



**DATE:** August 29, 2012

**TO:** Bellevue Transportation Commission

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**SUBJECT:** Downtown Transportation Plan Update

## **INTRODUCTION**

The update to the Downtown Transportation Plan will address mobility issues and challenges and support Downtown growth and urban livability looking out to 2030.

On September 13, 2012, staff will continue the review modeling results for 2030, including an introduction to level of service Downtown intersections.

## **BKR TRAVEL DEMAND MODELING**

At the Commission meeting on July 12, staff reviewed the 2030 travel demand attracted from regional destinations to Downtown Bellevue. This memo – and presentation on September 13 - will provide additional information on the forecast trips that are internal to Downtown and intersection level of service.

The Downtown Transportation Plan Update analysis will consider daily and PM Peak hour person trips moving to, from and within Downtown. Land use is the source of travel demand (person trips) that the BKR model forecasts. For the Downtown Transportation Plan Update we are using the 2030 land use forecast for Downtown of 70,300 jobs and 19,000 residents.

## **BKR Daily Travel Demand Summary**

Based on the forecast 2030 land use, the BKR model forecasts that there will be about 665,000 daily person trips attracted to, produced in, and internal to Downtown Bellevue, broken down as follows:

- Trips attracted to Downtown: 424,000
- Trips produced Downtown: 104,000
- Trips internal to Downtown: 137,000

## PM Peak Hour Travel Demand Summary

Using the same land use and transportation system assumptions for 2030 as described above, the total number of PM Peak Hour (5 PM – 6 PM) trips is about 55,000, broken down as follows:

- Trips attracted to Downtown: 30,000
- Trips produced Downtown: 15,000
- Trips internal to Downtown: 10,000

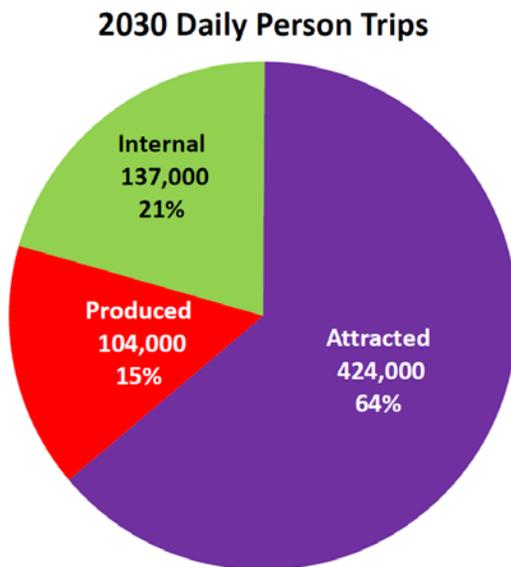


Figure 1. Daily Trips

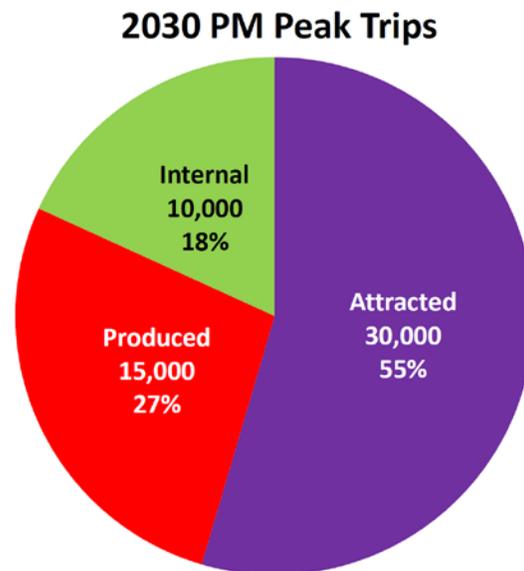


Figure 2. PM Peak Hour Trips

## 2030 Daily Trips vs PM Peak Hour Trips

Figures 1 and 2 show the projected number of trips and the percentages of the total for daily and PM Peak Hour trips. On a daily basis, 64% of the trips are attracted to Downtown, versus 55% during PM Peak. The percentage of trips produced Downtown on a daily basis is 15% versus 27% of the trips in the PM Peak that are produced Downtown. The internal trips are about the same percentage, 21% on a daily basis and 18% of PM Peak hour trips

## DOWNTOWN INTERSECTION LEVEL OF SERVICE

While the BKR model is used to calculate travel demand, another traffic analysis model called “Synchro” is used to create a picture of what is happening at intersections. Synchro provides a PM Peak Hour snapshot of turning movement counts at intersections – the number of vehicles that travel straight through an intersection, turn right or turn left. It calculates the average

“delay” of vehicles moving through the intersection and assigns a level of service (LOS) category based on standard industry practice shown in Table 1.

**Table 1 Intersection Level of Service**

Level of Service (LOS)	Average Delay (seconds/vehicle)
A	≤ 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

*Source: Highway Capacity Manual, Transportation Research Board, 2000*

### **Downtown Level of Service**

A Level of Service (LOS) analysis will be performed for Downtown intersections using Synchro, based on the forecast of trips to/from and within Downtown during a one-hour weekday period from 5 PM to 6 PM. This LOS Peak Hour analysis will be done for the 2030 baseline which considers both the forecast land use and the reasonably foreseeable transportation projects.

At a subsequent meeting staff will present preliminary results of LOS analysis for Downtown intersections for both the 2010 baseline and 2030 base year.

### **Sensitivity Test Proposal**

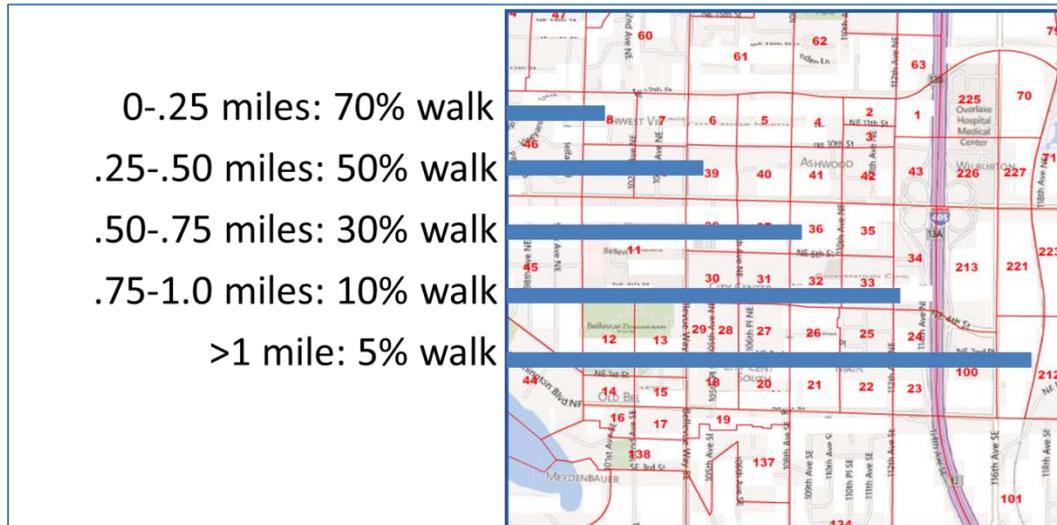
BKR does not produce a number for walk trips, only vehicle trips (transit, HOV, SOV) so a supplemental calculation is proposed to derive walk trips, as discussed in the following section. With the Commission’s concurrence we will test the proposed methodology against the 2010 baseline and review how it changes 2030 base year results.

### **Internal Downtown Trips Sensitivity Test Proposal**

In the BKR travel demand model, all trips made for any purpose between Transportation Analysis Zones (TAZs) are considered to be vehicle trips, even for the short trips between the small TAZs in Downtown Bellevue – which in most cases are comprised only of a single block. For the 2030 travel demand modeling, this model output may exaggerate the number of vehicle trips made within Downtown, and thus the Synchro-calculated vehicle delay may be greater than is likely. There are two factors to consider: 1) not everyone Downtown arrives with a car, and 2) many people Downtown will walk on short non-home-based trips.

People who arrive Downtown on transit or in a carpool may not have access to a car during the day, so the non-home based trips that they take internal to Downtown will likely be walk trips. So some trips would be taken “off the top” based on a “no car available” factor. For those who arrive Downtown in a car many of their trips taken internal to Downtown would also be walk

trips One of the factors in determining the likelihood of a walk trip is the distance between trip origin and destination. Staff developed a simple distance-based methodology to calculate the percentage of walk trips relative to the total number of trips, shown on the Downtown TAZ base map in Figure 3.



**Figure 3 Distance Methodology for Internal Vehicle Trip Reduction**

For an example in applying this distance methodology: consider all of the trips taken for any purpose between Bellevue City Hall and Meydenbauer Center (*0-.25 miles*); 70% of them are likely to be walk trips, whereas of the trips between City Hall and Bellevue Square (*.5 - .75miles*), 30% are likely to be walk trips. While other factors may play a role in a person’s decision whether to walk or use a vehicle – weather, packages to carry, parking availability and cost, etc, - for this purpose, staff considered applying a deduction for walk trips based on distance to be an appropriate sensitivity test.

Staff will seek the Commission’s comments on this proposed methodology, and will proceed with a sensitivity test based on the Commission’s direction.

### **NEXT TRANSPORTATION COMMISSION MEETINGS**

- At the next scheduled Commission meeting on September 27, staff will review preliminary recommendations for pedestrian and bicycle facilities, including design concepts for the NE 6<sup>th</sup> Street Pedestrian Corridor and for the 112<sup>th</sup> Ave NE segment of the Lake Washington Loop bicycle route.
- Fall 2012: Staff will continue review of the BKR and Synchro modeling results.