	Mercer Island	Lynnwood/Edmonds.Shoreline	North Seattle	University District	Downtown Seattle	Central Seattle	South Seattle	South King/Pierce Co.	North Snohomish Co./External	West of Puget Sound	Total
Origin	Bothell/Woodinville	Count						3		2	1			6
		% of Total						1.0%		.7%	.3%			2.0%
	Downtown/NW Bellevue	Count				2		7	1	3				13
		% of Total				.7%		2.4%	.3%	1.0%				4.4%
	East Bellevue	Count			1	3	3	31	7	9	2	1		57
		% of Total			.3%	1.0%	1.0%	10.5%	2.4%	3.1%	.7%	.3%		19.3%
	Renton/South Bellevue	Count			2	14	6	44	14	16	1		1	98
		% of Total			.7%	4.7%	2.0%	14.9%	4.7%	5.4%	.3%		.3%	33.2%
	Greater Issaquah	Count	1		1	5	2	27	11	11	2	1		61
		% of Total	.3%		.3%	1.7%	.7%	9.2%	3.7%	3.7%	.7%	.3%		20.7%
	Redmond/Overlake	Count	1					6	2	5	1			15
		% of Total	.3%					2.0%	.7%	1.7%	.3%			5.1%
	Kirkland/Totem Lake	Count						4		6	3			13
		% of Total						1.4%		2.0%	1.0%			4.4%
	Mercer Island	Count					1	2		1				4
		% of Total					.3%	.7%		.3%				1.4%
	South King/Pierce Co.	Count				1		4	2	1				8
		% of Total				.3%		1.4%	.7%	.3%				2.7%
	North Snohomish Co./External	Count								1				1
		% of Total								.3%				.3%
	East King Co./External	Count		1		1		10	2	5				19
		% of Total		.3%		.3%		3.4%	.7%	1.7%				6.4%
Total		Count	2	1	4	26	12	138	39	60	10	2	1	295
		% of Total	.7%	.3%	1.4%	8.8%	4.1%	46.8%	13.2%	20.3%	3.4%	.7%	.3%	100.0%

Origin * Destination Trip Share Table (I-90, AM Peak, Eastbound)

			Destination										
			Bothell/Woodinville	Downtown/NW Bellevue	East Bellevue	Renton/South Bellevue	Greater Issaquah	Redmond/Overlake	Kirkland/Totem Lake	Mercer Island	North Snohomish Co./External	East King Co./External	Total
Origin	Bothell/Woodinville	Count			1								1
		% of Total			.4%								.4%
	Lynnwood/Edmonds/Shoreline	Count	1		2	4	3					2	12
		% of Total	.4%		.8%	1.6%	1.2%					.8%	4.9%
	North Seattle	Count		5	22	9	8	2	1	4		1	52
		% of Total		2.0%	8.9%	3.6%	3.2%	.8%	.4%	1.6%		.4%	21.1%
	University District	Count			4	1	1						6
		% of Total			1.6%	.4%	.4%						2.4%
	Downtown Seattle	Count		4	2	3	3	5					17
		% of Total		1.6%	.8%	1.2%	1.2%	2.0%					6.9%
	Central Seattle	Count	1	15	13	15	6	6	1		1	2	60
		% of Total	.4%	6.1%	5.3%	6.1%	2.4%	2.4%	.4%		.4%	.8%	24.3%
	South Seattle	Count	5	14	18	4	6	16	4	1		1	69
		% of Total	2.0%	5.7%	7.3%	1.6%	2.4%	6.5%	1.6%	.4%		.4%	27.9%
	South King/Pierce Co.	Count	2	4	10	3	2	4	2	1			28
		% of Total	.8%	1.6%	4.0%	1.2%	.8%	1.6%	.8%	.4%			11.3%
	North Snohomish Co./External	Count				1							1
		% of Total				.4%							.4%
	West of Puget Sound	Count		1									1
		% of Total		.4%									.4%
Total		Count	9	43	72	40	29	33	8	6	1	6	247
		% of Total	3.6%	17.4%	29.1%	16.2%	11.7%	13.4%	3.2%	2.4%	.4%	2.4%	100.0%

Origin * Destination Trip Share Table (I-90, PM Peak, Westbound)

			Destination									
			Lynnwood/Edmonds.Shoreline	North Seattle	University District	Downtown Seattle	Central Seattle	South Seattle	South King/Pierce Co.	North Snohomish Co./External	West of Puget Sound	Total
Origin	Bothell/Woodinville	Count				1	2	4			1	8
		% of Total				.5%	1.0%	2.1%			.5%	4.1%
	Downtown/NW Bellevue	Count	1	3	1	6	2	6	2		3	24
		% of Total	.5%	1.5%	.5%	3.1%	1.0%	3.1%	1.0%		1.5%	12.3%
	East Bellevue	Count	4	16	2	3	13	11	3		4	56
		% of Total	2.1%	8.2%	1.0%	1.5%	6.7%	5.6%	1.5%		2.1%	28.7%
	Renton/South Bellevue	Count	3	7	2	14	7	2	2	1		38
		% of Total	1.5%	3.6%	1.0%	7.2%	3.6%	1.0%	1.0%	.5%		19.5%
	Greater Issaquah	Count	1	6		7	6	5	1			26
		% of Total	.5%	3.1%		3.6%	3.1%	2.6%	.5%			13.3%
	Redmond/Overlake	Count		4		3	1	12	2		1	23
		% of Total		2.1%		1.5%	.5%	6.2%	1.0%		.5%	11.8%
	Kirkland/Totem Lake	Count		1			3					4
		% of Total		.5%			1.5%					2.1%
	Mercer Island	Count		1			1	2	1			5
		% of Total		.5%			.5%	1.0%	.5%			2.6%
	Lynnwood/Edmonds/Shoreline	Count		1				1				2
		% of Total		.5%				.5%				1.0%
	South King/Pierce Co.	Count				1						1
		% of Total				.5%						.5%
	North Snohomish Co./External	Count						1				1
		% of Total						.5%				.5%
	East King Co./External	Count		2	2	2	1					7
		% of Total		1.0%	1.0%	1.0%	.5%					3.6%
Total		Count	9	41	7	37	36	44	11	1	9	195
		% of Total	4.6%	21.0%	3.6%	19.0%	18.5%	22.6%	5.6%	.5%	4.6%	100.0%

Origin * Destination Trip Share Table (I-90, PM Peak, Eastbound)

			Destination											
			Bothell/Woodinville	Downtown/NW Bellevue	East Bellevue	Renton/South Bellevue	Greater Issaquah	Redmond/Overlake	Kirkland/Totem Lake	Mercer Island	South King/Pierce Co.	North Snohomish Co./External	East King Co./External	Total
Origin	Mercer Island	Count		1										1
		% of Total		.4%										.4%
	Lynnwood/Edmonds/Shoreline	Count				1			1				1	3
		% of Total				.4%			.4%				.4%	1.1%
	North Seattle	Count		1	3	5	1	1						11
		% of Total		.4%	1.1%	1.8%	.4%	.4%						4.0%
	University District	Count			2	7	3	1		2	1		1	17
		% of Total			.7%	2.5%	1.1%	.4%		.7%	.4%		.4%	6.1%
	Downtown Seattle	Count	1	6	20	30	21	7	4	2	2		3	96
		% of Total	.4%	2.2%	7.2%	10.8%	7.6%	2.5%	1.4%	.7%	.7%		1.1%	34.5%
	Central Seattle	Count		1	8	9	11	2			2	1	2	36
		% of Total		.4%	2.9%	3.2%	4.0%	.7%			.7%	.4%	.7%	12.9%
	South Seattle	Count	10	4	19	22	10	14	7	1	4	1	5	97
		% of Total	3.6%	1.4%	6.8%	7.9%	3.6%	5.0%	2.5%	.4%	1.4%	.4%	1.8%	34.9%
	South King/Pierce Co.	Count	1	1	2	3	5	2				1	1	16
		% of Total	.4%	.4%	.7%	1.1%	1.8%	.7%				.4%	.4%	5.8%
	West of Puget Sound	Count		1										1
		% of Total		.4%										.4%
Total		Count	12	15	54	77	51	27	12	5	9	3	13	278
		% of Total	4.3%	5.4%	19.4%	27.7%	18.3%	9.7%	4.3%	1.8%	3.2%	1.1%	4.7%	100.0%

Origin * Destination Trip Share Table (SR 522, AM Peak, Westbound)

			Destination										Total
			Bothell/Woodinville	Downtown/NW Bellevue	Kirkland/Totem Lake	Lynnwood/Edmonds.Shoreline	North Seattle	University District	Downtown Seattle	Central Seattle	South Seattle	South King/Pierce Co.	
Origin	Bothell/Woodinville	Count	3			18	14	10	10	5	4	2	66
		% of Total	2.8%			17.0%	13.2%	9.4%	9.4%	4.7%	3.8%	1.9%	62.3%
	Downtown/NW Bellevue	Count				1				1			2
		% of Total				.9%				.9%			1.9%
	Redmond/Overlake	Count				1							1
		% of Total				.9%							.9%
	Kirkland/Totem Lake	Count				6	2		2				10
		% of Total				5.7%	1.9%		1.9%				9.4%
	Lynnwood/Edmonds/Shoreline	Count	1			2	3	1	2	1			10
		% of Total	.9%			1.9%	2.8%	.9%	1.9%	.9%			9.4%
	North Seattle	Count					1						1
		% of Total					.9%						.9%
	North Snohomish Co./External	Count		1	2	1	5		4				13
		% of Total		.9%	1.9%	.9%	4.7%		3.8%				12.3%
	East King Co./External	Count				1	2						3
		% of Total				.9%	1.9%						2.8%
Total		Count	4	1	2	30	27	11	18	7	4	2	106
		% of Total	3.8%	.9%	1.9%	28.3%	25.5%	10.4%	17.0%	6.6%	3.8%	1.9%	100.0%

Origin * Destination Trip Share Table (SR 522, AM Peak, Eastbound)

			Destination									
			Bothell/Woodinville	Downtown/NW Bellevue	East Bellevue	Greater Issaquah	Redmond/Overlake	Kirkland/Totem Lake	Lynnwood/Edmonds Shoreline	North Seattle	North Snohomish Co./External	Total
Origin	Bothell/Woodinville	Count	1					2			2	5
		% of Total	.7%					1.4%			1.4%	3.5%
	Kirkland/Totem Lake	Count							1	1		2
		% of Total							.7%	.7%		1.4%
	Lynnwood/Edmonds/Shoreline	Count	20	6	4	2	19	20	1		2	74
		% of Total	14.2%	4.3%	2.8%	1.4%	13.5%	14.2%	.7%		1.4%	52.5%
	North Seattle	Count	25				7	18			1	51
		% of Total	17.7%				5.0%	12.8%			.7%	36.2%
	University District	Count						1				1
		% of Total						.7%				.7%
	Downtown Seattle	Count						2				2
		% of Total						1.4%				1.4%
	Central Seattle	Count	4		1							5
		% of Total	2.8%		.7%							3.5%
	West of Puget Sound	Count					1					1
		% of Total					.7%					.7%
Total		Count	50	6	5	2	27	43	2	1	5	141
		% of Total	35.5%	4.3%	3.5%	1.4%	19.1%	30.5%	1.4%	.7%	3.5%	100.0%

Origin * Destination Trip Share Table (SR 522, PM Peak, Westbound)

			Destination											
			Bothell/Woodinville	Renton/South Bellevue	Redmond/Overlake	Kirkland/Totem Lake	Lynnwood/Edmonds.Shoreline	North Seattle	University District	Downtown Seattle	Central Seattle	South Seattle	West of Puget Sound	Total
Origin	Bothell/Woodinville	Count	4				22	13	2	2	3	2		48
		% of Total	4.0%				22.2%	13.1%	2.0%	2.0%	3.0%	2.0%		48.5%
	Downtown/NW Bellevue	Count					1	1						2
		% of Total					1.0%	1.0%						2.0%
	East Bellevue	Count					3						1	4
		% of Total					3.0%						1.0%	4.0%
	Renton/South Bellevue	Count					2							2
		% of Total					2.0%							2.0%
	Redmond/Overlake	Count					7	3						10
		% of Total					7.1%	3.0%						10.1%
	Kirkland/Totem Lake	Count					7	3		2				12
		% of Total					7.1%	3.0%		2.0%				12.1%
	Lynnwood/Edmonds/Shoreline	Count	2	1	3	1	3		1	1				12
		% of Total	2.0%	1.0%	3.0%	1.0%	3.0%		1.0%	1.0%				12.1%
	North Seattle	Count							1					1
		% of Total							1.0%					1.0%
	North Snohomish Co./External	Count	2					1	2					5
		% of Total	2.0%					1.0%	2.0%					5.1%
	East King Co./External	Count					2	1						3
		% of Total					2.0%	1.0%						3.0%
Total		Count	8	1	3	1	47	22	6	5	3	2	1	99
		% of Total	8.1%	1.0%	3.0%	1.0%	47.5%	22.2%	6.1%	5.1%	3.0%	2.0%	1.0%	100.0%

Origin * Destination Trip Share Table (SR 522, PM Peak, Eastbound)

			Destination										Total
			Bothell/Woodinville	Downtown/NW Bellevue	East Bellevue	Redmond/Overlake	Kirkland/Totem Lake	Lynnwood/Edmonds Shoreline	North Seattle	University District	North Snohomish Co./External	East King Co./External	
Origin	Bothell/Woodinville	Count	1					1			1		3
		% of Total	.9%					.9%			.9%		2.8%
	Downtown/NW Bellevue	Count	1										1
		% of Total	.9%										.9%
	Redmond/Overlake	Count									1		1
		% of Total									.9%		.9%
	Kirkland/Totem Lake	Count	1										1
		% of Total	.9%										.9%
	Lynnwood/Edmonds/Shoreline	Count	9	1	1	1	5	1			5		23
		% of Total	8.3%	.9%	.9%	.9%	4.6%	.9%			4.6%		21.3%
	North Seattle	Count	26	1	1		6	1			3	1	39
		% of Total	24.1%	.9%	.9%		5.6%	.9%			2.8%	.9%	36.1%
	University District	Count	11		1						2		14
		% of Total	10.2%		.9%						1.9%		13.0%
	Downtown Seattle	Count	6					1			2		9
		% of Total	5.6%					.9%			1.9%		8.3%
	Central Seattle	Count	5	1			1	1	1				9
		% of Total	4.6%	.9%			.9%	.9%	.9%				8.3%
	South Seattle	Count	2					1					3
		% of Total	1.9%					.9%					2.8%
	South King/Pierce Co.	Count					1			1	1		3
		% of Total					.9%			.9%	.9%		2.8%
	North Snohomish Co./External	Count								1			1
		% of Total								.9%			.9%
	East King Co./External	Count							1				1
		% of Total							.9%				.9%
Total		Count	62	3	3	1	13	6	2	2	15	1	108
		% of Total	57.4%	2.8%	2.8%	.9%	12.0%	5.6%	1.9%	1.9%	13.9%	9%	100.0%

Attachment D: "31" Traffic Analysis Zone Trip Share Tables

Origin * Destination Trip Share Table (SR 520, AM Peak, Westbound)

			Destination														
			Northgate	East Central Seattle	West Central Seattle	Northwest Seattle	Northeast Seattle	University District	Downtown Seattle	South Seattle	Shoreline	Lynnwood/Edmonds	Redmond	Overlake	South King County	South of King County	Total
Origin	Bothell	Count		1		2		2	4	1							10
		% of Total		.5%		.9%		.9%	1.9%	.5%							4.7%
	North Bothell	Count						1								1	2
		% of Total						.5%								.5%	.9%
	Woodinville	Count		6	1	1	1	4	11						1		25
		% of Total		2.8%	.5%	.5%	.5%	1.9%	5.2%						.5%		11.7%
	Kirkland/Totem Lake	Count	1	6	4	10	1	1	15	6	1						45
		% of Total	.5%	2.8%	1.9%	4.7%	.5%	.5%	7.0%	2.8%	.5%						21.1%
	Redmond	Count	1	7	2	2	3	8	11	1	1	1					37
		% of Total	.5%	3.3%	.9%	.9%	1.4%	3.8%	5.2%	.5%	.5%	.5%					17.4%
	Overlake	Count	1	3			1	4	5						1		15
		% of Total	.5%	1.4%			.5%	1.9%	2.3%						.5%		7.0%
	Downtown Bellevue	Count							2								2
		% of Total							.9%								.9%
	Northwest Bellevue	Count		5			1	1	12	2					1	1	23
		% of Total		2.3%			.5%	.5%	5.6%	.9%					.5%	.5%	10.8%
	East Bellevue	Count		3			2	4	5	2	1						17
		% of Total		1.4%			.9%	1.9%	2.3%	.9%	.5%						8.0%
	South Bellevue	Count						1									1
		% of Total						.5%									.5%
	East Sammamish	Count			2	1	1	3	1								8
		% of Total			.9%	.5%	.5%	1.4%	.5%								3.8%
	East King County	Count		1		2		3	4	2	1			1			14
		% of Total		.5%		.9%		1.4%	1.9%	.9%	.5%			.5%			6.6%
	NE Snohomish Co.	Count		3		1		2	4								10
		% of Total		1.4%		.5%		.9%	1.9%								4.7%
	East of King County	Count					1	1	1								3
		% of Total					.5%	.5%	.5%								1.4%
	South of King County	Count											1				1
		% of Total											.5%				.5%
Total		Count	3	35	9	19	11	35	75	14	4	1	1	1	3	2	213
		% of Total	1.4%	16.4%	4.2%	8.9%	5.2%	16.4%	35.2%	6.6%	1.9%	.5%	.5%	.5%	1.4%	.9%	100.0%

Origin * Destination Trip Share Table (SR 520, AM Peak, Eastbound)

			Destination												Total
			Northeast Seattle	Bothell	Kirkland/Totem Lake	Redmond	Overlake	Downtown Bellevue	Northwest Bellevue	East Bellevue	East Sammamish	Issaquah	East King County	NE Snohomish Co.	
Origin	Northgate	Count			2	1			2	2					7
		% of Total			.9%	.4%			.9%	.9%					3.1%
	East Central Seattle	Count		1	10	15	3	5	5	10		1	1		51
		% of Total		.4%	4.4%	6.6%	1.3%	2.2%	2.2%	4.4%		.4%	.4%		22.5%
	West Central Seattle	Count			3	11	4	3	2						23
		% of Total			1.3%	4.8%	1.8%	1.3%	.9%						10.1%
	Northwest Seattle	Count	1		9	20	8	9	6	9					62
		% of Total	.4%		4.0%	8.8%	3.5%	4.0%	2.6%	4.0%					27.3%
	Northeast Seattle	Count			4	12	2	1	6	7					32
		% of Total			1.8%	5.3%	.9%	.4%	2.6%	3.1%					14.1%
	University District	Count			2	5	3	3	1	1	1			1	17
		% of Total			.9%	2.2%	1.3%	1.3%	.4%	.4%	.4%			.4%	7.5%
	Downtown Seattle	Count			4	4	3	3	1	4					19
		% of Total			1.8%	1.8%	1.3%	1.3%	.4%	1.8%					8.4%
	South Seattle	Count				1				1					2
		% of Total				.4%				.4%					.9%
	Shoreline	Count			1	4		4		2					11
		% of Total			.4%	1.8%		1.8%		.9%					4.8%
	West of Puget Sound	Count			1		1								2
		% of Total			.4%		.4%								.9%
	South of King County	Count				1									1
		% of Total				.4%									.4%
Total		Count	1	1	36	74	24	28	23	36	1	1	1	1	227
		% of Total	.4%	.4%	15.9%	32.6%	10.6%	12.3%	10.1%	15.9%	.4%	.4%	.4%	.4%	100.0%

Origin * Destination Trip Share Table (SR 520, PM Peak, Westbound)

			Destination															
			Northgate	East Central Seattle	West Central Seattle	Northwest Seattle	Northeast Seattle	University District	Downtown Seattle	South Seattle	Shoreline	Lynnwood/Edmonds	Northwest Bellevue	South King County	West of Puget Sound	North of Snohomish Co.	South of King County	Total
Origin	Bothell	Count		1	1			2	2									6
		% of Total		.6%	.6%			1.2%	1.2%									3.7%
	North Bothell	Count		2			1											3
		% of Total		1.2%			.6%											1.9%
	Woodinville	Count		1		1												2
		% of Total		.6%		.6%												1.2%
	Kirkland/Totem Lake	Count	1	6	4	10	4	2	11	4		1					1	44
		% of Total	.6%	3.7%	2.5%	6.2%	2.5%	1.2%	6.8%	2.5%		.6%					.6%	27.3%
	Redmond	Count		3	2	8	1	2	6		1		1	1	1			26
		% of Total		1.9%	1.2%	5.0%	.6%	1.2%	3.7%		.6%		.6%	.6%	.6%			16.1%
	Overlake	Count		1		3	1	2	2		1							10
		% of Total		.6%		1.9%	.6%	1.2%	1.2%		.6%							6.2%
	Downtown Bellevue	Count	1	3	2	5	3	3			2							19
		% of Total	.6%	1.9%	1.2%	3.1%	1.9%	1.9%			1.2%							11.8%
	Northwest Bellevue	Count	1	3	1	3	2	2	2									14
		% of Total	.6%	1.9%	.6%	1.9%	1.2%	1.2%	1.2%									8.7%
	East Bellevue	Count	1	2	3	4	1	4	1		2					1		19
		% of Total	.6%	1.2%	1.9%	2.5%	.6%	2.5%	.6%		1.2%					.6%		11.8%
	South Bellevue	Count	1				1	1			1						1	5
		% of Total	.6%				.6%	.6%			.6%						.6%	3.1%
	East Sammamish	Count		1				1	1									3
		% of Total		.6%				.6%	.6%									1.9%
	Issaquah	Count						1										1
		% of Total						.6%										.6%
	East King County	Count		1			2	2	1		1							7
		% of Total		.6%			1.2%	1.2%	.6%		.6%							4.3%
	NE Snohomish Co.	Count							1									1
		% of Total							.6%									.6%
	South of King County	Count														1		1
		% of Total														.6%		.6%
Total		Count	5	24	13	34	16	22	27	4	8	1	1	1	1	2	2	161
		% of Total	3.1%	14.9%	8.1%	21.1%	9.9%	13.7%	16.8%	2.5%	5.0%	.6%	.6%	.6%	.6%	1.2%	1.2%	100.0%

Origin * Destination Trip Share Table (SR 520, PM Peak, Eastbound)

			Destination																			Total
			Bothell	North Bothell	Woodinville	Kirkland/Totem Lake	Redmond	Overlake	Downtown Bellevue	Northwest Bellevue	East Bellevue	South Bellevue	Mercer Island	East Sammamish	Issaquah	Renton	East King County	NE Snohomish Co.	South King County	North of Snohomish Co.	East of King County	
Origin	Northgate	Count				1	1			1	1											4
		% of Total				.5%	.5%			.5%	.5%											2.0%
	East Central Seattle	Count	1		3	11	6	3	1	4	2	1				1	1					34
		% of Total	.5%		1.5%	5.6%	3.1%	1.5%	.5%	2.0%	1.0%	.5%				.5%	.5%					17.3%
	West Central Seattle	Count				5	3	3	2	4												17
		% of Total				2.6%	1.5%	1.5%	1.0%	2.0%												8.7%
	Northwest Seattle	Count				7	4	1	2	5	2	1		1	1			1				25
		% of Total				3.6%	2.0%	.5%	1.0%	2.6%	1.0%	.5%		.5%	.5%			.5%				12.8%
	Northeast Seattle	Count				5	1		2	1	2			1								12
		% of Total				2.6%	.5%		1.0%	.5%	1.0%			.5%								6.1%
	University District	Count			2	7	2	2	2	3	5	3	1	2	1	1	2		1		1	35
		% of Total			1.0%	3.6%	1.0%	1.0%	1.0%	1.5%	2.6%	1.5%	.5%	1.0%	.5%	.5%	1.0%		.5%		.5%	17.9%
	Downtown Seattle	Count	1	1	8	10	10	3	3	9	6	1		1			1			1		55
		% of Total	.5%	.5%	4.1%	5.1%	5.1%	1.5%	1.5%	4.6%	3.1%	.5%		.5%			.5%			.5%		28.1%
	South Seattle	Count				2											1	2				5
		% of Total				1.0%											.5%	1.0%				2.6%
	Shoreline	Count				2			1		1				1							5
		% of Total				1.0%			.5%		.5%				.5%							2.6%
	Bothell	Count							1													1
		% of Total							.5%													.5%
	South Bellevue	Count											1									1
		% of Total											.5%									.5%
	South King County	Count			1																	1
		% of Total			.5%																	.5%
	North of Snohomish Co.	Count																	1			1
		% of Total																	.5%			.5%
Total		Count	2	1	14	50	27	12	14	27	19	6	2	5	3	2	5	3	2	1	1	196
		% of Total	1.0%	.5%	7.1%	25.5%	13.8%	6.1%	7.1%	13.8%	9.7%	3.1%	1.0%	2.6%	1.5%	1.0%	2.6%	1.5%	1.0%	.5%	.5%	100.0%

Origin * Destination Trip Share Table (I-90, AM Peak, Westbound)

			Destination																	Total
			Northgate	East Central Seattle	West Central Seattle	Northwest Seattle	Northeast Seattle	University District	Downtown Seattle	South Seattle	Shoreline	Lynnwood/Edmonds	Bothell	North Bothell	Mercer Island	South King County	West of Puget Sound	North of Snohomish Co.	South of King County	
Origin	Bothell	Count							2	2						1				5
		% of Total							.7%	.7%						.3%				1.7%
	North Bothell	Count							1											1
		% of Total							.3%											.3%
	Kirkland/Totem Lake	Count							4	6						3				13
		% of Total							1.4%	2.0%						1.0%				4.4%
	Redmond	Count		1					3	3						1				8
		% of Total		.3%					1.0%	1.0%						.3%				2.7%
	Overlake	Count		1					3	2			1							7
		% of Total		.3%					1.0%	.7%			3%							2.4%
	Downtown Bellevue	Count		1		1			3	1										6
		% of Total		.3%		.3%			1.0%	.3%										2.0%
	Northwest Bellevue	Count					1		3	2										6
		% of Total					.3%		1.0%	.7%										2.0%
	East Bellevue	Count	1	4	3	2		3	31	9	1					2				56
		% of Total	.3%	1.4%	1.0%	.7%		1.0%	10.5%	3.1%	.3%					.7%				19.0%
	South Bellevue	Count	1	10	3	6	4	6	37	11	1	1					1		1	82
		% of Total	.3%	3.4%	1.0%	2.0%	1.4%	2.0%	12.5%	3.7%	.3%	.3%					.3%		.3%	27.8%
	Mercer Island	Count						1	2	1										4
		% of Total						.3%	.7%	.3%										1.4%
	East Sammamish	Count	1	2	2	3			16	8	1			1				1	1	36
		% of Total	.3%	.7%	.7%	1.0%			5.4%	2.7%	.3%			.3%				.3%	.3%	12.2%
	Issaquah	Count		3	4	1		2	11	3						1				25
		% of Total		1.0%	1.4%	.3%		.7%	3.7%	1.0%						.3%				8.5%
	Renton	Count			1	1	2		9	5										18
		% of Total			.3%	.3%	.7%		3.1%	1.7%										6.1%
	East King County	Count	1	1					6	3					1					12
		% of Total	.3%	.3%					2.0%	1.0%					.3%					4.1%
	NE Snohomish Co.	Count								1										1
		% of Total								.3%										.3%
	South King County	Count		2			1		4	1										8
		% of Total		.7%			.3%		1.4%	.3%										2.7%
	East of King County	Count			1				4	2										7
		% of Total			.3%				1.4%	.7%										2.4%
Total		Count	4	25	14	14	8	12	139	60	3	1	1	1	1	8	1	1	2	295
		% of Total	1.4%	8.5%	4.7%	4.7%	2.7%	4.1%	47.1%	20.3%	1.0%	.3%	.3%	.3%	.3%	2.7%	.3%	.3%	.7%	100.0%

Origin * Destination Trip Share Table (I-90, AM Peak, Eastbound)

			Destination																	
			Bothell	North Bothell	Woodinville	Kirkland/Totem Lake	Redmond	Overlake	Downtown Bellevue	Northwest Bellevue	East Bellevue	South Bellevue	Mercer Island	East Sammamish	Issaquah	Renton	East King County	North of Snohomish Co.	East of King County	Total
Origin	Northgate	Count											1							1
		% of Total											.4%							.4%
	East Central Seattle	Count			1	1	3		4	1	7	7		2		2	1	1	1	31
		% of Total			.4%	.4%	1.2%		1.6%	.4%	2.8%	2.8%		.8%		.8%	.4%	.4%	.4%	12.6%
	West Central Seattle	Count					2	1	8	2	6	4		3	1	2				29
		% of Total					.8%	.4%	3.3%	.8%	2.4%	1.6%		1.2%	.4%	.8%				11.8%
	Northwest Seattle	Count				1	2		4		19	7	3	3	2	1			1	43
		% of Total				.4%	.8%		1.6%		7.7%	2.8%	1.2%	1.2%	.8%	.4%			.4%	17.5%
	Northeast Seattle	Count							1		3			2	1	1				8
		% of Total							.4%		1.2%			.8%	.4%	.4%				3.3%
	University District	Count									4	1			1					6
		% of Total									1.6%	.4%			.4%					2.4%
	Downtown Seattle	Count					4	1	4		2	2		1	2	1				17
		% of Total					1.6%	.4%	1.6%		.8%	.8%		.4%	.8%	.4%				6.9%
	South Seattle	Count	5	1		4	12	4	12	2	18	3	1	4	2	1			1	70
		% of Total	2.0%	.4%		1.6%	4.9%	1.6%	4.9%	.8%	7.3%	1.2%	.4%	1.6%	.8%	.4%			.4%	28.5%
	Shoreline	Count									1	3		1	2	1	1			9
		% of Total									.4%	1.2%		.4%	.8%	.4%	.4%			3.7%
	Lynnwood/Edmonds	Count									1								1	2
		% of Total									.4%								.4%	.8%
	NE Snohomish Co.	Count										1								1
		% of Total										.4%								.4%
	South King County	Count				2	3		2	1	9	3	1		2					23
		% of Total				.8%	1.2%		.8%	.4%	3.7%	1.2%	.4%		.8%					9.3%
	West of Puget Sound	Count							1											1
		% of Total							.4%											.4%
	South of King County	Count		2				1	1		1									5
		% of Total		.8%				.4%	.4%		.4%									2.0%
Total		Count	5	3	1	8	26	7	37	6	71	31	6	16	13	9	2	1	4	246
		% of Total	2.0%	1.2%	.4%	3.3%	10.6%	2.8%	15.0%	2.4%	28.9%	12.6%	2.4%	6.5%	5.3%	3.7%	.8%	.4%	1.6%	100.0%

Origin * Destination Trip Share Table (I-90, PM Peak, Westbound)

			Destination														Total
			Northgate	East Central Seattle	West Central Seattle	Northwest Seattle	Northeast Seattle	University District	Downtown Seattle	South Seattle	Shoreline	Lynnwood/Edmonds	South King County	West of Puget Sound	North of Snohomish Co	South of King County	
Origin	Lynnwood/Edmonds	Count								1							1
		% of Total								.5%							.5%
	Bothell	Count		1										1			2
		% of Total		.5%										.5%			1.0%
	North Bothell	Count							1	2							3
		% of Total							.5%	1.0%							1.5%
	Woodinville	Count		1						2							3
		% of Total		.5%						1.0%							1.5%
	Kirkland/Totem Lake	Count		2	1		1										4
		% of Total		1.0%	.5%		.5%										2.1%
	Redmond	Count	1			1	1		1	11			2	1			18
		% of Total	.5%			.5%	.5%		.5%	5.7%			1.0%	.5%			9.3%
	Overlake	Count			1	1			2	1							5
		% of Total			.5%	.5%			1.0%	.5%							2.6%
	Downtown Bellevue	Count			2	3		1	6	5		1	2	3			23
		% of Total			1.0%	1.5%		.5%	3.1%	2.6%		.5%	1.0%	1.5%			11.9%
	Northwest Bellevue	Count								1							1
		% of Total								.5%							.5%
	East Bellevue	Count	1	10	3	10	5	2	3	11	2	2	2	4		1	56
		% of Total	.5%	5.2%	1.5%	5.2%	2.6%	1.0%	1.5%	5.7%	1.0%	1.0%	1.0%	2.1%		.5%	28.9%
	South Bellevue	Count		5	2	4	2		10	2		2	2		1		30
		% of Total		2.6%	1.0%	2.1%	1.0%		5.2%	1.0%		1.0%	1.0%		.5%		15.5%
	Mercer Island	Count		1		1				2						1	5
		% of Total		.5%		.5%				1.0%						.5%	2.6%
	East Sammamish	Count			4	2	1		4	3		1	1				16
		% of Total			2.1%	1.0%	.5%		2.1%	1.5%		.5%	.5%				8.2%
	Issaquah	Count			2	2	1		3	2							10
		% of Total			1.0%	1.0%	.5%		1.5%	1.0%							5.2%
	Renton	Count				1		2	4		1						8
		% of Total				.5%		1.0%	2.1%		.5%						4.1%
	East King County	Count				1			2								3
		% of Total				.5%			1.0%								1.5%
	NE Snohomish Co.	Count								1							1
		% of Total								.5%							.5%
	South King County	Count							1								1
		% of Total							.5%								.5%
	East of King County	Count		1			1	2									4
		% of Total		.5%			.5%	1.0%									2.1%
Total		Count	2	21	15	26	12	7	37	44	3	6	9	9	1	2	194
		% of Total	1.0%	10.8%	7.7%	13.4%	6.2%	3.6%	19.1%	22.7%	1.5%	3.1%	4.6%	4.6%	.5%	1.0%	100.0%

Origin * Destination Trip Share Table (I-90, PM Peak, Eastbound)

			Destination																		Total
			Bothell	North Bothell	Woodinville	Kirkland/Totem Lake	Redmond	Overlake	Downtown Bellevue	Northwest Bellevue	East Bellevue	South Bellevue	Mercer Island	East Sammamish	Issaquah	Renton	East King County	NE Snohomish Co.	South King County	East of King County	
Origin	Northgate	Count										1									1
		% of Total										.4%									.4%
	East Central Seattle	Count						2			4	3		3	3	2			1	1	19
		% of Total						.7%			1.4%	1.1%		1.1%	1.1%	.7%			.4%	.4%	6.9%
	West Central Seattle	Count							1		4	4		2	3			1	1	1	17
		% of Total							.4%		1.4%	1.4%		.7%	1.1%			.4%	.4%	.4%	6.1%
	Northwest Seattle	Count						1			2	1			1	1					6
		% of Total						.4%			.7%	.4%			.4%	.4%					2.2%
	Northeast Seattle	Count							1		1					2					4
		% of Total							.4%		.4%					.7%					1.4%
	University District	Count					1				2	3	2	2	1	4			1	1	17
		% of Total					.4%				.7%	1.1%	.7%	.7%	.4%	1.4%			.4%	.4%	6.1%
	Downtown Seattle	Count	1			4	5	2	4	2	20	24	2	15	6	6	3		2		96
		% of Total	.4%			1.4%	1.8%	.7%	1.4%	.7%	7.2%	8.7%	.7%	5.4%	2.2%	2.2%	1.1%		.7%		34.7%
	South Seattle	Count	2	3	5	7	9	5	2	2	19	16		7	3	6	3	1	4	2	96
		% of Total	.7%	1.1%	1.8%	2.5%	3.2%	1.8%	.7%	.7%	6.9%	5.8%		2.5%	1.1%	2.2%	1.1%	.4%	1.4%	.7%	34.7%
	Shoreline	Count				1															1
		% of Total				.4%															.4%
	Lynnwood/Edmonds	Count															1				1
		% of Total															.4%				.4%
	South Bellevue	Count											1								1
		% of Total											.4%								.4%
	Mercer Island	Count							1												1
		% of Total							.4%												.4%
	South King County	Count			1		1	1	1		1	2		4	1			1		1	14
		% of Total			.4%		.4%	.4%	.4%		.4%	.7%		1.4%	.4%			.4%		.4%	5.1%
	West of Puget Sound	Count							1												1
		% of Total							.4%												.4%
	South of King County	Count									1	1									2
		% of Total									.4%	.4%									.7%
Total		Count	3	3	6	12	16	11	11	4	54	55	5	33	18	21	7	3	9	6	277
		% of Total	1.1%	1.1%	2.2%	4.3%	5.8%	4.0%	4.0%	1.4%	19.5%	19.9%	1.8%	11.9%	6.5%	7.6%	2.5%	1.1%	3.2%	2.2%	100.0%

Origin * Destination Trip Share Table (SR 522, AM Peak, Westbound)

			Destination																
			Northgate	East Central Seattle	West Central Seattle	Northwest Seattle	Northeast Seattle	University District	Downtown Seattle	South Seattle	Shoreline	Lynnwood/Edmonds	Bothell	Kirkland/Totem Lake	Downtown Bellevue	NE Snohomish Co.	South King County	South of King County	Total
Origin	Northwest Seattle	Count				1													1
		% of Total				.9%													.9%
	Shoreline	Count	2		1	1		1	2		2								9
		% of Total	1.9%		.9%	.9%		.9%	1.9%		1.9%								8.4%
	Lynnwood/Edmonds	Count											1						1
		% of Total											.9%						.9%
	Bothell	Count	1	3	2	9	3	10	5	2	12	2	1				1	1	52
		% of Total	.9%	2.8%	1.9%	8.4%	2.8%	9.3%	4.7%	1.9%	11.2%	1.9%	.9%				.9%	.9%	48.6%
	North Bothell	Count	1						5	2	3		1						12
		% of Total	.9%						4.7%	1.9%	2.8%		.9%						11.2%
	Woodinville	Count									2								2
		% of Total									1.9%								1.9%
	Kirkland/Totem Lake	Count				2			2		6								10
		% of Total				1.9%			1.9%		5.6%								9.3%
	Redmond	Count									1								1
		% of Total									.9%								.9%
	Downtown Bellevue	Count										1							1
		% of Total										.9%							.9%
	Northwest Bellevue	Count			1														1
		% of Total			.9%														.9%
	East King County	Count	1																1
		% of Total	.9%																.9%
	NE Snohomish Co.	Count				2	3		4		1			1	1	1			13
		% of Total				1.9%	2.8%		3.7%		.9%			.9%	.9%	.9%			12.1%
	North of Snohomish Co.	Count												1					1
		% of Total												.9%					.9%
	East of King County	Count					1				1								2
		% of Total					.9%				.9%								1.9%
Total		Count	5	3	4	15	7	11	18	4	28	3	3	2	1	1	1	1	107
		% of Total	4.7%	2.8%	3.7%	14.0%	6.5%	10.3%	16.8%	3.7%	26.2%	2.8%	2.8%	1.9%	.9%	.9%	.9%	.9%	100.0%

Origin * Destination Trip Share Table (SR 522, AM Peak, Eastbound)

			Destination															
			Northeast Seattle	Shoreline	Lynnwood/Edmonds	Bothell	North Bothell	Woodinville	Kirkland/Totem Lake	Redmond	Overlake	Downtown Bellevue	Northwest Bellevue	East Bellevue	East Sammamish	Issaquah	NE Snohomish Co.	North of Snohomish Co.	Total
Origin	Northgate	Count				4		1	4	2									11
		% of Total				2.8%		.7%	2.8%	1.4%									7.8%
	East Central Seattle	Count				2		1											3
		% of Total				1.4%		.7%											2.1%
	West Central Seattle	Count					1							1					2
		% of Total					.7%							.7%					1.4%
	Northwest Seattle	Count				8		2	6										16
		% of Total				5.7%		1.4%	4.3%										11.3%
	Northeast Seattle	Count				3	5	2	8	5							1		24
		% of Total				2.1%	3.5%	1.4%	5.7%	3.5%							.7%		17.0%
	University District	Count							1										1
		% of Total							.7%										.7%
	Downtown Seattle	Count							2										2
		% of Total							1.4%										1.4%
	Shoreline	Count		1		12		4	12	10	3	3		4			1		50
		% of Total		.7%		8.5%		2.8%	8.5%	7.1%	2.1%	2.1%		2.8%			.7%		35.5%
	Lynnwood/Edmonds	Count				3		1	8	6		1	2		1	1	1		24
		% of Total				2.1%		.7%	5.7%	4.3%		.7%	1.4%		.7%	.7%	.7%		17.0%
	Bothell	Count						1	1									2	4
		% of Total						.7%	.7%									1.4%	2.8%
	North Bothell	Count							1										1
		% of Total							.7%										.7%
	Kirkland/Totem Lake	Count	1		1														2
		% of Total	.7%		.7%														1.4%
	West of Puget Sound	Count								1									1
		% of Total								.7%									.7%
Total		Count	1	1	1	32	6	12	43	24	3	4	2	5	1	1	3	2	141
		% of Total	.7%	.7%	.7%	22.7%	4.3%	8.5%	30.5%	17.0%	2.1%	2.8%	1.4%	3.5%	.7%	.7%	2.1%	1.4%	100.0%

Origin * Destination Trip Share Table (SR 522, PM Peak, Westbound)

			Destination																
			Northgate	East Central Seattle	West Central Seattle	Northwest Seattle	Northeast Seattle	University District	Downtown Seattle	South Seattle	Shoreline	Lynnwood/Edmonds	Bothell	North Bothell	Kirkland/Totem Lake	Redmond	South Bellevue	West of Puget Sound	Total
Origin	Northgate	Count						1											1
		% of Total						1.0%											1.0%
	Shoreline	Count						1	1		1	1	1			1	1		7
		% of Total						1.0%	1.0%		1.0%	1.0%	1.0%			1.0%	1.0%		7.1%
	Lynnwood/Edmonds	Count										1	1		1	2			5
		% of Total										1.0%	1.0%		1.0%	2.0%			5.1%
	Bothell	Count	3	2	1	1	3	1		2	8	7	4						32
		% of Total	3.0%	2.0%	1.0%	1.0%	3.0%	1.0%		2.0%	8.1%	7.1%	4.0%						32.3%
	North Bothell	Count				1			2		1	1							5
		% of Total				1.0%			2.0%		1.0%	1.0%							5.1%
	Woodinville	Count	1			2	2	1			3	2							11
		% of Total	1.0%			2.0%	2.0%	1.0%			3.0%	2.0%							11.1%
	Kirkland/Totem Lake	Count				3			2		3	4							12
		% of Total				3.0%			2.0%		3.0%	4.0%							12.1%
	Redmond	Count					1				4	3							8
		% of Total					1.0%				4.0%	3.0%							8.1%
	Overlake	Count	1			1													2
		% of Total	1.0%			1.0%													2.0%
	Downtown Bellevue	Count					1												1
		% of Total					1.0%												1.0%
	Northwest Bellevue	Count									1								1
		% of Total									1.0%								1.0%
	East Bellevue	Count									1	2						1	4
		% of Total									1.0%	2.0%						1.0%	4.0%
	Renton	Count									1	1							2
		% of Total									1.0%	1.0%							2.0%
	East King County	Count									2								2
		% of Total									2.0%								2.0%
	NE Snohomish Co.	Count				1		2					1	1					5
		% of Total				1.0%		2.0%					1.0%	1.0%					5.1%
	East of King County	Count	1																1
		% of Total	1.0%																1.0%
Total		Count	6	2	1	9	7	6	5	2	25	22	7	1	1	3	1	1	99
		% of Total	6.1%	2.0%	1.0%	9.1%	7.1%	6.1%	5.1%	2.0%	25.3%	22.2%	7.1%	1.0%	1.0%	3.0%	1.0%	1.0%	100.0%

Origin * Destination Trip Share Table (SR 522, PM Peak, Eastbound)

			Destination															Total
			Northgate	Northeast Seattle	University District	Shoreline	Lynnwood/Edmonds	Bothell	North Bothell	Woodinville	Kirkland/Totem Lake	Redmond	Downtown Bellevue	Northwest Bellevue	East Bellevue	East King County	NE Snohomish Co	
Origin	Northgate	Count						3	1		2		1					7
		% of Total						2.8%	.9%		1.8%		.9%					6.4%
	East Central Seattle	Count		1		1		3						1				6
		% of Total		.9%		.9%		2.8%						9%				5.5%
	West Central Seattle	Count						2			1							3
		% of Total						1.8%			.9%							2.8%
	Northwest Seattle	Count				1		8		3	4					1	1	18
		% of Total				.9%		7.3%		2.8%	3.7%					.9%	.9%	16.5%
	Northeast Seattle	Count						6		5					1		2	14
		% of Total						5.5%		4.6%					.9%		1.8%	12.8%
	University District	Count						6	2	3					1		2	14
		% of Total						5.5%	1.8%	2.8%					.9%		1.8%	12.8%
	Downtown Seattle	Count				1		5		1							2	9
		% of Total				.9%		4.6%		.9%							1.8%	8.3%
	South Seattle	Count				1			1	1								3
		% of Total				.9%			.9%	.9%								2.8%
	Shoreline	Count				1		4		1	3	1			1		4	15
		% of Total				.9%		3.7%		.9%	2.8%	.9%			.9%		3.7%	13.8%
	Lynnwood/Edmonds	Count						4			2		1				1	8
		% of Total						3.7%			1.8%		9%				.9%	7.3%
	Bothell	Count					1	1	1								1	4
		% of Total					.9%	.9%	.9%								.9%	3.7%
	Kirkland/Totem Lake	Count								1								1
		% of Total								.9%								.9%
	Overlake	Count															1	1
		% of Total															.9%	.9%
	Downtown Bellevue	Count							1									1
		% of Total							.9%									.9%
	NE Snohomish Co	Count			1													1
		% of Total			.9%													.9%
	South King County	Count			1						1						1	3
		% of Total			.9%						.9%						.9%	2.8%
	East of King County	Count	1															1
		% of Total	.9%															.9%
Total		Count	1	1	2	5	1	42	6	15	13	1	2	1	3	1	15	109
		% of Total	.9%	.9%	1.8%	4.6%	.9%	38.5%	5.5%	13.8%	11.9%	.9%	1.8%	.9%	2.8%	.9%	13.8%	100.0%

Trans-Lake Washington Study

Appendix 9
Public Meeting Comment Summaries

TRANS-LAKE WASHINGTON STUDY
PUBLIC WORKSHOP SUMMARY
SEPTEMBER 22, 1998
KENMORE JUNIOR HIGH

Number of Attendees

Eight, plus four Study Committee members

Attendees included the Mayor of Kenmore, the City Manager of Kenmore, and several Kenmore City Council Members.

General Comments

- It takes two hours to get from downtown Seattle to Kenmore via bus. This is an example of why alternative forms of transportation simply don't work well here. It's very frustrating!
- You have not scheduled any public workshops for Redmond or Kirkland – this is a serious oversight, since the residents of those cities are dependent on 520.
- We really appreciate that you have come to Kenmore.
- As a brand new city, we are concerned about traffic to **and through** Kenmore, as well as traffic across Lake Washington.
- Is the 522 study in sync with this one? It would not be good if work taking place under 522 had to be redone because of the findings of the Trans-Lake Study.

Comments Regarding the Problem Statement

- This is a fine and fair statement.
- I think it dances around the issues somewhat, particularly costs and funding of any improvements. Who pays and how they pay are crucial components of any final solution.
- User information and lack of knowledge are a part of the problem, as well. They should be included in the problem statement.

Comments Regarding the Potential Concepts

- Road use is under priced in general. We should be paying the true costs for building and maintaining our roads.
- A gas tax should be explored.
- There are too many ideas on this list. Some of them are a real "reach." How are you going to narrow it, and how many concepts do you expect to have in July 1999?
- People in this country are married to their cars. We need to do a better job of educating them about the kinds of impacts this lifestyle means for our quality of life

and the environment over the long term. We need to grapple with: lifestyle changes, or adding more lanes? How do we change behaviors?

- We should use Europe as a model; look to them for ideas on how to have more and better transit options, and mixed-use areas in the city. (Kenmore has this vision for its future.)
- I'm concerned that anything that gets done will be too little, too late.
- We can't go with Band-Aid approaches anymore. We need to fix the entire problem.
- Any solution will probably have to contend with some NIMBY issues. How do we get over that? We need to realize there are millions of commuters out there that need real solutions. We can't get sideswiped by a few property owners.
- Right now there is no connection between property taxes and roads. But there should be. People should understand that it will simply cost more in order to put some of these solutions in place.
- We should be sending some kind of message: if you use the roads more, you will have to pay more.

Comments Regarding Possible Evaluation Criteria

- Cost is obviously an important factor for evaluation.
- The aesthetics of any proposed solutions are important.
- The solutions should be based on the amount of travel time they ultimately save.
- Don't forget to consider the impacts on business of any possible solutions.
- The committee should consider which solutions will provide the most benefits to the greatest number of people.
- We will always have this tension between the need to have functioning regional travel and the impacts on certain neighborhoods. Somehow, that needs to be reconciled.
- The committee should search for the "low hanging fruit." What can we buy into that could be implemented fairly easily, and yet have a great deal of public visibility, as well?

PUBLIC MEETING SUMMARY
29 SEPTEMBER 1998
BELLEVUE DOUBLETREE INN

Number of Attendees

Twenty four, plus four Study Committee members

General Comments

- Who is ultimately responsible for adopting, and implementing the recommendations of the Committee?
- The Study Committee is more like the "prom committee." 43 people meeting once a month for half an hour isn't enough. We need more concerted, focused thinking. Perhaps a computer chat room so there could be continuous conversation, study committee could be more involved.
- Public education is a real issue. We need to get more people attending these meetings!

Comments Regarding the Problem Statement

- Not enough emphasis on business centers and economics, include economic vitality.
- Add air and noise pollution.
- Think in terms of both short-term and long-term solutions.
- We need to look at where growth will occur in the next ten years. We need to forecast growth and extend traffic studies to analyze the flow patterns in these areas.
- Don't limit vision to just the Trans-Lake corridor. There is a big network, lots of pinch points. You need to look all the way from Everett to Tacoma.
- There is a lot of frustration with growth management. We need to have the infrastructure in place at the time that jobs are created, not after the fact.

Comments on the List of Potential Concepts

- Elliott Bay water taxi has proven viable. At first thought to be just a commuter run, now also supported by recreation, bicycles to Alki.
- Any incentive to have big delivery vehicles run at night/off peak?
- Need some sort of environment tax. Put it at the gas pump, but call it an enviro tax. Lost of environmental cost that seems to be free. Are we willing to pay for a great environment?
- Trucks slow down on hills, slow all traffic. Eliminating trucks will help the flow, but where do they go?

- Boeing has shifted most plane production to nighttime because it is more efficient. Increased congestion affects efficiency.
- The cost of gas and HOV lanes will not get people out of cars. People will do what they want, when they want. Need trains and bus to meet the need.
- We need drivers' education for newcomers to the area and the US.
- We need to accept that it's okay to build new roads. Society is choosing that they love their cars and want to drive. The Committee should realize people are moving away from mass transit.
- Infill is a drawback. The price of property skyrockets and it's costly to acquire right-of-way. We can't afford to expand infrastructure. Most people aren't looking for high-density life.
- Public transit is not feasible.
- Look at the philosophy of the study—do we get people out of their cars by attracting them or by forcing them out? Let's wait a couple more years for improved technology—use electric cars on guideway system. People will choose this if we wait for the technology.
- Pick some city or area to emulate. Hong Kong is impressive. Are there other US cities that Seattle could look at?

Comments Regarding the Evaluation Criteria

- Does it reduce congestion?
- Does it provide for a mix of alternative choices?
- Is it feasible in terms of cost?
- The solutions need to make wise use of public money.
- It's important to quantify the percentage of usage for each particular approach.
- Does it have negative or positive effects on the environment?
- Don't avoid dealing with the issue by putting it off on another community or study.
- It's important to have a good understanding of where people live and work, and where they travel throughout the day. You need to know where the pinch points are in the traffic network.
- People judge what is feasible too quickly. Things get cut early because they look too expensive. But people don't realize what it will really take to reduce congestion. The investment will be worth it if it **really** reduces congestion.
- Start backwards—lay out the most extreme solutions on a huge map, everything you would do to fix every problem. Then begin to eliminate those you can't live with. What you are left with in the end will be the solution.

Trans-Lake Washington Study
Public Workshop Summary
October 1, 1998
Seattle
Museum of History and Industry

Number of Attendees

Thirty-eight, plus seven Study Committee members

General Comments

- Have you done origin and destination studies to better understand the extent of the problem?
- When and how will you assign costs to the various alternatives you develop?
- Who is ultimately responsible for ensuring that the solutions are implemented?
- Does the funding exist for the solutions?
- Will the solutions be subject to a public vote before they are implemented?

Comments Regarding the Problem Statement

- There are too many cars on the road and not enough incentive for people to get out of their cars. We need to develop better incentives.
- The statement needs more quantitative definitions. For example, how do you quantify congestion? If we have a shortfall of capacity, how much shortfall do we have?
- Right now we are out of balance. What is a problem for some people is not a problem for others. Everyone has a different way of characterizing the problem.
- How do we define appropriate expectations for people? It could be that our societal expectations are too high. Maybe we should lower our expectations of the time it should take us to travel from Point A to Point B.
- The problem needs to presented in a balanced way. Land use, demand management, and concurrency all have to be included as part of the problem, as well as part of the solution.
- The problem statement needs to be clear. Is it really congestion that is the problem, or is it travel time and the unpredictability of that travel?
- Make sure the entire network is included as part of the problem, and part of what needs to be studied. You can't just fix one piece of the network.
- It's important not to ignore the needs of the Single Occupancy Vehicle commuter. I can't use transit because I travel to different places during the day. I don't have other options available to me.

- It's not just commuters we're talking about here. Businesses have needs too. You have to take into the account the needs to transport goods and services, as well as people.

Comments Regarding the Potential Concepts

- The unique topography of the area requires creative thinking.
- Our area needs more rapid transit options.
- We should take advantage of ferries. Look at Vancouver, for example, and what they do up there.
- Free buses would make a big difference.
- If you look at the charts, you can see that, consistently over a number of years, the single occupancy vehicle has accounted for most of the trips across Lake Washington. Behavioral change might not be much of a reality. We need to account for the fact that SOVs are going to remain important to people.
- Make incentives for companies to stagger start times and business hours. That would mean fewer cars and trucks on the road at rush hour.
- Build another bridge north of Sandpoint.
- Bridges require too much "funneling" of traffic. That's the same problem we have right now.
- Adding new lanes is just a knee-jerk, temporary solution. Every study says that adding lanes doesn't solve the problem over the long term.
- I'm not sure every study says that. 60-80% of the traffic on the road is related to the movement of goods and services. We need more capacity for that need.
- There are lots of models of other cities to look at throughout the world. Let's study them. What have they done right? What have they done wrong? What can we copy?
- Remember that there are economic costs to the "do nothing" alternative also. Companies will leave this area because their workers cannot physically get to work on time.
- Rather than just provide free bus service, let's evaluate free buses for one year. Let's determine: what kind of a difference did free buses make? How did they change the behaviors of commuters?
- More people would commute by bike if there were covered bike lanes.
- We should have a "no concrete" alternative. Use that as a baseline alternative and evaluate other options against it.
- Two ideas that should be explored: specialty lanes for motorcycles, etc., and a "convoy" system.
- We should have a system of jitneys.

Comments Regarding the Evaluation Criteria

- Again, you need concrete, quantifiable measures. What is the objective you are trying to achieve? What is your goal for less congestion, shorter travel time, fewer cars on the road? What are the quantifiable standards you want to aim for? Without a vision of where you want to go, without specific targets, you won't know how to evaluate options.
- A long-term view is necessary. A 30-year timeframe should be used when evaluating ideas.
- One way to go about it is to think about "average body speed" on the roads. We should strive to maintain this at 30 mph.
- Cost-effectiveness is key.
- You are going to have "big bites" and "little nibbles." Go for the big bites first, and add the little nibbles later.
- Think about how many people are using transportation of all kinds and choose the most cost-effective and time-effective alternatives.
- Pollution is important, and in a comprehensive sense. Consider the impacts of the alternatives on air, noise, and water pollution. Use as a baseline measurement: we don't want pollution to get any worse.
- It's important to think about pollution in the global sense, as well – particularly the use of fossil fuels and lubricants.
- The solutions should be ones that minimize fuel use.
- The solutions should be equitable in an economic sense. How will the solutions be paid for? Who is going to be subsidizing them?
- The solutions should be sustainable, looking forward to 30 or 40 years.
- The solutions have to strive for balance. What is one neighborhood's solution, for example, might create negative impacts in another neighborhood. We have to make certain the solutions are balanced in a way that accounts for these differences.
- What's the vision for our city over the next 30-40 years? What do we want to be? Is our population concentrated appropriately to achieve that vision?
- We're likely to have winners and losers with each alternative. We need to figure out a way to have the solutions be "win/wins."

Appendix B

Comments from Workshops Set #2

KIRKLAND WORKSHOP MAY 24, 1999

#1 No Action (1)

Selection Reasons:

- Other options are too expensive; too much public money for what is a small geographic area
- Latent demand will fill new bridges & lanes
- Lifestyle choices (i.e., to avoid traffic) are already in progress.
- NIMBY-ism will win: 520 or 522 expansion is not politically feasible
- Mitigation costs too high
- Legal hurdles will doom other options

Green dots:

- No expansion of 520 & 522

Yellow dots:

- I-90 center lanes changed to 2-way HOV all day; good for the sake of regional bus service.

Red dots (over my dead body):

- I-90 rail: HOV capacity is important and provides maximum flexibility in the system. Rail is also not prudent for Issaquah residents

#2 MTP 98 (2)

Selection Reasons:

- Low cost, low impacts
- No new bridge needed
- HOV on 520: an incentive— too radical to take away GP lanes

Green dots:

- Low impacts, low costs of #2
- No new bridge
- Add HOV lane in each direction to 520

Yellow dots:

- Very aggressive TDM (from #7)— motivation to change behavior, without which, people will not change
- SR 520 corridor treatment from #6 (One HOV/one GP lane added to 520 in each direction)

Red dots:

- No action
- Conversion of GP lanes to HOV on 520. Keep current GP lanes, but continue to support HOV.

#3 MTP Flipped (5)

Green dots:

- Increasing HOV lanes is better use of money than building rail: provides maximum capacity and flexibility
- Prefer rail alignment using 520, rather than I-90
- HOV to maximize effectiveness of 520 expansion

Opposition:

- 2 way HOV on I-90: no shoulders for breakdowns, negatively impacts reliability
- Too early for rail in the region; perhaps in the long term, but not now
- Lack of support for rail serving Bellevue

Yellow dots:

- Connect to Mercer/Fairview
- Add a GP lane on 520 (cheaper than #6 520 corridor treatment)
- Ramps to Montlake/Pacific

#4 Roadway/Rail (5)

Why this alternative?

- Light rail on both 520 & I-90
- Think people (especially east side residents) will use light rail: fast & efficient
- Think rail will happen more quickly than new bridges

Green dots:

- 520 corridor treatment: rail & new GP lanes

Yellow dots:

- Add ferry (passenger only)
- Add HOV lane to 520

Red dots:

- No action on Sand Point to Kirkland corridor; should add ferry
- Changing GP to HOV lane(s).

Mitigation:

- Restrict hours of construction to 5am – 8 pm weekdays, and perhaps a little later on weekends. Would be willing for construction to last longer because of this.

#5 New Crossing (0)

#6 Roadway/Bus (3)

Green dots:

- 520 corridor treatment: increase in number of lanes (perhaps consider adding 2 lanes)

Red dots:

- I-90 rail: no sense in displacing HOV lanes for rail that may not attract many riders.

Mitigation:

- Lids
- Sound walls

Should be building for the long term, i.e., high capacity

#7 Maximize Alternatives (4) (following discussion, one advocate of #1 and one advocate of #2 switched allegiance to #7)

Selection reasons:

- No ESA issues
- Building additional roadway capacity doesn't solve problems
- Pedestrian ferry: easy to expand capacity
- Congestion pricing
- Cost

Green dots:

- Congestion pricing: people pay per use/incentive to use bus or restrict trips
- Ferry (pedestrian only, no bus & no need for parking lot for waiting cars)
  - effectively used elsewhere (Sydney, Hong Kong)
  - low infrastructural impact
  - positive aesthetically
  - low cost
- Bike/Pedestrian alternative for crossing 520
  - Low cost
  - Reduction of traffic congestion
  - Aids public health

Yellow dots:

- Add HOV to 520 (Possibly not needed, depending on results of TDM effects)
- MTP Flipped treatment of adding rail to 520
  - Due to development patterns on the eastside

Red dots:

- Conversion of GP lanes on 520 to HOV
  - Politically unlikely
  - Lack of integration with overall solution
  - Possible low use, due to 3+ requirement
  - Not a good idea to remove existing capacity

#8 None of the Above (3)

- Should double the size/capacity of 520, with all new lanes being GP.
- End HOV region-wide.
- One advocate of the "car-bus."

Post-Game commentary

1) A question was raised regarding the source of funding for the actual construction. Would state taxes and tolls be used for the roads, and would rail be paid for with bond issues?

Perhaps private funding would be used, as well as public. Possible consideration of, for example, a private ferry operating company.

2) Should be junking all of these plans. Public transit is used by only 3% of the population and this won't change. Need to develop a plan that allows people their SOV's, and also solves traffic congestion problems. Recommend the combination of a car-train (large vehicle, like a road car-ferry, with stops every five miles) and an under-lake tunnel. Federal matching funds exist for this, and the government will be pushing for it in the very near future.

3) We are under-planning. Population is rising, and none of these Solution Sets increase system capacity.

SEATTLE WORKSHOP, MAY 26, 1999

Interactive exercise not used, due to public reluctance and desire for comment and question/answer session only.

Question/Comment:

The public involvement process is not inclusive of affected parties.

Jeff Peacock:

There are more than 4000 people on the Trans-Lake mailing list, and the Trans-Lake website receives at least three or four questions and/or comments every day.

Response from Questioner:

Can you tell me what percentage of people on that mailing list live in which neighborhoods?

Jeff Peacock:

Not at this moment.

Question/Comment:

Resident of the Montlake neighborhood states doesn't want more traffic through his neighborhood. Asks if the committee has considered converting GP lanes to HOV lanes, but then limiting access and egress from those HOV lanes. Or at least doing so in Montlake.

Jeff Peacock:

Such a lane conversion might help this particular neighborhood, but the Trans-Lake Study Committee (TLSC) is looking for a system-wide solution that is reasonable and feasible. According to the current modeling, changing GP lanes to that style of HOV lane leads to continuous traffic back-ups that would back-up into surrounding neighborhoods. But we are considering many alternatives still at this point.

Response from Questioner:

As long as these types of things are under consideration, that's OK.

Question/Comment:

Please explain the "consumer reports" dots on the game sheet.

Jeff Peacock:

(explains the dots)

Question/Comment:

Complaint over the lack of give and take in tonight's meeting. Attendants don't care about other's opinions. Will come to the Bellevue meeting in the hope of playing the game and interacting.

Question/Comment:

How much longer with the 520 bridge last?

Jeff Peacock:

If the incidence of heavy storms remains consistent with the recent past, it should last another 20-25 years.

Question/Comment:

The Solution Sets don't matter. There is one consistent impact on this whole issue, and that's the Montlake Bridge openings. Who controls this?

Jeff Peacock:

The lake is categorized as a "navigable waterway" and as such, bridge openings are on-demand, per US Coast Guard regulations. There are some restrictions on this, such as a two to two and a half hour closure in the morning and in the evening, during rush hour.

These restrictions could conceivably be lengthened, but this is beyond the scope of the TLSC.

Question/Comment:

Why are SR520 HOV ridership requirements 3+, while the rest of the state highway system requires only 2+?

Jeff Peacock:

On SR520, the HOV lane is really just the shoulder of the original road and, as such, is not designed to hold the same capacity as the travel lanes. Therefore, WSDOT felt that it should not be stressed to the same degree, and limiting the lane to vehicles carrying 3+ people reduces overall traffic carrying on the lane.

Also, SR520 goes from three lanes to two coming to the East highrise, and if the restriction were reduced to 2+ riders, then it would be three full lanes of traffic trying to merge, rather than 2 full lanes and a third, lesser traveled lane, thereby making the merge easier.

Question/Comment:

Need more time to review this game board's information before making choices about where to put red/yellow/green dots. Can we mail them in?

Margaret Norton-Arnold:

Data for mailing comments in is included on a form at the check-in desk, and you're welcome to mail them in.

Question/Comment:

Why are listed I-90 rail costs inconsistent from solution set to solution set?

Jeff Peacock:

Each option has a different alignment after leaving the I-90 corridor, and solution set #7, for example, has two alignments at that point.

Question/Comment:

The solution sets don't seem to help the traffic problems enough, in terms of real numbers of trips.

Jeff Peacock:

Our models say that current projections of transit times, i.e., SOV vs. bus, aren't good enough to convince people to change their attitudes, it's true. But #7, we feel that, while it currently states that bus riders would incur the same costs as SOV drivers, the usage would perhaps be higher than what the models predict.

Question/Comment:

What are the revenue estimates for what the TDM's would bring in? And where does the money to build these systems come from?

Jeff Peacock:

Haven't calculated revenues yet. And, as far as money to build goes, this study committee process is geared towards developing consensus on problems and solutions. Finances haven't come in to it, yet.

Question/Comment:

#7 has a round trip cost of $5. This should make bus travel very attractive, but I don't see that reflected in the numbers on the game board.

Jeff Peacock:

Yes, except for all sets but #7, the differences of time impact on transit usage has been calculated. I think this is true, though, and we will refine the numbers later, regarding possible rider shifts to transit.

Response from Questioner:

This $5 per round trip, for 300,000 people a day, should yield a lot of money. This money should be used for mitigation.

Jeff Peacock:

We tested the numbers given a cost of $5 per round trip, but we don't know what people will actually pay.

Question/Comment:

Want to know which solution set TLSC members want. At this point, give green light to #7, and red light to #6.

We should listen to each other.

Question/Comment:

Ignoring the neighborhood and mitigation columns on the game board, the only solution sets that have much impact on traffic are the very expensive ones, upwards of $5 billion. The cheaper ones don't seem to do much. Financial issues need to be addressesd before the study is complete.

Jeff Peacock:

First, the study is not complete.

Second, an increase in ride sharing, and the multiple modest travel time savings, if multiplied by the thousands of daily trips, those small improvements add up.

Third, we're trying to get as much information as possible to the public, even though the study is not completed.

Question/Comment:

Montlake Bridge is obsolete. When it was built, all freeways were to conform to one of two federal standards: one of cost or one of construction quality. Governor Rosselini chose the cheaper, construction standard model, which was regrettable. There was an original plan for two bridges over Mercer Island, which the residents quashed. I-90 bridge didn't fix the Montlake traffic problems, so SR520 was built.

Question/Comment:

It's a shame that when there was a rail corridor in existence in this area, the option to use it was crushed by politicians, so now we have to build from scratch.

This problem is a sign of the economic health of the region.

The question must be asked, why people choose to work on the east side, but insist on living in Seattle.

Question/Comment:

There are too many entries/exits to/from SR520. There are five near the west end of the bridge. For a limited cost ($5-10,000) WSDOT could put up temporary barriers to see what would happen if three of these on-ramps were closed. Suggest closing the Arboretum, Montlake, and North I-5 ramps.

Question/Comment:

The above concept was tried before, and it clogged Montlake surface streets terribly.

Question/Comment:

Concern with lack of interaction with TLSC members.

These solution sets are not from the committee.

Dispute the format of 'solution sets' in the first place.

Want to have a different kind of discussion, where people talk with committee members.

Financial costs are one aspect of this problem, but social/human costs have not been discussed.

North-South traffic problems are greater than East-West traffic problems. I-5 cannot handle more traffic without being expanded itself.

Need a creative solution, not the traditional, highway-building solution. Need to move beyond freeways. Need a meeting with committee members for discussion, not game-playing.

Question/Comment:

Seattle has many cars, but considering more roads is not a good idea.

Mitigation costs should be up front and necessary elements of any choice made in this problem.

Could have more freeway accesses south of the city, in the more industrial sections, where there are vacant buildings, whose destruction would not involve any human costs, unlike home destruction that would be needed for many of these solutions. Should at least consider this as one option.

Question/Comment:

Any expansion of 522 will require that it connect with I-5. But this can't happen. Therefore, there would need to be a new North-South freeway.

Jeff Peacock:

There is a lot of information on the game boards, and being introduced by the consultant team. We're not covering any of the details. For example, none of the solution sets involve adding lanes to 520.

We are interested in any ideas that people may have.

Question/Comment:

Should break up these solution sets.

The University District has 60,000 entering the neighborhood daily.

HOV lanes on 520 would cause back-ups onto surface streets. Must restrict exits/entries to 520.

So, we need rail. Built parallel to 520, and tunneling under 45th Street NE. It should connect with Sound Transit's terminal there, and that terminal needs to be big enough for bus traffic. The University District cannot cope with the traffic from a Sound Transit terminal.

Need people to change their habits, significantly reduce the use of SOV's. We must add transit.

Question/Comment:

Feel disconnected with TLSC. There's no feedback. Want more outreach, regarding considerations of the study.

Final choice will be a mix of elements from existing solution sets. Whatever that final solution is, those who use the system should pay for it.

It will be a long time before this is completed.

Perhaps we should close some on-ramps. This would be an inconvenience to some, but some people will always be inconvenienced.

Hope that the committee has considered banning multi-axle vehicles from these highways, during peak travel hours; say 3 hours in the morning and 3 in the evening. This could help traffic greatly.

Question/Comment:

Northeast District Council Representative (Montlake north, and I-5 to the Lake):

Official council stand: No new bridges. Any expansion of capacity on existing bridges should be for rail only.

Personal view: It's been stated that the TLSC is looking for reasonable and feasible solutions. We must consider the possibility that there may be no such thing.

Question/Comment:

#7 seems like the best solution set, but may not be politically feasible, especially considering that $5 per round trip charge. Perhaps charging a lower rate would help its cause.

Also, the revenue from this should be applied to mitigation.

Question/Comment:

We need a rail-only option. This rail should go in a tunnel. This is a good option, and should be on the table with the rest.

Question/Comment:

20 or 30 years ago, the government promised that while building the I-90 bridge, it would be easy to convert the HOV lanes to rail. The government broke that promise. We need rail, as was promised. We should have rail on I-90 and on 520.

Question/Comment:

We could consider an approach similar to Sun Valley's bus system. This system is very effective: it's free, and well-used. It is funded by local businesses, just to remove cars from the street system. Perhaps something similar could be done here.

Question/Comment:

The solution sets are unacceptable, especially any increase in 522 capacity. Yet, there is one advantage to increasing 522: it can't sink.

Question/Comment:

What are the fiscal impacts of these solution sets? It looks like #7 will return $10-12 billion dollars, but only cost $2 billion. The other sets offer no financial return.

Question/Comment:

Do not increase highway capacity.

Half of Seattle's surface area is already dedicated to automobile traffic, either as streets or parking. The city is suffocating. We have voted for RTA and monorail. Regardless of the solution sets, Seattle wants alternative forms of travel.

Fiscally, these cost predictions are likely to be below the real costs.

We spend lots of money on sports stadiums, but education is extremely under-funded, and things like community centers go begging. SOV's are great for individuals, but as a society, we can't afford this behavior. This money would be much better spent elsewhere, like in alternative forms of transit. Not in increasing automobile capacity.

Question/Comment:

Thanks to the TLSC members' hard work on this problem, and thanks to them for solution set #7, despite the resistance to its creation.

We need to see costs on the game board. It's essential to making a choice to know how much taxpayer money will be needed.

Total daily trips are ranked best to worst, but our goal is mobility, not access. It's far better to live where you work.

Jeff Peacock:

What ideas can you provide for this?

Response from Questioner:

Congestion pricing to encourage people to change their behavior.

Question/Comment:

Regarding rail, we voted for MPA, and it failed twice. Why? There was one person who helped it fail, and this person owns a local grocery store. Can anyone tell me who this person was?

(response from the audience): Kemper Freeman!

That's right! And remember, when you're making your shopping choices, that there are two grocery stores in this area.

Question/Comment:

#7 seems like a reasonable middle ground choice.

I'd prefer it if we could tear down the 520 bridge, and if people wanted to cross the lake, they'd have to take a bus. Of course, that won't happen.

The best way to discourage SOV use is to price it to death.

Question/Comment:

I oppose new bridges or any bridge expansion. There is no street capacity to handle it. This would adversely affect neighborhoods, parks, and the environment.

Highway taxes are used to primarily subsidize trucks.

Tolls hurt the poor, and favor the wealthy. So I oppose tolls.

Question/Comment:

We've been trying to revive Seattle for years. Look at the new concert hall, the stadiums downtown, and the planned library. All of this is designed to attract more people to the area. We have to find solutions, because more people will come.

Question/Comment:

We need bus ferries. Texas has an island that is connected to the existing highway system by ferries, which are just part of the highway system, no pedestrians, just cars. We could do that, and no parking would be needed. It would lower congestion.

Question/Comment:

We must consider mass transit. We need an ecological approach. We must prevent more pollution, keep cars out, lessen congestion downtown, and improve safety. A good mass transit system would do this. We need to offer good transit for tourists, and this would do that.

Some sacrifice is required, but we could do it. We can live as they do in cities like Amsterdam, where huge highway systems were not built, and people do fine. We'd get used to it.

Question/Comment:

I question the assumptions of traffic growth (50%) made by the TLSC. The area is saturated.

New highway development doesn't aid problems, it only assists outlying, low-density development.

Montlake is not the only neighborhood that is impacted by these problems.

SOV use is rising. HOV lane increases only lead to an increase in SOV use.

Environmental impact statements are not discussing lateral damages of highway construction. Highways affect land-use patterns because of the new vehicles crossing the lake. We need to know land-use patterns. The DOT says that their decisions don't affect land-use patterns.

In New York City now, the government requires that any new highways be rail-capable structures. This is the answer. Unfortunately, I-90 can't handle rail. It wasn't built for it.

Question/Comment:

What was the consensus reached from the Kirkland meeting (5/24/99)?

Pre-Game Question and Answer time:

Question/Comment:
What happens during any bridge construction?
Jeff Peacock:
If we look at what happened in San Francisco, after the earthquake, people managed to find alternatives.
Response from Questioner:
But that was temporary. How long will there be a disruption if we're building a new bridge?
Jeff Peacock:
Working round the clock, as was done in the past, you can assume two to two and a half years.
Question/Comment:
What is the life expectancy of the I-90 bridge? 40 years?
Jeff Peacock:
I don't know. I suspect that it was designed for 75-100 years.
Question/Comment:
Why is Overlake indicated as the terminus for the rail line?
Jeff Peacock:
The original rail plan that was developed in the early 90's had the line stopping there. We've tried to follow existing policy. But there are other options in the solution sets, with lines extending to Redmond and Issaquah.
Question/Comment:
How long would it take to construct this new crossing bridge?
Jeff Peacock:
Years. I'm not trying to be flippant, but in an aggressive schedule, probably six to ten years. Any of these projects are probably not far from that time frame, due to the sensitivity of the environment, and the need to get approval from all of the interests and jurisdictions that surround the lake.
Question/Comment:
Why was the Juanita—Sand Point crossing chosen, as opposed to another point of crossing?
Jeff Peacock:
We looked at three or four possibilities before settling on this one. It looked the best, as far as tying in to I-5 and 405, bumped north a bit to avoid Magnuson Park. There is some eagle habitat north of Kirkland, and south of Kirkland is not as environmentally sensitive.
Question/Comment:
In the bar graphs, you link the new crossing with expansion of 520 to determine the benefit. Why? What happens if you drop the new crossing?
Jeff Peacock:
First, we tried to add the maximum number of lanes, and that came out to 10 new lanes in two separate crossings. The bar graph reflects that.

Second, if you drop the new crossing from the calculations, there is still a benefit, but it isn't such a dramatic improvement.

Question/Comment:

If you move more vehicles across the lake, and the surrounding systems, like I-5 and 405, don't change, I don't see how it helps traffic, except just across the lake.

Jeff Peacock:

Our analysis has looked at I-5 and at 405 in conjunction with each solution set. Do they breakdown, do they perform well? We're still in the process of looking at that.

Response from Questioner:

So, we don't know the answer?

Jeff Peacock:

Not fully. Preliminary findings suggest that a new crossing does cause problems on both I-5 and 405.

Response from Questioner:

Doesn't that affect Trans-Lake choices?

Jeff Peacock:

Yes, it does. I want to underscore that this is a first blush at this. We're moving through the process. This is not final.

Question/Comment:

Wasn't there a plan to build a toll bridge in the past?

Jeff Peacock:

Yes, in 1994 or 1995, I believe.

Question/Comment:

So, if they were discussing it then, and it didn't happen, and now we're looking at another 10 years before new construction is finished, well, we don't have time. Everything is going to break down before we're through.

Jeff Peacock:

We're looking twenty years into the future on this project.

Question/Comment:

My understanding is that it's illegal to institute tolls anywhere on an interstate highway system.

Jeff Peacock:

I'm not sure about that. At this point, TDM doesn't mean only tolls.

Rob Fellows:

The government has recently changed their stance on the interstate tolls question, and there are some cases where it has been allowed. So that really isn't an issue.

Question/Comment:

I'm surprised at the small degree of effectiveness from rail transit. I think you're underestimating ridership. How did you get these numbers?

Jeff Peacock:

That was our question, too. The controlling factor seems to be that ridership is directly related to travel times. And travel times for rail were slower than for bus travel, under the initial layouts. We're trying different layouts now, and continuing to explore options. Also, land use on the east side is different than land use on the west. There is less density along the corridors, and that hurts ridership.

Question/Comment:

Solution set #7 leads to the shortest travel time, even though you've reduced capacity.

#1 No Action (0)

#2 MTP (3)

Selection reasons:

- Relatively simple, compared to other solution sets
- Should extend rail terminus to Redmond (Microsoft). Overlake is not a logical terminus
- High speed train, if at all possible
- Some concern about displacements from construction

Yellow dots:

- Add 1 HOV (or transit-only) lane each way to 520
- Add toll to 520 (but a more reasonable toll than $5
    - There are more reasons to stay on the east side off hours now, like cultural and social opportunities

Red dots:

- Solution Set #6
    - Too much money
    - Too much negative impact
    - No rail

#3 MTP Flipped (2)

Selection reasons:

- Rail component (vs. #2) on 520
- Committee-identified problems of safety and reliability: rail addresses these, while HOV and GP lanes do not
- Conversion of I-90 to center lane HOV, 520 HOV, and light rail

Green dots:

- Rail on 520 vs. I-90, which would entail loss of center roadway
- Added 520 HOV lane

Yellow dots:

- TDM, as in #7, to reduce SOV demand, flatten peak period travel

Red Dots:

- #6 treatment of Sand Point—Kirkland corridor
    - serious environmental problems
    - high cost, low benefit
    - throughput to I-5 and 405
- No action

#4 Roadway/Rail (5)

Selection reasons:

- Bridges don't provide enough benefit
- Building more highways is unwise:
  - doesn't address the roads that accept the increased traffic, e.g., I-5, I-405
  - new roads fill as fast as they're built
- Rail gets people off the roads
- Rail has less impact on communities and on the environment
- Mass transit must get off of existing roads/existing problems
- Rail does the best job addressing needs of people traveling east-west
- Rail is proven solution: witness other communities that have done the same, e.g., Boston, San Francisco
  - South San Francisco: no rail, big traffic problems
  - Central San Francisco: BART exists, very effective
- The region has voted for light rail in the past; support exists for it

Green dots:

- Rail on 520
  - Traffic is awful, rail would address that. This corridor needs help— more transit is necessary and rail would pick that up
  - Addresses the trend north-ward of population and business
  - North has less capacity than I-90
  - New lanes, no new bridge
  - Fits well in region

Yellow dots:

- Sand Point crossing, but not now: long term addition, far in the future, but it's a good geographic location
- More rail: solution set #5 I-90 rail treatment
- #3 520 corridor treatment
- Ferry crossing

#5 New Crossing (0)

#6 Roadway/Bus (7)

Selection reasons/Green dots:

- New, 8-lane 520 bridge
- "Chunnel"— don't care which route it takes
- Has both GP & HOV additional lanes on 520
- Like the 2 lane connection to Eastlake/Fairview
- Eliminates Mercer Weave, eases move to I-5

Yellow dots:

- Double deck 520
- Tunnel under Lake: Seattle – Bellevue – Issaquah Plateau, for an express bus route
- Light rail: Seattle – Bellevue – Issaquah, Kirkland, using freeway routes
- Bike lanes

- Integrate bus, rail systems
- Improve intra-east side transit system

Problems

- 8 lanes on 520, worry about neighborhood impacts
- Breadth of an 8-lane 520: footprint, right-of-way
- Continuous 520 construction

Red dots:

- HOV
- Kirkland— Sand Point freeway
  - Costly
  - Impact to I-5
  - Impact tc Montlake neighborhood

#7 Maximize Alternatives (9)

Selection reasons:

- No more SOV capacity
- More people on rail and out of their cars
- Long term sustainability
- Environmentally friendly
- Aggressive in long-term thinking/forward-thinking: the idea of being surrounded by 3-6000 pounds of iron has to go eventually; these days, we're slaves to cars
- One of the least expensive options

Green dots:

- Everything in set (with a small caveat for the ferry)
- Rail aspect
- Aggressive TDM
- Making transit a priority

Yellow dots:

- HOV lanes are good, transit-only lanes are even better
- New crossing
  - Sand Point a good location to add a bridge
  - Would give an automobile alternative
- Aggressive vs. very aggressive TDM

Red dots:

- No 8-lane expansion of 520
  - Noise
  - Displacements
- No action— unacceptable
- Sand Point – Kirkland crossing
  - Promotes SOV use
  - Expensive

- Where will these vehicles go after they cross?
- Bus ferry would be OK

- Tunnel—not feasible

Mitigation:

- Traffic calming neighborhoods
  - Speed bumps
  - Traffic circles
  - Trees
  - Landscaping
- Sound walls
- Cut & Cover tunnels/lids
- Intense landscaping
- Bike lanes
- Trade-offs & compensation for neighborhood disruption (ex. the I-90 corridor)

#8 None of the above (3)

Selection reason:

- Solution set process didn't try to solve the problem, only slow the decline of the system. Need to improve, not simply slow the degradation.
- Solution set rail options ignore monorail and subway in favor of light rail
  - Subways work in other large cities, e.g., London, Paris
  - Monorail works in Japan, and is quiet and clean
  - Subways and Monorails require less land: you're raising or lowering the tracks to be above or below existing roadways: no interference with traffic
  - Committee hasn't explored these different modes

The committee is still thinking in standards that are 25 years old. More roads is not the answer: needs are evolving, even cars are evolving: need new ideas.
Have been trying to tell the committee to consider express monorails since January 5th.
TDM's border on the un-American, unethical.

End of presentations

When asked if anyone would be willing to change groups, one from Solution Set #2 said that he could go to #8, but he liked rail, no matter what it was called, and he liked I-90 rail because it's feasible now.

One person from Solution Set #7 said that if one added the ferry and TDM's to #2, then that would be effective.

Post-game commentary:

Question/Comment:

I think we've reached a consensus of sorts: people want to get cars out, and add transit.

Question/Comment:

We need somebody to make a decision. Maybe we need a Planning Commission, instead of all these committees doing all these studies. Or someone we trust.

Margaret Doman:

Can we get a count of how many east side residents are here (14). And how many people live in Seattle and work on the east side? (2).[counts are quick estimates only]

Tom Heller:

(addressing a member of the Solution Set #4 group): You chose rail, emphasizing 520. Is the current density along 520 enough to support rail?

Response:

We don't really have the information here to answer that, do we?

Another attendee:

Transit use on 520 is significant. Greater than on I-90. There's high employment on the east side and high residential population in Seattle.

Paul Henry:

Many Seattle residents commute to high-tech east side businesses. These are innovative, progressive companies, that might look into assisting their employees using new transit alternatives.

Question/Comment:

Whichever bridge rail is faster, and easier to build, is best.

Question/Comment:

There is already a lot of bus use on 520, especially for University area. Why not put the rail on I-90?

Question/Comment:

Don't penalize current transit users.

Roy Francis:

How many who like rail want to add rail in addition to existing roadways? (8)

How many want to convert existing lanes to rail? (0)

Losing capacity is not a good idea.

For rail on I-90, should we convert the center HOV lanes to light rail?

Room as a whole:

Yes.

Roy Francis:

Current estimates of travel time will increase if that happens, due to the loss of roadway capacity. The throughput of people will drop. Do you still think it's a good idea to convert the center HOV lanes to rail?

Question/Comment:

I don't believe it.

Question/Comment:

Of course you lose capacity. But if you build an express monorail system between Seattle and Redmond, not on existing lanes, that would increase capacity.

Jeff Highley:

Now, converting lanes on I-90 would decrease ridership vs. buses.

Question/Comment:

At first, perhaps.

Jeff Highley:

Is it worth it, reducing capacity?

Question/Comment:

At first, yes.

Question/Comment:

In the long term, no major cities have made it with buses alone.

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#1 No Action (3)

Selection Reasons:

- Too late: we missed out in the 1960's when we had the opportunity to vote for comprehensive rail service.
- Money should not be spent now: we are on the verge of major social and technological change that could render any action rapidly obsolete.
- Any increase in cross-lake capacity will produce more sprawl/development.
- Funding is ambiguous; can't do a cost/benefit analysis.
- TDM's
  - public will not accept tolls.
  - it's impossible to predict the results.

Green dots:

- Entire Solution Set
- Limited transit lane on 522
  - Alternative to widening bridges
  - It can be done now

Yellow dots:

- Passenger-only ferry : Kirkland-Sand Point or Kirkland-Montlake.
  - Demand exists on Puget Sound; it will exist on Lake Washington as well.
  - Needs to be integrated with other modes of transit.

Red dots:

- SR 522 transit lane: SR 523 should be used for transit lanes.
- New bridge at Kirkland-Sand Point.
  - Construction will be expensive
  - Mitigation will be expensive
  - Increased capacity increases sprawl

#2 MTP (3)

Green dots:

- No Kirkland-Sand Point bridge
  - If it was built, where would the traffic go?
  - Doesn't address problems of I-5 and 405 capacity

Yellow dots:

- Very aggressive TDM, to reduce demand
- Park and ride lots to feed rail

#3 MTP Flipped (4)

Green dots:

- I-90 corridor: maintains 2-way HOV
- 522 transit signal priorities
- HOV on 520

Yellow dots:

- Higher parking prices
- Light Rail on I-90, through to Redmond
- Very aggressive TDM's

Red dots:

- New crossing
  - Latent demand concerns
  - Increased traffic dumping into arterials

#4 Roadway/Rail (1)

Selection reasons:

- Rail on I-90
- No new bridge

Green dots:

- No new bridge at Kirkland-Sand Point

Yellow dots:

- Lanes on SR 520: need 3 lanes all the way through, not 3 lanes reduced to 2 as one leaves the bridge.

Red dots:

- New crossing.

#5 New Crossing (0)

#6 Roadway/Bus (3)

Selection reasons:

- New bridge: 520 is too congested at the I-5 end
- No rail
- Lanes added to 520

Green dots:

- New crossing
  - It's a more direct route
  - It's an additional way across the lake
- 520 corridor: existing route, if there are three lanes all the way across, then there is no problem.

Yellow dots:

- Add one General Purpose lane on 520: HOV doesn't satisfy traffic demands.

Red dots:

- No transit lanes on 522 (2)
- No new crossing at Sand Point-Kirkland (1)

#7 Maximize Alternatives (7)

Selection reasons:

- More pavement = more cars

- Lower costs
- Puts cost burden on SOV users, instead of home-owners
- Most cost effective, without subsidizing car users.
- Focus on mass transit.
- Uses waterways, instead of building more pavement.

Green dots:

- SR 522 treatment (1)
- Sand Point-Kirkland treatment (1)
- SR 520 treatment (1)
- I-90 treatment (3)
- Very aggressive TDM's (3)

Yellow dots:

- Light rail on SR 520
- Added HOV lane on SR 520

Red dots:

- Kirkland-Sand Point bridge

None of the Above (5)

- Build a "County Line Freeway"
  - The government already owns a lot of land along this route, so there would be less impact on people.
  - It would reduce traffic on 522
- 520: extend the freeway through to Ballard. If we widen it, we should lengthen it as well.
- Build a "605"-type freeway
  - Could relieve congestion on I-5 by moving more activity east, through Duvall and other far-eastern communities.
- Most major cities have a gridding system: Major freeways, Secondary roads, and Surface streets to which there is limited access. Why doesn't Seattle have this?
- Keep turn lanes on Lake City Way. Could make lanes into bus lanes during peak hours.
- Monorail
- No tolls on Trans-Lake system. Tolls would cause people to divert to SR 522.
- Less severe Solution Set #7: could get more people out of their cars, but needs to be toned down. Would need voter approval, and would never get it for such a harsh set of TDM's.

Post-Game Commentary

Question/Comment:

Parts of each Solution Set are really bad. For example, the new bridge. And #7 is too punitive, not proactive. Some other green lights sound good, but they're regional treatments, not system-wide.

Margaret Norton-Arnold:

The solution sets will probably change after further discussion.

Question/Comment:

I'm concerned about pedestrian access on 522. It's bad now, and it needs to be considered in this corridor.

Question/Comment:

I drive 522 every day, and people cross the road by standing in the turn lanes and waiting for traffic to stop. This is the result of bad planning. We need to consider what is done with the actual people who live here, when planning changes.

Rob Fellows:

Our plans are now concerned with just this. There is a 522 study ongoing now.

Tom Heller:

Over the last three to four years, there has been a neighborhood planning process underway here in Lake City. The plan has been completed and it does talk about pedestrian access. I'd like to give credit to A.J. Skurdal, who chaired the planning effort. He's the one to ask if you have any questions.

Question/Comment:

It makes no sense to do so much construction. There is a growing tendency to telecommute now. The business population may be doing much more work from their homes.

Question/Comment:

Telecommuting: I'm afraid this may go the way of the paper-less office.

Question/Comment:

Microsoft is building like mad. I don't think they're planning on having a lot of telecommuting in the future.

Question/Comment:

TDM's: why not give tax advantages to companies that support car-pooling and other transit options for their employees?

Margaret Norton-Arnold:

This is under consideration as part of the TDM plan.

Question/Comment:

(from member of #7, Maximize Alternatives, group): We've been called 'punitive' twice now and I'd like to respond. I want to see how much money would be raised by tolls on SOV's. Not much, I'm thinking. This new construction will be paid for by taxes: sales taxes and income taxes. No one likes to pay more taxes.

Car travel is the one thing in our lives that isn't heavily taxed and charged. In fact, it's subsidized. No wonder people use cars: people like cars, and it's the cheapest way to get around. So, people use it.

Let's put the cost on the people who use it. Including me. I'll pay for it.

Question/Comment:

Solution set #7 says change HOV on I-90 to light rail. You need to look at what happens to traffic when a lane is lost. You need to check traffic out before you change things for the privileged few.

Margaret Norton-Arnold:

Are there any comments from the Study Committee members?

Tom Heller:

Oh, yeah. My mind's made up now.

Question/Comment:

We've been studying the pedestrian question. Our group looked at the area between 95th and 145th, and between 15th and Lake Washington. We have a plan that we feel has broad public support, and we hope that the Study Committee will take note of it.

Question/Comment:

Where is the money coming for all of this construction? The state has no money for this. So, it's going to need new money. And that comes from tolls and taxes. There will have to be a toll on every route, on every car crossing the lake, and the tolls will need to be ten or fifteen dollars to pay for all this. There'll be a massive public riot on this cost.

Question/Comment:

Nationwide, states are deciding that HOV lanes don't work. Yet, here we have HOV lanes on every solution set. At least open the HOV lanes up to all traffic during non-peak hours, like they do in Portland. I seriously question the need for and effectiveness of HOV lanes at all.