Part 3 - Transportation Modal Elements

The TSP Modal Elements illustrate and describe each component of the whole transportation system envisioned for Washington County. The word “modal” refers to the different methods ("modes") of travel that are included in the County’s transportation system, including automobile, freight, pedestrian, bicycle, transit, and transportation-system management. The Modal Elements implement the TSP Goals, Objectives, and Strategies (as amended) that were initially adopted by A-Engrossed Ordinance 768 in October 2013. Each Modal Element includes maps and accompanying text that describes the transportation system components in terms of three characteristics:

**Classification:** The intended character and function each component of the system is intended to serve;

**General location:** The property or land that will be required to accommodate each component of the system; and

**General size and scope:** The amount and configuration of land necessary to accommodate each component of the system in the long term.

Together, the Modal Elements establish the framework for an integrated multimodal transportation network. The backbone of this network is a system of arterial and collector “complete streets,” high-capacity transit lines, freeways, freight railroads, multi-use trails, airports, and pipelines that collectively provide for transportation needs for people and freight within Washington County, as illustrated in Figure 3-1.

**Figure 3-1: An Integrated Multimodal Transportation System**

While the Modal Elements identify specific attributes related to individual travel modes, each mode is a component of a comprehensive transportation system that combines all travel modes to create a complete, integrated transportation network. Consistent with state and regional policy, the TSP Modal Elements collectively address all travel modes for people and goods. This chapter includes background information from the TSP Existing Conditions and Future Needs Report, goals, objectives, and strategies associated with the Modal Elements, and the Modal Elements themselves.
Roadway Element

Washington County’s transportation system includes nearly 1,300 miles of roads, shared by motor vehicles, bicycles, pedestrians, trucks, and public transit. The County’s roadway system includes a wide variety of roadway types – from major urban boulevards to gravel rural roads. The Roadway Element provides for an integrated network of complete streets that provide an interconnected transportation system for all modes and users. “Complete streets” are designed to accommodate use by all travel modes, including automobiles, bicycles, freight delivery vehicles, transit vehicles, and pedestrians of all ages and abilities.

TRANSPORTATION SYSTEM PERFORMANCE

Performance Targets and Standards

Regional Performance Targets

The Metro 2014 Regional Transportation Plan (RTP) identifies a number of regional performance targets for transportation through 2040. Washington County must work towards achievement of the targets included in the RTP. In addition to the mobility targets identified in the 2014 RTP, Metro’s Regional Transportation Functional Plan (RTFP) establishes regional performance targets and standards. The RTFP establishes two primary performance targets: Non-Single Occupant Vehicles (modal performance), and Roadway Mobility Operating Standards (mobility performance), as directed in RTFP Section 3.08.230. Each city and county in the region must demonstrate that solutions adopted in their respective transportation system plans will achieve progress toward the regional targets and standards, and shall include the regional targets and standards or alternatives to them in their respective transportation system plans. The Washington County TSP is consistent with the RTFP and the 2014 RTP.

Mobility Standards

Level of Service

Capacity and Level of Service (LOS) are two related terms. Capacity describes how much traffic a given transportation facility can accommodate in a given amount of time and is independent of travel demand. Level of Service is a measure of how well a facility is operating under certain conditions and does reflect travel demand. Capacity and LOS vary with the type of facility, prevailing traffic, facility design, road conditions, and other factors. LOS is a measure of the quality of service on a specific road or highway as perceived by users of the facility. In 1965, the Highway Capacity Manual divided highway LOS into six levels, with letter grades A through F (similar to a report card) where A is the best and F is the worst. Since that time there has been considerable work done to develop LOS measures for different travel modes, but there is no agreement on multimodal LOS standards at this point. Individual levels of service are illustrated in Figure 3-2.

Figure 3-2: Level of Service and Congestion

<table>
<thead>
<tr>
<th>A</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Good</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
</tr>
<tr>
<td>D</td>
<td>Acceptable</td>
</tr>
<tr>
<td>E</td>
<td>Congested</td>
</tr>
<tr>
<td>F</td>
<td>Severely Congested</td>
</tr>
</tbody>
</table>
Regional Mobility Standards
Metro identifies mobility targets in the 2014 RTP and the RTFP. The targets define deficiency thresholds for the mid-day peak (highest 60-minute period between 9:00 AM and 3:00 PM) and the highest overall two consecutive hours of weekday traffic volumes. The RTP mobility policies define an operating standard for different land use types within the Urban Growth Boundary. Although these standards are labeled “interim,” they apply to the Washington County TSP until Metro issues a revision to these policies. The two-hour peak standards are identical to those identified within the Portland metropolitan region by ODOT in the Oregon Highway Plan. Washington County mobility standards are consistent with Metro and ODOT requirements.

Washington County Mobility Standards
Washington County maintains a “Level of Service” standard for vehicle operations on County roads as shown in Table 3.1. This standard is currently defined in “Objective 5.3: Utilize the Interim Washington County Motor Vehicle Performance Measures to manage congestion.” Portions of Washington County are outside of the Urban Growth Boundary. In these areas the ODOT mobility targets identified for rural highways apply. The County must use the ODOT mobility targets when evaluating congestion on ODOT facilities within Washington County over the 20-year planning horizon of the transportation system plan, or must adopt alternative mobility standards that better reflect the goals in the County’s transportation system plan.

Certain segments of statewide, regional, or district highways may be designated as Special Transportation Areas (STA), which are areas of compact development located adjacent to a state highway where the need for appropriate local access outweighs considerations of highway mobility. STAs are therefore subject to alternative mobility targets. There are three STAs within Washington County:

- OR 8 (Tualatin Valley Highway) from milepost 16.06 to 16.67 in Cornelius.
- OR 47 (Tualatin Valley Highway) from milepost 25.34 to 26.54 in Gaston; and
- OR 141 (Hall Boulevard) from milepost 2.84 to 3.84 in Beaverton, unincorporated Washington County and Tigard.
Table 3.1: Interim Washington County Motor Vehicle Performance Measures

<table>
<thead>
<tr>
<th>Location</th>
<th>AM/PM Peak Two-hour Period</th>
<th>Target(^1) Performance Measures(^3)</th>
<th>Acceptable(^1) Performance Measures(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Hour(^4)</td>
<td>Second Hour(^4)</td>
<td>First Hour(^4)</td>
</tr>
<tr>
<td>Regional Centers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Town Centers</td>
<td>.99 (E)</td>
<td>.9 (D)</td>
<td>.99 (E)</td>
</tr>
<tr>
<td>Main Streets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station Communities</td>
<td>.9 (D)</td>
<td>.9 (D)</td>
<td>.9 (E)</td>
</tr>
<tr>
<td>Other Urban Areas</td>
<td>.9 (D)</td>
<td>.9 (D)</td>
<td>.99 (E)</td>
</tr>
<tr>
<td>Rural Areas</td>
<td>.9 (D)</td>
<td>.9 (D)</td>
<td>.9 (D)</td>
</tr>
</tbody>
</table>

1 For development review purposes, these performance standards will be used in assessing safety improvements. For plan amendment purposes, if a plan amendment is predicted to exceed the acceptable performance standard, the performance on applicable facilities will not be allowed to deteriorate further, and mitigation may be necessary. For project development purposes, these performance standards will be used to evaluate conditions beyond the transportation plan’s planning horizon, as appropriate.

2 For location reference see 2040 Growth Concept Design Types Map.

3 Vehicle performance shall be determined by using volume-to-capacity ratios. Volume-to-Capacity equivalencies to Level of Service (LOS) are as follows: LOS C = V/C of 0.8 or lower; LOS D = V/C of 0.81 to 0.9; LOS E = V/C of 0.91 to 0.99. Further discussion of vehicle performance is provided in the Technical Appendix.

4 First Hour is defined as the highest hour of the day. Second hour is defined as the hour following the first hour.

Travel Mode Standards

Washington County must demonstrate that transportation solutions included in its transportation system plan will achieve progress toward the regional targets and standards included in the RTP. The county must include the regional targets and standards, or locally adopted standards, in its transportation system plan. In 2010 the urban area of Washington County already met the regional non-SOV targets for 2035.\(^1\)

Regional growth in population and employment and changes to the transportation system are projected into the future. However, the regional travel demand forecasts are based on the existing measured modal preferences. Future forecasts do not attempt to account for changes in attitudes or preferences because these kinds of changes are difficult to quantify. Future forecasts do show an increased reliance on transit (increased from 1.8 percent of trips to 2.6 percent) and bicycling (increased from 0.8 percent of trips to 1.0 percent). However, the shared-ride rate decreased and the drive-alone rate remained virtually unchanged from 2010 to 2035. Figure 3-3 shows the 2010 and forecast 2035 daily trips by travel mode in Washington County.

\(^1\) Metro staff indicated that they are working on an update to forecast to the year 2040.
Origin-Destination Patterns

Discussions about travel patterns frequently reflect assumptions about predominant traffic flows, but such anecdotal discussions may neglect significant routes. The Westside Travel Demand Forecast Model was built specifically to answer questions about travel demand patterns in Washington County. Ten locations were chosen for analysis of travel origins and destinations, using a “select-link” analysis. These are:

- Tualatin-Sherwood Road (west of Boones Ferry Road),
- Roy Rogers Road (south of Scholls Ferry Road),
- Scholls Ferry Road (west of Highway 217),
- River Road (south of Farmington Road),
- Murray Blvd. (south of TV Highway),
- 185th Avenue (north of Baseline Road),
- Walker Road (west of 158th Avenue),
- Cornell Road (west of Cornelius Pass Road),
- West Union Road (west of Bethany Boulevard), and
- Zion Church Road (west of Glencoe Road).

Roadway Traffic Volume Trends

Washington County maintains several hundred traffic count stations, which are counted annually or every three years. Table 3.2 compares the average motor vehicle volumes and truck volumes for all urban and rural count stations in Washington County, based on counts recorded at 211 urban count stations and 53 rural stations in 2007 and 2012. This data shows a three-to four-percent drop in average motor vehicle volumes over this five-year time period. Average truck volumes decreased during this time period by approximately two percent in the urban area, and by more than 12 percent in the rural area. These decreases in volume, especially rural truck volumes, may be attributed to the economic downturn experienced during this time period. The difference in truck volume decreases between urban and rural counts is due, in part, to a higher proportion of trucks in traffic in rural areas (10-11 percent share) than in urban areas (5-6 percent share).
Table 3.2: Traffic Volume Comparison – 2007 and 2012

<table>
<thead>
<tr>
<th></th>
<th>Urban Area¹</th>
<th>Rural Area²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Auto Volume</td>
<td>13,398</td>
<td>12,936</td>
</tr>
<tr>
<td>Average Truck Volume</td>
<td>762</td>
<td>744</td>
</tr>
<tr>
<td>Average Percent Trucks</td>
<td>5.66%</td>
<td>5.56%</td>
</tr>
</tbody>
</table>

1 Based upon 211 counts containing data for both 2007 and 2012.
2 Based upon 53 counts containing data for both 2007 and 2012.

Vehicle Miles Traveled (VMT)

VMT is a useful way to measure overall utilization of the transportation system. The U.S. Department of Energy reports annual VMT per capita. ODOT estimates VMT on state routes by county; estimates for Washington County are shown in Figure 3-4. Some of the decline in VMT on ODOT facilities may be due to the transfer of some facilities from ODOT to Washington County, and some may be due to the economic downturn during the period from 2007-2011. Fuel sales are another way to estimate VMT. Figure 3-5 shows fuel sales per capita in Washington County between 2006 and 2011, which have declined during this period.

For the TSP, VMT was computed using output from Metro’s regional travel demand model. The primary advantage in using the regional model is that it allows the forecast of VMT into the future, and allows for comparison of VMT between transportation system alternatives. The primary disadvantage is that the regional model output is not available for each year. Therefore the evaluation cannot show trends over time, only the absolute change at the end of the planning horizon. Historical VMT numbers and trends cannot be calculated consistently from this data. In addition, the regional model is only valid for the specific level of land use development included in the adopted regional forecast, and cannot be used to test alternative land use scenarios that might be developed at the county or local levels. Given these limitations, additional national and local information was used to further analyze VMT for Washington County.
VMT within Washington County includes travel by residents from outside the County, but does not include travel by Washington County residents outside the County. Total weekday VMT within Washington County is estimated to be 8.4 million miles of travel in 2010, which translates to approximately 15.76 miles/day/person based on the population of Washington County in 2010. The Metro regional travel demand forecast was used to estimate the 2010 VMT and the forecast for 2035 VMT based on the “State” transportation system.\(^2\) VMT within Washington County is expected to increase to 11.9 million miles per day. This translates to approximately 15.71 miles/day/person based on the population increase projected for Washington County; which is a slight decrease from the 2010 VMT. (Note this does not include weekend or holiday travel.)

\(^2\) The VMT estimates produced through the regional travel model may not be accurate; however, they are presented here for reference.
Roadway Performance
Speed and Reliability
Free flow travel refers to conditions when there are no traffic slow-downs due to the volume of vehicles on the roadway or other unexpected events. It may include normal stopping at stop signs or traffic lights, and may differ from the posted travel speeds. Comparing ‘free flow’ vehicle speeds to those measured on an average weekday peak hour (Tuesday through Thursday, 5:00-6:00 PM), shows the effect of congestion on vehicle speeds. Travel time reliability refers to the consistency or dependability in travel times. While reliability is related to speed reductions, the two measures are significantly different. Reliability focuses on the day-to-day consistency in travel times rather than the level of delay caused by congestion on a ‘typical’ day. If a corridor is normally slower than free-flow conditions, it may be considered reliable, as long as the travel time is consistent on a daily basis. However, if travel times dramatically increase compared to ‘normal’ or ‘expected’ conditions the roadway is not considered to be reliable.

Travel time data was collected on most highways and arterials in Washington County for each day from 2008 through 2010. Table 3.3 summarizes the average weekday peak-hour travel speed in Washington County from 2008 through 2010. Information is presented for 2008-2010, for Tuesday through Thursday during the 5:00 to 6:00 PM period. Table 3.4 summarizes travel time reliability in Washington County for the same period. More detailed information about travel speeds and travel time reliability is included in map form in the Existing Conditions Report (Chapter 2). The data includes freeways and arterials but generally not local or neighborhood streets or many collectors.

Table 3.3: Average Weekday Peak Hour Speed Summary: 2008-2010
(Tuesday-Thursday, 5:00 PM to 6:00 PM)

<table>
<thead>
<tr>
<th>Typical Peak Hour Travel Speed</th>
<th>Roadway Miles</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncongested (at least 90% of free flow speed)</td>
<td>477</td>
<td>50%</td>
</tr>
<tr>
<td>Slowing (75-90% of free flow speed)</td>
<td>298</td>
<td>31%</td>
</tr>
<tr>
<td>Slow (60-75% of free flow speed)</td>
<td>138</td>
<td>14%</td>
</tr>
<tr>
<td>Congested (less than 60% of free flow speed)</td>
<td>41</td>
<td>4%</td>
</tr>
</tbody>
</table>

Source: INRIX
Note: Total is limited to roadways with data availability. The data includes freeways and most arterials but generally not local or neighborhood streets or many collectors.

Table 3.4: Weekday Peak Hour Travel Time Reliability: 2008-2010
(Tuesday-Thursday, 5:00 PM to 6:00 PM)

<table>
<thead>
<tr>
<th>High Congestion Day Compared to Normal Day</th>
<th>Roadway Miles</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most Reliable (travel times are less than double)</td>
<td>317</td>
<td>33%</td>
</tr>
<tr>
<td>Moderately Reliable (travel times more than double)</td>
<td>467</td>
<td>49%</td>
</tr>
<tr>
<td>Unreliable (travel times triple or more)</td>
<td>170</td>
<td>18%</td>
</tr>
</tbody>
</table>

Source: INRIX
*Represents 95th percentile day travel times compared to average day
Note: Total is limited to roadways with data availability. The data includes freeways and most arterials but generally not local or neighborhood streets or many collectors.

The results indicate that approximately half of these roadways in Washington County operated at 90 percent of free flow speed on a typical day during this time period. Congested conditions, where speed is reduced to 60 percent or less of free flow speed on an average day, occur on less than five percent of roadways in Washington County. Travel time reliability findings indicate that approximately one-third of the roadways in Washington County experience slow day (95th percentile) travel times that are less than double those of a normal day; unreliable roadways that experience travel times that are triple or more on slow days make up 18 percent of County roads. The remaining 49 percent of roadways are categorized as ‘moderately reliable’ and experience travel times that increase by 100 to 200 percent on high congestion (95th percentile) travel days.
Roadway Congestion

Traffic congestion is often represented as a ratio of the motor vehicle volume (or demand) to roadway capacity. Demand-to-capacity (D/C) ratios were estimated for the 2010 PM peak hour (between 4:00-6:00 PM) using the Washington County travel demand model. This model includes most collectors, arterials, and highways in Washington County. Locations in Washington County where peak period minimum performance standards are likely to be exceeded are listed below.

- I-5 (various segments between OR 217 and I-405)
- OR 217 (various segments between US 26 and I-5)
- OR 99W (south of OR 217)
- TV Highway (east of 185th Avenue)
- Durham Road (west of Boones Ferry Road)
- Greenburg Road
- Scholls Ferry Road (west of OR 217)
- Boones Ferry Road (between Bridgeport Village and east of Tualatin Road and in the vicinity of 95th Ave/Commerce Circle)
- Walker Road (various segments between Cedar Hills Boulevard and Amberglen Parkway)
- Roy Rogers Road (south of Scholls Ferry Road)
- Cornell Road (west of Saltzman, west of 185th, and west of Brookwood)
- West Union Road (west of 185th)
- Evergreen Parkway (west of 185th and west of Imbrie)
- Tualatin-Sherwood Road
In the Portland metropolitan region, some roadways experience congestion that extends beyond the peak periods of travel. Because off-peak travel conditions are not directly represented in the available peak-period travel demand models, the Hours of Congestion Tool was developed to estimate the duration of congestion, especially for future conditions where “peak spreading” is more likely to occur. Peak spreading refers to the situation where travelers shift their trips from the peak period to the hours before or after the peak period (“peak shoulder hours”) in response to severe congestion during the peak period. The Hours of Congestion Tool uses the peak-period travel demand models together with estimated roadways capacities, and 24-hour traffic volume profile data to estimate the duration of congestion per day for area roadways. Congestion is defined where hourly directional traffic volume is at least 90 percent of estimated roadway capacity (i.e., level-of-service E or F). Locations in Washington County where future congestion may occur for eight hours or more per day include:

- Boones Ferry Road (between Bridgeport Village and east of Tualatin Road),
- Tualatin-Sherwood Road,
- OR 217 (various segments between US 26 and I-5),
- OR 99W (through Tigard),
- Beaverton-Hillsdale Highway, intersection with Oleson Road and Scholls Ferry Road,
- Walker Road (various segments between Cedar Hills Boulevard and Amberglen Parkway), and
- TV Highway (between 170th Avenue and Cedar Hills Boulevard).

Maps illustrating existing conditions are included in the *Existing Conditions and Future Needs Report* in Chapter 2, Figures 2-30 and 2-31.

**Future Congestion**

Future travel demand (year 2035 generated by using the Regional Travel Demand Model) was assigned to the future County transportation network (includes facilities currently in place and improvements currently funded through MSTIP 3d and other funding sources likely to be in place by 2035). Many of the roadways in Washington County will not meet the Washington County LOS standards without some form of improvement to the roadway system. Three categories of system improvements will be needed in the future:

- Roadways in the vicinity of the urban reserves will need to be improved to accommodate travel demand created by development anticipated in the urban reserve areas, unless a complete urban network is assumed to be provided within the urban reserve areas. Since this network only includes projects with committed funding, such improvements were not included in this analysis, but can be expected in the future.
- Implementation of transportation improvements in conjunction with development along arterial and collector roadways that are not currently completed to urban standards. In many locations roadway improvements have been deferred until development occurs on the adjacent properties. It is assumed that such development will likely be conditioned to complete the roadway to urban standards along the frontage.
- It is expected that additional funding will be available between now and 2035 for transportation system improvements that are not included in this network. This network does not utilize that funding; thus it represents a “conservative” view of future transportation system needs.

The analysis of future transportation system needs was repeated, using a transportation system network that included additional improvements included in the RTP “State” list of transportation projects. Implementation of the “State” 2014 RTP projects achieves significant improvement in roadway performance compared to the “Committed” system, and the expected operation of most facilities is drastically improved. More detailed information, along with graphic illustrations of the results of this analysis, is included in Chapter 2 of the *Existing Conditions and Future Needs Report*. 
Roadway Safety

Transportation safety is a complex subject due to the variety of factors that interact with each other during the course of a person’s use of the right-of-way. Road conditions, weather, driver attention, and user type (vehicle, pedestrian, etc.) are just some of the factors that come into play when considering the safety of a particular location. Predictive models are available, along with anecdotal knowledge and experience with similar conditions. Traffic volumes, crash data, and on-site observations provide information to analyze locations and travel corridors and determine the types of improvements that would improve safety. Each situation and location is unique and requires engineering analysis and professional judgment in determining appropriate safety improvements.

Washington County transportation policies and actions are aimed at improving the overall safety of the County’s transportation system. Modern techniques, industry standards, and best management practices are used for new construction and on-going maintenance of the transportation system in Washington County in order to create a safe and reliable network of roads and bridges. Washington County’s roads, bridges, and traffic safety appurtenances are engineered, constructed, and maintained to minimize fatalities and personal injuries, and reduce property damage. In addition, active presence by law enforcement personnel reinforces the rules of the road, contributing to a safer environment for all travelers. Tens of thousands of vehicles traverse Washington County roads on a daily basis and the vast majority of those trips are completed without incident. However, some locations may have a higher-than-average rate of accidents or crashes.

Motor Vehicle Collision Data

Traffic safety monitoring is based on historical crash data. Primary information comes from local police agency reports that are submitted to ODOT for processing and evaluation statewide. The ODOT Crash Analysis and Reporting Unit compiles data for reported motor vehicle traffic crashes occurring on city streets, county roads, and state highways. This data only reflects reported collisions involving motor vehicles; the number of actual collisions that occur is not known. Table 3.5 provides information on the types of crashes in Washington County in 2013.

<table>
<thead>
<tr>
<th>Table 3.5: Washington County Crashes by Type in 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Motor Vehicle Crash</strong></td>
</tr>
<tr>
<td>Non-Collision</td>
</tr>
<tr>
<td>Overturning</td>
</tr>
<tr>
<td>Other Non-collision</td>
</tr>
<tr>
<td>Collision Involving:</td>
</tr>
<tr>
<td>Pedestrian</td>
</tr>
<tr>
<td>MV in transport</td>
</tr>
<tr>
<td>Parked MV</td>
</tr>
<tr>
<td>Railway train</td>
</tr>
<tr>
<td>Pedalcyclist</td>
</tr>
<tr>
<td>Animal</td>
</tr>
<tr>
<td>Fixed object</td>
</tr>
<tr>
<td>Other object</td>
</tr>
</tbody>
</table>

As shown in Table 3.6, by far the most common contributing factor to crashes in Washington County in 2013 was following too closely, representing 42% of crashes and 43% of injuries. Failure to yield was another common factor contributing to crashes and injuries. Looking at fatal crashes, however, drunk driving and speeding were the leading causes.

Table 3.6: Contributing Factors to Crashes in Washington County (2013)

<table>
<thead>
<tr>
<th>Contributing Factor</th>
<th>Count</th>
<th>Percentage</th>
<th>Fatal</th>
<th>Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed too fast</td>
<td>546</td>
<td>7%</td>
<td>5</td>
<td>266</td>
</tr>
<tr>
<td>Failed to yield</td>
<td>1,260</td>
<td>16%</td>
<td>2</td>
<td>601</td>
</tr>
<tr>
<td>Passed stop sign</td>
<td>74</td>
<td>1%</td>
<td>1</td>
<td>47</td>
</tr>
<tr>
<td>Disregard traffic signal</td>
<td>378</td>
<td>5%</td>
<td>1</td>
<td>212</td>
</tr>
<tr>
<td>Drove left of center</td>
<td>116</td>
<td>2%</td>
<td>2</td>
<td>53</td>
</tr>
<tr>
<td>Improper overtaking</td>
<td>56</td>
<td>1%</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>Followed too closely</td>
<td>3,227</td>
<td>42%</td>
<td>1,489</td>
<td></td>
</tr>
<tr>
<td>Made improper turn</td>
<td>313</td>
<td>4%</td>
<td></td>
<td>73</td>
</tr>
<tr>
<td>Had been drinking</td>
<td>251</td>
<td>3%</td>
<td>6</td>
<td>127</td>
</tr>
<tr>
<td>Improper driving</td>
<td>385</td>
<td>5%</td>
<td>3</td>
<td>115</td>
</tr>
<tr>
<td>Mechanical defect</td>
<td>24</td>
<td>0%</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>1,102</td>
<td>14%</td>
<td>1</td>
<td>450</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>7,732</td>
<td>100%</td>
<td>22</td>
<td>3,464</td>
</tr>
</tbody>
</table>

Source: 2013 Oregon Traffic Crash Summary. Note: Crashes with multiple contributing circumstances are counted in all applicable categories.

**SPIS**

Locations that are prone to a higher rate of crashes are tracked and categorized using the County's Safety Priority Index System (SPIS). SPIS is an effective problem identification tool for evaluating roadway intersections and segments with higher-than-average crash histories. The SPIS score is based on a running three years of data tracking crash frequency, crash rate, and crash severity at over 300 intersections along Washington County roadways. While SPIS alone may not reveal the real problem or root cause of a high occurrence of crashes, it is nevertheless a useful tool for identifying and evaluating recurring safety issues. The County has pursued safety fixes at a number of locations in response to SPIS data. Figure 3-6 presents 2011-2013 SPIS locations for Washington County roadways.
This map displays reference information that is not adopted by Washington County ordinance. It is not to be considered as the official Washington County Transportation System Plan. Please contact Washington County Long Range Planning at (503) 846-3519 with any questions regarding this map.

Effective: November 27, 2015
Washington County Resolution and Order 86-95
In 1986, Washington County adopted Resolution and Order 86-95, “Determining Traffic Safety Improvements under the Traffic Impact Fee,” which established the process for reviewing land development applications in the County. The need for a distinction between safety improvements and capacity improvements initiated the drafting of R&O 86-95. The Traffic Impact Fee (TIF) adopted by the County, which has since been updated and replaced by the Transportation Development Tax (TDT), significantly changed the method the County uses to calculate fees to assure that developments provide the improvements necessary to maintain adequate levels of service for roadways. The adoption of the TIF shifted the basis for determining conditions of development approval from an assessment of capacity deficiencies to a determination of when and where traffic safety improvements would be required. The basic assumption in determining necessary traffic safety improvements is that:

Locations currently exist that present an unacceptable risk to the traveling public’s safety, and increasing accident exposure by significantly increasing traffic resulting from development is unacceptable without mitigation measures; and Significant increases in traffic resulting from development can create hazard locations that currently do not exist, and mitigating measures are necessary to protect the traveling public.

For the first situation, a comprehensive analysis of accident data for county intersections was used to determine existing hazardous locations. The top 50 percent of all SPIS scores, as established by policy of the Board of County Commissioners, are defined as existing hazard locations on the premise that this would reflect a manageable number of locations where safety issues might be addressed.

Metro State of Safety Report – April 2012
The 2014 RTP includes specific performance measures/targets to track the region’s progress in achieving the regional goals and objectives included in the plan. The purpose of Metro’s State of Safety Report was to document roadway crash data, patterns, and trends in the Portland metropolitan area and beyond. It presents data on the safety of the transportation system within the Portland metropolitan area, and includes a number of findings and potential strategies that local jurisdictions may incorporate into their transportation system plans. According to this report, Washington County has the lowest rate of serious crashes (combined motor vehicle, bicycle, and pedestrian crashes) per capita and per vehicle mile traveled of any county in the Portland metropolitan area. Furthermore, Washington County has the lowest rate in the region for all injuries per million residents; and the density of crashes in Washington County is much lower than in other locations in the Portland metropolitan area. Additional information from this report is included in the Existing Conditions Report.

Facility Conditions
Maintenance is an essential function for the County’s transportation system; which includes nearly 1,300 miles of paved roadway, almost 200 bridges, more than 3,000 culverts, close to 900 miles of drainage ditches, and numerous miles of roadside vegetation in Washington County. Preserving Washington County’s investment in its transportation infrastructure is the fundamental purpose of maintenance. The Operations & Maintenance Division (OPS) within LUT strives to apply the appropriate level of resources at the right time to provide the most cost-effective use of available funds while achieving the best overall condition of the County’s transportation system assets.
Roadway pavement conditions vary throughout the County, although the overall network condition is classified as fair or above. Roadway maintenance is largely funded through State of Oregon gas tax revenues for urban arterials, urban collectors, and all rural roads. The Urban Road Maintenance District provides funding for roadway maintenance on urban Local Streets and urban Neighborhood Routes. Although these revenues have been sufficient to fund most roadway maintenance needs in the past, it has become increasingly difficult for Washington County to adequately fund needed road maintenance due to:

- Improved vehicle fuel efficiency resulting in lower gas tax revenues,
- Infrequent gas tax increases that have not kept up with the rate of inflation,
- Steadily increasing fuel prices that results in lower fuel sales and lower tax generation, and
- Reduction in the average vehicle miles traveled (VMT) by residents resulting from changing travel patterns and public service campaigns such as “Drive Less/Save More”.

The County has been able to manage maintenance of the transportation system by utilizing the Road Maintenance Priority Matrix, which was initially adopted with the 1988 Washington County Transportation Plan. This matrix provides guidance to the County to maintain the “major system” first in order to maximize the funds available for road and bridge repairs. Mandated emergency and hazard types of activities receive the highest priority designation, regardless of functional classification. For general maintenance, minor improvements and reconstruction activities, a road with the higher functional classification generally has priority over a road with a lower functional classification designation to ensure that roads that play the most vital role in moving people and goods throughout the county are prioritized over other roads for general maintenance, minor improvements, and reconstruction.

Pavement Condition Index
To adequately maintain the many miles of roads under its jurisdiction, Washington County uses a computerized pavement management system to monitor and evaluate the condition of its paved roads. Arterial and collector roads are visually inspected and their surface condition assessed every two years, while Neighborhood Routes and Local Roads are inspected every four years. Based on this assessment, each road or roadway segment is assigned a Pavement Condition Index (PCI) score and grouped into one of the following five condition categories:

- **Very Good Condition** - Pavement structure is stable, with no cracking, patching, or deformation evident. Roadways in this category are usually new or recently constructed (average PCI of 85-100).
- **Good Condition** – Pavement structure is stable, but may have surface erosion or minor hairline cracking, patching or deformation. Riding qualities are still very good (average PCI of 70-84).
- **Fair Condition** - Pavement structure is generally stable with minor areas of structural weakness. Cracking is easier to detect and pavement might be patched, but not excessively. Riding quality is good, but deformation is more pronounced and more easily noticed (average PCI of 55-69).
- **Poor Condition** - Roadway has areas of instability, marked evidence of structural deficiency, large cracking patterns known as “alligatoring,” heavy and numerous patching and very noticeable deformation. Riding quality ranges from acceptable to poor. Spot repair of the pavement base may be required (average PCI of 25-54).
- **Very Poor Condition** – Costs of saving the pavement structural section would equal or exceed complete reconstruction (average PCI of 0-24).

The average 2011 PCI for all roads in a particular functional classification, as compared to the target PCI, is shown in Table 3.7. The system average PCI of 81 indicates that the County’s overall road system is in Good condition, and all functional classifications meet or exceed their target PCI, except for the urban and rural Arterial classifications. While the Arterial classifications fall slightly short of their targets, they still fall in the Good condition rating range.
Table 3.7: Average 2011 PCI vs. Target PCI by Functional Classification

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>2011 Average PCI</th>
<th>Target PCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial</td>
<td>78</td>
<td>80</td>
</tr>
<tr>
<td>Collector</td>
<td>80</td>
<td>75</td>
</tr>
<tr>
<td>Neighborhood Route (URMD)</td>
<td>84</td>
<td>75</td>
</tr>
<tr>
<td>Local (URMD)</td>
<td>85</td>
<td>75</td>
</tr>
<tr>
<td>Local (non-URMD)</td>
<td>74</td>
<td>65</td>
</tr>
<tr>
<td>Rural Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial</td>
<td>76</td>
<td>80</td>
</tr>
<tr>
<td>Collector</td>
<td>81</td>
<td>75</td>
</tr>
<tr>
<td>Local</td>
<td>77</td>
<td>65</td>
</tr>
<tr>
<td>System Average</td>
<td>81</td>
<td></td>
</tr>
</tbody>
</table>

**Bridge Conditions**

Bridges and, to a less noticeable degree, culverts are important elements of Washington County’s transportation system. These facilities provide essential system connectivity, especially in rural areas where alternate routes are limited. Washington County manages 188 bridges, 150 of these structures are longer than 20 feet, which makes them part of the National Bridge Inventory (NBI). NRI bridges are inspected every two years through the ODOT, and results are reported to the Federal Highway Administration. The remaining 38 bridges are not on the NBI system and are inspected every two years by certified inspectors who are either Washington County staff or contracted consultants. Although a culvert is similar to a bridge in that it allows water to flow beneath a road surface, many culverts are replaced as part of the regular maintenance program or in conjunction with roadway improvement projects, so they are discussed here.

In addition to deterioration caused by age or the environment, load carrying trucks can do substantial damage to bridges. To protect the integrity of these facilities as well as public safety, Washington County can designate bridges as “length and width limited” or as “weight limited.” Although the vast majority of bridges in Washington County are considered to be “Highway Legal” and capable of carrying trucks that have axle weights and spacing that do not exceed statutory limits, 10 bridges currently are posted as “Weight Limited” because their structural components or features have been compromised, or the design was determined to be insufficient to carry specified loads or configurations. Two bridges in Washington County are designated as Length or Width Limited because of geometric features that restrict certain size vehicles from traversing the structure without damaging the bridge or conflicting with other traffic movements. Additional information on Washington County bridges can be found in Chapter 2 of the TSP Existing Conditions and Future Needs Report.

Rood Bridge is the longest bridge in Washington County with multiple spans totaling 684 feet.
Urban Road Maintenance District
The Urban Road Maintenance District (URMD) was approved by voters in urban unincorporated Washington County to improve the condition of unincorporated Local Streets and Neighborhood Routes. The district was formed in 1987 and funding was approved for the district in 1994, both by approval of voters in unincorporated Washington County. At the time URMD was formed, urban local roads had deteriorated due to lack of funding for preventative maintenance. The intent was to fund maintenance to prevent further deterioration to protect the traveling public, to preserve assets, and to enhance property values. Before 1994 more than 80 miles of Neighborhood Routes or Local Roads were classified as being in poor or very poor condition, and only 77 percent were in fair or better condition. Ballot Measure 50 in 1997 made the URMD levy permanent at a rate of $0.2456 per $1,000 of assessed valuation. URMD funds road maintenance for approximately 430 miles of Neighborhood Routes and Local Streets within its district. URMD funds cannot be used outside of its district, or for maintenance needs on Arterials or Collectors. In 2011 the Board of Commissioners expanded the list of eligible activities under URMD to include safety improvements (e.g., sidewalks, bike lanes, paved shoulders) on any road (including Arterials and Collectors) within the district.

Gravel Road Upgrade Program
Over the past two decades the subject of forming road maintenance districts in the rural area, or expanding the URMD to include the rural area, has periodically surfaced without any positive results. To address the problem of deteriorating gravel roads and increased dust damage to nearby crops, Washington County developed a program to upgrade some rural Local Roads from gravel to a hard chip-seal surface. The chip-seal process involves applying two to three layers of rock and emulsified asphalt to create a hard-driving surface. Since upgrading all gravel roads to hard surface is expensive, a prioritization methodology to select roads for chip-sealing was developed based on crop frontage, number of houses, traffic volumes, and other factors. On average, several miles of gravel roadway per year were upgraded to chip-seal through the Gravel Road Upgrade Program. Funding for this program has been discontinued as of 2013, so there have not been any new projects under this program.

ROADWAY GOALS, OBJECTIVES AND STRATEGIES
This section includes the goals, objectives, and strategies specifically associated with the roadway system. It includes Goal 5: Mobility, Goal 6: Accessibility and Goal 7: Connectivity. These goals, objectives, and strategies help implement the guiding principles described in Part 2 of this document. They outline and guide the development, design, and management of a transportation system that:

- Provides a network of multimodal transportation facilities and operational systems intended for travel between points A and B,
- Connects and integrates land use and transportation,
- Provides multiple travel routes and connections within and between parts of the community, and
- Provides for travel by all modes including walking, bicycling and public transit.

New and improved connections, with rare exception, are to be implemented as “complete streets” within the urban area. Complete streets are roadways designed and operated with all users in mind — people walking, bicycling, using mobility devices, transit, cars, motorcycles, and freight vehicles. Complete streets provide for the safe, comfortable, and convenient movement of people of all ages, abilities, and means. Transportation system design also must respond to land use patterns and community needs. Existing and future development patterns determine where homes, schools, work, shopping, and other activities are located, and can profoundly affect the way in which we move about.
Mobility

Mobility means travel between points A and B. The mobility goal calls for providing a network of multi-modal roadways and operational systems. Achieving the mobility goal entails the effective and efficient management of the existing and future roadways, including the improvement of roadways to urban standards as complete and livable streets.

The four primary objectives of the design, implementation and management for the mobility functions of the roadway system include:

1. Designation of an appropriate functional classification system and maps

The Transportation System Plan calls for developing an appropriate roadway functional classification system based on travel characteristics and community aspirations. This functional classification system describes appropriate operational attributes, as well as roadway design treatments and standards. Roadway functional classification definitions are described at the end of this section.

Streets where Regional Street Design standards are to be considered are shown on the Regional Street Design Overlay Map. The intent of this map is to identify those Arterial and Collector streets where certain design treatments may be used to enhance pedestrian, bicycle and transit functions while also seeking to provide adequate motor vehicle capacity resulting in safer, modally balanced streets. The Regional Street Design Overlay Map identifies Boulevards, Boulevard Intersections and Streets, the designs for which are discussed below.

- Boulevards may have three or more lanes and may include landscaped medians, on-street parking, landscape buffered sidewalks and enhanced pedestrian crossings. These roadways also include bicycle lanes or other bicycle treatments and wide sidewalks that can accommodate transit enhancements such as benches or bus shelters.
- Boulevard Intersections may include broad or wide sidewalks up to 12 feet in width as well as special lighting and crossing features to improve pedestrian, bicycle and transit safety and accessibility.
- Streets may range from two to more travel lanes and may include continuous two-way left turn lanes or median treatments, with landscaping where appropriate, bike lanes and landscape buffered sidewalks of six or more feet. Streets may include marked pedestrian crossings at intersections and/or may include special crossing amenities at major intersections.

2. Providing systems to manage and operate the roadway system efficiently

The plan also calls for improved systems to manage and operate roadways within a constrained urban context. Access management, traffic calming and facility design are important elements of managing the transportation system. Access management reduces conflicts between through movements and vehicles turning off and onto the roadway, as well as conflicts between motor vehicles and pedestrians or bicyclists. Facility design addresses roadway safety and operations with striping, geometry, turn movement channelization and other minor roadway reconstruction. Traffic calming devices may be applied to Local Streets and Neighborhood Routes to attempt to help protect neighborhoods from the intrusion of through-traffic, and from speed violations. Traffic calming techniques may include signage, curb extensions, traffic barriers, narrowed travel lanes, planted medians and other features.
Programs that allow better use of the existing transportation system benefit all users and improve system capacity and efficiency. Transportation System Management (TSM) is a general term used to describe techniques for increasing the efficiency, safety and capacity of a transportation facility without major new capital improvements. This may include signal improvements, facility design treatments, access management, managed lanes, turn restrictions, ramp metering, incident response, targeted traffic enforcement and/or programs that smooth transit operations, among other treatments.

### 3. Monitoring travel conditions with an appropriate level-of-service and other performance standard

The Transportation System Plan makes the presumption that building a roadway system to accommodate all motor vehicle traffic at desired standards during the peak travel period may not be practical. Certain project(s) necessary to provide desired peak-period motor vehicle performance would be extremely difficult to build for reasons of physical impacts, costs, and conflicts with other goals or community aspirations. In the meantime, the Interim Washington County Motor Vehicle Performance Measures will continue to fulfill the important role of evaluating target and acceptable motor vehicle performance.

### 4. Encouraging transportation demand management programs and partnerships

Transportation Demand Management (TDM) is the general term used to describe any activity that provides an alternative to single-occupant-vehicle trips. TDM encompasses a range of strategies such as carpooling, staggered work shifts and/or telecommuting. These strategies encourage ridesharing (e.g., car- or vanpooling), transit use (e.g., fare subsidies), bicycle commuting (e.g., on-site showers, lockers or bike parking), walking to work and/or flexible work hours. TDM strategies are relatively low-cost initiatives that can help reduce traffic congestion problems and improve overall mobility.

As growth in Washington County occurs, the number of vehicle trips and travel demand in the area will also increase. The ability to provide alternatives may help accommodate this growth. TDM strategies and programs have taken on increased importance and emphasis recently. This is in part due to an increased interest in improving air quality and active transportation and health. TDM strategies are encouraged by a number of organizations for these reasons, as well as reducing the need and expense for additional vehicle capacity. The State of Oregon requires employers with more than 50 employees to have programs in place that reduce the percentage of employees who drive alone to work.

Transportation Management Associations (TMAs) are typically public/private partnerships that have been established in some areas to coordinate and assist firms in complying with these regulations and to be advocates for activities that reduce demands on our roadway system. TMAs play a role in reducing single-occupant-vehicle trips, reduce green-house gas emissions, foster economic vitality, improve health and enhance the efficiency of our regional transportation network. Since 1997 the Westside Transportation Alliance (WTA) has worked with its partners and Washington County employers to offer workplace services and programs that help employees commute to work by transit, carpool, vanpool, walking and biking. More recently the WTA expanded its focus to include business services such as “last mile” connections and creation of bicycle parking resources.
Goal 5: Mobility

*Promote the efficient and cost-effective movement of people, goods and services by all modes.*

Objective 5.1. Provide a county roadway system that is cost-effective, designed to operate efficiently, and serves all travel modes.

- Strategy 5.1.1 Recognize that the functional classification system represents a continuum in which through traffic increases and provisions for vehicle access decrease in the higher classification categories. Designate a roadway Functional Classification Map utilizing some or all of the following criteria for defining or modifying the functional classification:
  - Expected amount, type and characteristics of vehicle traffic.
  - Distance between similar roadways within the system.
  - Expected needs of the community and traveling public.
  - Extent of appropriate access.
  - Length of the roadway.
  - Land use along the roadway.
  - Neighborhood and community aspirations.

- Strategy 5.1.2 Determine ultimate street design requirements and street profile for development review and/or public improvement based on the Functional Classification Map designation and/or Special Area Street Map designation; and utilize the Pedestrian System Map, the Bicycle System Map, and the Lane Numbers Map to determine the appropriate right-of-way dedication and design treatment applicable within the currently adopted roadway standards.

- Strategy 5.1.3 Address potential impacts of long-distance trips on neighborhoods or communities by:
  - Ensuring that the collectors and arterials of the transportation system are designed to adequately accommodate these trips.
  - Designing and managing local streets to accommodate local trips and to discourage long-distance trips.

- Strategy 5.1.4* Prior to adding through travel lane capacity to the Lane Numbers Map, or elsewhere in the transportation system plan, consider the following strategies, in the order listed below:
  - Transportation System Management strategies, including Travel Demand Management, safety, operational and access management improvements.
  - Bicycle and pedestrian system improvements.
  - Appropriate lane-markings, safety improvements, and other operational devices to improve traffic flow.
  - Where appropriate and feasible incorporate Land Use strategies to reduce motor vehicle congestion and peakperiod demand.
  - Parallel connections and local street connectivity improvements.

*Strategy 5.1.4 has been developed based on and in response to the Regional Transportation Functional Plan requirements in Title 2, 3.08.220.*
• Strategy 5.1.5 Define and maintain a Long-Term Jurisdiction Map that is intended to serve major travel movements, and appropriate for longterm Washington County operation and maintenance. Maintain a map which identifies the Long-Term Jurisdiction of county and state facilities. Negotiate jurisdiction of facilities identified for longterm county operation and maintenance.

Objective 5.2 Provide systems to efficiently manage and operate the roadways.

• Strategy 5.2.1 Identify, evaluate, develop and enhance transportation system management and operation technology and techniques that limit congestion and maximize transportation system operating efficiency.

• Strategy 5.2.2 Implement intelligent/adaptive transportation system technologies and techniques that improve the efficiency and operation of the transportation system.

• Strategy 5.2.3 Coordinate efforts with regional partners to cooperatively develop sub-regional arterial surface street management systems and programs that include, but are not limited to, signal system coordination and optimization, video data collection, data retrieval and archiving.

• Strategy 5.2.4 Coordinate with TriMet, Metro, the Oregon Department of Transportation (ODOT) and other agencies to provide appropriate signal priorities along frequent and rapid bus transit routes.

• Strategy 5.2.5 Investigate managed lane treatments and other priority treatments for freight, transit, or other modes, in appropriate corridors and/or locations.

• Strategy 5.2.6 Investigate the potential for public/private partnerships to provide driver information services (such as phone applications and/or social media).

Objective 5.3 Utilize the Interim Washington County Motor Vehicle Performance Measures to manage congestion (please note Interim Washington County Motor Vehicle Performance Measures will be the same as the volume to capacity ratio (V/C) standards adopted in 2002 (see Table 3.1) until an analysis and update of performance standards has been completed and adopted).

• Strategy 5.3.1 Provide a transportation system that accommodates travel demand consistent with applicable performance standards for all modes of travel where feasible.

• Strategy 5.3.2 Provide a roadway system that meets the mobility needs of Washington County residents and businesses, as defined by performance standards identified in Interim Washington County Motor Vehicle Performance Measures of this plan.

• Strategy 5.3.3 Implement Washington County projects necessary to improve performance and reduce system design deficiencies in roadway corridors and segments that are operating or forecasted to operate at less than acceptable standards as identified in the Interim Washington County Motor Vehicle Performance Measures.

• Strategy 5.3.4 Implement Washington County’s Comprehensive Plan, including the review of development applications, as defined by the performance standards identified in the Interim Washington County Motor Vehicle Performance Measures of this plan.

• Strategy 5.3.5 Help provide a roadway system that addresses travel demand associated with anticipated new development or redevelopment, by applying appropriate access management standards as defined and required within the Community Development Code (CDC).

• Strategy 5.3.6 Recognize that flexibility is necessary and it may not be desirable or practicable to meet the interim level-of-service standard in all cases.
Objective 5.4 Encourage Travel Demand Management efforts to reduce total vehicle travel, and vehicle travel during peak hours.

- Strategy 5.4.1 Develop and emphasize Travel Demand Management and reduction strategies as mechanisms for reducing vehicle trips and shifting travel to off-peak periods.
- Strategy 5.4.2 Work with the Westside Transportation Alliance, major employers and business groups to develop and implement demand management programs to work towards the mode share targets adopted in this plan.
- Strategy 5.4.3 Explore Washington County’s role, with partners, in coordination and development of Transportation Demand Management programs.

Accessibility

Accessibility provides the connection and integration between land use and transportation. The accessibility goal and its related objectives and strategies, encourages Washington County to plan for equitable access and a barrier free transportation system, including compliance with the Americans with Disabilities Act (ADA). The transportation system should be designed to provide affordable and equitable access to travel choices that serve the needs of people and businesses, including those with low income, children, the elderly and people with disabilities. The transportation system is needed to provide access to and within all destinations, with particular emphasis on providing access to destinations essential for daily needs.

Accessibility can be measured by the ability to reach desired goods, services, activities and destinations with relative ease, and within reasonable timeframes and costs. Many factors may affect accessibility (or physical access), including the quality, cost and affordability of transportation options, land use patterns, connectivity of the transportation system and the degree of integration between travel modes. The accessibility of a particular location can be evaluated based on distances and travel options, and how well various modes serve that location.

The Regional Transportation Plan (RTP) calls for a measurement of “basic infrastructure.” This performance target is measured by the number of essential destinations accessible within 30 minutes by trails, bicycling and public transit or within 15 minutes by sidewalk. The RTP also calls for “access to daily needs” using the same measurement methodology, but specifically measures transportation disadvantaged populations. The RTP calls for monitoring of these performance targets to provide accountability. Decision makers can use this information to adapt policies and investment strategies based on what is learned.

The Americans with Disabilities Act (ADA) of 1990 affects a great deal of transportation infrastructure. Many of the requirements have been implemented through the Uniform Building Code, which outlines the details of designing and implementing appropriate features for people with disabilities. Washington County sidewalks are now required to be implemented with curbcuts at intersections. As a component of ADA compliance, Tri-Met operates a paratransit service called LIFT. Registered customers who have a disability or disabling health condition that prevents independent use of TriMet buses and/or trains may use this shared-ride public transportation service. TriMet’s stops, stations and vehicles have accessibility features that help make it easier for people with disabilities to readily use TriMet.

Another form of accessibility is emergency response. Emergency response time for lifethreatening emergencies is critical. Total response time for these events is measured in three elements:
• **Alarm processing** - the time interval from incident initiation (9-1-1 pick-up) to dispatch.
• **Turnout** - the time interval from dispatch to vehicle enroute for first arriving unit.
• **Travel** – the time interval enroute to arrival of first responding unit.

**Goal 6: Accessibility**

*Provide safe and efficient access to destinations within Washington County.*

**Objective 6.1.** Provide an accessible, multimodal transportation system that meets the needs of the community.

- **Strategy 6.1.1** Coordinate with private and public developers and the public to provide access via a safe, efficient, and appropriately balanced system of complete streets.
- **Strategy 6.1.2** Encourage modifications that bring driveway and other access points into compliance or closer to compliance with applicable standards.
- **Strategy 6.1.3** As appropriate, require development adjacent to transit routes, and within transit oriented districts, to provide direct pedestrian and bicycle access to transit, including street crossings. Such crossings are preferred at intersections. Mid-block crossings would only be permitted where they meet applicable warrants.
- **Strategy 6.1.4** Encourage enhanced or improved pedestrian and bicycle street crossings in appropriate high activity locations.
- **Strategy 6.1.5** Consider measures to increase the accessibility of essential destinations.
- **Strategy 6.1.6** Encourage the development of appropriate multimodal connections within destination areas.
- **Strategy 6.1.7** Consider all abilities and travel options when planning, designing and implementing transportation improvements.
- **Strategy 6.1.8** Provide adequate access for emergency service vehicles throughout the system. Coordinate with emergency service providers on proposed transportation improvements and/or design and placement of traffic calming devices. Consider emergency vehicle access during the review of proposed private development actions as required by the Community Development Code (CDC).
- **Strategy 6.1.9** Identify opportunities to improve access in underserved communities.

**Connectivity**

Connectivity creates multiple opportunities for movement within and between neighborhoods as well as within areas of employment and other parts of the community. The connectivity goal encourages Washington County to plan for an interconnected transportation network. Connectivity focuses on an interconnected multi-modal local street network and provision of accessways for non-motorized modes where multi-modal street connections are impractical. This encourages local travel needs so that local trips are can be made easily and efficiently, without needing to use the Arterial or Collector street system. New development and redevelopment is required to meet connectivity standards.

This goal does not necessarily require a grid street system, but is intended to provide for a development and system pattern which provides choices and convenient circulation for pedestrians, bicyclists and transit users and motorists. The Community Development Code (CDC) requires appropriate neighborhood circulation. See the CDC for more information regarding requirements and standards for both on-site and off-site circulation.
Local Street Connectivity

Local Streets are intended to provide direct property access. Local Streets should provide routes for local trips to help keep through trips on Collector and Arterial streets. While Local Streets are not intended to serve through traffic, the aggregate effect of Local Street connectivity impacts the effectiveness of the Arterial and Collector system. Therefore, a connected Local Street system should be established in order to provide for local travel needs and to help preserve the capacity of the Arterial and Collector streets for longer or regional trips. Local Street connectivity requirements are defined in the CDC.

Community Plan Local Street Connectivity Maps

The Local Street system will provide a connected network that facilitates local travel needs, lands that have been determined to be of sufficient size and that are candidates for development or redevelopment, are identified on the Local Street Connectivity maps/Local Street Connective Maps and standards are used to meet Metro’s street connectivity requirements, provide a generally direct and uncircuitous pattern of streets and to ensure the development will not preclude future street connections to lands not yet developed. The Local Street Connectivity Map indicates where, as part of development, Local Streets are required to connect to the existing system. Where it is impracticable to provide a Local Street connection based on criteria in the CDC, bicycle and pedestrian accessways are required instead. The general connectivity requirements of the CDC apply to lands not on these maps.

Washington County has identified potential Local Street Connectivity Lands. These lands are defined as contiguous vacant or underdeveloped urban lands of five (five) acres or more. On these lands, new development would be subject to a shorter block length standard (530 feet vs. the existing 600 foot standard). In addition, cul-de-sacs are limited to no more than 200 (two hundred) feet and no more than 25 dwelling units are allowed on closed end streets that cannot be extended due to physical or environmental constraints. Within areas designated as Local Street Connectivity Lands, the connectivity standards are applicable to mixed use developments including multi-family and/or commercial development. Street connections would be required where practicable on such lands.

Circulation System Design and Transit Oriented Design Principles

Throughout Washington County the design and location of the circulation system in a community is the key element for determining pedestrian connectivity and the arrangement of land uses. These principles and standards are of particular importance for Transit Oriented Districts. Within Transit Oriented Districts, an urban scale block dimension and clearly delineated pedestrian system should provide direct connections to transit service. These direct pedestrian connections should be clearly marked and designed to avoid conflicts with vehicles. When developing the design, considerations may include the anticipated concentrations of employment or housing as well as public building and common open spaces.
Goal 7: Connectivity

*Provide improved and new transportation connections within and between developed and developing areas.*

**Objective 7.1** Provide an interconnected transportation network that offers multi-modal travel choices and minimizes out-of-direction travel for all modes.

- Strategy 7.1.1 Require development to provide an interconnected local street system, as set forth in the Community Development Code and/or Community Plans, including a pedestrian and bicycle network. Require accessways in locations where street connections are undesirable or impracticable.
- Strategy 7.1.2 Require development to provide connections to established or planned accessways, trails, easements and other nonmotorized facilities.
- Strategy 7.1.3 Require development to address connectivity standards on lands designated on the local street connectivity maps and/or within areas designated as transit oriented districts.
- Strategy 7.1.4 Prioritize projects that complete facility gaps and deficiencies as funding allows.
- Strategy 7.1.5 Encourage the off-street trail networks to be integrated with on-street pedestrian and bicycle facilities.

**Objective 7.2** Identify as Refinement Areas locations where new Arterial or Collector connections or other improvements are necessary, but the specific location, mode and/or function has not been determined.

- Strategy 7.2.1 Within designated Refinement Areas, require that development demonstrate how the development proposal shall either accomplish or not preclude the needs identified by the Refinement Area.
- Strategy 7.2.2 Seek to identify the specific location, mode and/or function within Refinement Areas and amend the appropriate maps to remove the refinement area designation, as funding and resources allow.

**Objective 7.3** Consider new road alignments shown on the Functional Classification System Map and Community Plans to be general and subject to modification depending on impacts and issues assessed during the project development and development review process.

- Strategy 7.3.1 Analyze and design new roads when development applications are received or funds become available.
- Strategy 7.3.2 Provide flexibility at the plan and project development level to respond to location-specific considerations consistent with environmental, community and transportation system objectives.
- Strategy 7.3.3 Identify new and/or additional Neighborhood Routes and Special Area Local Streets through the development review process.
- Strategy 7.3.4 Modify alignment of proposed roads as determined through project development and/or the development review process and consistent with the Implementation section of this plan.
ROADWAY ELEMENT CLASSIFICATIONS AND MAPS
This section provides descriptions and maps of facility classifications associated with the roadway system in Washington County, including Functional Classification, Lane Numbers and Right-of-Way Protection, Special Area Streets, Long Term Roadway Jurisdiction, Rural Roadway Enhancement Study Corridors, and Refinement Areas.

Functional Classification
Functional Classification introduces the two primary transportation functions of roadways, namely mobility and access, and describes where different categories of roadways fall within a continuum of mobility-access. While these two functions lie at opposite ends of the continuum of roadway function, most roads provide some combination of each. Most travel occurs through a network of interdependent roadways, with each roadway segment moving traffic through the system toward destinations. The concept of functional classification defines the role that a particular roadway segment plays in serving this flow of traffic through the network, as illustrated in Figure 3-7. Roadways are assigned to one of several possible functional classifications within a hierarchy according to the character of travel service each roadway provides. Planners and engineers use this hierarchy of roadways to channel transportation movements through a highway network efficiently and cost-effectively.

The Functional Classification system provides direction for planners and designers regarding appropriate classification criteria and facility design. It provides a continuum in which the emphasis on through-traffic increases and provisions for access decrease as classifications get higher. A Freeway’s main function is to provide a continuous route that enables traffic to move easily over long distances – the emphasis here is on mobility – and freeways are the highest classification. The primary function of a Local Street is to provide access to individual properties, and this is the lowest street classification. Functional classifications between these two have more (or less) emphasis on mobility versus property access.

The Washington County Functional Classification system includes five basic classifications: Principal Arterial, Arterial, Collector, Neighborhood Route, and Local Street. Each of the underlying designations (Collector, Neighborhood Route, and Local) also may have a Special Area designation related to special design standards that support transit-oriented development. The Special Area functional classifications in Washington County apply to the Town Centers and Station Communities in the Sunset Station, Cedar Mill, Willow Creek, Merlo, and Elmonica areas. There are also commercial/industrial designations for certain Collectors.

Figure 3-7: Relationship between Functional Classification, Mobility, and Access
**Principal Arterials** form the backbone of the road network and are generally labeled freeways and highways. These routes connect over the longest distance (miles) and are spaced less frequently than other Arterials. These freeways and highways generally span several jurisdictions and can have statewide importance. At a minimum, highways that are classified by ODOT as Interstate or Statewide Highways are considered Principal Arterials. General characteristics of Principal Arterials can include:

- Freeways have the highest level of access control, including grade separated interchanges. No at-grade driveways or connections are allowed.
- Highways generally have limited at-grade connections.
- Freeways and highways provide connections for the movement of people, services and goods between the central city, regional centers and destinations beyond the region.
- Principal Arterials that are not freeways are managed to minimize the degradation of capacity while providing limited access to abutting properties.
**Arterial Streets** interconnect with the Principal Arterial highway system. Arterials provide general mobility for travel within the Washington/Multnomah/Clackamas County area. Correctly sized Arterials at appropriate intervals allow through-trips to remain on the Arterial system; thereby discouraging use of Local streets for cut-through traffic. Arterials streets link major commercial, residential, industrial and institutional areas. General characteristics of Arterials may include:

- Arterials serve as primary connections to Principal Arterials and connect to other Arterials, Collector and Local Streets, where appropriate.
- Arterials in the rural area provide connections to neighboring cities and farm-to-market access between urban and rural areas. Most rural Arterials serve a mix of rural-to-urban and farm-to-market traffic. In some cases, rural Arterials, especially in rural/urban fringe areas, accommodate significant amounts of urban-to-urban through-traffic during peak commuting time periods. This is not the intended function of the rural Arterial designation and is often the result of congestion on urban Arterials.
- Arterials may provide for freight movement similar to Principal Arterials.
- Arterials have moderate access control for cross streets and driveways. Typically, residential driveways are not allowed access to Arterials.
Collector Streets provide both access and circulation between residential, commercial, industrial and agricultural community areas and the Arterial system. As such, Collectors tend to carry fewer motor vehicles than Arterials, with reduced travel speeds. Collectors may serve as freight access routes providing local connections to the Arterial network. General collector characteristics can include:

- Collectors connect neighborhoods to nearby centers, corridors, station areas, main streets and nearby destinations in the urban area. Land development should not be sited to obstruct the logical continuation of Collector Streets.
- In the rural area, Collectors are a primary link between the Local Street system and Arterials for freight, people, goods and services.
- Access control on Collectors is lower than on Arterials. Commercial, industrial, and institutional uses will be eligible for direct access to Collectors in accordance with provisions of Article V of the Community Development Code. Direct access to new residential lots is not permitted.

Collector: NW 231st Avenue

Collector: SW Elsner Road

Collector: Oak Street
**Neighborhood Routes** are located in residential neighborhoods and provide connectivity to the Collector and Arterial system. They do not serve citywide or community circulation. Because traffic needs are greater than a Local Street, certain measures should be considered to retain the neighborhood character and livability of these routes. Neighborhood traffic management measures are allowed (including devices such as speed humps, traffic circles and other devices.) New Neighborhood Routes that are not in this plan may be established via the land development process.

- The Neighborhood Route designation is appropriate for urban areas where neighborhood forms are more compact and the routes are much shorter than typically occur in the rural area.
- Traffic management or calming measures are allowed.

**Commercial/Industrial Streets** are a design variant of the Collector Street designation and are intended to provide access to commercial or industrial properties. The application of this designation through the development review process may require a different design standard than the underlying functional classification designation.
**Local Streets** primarily provide direct access to adjacent land. While Local Streets are not intended to serve through-traffic, the aggregate effect of Local Street design can impact the effectiveness of the Arterial and Collector system when local trips are forced onto the Arterial street network due to a lack of adequate Local Street connectivity. Local Street connectivity maps in the Community Plans identify new Local Street connections that are required by the Community Development Code in conjunction with development. New Local Streets that are not in this plan may be established via the land development process.

Rural Local Roads may be miles long because of large parcels and a relatively sparse street network. Many Rural Local Roadways are unpaved (gravel) and the serviceability of these roads can vary with rainfall and maintenance. Rural Local Roads provide direct access to a variety of rural land uses including agriculture, forestry, quarry activities, low-density rural residential uses as well as rural commercial and industrial uses.

Rural Local Street characteristics include:
- Paved or unpaved surfaces.
- Narrow lane widths with roadside ditches to provide drainage.
- No access control and access points spaced far apart.
- Lack of traffic calming measures, sidewalks and illumination.

Urban Local Street characteristics include:
- Traffic calming measures are allowed.
- Access control is minimal with direct driveway connections permitted from all land use types.
- A connected network of Local Streets is required as set forth in the Local Street Connectivity Maps of the Community Plans and in the Community Development Code.
- Sidewalks and street lighting.

**Special Area Streets** are sub-categories of the Collector, Neighborhood Route, Commercial Street, and Local Street underlying functional classification designations. Special Area street designations are most frequently applied in transit-oriented overlay districts within 2040 Center and Station Community Area designations. They are identified on the Special Area Street Overlay Map and also in the Community Plans. Special Area Street design standards are included in the Washington County Road Design and Construction Standards.
• **Special Area Collectors** are intended to link traffic from Special Area Local Streets, Special Area Neighborhood Routes, and some Special Area Commercial Streets to Arterials. Posted speeds are low to moderate. A moderate degree of non-transit-oriented development traffic would be acceptable for these facilities.

The design of a Special Area Collector provides multimodal access to the Arterial system, station area employment and high density residential areas while discouraging traffic infiltration on local streets. In addition to autos, these facilities accommodate primary and secondary bus lines, bike lanes and sidewalks separated from the street by a landscape strip. Based on an engineering analysis, left turn lanes in medium and low density residential areas may be generally provided at intersections with Arterials.

Developments which are oriented to Special Area Collectors are generally employment-based or multi-family residential. Single-family residential developments that abut a Special Area Collector are typically oriented away from road.

• **Special Area Neighborhood Routes** serve both a traffic collection and distribution function and provide access to adjacent properties. These facilities are intended to have less volume and less through-traffic than Special Area Collectors. Posted speeds are low and a limited amount of non-transit-oriented development traffic is acceptable for these facilities. New Special Area Neighborhood Routes that are not in this plan may be established via the land development process.

The design of Special Area Neighborhood Routes emphasizes neighborhood orientation by accommodating on-street parking, transit service and bicycles in a relatively narrow paved width which includes the use of traffic calming measures. Exclusive turn lanes are not appropriate for these facilities unless needed for safety at intersections with Arterials.

• **Special Area Neighborhood Routes** primarily serve residential land-uses. Development which includes small to medium scale mixed uses is also appropriate.

• **Special Area Commercial Streets** serve local access and service needs associated with urban high density residential, mixed use and employment-oriented land uses. These roads are not intended to serve through-trips but may have higher traffic volumes than Special Area Neighborhood Routes. The street may not exceed two travel lanes in each direction. Speeds should be low. New Special Area Commercial Streets that are not in this plan may be established via the land development process.

The design of Special Area Commercial Streets reflects intensive localized urban use by all modes. The road must accommodate autos, trucks, buses and bicycles while also providing transit stop amenities and frequent opportunities for pedestrian crossings. Sidewalks are wide and have tree wells to encourage walking.

• **Special Area Local Streets** provide direct property access. They are not intended to serve through traffic. Posted travel speeds are generally low. The design of Special Area Local Streets reflects the residential neighborhood function by accommodating on-street parking on a narrow paved width which can include traffic calming measures to slow down traffic. Special Area Local Streets should serve only low to medium density residential districts. New Special Area Local Streets that are not in this plan may be established via the land development process.
Functional Classification Summary

As of 2011, Washington County had jurisdiction more than 1,300 centerline miles of roadway, about evenly divided between urban and rural areas. The Local Street classification accounted for nearly 60 percent of the total road mileage in the county in 2011. These mileage figures include roads located entirely within the unincorporated area of Washington County as well as roads under County jurisdiction located within the cities of Washington County. Most of the latter category consists of Arterials such as Tualatin-Sherwood Road in Tualatin and Sherwood, Cornell Road in Hillsboro, and Walker Road in Beaverton.

Table 3.8 summarizes the mileage of different classifications of roads within Washington County. The Functional Classification map included as Figures 3-8 and 3-9 identifies the functional classification for all County roadways. Design parameters for the different functional classifications are included in Table 3.9.

### Table 3.8: Washington County Road Mileage by Functional Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Mileage</th>
<th>Percent of Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial</td>
<td>125</td>
<td>9.7</td>
</tr>
<tr>
<td>Collector</td>
<td>74</td>
<td>5.8</td>
</tr>
<tr>
<td>Neighborhood Route</td>
<td>83</td>
<td>6.5</td>
</tr>
<tr>
<td>Local</td>
<td>362</td>
<td>28.2</td>
</tr>
<tr>
<td>Urban Total</td>
<td>644</td>
<td>50.2</td>
</tr>
<tr>
<td><strong>Rural Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial</td>
<td>74</td>
<td>5.8</td>
</tr>
<tr>
<td>Collector</td>
<td>191</td>
<td>14.9</td>
</tr>
<tr>
<td>Local</td>
<td>374</td>
<td>29.2</td>
</tr>
<tr>
<td>Rural Total</td>
<td>639</td>
<td>49.8</td>
</tr>
<tr>
<td><strong>County Total</strong></td>
<td>1,283</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Washington County

The above designations are underlying functional classification designations. Collector, Neighborhood Route and Local streets may also have Special Area designations, particularly in areas where transit oriented development is planned.
Table 3.9: Functional Classification Design Parameters

<table>
<thead>
<tr>
<th>Roadway Classification</th>
<th>Lanes</th>
<th>Bike Lanes</th>
<th>Max ROW</th>
<th>Max Paved Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Arterials &amp; Arterials</td>
<td>7</td>
<td>Yes</td>
<td>122 Feet</td>
<td>98 Feet</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Yes</td>
<td>98 Feet</td>
<td>74 Feet</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Yes</td>
<td>90 Feet</td>
<td>50 Feet</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Yes</td>
<td>90 Feet</td>
<td>48 Feet</td>
</tr>
<tr>
<td>Arterials with Streetscape Overlay</td>
<td>5</td>
<td>Yes</td>
<td>102 Feet</td>
<td>74 Feet</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Yes</td>
<td>90 Feet</td>
<td>50 Feet</td>
</tr>
<tr>
<td>Arterials with Enhanced Major Street Bikeway</td>
<td>5</td>
<td>Yes</td>
<td>102 Feet</td>
<td>78 Feet</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Yes</td>
<td>90 Feet</td>
<td>54 Feet</td>
</tr>
<tr>
<td>Arterials w/ Streetscape Overlay and Enhanced Major St Bikeway</td>
<td>5</td>
<td>Yes</td>
<td>106 Feet</td>
<td>78 Feet</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Yes</td>
<td>90 Feet</td>
<td>54 Feet</td>
</tr>
<tr>
<td>Collectors</td>
<td>5</td>
<td>Yes</td>
<td>98 Feet</td>
<td>74 Feet</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Yes</td>
<td>74 Feet</td>
<td>50 Feet</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Yes</td>
<td>74 Feet</td>
<td>50 Feet</td>
</tr>
<tr>
<td>Collectors with Streetscape Overlay</td>
<td>5</td>
<td>Yes</td>
<td>102 Feet</td>
<td>74 Feet</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Yes</td>
<td>78 Feet</td>
<td>50 Feet</td>
</tr>
<tr>
<td>Collectors with Enhanced Major Street Bikeway</td>
<td>5</td>
<td>Yes</td>
<td>102 Feet</td>
<td>78 Feet</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Yes</td>
<td>78 Feet</td>
<td>54 Feet</td>
</tr>
<tr>
<td>Collectors w/ Streetscape Overlay &amp; Enhanced Major St Bikeway</td>
<td>5</td>
<td>Yes</td>
<td>106 Feet</td>
<td>78 Feet</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Yes</td>
<td>82 Feet</td>
<td>54 Feet</td>
</tr>
<tr>
<td>Special Area Collectors</td>
<td>3</td>
<td>Yes</td>
<td>52 Feet</td>
<td>46 Feet</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Yes</td>
<td>40 Feet</td>
<td>34 Feet</td>
</tr>
<tr>
<td>Neighborhood Routes</td>
<td>2</td>
<td>No</td>
<td>60 Feet</td>
<td>36 Feet</td>
</tr>
<tr>
<td>Special Area Neighborhood Routes</td>
<td>2</td>
<td>No**</td>
<td>44 Feet</td>
<td>38 Feet</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>No</td>
<td>70 Feet</td>
<td>50 Feet</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>3</td>
<td>Yes</td>
<td>64 Feet</td>
<td>50 Feet</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>No</td>
<td>64 Feet</td>
<td>34 Feet</td>
</tr>
<tr>
<td>Special Area Commercial Streets</td>
<td>4</td>
<td>No**</td>
<td>70 Feet</td>
<td>64 Feet</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>No**</td>
<td>58 Feet</td>
<td>52 Feet</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>No**</td>
<td>46 Feet</td>
<td>40 Feet</td>
</tr>
<tr>
<td>Locals</td>
<td>24' Travel Way</td>
<td>No</td>
<td>60 Feet</td>
<td>32 Feet</td>
</tr>
<tr>
<td>Special Area Local Streets</td>
<td>16' Travel Way</td>
<td>No</td>
<td>38 Feet</td>
<td>32 Feet</td>
</tr>
</tbody>
</table>

*Consult the roadway freight map for additional design considerations.
**While these facilities do not include bike lanes, they do include wide travel lanes of 14 feet due to constrained right-of-way width – see Footnotes 2 and 5.

Footnotes:
1. The maximum number of travel lanes that can be built without a plan amendment is identified on the “Road Lane Numbers” Map except for roads allowed to be built as provided by the Community Development Code (CDC). This plan-level decision establishes the transportation system capacity necessary to adequately serve future travel demand identified in the TSP. The number of lanes required to accommodate turning movements at intersections and interchanges will be determined through traffic analysis conducted during the transportation project development process. This project-level decision identifies physical improvements necessary at or near intersections and interchanges to safely and efficiently move toward attaining the system capacity identified in the TSP. Improvements may include turn lanes and auxiliary lanes adjoining the traveled roadway to accommodate weaving, merging, speed changes or other purposes supplementary to through traffic movement. Auxiliary lanes to address spot area capacity and safety needs may extend between intersections (including interchanges) and beyond an intersection. Opportunities for public participation are available as provided by the CDC.
2. Bikeways or bicycle lanes are required on all urban Collectors and Arterials, including Special Area Collectors. A Six-foot wide, striped and stenciled bike lane or other appropriate bicycle treatments shall be constructed along these facilities except where special constraints exist, as determined by the County Engineer. In those areas, five-foot wide bike lanes, 14-foot wide outside travel lanes or other appropriate facilities may be used and transitioned back to the appropriate bicycle facility when the constraint ends. The Bicycle Facility Design Toolkit should be referenced during the design of urban Collectors and Arterials. Outside of the UGB, refer to the Bicycle System Map and the Rural Roadway Enhancement Study Corridors Map to determine which facilities are intended to have bikeways. Rural bikeways may be a minimum of six-foot wide paved shoulders.

3. Minimum right-of-way and maximum paved widths identified here are, as a rule, the maximum that can be built on roadway segments without an amendment to the TSP. However, plan amendments will not be required when it is determined by the County Engineer during the project development or development review processes that these maximums should be exceeded. The reasons to exceed the maximums may include accommodation or topography or other project-level refinements associated with safety and/or wider bicycle and/or pedestrian facilities; transit facilities; on-street parking; project impact mitigation measures; and intersection, interchange or other project features identified as necessary for safe, efficient operation of the planned transportation system. All intersections along Arterials and Collectors shall be planned to include right-of-way necessary for turn lanes within 1,000 feet of intersections based on a 20-year analysis of intersection needs. Actual right-of-way requirements may be less than the maximums specified in the table based on roadway characteristics and surrounding land uses, as determined by the County Engineer. On two and three lane urban Collectors, right-of-way may be reduced to 60 feet and maximum paved width may be reduced to 36 feet through the land development or project development processes. Such a determination can be made when there is a finding that a turn lane is reasonably unlikely to be needed based on anticipated future development and traffic analysis, and after consideration of other related transportation facilities including storm water quality facilities. Acquiring adequate right-of-way is important to avoid unnecessary and costly future improvement impacts. In all circumstances, Arterial, Collector and Neighborhood Route right-of-way shall be no less than the roadway width (curb to curb or back of shoulder to back of shoulder) plus 24 feet. In rural areas, the maximum right-of-way for Collectors shall be 60-feet. Article VII of the CDC identifies land use standards, public notice and involvement provisions and appeal opportunities that are provided in the land use permitting process.

4. On those roadways designated on the Pedestrian System Map as ‘Pedestrian Parkway’, ‘Streetscape Overlay’, or located within identified ‘Pedestrian Districts’, sidewalks widths and other design features such as planter areas and crosswalks should be determined based on the Washington County Pedestrian Enhancements Design Guidelines and/or applicable standards in the Community Plans and/or the CDC, as determined by the County Engineer. On those roadways designated on the Bicycle System Map as ‘Enhanced Major Street Bikeway’, buffered bike lanes and other bicycle treatments shall be determined based on the Bicycle Facility Design Toolkit and/or applicable standards in the Community Plans and/or CDC, as determined by the County Engineer.

5. ‘Special Area’ streets (Collector, Neighborhood, Commercial or Local classifications) are shown on the ‘Special Area Street Overlay’ maps. Special Area Local Streets may also be designated in the appropriate Community Plans and/or by the CDC. Additional Special Area Neighborhood Routes and Special Area Local Streets may be designated using the development review process. Special Area Street designs will be determined via the Washington County Pedestrian Enhancements Design Guidelines and/or applicable standards in the Community Plans and/or the CDC, as determined by the County Engineer. In those areas, five-foot wide bike lanes, 14-foot wide outside travel lanes or other appropriate facilities may be used and transitioned back to the appropriate bicycle facility when the constraint ends. The Bicycle Facility Design Toolkit should be referenced during the design of urban Collectors and Arterials. Outside of the UGB, refer to the Bicycle System Map and the Rural Roadway Enhancement Study Corridors Map to determine which facilities are intended to have bikeways. Rural bikeways may be a minimum of six-foot wide paved shoulders.

6. Consult the Pedestrian System Map for the Streetscape Overlay definition and location.

7. Consult the Bicycle System Map for the Enhanced Major Street Bikeway definition and location.

Interim Functional Classification Designations

Some roadways in Washington County have an interim Functional Classification designation. These are roadways where the designation is expected to change once planned elements of the system have been completed. These roadways/locations are described below.

**Joss Avenue**

NW Joss Avenue is designated as an Interim Collector on the Functional Classification Map. It is anticipated that NW Joss Avenue ultimately will be reclassified to its expected function as a Neighborhood Route after the construction of Shackelford Road to NW 185th Avenue. See the Bethany Community Plan (Chapter 2: North Bethany Subarea Plan) for additional details.

**Saltzman Road**

The segment of NW Saltzman Road between NW Laidlaw Road and NW Bayonne Lane is anticipated to be realigned west of its current alignment, to the intersection of NW Laidlaw Road at NW 130th Avenue. The realigned segment of Saltzman Road is designated on the Functional Classification Map as a Proposed Collector. Interim improvements to the existing alignment may be implemented to enhance the operation of the facility until the realignment has been completed. After the realignment of Saltzman Road is in place, it is anticipated that the current alignment of Saltzman will be reclassified consistent with its new function as either a Neighborhood Route or a Local Street. The appropriate classification will be determined based upon observed traffic operations and needs after the realignment is complete.
This map displays an unofficial representation of elements adopted as part of Washington County Ordinance No. 783. It is not to be considered as the official Washington County Transportation System Plan. Please contact Washington County Long Range Planning at (503) 846-3519 with any questions regarding this map.
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Online Map: http://arcg.is/1Fitela

This product is for informational purposes and may have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of the information should review or consult the primary data and information sources to ascertain the usability of the information. Care was taken in the mapping but there are no warranties for this product. However, notification of any errors will be appreciated.
Lane Numbers and Right-of-Way Protection
The maximum number of lanes that can be built on individual roads without a plan amendment is identified on the Lane Numbers map included as Figure 3-10. Intersections along Arterial and Collector roads shall be planned to include right-of-way for turn lanes within 1,000 feet of the intersections. Specific needs for turn lanes are determined through traffic analysis conducted at the time of development and/or during the transportation project development process (as described in, Table 3.9: Functional Classification Design Parameters).

Special Right-of-Way Needs
Roadways
Several in Washington County have special designations, where performance monitoring over time is necessary or where additional right-of-way may be needed. These locations are described below.

- **Kaiser Road** – Springville Road to Bethany Boulevard: The intersections of Kaiser Road at Bethany Blvd. and Springville Road control the operations of this segment of Kaiser Road. As development occurs in North Bethany and throughout the region, this section of Kaiser Road may require additional turn lanes and/or travel lanes beyond the three lane configuration identified on the TSP map.

- **Saltzman Road / 130th Avenue** – Laidlaw to County line: This segment of Saltzman Road/130th Avenue represents a future opportunity for a north/south connection between Laidlaw Road and Springville Road. This connection is classified as a twolane neighborhood route until such time that a reclassification is warranted. Additional travel lanes, turn lanes, bicycle facilities, and right-of-way may be required to complete the transportation grid necessary to meet the future system needs of the traveling public.

- **Tualatin Valley Highway** – Maple Street to Cedar Hills Boulevard: As discussed in the Refinement Area section later in this document, a long-term transit solution for Tualatin Valley Highway has yet to be identified. In advance of this transit study involved jurisdictions should consider the preservation of land for Business Access Transit (BAT)/High Capacity Transit (HCT) uses. This land area is not intended to be used for general purpose through lanes.

Major Intersections
To a large degree, the motor-vehicle system functions only as well as its intersections. Intersections that are expected to serve very high motor-vehicle traffic volumes pose additional challenges. Intersection design, and the analysis necessary to support it, ordinarily is undertaken as part of a project or land development process. The locations identified as Major Intersections are potential candidates for grade separation, additional at-grade turn lanes and/or other intersection design solutions. Additional right-of-way in the vicinity of Major Intersections may be needed to preserve options for long-term system needs. Major Intersections should be evaluated with regard to the land use context and all the goals of the transportation system plan. Particular attention should be given to multimodal system accessibility and local connectivity within the vicinity of these intersections. The solution(s) identified should consider impacts on safety, economic vitality, liveability, and the natural environment. Major Intersections are designated at the following locations:

- **170th Avenue @ Tualatin Valley Highway**
- **185th Ave @ Baseline Rd**
- **185th Ave @ Cornell Rd**

3 **Improvements recommended for beyond the time frame of the TVCP**
PART 3: TRANSPORTATION MODAL ELEMENTS

Effective November 27, 2015

Major Intersections may be significant conflict points for all modes. Such intersections can easily become bottlenecks for motor-vehicle travel and hazardous and/or intimidating for users of nonmotorized travel modes. Depending on the severity of the problems, the impacts to all modes can affect a larger area beyond the intersection and may cause problems that ripple throughout the transportation system, causing vehicle delay and/or intimidating barriers for bicycle and pedestrian travel. Impacts may be particularly problematic in areas where community design and land use goals could be compromised by the presence of a major intersection. This plan does not identify solutions to traffic problems at the Major Intersection locations. Those solutions can be studied through coordinated interagency planning efforts, which will determine the ultimate intersection design and define any associated right-of-way needs.

For intersections studied as part of the 2013 Tualatin Valley Highway Corridor Plan (TVCP), near-term improvements such as signal timing, transit prioritization, traffic operations monitoring, and specific turn lane configurations have been identified. The TVCP intersection improvements (and/or other reasonable replacement improvements) are to be implemented and prioritized as funding allows. If, after the lifespan of the TVCP and/or the improvements consistent with the TVCP have been implemented, motor-vehicle traffic congestion becomes unacceptable, then these Tualatin Valley Highway intersections should be considered as candidates for grade separation and/or other intersection improvements to meet travel needs.

4 Included in the TVCP

- 185th Ave @ Evergreen Pkwy
- 185th Ave @ Tualatin Valley Highway
- 185th Ave @ Walker Rd
- Brookwood Blvd @ Evergreen Blvd
- Cornelius Pass Rd @ Cornell Rd
- Cornelius Pass Rd @ Tualatin Valley Highway
- Murray Blvd @ Tualatin Valley Highway
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Roadway System Adequacy
The roadway system identified in this plan is a component of an integrated multi-modal network of complete streets. The Arterial and Collector roadway system identified by the lane numbers map constitutes an adequate system for meeting anticipated travel needs. In general, the planned roadway component of the network is anticipated to meet Oregon Highway Plan mobility targets and standards, as well as the Regional Transportation Functional Plan interim mobility deficiency thresholds and operating standards, except for the segments identified in technical appendix Part 3 of Resolution and Order 14-113. These standards are further identified by interim Washington County Motor Vehicle Performance Standards (Table 3.1: Interim Washington County Motor Vehicle Performance Measures) within Goal 5 (Mobility) of this TSP.

The technical appendix (part 2) to this plan includes a list of project candidates, which may be implemented within reasonably achievable funding constraints. The technical appendix (part 3) also identifies various locations that are forecast to exceed the motor vehicle performance standards after the implementation of planning improvements. These potential deficiency locations will require additional monitoring and system performance evaluation over time. For such locations, the ultimate decisions regarding the modes, functions, general locations of solutions and potential development of alternative mobility measures and standards, are deferred to future refinement planning to be incorporated into the next TSP update.

Special Area Streets
Special Area Streets are identified on the Special Area Street Overlay Maps as well as in the County’s Community Plans. Special Area Street design standards are included in the Washington County Uniform Road Improvement Design Standards. Figures 3-11 3-12 and 3-13 include the maps of Special Area Streets.

Long Term Roadway Jurisdiction
The Long Term Roadway Jurisdiction map identifies roadways that are considered to be appropriate under Washington County jurisdiction over the long term, with remaining roadways either staying under state jurisdiction or becoming city roadways when currently unincorporated areas are annexed. Figures 3-14 and 3-15 illustrate roads intended to be under county jurisdiction over the long term.
This map displays an unofficial representation of elements adopted as part of Washington County Ordinance No. 783. It is not to be considered as the official Washington County Transportation System Plan. Please contact Washington County Long Range Planning at (503) 846-3519 with any questions regarding this map.
Figure 3-13: Special Area Street Overlay: Beaverton-Hillsdale/Oleson/Scholls Ferry Intersection
This map displays an unofficial representation of elements adopted as part of Washington County Ordinance No. 783. It is not to be considered as the official Washington County Transportation System Plan. Please contact Washington County Long Range Planning at (503) 846-3519 with any questions regarding this map.
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Effective: November 27, 2015

Washington County – these roadways are proposed to be under county jurisdiction

State – these roadways are proposed to be under state jurisdiction

Other Roads

Urban Area

County

Online Map: http://arcg.is/1AZZkuJ
Rural Road Enhancement Study Corridors

The Rural Road Enhancement Study Corridors (Figure 3-16) identify corridors where conflicting travel needs of different users must be considered and monitored. Many of these rural roadways were originally designed and built to accommodate only local and agricultural-related traffic. Now they may host urban traffic, farm equipment and commercial freight traffic. The identified corridors may be accommodating travel beyond the scope or intensity intended or envisioned during their design. The travel needs for different users must be considered and monitored. Such users may include urban motor vehicle travelers using these routes as regional connections for cross-county or cross-region travel, farm equipment and commercial freight traffic as well as bicyclists using them for both recreational and commuting travel. Minor enhancements (consistent with OAR 660-012-0065) may be appropriate to consider along these corridors as resources allow.

Enhancement considerations should not be limited to motor vehicle traffic. The rural roadways of Washington County continue to be popular bicycle routes for both recreational and commuting travel. In addition, farm-machinery and farm related travel, as well as commercial freight travel, need to be considered.

A variety of agricultural resources and communities are located along these rural routes. The owners and operators of these resources and residences in these communities are likely to be most affected by any enhancement of these facilities. Furthermore, these parties may have considerable insight into how such enhancements could be most effective. Ongoing dialog and coordination with the affected parties should be conducted as part of the assessment of rural enhancement solutions.

Identification and evaluation of enhancement improvements should be considered as available funding is identified. Specific improvements are to be identified at the time of the evaluation. Some sample considerations may include:

- Sight distance improvements
- Pavement markings
- Advance curve warning signs
- Larger signs and/or reflective sign posts
- Intersection illumination
- Flashing beacon in advance of intersections
- Vegetation control
- Shoulder widening
- Other intersection improvements
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This map displays an unofficial representation of elements adopted as part of Washington County Ordinance No. 783. It is not to be considered as the official Washington County Transportation System Plan. Please contact Washington County Long Range Planning at (503) 846-3519 with any questions regarding this map.
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Refinement Areas

Refinement areas are locations that have been identified where further study is needed to determine the mode, function and/or general location of a future solution or transportation improvement. Further study of a refinement area may occur through a transportation planning process, capital project development or the land development process. Before development may occur on land within a refinement area, the development application must demonstrate how potential solutions to the transportation need will (at a minimum) not be precluded by the proposed development.

SW 124th Avenue Refinement Area

There is a potential future need for a north-south arterial roadway and freight route in the vicinity of the 124th Avenue extension as shown on the Washington County Refinement Area Map. The County anticipates undertaking a broader planning process to address the needs in the area as part of an evaluation and concept planning of the potential future urban reserve lands within the area. A possible realignment of 124th Avenue and/or Tonquin Road may need to be considered in the future.

NW 185th Avenue and OR Highway 26 Interchange Refinement Area

The need for improvements to the 185th Avenue and Highway 26 Interchange has been identified as a potential future need. The design and other attributes of the interchange improvements require additional refinement.

185th Avenue Extension Refinement Area

There is an identified potential future need for an extension of 185th Avenue connecting from SW Gassner road to SW Kemmer Road. The extension would help relieve traffic congestion and improve traffic operations North-South. The refinement area is expected to be evaluated in conjunction with planning for the urban lands in the vicinity, particularly south of Kemmer Road.

North Bethany Neighborhood Route Refinement Area Map

Refer to Area of Special Concern (ASC) 6B in the Bethany Community Plan, Chapter 2, North Bethany Sub-area Plan – as amended.

Day Road Overcrossing Refinement Area

The Basalt Creek Transportation Refinement Plan identified a potential future need for a future arterial corridor extending from the intersection of Boones Ferry Road and Day Road over Interstate 5 and connecting to Elligsen Road. The proposed Arterial is not intended to provide access to or from Interstate 5. This refinement area is intended to identify that a roadway alignment shall be evaluated prior to development or redevelopment occurring. The final alignment will be determined through concept planning after the refinement area has been brought into the Urban Growth Boundary.

I-5 to Highway 99W Refinement Area

In 2009 the I-5 to 99W Connector study was completed and resulted in a recommendation that included a variety of transportation investments to improve the area’s road, transit, bicycle, pedestrian and trail networks. The result of the project acknowledged a desire to distribute traffic across the network and established eight conditions that need to be addressed before the Southern Arterial can proceed to construction. These eight conditions are listed in the technical appendix to this plan.
Issues that need to be examined in greater detail include:

- Evaluate alignment options and their environmental impact;
- Integrate the proposal with the concept plan and transportation system plan for the newly expanded UGB area and any new Urban Reserves that are designated in the area;
- Address any requirements that may result from adoption of an exception to Goal 14 (if needed) for an urban facility outside the UGB;
- Integrate the proposal with the regional mobility corridor between Tigard to Wilsonville to ensure these east-west arterials and I-5 itself could effectively function together; and
- Determine the most appropriate approach to connecting the Southern Arterial to I-5, including options for improvements to the I-5/North Wilsonville interchange, or consideration of extending the Southern Arterial east across I-5 to Stafford Road, thereby providing better access to I205.

Many of the regional conditions can be met within the land use planning for the recent UGB expansion areas and/or Urban Reserves areas. Land use planning processes within the area may require additional transportation system refinement planning to integrate the plan with the I-5 to Highway 99W corridor strategy.

Since the completion of the I-5/99W Connector Study, Washington County led the Basalt Creek Transportation Refinement Plan along with Metro, ODOT and the Cities of Tualatin and Wilsonville. The purpose of this refinement plan was to determine the major transportation system to serve the Basalt Creek Planning Area. The plan sets the stage for land use concept planning and comprehensive plan development for the Basalt Creek area. The need to plan for the future transportation system was driven by future growth in the Basalt Creek area itself as well as almost 1000 acres of future industrial development targeted for surrounding areas. This plan refined the recommendations from the I-5/99W Connector Study and the Regional Transportation Plan, generally for the area between 124th Avenue on the west, and I-5 on the east. As a result of this planning effort agreement was reached regarding a set of roadway improvements including the extension of SW 124th Avenue, a new east-west roadway between that extension and Boones Ferry Road, a new overcrossing of I-5 to Stafford, a new overcrossing of I-5 at Day Road, and several upgrades to the existing roadway network between Tualatin and Wilsonville. The results of the Basalt Creek Transportation Refinement Plan have been incorporated into the multi-modal network of complete streets depicted on the various transportation maps in this TSP.

West of 124th Avenue and through the Brookman Addition Concept Plan area additional refinement effort is still needed. There continue to be concerns related to potential urban development, and the intersection of the Southern Arterial with Highway 99W. During the development of the Brookman Addition Concept Plan the ultimate location of Southern Arterial was not known. The coordination of the two processes resulted in the recommendation of the Brookman Addition Concept Plan that the existing intersection of Brookman Road and Highway 99W be realigned to the north to avoid conflicts with a potential Southern Arterial alignment further south. The Brookman Addition Concept Plan indicated that Brookman Road would serve as a collector roadway, to provide access to future development within the area. No identified location for the Southern Arterial has been established since the adoption of the Brookman Addition Concept Plan, the I-5 to 99W Connector Study and designation of Urban Reserves south of Brookman Road. Therefore, this area remains as a refinement area.
In the interim, consistent with conditions for strategic protection of right-of-way for the southern arterial in
the I-5 to 99W connector study, Brookman Road has been designated as an arterial with 5 lanes of right-of-
way. It is recognized that changing the role and function of Brookman Road would require modifications to
the Brookman Addition Concept Plan to determine how future development would occur. During the interim,
while refinement planning has not yet been completed, access spacing and other requirements will need
to be evaluated on a case by case basis at the time of any development application. The long-term intent is
to reevaluate the Brookman Addition Concept Plan in the context of the Urban Reserve designation to the
south. The evaluation would consider the refinement of both the location Southern Arterial, and a local col-
lector level roadway(s) to serve to the area. As the issues for the Southern Arterial are resolved (including the
long-term alignment) appropriate changes to these interim designations should be considered.

Short-term regional strategy

- Identify transit improvements, specifically east-west connections between Tualatin and Sher-
  wood though TriMet’s Service Enhancement Plan.
- Upgrade existing streets to two lanes with turn lanes, traffic signal timing, bicycle lanes and
  sidewalks, including Herman Road, Tualatin-Sherwood Road, and 95th Avenue.
- Add a lane to the southbound I205 to southbound I5 interchange ramp, extend the acceleration
  lane and add an auxiliary lane on southbound I5 to Elligsen Road.
- Conduct more detailed project planning and begin construction of a two-lane extension of SW
  124th Avenue from Tualatin-Sherwood Road to Grahams Ferry Road.
- Improve the intersection of Tonquin Road and Grahams Ferry Road.
- Continue Intelligent Transportation System improvements along Tualatin-Sherwood Road.
- Conduct more detailed planning to meet all the conditions placed in the proposed Southern
  Arterial, including:
  › Conduct the I-5 to South Corridor Refinement Plan (includes I-5 from Portland to Tigard, I-5 from
    Tigard to Wilsonville and OR99W from I-5 through Tigard and Sherwood). Local jurisdictions will
develop land use plans for areas recently added to the urban growth boundary. These planning
  efforts will include opportunities for further public participation and input.
  › Conduct a more detailed planning study on a potential Southern Arterial. This study will include
  impacts on existing development and the natural environment to refine the design and alignment
  location. These detailed planning studies will consider impact mitigation and coordinate with land
  use and transportation plans for the area. The studies will also include integration with land use
  plans for UGB expansion areas and Urban Reserves. The studies will consider access between I-5
  and a southern arterial and the potential for the preferred alignment to address any conditions
  associated with land use goal exception appropriately for the southern arterial. These planning
  efforts will include opportunities for further public participation and input.

In the recommended alternative, Tualatin-Sherwood Road is sized based upon the expectation there will be
a Southern Arterial. Due to insufficient capacity, it is expected that Tualatin-Sherwood Road cannot meet
regional mobility goals without the Southern Arterial. Further expansion of Tualatin-Sherwood Road is incomp-
thabile with the plans for both the Tualatin and Sherwood Town Centers. If the southern arterial is removed
through future studies, there will be a significant unresolved mobility issue addressing east-west travel
through this area – with resulting impacts on employment and economic vitality.
**Medium-term regional strategy**

- Widen existing streets to urban standards including turn lanes, traffic signal timing, bike lanes and sidewalks, including Tualatin-Sherwood Road, Roy Rogers Road, Boones Ferry Road and Herman Road.
- Widen and improve sidewalks and bike lanes on Day Road between Grahams Ferry Road and Boones Ferry Road.
- Widen Boones Ferry Road between Lower Boones Ferry Road and Martinazzi Avenue to add capacity for vehicles as well as bikes and pedestrians across the Tualatin River.
- Improve the roadway network in north Tualatin, including improvements to Cipole and Teton.
- Realign and widen Tonquin Road between Grahams Ferry Road and Oregon Street.
- Widen 124th Avenue to ultimate urban standard as a complete street with bicycle and pedestrian facilities between Tualatin-Sherwood Road and Grahams Ferry Road.
- Construct a new 5-lane arterial with bike lanes and sidewalks between Grahams Ferry Road and Boones Ferry Road.
- Construct I-5 ramp improvements at the Boones Ferry / Elligsen Road Interchange.

**Long-term regional strategy**

- Conduct additional refinement planning and adopt land use plans for the designated urban reserves in the areas and program right-of-way acquisition for the Southern Arterial.
- Extend new Day Road overcrossing over I-5 from Boones Ferry Road to Elligsen Road (alignment to be determined through future concept planning).
- Extend new 4-lane overcrossing from Boones Ferry Road over I-5 into urban reserve areas east of I-5 (alignment to be determined through future concept planning).
- Construct the Southern Arterial between Highway 99W and 124th Avenue once the project conditions have been met and funding becomes available.

**NW Schaaf Road Extension Refinement Area**

There is an identified potential future need for an extension of Schaaf Road connecting from Helvetia Road to West Union Road. The extension would help relieve traffic along West Union Road and at the intersection of Helvetia Road and West Union Road. The refinement area is expected to be evaluated in conjunction with planning for the urban lands in the vicinity.

**NW Springville Road Extension Refinement Area**

There is a potential future need for an extension of Springville Road westward from 185th Avenue to West Union Road. The extension could help to relieve traffic at the intersection of 185th Avenue and West Union Road. The refinement area is expected to be evaluated in conjunction with the planning for the urban reserves in the area, and may include an assessment of potential environmental issues.
Tualatin Valley Highway Refinement Area

A refinement plan for Tualatin Valley Highway (Maple Street to Cedar Hills Boulevard) and surrounding areas called the TV Highway Corridor Plan (TVCP) was completed in 2013. The TVCP was a joint effort between ODOT, Metro, the City of Hillsboro, the City of Beaverton and Washington County that focused an examination of the transportation system to identify needs and recommend improvements for all modes of transportation. There are still two outstanding sections of the corridor left to be studied: within Beaverton (OR 217 to SW Cedar Hills Blvd) and from Hillsboro (west of SE 10th Avenue/Maple Street) to Forest Grove. A number of improvements have been identified in this corridor to address existing deficiencies and safety concerns and serve increased travel demand.

A long-term transit solution for Tualatin Valley Highway has yet to be identified. In advance of this transit study additional land area is to be preserved for Business Access Transit (BAT) / High Capacity Transit (HCT) uses. This land area is not intended to be used for general purpose through lanes. Development along Tualatin Valley Highway shall consider opportunities for the preservation of land so as to not preclude a future Business Access and Transit lane in the westbound direction, and to not preclude Bus pullouts in the eastbound direction.

The TVCP recommendations fall into 3 categories: 1) Near Term Actions, 2) Opportunistic Actions and 3) Longer Term Refinement Planning Needs.
Near Term Actions
The proposed improvements described below will address existing needs, including multimodal system completeness and safety, and can reasonably be expected to be completed within the next 15 years with a strong commitment from one or more of the partner agencies that have jurisdiction over subject transportation facilities.

• Complete detailed multi-agency study to determine future potential for high capacity transit solutions within the Tualatin Valley Highway corridor
• Improve bus stops along Tualatin Valley Highway
• More frequent bus service
• Add street lighting on Tualatin Valley Highway
• Improve Tualatin Valley Highway pedestrian crossings
• Complete Planning and Conceptual design for a Multi-use path
• Fill gaps in sidewalks and add landscape buffers along Tualatin Valley Highway
• Add directional wayfinding signs
• Complete the (currently discontinuous and narrow) bike lanes on Tualatin Valley Highway
• Improve bike crossings of Tualatin Valley Highway
• Develop continuous east-west parallel bike routes north and south of Tualatin Valley Highway
• Public community rail safety education
• Support and promote employer incentive programs to reduce driving
• Improve signal timing, transit prioritization and traffic operations monitoring
• Signal prioritization for transit
• Adaptive signal control (“smart signals” that adjust timing to congestion levels)
• Improve operations at signalized intersections along Tualatin Valley Highway
• Intersection modification to address safety and mobility
• Left-turn signal improvements

Opportunistic Actions
Understanding that funding opportunities (whether public funding or public funding in combination with private sources) may arise to pay for transportation improvements within the TVCP Project Area, this section includes projects that are important but whose implementation will be dependent on what funding is leveraged in the future. The recommendations discussed below include projects for partner agencies in the TVCP Project Area to work towards to meet the goals and objectives of the TVCP, while attempting to:

• Encourage private contributions by developers to implement the near term improvements, including reserving right-of-way for future transportation improvements (City of Hillsboro, City of Beaverton, Washington County).
• Consider the acquisition of land for the development of a westbound business access transit (BAT) lane as redevelopment opportunities arise on Tualatin Valley Highway. The City of Hillsboro may also require all half-street improvements be constructed to include the set-back curb, planter strip and sidewalk improvement to create an amenable environment for future transit solutions on Tualatin Valley Highway. This redevelopment should be consistent with ODOT standards.
• As projects arise from appropriate categories examine whether opportunities are available to use other funds to leverage this funding (e.g., safety) (ODOT, consulting with partners).

• As land use and transportation system conditions change and near term improvements are completed, consider the opportunity to update this adaptive corridor management strategy (all partners).

• Improve existing north-south routes for all modes to reduce travel demand on Tualatin Valley Highway and congestion at intersections. Improvements to roadways such as Brookwood Avenue, Century Boulevard, Cornelius Pass Road, 209th Avenue, 198th Avenue, 185th Avenue and 170th Avenue would provide the greatest benefit to the overall transportation system. Improvements on 198th Avenue south of Tualatin Valley Highway are scheduled in the next five years through Washington County’s Major Streets Transportation Improvement Program. The other three corridors will require a more opportunistic approach, including working with developers of South Hillsboro to help improve 209th Avenue (City of Hillsboro, City of Beaverton, Washington County).

**Long Term Refinement Planning Needs**

The refinement plan was unable to adequately address some longer term planning aspirations for the corridor. The following should be addressed as part of a future corridor refinement plan:

• If HCT is determined to be the preferred option, the location (e.g. on or adjacent to Tualatin Valley Highway) transit mode (e.g., bus rapid transit, express bus service, light rail, streetcar or commuter rail) and amount of right-of-way needed should be identified. This transit alternative analysis study may explore enhanced signal operations for transit and/or the viability of a Business Access Transit (BAT) lane in appropriate locations.

• The location of a multi-use pathway parallel to Tualatin Valley Highway.

• The location of new local street connections, in concert with access management along Tualatin Valley Highway.

• While grade separated intersections are not included in the plan, it is recognized that in the long term, all tools should be considered to maintain acceptable intersection performance to serve future transportation and community needs.

**NW Wilkins Road Extension Refinement Area**

The Amberglen Community plan determined an extension of Wilkins Road, including a new bridge crossing Bronson Creek, from NW Stucki Avenue to NW 185th Avenue to be a potential future need. However, due to the unique uncertainty of the timing and level of future development in this area it is impractical to designate specific road alignment at this time.

**Refinement Area Maps**

Refinement Areas are shown on the Functional Classification Maps (Figures 3-8 and 3-9) in this Users’ Guide. Officially adopted Refinement Area maps are included in A-Engrossed Ordinance No. 783, with a full-page map for each Refinement Area.