

FUTURE CONDITIONS

An important part of any corridor analysis is to examine the future traffic conditions with the expected roadway configuration. We developed the 2030 forecast for traffic using the Bellevue-Kirkland-Redmond (BKR) travel forecasting model developed for these three cities. This model has land use forecasts approved by both the cities of Redmond and Bellevue. Mirai provided refinements to reflect Kirkland’s growth beyond the adopted 2022 land use assumptions. We also assessed traffic operations in the corridor for a mid-year condition in 2014 to reflect how concurrency would be met under the alternatives examined. Traffic volumes for the 2014 PM peak hour turning movement volumes were estimated by interpolating the volumes between existing 2005 volumes and forecasted 2030 volumes.

Year 2030 Forecasts: Travel Demand Modeling

The BKR model was used for this project to estimate traffic volumes for the 2030 PM peak period. Mirai validated the BKR model using 2005/2007 traffic counts along NE 132nd Street, NE 124th Street and NE 116th Street. We can expect traffic growth to increase on all roadways in the study area and throughout the eastside, and as well as expect an overall increase in congestion. The anticipated growth in the area is summarized in **Table 2**; the annualized average growth is shown in **Table 3**. Both of these tables reveal that growth in Bellevue, Kirkland and Redmond is expected to be higher than the growth for the remainder of King, Snohomish, Pierce and Kitsap Counties.

Table 2. Growth between 2005 and 2030 in the Study Area

City	2005		2030			
	Origins	Destinations	Origins		Destinations	
			Number	Percent	Number	Percent
Bellevue	50,193	42,508	87,083	73%	68,268	61%
Kirkland	27,173	27,530	41,807	54%	42,134	53%
Redmond	29,203	25,593	50,799	74%	42,278	65%
Rest of 4 Counties	592,600	603,538	879,440	48%	906,429	50%
TOTAL	699,169	699,169	1,059,109		1,059,109	

Table 3. Annualized Average Growth between 2005 and 2030 in Percentage

City	Origins	Destinations
Bellevue	2.23%	1.91%
Kirkland	1.74%	1.72%
Redmond	2.24%	2.03%
Rest of 4 Counties	1.59%	1.64%

Most of the increase in vehicle trips is oriented north and south and is located along I-405. There is also a significant increase in vehicle trips along SR 202, Woodinville-Redmond Road. The 2005 to 2030 traffic growth is shown in **Figure 12**.

Figure 13 shows the results of the select link analysis for westbound trips on NE 132nd Street east of I-405. This figure shows that most of the trips come from the south or southeast and have destinations north and west of the NE 132nd Street Corridor. NE 132nd Street is one of several paths used to complete these trips connecting the southeast and northwest areas.

Northbound trips using the Totem Lake east-west corridor are shown in **Figure 14**. This select link analysis for northbound trips on I-405 south of NE 116th Street show that most of these trips are destined to the north or northeast and not going east or west along NE 132nd Street.

Totem Lake Corridor Growth

Screenline volumes were developed for the Totem Lake east-west corridor to the east and to the west of I-405, for traffic assigned to NE 116th Street, NE 124th Street and NE 132nd Street. As noted previously, these three arterials make up the east-west travel corridor that serves the Totem Lake urban center and there is substantial inter-relation between the three roadways.

The peak hour volumes for the three roadways are summarized in **Figure 15** for 2005 and 2030. Comparing the volumes for several conditions, 2007, three-lane with the 2030, three-lane with I-405 ramps, this figure shows a forecast increase of 1,095 eastbound trips and 2,180 westbound trips in the PM peak hour for the corridor as a whole west of I-405. This same figure shows an increase of 1,280 eastbound trips and 690 westbound trips for the corridor to the east of I-405. This summary indicates a need for additional capacity within the corridor, but does not indicate where it should be implemented.

Of the three arterials, NE 124th Street is the major arterial serving a predominantly commercial and multi-family mix of development. It is the only street with a full interchange connection to I-405. Both NE 116th Street and NE 132nd Street serve predominantly residential land uses and neighborhoods.

Figure 12. Forecast PM Peak Hour Traffic Growth from 2005 to 2030

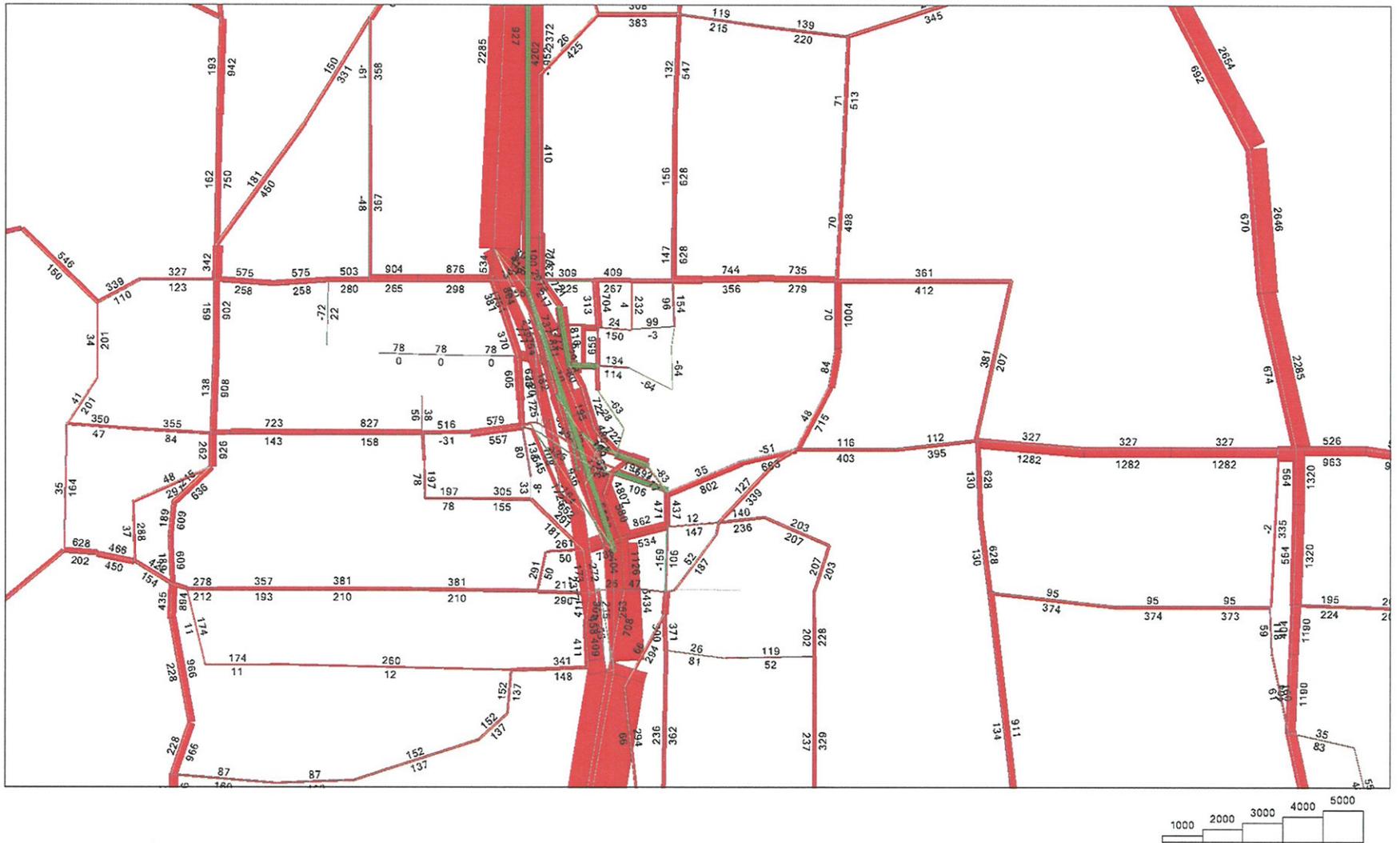


Figure 13. Select Link Analysis for Westbound Trips along NE 132nd Street East of I-405

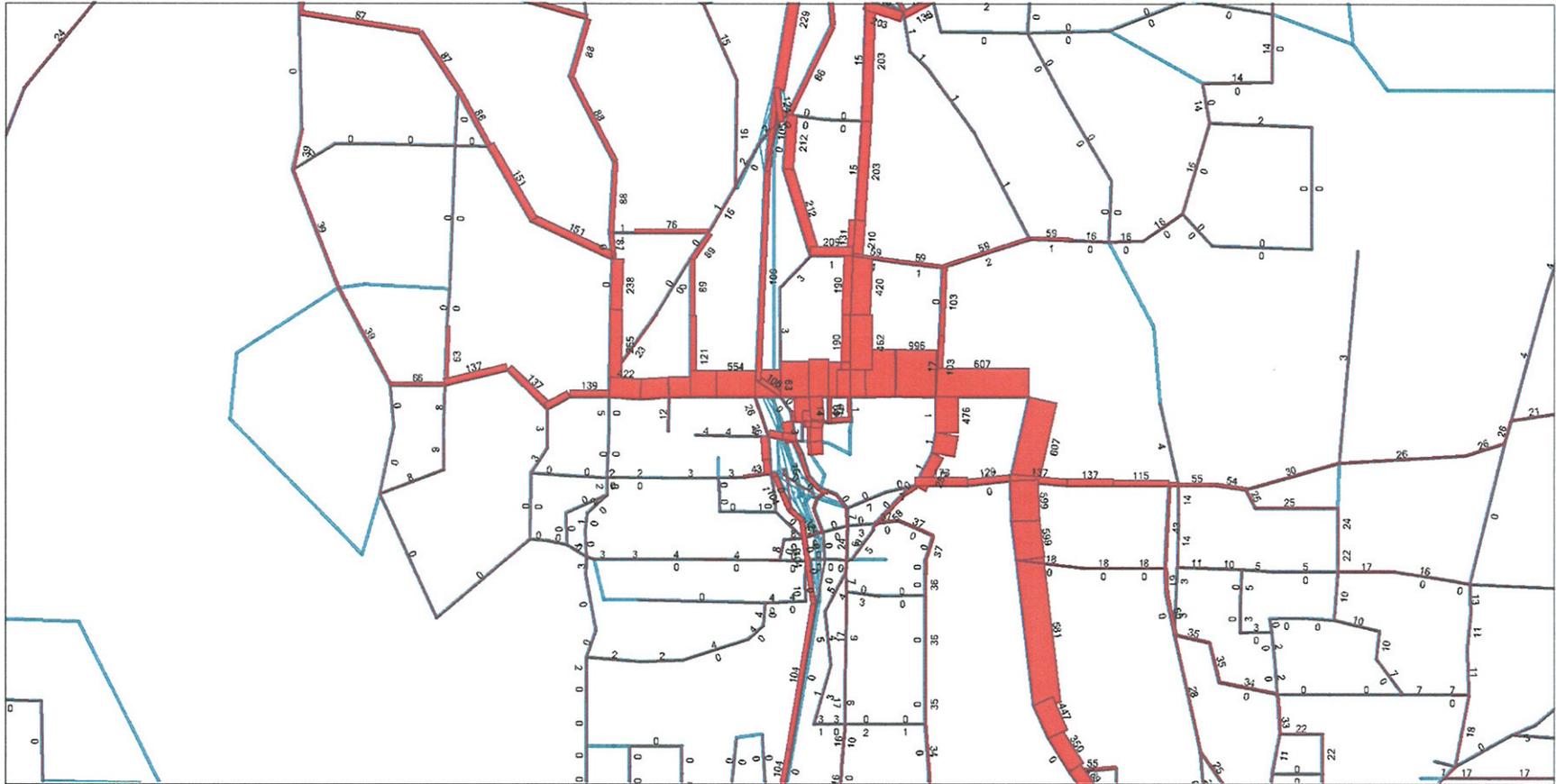
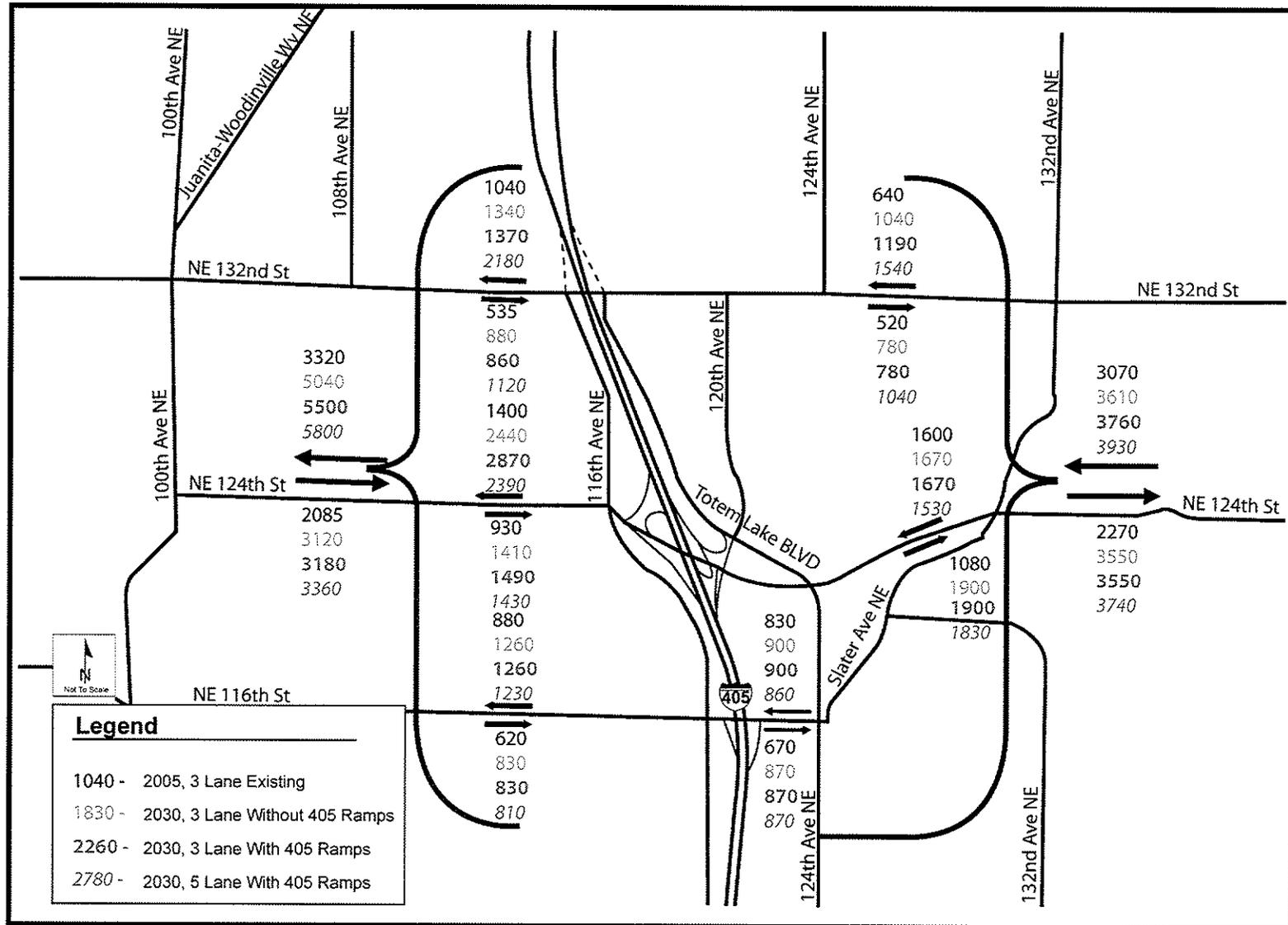


Figure 15. Comparison of 2005 and 2030 Forecast PM Peak Hour Volumes



Totem Lake East-West Corridor Analysis

The Totem Lake east-west corridor will need additional capacity to meet the estimated peak hour demand identified by the BKR model for 2030. However, identifying the best place to add capacity in this corridor goes beyond the analysis for NE 132nd Street alone, and necessitates the exploration of where else capacity could be added in this corridor. Mirai ran some options using the BKR model to estimate the traffic demand under two scenarios:

- Adding a lane in each direction to NE 132nd Street for a five-lane roadway,
- Adding a lane in each direction to NE 124th Street for a 7-lane roadway.

Figure 16 shows the volume changes that would result from adding two lanes to NE 132nd Street. The addition of two lanes would increase the number of trips on NE 132nd Street and decrease the number of trips on NE 124th Street. This shift of trips from NE 124th Street to NE 132nd Street is due to the additional capacity on NE 132nd Street, which reflects a traveler's desire to seek the path with the higher capacity. The number of vehicles using the new half interchange does not change under this scenario. However, the decrease in assigned traffic along NE 124th Street is not realistic since NE 124th Street has the most direct access to the full interchange at I-405 and serves the commercial area of Totem Lake. The addition of lanes on NE 132nd Street could draw traffic from the major arterial in this corridor, which may not be desirable to either the City or to the neighborhoods adjacent to NE 132nd Street.

Under the second scenario two lanes added to NE 124th Street rather than to NE 132nd Street, **Figure 17**, shows a significant increase in trips along NE 124th Street as well as an increase in trips along 100th Avenue NE between NE 124th Street and NE 132nd Street. Meanwhile the number of trips on both NE 116th Street and NE 132nd Street showed some reduction. This option could better serve the overall travel demand patterns between the interchange area and the Willows Road corridor to the east when compared to adding capacity to NE 132nd Street.

Figure 17. Forecast 2030 PM Peak Hour Volume Change from a 5-Lane to 7-Lane NE 124th Street

