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MEMORANDUM

DATE: November 12, 2012

TO: **Jay Sugnet, City of Portland**
Denver Igarta, City of Portland

FROM: Alan Snook, AICP

SUBJECT: **Barbur Boulevard Origin/Destination Assessment**

P12aws-000-000

The purpose of this memorandum is to explore the origin and destination of motor vehicle users along SW Barbur Boulevard to help inform the Barbur Boulevard land use planning that is currently underway. In addition to the users, a small assessment of Interstate 5 ramp reconfiguration near the Spring Garden Street/Barbur Boulevard interchange.

Executive Summary/Background Data

The corridor of SW Barbur Boulevard was partitioned into four segments that reflect neighborhood areas. These segments are the Lair Hill (I-405 to approximately SW Hamilton Street), The Woods (SW Hamilton to approximately SW Bertha Boulevard), Historic Highway (SW Bertha Boulevard to approximately SW Capital Hwy), and Far Southwest (SW Capital Hwy to approximately SW 65th Avenue). Figure 1 shows these approximate breaks in study segments along Barbur Boulevard.

Existing traffic volume data was collected along the corridor where available (both historic and current data). At a minimum two locations were obtained for this traffic data to help determine daily traffic volumes and the fluctuation of volumes along SW Barbur Boulevard in comparing segments. Generally speaking, the north portion of SW Barbur Boulevard carries approximately 18,000 cars daily until the merge with SW Naito Hwy. At this point the volumes increase to approximately 34,000 daily vehicles and fluctuate between 24,000 – 31,000 daily vehicles until the junction of SW Capital Highway where volumes decrease back down to the 16,000 – 19,000 level. Figure 2 shows these traffic volumes, as well as the year they were collected.

In addition to the historic and available traffic data, the speeds along SW Barbur Boulevard were obtained to compare the 85th percentile speed with the posted speed. An 85th percentile speed indicates that 85% of vehicles are traveling at that speed or lower. Generally it is a good indicator for design purposes and if there is a potential for speeding along a roadway. At all four locations where speed was measured there was a trend of the 85th percentile speed approximately 10 miles over the posted speed. Figure 2 indicates the locations of the speed measurements, and the 85th percentile measurements.

Analysis of the users during the PM peak hour along SW Barbur Boulevard in the planning horizon indicate that approximately 20% of the vehicles are through vehicles (using the full length of Barbur Boulevard for their trip). However many of the users are using Barbur Boulevard as a complementary route to Interstate 5, and even switch between the two routes depending on the congestion levels.

Many of the trips also seem to be local using land uses along Barbur Boulevard for their origin or destination with only a handful of major roadways taking trips further from the Barbur Boulevard. Users in the southern portion of Barbur Boulevard show very little use of Barbur Boulevard in the north portion near downtown Portland, and rather continue on (or access Barbur Boulevard) via Naito Parkway. In the southern end of Barbur Boulevard there are few trips that head to the north portion of Barbur Boulevard, with the majority of those trips staying north of the Multnomah Boulevard connection.

Origin/Destination Assessment

One of the concerns associated with SW Barbur Boulevard relates to the users on the roadway and where they are coming from and heading to. Typically this is called “origin” and “destination”. To better help paint the picture of potential implications with land uses and future high capacity transit options, an origin/destination assessment was done along the corridor. This is done using the Metro regional travel demand model and selects a location along the roadway as the “study point”. Motor vehicles within the regional travel demand model that pass over that study point are then tracked as to their origin (what area of town they came from) and destination (what area of town they are headed to). This assessment is done for the planning horizon of 2035, and for the PM peak hour.

Lair Hill Segment

The Lair Hill select link location was done on SW Barbur Boulevard at approximately SW Hamilton Street. Looking at the southbound direction, about 30% of the trips on Barbur Boulevard are coming from Barbur Boulevard north of the Naito Parkway junction, and about 36% of the southbound trips come from Naito Parkway. The trips along Barbur Boulevard heading southbound start to diminish and take alternative roads. Primary roads where southbound trips divert to are Capitol Highway (37%), Multnomah Boulevard (7%), and Terwilliger Boulevard (13%). By the time southbound trips are at the junction with Hwy 99W and Interstate 5, there are approximately 10% of the trips from the original select link location.

The northbound direction approximately 43% of the trips from the select link location are destined for the Ross Island Bridge (and beyond). Approximately 18% of the trips continue onto Barbur Boulevard, while 65% divert to Naito Parkway. South of the select link location a majority of trips come from Capitol Highway (41%) with a minor amount coming from Terwilliger Boulevard (5%), Multnomah Boulevard (3%), and Taylors Ferry Road (6%). Trips coming from the Hwy 99W and Interstate 5 junction account for approximately 12% on Hwy 99W, and 9% on Interstate 5.

Figure 3 shows the percentage of trips along SW Barbur Boulevard for this select link location at various points along the roadway.

The Woods Segment

The select link location within The Woods segment was done approximately half way between Capitol Highway and Terwilliger Boulevard. The number of trips on Barbur Boulevard north of the Naito junction account for approximately 28% of the southbound trips at the select link location. The other major roadways with southbound origins consist of Interstate 405 (4%), Naito Parkway (29%), 5th Avenue in downtown Portland (11%), and the Ross Island Bridge (14%). Trips south of the select link location generally are destined to Multnomah Boulevard (13%), Terwilliger Boulevard (19%), Taylors Ferry Rd (8%), and Capitol Highway (7%). Approximately 20% of southbound trips from this select link point travel all the way to the Hwy 99W/Interstate 5 junction, with 4% continuing on Hwy 99W and 16% continuing on Interstate 5 southbound.

The northbound direction has approximately 30% of the traffic starting from Hwy 99W (15%) and Interstate 5 (16%), then adds traffic from Taylors Ferry Road (11%), Capitol Highway Boulevard (7%), Multnomah Boulevard (5%), and Terwilliger Boulevard (8%). After the select link location, trips are primarily destined for Capitol Highway (10%), the Ross Island Bridge (39%), and Naito Boulevard (19%), with approximately 18% of the northbound trips staying on Barbur Boulevard at the junction with Naito Parkway.

Figure 3 shows the percentage of trips along SW Barbur Boulevard for this select link location at various points along the roadway.

Historic Highway Segment

The select link location in this area was done on Barbur Boulevard just north of the Capitol Highway/Barbur Boulevard/Interstate 5 interchange. The southbound trips at this location have minor origins from downtown with trips coming from Interstate 405 (10%), Naito Parkway (6%), and Interstate 5 (5%). Approximately 8% of the trips come from Barbur Boulevard just north of the Naito Parkway junction. Another 4% is added from the Ross Island Bridge. Closer to the select link approximately 17% of the trips come from Taylors Ferry Road/Spring Garden Street. South of the select link location major trip destinations are to Taylors Ferry Road (8%), Capitol Highway (13%), Hwy 99W (15%) and Interstate 5 (41%).

The northbound direction trips originate from Hwy 99W (22%) and Interstate 5 (17%), with additions from Taylors Ferry Road (20%) and Capitol Highway (12%). After passing the select link location, trips are destined to Taylors Ferry Road/Spring Garden Road (12%), Capitol Hill Road (13%), Terwilliger Boulevard (6%), Ross Island Bridge (19%), and Naito Parkway (11%). Very few trips stay on Barbur Boulevard after the Naito Parkway junction (approximately 4%).

Figure 3 shows the percentage of trips along SW Barbur Boulevard for this select link location at various points along the roadway.

Far Southwest Segment

The location for the select link in this segment was on Barbur Boulevard just south of the Interstate 5/Capitol Highway/Barbur Boulevard interchange. In the southbound direction very few trips originate from as far north as the downtown Portland or Ross Island Bridge area. Approximately 13% of the trips on the select link come from downtown Portland (all along Naito Parkway). Two other major roadways that show originating trips are Taylors Ferry Road/Spring Garden Street (8%) and Capitol Highway/Huber Street (18%). Major destination roadways south of the select link include Hwy 99W (45%), Interstate 5 (30%), and Capitol Highway/Lesser Road (8%).

The northbound direction pulls the majority of its trips at this location from Hwy 99W (55%) and Interstate 5 (40%). Destination roadways north of the select link location include 45th Drive (6%), Capitol Highway (14%), Huber Street (9%), Capitol Hill Road (8%), Ross Island Bridge (10%) and Naito Parkway (7%). There are no northbound trips from this select link location that are on Barbur Boulevard north of the Naito Parkway junction.

Figure 3 shows the percentage of trips along SW Barbur Boulevard for this select link location at various points along the roadway.

Through Users

In addition to assessing the origins and destinations at on specific location along Barbur Boulevard, an assessment using the regional travel demand model was also done for through users from one end of Barbur Boulevard (just south of Naito Parkway) to the other end (just north of the Interstate 5 junction). This tracks any users that travel over both spots for their full journey, but does not count vehicles that only travel over one of the locations.

In the northbound direction, approximately 20% of the total traffic on Barbur Boulevard is through traffic. This is determined by comparing the total through users to the total volumes at both locations (south location is approximately 21%, while the north location is approximately 19%). The southbound location is slightly different with approximately 22% of through users at the southern location, but approximately 7% of the total traffic at the northern location. The difference in through percentage of users is due to the larger volume of traffic at the north location.

Interchange Reconfiguration Assessment

A sensitivity test was done related to the interchange configuration with Interstate 5 and relocation of the southbound off-ramp (just south of Multnomah Boulevard) to a new location at SW 26th Way. In addition, that sensitivity testing looked at adding a southbound on-ramp from SW 26th Way as well. The sensitivity testing was aimed at determining if there were large shifts of travel patterns due to this reconfiguration.

The sensitivity testing indicated that the relocation of the southbound off-ramp shifted the current traffic from that ramp to the new location, and the new southbound on-ramp added approximately 180 net new vehicles in the area during the PM peak hour. There was no significant long range shifting of traffic based on the finding in the model. Shifts in traffic patterns were localized, and generally less than 100 vehicles during the PM peak hour.