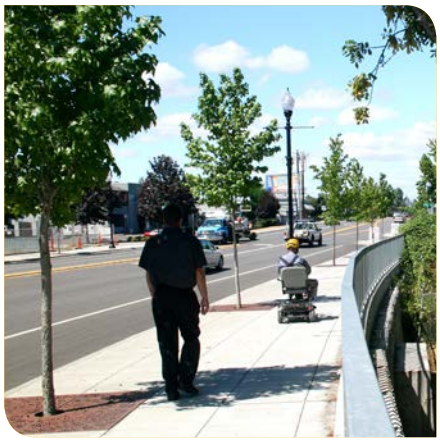

Washington County

Transportation System Plan

USERS' GUIDE

Effective November 27, 2015

Acknowledgements

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Jon Reimann, Economic Development
Monica Schumaker, CPO 4M, Transit
Annee VonBorg, Pedestrian
Matt Wellner, Homebuilders
Peter Welte, Bicycle

Interagency Coordinating Committee

Hal Bergsma, THPRD
Marah Danielson, ODOT
Martha DeBry, City of North Plains
Robert Galati, City of Sherwood
Judith Gray, City of Tigard
Kaaren Hofmann, City of Tualatin
Jim Hough, City of Banks
Terry Keyes, City of Cornelius
Margaret Middleton, City of Beaverton
Karen Mohling, Tualatin Valley Fire & Rescue
Jeff Mori, Washington County Sheriff
Don Odermott, City of Hillsboro
Deena Platman, Metro
James Reitz, City of Forest Grove
Loren Rogers, Hillsboro School District
Roland Signett, City of Durham
Dave Wells, City of King City
Richard Williams, City of Gaston
Debby Wright, Beaverton School District

Washington County Department of Land Use & Transportation

Andrew Singelakis, Director
Andy Back, Planning and Development Services Division Manager
Steve Szigethy, Principal Transportation Planner, Long Range Planning
Steve L. Kelley, Senior Planner, Project Manager
Dyami Valentine, Senior Planner
Karen Savage, AICP, Senior Planner
Brian Hanes, GIS Analyst
Doria Mateja-Stellmacher, GIS Technician III
Joseph Hayes, GIS Technician III
Michelle Pimentel, Senior Program Educator
Angela Brown, Assistant Planner

Project Team - Consultants

DKS Associates

Carl Springer, Project Manager
Mat Dolata

CH2M Hill

Kristin Hull, Public Involvement Lead
Kate Lyman

DHM Research

Su Midghall
James Kandell

Washington County Department of Land Use & Transportation • Planning and Development Services Division
155 N. First Avenue, Suite 350 Hillsboro, OR 97124 • www.co.washington.or.us/lut

Preface

The intent of this Users' Guide is to provide a "user-friendly" version of the Washington County Transportation System Plan (TSP) for County staff, agency, and community partners, and all members of the public. This Users' Guide does not constitute the legally adopted Washington County Transportation System Plan. It draws from the appropriate ordinances adopted by the Board of Commissioners, but in some cases summarizes or reorganizes information from those ordinances. The user should refer to the adopted ordinances if in doubt about any information. Where verbatim language from the ordinances is used, it is highlighted with a shaded background. This version of the TSP is based on ordinances adopted in 2013 (A-Engrossed Ordinance No. 768), 2014 (A-Engrossed Ordinance No. 783) both of which became effective on December 1, 2014, and 2015 (A-Engrossed Ordinance No. 799), which became effective on November 27, 2015. In the future there may be amendments to the TSP. In this and all future versions of the Users' Guide, the effective date of the adopted TSP content included in this document is shown on the cover page and in the footer of each page.

CONTENTS

Using This Guide ..... *vii*

Part 1 – Background *1*

PAST, PRESENT, AND FUTURE 1

INTRODUCTION 3

Updating Washington County's Transportation System Plan **4**

How the TSP Is Used **7**

Framework Documents **7**

Washington County Population and Employment Trends **10**

Part 2 – General Transportation Policies for Washington County *15*

GUIDING PRINCIPLES 15

GENERAL POLICIES 16

Safety **16**

Economic Vitality **19**

Livability **22**

Natural Environment **25**

Part 3 - Transportation Modal Elements *29*

Roadway Element **30**

TRANSPORTATION SYSTEM PERFORMANCE 30

Performance Targets and Standards **30**

Transportation System Demand Patterns **33**

Roadway Performance **36**

Facility Conditions **43**

ROADWAY GOALS, OBJECTIVES, AND STRATEGIES 46

Mobility **47**

Accessibility **51**

Connectivity **52**

ROADWAY ELEMENT CLASSIFICATIONS AND MAPS 55

Functional Classification **55**

Lane Numbers and Right-of-Way Protection **69**

Roadway System Adequacy **73**

Special Area Streets **73**

Long Term Roadway Jurisdiction **73**

Rural Road Enhancement Study Corridors **85**

Refinement Areas **89**

CONTENTS

Freight Element **97**
- **Roadway Freight Connections** **97**
- **Freight Route Designations** **97**
- **Truck Demand** **98**

ROADWAY FREIGHT GAPS AND DEFICIENCIES 100
- **Metro 2014 RTP** **100**
- **Metro Regional Freight Plan** **101**
- **Portland Region Economic Corridor Evaluation Report** **101**
- **Roadway Freight Findings** **103**

DESIGNATED TRUCK ROUTES 104
- **Truck Routes** **104**
- **Over-Dimensional Truck Routes** **104**

FREIGHT RAIL 109
- **Railroad Routes, Owners, and Users** **109**
- **Freight Rail Demand** **109**
- **Railroad Crossing Considerations** **109**

PIPELINES 110

AVIATION 110
- **Hillsboro Airport** **111**
- **Other Airports** **111**
- **Air Cargo to PDX** **111**

Active Transportation Elements **117**

ACTIVE TRANSPORTATION PLANNING CONTEXT 118
- **State of Oregon** **118**
- **Metro** **118**
- **Washington County** **119**
- **Cities and Other Jurisdictions** **119**

ACTIVE TRANSPORTATION TRENDS AND FORECASTS 120
- **Future Demand** **121**
- **Community Comments about Active Transportation** **121**

ACTIVE TRANSPORTATION GOALS, OBJECTIVES, AND STRATEGIES 122

PEDESTRIAN, BICYCLE, AND TRANSIT ELEMENTS 125

PEDESTRIAN ELEMENT 126
- **Sidewalks** **126**
- **Pedestrian Crossings** **133**
- **Trails** **137**
- **Rural Pedestrian Considerations** **139**
- **Pedestrian System Map** **141**

CONTENTS

BICYCLE ELEMENT ... 149
Bicycle Trip Characteristics ... 149
Bikeway Facilities ... 150
Bicycle Parking ... 158
Bicycles and Transit ... 159
Bicycle System Map ... 159
TRANSIT ELEMENT ... 165
Transit Providers ... 165
Transit Needs ... 171
High Capacity Transit Planning ... 178

Transportation System Management and Operations Element ... 185
MULTIMODAL TRAFFIC MANAGEMENT, OPERATIONS, AND TRAVELER INFORMATION ... 185
Traffic Control and Traveler Information ... 186
Rural ... 188
TRAFFIC INCIDENT RESPONSE ... 189
TRANSPORTATION DEMAND MANAGEMENT ... 189

Part 4 – Implementation and Funding ... 191
MONITORING THE TSP ... 191
Monitoring ... 191
Legislative Plan Amendments ... 192
COORDINATION ... 193
Public Involvement ... 193
Agency Coordination ... 194
Plan Coordination and Consistency Requirements ... 194
Programming and Development Review ... 195
FUNDING ... 198
Capital Funding Programs ... 199
Maintenance Funding Programs ... 201
Transportation Project Development ... 203
Washington County Capital Project List ... 204
MAINTENANCE ... 205
Maintenance Priorities ... 205
Target Service Levels ... 206

Appendices ... 209
APPENDIX A – GLOSSARY - DEFINITIONS ... 209
APPENDIX B - ABBREVIATIONS, ACRONYMS AND INITIALIZATIONS ... 220
APPENDIX C – CAPITAL PROJECT CANDIDATE LIST ... 222

TSP GOALS, OBJECTIVES AND STRATEGIES

Goal 1: Safety....17
Goal 2: Economic Vitality....21
Goal 3: Livability....23
Goal 4: Natural Environment....26
Goal 5: Mobility....49
Goal 6: Accessibility....52
Goal 7: Connectivity....54
Goal 8: Active Transportation....122
Goal 9: Coordination....196
Goal 10: Funding....201
Goal 11: Maintenance....207

TABLES

Table 1.1: Washington County Travel Demand (Average Weekday)....12
Table 1.2: Commuter Residence Characteristics - 2002 and 2010....13
Table 3.1: Interim Washington County Motor Vehicle Performance Measures....32
Table 3.2: Traffic Volume Comparison - 2007 and 2012....34
Table 3.3: Average Weekday Peak Hour Speed Summary - 2008-2010....36
Table 3.4: Weekday Peak Hour Travel Time Reliability - 2008-2010....36
Table 3.5: Washington County Crashes by Type in 2013....39
Table 3.6: Contributing Factors to Crashes in Washington County (2013)....40
Table 3.7: Average 2011 PCI vs. Target PCI by Functional Classification....45
Table 3.8: Washington County Road Mileage by Functional Classification....62
Table 3.9: Functional Classification Design Parameters....63
Table 3.10: Daily Traffic Performance Measures for Key Economic Corridors in Washington County....102
Table 3.11: Arterial/Collector Sidewalk Coverage - Urban Washington County....127
Table 3.12: Identified Arterial/Collector Sidewalk Needs....128
Table 3.13: Mid-Block Crossing Improvement Tiers....133
Table 3.14: Existing and Planned Trails in Washington County....138
Table 3.15: Arterial/Collector Bikeway Coverage, Urban Washington County....151
Table 3.16: Enhanced Bikeways in Urban Washington County....155
Table 3.17: Arterial/Collector Bikeway Coverage, Rural Washington County....155
Table 3.18: Identified Bike Lane Needs in Washington County....157
Table 3.19: TriMet Transit Routes Serving Washington County....166
Table 3.20: TriMet Park and Ride Locations in Washington County....168
Table 4.1: Countywide Transportation Funding Programs....199
Table 4.2: Road Maintenance Priority Matrix....206
Table C-1: Capital Project Candidate List....223

FIGURES

(Maps are in italics)

Figure 1-1: TSP Update Planning Process 4
Figure 1-2: TSP Update Committee Structure and Decision-Making Process 5
Figure 1-3: Washington County Population and Employment Trends - 1970-2040 11
Figure 1-4: Mode Share for Travel in Washington County – Existing, Forecast and Targets 13
Figure 2-1: Washington County Department of Land Use & Transportation Mission and Emblem 15
Figure 3-1: An Integrated Multimodal Transportation System 29
Figure 3-2: Level of Service and Congestion 30
Figure 3-3: Daily Trips in Washington County by Travel Mode - 2010 and 2035 33
Figure 3-4: ODOT VMT Estimates for Washington County - 1991–2011 (ODOT Roads Only) 35
Figure 3-5: Washington County Fuel Sales - 2006–2011 35
Figure 3-6: SPIS List 2011-13 (Urban Area) *41*
Figure 3-7: Relationship between Functional Classification, Mobility, and Access 55
Figure 3-8: Functional Classification *65*
Figure 3-9: Functional Classification (Urban Area) *67*
Figure 3-10: Lane Numbers *71*
Figure 3-11: Special Area Streets Overlay: Cedar Mill and Sunset Station Areas *75*
Figure 3-12: Special Area Streets: Willow Creek, Merlo and Elmonica Areas *77*
Figure 3-13: Special Area Streets: Beaverton-Hillsdale/Oleson/Scholls Ferry Intersection *79*
Figure 3-14: Long Term Roadway Jurisdiction *81*
Figure 3-15: Long Term Roadway Jurisdiction (Urban Area) *83*
Figure 3-16: Rural Road Enhancement Study Corridors *87*
Figure 3-17: FHWA Vehicle Classifications 98
Figure 3-18: Roadway Freight System *105*
Figure 3-19: Roadway Freight System (Urban Area) *107*
Figure 3-20: Aviation, Railroad, and Pipeline System *113*
Figure 3-21: Aviation, Railroad, and Pipeline System (Urban Area) *115*
Figure 3-22: Sidewalk Inventory *131*
Figure 3-23: Enhanced Crossing Study Corridors *135*
Figure 3-24: Pedestrian System *145*
Figure 3-25: Pedestrian System (Urban Area) *147*
Figure 3-26: Bike Lane Inventory *153*
Figure 3-27: Bicycle System *163*
Figure 3-28: Transit Service Needs Analysis *175*
Figure 3-29: Transit System *183*
Figure 3-30: ITS Communications Backbone 186
Figure 4-1: Transportation Funding Strategy 198
Figure 4-2: Transportation Project Development Process 203

Using This Guide

The *Washington County Transportation System Plan Users' Guide* consolidates information from multiple documents that make up the official Washington County Transportation System Plan (TSP), and provides direct links to the more detailed source documents and other reference materials. It is intended to provide the reader with a "one-stop" resource to find background information on the transportation system and travel behavior in Washington County; current Washington County transportation goals, objectives, and strategies; designations of functional classification and number of lanes for county roads; designation of facilities for other transportation modes (pedestrian, bicycle, transit. and freight); and information on plan implementation (funding, coordination with other agencies and planned improvements). If there is any question about information included in the Users' Guide, the reader should refer to the officially adopted ordinances (*A-Engrossed Ordinance No. 768*, *A-Engrossed Ordinance No. 783*, and *A-Engrossed Ordinance 799*).

This document was prepared for use by County staff, staff from other agencies, and the general public. It is available in electronic format (with direct links to various documents and web sites) and in print. Additional information is available on interactive web-based maps that illustrate components of the TSP. The Users' Guide is organized into the four major sections described below.

Part 1 – Background

This section includes information on the purpose of the County's TSP, the requirements governing its development, how it is used, framework documents that influence Washington County's TSP, and a summary of existing and future transportation conditions. In addition, this section includes a summary of information gathered through the extensive community-involvement process used to develop the TSP.

Part 2 – General Transportation Policies

Section 2 includes an overview of the County's overarching transportation goals, objectives, and strategies, along with guiding principles for the TSP. It also includes general transportation goals, objectives, and strategies that affect all modes of travel. Goals, objectives, and strategies related to specific travel modes are included in subsequent chapters.

Part 3 – Transportation System Plan Modal Elements

The individual plan elements developed for each major travel mode are covered in section 3. These include the Roadway Element, Freight Element, and Active Transportation Element. Each of these elements includes introductory information about existing conditions and forecasted needs related to the travel mode; specific goals, objectives, and strategies associated with the travel mode; and maps and other supporting information that show the classifications of specific facilities associated with the travel mode.

Part 4 – Implementation

Information about how the TSP will be monitored and amended in the future, and specific goals, objectives, and strategies related to implementation of the plan (Coordination, Funding, and Maintenance) are included in the final section. In addition, this section includes information about the list of candidate transportation improvements included in the Financially Constrained Project List (projects for which funding is anticipated to be available during the next 20 years). The candidate project list is included as Appendix C of this document.

Appendices

Appendices to the *Users' Guide* include: A Glossary (Appendix A) defining terms used in the TSP; a list of Abbreviations, Acronyms, and Initializations used in the document (Appendix B); and a list of candidate transportation improvement projects consistent with the *2014 Regional Transportation Plan* (Appendix C).

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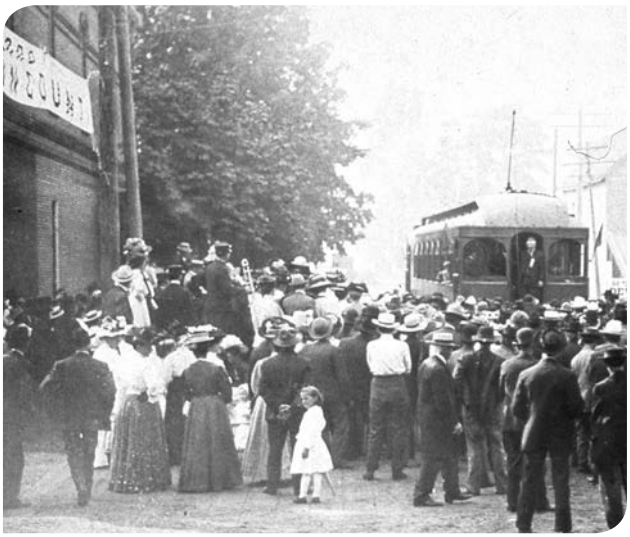
Part 1 – Background



Part 1 provides information about why Washington County has a TSP, how it is used, and the regulations and requirements that govern the plan's contents. This section also includes brief summaries of framework documents that provide context or other information useful for the County's TSP; a summary of the existing transportation system and its utilization, demographic trends, and forecasts for the year 2035; and a summary of the community input received during the update of the TSP.

PAST, PRESENT, AND FUTURE

The transportation system serving Washington County developed incrementally over time – starting with the routes traveled by the Kalapuya people throughout western Oregon hundreds of years ago. Early settlers built upon these routes, bringing successive improvements to connect farms and forests with local markets and beyond. Stagecoach routes and plank roads gave way to railroads and paved roads. Automobiles now dominate the transportation system in Washington County, supplemented with public transit and freight rail facilities and services, and facilities for people walking and biking. The County's transportation system has been built by multiple public agencies and private-sector transportation providers. Much of the road/street network in Washington County is characterized by "legacy" rural roads, linking local street systems in communities in the County. Additional roads have been built to serve suburban and urban growth in the County; along with several large-scale highway and transit investments, including the MAX light rail transit line linking Hillsboro and Beaverton with Portland (TriMet), and Highway 217 and Highway 26 (Oregon Department of Transportation).

Today the Washington County transportation system faces many challenges. As the County has developed, traffic congestion has increased on many roads and there has been increased demand for alternatives to driving such as public transit, bicycling, and walking. Many roads have not kept pace with the increase in travel demand resulting from rapid growth in population and employment in Washington County over the past 20 years. Mobility and accessibility for people and goods plays a significant role in the locational decisions of employers and residents, economic vitality, livability, safety, and the natural environment.

The TSP addresses a broad range of transportation challenges and opportunities. It provides guidance on how to build, operate, and maintain Washington County's major roadway network while addressing complementary elements of the larger transportation system – including public transit, multi-use trails, state highways and freight railroads operated and maintained by other entities. The TSP addresses a diversity of transportation needs while integrating social, economic, environmental, and livability aspirations within a framework for making future transportation decisions. Transportation challenges and opportunities in Washington County are summarized below.

- Washington County has outgrown the initial farm-to-market road system, resulting in congestion and safety issues on roads that were not designed to serve large numbers of commuters.
- Washington County is now a leader in employment opportunities in the Portland metropolitan region. Travel patterns have changed from trips oriented toward jobs and services in Portland to an increasingly complex mix of travel to jobs in Washington County and elsewhere in the region.
- Increasing traffic congestion throughout the County associated with employment, commercial and residential growth in the county.
- Conflicts among different travel modes using roads that were built without adequate facilities for bicyclists and pedestrians.
- Increasing maintenance obligations for an expanding and aging transportation network.
- Increased demand for public transit service during a time of transit funding challenges.
- The decreasing "buying power" of existing fuel taxes due to inflation, stricter design standards to address environmental issues, and multimodal transportation needs and increased fuel efficiency of newer vehicles.
- Uncertain outlook for funding from traditional federal and state funding sources and increasing reliance on local funds to build and maintain roads and other transportation facilities.
- Increasing attention to the link between transportation and public health and concern about equity in the allocation of transportation resources.
- Evolving lifestyle and travel preferences resulting from changing demographics in Washington County, changes in the regional economy, and changes in technology affecting workplace options and travel choices.

INTRODUCTION

The *Washington County TSP* is one of several elements that comprise the *Washington County Comprehensive Plan*. Other elements include:

- County Resource Document
- Comprehensive Framework Plan for the Urban Area
- Rural/Natural Resource Plan (which includes the Exceptions Statement Document)
- Community Plans and their Background Documents
- Community Development Code
- Unified Capital Improvements Program (Including the Transportation Capital Improvement Program)
- Urban Planning Area Agreements

The TSP serves as the guiding document for transportation system improvements and operations for Washington County – establishing the policies, projects, and programs necessary to achieve the County's transportation goals and objectives. The TSP supports the adopted development patterns included in the County's Community Plans, the Rural/Natural Resource Plan, and the comprehensive plans adopted by the cities within Washington County. It is consistent with regional plans adopted by Metro and TriMet, state plans adopted by the Oregon Department of Transportation (ODOT), and the Oregon *Transportation Planning Rule*. Reflecting both countywide and community-planning perspectives, the TSP addresses major transportation system elements, including roadways (not including local streets), freight, and active transportation (pedestrian, bicycle, and transit). The local street system is regulated by the *Community Development Code*, Community Plans and the Rural/Natural Resource Plan.

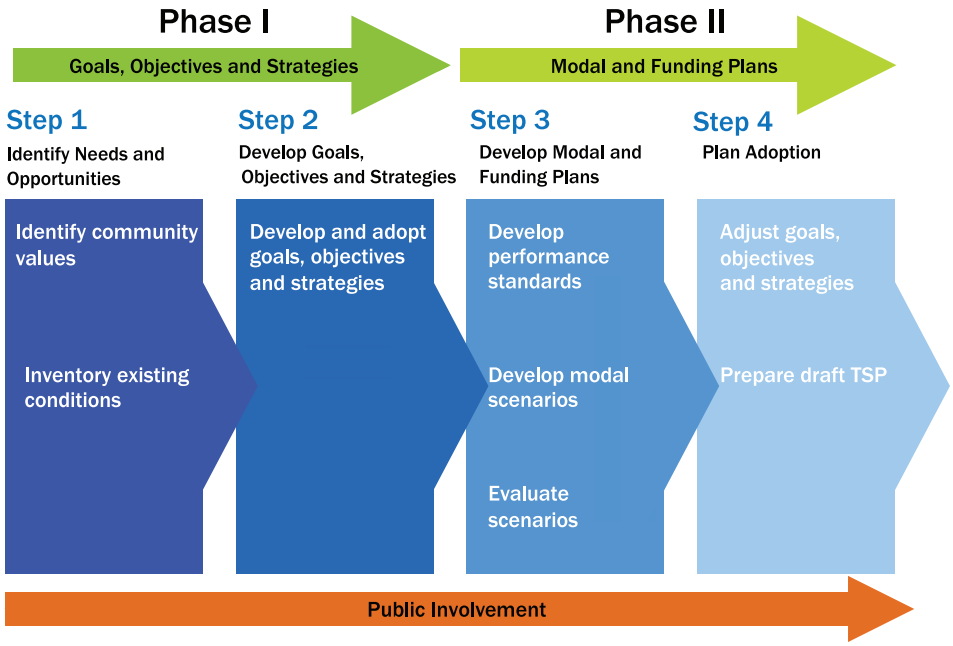
The first *Washington County Transportation Plan* was adopted in 1988. The plan was amended numerous times between 1988 and 2002. In 2002 the *Washington County Transportation Plan* (a comprehensive update of the 1988 document) was adopted by Ordinance No. 588 and Resolution and Order No. 02-125. Additional amendments were adopted between 2002 and 2014. The *Washington County Transportation System Plan Users' Guide* is a compilation of information drawn from these previous plans and from the documents prepared for the 2014 Update of the TSP, which include the *TSP 2035 Existing Conditions and Future Needs Report* (January 2013), the transportation Goals, Objectives, and Strategies adopted through *A-Engrossed Ordinance No. 768* (adopted October 1, 2013, effective December 1, 2014), the transportation modal elements adopted through *A-Engrossed Ordinance No. 783* (adopted October 7, 2014, effective December 1, 2014), revisions to the text and maps adopted through *A-Engrossed Ordinance 799* (adopted September 22, 2015, effective November 27, 2015), the *Findings adopted by Resolution and Order 14-109* and *Resolution and Order 15-105*, and the *Technical Appendix adopted by Resolution and Order No. 14-113*.

The *Transportation System Plan* adopted in 2002, was based on growth forecasts and travel demand anticipated through the year 2020. The 2014 TSP update is based on new forecasts of anticipated growth and travel demand through the year 2035 and beyond. It represents a comprehensive assessment of existing and projected future conditions (based on regional forecasts developed by Metro). In addition, the 2014 TSP update restructures the County's transportation policies and the overall plan in order to be consistent with more recent state and regional transportation policies and programs. The 2014 TSP also includes updated maps and an updated list of candidate transportation projects.

Updating Washington County's Transportation System Plan

The TSP update process began in 2012. In order to address the broad range of transportation issues involved in the update, and to allow adequate time for review and input by the public and governing bodies, the County developed the TSP in two phases, as illustrated in Figure 1-1.

Figure 1-1: TSP Update Planning Process



Phase I of the update included a review of existing conditions, analysis of forecasts of anticipated growth and future travel, and identification of existing and future transportation system needs. Phase I also included a reorganization of the County's transportation system policies. Policies from the *Transportation System Plan* were modified and reorganized into transportation system goals, objectives, and strategies.

Phase II included an analysis of future transportation needs using transportation system performance measures specifically developed for the TSP update. The transportation system maps were updated in Phase II, including maps for functional classification of County roads, the number of lanes planned for individual roads, right-of-way preservation needs, and special area street overlays. Modal elements were completed in Phase II for roadways, freight, active transportation (bicycling, walking and transit), and transportation system management. In addition, Phase II included the development of implementation strategies -- coordination with other agencies and community groups, funding, maintenance of the transportation system, and identification of candidate transportation system improvements.

Public Involvement

Public involvement played an important role throughout the TSP update process. The project team coordinated with two advisory committees appointed by the Board of Commissioners for the duration of the planning process. The Community Advisory Committee (CAC) was an 18member group consisting of neighborhood, business, and advocacy group representatives. The Interagency Coordinating Committee (ICC) was a technical committee consisting of representatives from the cities in Washington County, Tualatin Hills Park & Recreation District (THPRD), Tualatin Valley Fire & Rescue (TVF&R), TriMet, Metro, Port of Portland, and ODOT. All committees provided input and advice during the development of the TSP, and considered the implications of County transportation policies on their respective jurisdictions and constituencies. Regular meetings were held with both committees over the course of the TSP update to solicit input, review interim work products, and develop policy and technical direction for the TSP. Other official bodies and entities involved in decision making for the TSP Update are described below; the committee structure and decision-making process is illustrated in Figure 1-2.

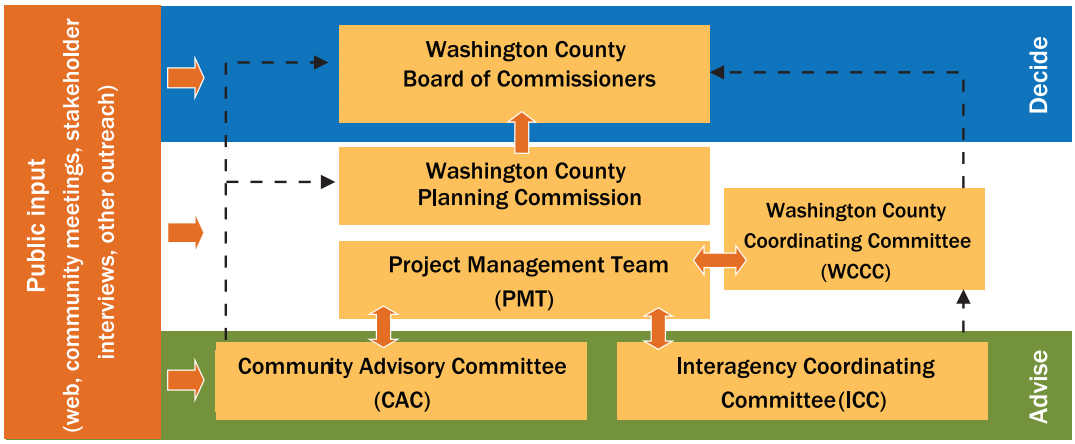
- *Washington County Board of Commissioners* (Board) - An elected five-member legislative body that makes decisions for the County provided guidance and adopted the implementing ordinances.
- *Washington County Planning Commission* – A nine-member volunteer commission that advises the Board on land use and transportation issues participated throughout the planning process and endorsed the adopting ordinances.
- *Project Management Team* (PMT) - Staff from the Department of Land Use & Transportation and the consultant team were responsible for preparing the TSP update, integrating public input, and making recommendations to decision makers.

CAC work groups in fall 2013 helped determine transportation solutions for specific areas of the county.

- *Washington County Coordinating Committee* (WCCC) - A countywide group of elected representatives from Washington County and the cities within Washington County was briefed on the TSP and provided advice to the project team.

To understand community perspectives about the transportation system and to engage community members in updating the TSP, the project team held open houses at key points in the planning process at several locations throughout Washington County. Staff also attended numerous local farmers' markets, Citizen Participation Organization (CPO) meetings, and interviewed and participated in regular briefing sessions with a variety of stakeholder groups including Adelante Mujeres, Committee for Citizen Involvement (CCI), Rural Road Operations and Maintenance Advisory Committee (RROMAC), Urban Road Maintenance District Advisory Committee (URMDAC), Washington County Farm Bureau, Westside Economic Alliance, and *Westside Transportation Alliance*. The public involvement approach for the TSP update was designed to engage a broad cross section of the community in developing the plan, including people not historically involved in transportation planning in Washington County. Project materials were translated into Spanish and distributed at community and project events, and were posted on the project website. The project website also included a comment map where people could identify transportation problems, and comment on proposed transportation changes and projects.

Figure 1-2: TSP Update Committee Structure and Decision-Making Process



Adopting Ordinances

A-Engrossed Ordinance No. 768

A-Engrossed Ordinance No. 768, adopted by the Board of Commissioners on October 1, 2013, became effective on December 1, 2014. It was the first of three ordinances that amended and updated the *Washington County Transportation Plan*. *A-Engrossed Ordinance No. 768* made significant changes to the 2002 plan, including:

- Modifications to all transportation policies and strategies, including the reorganization of the policies into goals, objectives, and strategies;
- Updates to the transportation goals, objectives, and strategies to reflect current and accepted practice;
- Amendments to the guiding principles of the TSP to reflect the Department of Land Use & Transportation's vision for safety, economic vitality, livability, and the natural environment;
- Amendments to the system design elements of the TSP to reflect key attributes of the transportation system including mobility, accessibility, connectivity, and active transportation (pedestrian, bicycle, and transit); and
- Modifications to the implementation elements of the TSP, including coordination, funding, and maintenance.

A-Engrossed Ordinance No. 783

A-Engrossed Ordinance No. 783 was adopted by the Board of Commissioners on October 7, 2014, and became effective on December 1, 2014. It is a companion to the policy framework adopted in *A-Engrossed Ordinance No. 768*. A-Engrossed Ordinance No. 783 incorporated the modal elements of the TSP. Together, these two ordinances guide the development of Washington County's integrated multimodal transportation system. Adopting the framework of goals, objectives, and strategies (through A-Engrossed Ordinance No. 768) prior to the development of the modal elements allowed the goals, objectives, and strategies to be established independent of the details of specific map amendments. The modal element update of the TSP focused on the key points summarized below.

- Map amendments/updates to reflect the policy framework adopted by A-Engrossed Ordinance No. 768;
- Map amendments/updates to reflect adopted planning efforts that were not otherwise incorporated into the County's transportation system plan;
- Response to changing conditions that were not identified or adopted into the TSP through separate processes;
- Enhancements to the active transportation system elements (pedestrian, bicycle, and transit);
- Response to regional planning requirements; and
- Review of several critical locations.

A-Engrossed Ordinance No. 799

A-Engrossed Ordinance No. 799 was adopted by the Board of Commissioners on September 22, 2015, and became effective on November 27, 2015. It amended the Transportation Element of the County's *Comprehensive Plan* to modify the roadway and active system elements of the plan. Key provisions of the ordinance are summarized below.

- Updates to classify regional trails as essential services,
- Updates to provide right-of-way for streetscape overlays and enhanced major street bikeways designations,
- Updates to incorporate recently adopted plans from other jurisdictions, including:
  - The City of Tigard's River Terrace concept plan,
  - The City of Beaverton's South Cooper Mountain concept plan,
  - The Ice Age Tonquin Trail, and
- Other transportation-related amendments to provide consistency with recently adopted planning efforts.

How the TSP Is Used

The TSP is used for many different purposes. It provides guidance on how to design, build, operate, and maintain Washington County's transportation system. This system includes transportation facilities and services provided by Washington County and facilities and services provided by other agencies such as transit facilities and services, multi-use trails, and other facilities serving bicyclists and pedestrians, state highways, airports, and railroads. The TSP is used in conjunction with other *Comprehensive Plan* documents, including the County's *Uniform Road Improvement Design Standards, Community Development Code*, and Community Plans (County Code Chapter 15). The TSP:

- Provides a framework for near term and long-term transportation-related decisions to enable the County to reach adopted transportation goals and targets;
- Is used in the review of proposed land developments to determine the number of lanes and other design characteristics for affected roads, including how bicycles and pedestrians will be accommodated;
- Identifies where right-of-way needs to be preserved to provide for new or improved roads to serve future growth;
- Is coordinated with other agencies, such as ODOT and local cities, to provide a seamless, integrated regional system of transportation facilities and services; and
- Identifies the magnitude of future transportation needs so that long-term financing can be put into place to pay for needed transportation system facilities, services, and maintenance.

Framework Documents

Policies and regulations at the state, regional, county, and local levels provide direction and establish legal requirements for transportation planning in Washington County. Coordination with multiple agencies is required so that Washington County's TSP is consistent with the plans of other jurisdictions. Key regulations and documents which affect the TSP are summarized below.

Oregon State Documents

Oregon Transportation Planning Rule (TPR)

Oregon Administrative Rule 660-012, referred to as the *Transportation Planning Rule* (TPR), implements Oregon Statewide Planning Goal 12: Transportation. The purpose of the TPR is to ensure coordination of transportation and land use planning in the development of agency transportation system plans, and in project development. The TPR is the legislative mandate that requires Washington County to prepare and update its TSP.

Oregon Transportation Plan

The *Oregon Transportation Plan* (OTP), the state's long-range policy document, guides transportation planning and project development in Oregon. The OTP was originally adopted in 1992 and updated in 2006. As stated in the document, the 2006 OTP "provides a framework to further these policy objectives with emphasis on maintaining the assets in place, optimizing the existing system performance through technology and better system integration, [and] creating sustainable funding and investing in strategic capacity enhancements." The OTP is supported by modal plans that help establish state transportation system investment priorities. These documents are summarized below.

- The *Oregon Highway Plan* (OHP) establishes visions, policies, and strategies for investing in state and federal highways in Oregon. The OHP was last adopted in 1999. Since the adoption of the last Washington County TSP in 2002, there have been two major amendments to the OHP that affect Washington County.
- The *Oregon Bicycle and Pedestrian Plan,* originally adopted in 1995 as a modal element of the OTP, is the planning and design manual for pedestrian and bicycle transportation in Oregon and is used to implement the actions recommended in the OTP. The technical section of the plan was updated in October 2010 and re-titled as the *Bicycle and Pedestrian Design Guide* to offer a greater level of guidance on the provision of bicycle and pedestrian facilities. The *Washington County Bicycle Facility Design Toolkit*, completed in 2012, incorporates these and other design guidelines.

- The *Oregon Freight Plan (OFP)* adopted in 2011, is the first statewide plan devoted entirely to freight. Similar to the OTP, the OFP is needed to comply with federal and State of Oregon regulations. At the state level, the OFP addresses freight needs as required under the Oregon *Transportation Planning Rule*, which also requires local governments to address goods movement in their TSPs, consistent with the state TSP.

Regional Planning Documents

2014 Regional Transportation Plan (2014 RTP)

Every four years, Metro is required to update the *Regional Transportation Plan*, which guides future investments in the region's transportation system. Metro adopted the most recent update of the RTP in July 2014. The RTP establishes policies and priorities for travel by motor vehicle, transit, foot and bicycle, the movement of goods and services, street design, and the efficient management of the overall regional transportation system. For each update, Metro develops new forecasts for future population, jobs, and travel. The RTP also assesses federal, state, and local funding for transportation improvements, estimates project costs, and proposes funding strategies. Metro works closely with local jurisdictions and regional and state agencies in preparing the RTP.

Specific items in the RTP that affect transportation planning in Washington County include the designation of regional mobility corridors, performance targets, modal targets, and mobility standards. Metro uses an outcomes-based framework for the RTP. The desired regional outcomes are listed below.

- *Vibrant Communities* – People live and work in vibrant communities where they can choose to walk for pleasure and to meet their everyday needs.
- *Economic Prosperity* – Current and future residents benefit from the region's sustained economic competitiveness and prosperity.
- *Safe and Reliable Transportation* – People have safe and reliable transportation choices that enhance their quality of life.
- *Leadership on Climate Change* – The region is a leader in minimizing contributions to global warming.
- *Clean Air and Water* – Current and future generations enjoy clean air, clean water, and healthy ecosystems.
- *Equity* – The benefits and burdens of growth and change are distributed equitably.

The RTP identifies 24 regional mobility corridors in the Portland metropolitan region where travel movement is particularly important and should be facilitated to meet the RTP performance standards. The mobility corridor framework requires consideration of multiple facilities, modes, and land use when identifying transportation solutions for these key corridors. The nine regional mobility corridors in Washington County include:

- #2: Portland Central City to Tigard,
- #3: Tigard to Wilsonville,
- #7: Tualatin to Oregon City,
- #19: Beaverton to Tigard,
- #20: Tigard to Sherwood and Sherwood to Newberg,
- #21: Portland Central City to OR 217,
- #22: OR 217 to North Plains,
- #23: Forest Grove to U.S. 26, and
- #24: Beaverton to Forest Grove.

Regional Transportation Functional Plan (RTFP)

The *Regional Transportation Functional Plan*, adopted by Metro in 2010, implements the goals, objectives, and policies of the RTP. Cities and counties in the region must comply with the regional directives included in the RTFP in the development and implementation of their TSPs. The RTFP includes both design and planning requirements. The RTFP also requires the County to coordinate its transportation planning with local jurisdictions located within the County to ensure consistency of plans among jurisdictions. In addition, Metro requires that TSPs use the regional forecasts of growth for the region, including some consideration of growth in the Urban Reserve areas as adopted by Metro. Finally, the RTFP requires that the County confirm the sufficiency of existing programs and planned improvements to meet future travel needs.

Washington County Documents

Washington County Comprehensive Plan

The *Washington County Comprehensive Plan* provides the basis for the future growth and development of the County; and is applicable to unincorporated properties inside the regional Urban Growth Boundary and the urban growth boundaries of Banks, Gaston, and North Plains. The *Rural/Natural Resource Plan* addresses all properties outside of an urban growth boundary. The *Comprehensive Framework Plan* (Framework Plan) reflects current and future needs of the urban unincorporated properties in Washington County and contains specific standards designed to regulate growth and development in these areas. Policies and strategies for these areas guide growth and development consistent with the physical and economic conditions in the county, legal requirements, and the resources of the County.

The Framework Plan provides a policy framework and factual basis to guide the preparation of more detailed Community Plans for different areas of Washington County.[1] It identifies issues of countywide concern and establishes minimum criteria that must be reflected in the Community Plans and other detailed elements of the Comprehensive Plan. Plan designations and Significant Natural Resource Area designations are applied in the Community Plans to ensure that they are consistent with the Framework Plan. Some areas of the County do not have Community Plans because the nearby cities are responsible for comprehensive planning and subsequent urban development of their adjacent urban unincorporated areas.

The Future Development Areas Map in Policy 41 of the Framework Plan applies Plan Designations and Significant Natural Resource Area designations for these areas. Once a Community Plan has been adopted by ordinance, it becomes the legally binding statement of County policy within the boundaries of that planning area. Community plans have been adopted for: Sherwood, Cedar Hills-Cedar Mill, Aloha-Reedville-Cooper Mountain, Bethany, West Union, Bull Mountain, Sunset West, Raleigh Hills, Metzger, East Hillsboro, and West Tigard. Other Comprehensive Plan elements include: The Transportation System Plan, Urban Area Planning Agreements, the Exceptions Document, Capital Improvement Projects, a Public Facilities Plan, and the Pedestrian and Bicycle Plan (a subset of the Transportation Plan).

Washington County Community Development Code

The *Community Development Code* (CDC) implements the *Washington County Comprehensive Plan* through the adoption and coordination of planning and development regulations that provide for the health, safety, and general welfare of Washington County residents. The CDC specifies standards and requirements that affect development applications based on information included in the different elements of the Comprehensive Plan (e.g., Community Plans, the Natural Resource Plan, and the Transportation Plan. These include (but are not limited to) urban land divisions, and are specified in the CDC. Land within the unincorporated portion of Washington County may be used or developed only as permitted by the Comprehensive Plan and the CDC. In general, Article V of the CDC identifies public facilities and services that are necessary at a minimum level to accommodate development - particularly transportation facilities. Land within incorporated areas of Washington County may be subject to Article V requirements, depending on the location of the development, and if access to County roadways is contemplated. Article VII of the CDC identifies public transportation improvements authorized by the Transportation System Plan that are subject to development review, and establishes the standards and procedures for such review.

1 *The majority of the Community Plans were completed in the late 1980's; and many have not been updated since that time. Where there are differences between a Community Plan and the TSP, the TSP overrules the Community Plan.*

Local Jurisdiction Documents

Sixteen cities are wholly or partially located in Washington County: Banks, Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, North Plains, Portland, River Grove, Sherwood, Tigard, Tualatin, and Wilsonville. Cities are responsible for the transportation system within their boundaries, with the exception of transportation facilities under the jurisdiction of the state or county. Given the interdependence of city, county and state transportation facilities and services, coordination of system design, improvements, and management policies and practices is important. Washington County coordinates with cities, adjacent counties, and state and regional agencies on a continuous basis. Formal coordination is accomplished through Urban Planning Area Agreements (UPAAs) or other intergovernmental agreements that specifically define local government relationships and responsibilities. Ongoing coordination occurs through the Washington County Coordinating Committee (WCCC) and the WCCC Transportation Advisory Committee; project Technical Advisory Committees established by the County, cities or other agencies; and the ongoing work conducted by these agencies. TriMet, the regional public transit provider, also develops plans that affect transportation in Washington County. Key TriMet documents include the *Westside Service Enhancement Plan* and the *Southwest Service Enhancement Plan*.

Washington County Population and Employment Trends

Washington County is one of the fastest-growing counties in the Pacific Northwest. The following section documents changes in population, employment, travel demand, and land use over the past decade and forecasts those trends into the future. Since 1973, Washington County's urban growth and rural preservation have taken place in an efficient pattern consistent with requirements of Oregon's Urban Growth Management Program. Requirements that guide development in Washington County were further refined in 1994 through the *Metro 2040 Growth Concept*, which called for dense, active centers connected by multimodal transportation corridors. These planning requirements have helped contain and focus urban growth, protect industrial and employment areas, and protect the rural areas outside of the Urban Growth Boundary.

Metro's 2040 Growth Concept

Metro's *2040 Growth Concept* describes development in the Portland metropolitan region through the year 2040. The 2040 Growth Concept:

- Encourages efficient land use, directing most development to existing urban centers and along existing major transportation corridors;
- Promotes a balanced transportation system within the region that accommodates a variety of transportation options such as bicycling, walking, driving and public transit; and
- Supports the region's goal of building complete communities by providing jobs and shopping close to where people live.

Urban and Rural Reserves

In 2011, Clackamas, Multnomah, and Washington counties and Metro collaborated on a regional effort to determine growth trends in the region for the next 40 to 50 years. *Urban and Rural Reserves* are intended to provide greater predictability for the region regarding where future growth may take place, while protecting important farmland and natural areas from urbanization.

Urban Growth Boundary

Several amendments to the *Urban Growth Boundary* (UGB) have occurred since the completion of the Washington County Transportation System Plan. In 2002, 18,867 acres were added to the UGB to provide for 38,657 housing units, and 2,671 acres were added for additional jobs. This action also included important regional policies to support neighborhoods, protect industrial areas, and enhance regional and town centers. In 2004, an additional 1,956 acres were added to the UGB to address the need for industrial lands identified as part of the 2002 planning process. In 2005, the Metro Council added 345 acres of land for industrial purposes, which completed the 2002 planning process. In 2011, the Metro Council added 1,985 acres to the UGB to address the anticipated 20-year need for new housing and jobs.

The TSP responds to the UGB and Urban and Rural Reserve designations by focusing on transportation improvements that accommodate growth within the existing adopted UGB. It is assumed that the land within the Rural Reserves will not develop with urban uses within the planning horizon. For travel demand forecasting purposes, it was assumed that by 2035 additional areas within the current UGB will have been developed; infill development and re-development will have occurred in existing centers, corridors, and other appropriate locations in the urban area, and that the Urban Reserves will have been partially developed consistent with Metro's land use forecast assumptions.

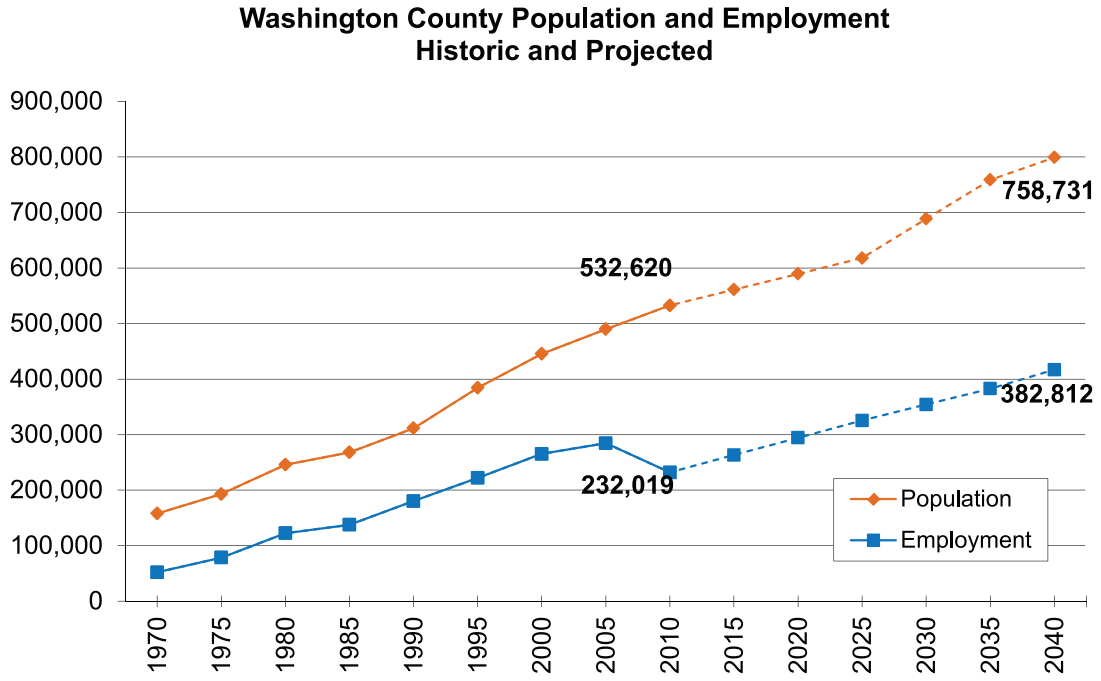
Population and Employment Trends in Washington County

As indicated in Figure 1-3, Washington County has grown considerably during the last 40 years. Since 1970 the population within Washington County has increased by 71 percent, from 311,544 people to 532,620 people. Between 2000 and 2010 Washington County gained more than 87,000 new residents, a 20 percent increase. Over the past 40 years Washington County employment increased by 29 percent, from 180,302 jobs to 232,019 jobs. Between 2005 and 2010 Washington County employment actually decreased 22 percent, from 284,000 jobs to 232,000 jobs, as a result of the national recession. Job figures have since rebounded.

Washington County's dramatic growth rate during the past 40 years is expected to slow down in the future, but continue above the national average. By the year 2035, Washington County's population is projected to increase 42 percent to 758,500 people. The projected average annual growth is approximately 1.4 percent per year for the 25-year period, which is down significantly from the 2.8 percent annual average growth rate of the preceding 25 years.

Over the long term, Washington County is expected to continue to gain jobs at a relatively rapid pace with employment increasing at a faster rate than population. By 2035 Washington County employment is projected to increase to 382,000 jobs – 150,000 jobs above 2010 employment and 100,000 jobs above 2005 employment. The forecasted average annual employment growth is approximately 2.0 percent per year for the 25-year period 2010-2035, down slightly from the 2.1 percent annual average employment growth rate of the preceding 25 years (1985-2010).

Figure 1-3: Washington County Population and Employment Trends – 1970-2040



Travel Demand in Washington County

The growth envisioned in the population and employment forecasts translates directly into transportation system needs within Washington County. Of particular significance for the transportation system is the growth in jobs and peak-hour travel demand. Travel most often occurs to, from, or between areas of employment. Population numbers are an important indication of the number of travelers, but employment has a greater impact on where travelers want to go. There was limited growth in traffic between 2007 and 2012, which corresponds with the economic downturn that resulted in the loss of more than 50,000 jobs in Washington County between 2005 and 2010. During that same time population increased by almost 43,000 people.

Washington County estimates existing and future travel demand using a specific west side version of the regional travel demand model. The regional forecasting model is calibrated with a number of inputs, including household activity surveys, traffic counts, land use policies, and anticipated transportation investments. Table 1.1 describes existing and forecasted total person trips by travel mode for Washington County.

Table 1.1: Washington County Travel Demand (Average Weekday)

Mode	2010	2035 RTP[6]	Percent Change
Total Personal Trips	3,866,409	5,541,705	+43%
Auto	3,610,591	5,094,927	+41%
SOV[2]	1,861,046	2,680,680	+44%
Shared Ride[3]	1,749,546	2,414,247	+38%
Transit[4]	68,719	130,709	+90%
Pedestrian[5]	171,716	261,492	+52%
Bicycle[5]	35,383	54,577	+54%

1. All modes include all daily trips that either start or end within Washington County, including the rural areas outside the Metro Boundary.
2. SOV – Single Occupancy Vehicle, a vehicle in which the driver is traveling alone (this is a subset of the Auto category).
3. Shared Ride – Includes both the driver and other passengers (this is a subset of the Auto category).
4. Yellow school bus trips are not included.
5. Pedestrian and Bicycle trips do not include travel for the purpose of exercise.
6. Travel demand forecasts consistent with the Regional Travel Plan (adopted 2010).

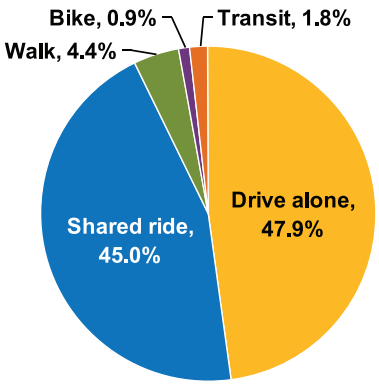
Vehicle Miles Traveled

Another commonly used indicator of travel demand is vehicle miles traveled (VMT), or the total number of miles driven by all vehicles in a defined area. VMT estimates for the TSP do not track miles driven outside Washington County by residents or employees, and do not include weekend or holiday travel. VMT within Washington County in 2010 was estimated to be 8.4 million miles per weekday or 15.76 miles per weekday per capita. VMT in 2035 is forecast to increase to 11.9 million miles per weekday, but population growth is forecast to outpace it, reflecting a slightly lower per capita VMT of 15.71 miles per weekday per person.

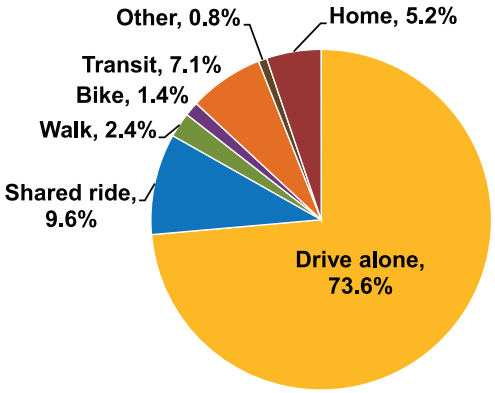
Mode Share

The Regional Travel Demand Model provides estimates of mode share, or the proportion of trips made using different modes of travel. Figure 1-4 shows current travel mode shares as estimated by the West Side Focus Travel Demand Model (for all trips) and the U.S. Census Bureau American Community Survey (for journey to work), as well as a 2035 mode share forecast and the target mode shares urban Washington County needs to achieve to be consistent with the 2014 Regional Transportation Plan.

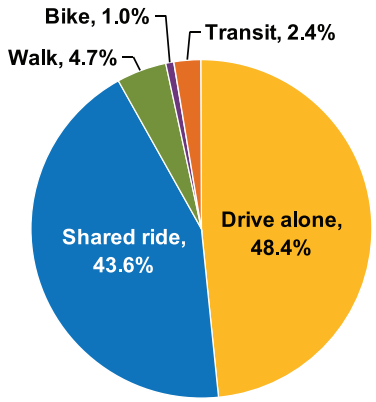
Figure 1-4: Mode Share for Travel in Washington County – Existing, Forecast and Targets



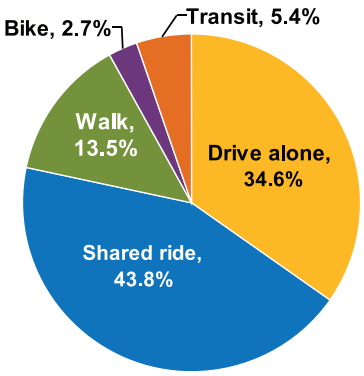
2010 Urban Washington County – All Trips
Source: West Side Focus Travel Demand Model



2013: Washington County – Journey to Work
Source: US Census American Community Survey



2035 Urban Washington County – All Trips
Source: West Side Focus Travel Demand Model



2035 Urban Washington County – All Trips
Interpretation of 2014 RTP Targets

Commute Patterns

Another important characteristic of travel in Washington County is bi-directional commute patterns. Washington County has a strong jobs base that attracts workers from elsewhere in the Portland metropolitan region. Washington County also has a more traditional suburban role of providing housing for people who commute to work in Portland. Commute trips also include trips that remain entirely within Washington County. As shown in Table 1.2, nearly half of Washington County residents worked outside the county in 2010; and nearly half of the employees working in Washington County lived outside the County.

Table 1.2: Commuter Residence Characteristics – 2002 and 2010

Washington County	2002	2010
Employee Population (Residents)	215,901	216,424
Employment (Jobs)	213,028	222,588
Employees Living Outside of County	43.7%	48.8%
Residents Working Outside of County	44.5%	47.4%

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics Note: Due to the small sample size, this data has a large margin of error.

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Part 2 – General Transportation Policies for Washington County

This chapter includes overarching goals, objectives, and strategies affecting transportation in Washington County. These guiding principles provide the policy basis for the modal and implementation elements included in subsequent chapters of this document.

GUIDING PRINCIPLES

The guiding principles of the Transportation System Plan (TSP) reflect the mission of Washington County's Department of Land Use & Transportation:

- Building & Maintaining the Best Transportation System.
- Planning & Protecting the Uses of the Land.

The following four goals help to define that twofold mission (as illustrated in the Department's emblem), to provide safety, enhance community livability, protect the natural environment and support economic vitality within Washington County:

- Goal 1: Safety
- Goal 2: Economic Vitality
- Goal 3: Livability
- Goal 4: Natural Environment

These four goals – which are in no particular order – complement and balance each other. While at times, due to specific circumstances, choices may be necessary to establish the desired balance, on the whole the goals of safety, economic vitality, livability, and natural environment complement each other. This TSP intends to refine and apply these goals as the guiding principles for the planning, development and operation of the transportation system throughout Washington County.

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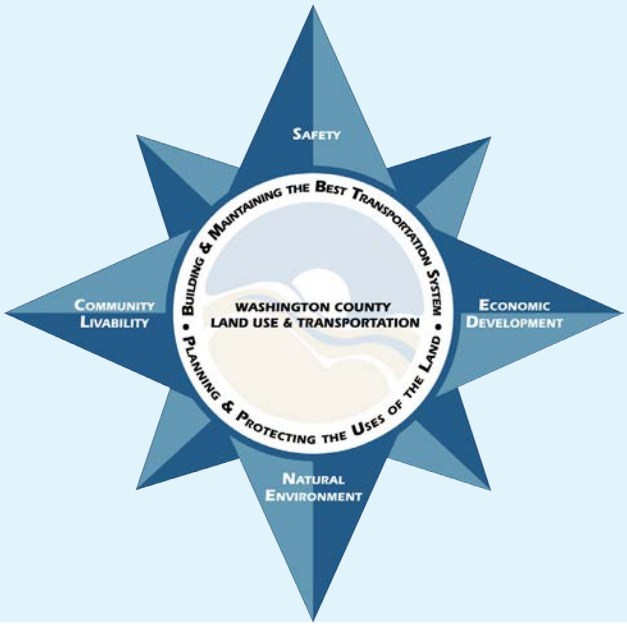
Figure 2-1: Washington County Department of Land Use & Transportation Mission and Emblem



GENERAL POLICIES

Safety

Transportation safety is a complex subject due to a variety of interacting factors. Road conditions, weather, driver ability and vehicle type are just some of the factors that come into play when considering the safety of a particular situation or location. Predictive models are available, along with anecdotal knowledge and experience with similar conditions. Traffic volumes, crash data, and citizen observations are just some of the ways that staff can analyze locations and corridors to determine what type of improvements or changes to transportation infrastructure would enhance safety. Each situation and location is unique, requiring engineering analysis and professional judgement. This section is intended to provide a broad explanation of safety trends and considerations for planning purposes.

In Washington County, new road construction, and the ongoing maintenance of the existing transportation system, uses modern techniques, industry standards, and best management practices. In addition, an active presence by law enforcement personnel reinforces the rules of the road. These roads are still subject to traveler behavior factors such as speeding, following too closely, drunk driving and walking or bicycling without appropriate visibility gear. Non-behavior factors may also play a role.

Tens of thousands of vehicles traverse Washington County roads on a daily basis and the vast majority of those trips are without incident. However, there are some locations that tend to have an increased rate of crashes. Metro's *State of Safety 2011* Report reveals that in 2007 through 2009, urban Washington County had the lowest rate of injuring crashes per capita, the lowest rate of fatal or incapacitating crashes per capita, and the lowest rate of fatal or incapacitating crashes per vehicle miles travelled, compared to urban Clackamas County, the City of Portland, and east Multnomah County.[2] Looking a trends over time, crash rates for all modes (except motorcycles) are continuing to decline locally, regionally and nationally, after peaking in the 1990s.

Safety initiatives in the region, including various Safe Routes to School programs and Portland's High Crash Corridor program, typically dissect transportation safety into three or more components within which action may be taken. These are known as the three "E's":

- **Engineering** - Physical enhancements to improve safety on a transportation facility;
- **Enforcement** - Partnering with law enforcement to identify and reduce violations of traffic laws; and
- **Education** - Helping people understand the rules of the road and how to walk, bike or drive safely.

Some Safe Routes to School programs have added other "E's" – encouragement, evaluation, and equity – that are useful tools in the broader context of transportation safety.

Evaluation is a particularly important function that Washington County undertakes. The **Safety Priority Index System (SPIS)** List is the primary tool for identify intersections where crashes have been occurring frequently. SPIS, originally developed in 1986 by ODOT, assigns intersections a score based on crash frequency (total number of crashes), crash rate (number of crashes per entering vehicles) and crash severity (number of crashes involving injuries or fatalities), over a three-year period. Intersections with high SPIS scores may or may not have cost-effective or feasible remedies to reduce the frequency or severity of crashes, but the SPIS tool is effective in helping identify safety issues in a strategic fashion.

2 Metro State of Safety 2011 Report, p 14, Metro

ADOPTED TEXT

Some safety concerns are less measurable. Issues of perceived safety and pedestrian/bicycle comfort may not be evident in crash statistics, even though these issues may be detracting significantly from the use of certain modes or facilities. People may avoid walking or biking along certain roads that lack appropriate facilities to do so, regardless of the facility's safety record.

Safety strategies in the TSP focus on:

- Engineering and maintenance solutions.
- Completing gaps in the pedestrian and bicycle network.
- Strategic evaluation of and response to crash patterns.
- Addressing safety deficiencies through development review.
- Education and enforcement initiatives.
- Lighting.

While the TSP cannot, in and of itself, reduce crashes, it provides a framework for systematically building, operating, and maintaining a safe transportation system for all users.

Goal 1: Safety
Provide a safe transportation system for all users.

ADOPTED TEXT

Objective 1.1 Provide a transportation system that is structurally and operationally safe for all users and all modes.

- Strategy 1.1.1 Plan, engineer, design and construct the transportation system using accepted design standards that promote safety and that provide the intended multimodal function as indicated in the TSP and the Road Design and Construction Standards.
- Strategy 1.1.2 Address safety concerns on county transportation facilities identified through the Operations & Maintenance Division Service Request System.
- Strategy 1.1.3 Use the Maintenance Priority Matrix to help prioritize maintenance and safety expenditures.
- Strategy 1.1.4 Where and when practicable, separate travel modes and minimize conflicts between and within modes.
- Strategy 1.1.5 Prioritize missing or incomplete facilities as safety enhancements where appropriate.
- Strategy 1.1.6 Limit sign clutter by utilizing the Manual on Uniform Traffic Control Devices or other appropriate standards for the design and placement of traffic signs.

Objective 1.2 Strategically monitor, evaluate and respond to crash patterns and safety concerns.

- Strategy 1.2.1 Utilize and where practicable improve upon the Safety Priority Index System (SPIS) and other available data sources to identify locations on county roads where crash frequency, rate and severity is disproportionately high.
- Strategy 1.2.2 Make improvements to existing transportation facilities to address SPIS findings, Bicycle and Pedestrian Improvement Prioritization Project findings and other identified safety concerns, using appropriate and available funding sources.

- Strategy 1.2.3 Identify appropriate safety solutions for designated truck routes to safely move freight and agricultural equipment amid other modes.
- Strategy 1.2.4 Consider developing a Transportation Safety Action Plan for Washington County or subsections or corridors of Washington County.
- Strategy 1.2.5 Develop crash reduction performance measures.

Objective 1.3 Review all development proposals, including those within incorporated areas, to continue the safe operation of county roads.

- Strategy 1.3.1 Require development to address safety deficiencies identified on the SPIS List or in other sources, through the development review process described in the Community Development Code (CDC), as appropriate.
- Strategy 1.3.2 Apply access management standards as set forth in the CDC in order to reduce traffic conflicts and improve safety.
- Strategy 1.3.3 Consider an update to Resolution and Order 86-95, to implement safety improvements associated with new development and redevelopment.

Objective 1.4 Coordinate with law enforcement and other safety related agencies and organizations to improve the safe operation of the transportation system by all modes.

- Strategy 1.4.1 Coordinate with law enforcement agencies to reduce violations of traffic laws and to target violation problem locations.
- Strategy 1.4.2 Consider security and law enforcement issues in the design and maintenance of transportation facilities, including “crime prevention through design” principles.
- Strategy 1.4.3 Encourage educational programs that improve public understanding of safe use of the transportation system.
- Strategy 1.4.4 Coordinate with and identify opportunities to advance the goals of Safe Routes to School programs in Washington County.

Objective 1.5 Illuminate the transportation system appropriately.

- Strategy 1.5.1 Require new development and redevelopment in the urban area to install street lighting under the provisions identified in the CDC.
- Strategy 1.5.2 Integrate street lighting into major county transportation improvement projects, where appropriate.
- Strategy 1.5.3 Use the proposed Urban Streetscape Toolkit to explore a variety of lighting options and to identify appropriate contexts to use them.
- Strategy 1.5.4 Consider street lighting designs and practices that limit impacts on neighborhoods and agriculture.

ADOPTED TEXT

Economic Vitality

The transportation system plays a critical role in the economic vitality of Washington County. In 2013 Washington County was home to over 232,000 jobs and the highest average weekly wages in Oregon. Continued economic health depends on effectively serving the transportation needs of businesses large and small, including the people who work, shop and/or provide services. For the movement of goods, this means providing reliable freeway and arterial access to and from major employment areas, and helping railroad companies move goods efficiently and safely. Employers also need access to a sufficient labor market within a reasonable commute time and by multiple modes.

Economic vitality is addressed in the TSP in the following ways:

- Designating a safe, reliable network of truck routes, including routes for hazardous materials and over-dimensional vehicles.
- Working with private railroad operators to continue the efficient movement of rail freight.
- Ensuring that airports and pipelines are planned, sited, and operated in accordance with all applicable regulations.
- Encouraging infrastructure investments in economic activity centers.
- Making sure employers have adequate access to the labor market.
- romoting rural economic vitality by accommodating safe, reliable travel for the agricultural, forestry and tourism industries.

Additional considerations on the components of economic vitality are provided below.

Truck Routes

Most freight in Washington County is expected to be shipped by truck in the future. To provide for the most efficient transport of freight and to minimize impacts on residential neighborhoods, Through Truck Routes are designated primarily on Arterial and Collector roads. The truck route designations in the TSP encourage, but do not require, truck drivers to use these routes. The primary purpose of designating truck routes in the TSP is to identify where future improvements on these roads should provide for the safe and efficient movement of trucks.

Hazardous Materials Trucking

Transport of hazardous materials is regulated by the Federal Motor Carrier Safety Administration under Title 49 Code of Federal Regulations, Parts 390-397, and is not governed by local jurisdictions. Hazardous materials include a variety of substances, ranging from radioactive materials and medical wastes to gasoline. The transport of non-radioactive hazardous materials requires that vehicles transporting these materials comply with any routing designations of a state, be placarded or marked and not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets or alleys, except where there is no practicable alternative. The transport of radioactive materials is generally restricted to designated preferred routes on interstate highways, beltways or bypasses, where alternative routes have not been designated by a state. The transport of hazardous materials is permitted on all Through Truck Routes within the county. However, the Vista Ridge Tunnel just east of Washington County on US 26 is closed to such traffic. As a result, hazardous materials are often transported via Cornelius Pass Road or OR 217.

Over-Dimensional Vehicles

Over-dimensional vehicles are trucks with wide or long loads that require a special permit. Washington County Operations Division maintains and annually updates a pre-approved over-dimension permit route map to facilitate such vehicles.

Freight Rail

While the role of railroads in Washington County's overall freight network is relatively small, a number of local firms continue to use them regularly, particularly in the forest products industry. Portland & Western is the primary operator of freight railroads within Washington County, with lines stretching from Banks to Wilsonville, and from Lake Oswego to Sherwood. The majority of roadway rail crossings in Washington County are at grade, posing potential conflicts and hazards. ODOT Rail Division authorizes new or modified rail crossings.

Air

Washington County's Comprehensive Plan identifies Public Use Airports and state-recognized Private Use Airports with land use overlay designations in the map elements of the Rural/Natural Resource Plan and/or Community Plans entitled Airport Overlay Districts. Land use related policies and strategies regarding the overlay-designated airport facilities are addressed in the Rural/Natural Resource Plan and in the Comprehensive Plan Framework for the Urban Area. Development standards for all airport and heliport related uses, including personal use airports and heliports, are outlined in the Community Development Code. Private use facilities fall under two general categories: private use airports identified by the Oregon Department of Aviation (pursuant to ORS 836.608(2)) that are subject to LCDC's Airport Planning Rule (OAR 660-013), and personal use facilities that are subject to local regulation.

Pipelines

Major high-pressure gas pipelines (60 pounds per square inch or greater) are shown in the TSP to highlight possible conflicts with future roadway extensions or expansions.

ADOPTED TEXT

Economic Activity Centers

Economic Activity Centers include employment land (such as North Hillsboro and the Tualatin-Sherwood Corridor) and regional centers (including downtown Beaverton, downtown Hillsboro, Tanasbourne-Amberglen and Washington Square). They are identified in the TSP because their intensity of commercial or industrial uses often demand a commensurate level of transportation operational or capital.

Access to Labor

For Washington County employers, having access to the regional labor market is just as important as moving goods or services. Part of a company's location decision is based on having a sufficient pool of talented workers be able to reach that location within a reasonable travel time of their homes, and by multiple modes if possible. Employers count on Washington County and its partner jurisdictions to provide an efficient, reliable transportation system so that employees are willing to take jobs here and are able to get to work on time. Roadway congestion and poor transit service can both negatively affect employers' access to labor.

Rural Economic Vitality

In rural Washington County, agriculture, forestry and tourism contribute significantly to the economy. Washington County ranks in the top five Oregon counties for gross sales of greenhouse/nursery products, wine grapes and cane berries, and hosts thousands of acres of timber and recreation land in the Coast Range.[3] Tourism augments these rural economic activities when people visit farmstands, wineries and recreational destinations. Transportation's role is to provide a safe, reliable network of roads for everyone who lives, works, visits, or passes through the rural area. This includes managing conflicts between agricultural equipment, log trucks, cars and bicycles.

3 *Oregon Agriculture: Facts and Figures. National Agricultural Statistics Service and Oregon State University Extension Service, July 2012.*

Goal 2: Economic Vitality
Provide a reliable transportation system that enhances the economic health of Washington County.

Objective 2.1 Designate a roadway freight system that facilitates the efficient movement of goods, services, and agricultural equipment.

- Strategy 2.1.1 Coordinate planning, development, maintenance, and operation of an efficient and safe roadway freight system with the private sector, ODOT, TriMet, Metro, the Port of Portland, and the cities of Washington County.
- Strategy 2.1.2 Improve monitoring, analysis and management of freight needs by maintaining a truck classification count database.
- Strategy 2.1.3 Develop freight reliability criteria, including percentage reduction in delay per truck trip, for purposes of project prioritization.
- Strategy 2.1.4 Proactively identify and correct roadway design, safety, and operational deficiencies on truck routes to meet freight reliability targets.
- Strategy 2.1.5 Coordinate with federal and state agencies as necessary for compliance with federal and state regulations pertaining to the safe transport of hazardous materials within and through Washington County.
- Strategy 2.1.6 Designate and map over-dimensional freight routes, and identify where roadway improvement projects should not further restrict or limit over dimensional vehicle operations, as appropriate.

Objective 2.2 Encourage the safe, efficient operation of railroad, airport and pipeline facilities.

- Strategy 2.2.1 Maintain or establish safe and effective rail crossing treatments through federal and state rail regulations.
- Strategy 2.2.2 Protect active freight railroads from unregulated crossings and encroachment.
- Strategy 2.2.3 Consider the needs of freight rail operators, including the practice of storing and staging longer freight trains between road crossings.
- Strategy 2.2.4 Work with public and private sector partners to preserve existing railroads and railroad rights-of-way for transportation purposes or alternative public purposes, to the extent practicable.
- Strategy 2.2.5 Coordinate with service providers to continue the safe operation and adequate maintenance of existing air, rail, and pipeline facilities; and protect such facilities from encroachment by incompatible land uses.
- Strategy 2.2.6 Coordinate planning and development of new or expanded air, rail, and pipeline facilities and services consistent with federal, state and regional plans and regulations, including analysis of environmental and noise compatibility with surrounding land uses.

Objective 2.3 Invest in transportation to encourage economic development.

- Strategy 2.3.1 Prioritize economic development-focused transportation investments within and connecting to regional centers, industrial areas, freight and passenger intermodal facilities.

- Strategy 2.3.2 Facilitate a transportation system that provides employers access to an adequate labor pool.
- Strategy 2.3.3 Recognize the economic benefits that active transportation and transit investments have for recruiting and retaining businesses and employees, and facilitate these investments appropriately.

Objective 2.4 Encourage rural economic vitality in Washington County.

- Strategy 2.4.1 Facilitate the safe, efficient movement of agricultural and forest products, including agricultural machinery.
- Strategy 2.4.2 Consider developing rural road safety strategies to address conflicts between agricultural equipment, log trucks, cars and bicycles on rural roads.
- Strategy 2.4.3 Consider the transportation and land use needs of agricultural and forest industries when designing roadway improvements in the rural area.
- Strategy 2.4.4 Facilitate safe travel for rural tourism traffic, including the safe operation of designated scenic driving and bicycling routes.

Livability

ADOPTED TEXT

Livability means different things to different people, but most would agree that good transportation is a critical component of community livability. For some a transportation system that supports a livable community means attractive streets and a variety of travel options; for others it means uncongested freeways and quick travel times. The transportation system provides connections – both literally and figuratively – between commonly-stated elements of livability: affordable housing, good jobs, strong schools, nearby shopping and a safe, healthy environment. A well-planned transportation system should meet the fundamental need of mobility while also providing the benefits of safe, livable and vibrant communities.

The TSP livability strategies focus on:

- Reducing negative impacts on the human environment, which includes neighborhoods, business districts, farms, parks, and other features that people took care in creating.
- Coordinating land use and transportation planning.
- Recognizing and addressing the unique concerns of the rural area.
- Addressing social and geographic equity in transportation investments and impacts.

Land Use and Transportation Integration

The successful integration of land use and transportation planning can reduce the need for travel, promote fiscally responsible investment of public dollars, and create livable communities. Land use and transportation integration is well established in Washington County.

In 1995, Metro adopted the 2040 Growth Concept, the long-range plan for managing regional growth that "merged land use and transportation planning to reinforce the objectives of both."[4] Washington County and the cities therein plan their land use designations and transportation investments in concordance with the 2040 Growth Concept, concentrating mixed-use and higher-density development into "centers," "station communities" and "main streets" and connecting them with multi-modal transportation corridors.

4 *Metro, Regional Transportation Plan, page 2-4, 2010.*

Livable Streets

"Livable streets" is a term used to reflect enhanced street design features that may encourage more walking, bicycling and transit use and foster economic development. Careful consideration must be given as to the appropriate locations for enhanced street designs, and how the improvements will be maintained in the long term.

Enhanced street designs are encouraged in Regional Centers, Town Centers, Station Communities and Main Streets (as designated in the Metro 2040 Growth Concept), and in Pedestrian Districts identified in the Washington County TSP. These enhancements can help foster the land use, economic and transportation mode share targets envisioned for these areas.

Equity

Equity in transportation planning includes both social and geographic equity.

Planning for equity often means examining socio-economic, demographic and geographic characteristics. Some demographic groups may not have been engaged in planning efforts in the past. Currently, a concerted effort is made to engage these historically underrepresented populations of Washington County – including low-income, minority, youth and low English proficiency residents – and provide them a voice throughout the planning process. A livable future is one that engages and benefits all residents and users of the transportation system.

Goal 3: Livability

Preserve and enhance Washington County's quality of life for all residents, workers and visitors.

Objective 3.1 Strive to maintain and enhance the livability of existing and future communities and neighborhoods.

- Strategy 3.1.1 When considering transportation improvements that create new, expanded or extended roadways, evaluate and balance the needs of the traveling public with the livability and viability of neighborhoods, business districts, agricultural areas, historic places and other cultural resources.
- Strategy 3.1.2 Strive to limit inappropriate through-traffic and speeding in residential areas using the Neighborhood Streets Program, while maintaining adequate neighborhood and emergency access.
- Strategy 3.1.3 Consider low-impact strategies to improve traffic flow including appropriate lane-markings, safety improvements, roundabouts and other operational devices.
- Strategy 3.1.4 Identify scenic view corridors and vistas and strive to maintain and enhance these visual resources for residents and users of the transportation system.
- Strategy 3.1.5 Follow federal and state regulations and guidelines on reducing transportation-related noise.
- Strategy 3.1.6 Work with appropriate entities to identify, avoid and/or mitigate negative impacts on the community from airport, rail freight, pipeline and electric transmission projects.
- Strategy 3.1.7 Regulate the provision of parking as identified in the Community Development Code (CDC).

ADOPTED TEXT

Objective 3.2 Coordinate transportation and land use planning.

- Strategy 3.2.1 Plan and provide a multimodal transportation system that encourages the land uses, mixes and densities indicated in the Comprehensive Plan, community plans and/or other applicable, adopted land use plans.
- Strategy 3.2.2 Plan for the anticipated multimodal travel demand generated by proposed development within and near Washington County.
- Strategy 3.2.3 Explore opportunities to further improve accessibility, including jobs/housing balances, through integrated transportation and land use solutions.
- Objective 3.3 Use transportation investments to enhance the viability of centers.
- Strategy 3.3.1 Prioritize enhanced complete street and boulevard designs with wider sidewalks and a higher level of streetscape amenities within Metro 2040 Regional Centers, Town Centers, Station Communities and Main Streets, and consolidate the TSP overlay designations of these streets.
- Strategy 3.3.2 Consider developing an Urban Streetscape Toolkit that illustrates and describes the palette of available design options for streetscape projects such as sidewalks, lighting, trees, landscaping and retaining walls.
- Strategy 3.3.3 Recognize the continued importance of adequate mobility for people and good, to, from and between centers in order to create and sustain economic viability.

Objective 3.4 Identify, limit and/or mitigate adverse impacts of transportation on rural, agricultural and resource areas in Washington County.

- Strategy 3.4.1 Consider education, enforcement and engineering solutions to mitigate conflicts between motor vehicles, bicycles and agricultural equipment on rural roads.
- Strategy 3.4.2 Involve affected property owners early in the project development process to address land use compatibility issues adjacent to roads that form the boundary between urban areas, urban reserves, rural areas and/or rural reserves on a case-by-case basis.
- Strategy 3.4.3 During the concept planning of newly-designated urban areas, strive to design the transportation system so that the traffic associated with these areas may travel primarily through the existing urban area.

Objective 3.5 Distribute transportation benefits and impacts equitably among residents, businesses, workers and visitors in Washington County.

- Strategy 3.5.1 Equitably distribute the benefits and impacts of transportation improvements, maintenance and operations activities geographically across Washington County.
- Strategy 3.5.2 Identify, map and periodically update the locations of transportation disadvantaged / underrepresented populations, including concentrations of children, elderly, low-income, racial/ethnic minority, English as a second language (ESL) and zero-car households, and use this information to help inform transportation investment decisions.
- Strategy 3.5.3 During transportation and land use planning and implementation, consider the share of household income spent on housing and transportation.

ADOPTED TEXT

Natural Environment

All transportation modes, vehicle types and facilities – even electric vehicles and multi-use trails – have impacts on the natural environment, from localized habitat degradation caused by the horizontal footprint of a road or trail, to global climate change influenced by carbon emissions. The TSP divides environmental considerations into three categories: air and climate; land and water and efficiency. (Impacts to the built environment are addressed under Goal 3: Livabilty.)

Air and Climate

The Portland Air Quality Maintenance Area currently meets all federal air quality health standards. However, in the past, the Portland Air Quality Maintenance Area did not meet the air quality health standards for ground-level ozone (smog) and carbon monoxide. Gasoline powered vehicles emit both carbon monoxide and ozone precursors. Therefore, the Oregon Department of Environmental Quality (DEQ) had established an emission budget for ozone precursors and carbon monoxide. These emission budgets include a mobile source (vehicle) category. For regional transportation planning purposes, the transportation network must demonstrate compliance with the mobile source emission budgets for these pollutants.

Ground-level ozone (smog) is a serious type of air pollution caused by a chemical reaction when nitrogen oxides and volatile organic compounds are exposed to sunlight and warmer temperatures. Smog discolors the atmosphere and can harm human health. The ozone precursors of nitrogen-oxides and volatile organic compounds are criteria pollutants for air quality conformity determinations.

Carbon monoxide is a colorless, odorless gas that can lead to serious human health problems with prolonged exposure, or short term concentrated exposure. Carbon monoxide exposure issues may occur during winter conditions with both cold temperatures and stagnant air.

Both ground-level ozone and carbon monoxide are air quality pollutants monitored by DEQ. These and other emissions are measured hourly through an air quality surveillance network of established sites throughout the region that record the chemical composition of the air.

The transportation sector further affects air quality and climate through the emission of greenhouse gases such as carbon dioxide, airborne toxics such as benzene and particulate matter. Both air toxics and particulate matter are known or suspected to cause concern or other health problems. In Oregon, an estimated 34% of greenhouse gas emissions – the largest single share – can be attributed to transportation related sources.[5] Recent data from DEQ also suggest that air toxics are disproportionately concentrated in urban Washington County due to stagnant air.[6]

Clean air has been a federal mandate since the Clean Air Act of 1970. Clean Air Act Amendments in 1990 required metropolitan planning organizations to demonstrate air quality conformity in their transportation plans in order to receive federal transportation funds. The air quality/transportation connection is also part of Oregon's Statewide Planning Goal 6 (Air, Water and Land Resources Quality), and is enforced by the Oregon Department of Environmental Quality (DEQ) through OAR 340-200-0040.By developing the Washington County TSP consistent with the Metro RTP (which complies with federal and state air quality conformity regulations), Washington County helps the region meet federal, state and regional air quality regulations.

5 *Clean Fuels Program, Oregon Department of Environmental Quality, 2012, http://www.deq.state.or.us/aq/cleanFuel/index.htm*
6 *Portland Air Toxics Report, Oregon Department of Environmental Quality, 2010, http://www.deq.state.or.us/aq/planning/patsReport.htm*

Plan strategies that address air quality and climate change focus on (1) reducing vehicle trips and trip lengths by moving more trips to active (transit, walk and bike) modes, increasing shared ride trips and reducing travel demand through telecommuting and land use planning, and (2) increasing and encouraging the use of fuel efficient and zero-emission vehicles.

Land and Water

Washington County is host to significant terrestrial and aquatic resources, including the Tualatin River and its tributaries, a number of regionally-significant wetlands, some of the most productive agricultural lands in Oregon and upland areas of oak savanna and Douglas-fir forest. The value of these is multi-faceted: providing fish and wildlife habitat, filtering and cooling runoff, cleaning the air and adding unquantifiable aesthetic and economic value.

Washington County's Community Development Code Article VII specifically addresses the impacts of transportation projects on land and water resources, as well as other resources including cultural, visual and recreational resources. Transportation project applicants must describe anticipated impacts on the natural, built, and planned environment, and propose mitigation measures. Land and water resources in Washington County are documented in the county's Rural/Natural Resource Plan and in mapping associated with Metro's Functional Plan Title 3 and Oregon's Goal 5 (Natural Resources, Scenic and Historic Areas and Open Spaces).

Transportation improvement projects must demonstrate compliance with applicable environmental regulations pertaining to storm water and aquatic resources. In many areas of the county, this includes a permit from Clean Water Services. Elsewhere, appropriate city, regional, state and/or federal regulations apply; particularly when a project may disrupt a waterway, floodplain or wetland. State land use regulations also apply in Exclusive Farm (State Goal 3) and Forest Districts (State Goal 4).

Plan strategies that address impacts to land and water resources focus on identifying natural resources through existing planning and regulatory mechanisms, avoiding impacts to these resources if possible, and – if impacts are unavoidable - reducing and mitigating them through context-sensitive design features and enhancements.

Efficiency

The TSP addresses energy and resource conservation through vehicle fleet- based strategies such as encouraging the use of fuel-efficient or zero-emission vehicles and through the use of recycled or low-impact materials in transportation projects.

Goal 4: Natural Environment

Create and maintain a transportation system that first avoids, then minimizes, then mitigates impacts to the natural environment.

Objective 4.1 Reduce negative impacts of the transportation system on air quality and global climate.

- Strategy 4.1.1 Meet regional air pollutant and greenhouse gas reduction performance targets by implementing the active transportation, travel demand management and accessibility strategies in this plan.

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- Strategy 4.1.2 Help the region meet the air quality emission budgets for mobile sources for carbon monoxide and ground-level ozone precursors.
- Strategy 4.1.3 Using the Comprehensive Framework Plan and the Community Development Code, implement the Metro 2040 Growth Concept to create a compact urban form that increases the accessibility of destinations and reduces vehicle miles traveled.

Objective 4.2 Reduce and/or mitigate negative impacts of the transportation system on the natural environment.

- Strategy 4.2.1 Identify and first avoid, then limit and/or mitigate adverse impacts of transportation projects on mapped Significant Natural Resources.
- Strategy 4.2.2 Transportation improvements are to be developed consistent with Oregon statewide planning goals and administrative rules, when establishing general transportation alignments, unless a special exception is allowed.
- Strategy 4.2.3 Washington County's Department of Land Use & Transportation Project Review Committee shall review transportation project applications for completeness and compliance with applicable regulations.
- Strategy 4.2.4 Consider the temporary and long-term impacts of construction and maintenance activities on the natural environment and adopt practices that mitigate these impacts.
- Strategy 4.2.5 Consider and incorporate as appropriate context-sensitive design treatments that reduce and/or mitigate transportation impacts including surface storm water management features and impervious surface reductions.
- Strategy 4.2.6 In agricultural areas avoid and/or limit significant disruption of farming activities during both project implementation and maintenance, in accordance with Policy 15 of the Rural/Natural Resource Plan, as appropriate.
- Strategy 4.2.7 Consider existing natural hazards, as well as potential future natural hazards, during the design and engineering of transportation improvements.

Objective 4.3 Reduce energy and resource consumption associated with transportation.

- Strategy 4.3.1 Encourage the purchase of fuel-efficient vehicles when replacing county fleet vehicles to reduce energy consumption and help achieve greenhouse gas reduction goals.
- Strategy 4.3.2 Encourage the use of recycled and other low-impact materials in the construction and maintenance of the transportation system.
- Strategy 4.3.3 Coordinate with private and public sector partners to standardize, codify and incentivize technological solutions to reducing energy consumption, including the installation of additional electronic vehicle charging/parking spaces throughout Washington County.

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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

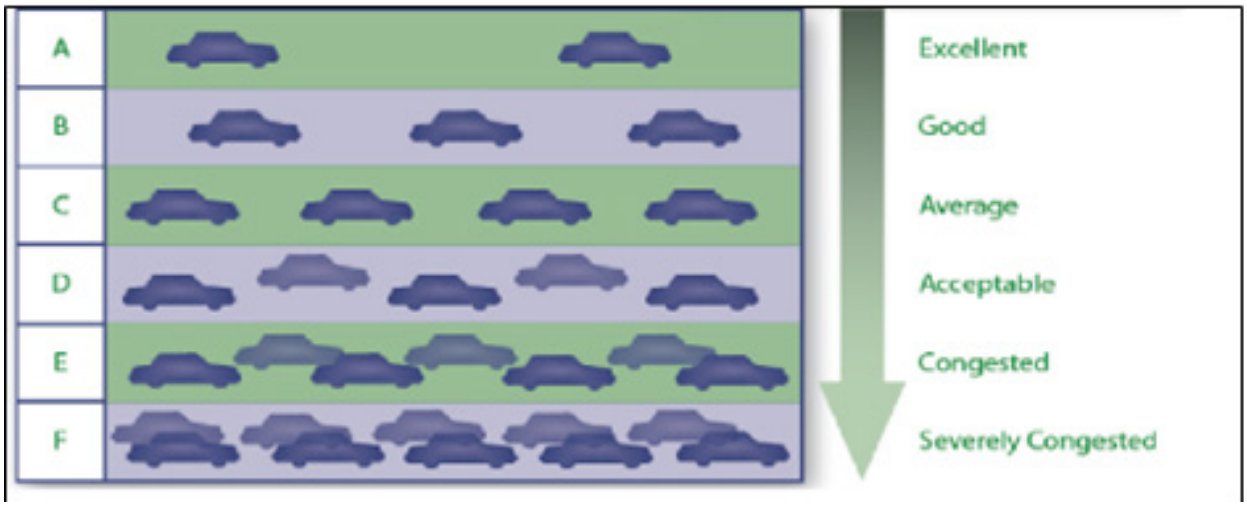
The Metro *2014 Regional Transportation Plan* (RTP) identifies a number of regional performance targets for transportation through 2040. Washington County must work towards achievement of the targets included in the RTP. In addition to the mobility targets identified in the 2014 RTP, Metro's *Regional 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



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 week-day 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.

Hall Boulevard Near Oak Street

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

Maximum Volume to Capacity (V/C) Ratio Standards				
Location[2]	AM/PM Peak Two-hour Period			
	Target[1] Performance Measures[3]		Acceptable[1] Performance Measures[3]	
	First Hour[4]	Second Hour[4]	First Hour[4]	Second Hour[4]
Regional Centers Town Centers Main Streets Station Communities	.99 (E)	.9 (D)	.99 (E)	.99 (E)
Other Urban Areas	.9 (D)	.9 (D)	.99 (E)	.9 (D)
Rural Areas	.9 (D)	.9 (D)	.9 (D)	.9 (D)

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

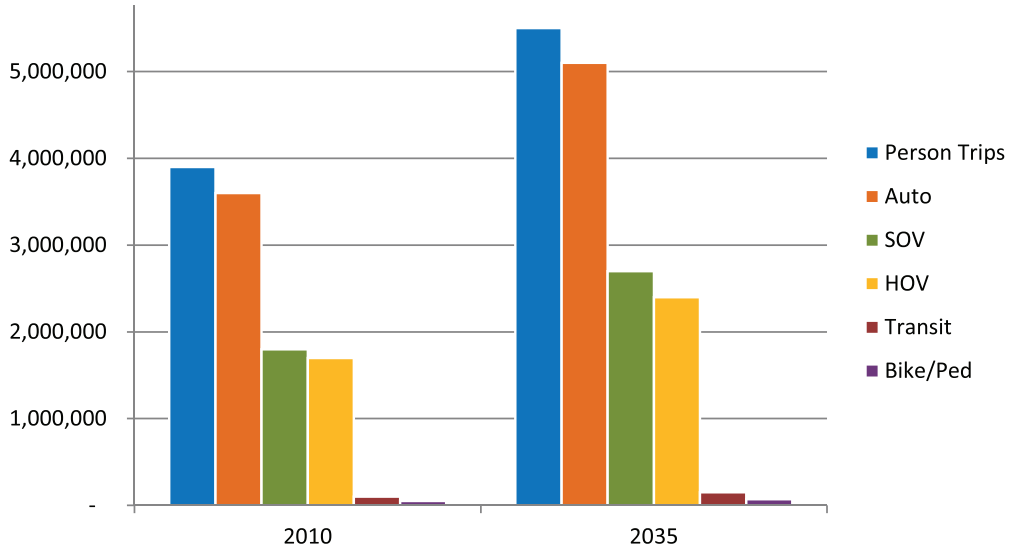
Washington County must demonstrate that transportation solutions included in its transportation system plan will achieve progress toward the regional targets and standards included in the RTP. The county must include the regional targets and standards, or locally adopted standards, in its transportation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

Covered bicycle parking in Forest Grove

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.*

Figure 3-3: Daily Trips in Washington County by Travel Mode: 2010 and 2035



Transportation System Demand Patterns

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

	Urban Area[1]				Rural Area[2]			
	2007	2012	Volume Change	Percent Change	2007	2012	Volume Change	Percent Change
Average Auto Volume	13,398	12,936	-462	-3.45%	6154	5,971	-182	-2.96%
Average Truck Volume	762	744	-18	-2.33%	646	565	-81	-12.52%
Average Percent Trucks	5.66%	5.56%		-0.10%	11.28%	9.71%		-1.57%

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.

Traffic on Pacific Highway in Tigard

Figure 3-4: ODOT VMT Estimates for Washington County: 1991–2011 (ODOT Roads Only)

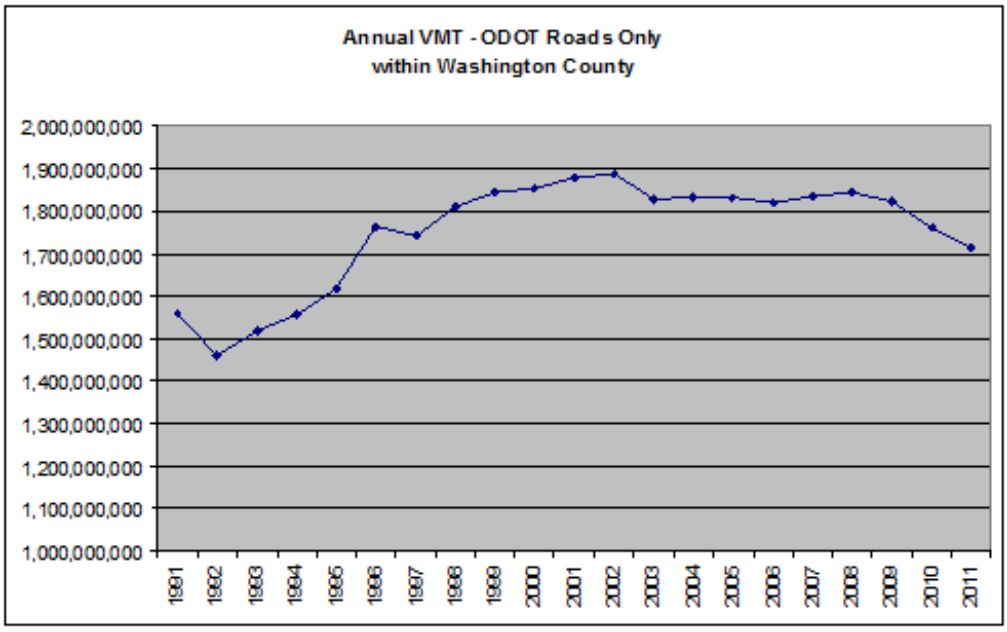
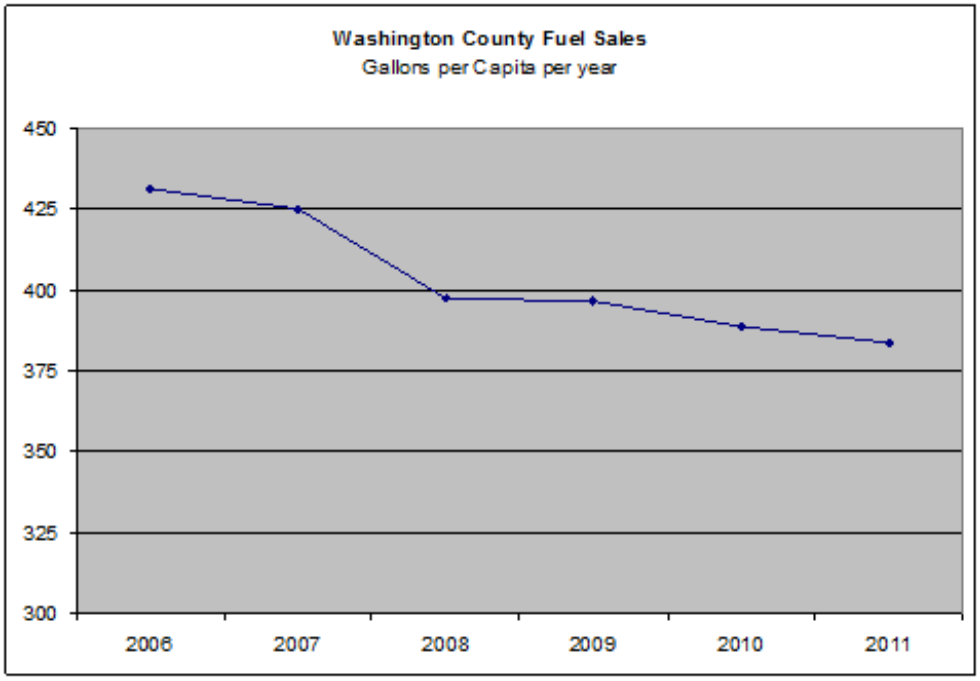


Figure 3-5: Washington County Fuel Sales: 2006–2011



Source: ODOT Fuels Tax Group Reports, PSU Population Center

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)

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

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)

High Congestion Day Compared to Normal Day	Roadway Miles	Percent of Total
Most Reliable (travel times are less than double)	317	33%
Moderately Reliable (travel times more than double)	467	49%
Unreliable (travel times triple or more)	170	18%

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

Current 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

Traffic on 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 an¬ecdotal 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 determin¬ing 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 3.5: Washington County Crashes by Type in 2013

Number of Crashes												
	Total				On Roadway				Off Roadway			
Type of Motor Vehicle Crash	Total	Fatal	Non-fatal Injury	Property Damage	Total	Fatal	Nonfatal Injury	Property Damage	Total	Fatal	Non-fatal Injury	Property Damage
Non-Collision												
Overturning	36		26	10	21		17	4	15		9	6
Other Non-collision	13		9	4	7		6	1	6		3	3
Collision Involving:												
Pedestrian	105	6	91	8	93	6	82	5	12		9	3
MV in transport	5,714	6	2,509	3,199	5,696	6	2,504	3,186	18		5	13
Parked MV	140		20	120	71		8	63	69		12	57
Railway train	4		2	2	3		1	2	1		1	
Pedalcyclist	97		83	14	92		78	14	5		5	
Animal	30		4	26	29		4	25	1			1
Fixed object	770	7	284	479	6		1	5	764	7	283	474
Other object	25		5	20	23		5	18	2			2
Totals	**6,934**	**19**	**3,033**	**3,882**	**6,041**	**12**	**2,706**	**3,323**	**893**	**7**	**327**	**559**

Source: 2013 Oregon Traffic Crash Summary, Transportation Data Section, Crash Analysis and Reporting Unit, ODOT, October 2014, pages 283-284. The summary data represents the annual crash data for year 2013 as it existed on September 15, 2014. Additional detail is included in the ODOT report, available at: http://www.oregon.gov/ODOT/TD/TDATA/car/docs/2013CrashSummaryBook.pdf

Beaverton-Hillsdale Hwy at Oleson Road

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)

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

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

SPIS

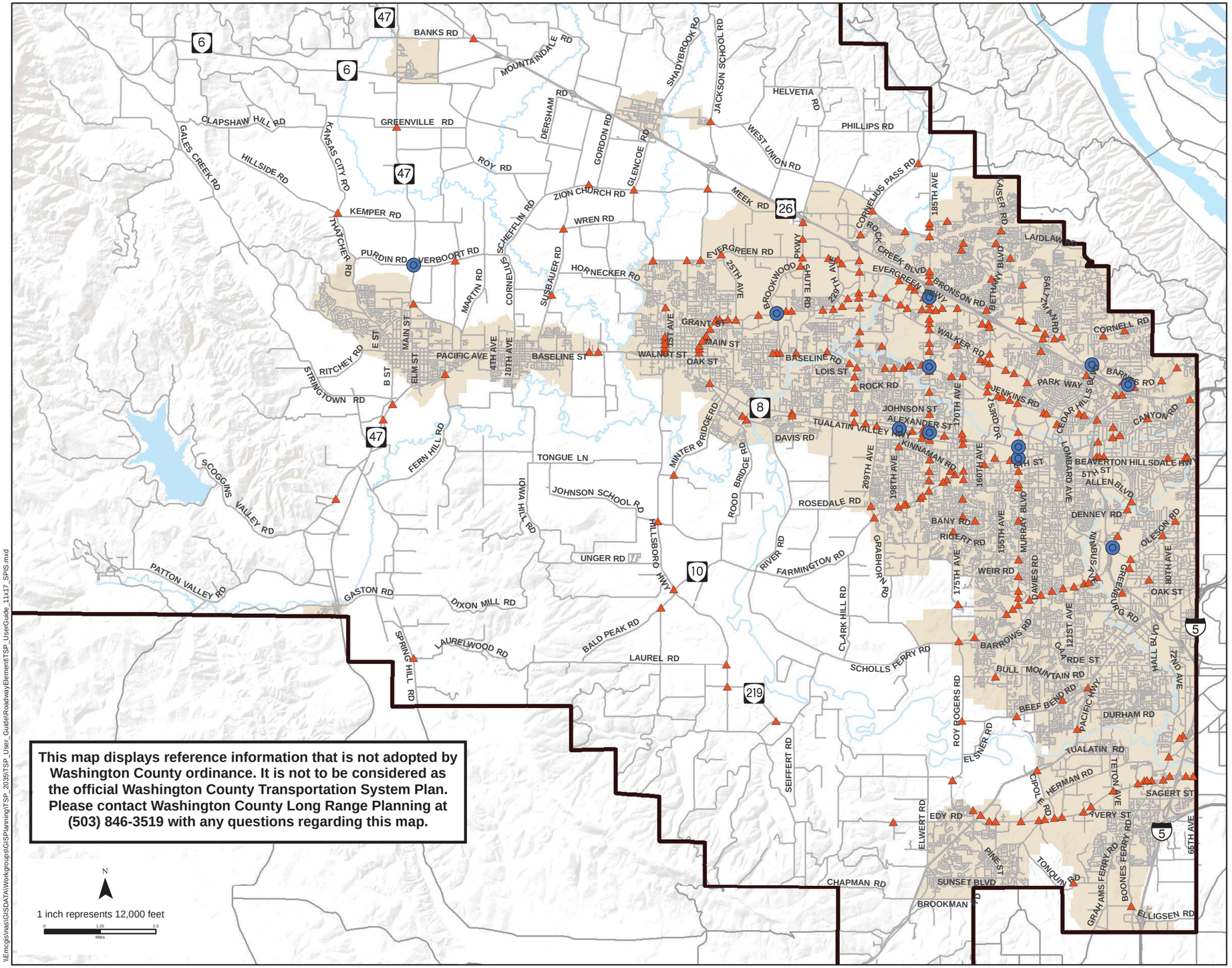
Locations that are prone to a higher rate of crashes are tracked and categorized using the County's Safety Priority Index System (SPIS). SPIS is an effective problem identification tool for evaluating roadway intersections and segments with higher-than-average crash histories. The SPIS score is based 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.

Transportation System Plan User's Guide

Roadway Element

SPIS List 2011-13

(Urban Area)



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.

N

1 inch represents 12,000 feet

0 1.25 2.5 Miles

- Top 11 Ranking SPIS locations
- SPIS locations
- Other Roads
- Urban Area
- County

Figure 3-6

Online Map: http://arcg.is/1NN6KcH

Department of Land Use & Transportation
Planning and Development Services Division

Effective: November 27, 2015

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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.

Maintenance activities on a rural Washington County road

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

Functional Classification	2011 Average PCI	Target PCI
Urban Area		
Arterial	78	80
Collector	80	75
Neighborhood Route (URMD)	84	75
Local (URMD)	85	75
Local (non-URMD)	74	65
Rural Area		
Arterial	76	80
Collector	81	75
Local	77	65
System Average	**81**	

Bridge Conditions

Washington County bridge 82517, crossing Valley Branch Creek

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*.

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.

ADOPTED TEXT

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 u7sed 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

ADOPTED TEXT

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 van-pooling), transit use (e.g., fare subsidies), bicycle commuting (e.ge., 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.

ADOPTED TEXT

- 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 4) 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.

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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, TriMet 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.

ADOPTED TEXT

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.

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Goal 7: Connectivity
Provide improved and new transportation connections within and between developed and developing areas.

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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.

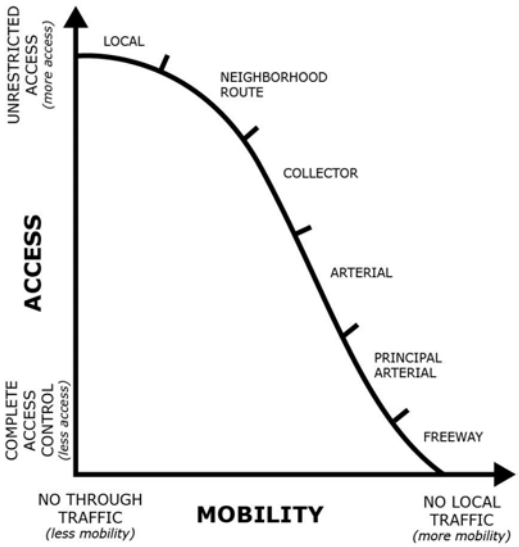
Functional Classification

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



Relationship Between Functional Classification, Mobility, and Access

Functional Classification Definitions

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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.

Principal Arterial: OR Highway 26 (Sunset Highway)

Principal Arterial: OR Highway 217 (Beaverton Tigard Highway)

Principal Arterial: Hwy 47 (Nehalem Hwy)

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.

ADOPTED TEXT

Arterial: NW Cornell Road in Hillsboro

Arterial: SW Oleson Road in Beaverton

Arterial: SW Scholls Ferry Road in Beaverton

ADOPTED TEXT

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 in Hillsboro

Collector: SW Elsner Road in Sherwood

Collector: Oak Street in Tigard

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.

ADOPTED TEXT

Neighborhood Route: SW 173rd Avenue in Aloha

Neighborhood Route: SW Scenic Drive in Beaverton

Neighborhood Route: SW Roxbury Avenue in Beaverton

Local Street: SW San Mateo Terrace in Aloha

ADOPTED TEXT

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.

ADOPTED TEXT

Cornell Road in Hillsboro

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

Classification	Mileage	Percent of Total Miles
Urban Area		
Arterial	125	9.7
Collector	74	5.8
Neighborhood Route	83	6.5
Local	362	28.2
Urban Total	644	50.2
Rural Area		
Arterial	74	5.8
Collector	191	14.9
Local	374	29.2
Rural Total	639	49.8
County Total	**1,283**	**100**

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

Roadway Classification	Lanes[1]	Bike Lanes[2]	Max ROW[3]	Max Paved Width[3]
Principal Arterials & Arterials[4,5]	7	Yes	122 Feet	98 Feet
	5	Yes	98 Feet	74 Feet
	3	Yes	90 Feet	50 Feet
	2	Yes	90 Feet	48 Feet
Arterials with Streetscape Overlay[4,5,6]	5	Yes	102 Feet	74 Feet
	3	Yes	90 Feet	50 Feet
Arterials with Enhanced Major Street Bikeway[4,5,7]	5	Yes	102 Feet	78 Feet
	3	Yes	90 Feet	54 Feet
Arterials w/ Streetscape Overlay and Enhanced Major St Bikeway[4,5,6,7]	5	Yes	106 Feet	78 Feet
	3	Yes	90 Feet	54 Feet
Collectors[4]	5	Yes	98 Feet	74 Feet
	3	Yes	74 Feet	50 Feet
	2	Yes	74 Feet	50 Feet
Collectors with Streetscape Overlay[4,6]	5	Yes	102 Feet	74 Feet
	3	Yes	78 Feet	50 Feet
Collectors with Enhanced Major Street Bikeway[4,7]	5	Yes	102 Feet	78 Feet
	3	Yes	78 Feet	54 Feet
Collectors w/ Streetscape Overlay & Enhanced Major St Bikeway[4,6,7]	5	Yes	106 Feet	78 Feet
	3	Yes	82 Feet	54 Feet
Special Area Collectors[5]	3	Yes	52 Feet	46 Feet
	2	Yes	40 Feet	34 Feet
Neighborhood Routes	2	No	60 Feet	36 Feet
Special Area Neighborhood Routes[5]	2	No**	44 Feet	38 Feet
Commercial/Industrial	4	No	70 Feet	50 Feet
	3	Yes	64 Feet	50 Feet
	2	No	64 Feet	34 Feet
Special Area Commercial Streets[5]	4	No**	70 Feet	64 Feet
	3	No**	58 Feet	52 Feet
	2	No**	46 Feet	40 Feet
Locals	24' Travel Way	No	60 Feet	32 Feet
Special Area Local Streets[5]	16' Travel Way	No	38 Feet	32 Feet

**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.

ADOPTED TEXT

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 20year 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 by 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 other 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 development review process. While Special Area Commercial Streets do not include striped bicycle lanes, they shall include wide travel lanes of 14 feet to accommodate bicycle use. For Special Area Collectors, in addition to the right-of-way, a nine-foot minimum utility/sidewalk easement shall be dedicated on each side of the right-of-way. For Special Area Local streets, in addition to the right-of-way, a ten-foot minimum utility/sidewalk easement shall be dedicated on each side of the right-of-way. For Special Area Alleys, additional right-of-way may be required as part of development review. The right-of-way determination may include special consideration of other related transportation and water quality facilities, such as (but not limited to): low impact water quality treatment, parking, intersection bump outs, mid-block crossings and/or trail extensions.

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.

ADOPTED TEXT

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.

Transportation System Plan User's Guide

Roadway Element

Functional Classification

- Freeway
- Principal Arterial
- Arterial
- Collector
- Neighborhood Route
- Proposed Arterial
- Proposed Collector
- Proposed Neighborhood Route
- Refinement Area
- Other Roads
- Urban Area
- County

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Figure 3-8

Online Map: http://arcg.is/1Fitela

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Transportation System Plan User's Guide

Roadway Element

Functional Classification
(Urban Area)

- Freeway
- Principal Arterial
- Arterial
- Collector
- Neighborhood Route
- Proposed Arterial
- Proposed Collector
- Proposed Neighborhood Route
- Refinement Area
- Other Roads
- Urban Area
- County

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Figure 3-9

Online Map: http://arcg.is/1Fitela

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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, livability, and the natural environment. Major Intersections are designated at the following locations:

- 170th Avenue @ Tualatin Valley Highway[3]
- 185th Ave @ Baseline Rd
- 185th Ave @ Cornell Rd

3 *Improvements recommended for beyond the time frame of the TVCP*

ADOPTED TEXT

Major Intersection: NW 185th Avenue and Evergreen Parkway

- 185th Ave @ Evergreen Pkwy
- 185th Ave @ Tualatin Valley Highway[4]
- 185th Ave @ Walker Rd
- Brookwood Blvd @ Evergreen Blvd
- Cornelius Pass Rd @ Cornell Rd
- Cornelius Pass Rd @ Tualatin Valley Highway[4]
- Murray Blvd @ Tualatin Valley Highway[4]

ADOPTED TEXT

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*

Transportation System Plan User's Guide

Roadway Element

Lane Numbers

- 8 or more lanes
- 6-7 lanes
- 4-5 lanes
- 2-3 lanes
- Other Roads
- Urban Area
- County

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Figure 3-10

Online Map: http://arcg.is/1ECXGRs

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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.

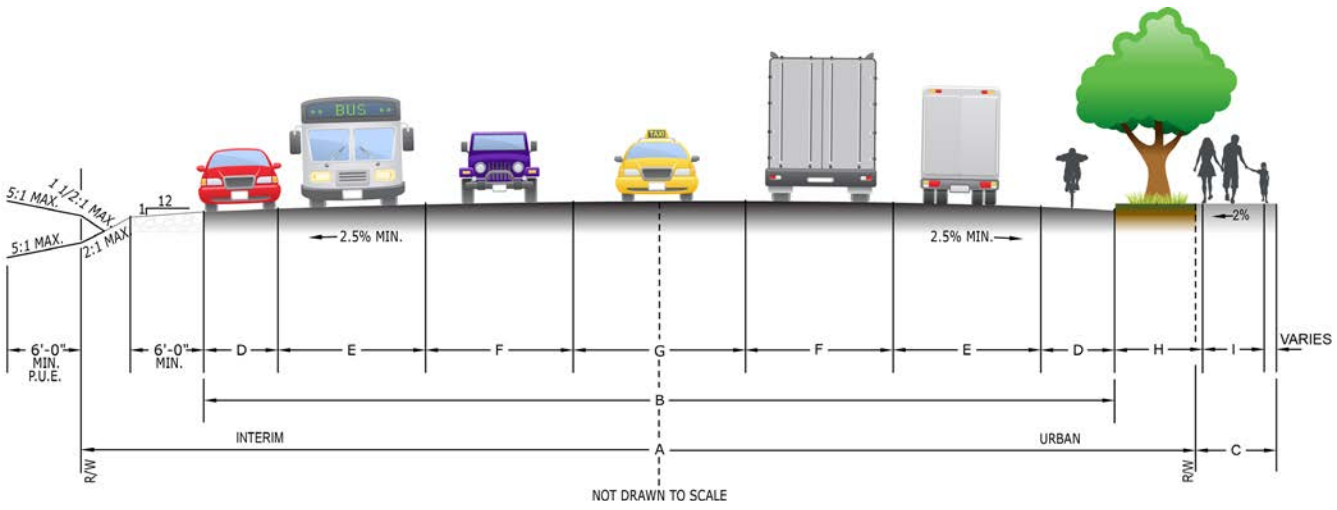
ADOPTED TEXT

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.



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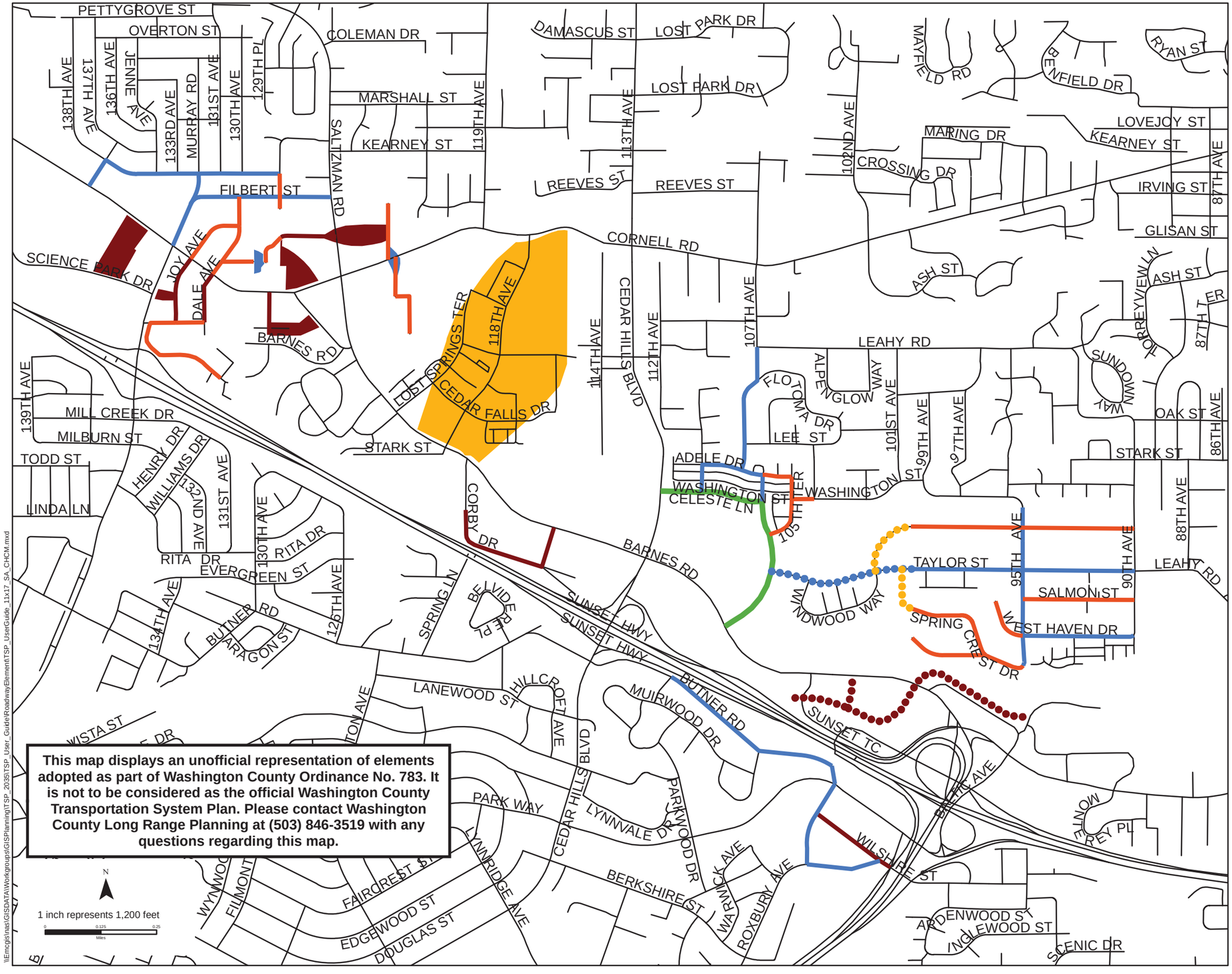
Transportation System Plan User's Guide

Roadway Element

Special Area Streets Overlay:

Cedar Hills and Sunset Station Area



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- Special Area Collector
- Special Area Neighborhood Route
- Special Area Local Street
- Special Area Commercial Street
- Proposed Special Area Neighborhood Route
- Proposed Special Area Local Street
- Proposed Special Area Commercial Street
- Special Area Commercial Street Corridor
- Special Area Street Corridor
- Arterial Corridor
- Street

Figure 3-11

Online Map: http://arcg.is/1mVQq0y

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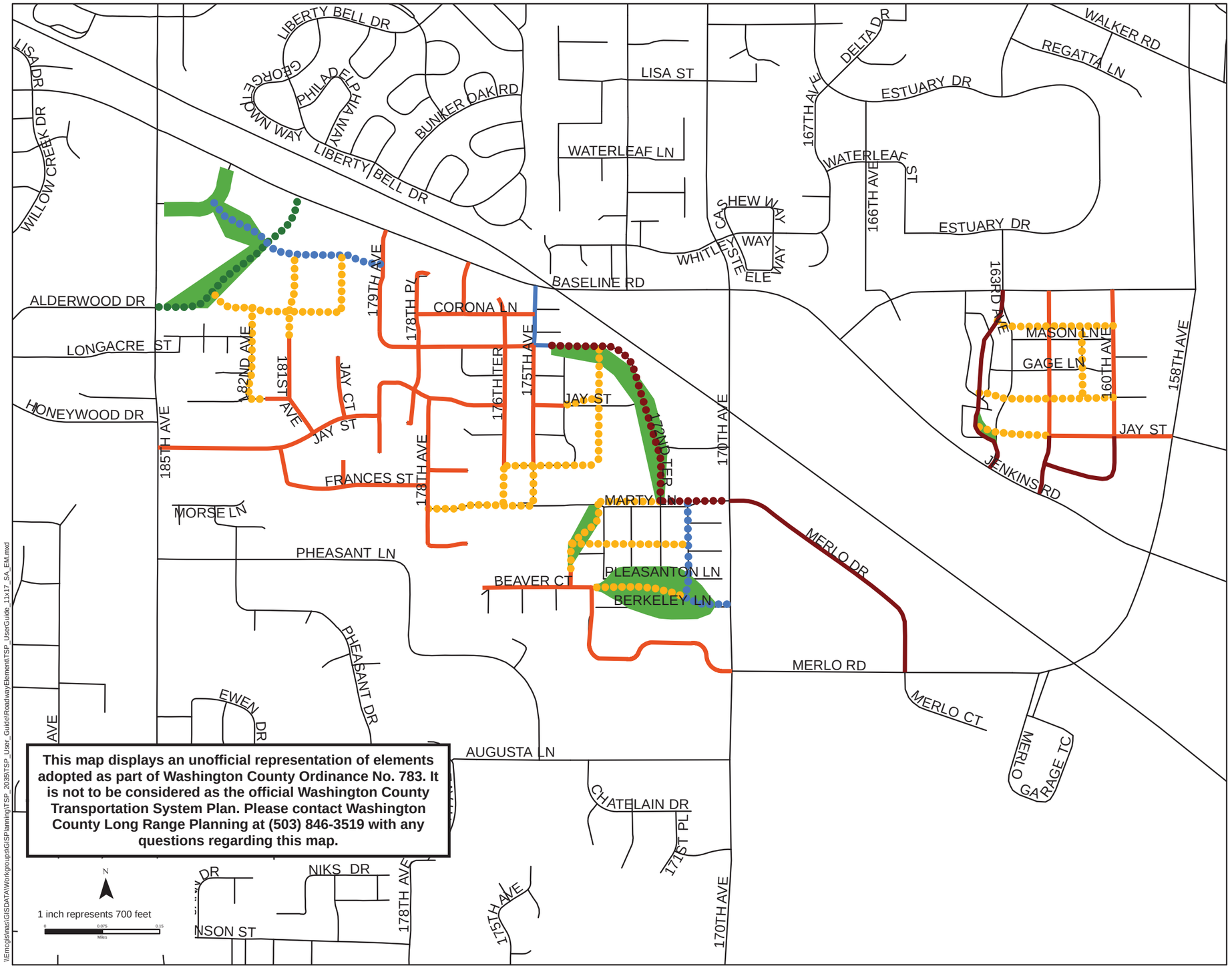
Transportation System Plan User's Guide

Roadway Element

Special Area Streets Overlay:

Willow Creek, Merlo and Elmonica Areas



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- Special Area Neighborhood Route
- Special Area Local Street
- Special Area Commercial Street
- Proposed Special Area Collector
- Proposed Special Area Neighborhood Route
- Proposed Special Area Local Street
- Proposed Special Area Commercial Street
- Corridor
- Street

Figure 3-12

Online Map: http://arcg.is/1mVQq0y

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Figure 3-13: Special Area Street Overlay: Beaverton-Hillsdale/Oleson/Scholls Ferry Intersection

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Transportation System Plan User's Guide

Roadway Element

Long Term Roadway Jurisdiction

Washington County - these roadways are proposed to be under County jurisidiction

State- these roadways are proposed to be under State jurisidiction

Other Roads

Urban Area

County

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Figure 3-14

Online Map: http://arcg.is/1AZZkuJ

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Transportation System Plan User's Guide

Roadway Element

Long Term Roadway Jurisdiction

(Urban Area)

- 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

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Figure 3-15

Online Map: http://arcg.is/1AZZkuJ

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Scholls Ferry Road

Rural Road Enhancement Study Corridors

The Rural Road Enhancement Study Corridors identified corridors where conflicting travel needs of different users must be considered and monitored. Figure 3-16 shows the location of these corridors. Many of these rural roadways were originally designed and built to accommodate only local and agricultural-related 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. 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, and
- Other intersection improvements.

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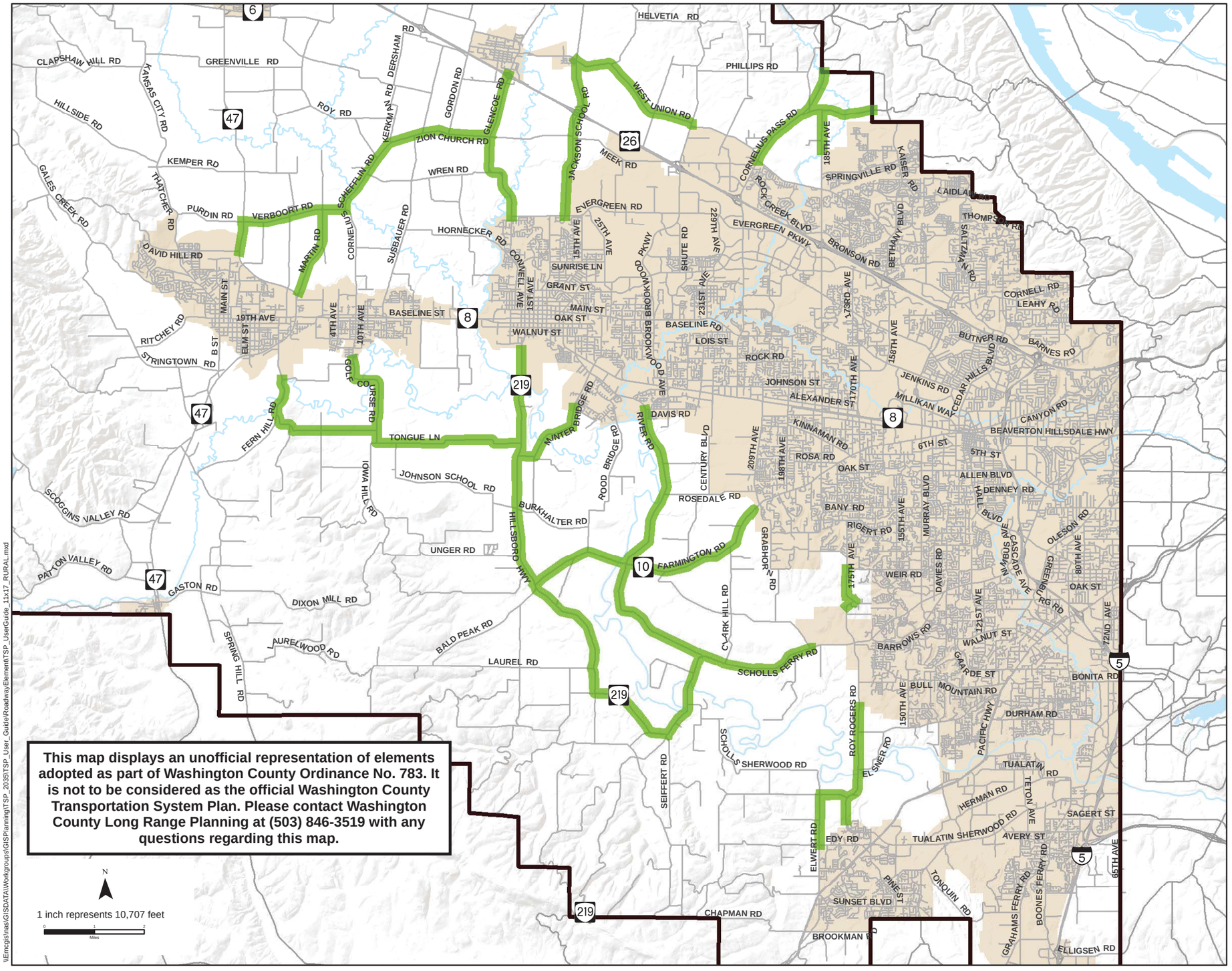
Transportation System Plan User's Guide

Roadway Element

Rural Road Enhancement Study Corridors



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- Rural Road Enhancement Study Corridor
- Other Roads
- Urban Area
- County

Figure 3-16

Online Map: http://arcg.is/1bSRMU8

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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 Subarea 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.

ADOPTED TEXT

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.

ADOPTED TEXT

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 5lanes 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 collector 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 Sherwood 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 incompatible 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.

ADOPTED TEXT

ADOPTED TEXT

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 near 185th

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.

ADOPTED TEXT

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.

ADOPTED TEXT

- 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.5 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)*.

ADOPTED TEXT

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.

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Freight Element

Washington County is often dubbed the "Economic Engine of Oregon." Led by established industry clusters in high-tech, clean-tech, and active-wear, Washington County is home to more than 230,000 jobs and the highest average weekly wages in Oregon. Critical to maintaining and raising this status is the efficient movement of goods by road, rail, and air. This element includes information on existing conditions and future needs for roadway freight, freight rail, and air cargo; general aviation and pipelines are also covered. In addition, this element includes the Truck Route map and the Aviation, Railroad, and Pipeline map. Efficient freight movement is also addressed in TSP Goal 2: Economic Vitality, which provides specific objectives and strategies related to goods movement.

ROADWAY FREIGHT CONNECTIONS

This section primarily addresses the transport of freight on roadways because it is the only mode of freight travel over which Washington County has control. Significant amounts of freight are transported by rail and pipeline, and, to a much-lesser extent, air. However, planning for these modes is done by private companies or other government agencies. Rail, pipeline, and air travel modes are described as separate elements later in this element. Given the close connection between freight movement and economic growth, it is critically important for Washington County's freight connections to provide efficient and reliable transportation of goods. To keep pace with the demand for freight movement, which is expected to double by 2035, Washington County must identify and address gaps and deficiencies in the freight transportation network.

The following section identifies key freight connections and summarizes existing freight needs, including previous findings regarding freight system needs from Metro's 2014 RTP, the Metro *Regional Freight Plan*, and the ODOT *Portland Region Economic Corridor Evaluation Report*. Freight is transported via intermodal, roadway, rail, air, and marine facilities. Each of these modes is an important element of the goods movement system in Washington County and the Portland metropolitan region. While all modes are important, the majority of freight is moved via roadways. Approximately 67 percent of freight tonnage in the Portland metropolitan area moved by truck in 2000. The following section identifies freight roadway designations and truck demand in Washington County.

Freight Route Designations

The Countywide Truck Route system is an important element of the County's transportation system plan. To provide for the most efficient transport of freight, and to minimize negative impacts on residential neighborhoods, Truck Routes are designated primarily on Arterial and Collector roads. Truck Route designations in the TSP encourage the use of these routes for truck travel, but do not restrict truck travel or local pickup and delivery by truck to these routes. The primary purpose of designating Truck Routes in this plan is to ensure that any future improvements on these roads provide for the safe and efficient movement of trucks. Washington County Truck Route designations are defined and mapped later in this element.

Hazardous Materials

Transport of hazardous materials is regulated by the Federal Motor Carrier Safety Administration under Title 49 Code of Federal Regulations, Parts 390-397, and is not governed by local jurisdictions. Hazardous materials include a variety of substances, ranging from radioactive materials and medical wastes to gasoline. The transport of nonradioactive hazardous materials requires that vehicles transporting these materials comply with any routing designations of a state, be placarded or marked, and not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets, or alleys, except where there is no practicable alternative. The transport of radioactive materials is generally restricted to designated preferred routes on interstate highways, beltways, or bypasses, where alternative routes have not been designated by a state. Transport of hazardous materials is permitted on all Through Truck Routes within Washington County. However the Vista Ridge tunnel just east of Washington County on US 26 is closed to such traffic. As a result, hazardous materials are often transported via NW Cornelius Pass Road or OR 217.

Regional Freight System

Freight (i.e., truck) route designations are applied at the state, regional, County, and local level. ODOT, Metro, Washington County, and the cities in Washington County each have their own designations that reflect the needs for transporting goods within and through the respective agency jurisdictions. Roadways on these routes should be designed, constructed, and maintained to support the efficient movement of freight. The *1999 Oregon Highway Plan* identifies the State Highway Freight System. In Washington County, this designation is applied to all freeways (I-5, US 26, and OR 217) as well as OR 99W and OR 6. At the regional level, Metro identifies a more detailed set of significant freight infrastructure. Metro's Regional Freight Network in Washington County identifies main roadways and road connectors for freight trucks, railroad lines, rail yards, marine facilities, and airports.

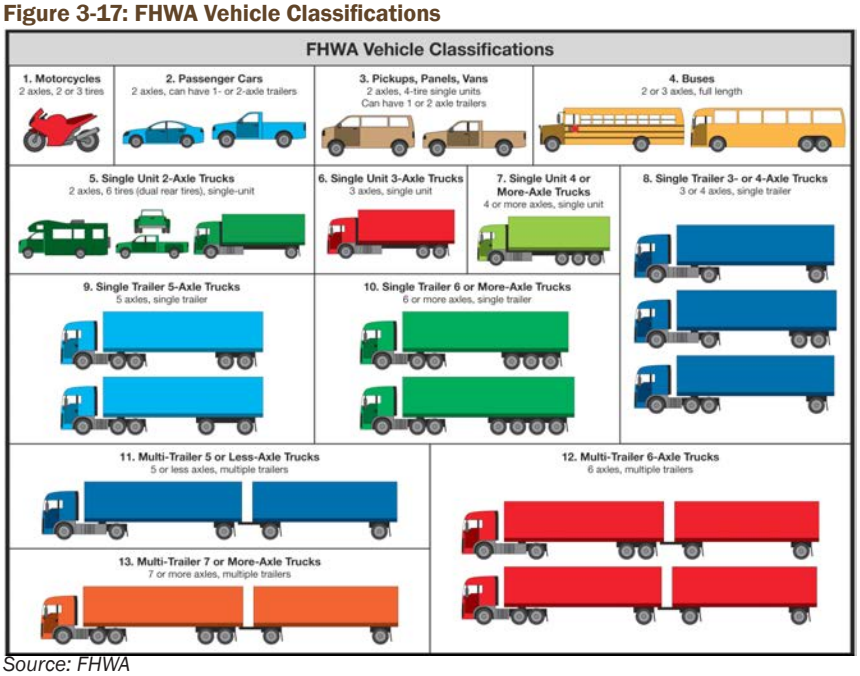
Commercial freight on NW Cornelius Pass Road (Multnomah County segment)

Truck Demand

Truck Counts

Counts of truck traffic have been taken at various locations within Washington County. These counts provide an understanding of truck operations within the county, but only at the points where the counts are taken. Specific path information about truck trips (origin, destination and route) is extremely limited. For operational purposes, FHWA classifies vehicles into 13 categories, as shown in Figure 3-17. Washington County vehicle classification counts use this classification scheme and describe trucks as classes 4 through 13. Vehicle classification counts have been taken at most Washington County count stations over the last five years. Summary information is provided below for locations with the highest truck volumes and the highest truck percentages of traffic. More detailed information is available in the Technical Appendix of the *Existing Conditions and Future Needs Report*.

Figure 3-17: FHWA Vehicle Classifications



Source: FHWA

Count locations in Washington County with the highest truck volumes include:

- Tualatin-Sherwood Rd, west of Boones Ferry (5,948 trucks in 2007, and 4,085 trucks in 2012)5,
- Cornelius Pass Rd, north of Cornell (2,172 trucks in 2007, 2,359 trucks in 2012),
- Glencoe Rd, south of Beach (1,916 trucks in 2007, and 1,647 trucks in 2012),
- Murray Blvd, south of Allen (1,882 trucks in 2007, and 1,657 trucks in 2012),
- 185th Ave, north of Cornell (1,725 trucks in 2007, and 1,730 trucks in 2012),
- Roy Rogers Rd, south of Scholls Ferry (1,723 trucks in 2007, and 1,587 trucks in 2012), and
- Scholls Ferry Rd, west of Nimbus (1,718 trucks in 2007, and 1,742 trucks in 2012).

Count locations in Washington County with the highest percentages of truck volumes include:

- Clark Hill Rd, south of Farmington (24 percent in 2007, and 14 percent in 2012),
- Grahams Ferry Rd, south of Cahalin St (22 percent in 2007, and 20 percent in 2012),
- Roy Rd, north of Cornelius-Schefflin (22 percent in 2007, and 27 percent in 2012),
- Cipole Rd, north of Tualatin-Sherwood (19 percent in 2007, and 17 percent in 2012),
- Tonquin Rd, south of Oregon St (18 percent in 2007, and 12 percent in 2012),
- Sellers Rd, south of Hwy. 26 (17 percent in 2007, and 15 percent in 2012),
- Gordon Rd, south of Beach (11 percent in 2007, and 15 percent in 2012),
- Farmington Rd, west of 209th (17 percent in 2007, and 14 percent in 2012), and
- Tualatin-Sherwood Rd, west of Boones Ferry (16 percent in 2007, and 14 percent in 2012).

The Washington County traffic count stations do not include ODOT or city-operated roadways. ODOT has a limited number of Automatic Traffic Recorder (ATR) count stations that count trucks on their roads in Washington County. Truck volumes and truck percentages of total traffic were compared for 2008 and 2010 (latest comparable data available) for the five ODOT ATR stations listed below:

- OR 6 west of Glenwood Lane (549 trucks or 12 percent trucks in 2008, 1,070 trucks or 22.6 percent trucks in 2010),
- U.S. 26 @ Hwy. 47 (302 trucks or 4.7 percent trucks in 2008, 583 trucks or 8.39percent trucks in 2010),
- U.S. 26 west of Glencoe Rd. (2,218 trucks or 10.6 percent trucks in 2008, 2,129 trucks or 10.13 percent trucks in 2010),
- I-5 south of Boones Ferry Rd. (20,632 trucks or 13.6 percent trucks in 2008, 15,596 trucks or 10 percent trucks in 2010), and
- OR 8 west of NW 334th Ave. (1,482 trucks or 4.38 percent trucks in 2008, 1,349 trucks or 4.06 percent trucks in 2010).

As indicated by the data, there are no clear trends. Two of the five count stations exhibited increased truck volumes and percentages, whereas the other three locations showed decreased truck volumes and percentages. Although this is a very limited sample size that should be viewed with caution, this data reflects an overall decrease of approximately 4,500 trucks, or just under 18 percent in truck traffic between 2008 and 2010. One possible explanation for this downward trend is that the 2008 to 2010 time period coincides with the height of the economic recession. Reduced business activity and an expected commensurate decline in truck activity may have occurred during this period.

5 *All of Tualatin-Sherwood has extremely high truck volumes, a listing of the highest truck volumes in Washington County would be a description of the count station locations along Tualatin-Sherwood Rd. It is listed once with the highest truck volume location.*

Freight & Truck Traffic Generating Areas

The Roadway Freight System needs to serve industrial and employment locations within Washington County. Many of these locations within the Urban Growth Boundary are identified by Metro Title 4. Other truck generating uses include many rural activities such as rock quarries, logging, and farming. No map of these activities is included, as they span most of the rural area.

Mclane Distribution in Tualatin

ROADWAY FREIGHT GAPS AND DEFICIENCIES

Significant regional efforts have previously been conducted to analyze the movement of goods in the region. Three studies in particular have provided valuable information on gaps and deficiencies in the freight network in Washington County. These include:

- *Metro 2014 Regional Transportation Plan*,
- *Metro Regional Freight Plan*, and
- *ODOT Portland Region Economic Corridor Evaluation Report*.

Findings from these regional efforts relevant to Washington County are summarized in the following sections.

Metro 2014 RTP

The RTP vision for the regional freight network is, "to enhance freight mobility and access to industrial areas and intermodal facilities by focusing on the most critical locations where roadway congestion occurs." The vision focuses on a systems approach in planning and managing the freight system in order to: reduce delay, increase reliability, protect industrial lands, and freight transportation investments, address critical marine and rail needs, and utilize "clean, green, and smart" technologies and practices. Performance thresholds for reliability on the regional freight transportation system are identified in the Interim Regional Mobility Policy.

The RTP identified long-term multimodal needs for key regional transportation corridors; the eight RTP "mobility corridors" located in Washington County are listed in Table 5-1 in the *Existing Conditions and Future Needs Report*, along with the regional freight needs identified for each corridor. Table 5-1 also identifies arterial and throughway needs that may be significant to local freight mobility and reliability, or that address other potential freight-related concerns. The RTP recommends implementation of the and *Urban Growth Management Functional Plan* to address the identified freight needs for these corridors. Future Corridor Refinement Plans are recommended for two of the corridors: the Portland Central City to Wilsonville and Sherwood corridor and the Beaverton to Forest Grove corridor. The RTP includes a long list of candidate transportation system improvements. Many of these projects will address freight mobility needs as well as mobility needs of general traffic.

Metro Regional Freight Plan

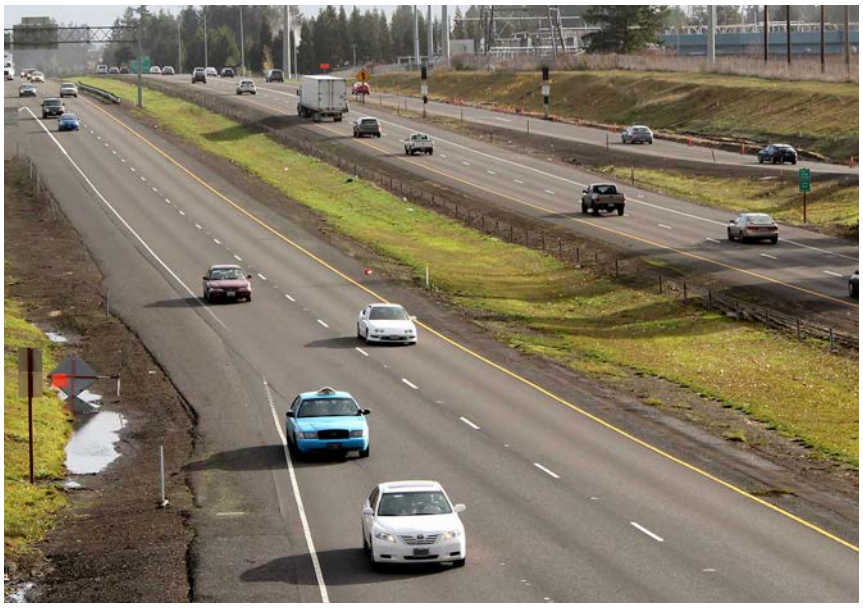
The *2010 Metro Regional Freight Plan*, an element of the RTP, provides data and analysis of freight and goods movement in the Portland metropolitan region. The plan describes the close relationship between freight transportation, trade, and economic growth; and provides an action plan and a tool kit of strategies designed to address freight needs and issues in conjunction with the RTP and the *2040 Growth Concept*. The plan identifies locations of recurring highway congestion (chokepoints) that affect freight movement. Locations and issues identified in Washington County include:

- I-5 Corridor (south of OR 217): the corridor is reaching capacity and carries a larger percentage of trucks;
- OR 217: inadequate interchange spacing leads to merge/weave congestion and accidents near interchanges at Southwest Beaverton-Hillsdale Highway, Allen Boulevard, and Denney Road;
- Non-continuous or Awkward Parallel Arterials and Connections: improved connections to current or emerging industrial areas are needed (e.g., I-5/OR 99W connector); and
- Last-mile chokepoints: locations that experience congested last-mile local industry connectors (e.g., SW 124th Avenue from Tualatin-Sherwood Road to the I-5/Elligsen Road interchange).

Improved access to the North Wilsonville-Tualatin-Sherwood industrial area has been identified as one of the highest priority road improvements in the region. OR 99W through Tigard also is identified as a core throughway system bottleneck, with substantial freight impacts. While truck traffic makes up the dominant share of freight movement, upgrades to rail main line and rail yard infrastructure also were identified as critical transportation needs. A prioritized project list developed by Metro's Regional Freight and Goods Movement Task Force (2008) is included in the *Regional Freight Plan*. These projects are categorized as high, medium-high, medium-low, or low regional priority, and may not be included in the financially constrained RTP project list. The highest priority freight-related projects identified for Washington County were identified as medium-high priority projects in the RTP, since the Task Force did not identify any high priority freight projects for Washington County.

Portland Region Economic Corridor Evaluation Report

The 2011 ODOT *Portland Region Economic Corridor Evaluation* identified eight key corridors serving the region's top economic centers for existing and future industrial employment. Five of the 14 regional economic centers are located in Washington County: Beaverton, Hillsboro, Tigard/SW 72nd, Tualatin/Sherwood, and Wilsonville. Two of the eight economic corridors are located in Washington County: I-5 (Elligsen Road to OR 217) and US 26 (I-405 to Cornelius Pass Road). OR 217, OR 99W, and other Washington County corridors were not determined to be in the top eight regional economic corridors serving industrial uses. Regional corridors were prioritized based on an assessment of regional truck traffic, industrial traffic, traffic generated from the identified economic centers, and the total number of economic centers served by the corridor. Both the I-5 and U.S. 26 segments in Washington County were ranked in the second highest prioritization tier based on the assessment. Analysis of the operational performance of these corridors predicts significantly more congestion by 2035, resulting in increased travel delay, and degradation of travel time reliability. Table 3.10 summarizes daily performance measures for the Washington County economic corridors in 2005 and 2035.



US 26 at Cornelius Pass Road

Table 3.10: Daily Traffic Performance Measures for Key Economic Corridors in Washington County

Corridor	Direction	Year 2005		Year 2035		Change (2035-2005)	
		Average Speed (mph)	Buffer Index*	Average Speed (mph)	Buffer Index*	Average Speed (mph)	Buffer Index*
I-5 (Elligsen Rd to OR 217)	north-bound	42	0.87	34	3.10	-8	2.23
	south-bound	44	0.72	36	2.41	-8	1.69
US 26 (I-405 to Cornelius Pass Rd)	eastbound	39	1.41	36	2.05	-3	0.64
	westbound	40	0.84	37	1.52	-3	0.68

**A buffer index score of 0.0 is free-flow, with larger numbers indicating increased speed variability. Generally, a buffer index between 1.0 and 2.0 represents corridors with significant peak period congestion and values above 2.0 represent severe congestion that spreads into multiple hours. Corridors with a buffer index greater than 2.0 are shown highlighted in bold font.*

Source: ODOT Portland Region Economic Corridor Evaluation Report, DKS Associates, December 2011

Of all the economic corridors analyzed for the region, the I-5 segment between Elligsen Road and OR 217 would degrade the most under projected future conditions. The corridor is projected to experience one of the greatest drops in average speed and the greatest degradation in travel-time reliability (as measured by the buffer index). Limited peak-period congestion experienced today would change to congested conditions spanning many hours of the day; the worst congestion of any of the corridors would occur on I-5 in the northbound direction. Travel speeds on U.S. 26 would degrade by approximately 3 mph in each direction, with the key bottleneck location remaining at the Vista Ridge tunnel approaches.

The regional picture of economic centers is important to understand freight travel patterns in Washington County. Opportunities and constraints for growth were also identified for sites expected to have significant industrial growth, including Hillsboro, Tualatin/Sherwood, and Wilsonville. The economic areas in Beaverton and Tigard/SW 72nd were not considered to have significant industrial growth in the future. The opportunities and constraints identified for each site analyzed are summarized below:

- Hillsboro would benefit from improved arterial performance on corridors that connect to US 26 (e.g., Cornell Road, Cornelius Pass Road, and Brookwood Parkway). The opportunities for growth are categorized as "fair" based on the location and level of reliance on congested facilities for access.
- Tualatin/Sherwood would benefit from improving the connectivity and performance of existing arterial corridors that connect to I-5 and OR 99W, and corridors parallel to I-5 to better connect OR 217 and Wilsonville. The opportunities for growth are categorized as "constrained" due to the distance from freeways, the level of congestion expected on connecting roadways (without additional future improvements), and the level of congestion expected on the portion of I-5 accessed by the site.
- Wilsonville would benefit from improving the performance of I-5 and parallel corridors between OR 217 and the Willamette River. Similar to Tualatin/Sherwood, the opportunities for growth are categorized as "constrained" due to limited freeway accessibility, and congestion on I-5 to the north. This location may remain favorable to uses that rely on connections to the south; but connections to other regional portals would be limited.

It should be noted that the ODOT study only reported on opportunities and constraints based on comparing the level of traffic congestion and regional mobility options. Other factors, such as parcel aggregation and site suitability, were not considered in this analysis.

Roadway Freight Findings

Existing and Future Industrial Areas

Key industrial centers in Washington County are located in Hillsboro, Beaverton, Tigard/SW 72nd, Tualatin/Sherwood, and Wilsonville. "Regionally Significant Industrial Areas" with high growth potential are located in Hillsboro, Tualatin/Sherwood, and Wilsonville. Mobility and reliability in accessing these locations should be improved, especially to the regional freeway corridors.

Key Access Routes for Truck Movement

Cornelius Pass Road

Trucks traveling to the region's ports often use Cornelius Pass Road to reach U.S. 30, where they either turn right to reach Port of Portland terminals, or turn left to reach ports in St. Helens and Longview. Though Cornelius Pass Road has some sharp curves, it is a designated freight route. Approximately 14 percent of the traffic on Cornelius Pass Road is trucks. Cornelius Pass Road also serves as a hazardous materials route for cargo that cannot pass through the Vista Ridge Tunnel. Germantown Road, though more direct for reaching Port of Portland terminals, is far less suitable for large trucks due to sharp curves and steep grades. Despite this, trucks constitute five percent of the traffic on Germantown Road. Improved connections between the Washington County industrial areas and the river ports are needed; this need is particularly important for transport of hazardous materials.

Tualatin-Sherwood Road

Tualatin-Sherwood Road has the highest truck volume of any arterial in Washington County, and is congested during much of the day. The railroad crossing at Boones Ferry further affects freight traffic. Many of the trucks using this road are accessing the industrial areas of Sherwood and Tualatin, headed to/from Interstate 5 or Interstate 205. Travel time along Tualatin-Sherwood Road is extremely unreliable, creating a need for improved freight reliability between the industrial areas in Sherwood and Tualatin, the Interstate system, and the rest of the region.

Tualatin-Sherwood Road

Gaps and Deficiencies

Washington County Truck Route designations generally reflect intuitive connections between economic activity areas and regional highways, primarily using the arterial roadway system. In a capacity-constrained context the Truck Route system may need to focus on identifying priority routes truck, facilities, and systems. The gaps and deficiencies most often identified in previous studies for regional freight mobility in Washington County include:

- I-5 between I-84 and Wilsonville - grades and travel time reliability issues;
- U.S. 26 between I-405 and Brookwood Parkway – grades, travel time reliability issues, and hazardous materials may not pass through the Vista Ridge Tunnel on Highway 26;
- Cornelius Pass Road - safety concerns; and
- Tualatin-Sherwood Road - reliability issues.

DESIGNATED TRUCK ROUTES

The primary purpose of designating Truck Routes in the TSP is to ensure that any future improvements on these roads provide for the safe and efficient movement of trucks; and to ensure that these facilities are designed to accommodate use by trucks of all sizes. Truck Route designations encourage the use of these routes for truck travel, but do not require that trucks use these routes. The Roadway Freight System Map shown in Figures 3-18 and 3-19 identify designated Truck Routes and Over-Dimensional Truck Routes in Washington County. These routes are on roadways where high volumes of freight traffic are anticipated, and where roadway system improvements should consider the needs of these vehicles as well as other travel modes using the facility.

ADOPTED TEXT

Truck Routes

Truck Route designations are for planning purposes only and are used to guide the design of road and bridge improvements to handle a greater frequency of truck and other heavy vehicle traffic Truck routes are identified roadways where a high percentage of vehicles larger than personal vehicles are expected. These routes may connect freight corridors and/or serve industrial areas.

The design of improvements or changes to truck routes should consider the needs of large vehicles such as broader turn radii, wider lanes, acceleration/deceleration characteristics, longer turn pockets, longer start up and stopping time built into signal timing and high overhead clearance. It should be noted that all county roads are open to vehicles that do not exceed statutory or permitted weights and dimensions. It is the responsibility of the vehicle's driver to operate the motor vehicle safely and legally, abiding by all posted limitations, temporary restrictions and/or emergency situations. Additionally, it is the driver's responsibility to navigate the County's road network taking into consideration of the geometry of the road.

Over-Dimensional Truck Routes

Certain truck routes routinely carry or have the ability to carry vehicles that exceed the statutory limits for weights and dimensions. These Over-Dimensional Truck Routes should be given special consideration for the operation of largerthanstandard vehicles.

When considering improvements or other actions within or adjacent to the right-of-way along Over-Dimensional Truck Routes, the design should not preclude the operation of larger vehicles. The design of improvements within or along these routes should consider (but is not limited to):

- Large turn radii;
- Mountable curbs and/or medians;
- Placement and/or type of street trees, street furniture and street lighting;
- Placement of sidewalks and design of pedestrian crossing treatments;
- Placement of signal poles, utilities and signage;
- Placement of planting strip, median design and vegetation treatments; and
- Building placement and setbacks.

Any new fixed object placed within the right-of-way should be evaluated for its effect on largerthanstandard vehicle operations.

The identification of these routes in this plan does not relieve a motor carrier from obtaining a trip permit. The route identification is solely intended for use in planning and design of roads and bridges.

Transportation System Plan
User's Guide

Freight Element

Roadway Freight System

- Over-Dimensional Truck Route
- Truck Route
- Other Roads
- County
- Urban Area

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1 inch represents 18,500 feet

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Figure 3-18

Online Map: http://arcg.is/1PXRBX2

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Planning and Development Services Division

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Transportation System Plan User's Guide

Freight Element

Roadway Freight System
(Urban Area)

- Over-Dimensional Truck Route
- Truck Route
- Other Roads
- County
- Urban Area

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Figure 3-19

Online Map: http://arcg.is/1PXRBX2

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Planning and Development Services Division

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FREIGHT RAIL

Rail shipping remains the most fuel-efficient method of moving goods over land. A train can move one ton of goods 400 miles on one gallon of diesel, compared to three gallons of fuel required for most trucks.

While the role of railroads in Washington County's overall freight network is relatively small, a number of local firms continue to use them regularly, particularly in the forest products industry. Portland & Western Railroad (PNWR) is the primary operator of freight railroads within Washington County, with lines stretching from Banks to Wilsonville, and from Lake Oswego to Sherwood.

Railroad Routes, Owners, and Users

Washington County has more than 90 miles of active "short line" freight railroads; all operated PNWR, a Salem-based subsidiary of short line holding company Genesee & Wyoming. Washington County does not contain any Class I railroads, intermodal facilities, or major rail yards. The PNWR system interchanges with the Albany & Eastern Railroad, BNSF Railway, Central Oregon & Pacific Railroad, Coos Bay Rail Link, Hampton Railway, Port of Tillamook Bay Railroad, and Union Pacific Railroad. Commodities transported by rail include aggregates, brick, and cement, chemicals, construction and demolition debris, food and feed products, forest products, metallic ores and minerals, and steel and scrap.

Portland & Western Railroad engines in Hillsboro

Freight Rail Demand

Class I railroads such as Union Pacific and BNSF have experienced major business growth in the past decade, largely due to increased fuel costs that make rail shipping less expensive than trucking. However, Washington County has only short line railroads, which are generally in a distressed or static state. The railroads' primary business – forest products – remains in an uncertain economic state, and few funds are available (public or private) for track maintenance or upgrades. Reliance on a single customer, such as the Stimson lumber mill at the terminus of the Westside-Seghers Branch, puts some short lines at further risk. While freight rail demand is uncertain, existing County policy is to preserve these corridors for future needs for freight and passenger service.

Railroad Crossing Considerations

The majority of roadway rail crossings in Washington County are at-grade, posing potential hazards and conflicts between rail traffic and other travel modes, including vehicles, pedestrians, and bicyclists. The ODOT Rail Division authorizes any new rail crossing or any modification to an existing rail crossing. Trains are required to signal with horns when approaching a highway crossing. All highway crossings are required to be marked with a passive stop sign and railroad crossing sign. Alternatively, an activated crossing guard arm may be installed if the traffic expected at the crossing warrants this treatment. Passive railroad crossing signs also may be accompanied by active flashing lights, which are to be treated the same as a red traffic light.

A 2011 USDOT report indicated that passive crossings are almost 10 times more risky than active crossings. This same report indicated that the incidents per year at railroad crossings have been declining over the last 20 years. Until recently, the State of Oregon regulated the length of time a railroad train may block a public highway-rail crossing. An Oregon Court of Appeals ruling determined that federal law preempted the State from continuing this practice. So, the State of Oregon can no longer control public crossings that are blocked by trains. Today, trespassing has become the leading cause of railroad fatalities (USDOT FRA Annual issues). Each year, approximately 500 people are killed nationally as a result of trespassing on railroad rights-of-way. Railroads face the challenge of identifying sites vulnerable to trespassing, improving awareness, and installing fencing.

Oregon Operation Lifesaver is a not-for-profit organization devoted to ending collisions, fatalities, and injuries at highway/railroad crossings and on railroad rights-of-way. To accomplish their mission, they promote the 3 E's of safety: Education, Enforcement, and Engineering. One particular area of concern is in Aloha, where people often cross the railroad tracks at unauthorized locations to reach bus stops and businesses along TV Highway. Railroad crossings also significantly affect the operation of a number of roadways in Washington County such as Tualatin-Sherwood Road and TV Highway.

PIPELINES

The most significant pipeline crossing Washington County is the Kinder-Morgan gas pipeline that transports pressurized, refined gas products from a facility on the Willamette River in Northwest Portland to Eugene and points in between. The pipeline generally follows a north-south BPA electric transmission line corridor through Bethany, Beaverton, Bull Mountain, and Sherwood; portions of which also accommodate the Westside Regional Trail. Several other gas pipelines cross the County, including another north-south corridor from the Dairy Creek valley to Sherwood, and several east-west routes. The primary concerns with major pipelines in the County are:

- Protecting the functionality of these pipelines as a mode of transporting products,
- Accounting for pipeline buffer corridors within planned development,
- Avoiding the high cost of relocating pipelines for transportation projects,
- Minimizing the community impacts of any future proposed pipelines, including liquefied natural gas (LNG) pipelines that have become more relevant in today's booming natural gas market,
- Minimizing impacts that any new pipelines would have on the community, and
- Minimizing impacts of new development on major pipeline corridors.

Existing high-pressure gas pipelines (60 pounds per square inch or greater) are shown in the TSP Aviation, Railroad and Pipeline System map.

AVIATION

Washington County has one medium-sized general aviation airport, two smaller private airports, and approximately 23 other airstrips or helipads, as described in the following sections. *Washington County's Comprehensive Plan* identifies Public Use Airports and state-recognized Private Use Airports with land use overlay designations (entitled Airport Overlay Districts) in the map elements of the Rural/Natural Resource Plan and/or Community Plans. Private use facilities fall under two general categories: private use airports identified by the Oregon Department of Aviation (pursuant to ORS 836.608(2)) that are subject to LCDC's Airport Planning Rule (OAR 660-013); and personal use facilities that are subject to local regulation. Land use related policies and strategies regarding the overlay-designated airport facilities are addressed in the Rural/Natural Resource Plan and in the Comprehensive Framework Plan for the Urban Area. Development standards for all airport and heliport related uses, including personal use airports and heliports, are outlined in the *Community Development Code*.

Portland & Western Railroad engines in Hillsboro

Hillsboro Airport

Hillsboro Airport (HIO), located northeast of downtown Hillsboro, is operated by the Port of Portland. HIO is defined by the Federal Aviation Administration (FAA) as a reliever airport for Portland International Airport (PDX); whose function is to preserve capacity at PDX by offering an alternative facility for general aviation aircraft, that is separate from commercial airline and air cargo activities. At the state level, the Oregon Aviation Plan defines HIO as a Category 2 airport that accommodates "corporate aviation activities, including business jets, helicopters, and other general aviation activities." HIO serves corporate air traffic associated with Intel and other large Washington County companies, while also accommodating personal aircraft. HIO has two runways, one 6,600 feet in length, the other 4,050 feet. In 2012, HIO had 277 "based aircraft" (aircraft that are typically stored and flown from the airport), down from the nearly 400 based aircraft in 2002. In 2008, HIO averaged 695 operations (takeoffs and landings) daily. The demand analysis included in the 2005 *Hillsboro Airport Master Plan* projected based aircraft to increase from 363 (in 2003) to 465 by 2025; and annual operations to increase from 253,847 to 323,000 – a 27 percent increase in operations. However, based aircraft and operations both dropped significantly during the "great recession".

Other Airports

Two smaller, public use airports are located in the rural areas of Washington County:

- Skyport Airport - near the village of Roy, and
- Stark Twin Oak Airport - along River Road near Scholls.

Both airports are general aviation facilities, limited to small-engine airplanes and helicopters. In addition to these two facilities, Washington County has 23 other air facilities, including small airstrips and helipad facilities at hospitals. No change to the operation of these airports is planned, and no additional public use airports are currently planned within Washington County.

Air Cargo to PDX

Much of Washington County's high tech cargo is shipped by air, due in part to the small size of the products and their high value. Air cargo is either shipped from Portland International Airport (PDX), where a number of established air freight carriers such as UPS, FedEx, and Asiana Cargo have multiple daily flights, or it is consolidated and shipped by truck to larger airports such as Seattle-Tacoma or San Francisco. The key transportation concern for air cargo traveling from Washington County to PDX is congestion and travel time reliability on routes between Washington County and PDX, particularly Sunset Highway. Aviation, railroad, and pipeline facilities in Washington County are shown in Figures 3-20 and 3-21.

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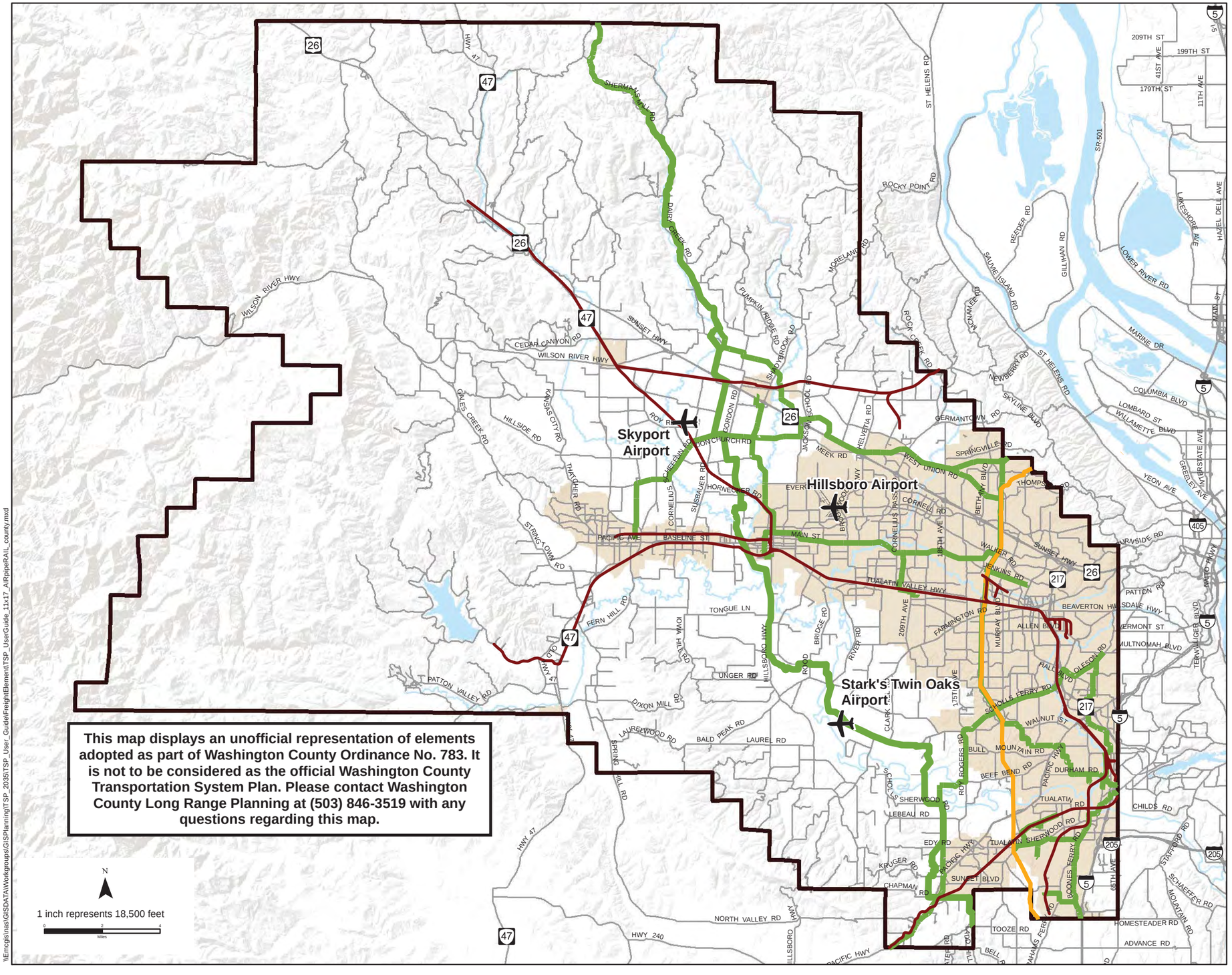
Transportation System Plan User's Guide

Freight Element

Aviation, Railroad and Pipeline System



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1 inch represents 18,500 feet

0 2 4 Miles

- Public Use Airports
- Propane Pipeline Corridor
- Natural Gas Pipeline Corridor
- Freight Rail
- Other Roads
- Urban Area
- County

Figure 3-20

Online Map: http://arcg.is/1L4CM1R

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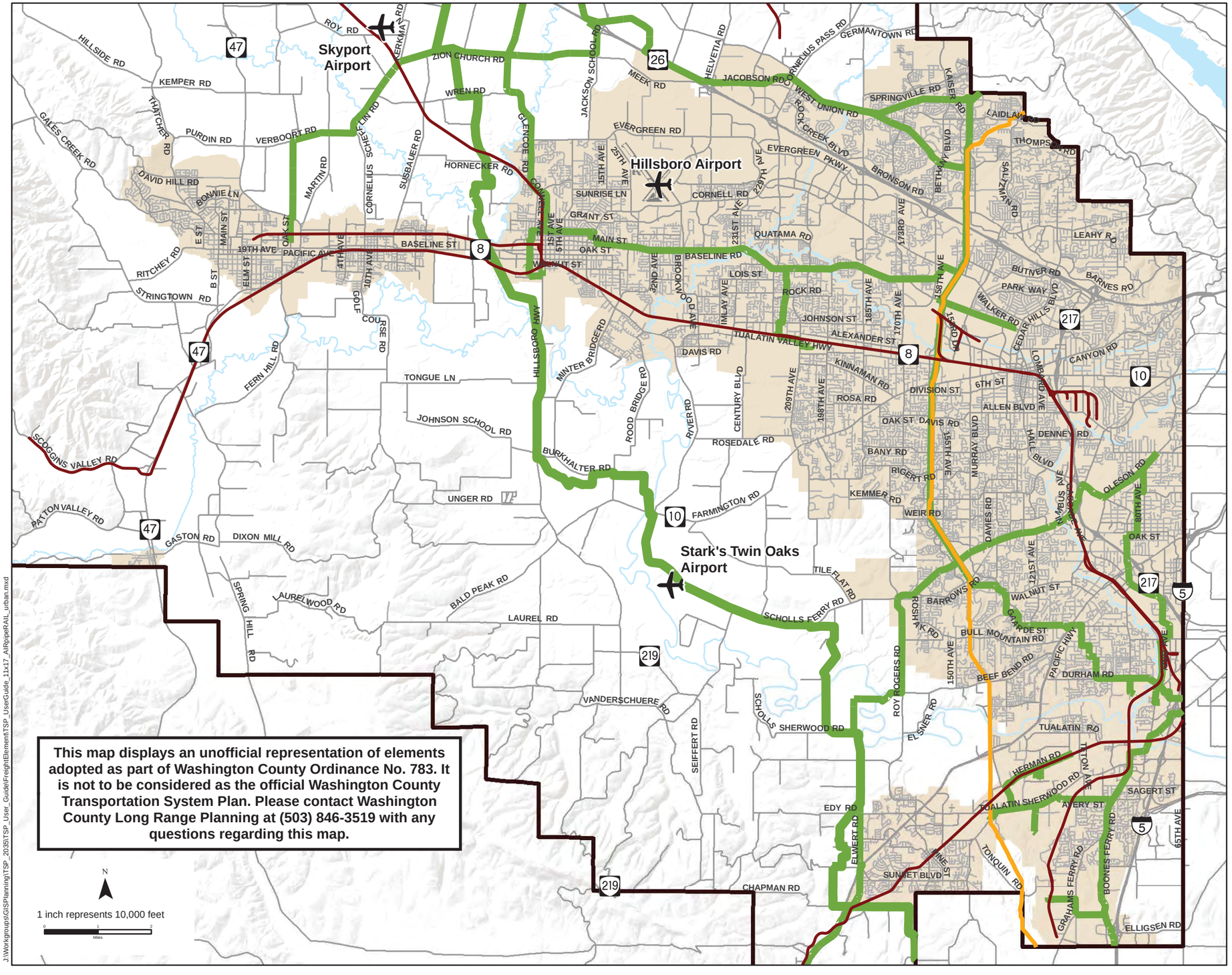
Transportation System Plan User's Guide



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Freight Element

Aviation, Railroad and Pipeline System

(Urban Area)

- Public Use
- Freight Rail
- Propane Pipeline Corridor
- Natural Gas Pipeline Corridor
- Other Roads
- Urban Area
- County

Figure 3-21

Online Map: http://arcg.is/1L4CM1R

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Active Transportation Elements

Active transportation refers to human-powered travel, including walking and bicycling. Public transit is also a component of active transportation because accessing transit stops usually involves walking or bicycling. Widespread use of the term began as transportation policy placed increased emphasis on non-automobile modes and as the links between human health and transportation planning became more evident.

Active transportation modes are essential components of the overall transportation system, meeting a variety of societal, environmental, and economic goals. These include:

- **Environmental stewardship and energy sustainability**: Replacing gasoline-powered automobile trips with active trips reduces the emission of greenhouse gases, air toxins and particulates, helping to maintain air quality and address energy sustainability.
- **Congestion alleviation**: People who walk, bike and use transit reduce the number of motor vehicles vying for space on roadways and in parking lots. The active mode share for commuting from Washington County is currently estimated to be about 11% for work-related trips.[6] Reduced congestion improves air quality, livability and economic vitality.
- **Health**: "Obesity is one of the biggest public health challenges the country has ever faced.[7]" The conditions in which we live explain in part why some Americans are healthier than others and why Americans are generally not as healthy as they could be. The social determinants of health include five key areas: Economic Stability, Education, Social and Community Context, Health Care, and the Neighborhood and Built Environment. The TSP sets the framework for future decisions about the Neighborhood and Built Environment component. Due to the connection to public health and healthy outcomes, it is necessary that public health and active lifestyles are considered as we make these choices. The transportation system is necessary to provide access to health care and emergency services. Furthermore, the transportation system provides the environment for an active lifestyle. Infrastructure that enhances pedestrian, bicycle and transit networks also enhances opportunities for physical activity within our communities. This may in turn help address obesity and other public health related issues.
- **Safety**: As walking and bicycling trips increase, so does the relative safety of those modes. In Portland, for example, the bicycle crash rate (reported crashes normalized by counted bicycle trips) has shown a general downward trend in the past decade, even as daily bicycle trips have more than doubled.[8] This can be partly attributed to increased attentiveness on the part of motorists as they see more bicyclists on the road. The same trend applies to pedestrian safety.
- **Efficient travel**: For many trips, active transportation choices are the most sensible and efficient mode. For very short trips, such as a quarter-mile trip to a convenience store, walking can be the best choice. Trips in the one- to five mile range are often ideal for bicycling.
- **Cost savings and social equity**: Some people in Washington County and nationwide cannot afford to or choose not to own or operate a private vehicle. For those who need or want to reduce their transportation costs, active transportation is a common solution. A younger millennial generation that is less interested in cars and driving than their parents were.
- **Attractive, efficient urban form**: The popularity of neighborhoods designed around a higher density urban form with active transportation facilities shows this type of community is increasingly desirable. From the historic, tree-lined streets of Forest Grove to the rapidly-growing Orenco Station neighborhood, active transportation facilities like sidewalks, bike lanes and frequent transit are drawing residents and businesses. Walkable neighborhoods tend to be compact, using urban land efficiently and helping to meet other regional land use policies such as agricultural preservation.

6 *American Community Survey 2010 One-Year Estimates, U.S. Census Bureau, 2011.*
7 *F as in Fat: How Obesity Threatens America's Future 2010, a report from the Trust for America's Health.*
8 *2011 Bicycle Counts Report, Portland Bureau of Transportation, 2012.*

ACTIVE TRANSPORTATION PLANNING CONTEXT

State of Oregon

Active transportation is a critical component of transportation planning at all levels of government in Oregon. The Oregon Statewide Planning Goal 12 (Transportation) states, among other things, that a transportation plan must:

- Consider all modes of transportation,
- Avoid principal reliance on any one mode,
- Conserve energy, and
- Meet the needs of the transportation disadvantaged.

Mandates for active transportation are found explicitly and implicitly throughout other State of Oregon transportation plans and policies, as summarized below.

- The *Transportation Planning Rule* (1991) requires local jurisdictions to include a bicycle/pedestrian component in their transportation system plans, and to establish a network of walking and biking facilities throughout the plan area.
- The *Oregon Transportation Plan* (2006) calls for a "balanced" transportation system and communities that provide "transportation choices."
- The *Oregon Highway Plan* (1999) requires state highways to accommodate alternative modes.
- The *Oregon Bicycle and Pedestrian Plan* (1995) calls for the integration of bicycle and pedestrian modes into all transportation planning and design activities, and provides design guidelines for bicycle and pedestrian facilities.

ADOPTED TEXT

Complete Streets

ORS, OAR and the Oregon Transportation Plan establish that bicycle facilities are required on all Collector or higher classification roadways (except freeways) when those roads are constructed or reconstructed. Exceptions are provided where a bikeway is not safe, where cost is excessively disproportionate to need or where there is an absence of need due to sparse population or other factors. Likewise these requirements include constructing sidewalks along new urban streets and along existing urban streets when they are reconstructed. Roadways within Washington County are required to be consistent with these complete street regulations. All projects are to be implemented in compliance with these and other applicable rules and regulations.

Metro

Metro's *2014 Regional Transportation Plan* relies heavily on active transportation modes to achieve regional land use and transportation goals. RTP Goal 3 – Expand Transportation Choices – includes the following objectives:

- Achieve modal targets for increased walking, bicycling and use of transit (19 percent, 3 percent and 10 percent mode shares, respectively) and reduced reliance on automobile and drive alone trips;
- Reduce vehicle miles traveled per capita; and
- Provide affordable and equitable access to travel choices and serve the needs of all people and businesses, including people with low income, children, elders, and people with disabilities, to connect with jobs, education, services, recreation, social, and cultural activities.

The 2014 RTP designates preferred networks for pedestrian, bicycle, and transit modes across the region. In Washington County, the regional pedestrian network focuses on mixed-use corridors, existing and planned regional trails, and pedestrian districts. The regional bicycle network includes many of these same corridors and trails, but adds "community bikeways" that would take the form of lower-traffic bike boulevards. The regional transit network includes existing

transit routes, potential future bus routes in growing areas, and a separate High Capacity Transit System Plan that prioritizes the next corridors for light rail, commuter rail, or bus rapid transit.

The 2014 RTP also includes a Regional Street Design Overlay for arterial streets. These designations – Regional Boulevards, Regional Streets, Community Boulevards, and Community Streets – encourage street designs that are conducive to active transportation and that support implementation of the *Metro 2040 Growth Concept*. The Regional Street designation overlaps with nearly all of Washington County's arterial roadways outside of industrial areas, and includes most of the 2040 mixed-use corridors. The less common Boulevard designation is found primarily along arterials within regional and town centers. Boulevards should include wide sidewalks, safe crosswalks, planter strips, medians, ample trees, and vegetation and other pedestrian-friendly design features.

A separate-but-related Metro initiative examines demographic and socio-economic data to identify areas with disproportionate concentrations of poverty, minority residents, older adults, youth, and low-English proficiency, as measured by the U.S. Census. "Environmental Justice" (EJ) scores indicate, among other things, where active transportation investments may have a particularly high benefit. Areas with higher EJ scores generally correlate with lower rates of automobile availability, usage, and affordability, potentially putting residents at a transportation disadvantage. In these areas, active transportation investments such as sidewalks, bike lanes, and transit service are particularly critical. Washington County contains several areas with high EJ scores, including the Aloha-Reedville area, downtown Hillsboro, downtown Beaverton, and a majority of the City of Cornelius.

Washington County

Washington County has conducted active transportation planning for several decades, responding to regional and state mandates as well as the needs and desires of its populace. In addition to pedestrian, bicycle and transit components found in every major update to the Washington County Transportation Plan, the County has pursued targeted planning efforts to address active transportation needs and opportunities including:

- The *Washington County Pedestrian and Bicycle Plan* (2010) which built upon the wealth of information collected in the 2020 Transportation Plan, this plan lists prioritizes and estimates costs for needed pedestrian and bicycle improvements.
- The *Washington County Bicycle Facility Design Toolkit* (2012) is a design guide that helps the County make informed decisions on how to incorporate context-specific bikeway facilities into roadway capital and other projects.
- The *Washington County Bicycle and Pedestrian Improvement Prioritization Project* (2013) performed a detailed gap analysis of sidewalks and bicycle facilities along Arterial and Collector roads, followed by a criteria-based prioritization of system deficiencies. This project was funded by a grant from the U.S. Department of Energy (DOE).
- The *Washington County Neighborhood Bikeways Plan* was developed concurrent with the TSP, and identifies low-volume, low-speed neighborhood streets in the urban unincorporated area that can accommodate a wide-array of bicycle comfort levels.

ADOPTED TEXT

Cities and Other Jurisdictions

Each city in Washington County has a transportation system plan with pedestrian, bicycle, and transit components. Tualatin Hills Parks and Recreation District (THPRD) has a district-wide trails plan as well as several specific trail feasibility or master plans. TriMet, through its service enhancement plans, studied population, employment, socio-economic, and ridership trends to determine potential service enhancements in Washington County. All of these plans help Washington County provide accurate and concurrent recommendations within the respective jurisdictions.

People bicycling and driving on NW 185th Avenue

ACTIVE TRANSPORTATION TRENDS AND FORECASTS

Due in part to the benefits associated with walking and biking, and the County's transportation policies, a growing proportion of Washington County residents are using active transportation modes for some or all of their trips. According to the U.S. Census Bureau, about 11 percent of workers who live in Washington County walked, biked, or took transit to work in 2010, compared to about 8 percent in 2000. With an estimated 249,753 workers in Washington County, that amounts to approximately 27,000 commuters using active transportation modes. Bicycling saw the greatest increase, quadrupling from 0.4 percent of commutes in 2000 to 1.6 percent in 2010. Commuting by transit, 5.7 percent of all trips, remained flat between 2000 and 2010. Washington County active transportation mode shares are lower than the tri-county average (Clackamas, Multnomah and Washington counties), but higher than national rates. The tri-county average is heavily influenced by Portland, where nearly a quarter of people commute by active modes, including a 6 percent bike commute mode share – the highest of any large American city. Conversely, only 5 percent of Clackamas County workers use active travel modes – less than half of the Washington County rate.

Comparing different trip types and locations reveals additional distinctions. In general, transit rates are lower and walking rates are higher for non-work trips, compared to work trips. This reflects a general tendency to use transit more for commuting and less for mid-day errands, as well as the convenience of walking for short trips. Comparing urban and rural portions of Washington County reveals an expected contrast in active travel mode usage. Rural walking and biking rates are roughly 2/3 of the urban rates; transit is less than half. The data does not reflect potentially thousands of recreation or exercise trips that begin and end at the same point, e.g., going for a jog or bike ride.

The past decade also saw a slight increase in households with no vehicles available, from 5.6 to 6.2 percent of households. Though small as a percentage, the 2010 figure represents about 12,000 households across the County that do not have access to a personal vehicle, and must rely on active transportation modes or transportation provided by family and friends to get around.

Future Demand

Forecasting future active transportation demand is challenging. Modelers must make assumptions about a number of future conditions, from land use and density patterns to fuel and parking prices. The Regional Travel Demand Model estimates future mode share for each traffic analysis zone based on these and other factors. The mode share forecast for Washington County in 2035 predicted very small gains in active transportation mode share (Figure 1-4). Walking, bicycling and transit useage rates increased by just a few tenths of a percentage point in all categories and geographies. In the urban area, the share of trips that use active transportation modes is projected to increase from 7.1 percent to 8.1 percent. By contrast, applying Metro's 2014 RTP performance target for active transpor¬tation modes would result in 22 percent (14 percent walk, 3 percent bike and 5 percent transit). Despite the current forecasts, Wash¬ington County is in a good position for growth in travel by active transportation modes as summarized below.

- Information technology workers, many of whom are employed in Washington County's growing "Silicon Forest," tend to demand quality-of-life amenities in the places where they choose to live. This includes access to good transit and opportunities to walk or bike for transportation and/or recreation. Increasing active transportation options, along with other quality-of-life amenities, may convince more high-tech workers to live near where they work in Washington County and bike or walk to work, or use light rail in conjunction with "last mile" solutions such as bike share.
- Across all professions, younger workers are driving less and using active transportation modes more, compared to their older co-workers.
- Washington County is home to Nike, whose products focus on active pursuits like running; and whose presence may have a spillover effect on the local population, such as spurring increased interest in running and fitness.
- Portland, a well-known hub of active transportation use, has an undeniable influence on Washington County. Washington County, by virtue of its close proximity to Portland and strong jobs base, also experiences much of this active transportation culture.
- The relatively flat terrain of the Tualatin Valley, combined with an ever increasing mileage of "complete streets", multi-use trails and high capacity transit routes, creates a favorable environment for increased use of active transportation travel modes. Washington County has the potential to become a North American model for suburban active transportation utilization.

Community Comments about Active Transportation

Active transportation themes were prevalent throughout the public involvement process for the 2014 TSP update. One of the seven "community values" developed by the TSP Community Advisory Committee is to have a transportation system that "makes it safe and convenient to get around by biking, walking or taking transit." Stakeholder interviews (representing diverse interests from large private sector employers to environmental advocacy groups), and community input revealed similar support for an enhanced active transportation network. Frequently-cited priorities included:

- Improving transit service to better serve suburb-to-suburb trips within Washington County;
- Developing comfortable and convenient walking and biking facilities that connect homes, businesses and transit;
- Provision of pedestrian and bicycle facilities that provide greater separation from automobile traffic and safer crossings of busy roads;
- Completing identified gaps in the pedestrian and bicycle networks;
- Expanding and improving the multi-use trail network in the county; and
- Making sure that bicycle facilities serve a variety of cyclist types - from young children to "strong and fearless" adults.

ADOPTED TEXT

Goal 8: Active Transportation
Create a built environment that encourages safe, comfortable and convenient active transportation options that are viable for all users.

Objective 8.1 Provide an integrated network of "complete streets" that safely and comfortably accommodate road users of all ages and abilities, including people walking, cycling, using mobility devices, taking transit and driving.

- Strategy 8.1.1 Prioritize public active transportation projects that are effective at improving connectivity, filling gaps, expanding coverage of the active transportation network and positively influencing walk/bike/transit mode shares.
- Strategy 8.1.2 Early in the project development process, solicit and consider input from active transportation advocates to help optimize the design of pedestrian, bicycle and access-to-transit projects.
- Strategy 8.1.3 On existing substandard streets where the construction of full street improvements is not practicable within the foreseeable future, consider the construction of interim pedestrian and bicycle facilities, as available public funding allows.

Objective 8.2 Provide a pedestrian network that is safe, comfortable and convenient for people of all ages and abilities.

- Strategy 8.2.1 Prioritize pedestrian projects that are technically and financially feasible and that also improve connectivity, fill gaps and/or provide safe routes to schools, community facilities, commercial areas or transit stops.
- Strategy 8.2.2 Prioritize pedestrian projects based on need; factors to consider may include: safety, density (residential and employment), access to essential destinations and transit and environmental justice factors, among others.
- Strategy 8.2.3 Inside the Urban Growth Boundary, require that sidewalks are constructed along new or improved streets and along street frontages of new developments.
- Strategy 8.2.4 Facilitate safe, convenient and comfortable pedestrian facilities through the provision of pedestrian scale amenities as deemed appropriate and in compliance with applicable regulations.
- Strategy 8.2.5 Consider enhanced pedestrian crossings treatments at intersections and at other appropriate locations, including school zones, commercial areas, transit stops, trail crossings, Pedestrian Districts and warranted mid-block locations, using county-approved crossing treatments.
- Strategy 8.2.6 In rural pedestrian activity areas, which includes recreational trail crossings, consider improvements that enhance pedestrian safety.
- Strategy 8.2.7 On roadways designated on the Pedestrian System Map as "Pedestrian Parkway" and/or "Streetscape Overlay" and on roadways within identified Pedestrian Districts, enhanced pedestrian facility designs shall be considered based on applicable standards, land use context and physical constraints.

Objective 8.3 Expand and improve the quality of bicycling infrastructure.

- Strategy 8.3.1 Refer to the guidelines set forth in the Washington County Bicycle Facility Design Toolkit when designing new or reconstructed urban and rural Principal Arterials (except for freeways), Arterials and Collectors, and implement treatments as deemed appropriate.
- Strategy 8.3.2 Develop a system of neighborhood bikeways on appropriate low-volume streets (as defined in the Neighborhood Bikeways Plan) to supplement the system of bicycle lanes and paved shoulders on major streets.
- Strategy 8.3.3 On those Arterials and Collectors designated on the Bicycle System Map as 'Enhanced Major Street Bikeway' buffered bike lanes and other bicycle treatments shall be considered based on the Bicycle Facility Design Toolkit and/or other applicable standards.
- Strategy 8.3.4 Maintain and periodically revisit bicycle parking requirements in the CDC and provisions for bicycle parking in applicable new development.
- Strategy 8.3.5 Coordinate the development of the bikeway system with other local and regional agencies and integrate it with the delivery of other transportation services.
- Strategy 8.3.6 Consider developing a rural road bicycle safety study that proposes solutions and strategies to increase the safety of recreational and utilitarian cycling in the rural area. Implement recommendations as appropriate.

Objective 8.4 Assist partners in developing and maintaining an off-street trail and accessway network that serves both recreational and transportation functions.

- Strategy 8.4.1 Require new development and redevelopment to provide adequate neighborhood connectivity by constructing public accessways, both within the site and connecting to adjacent land uses, in cases where street connections are not possible or not desired.
- Strategy 8.4.2 Ensure that new development and redevelopment does not preclude implementation of the planned off-street trail network shown in the TSP.
- Strategy 8.4.3 Work with Metro, Tualatin Hills Park & Recreation District (THPRD), cities, private developers and other entities to plan, map and improve countywide trail connectivity, including filling gaps in existing regional trails and planning new trails in areas lacking in these facilities.
- Strategy 8.4.4 Designate a functional classification of existing and planned trails consistent with Metro and THPRD trail planning activities.
- Strategy 8.4.5 For appropriate multi-use trails that are intended to serve a utilitarian function, encourage trail design and management solutions that facilitate the safe and efficient movement of trail users, including, but not limited to, the following:
  - Using surface materials that are durable, slip-resistant, watershed-friendly and resistant to ponding.
  - Avoiding or addressing flood-prone areas.
  - Minimizing sharp curves and out-of-direction travel that increase travel times and create blind spots.
  - In higher-density areas, installing pedestrian-scale trail lighting sensitive to surrounding land uses and wildlife habitat.
  - Keeping trails legally open during night hours.
  - Regular maintenance, surface repairs and debris clearing by the responsible jurisdiction.

ADOPTED TEXT

- Strategy 8.4.6 Explore trail provision and management solutions for areas of Washington County that lack a recreation district, parks department, or other provider of trails.
- Strategy 8.4.7 Seek funding for Regional Trails from transportation related funding sources including the Transportation Development Tax.

Objective 8.5 Improve access to and encourage the enhancement of transit service in Washington County.

- Strategy 8.5.1 Provide safe, convenient pedestrian and bicycle access to existing and proposed transit stops, including pedestrian crossings and other appropriate features near Major Transit Stops.
- Strategy 8.5.2 Coordinate with TriMet and other transit providers in their efforts to provide new or improved transit service to underserved locations in the urban area where concentrations of households, jobs or transit-dependent populations may warrant better service.
- Strategy 8.5.3 Work with Metro, TriMet and the cities to plan and implement new high capacity transit corridors identified in the Regional High Capacity Transit System Plan.
- Strategy 8.5.4 Work with employers, Westside Transportation Alliance, TriMet and other transit providers to identify creative solutions to bridge the "last mile" from transit stop to workplace.
- Strategy 8.5.5 Encourage Ride Connection, Yamhill County Transit, Columbia County Transit and other transit providers to continue and potentially enhance operation of rural transit where it is cost-effective and warranted by demand.
- Strategy 8.5.6 Encourage TriMet LIFT service operations and the provision of accessibility features at transit stops and on transit vehicles.

ADOPTED TEXT

Objective 8.6 Encourage and promote the use of active transportation options through programmatic approaches.

- Strategy 8.6.1 Work with transportation management associations, employers, schools, agencies that serve disadvantaged populations and active transportation advocacy organizations, to promote walking, bicycling and transit options for residents and workers in Washington County.
- Strategy 8.6.2 Consider developing a countywide Safe Routes to School program in partnership with school districts.
- Strategy 8.6.3 Develop wayfinding signage guidelines in coordination with Metro, cities and THPRD and incorporate signage into proposed Neighborhood Bikeway, trail, streetscape and other appropriate improvement projects, as funding allows.
- Strategy 8.6.4 Coordinate with the Washington County Department of Health and Human Services and other health organizations to promote and measure the public health benefits of active transportation.
- Strategy 8.6.5 Develop active transportation performance measures, including mode share targets.

PEDESTRIAN, BICYCLE AND TRANSIT ELEMENTS

The Washington County Transportation System Plan (TSP) Active Transportation Elements consist of a Pedestrian Element, Bicycle Element and Transit Element. These elements collectively describe and illustrate the desired future network of routes and facilities that will help people safely, comfortably and conveniently walk, bike and take transit in Washington County over the next 20 years.

The Active Transportation Elements were informed by several recent or concurrent planning efforts, including Metro's 2014 Regional Transportation Plan and Regional Active Transportation Plan, TriMet's Westside Service Enhancement Plan and Southwest Service Enhancement Plan, the County's Bicycle and Pedestrian Improvement Prioritization Project and Bicycle Facility Design Toolkit and several trail planning efforts undertaken throughout the county. The Active Transportation Elements are largely consistent with the concepts in these plans, often using the same functional classifications and routes. Any inconsistencies between this TSP and other relevant plans are typically the result of using different terminology or definitions, adding some network elements in response to identified needs or omitting some elements due to legal or jurisdictional concerns. These differences are further described in the individual modal elements.

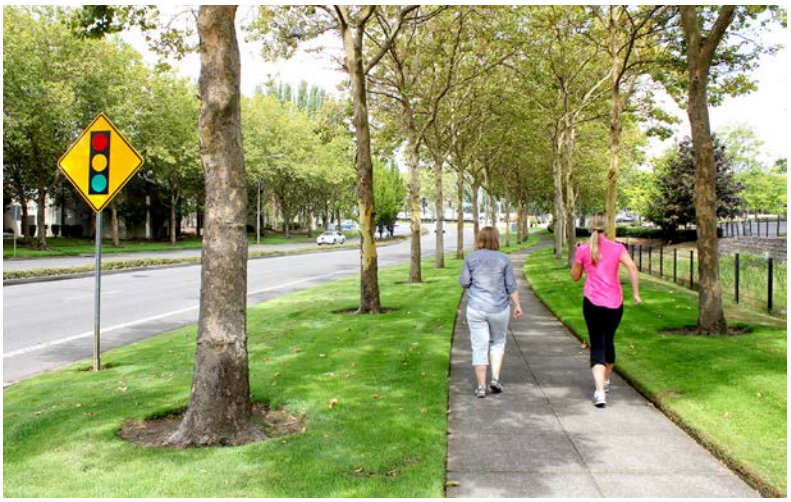
Like the other TSP elements, the three Active Transportation elements indicate the function, mode and general location of ultimate network facilities. Projects are not prioritized in this plan; however, particular needs have been identified in the TSP Existing Conditions and Future Needs Report and project candidates are addressed in the Capital Project List.

For areas within unincorporated Washington County, the Community Plans, Community Development Code, Rural/Natural Resources Plan and Road Design and Construction Standards shall be referenced to determine the manner in which the designations shown in the Active Transportations elements are to be implemented. Some Active Transportation designations are shown on city and ODOT facilities; in these cases the administrating jurisdiction's adopted codes and plans supersede the designations shown. In situations where County or state roads pass through cities, implementation of the Active Transportation designations requires coordination among all affected jurisdictions. All trail alignments shown on the maps are general in nature; the exact location of the trails shall be determined by the public entity or entities that will build and maintain the trail.

Schools with grades Kindergarten through 12 are important considerations within the Active Transportation Elements because they are prominent attractors of pedestrian and bicycle trips. As resources allow, school districts are encouraged to develop and/or expand Safe Routes to School programs in partnership with Washington County and the cities. These programs identify engineering, enforcement, education, encouragement and evaluation initiatives to promote safe walking and biking to school. As part of the engineering component, the county, cities and school districts are encouraged to work together to identify and prioritize network deficiencies and seek funding for solutions.

ADOPTED TEXT

PEDESTRIAN ELEMENT



NW Evergreen Parkway in Hillsboro

Walking, the most basic form of human travel, plays a fundamental role in the transportation system and has many advantages: travel times are predictable, expenses are minimal, and health benefits are proven. For Washington County, a shift to more walking trips could reduce the need for and/or scope of roadway and parking facilities, especially in regional and town centers. Compared to facilities for other modes, walkways are easy to maintain and inexpensive to install. A good pedestrian network also supports and leverages investments in transit. Walking plays an important role in community design, and vice versa. Put simply, places designed for walking usually result in more walking. Researchers generally agree that most people are willing to walk between a quarter and a half mile to reach destinations like stores and transit stops, and up to a mile to reach schools. Neighborhoods that include these mixed uses and that have safe, convenient, and attractive walking facilities tend to encourage walking. Regionally and nationwide, walkable neighborhoods increasingly rank among the most desirable and economically vibrant areas within urban regions.

The RTP and *Metro's Regional Active Transportation Plan* (ATP) include a Regional Pedestrian Network identifying where investments in pedestrian facilities make the most sense – in mixed-use centers, along major mixed-use corridors, and as a component of regional trails. Regional Centers, Town Centers, and Station Communities in the *Metro 2040 Growth Concept* are designated as Pedestrian/Bicycle Districts in the RTP, reflecting the important role of a walkable environment in supporting land use and urban form goals. The Washington County TSP Pedestrian Element contains similar facility and area designations consistent with the RTP and ATP.

Sidewalks

Washington County's urban pedestrian system consists of sidewalks, walkways, and crossings along and across streets, as well as off-street trails, and accessways[9] between streets. Supporting facilities that make walking safer include street lighting and pedestrian signals. Prior to 1980, provision of sidewalks was largely a function of developer preferences, local codes and covenants, urban/rural location, and historical period. As a result, the County has a mixture of suburban communities with and without sidewalks, surrounded by rural areas largely without sidewalks. Since 1980 Washington County has required the provision of concrete or other hard-surface walkways within new development and on road projects in the urban area. Currently all roadways in the urban area, with the exception of freeways, are pedestrian routes. With few exceptions, sidewalk installation is required when urban roadways are reconstructed for a development or capital project. In the rural area, the pedestrian system consists of roadway shoulders and paved or unpaved off-street trails. Sidewalks are not required in the rural area. Today sidewalks are usually built in one of three contexts:

- Within and/or alongside new development,
- As part of a major road expansion or safety project funded by MSTIP[10], TDT, or federal or state grants, or
- As an interim improvement funded through the county's Minor Betterments program.

Through these efforts, the County and its partner jurisdictions have made significant progress in adding sidewalks and walkways to major roads. As of 2014, 81 percent of Arterials and Collectors in the urban area have a walkway facility on one or both sides of the road. Table 3.11 includes information about existing sidewalk and walkway coverage in the urban portion of Washington County. Sidewalk and walkway coverage is illustrated in Figure 3-22.

9 *Accessway is the term used in the Community Development Code for pedestrian/bicycle only connections.*
10 *MSTIP is the county's Major Streets Transportation Improvement Program and TDT is the Transportation Development Tax.*

Table 3.11: Arterial/Collector Sidewalk Coverage - Urban Washington County[11]

Existing Sidewalks – Urban Principal Arterials, Arterials and Collectors			
Facility Type	**Facility Location**	**Miles**	**%**
Standard sidewalk	Both sides of road	245.4	56.1%
Standard sidewalk	One side of road	103.9	23.7%
Interim walkway	Both sides of road	0.5	0.1%
Interim walkway	One side of road	3.6	0.8%
No walkway facilities	N/A	84.2	19.2%
Total		**437.5**	**100.0%**

Summary Date: 03/26/14 – Source: Washington County Land Use & Transportation

Sidewalk Standards

In urban unincorporated Washington County, sidewalks are required along both sides of new public streets, new private commercial streets, and new private residential streets that access nine or more residential units.

Most development must provide "half street improvements" along existing, adjacent roads that do not already meet County road standards. Half street improvements include a sidewalk, planter strip, street lighting, and – if along an Arterial or Collector – a bike lane, as well as any associated dedication of public right-of-way. Sidewalks must be a minimum of five feet wide, and separated from the roadway by a planter strip at least four feet, six inches wide. Sidewalks also must be designed for people of all abilities. To aid people who use mobility devices such as wheelchairs, this means minimizing cross slope, limiting the impact of driveway crossings, and installing curb ramps with level landings at every street crossing. For people who are blind or have low vision, accessibility is enhanced by establishing a clear path of travel and tactile warnings at curb ramps.

Streetscape Enhancements

Wider pedestrian corridors provide the opportunity for streetscape improvements such as pedestrian-scale lighting, additional street trees, landscaping, benches, public art, and space for store displays or café seating. Cornell Road in Cedar Mill Town Center is an example where Washington County constructed an enhanced streetscape to promote commercial redevelopment and a safe and inviting pedestrian environment. Generally speaking, enhanced streetscapes are most appropriate within Metro 2040 centers, where aesthetic and safety improvements can help foster growth and economic development.

Arterial/Collector Sidewalk Needs

As shown in Table 3.11 above, approximately 76 miles of arterial or collector roads in Washington County – representing 18 percent of those roadway types – do not have separated walkway facilities. The Washington County Bicycle and Pedestrian Prioritization Project of 2013, funded by a U.S. Department of Energy grant, took inventory of these gaps and used weighted criteria to prioritize which ones have the highest need to be filled. Criteria included density and mix of land uses, observed safety issues and crash rates, street network connectivity, and social equity. A subsequent round of analysis determined which of those high-scoring projects are most feasible from a technical and financial standpoint. Priority sidewalk gaps are listed in Table 3.12. These gaps total 8.7 miles.

11 *Table 4.8 from TSP 2035 Existing Conditions and Future Needs Report, 2013*

Table 3.12: Identified Arterial/Collector Sidewalk Needs[12]

Roadway	From	To	Total Length (feet)
92nd Avenue	Garden Home Road	Allen Road	2,115
92nd Avenue	*Garden Home*	*Scholls Ferry*	*5,310*
143rd Ave	*Cornell Road*	*West Union Rd*	*8,889*
158th Ave/Merlo	*Jenkins Road*	*170th Ave*	*6,682*
170th Avenue	150' south of Heritage Court	Augusta Street	2,353
170th Avenue	*Merlo Road*	*Alexander St*	*8,448*
170th Avenue	*150' S. of Heritage Ct*	*Augusta Ln*	*2,353*
174th Avenue	Bronson Road	Madras Court	1,621
197th Avenue	100' south of Alderwood Court	Baseline Road	726
1st Avenue	Grant Street	south of Tiffany Lane	501
Glencoe Road	400' north of Tiffany Street	150' north of Cody Court	904
209th Avenue	*160' south of RR*	*300' north of Blanton Street*	*910*
209th Avenue	250' south of Stoddard Drive	McInnis Lane	286
209th Avenue	Carlin Boulevard	Manor Way	600
209th Avenue	Martini Court	208th Terrace	1,093
209th Avenue	Blanton Street	Kinnaman Road	1,015
Alexander Street	*170th Ave*	*178th Ave*	*1,208*
Alexander Street	*172nd Avenue*	*173rd Avenue*	*160*
Alexander Street	*173rd Avenue*	*178th Avenue*	*1,048*
Alexander Street	178th Avenue	182nd Avenue	468
Barnes Road	Cedar Hills Blvd	117th Avenue	1,145
Boones Ferry Road	250' north of Norwood Road	Horizon Comm. Church	904
Bronson Road	174th Avenue	179th Avenue	1,768
Bronson Road	*185th Ave*	*Bethany*	*15,565*
Brookwood Parkway	Huffman Street	Meek Road	2,162
Bull Mountain	*Hazeltree Terrace*	*120th Place*	*939*
Cedar Hills Boulevard	*Butner Road*	*WB Sunset-Cedar Hills Off Ramp*	*865*
Cornell Road	*99th Avenue*	*102nd Avenue*	*711*
Evergreen Pkwy	*Cornelius Pass*	*215th Ave*	*1,214*
Farmington Road	*171st Avenue*	*173rd Avenue*	*778*
Farmington Road	176th Avenue	185th Avenue	2,214
Farmington Road	300' east of 188th Court.	100' west of 189th Avenue	768
Fischer Road	131st Ave	Pacific Hwy	6,916
Garden Home Road	77th Avenue	92nd Avenue	3,147
Johnson Street	95' west of 214th Avenue	214th Avenue	95
Johnson Street	204th Avenue	85' east of 203rd Avenue	389
Johnson Street	174th Avenue	180th Terrace	632
Kinnaman Rd	*185th Ave*	*Farmington Rd*	*7,392*
Locust Street	80th Avenue	Hall Boulevard	1,392
Meadow Drive	Trout Creek Lane	Surrey Street	656
Murray Blvd	TV Hwy	Farmington Road	1,138
Rock Creek Boulevard	Malhuer Avenue	Rock Creek Drive	845
Rock Creek Boulevard	West of 185th Avenue	Columbia Drive	808

12 *Table 4.9, Existing Conditions and Future Needs Report, page 4-20.*
Note: Italic projects are included in the Bicycle and Pedestrian Improvement Prioritization Project (February 2013): Top 30 Gaps

West Union Road near Bethany Boulevard

Springville Road near 173rd

Bull Mountain Road at Hazeltree Terrace

Roadway	From	To	Total Length (feet)
Saltzman Road	*Cornell Rd*	*Barnes Rd*	*1,709*
Scholls Ferry Road	*S. of Merry Ln*	*McKay Elementary*	*970*
Scholls Ferry Road	Heather Lane	McKay Elementary	440
Scholls Ferry Road	*75' west of Northvale Way*	*395' east of Northvale Way*	*472*
Scholls Ferry Road	Heather Lane	South of Merry Lane	530
Scholls Ferry Road	90th Avenue	235' southwest of 86th Avenue	919
Scholls Ferry Road	250' west of 155th Terrace	250' east of 155th Terrace	504
Springville Road	178th Avenue	181st Avenue	439
Springville Rd	*185th Ave*	*Joss Ave*	*8,085*
Taylors Ferry Road	80th Avenue	75th Place	612
Thompson Rd	*Bronson Creek Rd*	*143rd Avenue*	*1,091*
Walker Rd	*173rd Ave*	*185th Ave*	*7,548*
Walker Road	*240' west of Bronson Creek Bridge*	*248' east of Bronson Creek*	*488*
Walker Road	*180th Avenue*	*178th Avenue*	*572*
Walker Road	*183rd Avenue*	*180th Avenue*	*746*
West Union Rd	*Cornelius Pass*	*185th Ave*	*15,367*
West Union Road	*LDS Church Property*	*203rd Place*	*2,577*
West Union Road	*185th Ave*	*Bethany Blvd*	*16,558*
West Union/ Thompson Road	Banff Drive	147th Place	422
West Union/ Thompson Road	Bronson Creek Drive	143rd Avenue	1,091
		TOTAL	**45,962**

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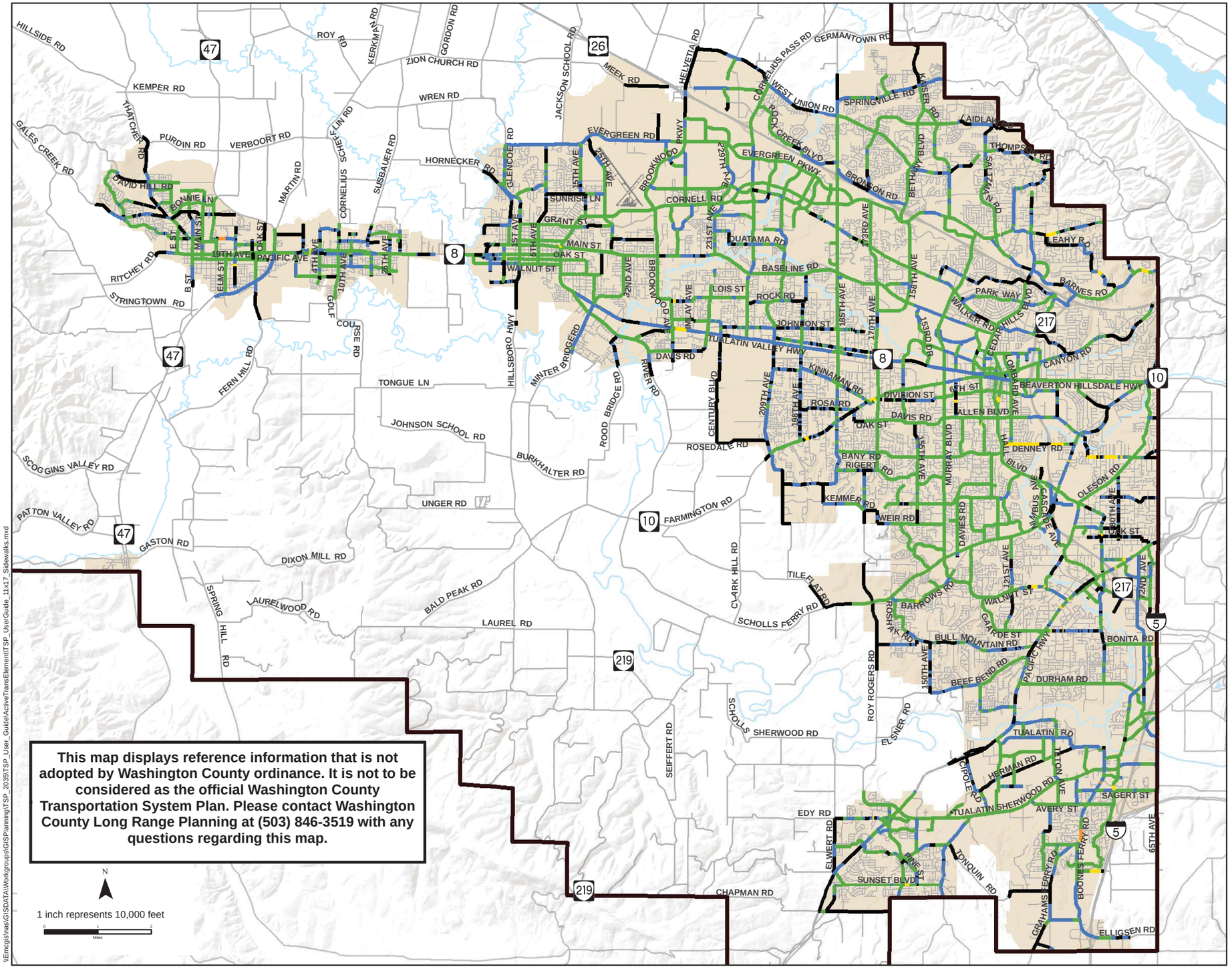
Transportation System Plan User's Guide

Pedestrian Element

Sidewalk Inventory



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1 inch represents 10,000 feet

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- Existing Both Sides
- Existing One Side
- Substandard Both Sides
- Substandard One Side
- No Sidewalks
- Other Roads
- Urban Area
- County

Figure 3-22

Online Map: http://arcg.is/1PXWrUr

Department of Land Use & Transportation
Planning and Development Services Division

Effective: November 27, 2015

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Pedestrian Crossings

Pedestrian Crosswalk West Union Road

Street crossings form critical connections in the pedestrian network, facilitating the simple but sometimes risky act of walking to destinations across the street. Crossings are particularly important for accessing transit, since a round trip usually involves crossing the road at one end of the journey. Bicyclists also use crossings, especially in circumstances where they are not mixed with traffic, such as at a trail crossing. By state law, every intersection is a legal crosswalk, even if it is not marked. In practice, this law is not sufficient to ensure safe passage across many urban arterial roads. The difficulty and danger of crossing a road increases with roadway width, volume, and traffic speed. Arterials like TV Highway, 185th Avenue, and Pacific Highway statistically pose a higher risk to pedestrians than streets with fewer lanes, slower travel speeds, and lower functional street classifications. The most difficult roads to cross often have the highest pedestrian crossing demands, due to high concentrations of businesses, multi-family housing, and public transit stops along the roadway.

Marked crosswalks in Washington County are mostly limited to the nearly 600 signalized intersections in Washington County. Most, but not all, signalized intersections in the county feature delineated crosswalks and walk signals. Outside of major road intersections, jurisdictions including THPRD and ODOT are increasingly targeting crossing improvements at mid-block locations and minor intersections that have a high pedestrian crossing demand.

Mid-Block Pedestrian Crossing Policy

In November 2010 Washington County adopted standards for evaluating and approving mid-block crossings of County roadways (Resolution and Order 10-107). Each mid-block crossing must be evaluated based on existing and planned roadway characteristics, observed traffic speeds, and volumes, nearby pedestrian trip generators, proximity of existing traffic signals to the location, sight distance, topography, and other considerations. At-grade crossings are not permitted within 300 feet of an existing signalized intersection. Specific crossing design features are selected from a tiered selection of improvements based on roadway lane numbers. The tiers are detailed in Table 3.13.

Table 3.13: Mid-Block Crossing Improvement Tiers

Tier	Standard Treatments	Additional Treatments To Be Considered
Tier 1	Crosses a 2-lane road with or without an island refuge. Install high visibility mounted signs and markings.	Refuge islands, curb extensions, staggered pedestrian refuges.
Tier 2	Crosses a 3-lane road with island refuge. Install high visibility signs and markings.	Flashing beacons, pedestrian actuated signal/beacon.
Tier 3	Crosses a 3-lane road without island refuge or 4-lane road with island refuge. Install high visibility signs and markings or pedestrian actuated signal.	Pedestrian actuated signal/beacon.
Tier 4	Crosses a 4-lane or greater road without an island/refuge. Install pedestrian actuated signal or beacon.	Pedestrian actuated signal, pedestrian over- or undercrossing.

Spacing Considerations for Pedestrian Crossings

Other than the requirement to avoid establishing at-grade crossings within 300 feet from an existing traffic signal, the County's mid-block crossing policy does not provide guidance on the overall desired spacing of crossings on urban roadways. In the aggregate, crossings must carefully balance pedestrian safety and convenience with other modal needs, including vehicular traffic flow. Several County and state policies provide implicit guidance:

- Per the Washington County *Community Development Code* (CDC), block faces in development along Arterials and Collectors cannot be longer than 600 feet. For those that are, an accessway must be provided every 400 feet. Within designated "Connectivity Lands," these maximums are reduced to 530 and 330 feet. These standards may result in pedestrian crossing demand where local streets and accessways meet the arterial/collector.
- Also per the CDC, direct access to an Arterial shall be from other Arterials or Collectors, unless access is granted through a Type II land use review process, in which case that access can be no less than 600 feet from another vehicular access point. While R&O 10-107 may still allow a crossing within 300 feet of a signalized intersection, the CDC requirement essentially establishes a de facto minimum spacing of 600 feet between Arterial pedestrian crossings.
- ODOT recommends traffic signal spacing between 1,100 and 4,840 feet on urban arterials, depending on posted speed and length of signal phase. These distances are too great to foster a well-connected pedestrian network, but they provide a starting point for establishing crossings in locations where there may be none for long distances.

How to best integrate and implement these standards depends largely on context. For example, downtown Beaverton features crossings every 264 feet (0.05 mile) on Hall Boulevard and Watson Avenue, corresponding with the area's compact street grid and dense land uses. By contrast, the TV Highway Corridor Plan recommends enhanced pedestrian crossings or fully signalized intersections approximately every 0.3 mile in the more suburban Aloha area.

Existing signalized intersections can also be made safer and more convenient for pedestrians by delineating standard crosswalks if they are missing, adding countdown walk signals, allowing a two-second advance phase for pedestrians, and making physical improvements such as curb extensions and refuge islands.

Pedestrian Crossing Needs

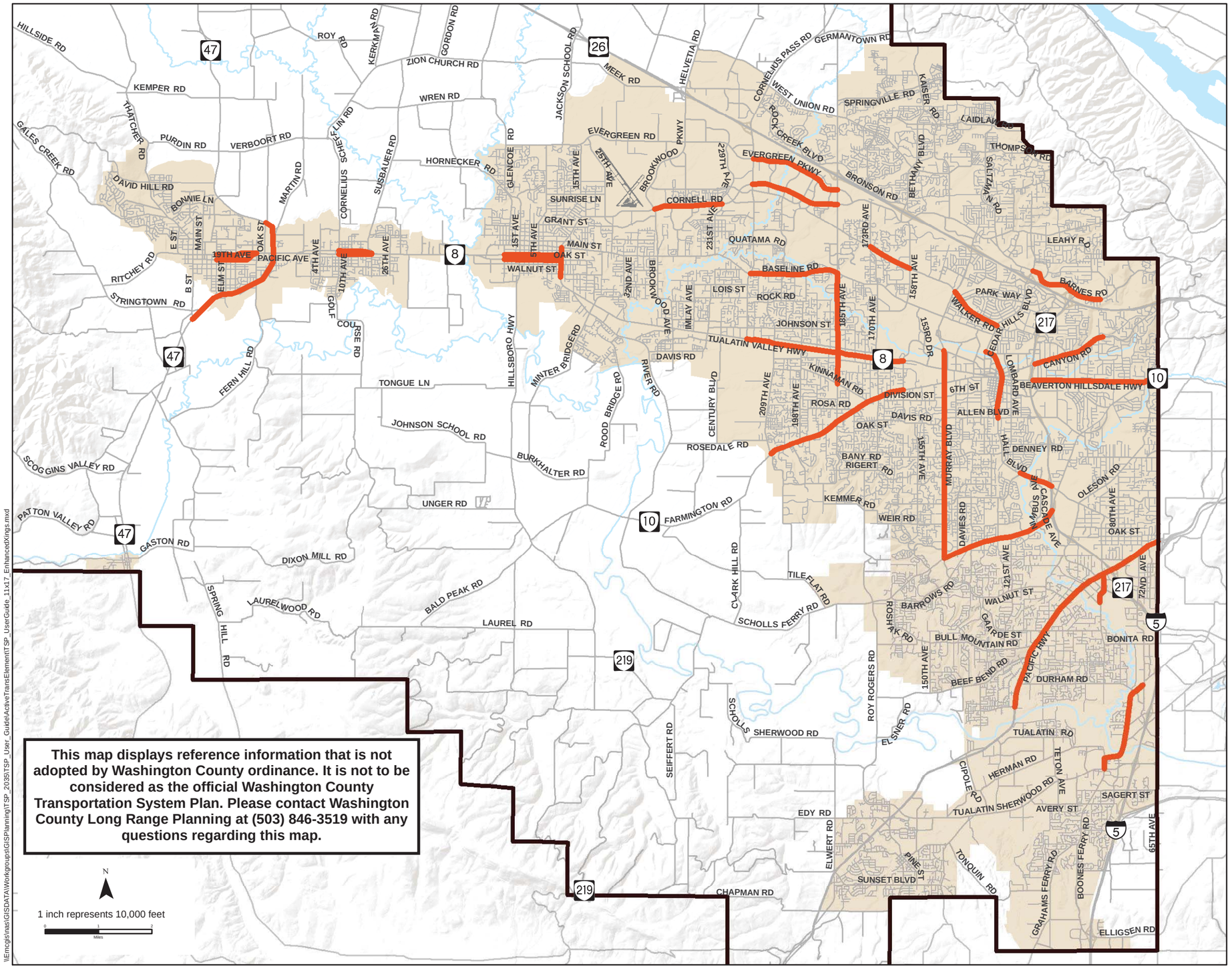
Figure 3-23 shows urban Washington County corridors where new, additional, or enhanced pedestrian crossings should be evaluated and potentially provided. These corridors, many of them four or more lane arterials with transit service, were compiled from the Washington County Transportation System Plan Background Report, TriMet's *2011 Pedestrian Network Analysis* document, and public comments received during the development of the 2014 TSP update. A finer scale analysis of each corridor is recommended before pursuing crossing projects.

Other transportation facilities, such as railroads and freeways, also present barriers to pedestrians who need to cross them. The Portland & Western Railroad (PNWR), that parallels TV Highway between Beaverton and Hillsboro, is a barrier for people from adjacent residential areas south of the tracks accessing the #57 bus stops and businesses along TV Highway. Pathways worn into the ground indicate that many people trespass across the railroad tracks rather than walk out of direction to the nearest legal crossing. Sunset Highway (U.S. 26) is a major physical and psychological barrier that effectively defines the northern area of Washington County. Between Highway 217 and Brookwood Parkway, the average interchange spacing is about 1.4 miles; and few roads or trails cross in between these locations. Several planned transportation corridors would provide additional crossings of Sunset Highway: Century Boulevard/229th Avenue, 173rd Avenue/174th Avenue/Bronson Creek Trail, 143rd Avenue/Meadow Drive/Westside Trail, and the North Johnson Creek Trail. Highway 217 imposes a north-south barrier between intensely developed areas on either side of the freeway. One location of particular concern in this corridor is the Washington Square Regional Center, where the shopping mall and bus transit center sit opposite the WES Commuter Rail station and the Nimbus Avenue employment corridor. The 2014 RTP proposes construction of a pedestrian bridge in this location.

Transportation System Plan User's Guide

Pedestrian Element

Enhanced Crossing Study Corridors



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1 inch represents 10,000 feet

0 1 2 Miles

- Enhanced Crossing Study Corridor
- Other Roads
- Urban Area
- County

Figure 3-23

Online Map: http://arcg.is/1PXXYKf

Department of Land Use & Transportation
Planning and Development Services Division

Effective: November 27, 2015

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Trails

Trails offer the greatest protection for pedestrians from motorized traffic. Often associated with recreational pursuits, trails also offer transportation utility for short walking trips and longer bicycling trips. Washington County has an ever-expanding network of trails for walking, running, skating, bicycling, and other forms of non-motorized human travel. As of 2012, 69 miles of trails traversed the County, including 36 miles in the urban area and 33 miles in the rural area. An additional 164 miles of trails are in the planning stages Countywide.

Trail planning in Washington County occurs at state, regional, and local levels. The State of Oregon is involved through its stewardship of the Banks-Vernonia Trail and nearby soft-surface trails within Stub Stewart State Park and Tillamook State Forest. *Metro's 2004 Regional Trails and Greenways Vision* established a strong conceptual framework for trail development in the urban portion of the County, which has since been embellished by more specific trail plans from Tualatin Hills Parks and Recreation District (THPRD) and city jurisdictions. THPRD's 2006 trail plan laid out a bold vision for trails in the central part of Washington County, with regional trails further connected by community trails and on-road segments.

Banks-Vernonia Trail

Trail construction and maintenance responsibilities in the urban area typically fall on local jurisdictions. THPRD has taken a lead in trail development in the past decade through its voter approved bond funding. Cities from Tualatin to Forest Grove also have made significant trail investments. Funding assistance often comes from regional and state grants, including Metro's natural area bond and ODOT's bike/pedestrian grants (the latter now included in the Statewide Transportation Improvement Program "Enhance" category). Washington County has a limited role in trail development, focusing its efforts on inter-jurisdictional coordination of trail planning and facilitation of road crossings. The loop trail around Henry Hagg Lake west of Gaston is the County's only major trail asset.

Private development is responsible for yet more trails in the county. From the mid-century Oak Hills subdivision to the latest Peterkort development projects, developers have provided local trail networks that provide a public amenity while also helping market their properties. Commercial developers have followed suit, as seen on the Nike campus and in Hillsboro's Dawson Creek Industrial Park. However, not all privately owned trails are open to the public.

Table 3.14 identifies the major existing and proposed Regional Trails in Washington County. Regional Trails are typically longer than other trails and help build out the *Metro Regional Trail and Greenway Vision*. Community Trails are shorter, often connecting neighborhoods or parks within a single jurisdiction. Regional and Community Trails are included in the TSP Pedestrian System Maps in Figures 3-24 and 3-25. Shorter, localized trails and accessways are located throughout the County, but are not included in Table 3.14 or any TSP maps.

Table 3.14: Existing and Planned Trails in Washington County

Trail Name, Description and Status
Banks-Vernonia Trail. Stretching through farms and forests between the namesake towns, this State Parks-operated rail-trail is a major regional recreation destination. A substantial portion of the trail is within Washington County. The trail was recently improved within Stub Stewart State Park, including asphalt surfacing and the Tophill Trestle bypass. Washington County extended the southern end of the trail to Sellers Road and provided a trailhead. In the long term, the trail is envisioned to connect to Hillsboro by either continuing along the Portland & Western Railroad or using the proposed Council Creek Regional Trail.
Beaverton Creek Trail. Originally envisioned as a conservation greenway, THPRD completed a 2007 feasibility study that proposed a trail along Beaverton Creek from the Fanno Creek Greenway Trail at Denny Road and Highway 217, northwestward to Arleda Park at SW 194th Place and Willow Creek Drive. A more recent iteration of the trail combines it with the adjacent Fanno Creek Greenway Trail in a multi-jurisdictional trail completion initiative called the Crescent Connection.
Burlington Northern Rail Trail. This rail corridor between North Plains and US 30 is occasionally discussed as a potential rail-trail. However, trail development is unlikely in the near term as freight trains still actively use this line.
Cooper Mountain Trail. This trail would provide an east-west connection from the Westside Trail to Cooper Mountain Nature Park, then northwestward to the South Hillsboro area.
Council Creek Regional Trail. A master planning process begun in 2012 is studying potential trail alignments in a corridor connecting Hillsboro, Cornelius, Forest Grove and Banks. The trail would provide a key active transportation link between the four cities and effectively extend the Banks-Vernonia Trail to the urban area. One potential route follows the namesake creek along the north edges of Cornelius and Forest Grove, and then turns northward along the Highway 47 corridor.
Fanno Creek Greenway Trail. One of the first paved multi-use trails in Washington County, the Fanno Creek Greenway forms a major spine of active transportation connecting Tigard, Beaverton and Portland. Several sections remain to be done, including a short segment in downtown Tigard and a longer extension from Bonita Road southward to the Ki-a-Kuts Bike-Ped Bridge over the Tualatin River. These missing sections are part of the Crescent Connection initiative that bundles the Fanno Creek Greenway and Beaverton Creek trails.
Hagg Lake Greenway. A greenway and potential trail is envisioned between Henry Hagg Lake and the Tualatin River, following the Scoggins Creek Valley and adjacent railroad corridor.
Ice Age Tonquin Trail. A three-pronged network of trails will eventually connect Tualatin, Sherwood and Wilsonville. One section has been completed within Metro's Graham Oaks Nature Park in Clackamas County. The northern prong of the trail would connect with the Westside Trail at a proposed ped/bike bridge over the Tualatin River near King City. The western prong would pass through the City of Sherwood as the Cedar Creek Trail.
Oregon Electric Trail. An abandoned railroad extends from the Cornelius Pass / Sunset Highway interchange northward to Helvetia. A finished section extends eastward from the railroad, connecting to the Rock Creek Trail. Both segments provide a trail connection to Liberty High School.
Path to the Pacific. Also called the Turf-to-Surf Trail, Portland-to-Coast Trail, and (in one segment) the TV Highway Trail, this ambitious concept aims to connect the Portland region with the Oregon Coast through a series of off-road and on-road connections. Multiple route alternatives through Washington County have been studied. A northern route would use the aforementioned Burlington Northern Railroad and US 26 right-of-way. A southern route would follow TV Highway and either the unfinished portion of the Banks-Vernonia Trail or the proposed Council Creek Trail. Both proposed routes converge in Manning, with hopes of using the Port of Tillamook Railroad (which was irreparably damaged in a 2007 winter storm) to reach the coast near Manzanita.
Pearl-Keeler Power Line Trail. This trail, shown in Hillsboro's 2009 Parks and Trails Master Plan as the BN Powerline Trail, would diverge southward from the Rock Creek Trail at Orchard Park, following BPA's Pearl-Keeler transmission line through the Reedville area. Portions of the trail exist within Paula Jean and Trachsel Meadows parks, but are deficient by modern regional trail standards. Recent planning for South Hillsboro continues the trail corridor south of TV Highway along the BPA line to Rosedale Road and potentially beyond.
River-to-River Trail. This proposed route, mostly within Clackamas County, would connect Tualatin with Lake Oswego using the Portland & Western Railroad corridor.
Rock Creek Trail. This trail uses a combination of stream valleys and power line corridors to travel southwestward from Bethany to Hillsboro. With some minor exceptions, the trail is complete north of Wilkins Street. Major gaps exist southward to TV Highway.
Sunset Highway Trail. A utilitarian bike-pedestrian trail parallels Sunset Highway from Highway 217 eastward and uphill to the Oregon Zoo. From the zoo, numerous low-traffic streets and trails provide pedestrian/bike connections to downtown Portland.
Tualatin River Greenway Trail. This riverside trail would extend from the Tualatin River National Wildlife Refuge eastward through downtown Tualatin, underneath Interstate 5 and into Clackamas County, where it would enter the Stafford urban reserve.

Trail Name, Description and Status
Washington Square Loop Trail. A proposed loop trail would encircle Washington Square Regional Center and connect to the Fanno Creek Greenway Trail at two points.
Westside Trail. Generally following a north-south power line corridor across Washington and Multnomah counties, the Westside Trail will eventually connect the Tualatin River near King City with the Willamette River in far northwest Portland. Many portions are complete between Barrows Road in Tigard and TV Highway in Beaverton. Major challenges in the remaining sections include steep topography on Bull Mountain, and costly crossings of Sunset Highway and the Tualatin River.
Yamhelas Westsider Trail. The Yamhelas Westside Trail Coalition is working to acquire an abandoned Union Pacific railroad connecting McMinnville and Carlton in Yamhill County with Gaston in Washington County. The abandoned segment stops just east of Hagg Lake.

Future Trail Needs

In terms of identifying and prioritizing trail needs, the County largely defers to the jurisdictions that would build and main¬tain these trails. Washington County policy (included under TSP Objective 8.4) supports filling gaps in existing regional trails, since these projects would have a greater potential to improve countywide trail connectivity. The Crescent Connection (Beaverton Creek and Fanno Creek Greenway trails) and Westside Trail are probably the best examples of this. However, County policy also supports new trail development efforts in areas that lack them, including the Ice Age Tonquin Trail, Council Creek Trail, and Yamhelas Westsider Trail. Because the County's role in trail planning focuses more on transportation and less on recreation, County policy tends to support trail projects that provide active transportation access to major employment hubs, transit stops, and mixed-use centers. Similarly, County residents, and workers involved in the 2014 TSP update voiced a strong interest in building trails for transportation, not just recreation. This means facilitating efficient and safe movement of people 24 hours a day, all year long, on appropriate urban trails. Design and management solutions to achieve this goal include:

- Avoiding flood-prone areas (horizontally or vertically) and using pervious asphalt to provide a surface that is durable, watershed-friendly, and resistant to ponding during the region's rainy winters;
- Minimizing sharp curves and out-of-direction travel that slow down travel times and create blind spots;
- Considering trail lighting in appropriate urban areas;
- Keeping trails legally open during night hours to facilitate all types of commuting schedules; and
- Ensuring regular maintenance and debris clearing by the responsible jurisdiction.

Not all trails would be appropriate for this level of service. For example, soft surface nature trails are typically not intended for commuting.

Rural Pedestrian Considerations

Walking as a means of transportation is less common in rural areas of Washington County. Distances between destinations are typically too long to feasibly walk between them. However, rural residents still have plenty of reasons to walk or run along rural roads – among them, exercise, visiting a neighbor, making an on-road trail connection, or getting to a reasonably close destination such as a farm stand, school, or church.

Rural Walking Facilities

There are very few designated facilities for walking in the rural area. Sidewalks are not required along rural roads in Washington County, and the intensity of land development that would trigger a need for sidewalks is limited by land use policies for the rural area. Many rural roads in Washington County are narrow, forcing pedestrians to share the roadway with automobile traffic. A limited number of rural roads, including Roy Rogers Road and Cornelius-Schefflin Road, have been intentionally improved with wide shoulders to accommodate farm equipment and bicyclists. These roads can also safely accommodate pedestrians. Additionally, portions of some rural arterials have reasonably sized shoulders (four feet or more) that can facilitate walking or running, such as Highway 47 between Forest Grove and Gaston, and Scholls Ferry Road west of Roy Rogers Road. The *Oregon Bicycle and Pedestrian Plan* recommends that shoulders to accommo-

date pedestrian and bicycle travel on state roads be a minimum of six feet wide. Perhaps the most significant and well-developed pedestrian facility in rural Washington County is the Banks-Vernonia Trail, which extends 21 miles between the namesake towns, and connects to Stub Stewart State Park. More rugged trails can be found at Henry Hagg Lake and in the Tillamook State Forest.

Rural Pedestrian Activity Areas

Several locations in rural Washington County attract or generate a small number of localized walking trips. These Rural Pedestrian Activity Areas include small villages with clusters of houses, businesses, or public uses like schools, churches, and social halls. Also included are road segments that connect nearby urban area and major recreational destinations such as regional parks and trails. Rural Pedestrian Activity Areas, mapped in the Pedestrian System Maps in Figures 3-24 and 3-25, include:

- The Villages of Blooming, Buxton, Cherry Grove, Dilley, Farmington, Gales Creek, Glenwood, Greenville, Groner, Helvetia, Kinton, Laurel, Laurelwood, Manning, Midway, Roy, Scholls, Verboort and West Union;
- The half-mile rural section of Highway 8 between Hillsboro and Cornelius;
- The intersection of B Street, Highway 47, and adjacent multi-use trails south of Forest Grove;
- The area surrounding Farmington View School along Highway 219 south of Hillsboro;
- Henry Hagg Lake County Park;
- L.L. Stub Stewart State Park, which includes multiple trail crossings of Highway 47;
- Tualatin River National Wildlife Refuge, which straddles Highway 99W; and
- A 2½ mile stretch of Highway 6 in the Tillamook State Forest between Gales Creek Campground and the Coast Range Summit, featuring a parallel hiking trail, a scenic viewpoint, and several parking areas for other trails.

Helvetia Tavern on NW Helvetia Road, Hillsboro

Rural Pedestrian Needs

Existing and future needs for walking in the rural area vary, and are largely dependent on context.
Installing walkway facilities in rural villages should be approached on a case-by-case basis. Village areas are not likely to see major growth due to land use regulations, but traffic passing through them may increase as housing and employment grows in nearby urban areas. Some villages may exhibit enough pedestrian demand and automobile traffic conflict to warrant building walkway facilities. Villages with schools, such as Groner, provide additional rationale for walkways. However, construction of sidewalks or walkways could have unwanted impacts on the aesthetics of a village. Enhanced crosswalks, which have fewer property impacts, may be more appropriate in some locations. Coordination with village residents, business owners, and school officials is the best way to determine these needs.

Use of major recreation facilities such as Stub Stewart State Park and the Banks-Vernonia Trail are likely to increase as population grows in the Portland region. Supportive pedestrian facilities on County roads may be needed, such as enhanced crosswalks, where trails cross roads. Rural areas that are close to urban areas may have urban levels of pedestrian demand. The most significant example is the half-mile stretch of Highway 8 between Hillsboro and Cornelius, which includes bus service. Public comment revealed a need for better walking facilities along this stretch, especially at the bridge over Dairy Creek.

Pedestrian System Map

Washington County's urban pedestrian system consists of sidewalks, walkways, and crossings along and across streets, as well as off-street trails and connections between streets. All roadways in the urban area, with the exception of freeways, are pedestrian routes. With few exceptions, within the urban area sidewalk installation is required by development when roadways are reconstructed for a development or capital project. Meanwhile, in the rural area, the pedestrian system consists of roadway shoulders and paved or unpaved off-street trails. Sidewalks are not required in the rural area.

The Pedestrian System Maps, included as Figures 3-24 and 3-25, identifies the future off-street trail network intended for utilitarian, recreational, and other types of walking trips. The map also indicates areas of above-average pedestrian activity in the urban unincorporated and rural areas, and delineates particular roadways and roadway segments where enhanced pedestrian features are desired because of land use context and/or transit service. Specific pedestrian classifications shown on the map are described in the following paragraphs.

Pedestrian System Classifications

Pedestrian/Bicycle District

Within the urban unincorporated area, a Pedestrian/Bicycle District identifies an area where high use by pedestrians and cyclists is either observed or intended. This activity may be due to a combination of existing and/or proposed land uses, density, land use mix, community design, availability of transit service and/or provision of pedestrian and bicycle facilities. Pedestrian-oriented design of streets, public spaces and land uses are generally required in these areas to provide a safe, direct, efficient, comfortable and attractive walking environment. Secure short-term and long-term bicycle parking is generally required and supporting facilities such as lockers and showers are recommended at places of employment. Appropriate features and dimensions will vary by context and shall be determined through the project development and/or land development review process with consideration of other classifications and in reference to the Community Plans and Community Development Code. Pedestrian/Bicycle Districts cover the same geographic areas as Metro 2040 Growth Concept Regional Centers, Town Centers and Station Communities as adopted in the *Washington County Comprehensive Framework Plan for the Urban Area.*[13]

Rural Pedestrian Activity Area

A Rural Pedestrian Activity Area is a location outside the urban growth boundary with a concentration of pedestrian activity related to a village, crossroads, school, religious institution, community center, farmstand, recreation area, trail or other cultural feature. Treatments such as marked crosswalks, mid-block crossings, wide shoulders and warning signage may be appropriate in these locations, subject to engineering and policy review.

Pedestrian Parkway

A Pedestrian Parkway is a major urban thoroughfare (typically an arterial) that has the potential for significant pedestrian activity. This activity may be due to the provision of transit service, a relatively high intensity and mix of land uses, and/or the continuous nature of the route as it passes through one or more communities. Enhanced pedestrian facilities are encouraged to facilitate a safe, comfortable walking environment along and across these roadways. Enhanced pedestrian crossings are recommended to help people reach transit stops and other destinations from the opposite side of the street. Site-specific study is needed to determine the locations and design features for such crossings. Consideration of sidewalk widths greater than those shown in adopted road standards is recommended on a context-sensitive basis, particularly on Pedestrian Parkway segments that overlap with Streetscape Overlays. In all cases, appropriate features and dimensions will vary by context and shall be determined through the project development and/or land development review process with

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13 Metro's Regional Active Transportation Plan (RATP) and Regional Transportation Plan (RTP) show Pedestrian Districts and Bicycle Districts on separate maps, though they cover the same geography. The TSP does not show Pedestrian/Bicycle Districts within cities.

consideration of other classifications in this TSP and in reference to the Community Plans, Community Development Code as well as adopted city plans and codes. Pedestrian Parkways in the Washington County TSP are equivalent to on-street Pedestrian Parkways shown in the *Metro Regional Transportation Plan*.[14]

Streetscape Overlay

A Streetscape Overlay is a segment of urban roadway in which enhanced pedestrian features, expanded pedestrian facility dimensions and place-making amenities are encouraged in order to facilitate a comfortable and attractive walking environment, and to leverage community and economic development. Streetscape Overlays include all Regional Boulevards and Community Boulevards shown on the Regional Design Classifications map in Metro's 2014 Regional Transportation Plan (RTP) within Washington County.[15] These segments are typically located within Metro 2040 Growth Concept Regional Centers, Town Centers, Station Communities and Main Streets. Several additional Streetscape Overlay segments are shown in the urban unincorporated area based on Washington County community planning projects such as the *Aloha-Reedville Study and Livable Community Plan and the North Bethany Subarea Plan*.

On roadways with Streetscape Overlays, appropriate features and dimensions will vary by context and shall be determined through the project development and/or land development review process. These determinations shall consider the other modal classifications within this plan – particularly freight and transit – and refer to the Community Plans, Community Development Code and adopted city plans and codes. Features may include (but are not limited to): sidewalks with widths greater than those shown in the Washington County Road Design and Construction Standards, medians, narrower travel lanes and/or narrower pavement widths, curb extensions, on-street parking, pedestrian-scale lighting, enhanced pedestrian crossings, traffic calming, street trees, landscaping, street furniture and public art.

Regional Trail

Regional Trails are included in both the Pedestrian Element and the Bicycle Element. A Regional Trail is a multi-use pathway that accommodates regional and local utilitarian pedestrian and bicycle trips. Regional Trails include off-street Pedestrian Parkways and Bicycle Parkways as identified in Metro's RTP, along with several existing or proposed multi-use trails in the rural area and a limited number of short pedestrian/bicycle connections that facilitate access to the regional transportation network. Regional Trails serve a transportation function and are encouraged to be designed and constructed in ways that facilitate comfortable, convenient travel, including the characteristics summarized below.

- Using surface and sub-grade materials and following grading and storm water management practices that result in a durable, slip-resistant, watershed-friendly surface throughout the year.
- Avoiding flood-prone areas and/or managing storm water to allow year-around operation.
- Providing adequate width, as surrounding context and circumstances allow, accommodating different trail users including people walking, running, cycling, skating, walking dogs and pushing strollers.

ADOPTED TEXT

14 Unlike Metro's RATP/RTP Pedestrian Parkways, Washington County TSP Pedestrian parkways do not include off-street trails. Trails and roadways are classified separately in the TSP due to the distinct differences in design, operation, maintenance and jurisdiction management between the two facility types. Off-street Pedestrian Parkways in Metro's RATP/RTP are included as Regional Trails in the TSP. On-street Regional Pedestrian Corridors – the second tier of pedestrian routes in Metro's RATP-RTP – are not included in the Washington County TSP because the county's Road Design & Construction Standards are mostly consistent with Metro's RATP design guidance for these routes, including provisions for planter strips.

15 Other street design classifications in Metro's 2014 RTP Regional Design Classifications map include Throughways, Regional Streets and Community Streets. Washington County design standards for Principal Arterials, Arterials and Collectors are consistent with the intent of these regional design classifications and are included in the Mobility section of the Washington County TSP Goals, Objectives and Strategies (Ordinance 768).

- Minimizing sharp curves and out-of-direction travel.
- In higher-density areas, installing pedestrian-scale trail lighting sensitive to surrounding land uses and wildlife habitat.
- Keeping trails legally open at all hours.
- Regular maintenance, surface repairs and debris clearing by the responsible jurisdiction.

Regional Trails in the urban area are intended to have paved surfaces; Regional Trails in the rural areaare encouraged to have paved surfaces, but may have paved or unpaved surfaces. Regional Trails that are routed along roadways may require further determination as to whether the trail will be separated from the roadway or employ a shared roadway design. When the location of a proposed Regional Trail is being determined in concert with a development proposal or transportation project, the County shall confer with the jurisdiction or special district that is responsible for maintaining that trail to ensure that the most up-to-date assumptions of that trail's location and design features are being considered.

Regional Trail Refinement Area

A Regional Trail Refinement Area is an area where a Regional Trail is planned conceptually but the specific alignment has not yet been determined. A feasibility study or master plan is necessary to determine the specific alignment. Before development may occur on land within a Regional Trail Refinement Area, in addition to other requirements, the development application must demonstrate how the Regional Trail will (at a minimum) not be precluded by the proposed development. Regional Trail Refinement Areas include:

- Turf-to-Surf Trail between Banks and Beaverton
- Council Creek Trail between Banks and Forest Grove and between Forest Grove and Hillsboro
- Cooper Mountain Trail
- River Terrace Trail
- Fanno Creek Greenway Trail between Bonita Road and the Tualatin River.

Community Trail

A Community Trail is a pathway that accommodates shorter-distance utilitarian walking trips and may or may not accommodate bicycle trips. Community Trails serve as convenient walking connections between local destinations or as accesses to Regional Trails. Community Trails are not necessarily designed for 24-hour, all-weather use; and may be constructed to different standards than Regional Trails. Community Trails include off-street Regional Pedestrian Corridors as indicated in Metro's RTP, in addition to selected community, local and other trails shown on trail maps by jurisdictions in Washington County. Community Trails that are routed along roadways require further determination as to whether the trail will be separated from the roadway or will employ a shared roadway design. When the location of a proposed Community Trail is being determined in concert with a development proposal or transportation project, the County shall confer with the jurisdiction or special district that is responsible for maintaining that trail to ensure that the most up-to-date assumptions of that trail's location and design features are being considered. Community Trails appear only in the Pedestrian Element.

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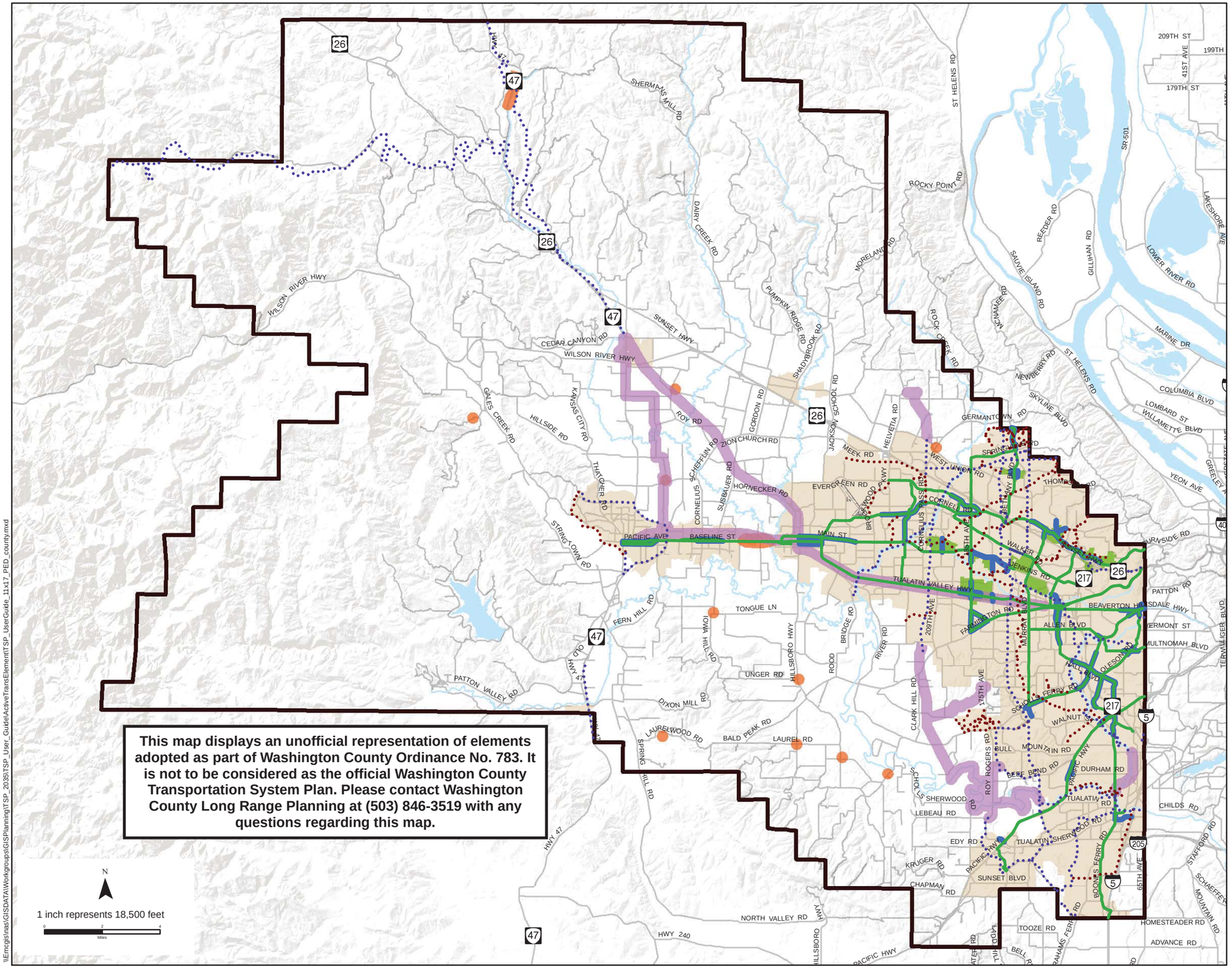
Pedestrian Element

Pedestrian System



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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Trails Existing/Proposed

- Regional Trail
- Community Trail
- Regional Trail Refinement Areas

- Pedestrian Parkway
- Street Scape Overlay
- Pedestrian/Bicycle District
- Rural Pedestrian Activity Areas
- Other Roads
- Urban Area
- County

Figure 3-24

Online Map: http://arcg.is/1ED2hD6

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Planning and Development Services Division

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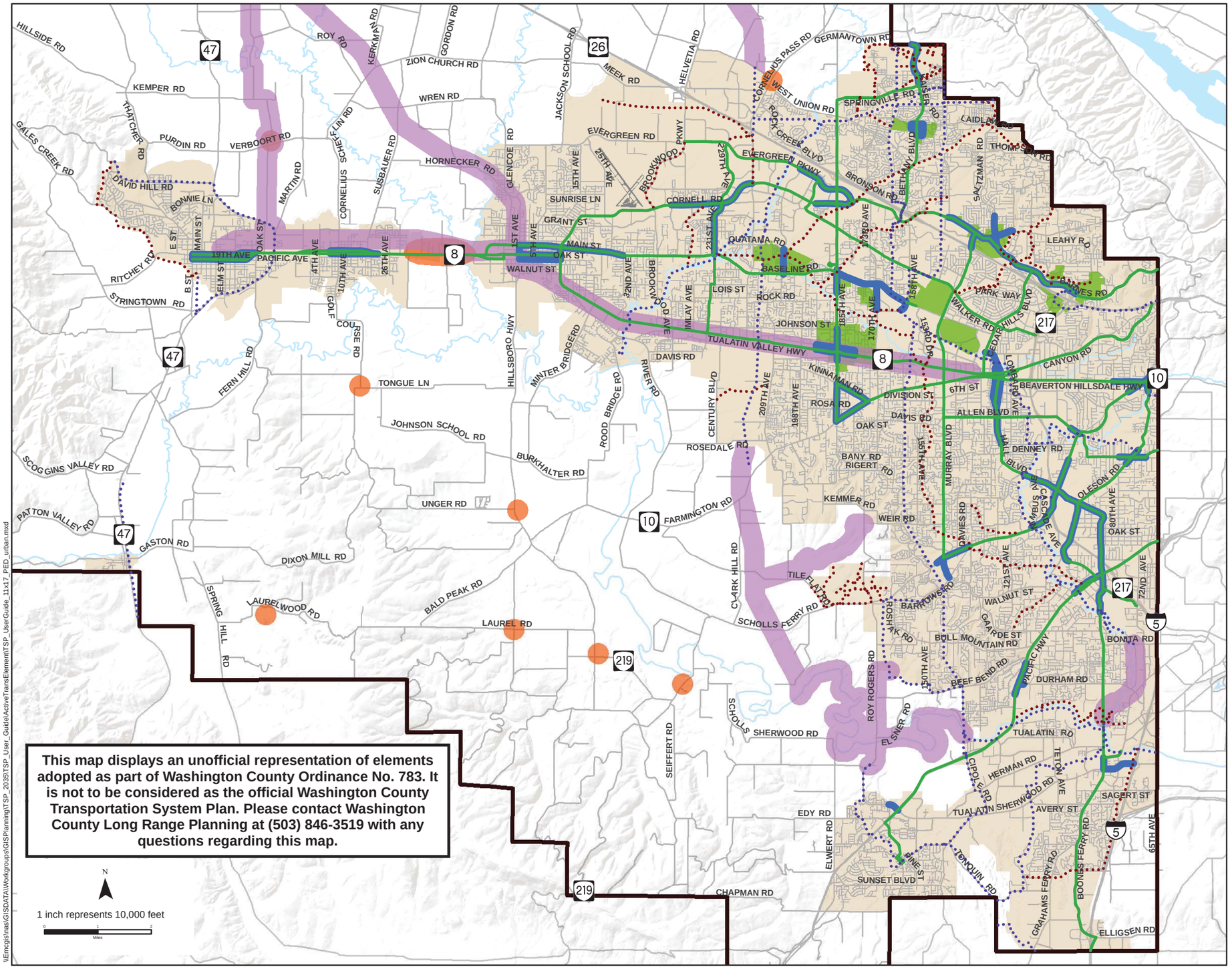
Transportation System Plan User's Guide

Pedestrian Element

Pedestrian System
(Urban Area)



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1 inch represents 10,000 feet

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- Regional Trail
- Community Trail
- Regional Trail Refinement Areas
- Pedestrian Parkway
- Street Scape Overlay
- Pedestrian/Bicycle District
- Rural Pedestrian Activity Areas
- Other Roads
- Urban Area
- County

Figure 3-25

Online Map: http://arcg.is/1ED2hD6

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Planning and Development Services Division

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BICYCLE ELEMENT

Bicycle planning in Washington County began in earnest following the passage of the Oregon Bicycle Law in 1971. The *Washington County Bicycle Pedestrian Pathway Master Plan* soon followed and was adopted in 1974. The master plan proposed an extensive network of on-street and off-street bicycle routes and a point system to prioritize routes for construction. By 1983 approximately seven miles of pathways had been completed. In 1986, the County adopted bikeway standards as part of the *Uniform Road Improvement Design Standards* calling for "a six-foot-wide bicycle lane constructed adjacent to the curb within the pavement area." The 1988 Washington County Transportation Plan notes that 15 miles of bike lanes built to design standards and 14 miles of substandard bicycle paths existed on, or adjacent to, County roads. By 2002 that number had grown to more than 64 miles of existing on-street bikeway facilities, as a result of adding more than 2.5 miles of bikeways to the system annually between 1988 and 2002 in conjunction with the Major Streets Transportation Improvement Program. Today, the County's major street network (Arterials and Collectors) has more than 91 miles of on-street urban bikeway (6' bicycle lanes and minimum 4' width paved shoulders) and 36 miles of rural on-street bikeways (minimum 4' width paved shoulders).

Bicycle Trip Characteristics

Bicycling is an important mode of transportation, whether used separately or with other travel modes such as transit. Bicycling is the most efficient form of transportation and is considered particularly well suited for shorter trips, typically less than three miles. A recent study that tracked cyclists' activity in the Portland metropolitan region, including Washington County, found the median length of bicycle trips of study participants was 2.8 miles. However, it was found that participants were willing to travel further from home to work; the median single trip distance was 3.8 miles with an average trip length of 5.2 miles. Acceptable trip length can vary greatly depending on the skill and fitness level of the cyclist.

Buffered bike lane on Tualatin-Sherwood Road

The bicycle can be used for a variety of uses and trip purposes. Bicycle trips in Washington County include trips to work, school, shopping, and for recreational purposes. The study noted above found that other than riding to home, riding to work was the most frequent trip purpose (25 percent), with approximately 18 percent for shopping/dining out/or other personal business, and 12 percent for social or recreation purposes (such as going to the movies, the gym, or visiting friends). Nationally, approximately 39 percent of all bicycle trips are less than two miles. This suggests that with improved access to safe and comfortable bikeways, bicycling can be a feasible option for many people.

Types of System Users

An important consideration in preparing a bicycle plan is to recognize the primary types of cyclists and their differing needs. Generally, bicyclists fall into three categories:

- **Strong and Fearless or Type A (Advanced)** – This group includes bicyclists who are comfortable riding on busy roads with a low level of separation from traffic and navigating in traffic when necessary to reach destinations. This group makes up a small percentage of cyclists and the population.
- **Enthused and Confident or Type B (Basic)** – This group includes utilitarian and recreational riders who will ride on busy streets if bike lanes or other facilities are provided, but may deviate from the most direct route to ride on low-traffic streets or shared-use paths.
- **Interested, but Concerned or Type C (Concerned)** – This group includes a wide range of people of all ages who enjoy bicycling occasionally, but may only ride on shared use paths, protected on-street facilities, or low-traffic local streets. The majority of the population falls into this category.

Achieving regional active transportation performance targets will require attracting a wider range of users. A variety of factors limit bicycling by Type B and C cyclists, including adjacent vehicle speeds (>35 mph), adjacent vehicle volumes (>3,000 ADT), and freight conflicts. Some jurisdictions are responding to these issues by increasing the separation between vehicle and bicycle travel through enhanced bicycle facility design. The *Washington County Bicycle Facility Design Toolkit* provides detailed design considerations intended to provide safe and convenient bikeways that will be especially beneficial to Type B and C bicyclists.

Bikeway Facilities

The following section describes the spectrum of existing and potential separated on-street bikeway facilities.

Veterans Drive features a raised cycle track, which was constructed as a joint project between the City of Hillsboro and Washington County at the Fair Grounds.

- **Shoulder Bikeways:** On rural roads or interim urban roads with a large shoulder, shoulder bikeways can accommodate bicycle travel. Shoulder bikeways are generally used by commuter and long-distance recreational riders, rather than families with children or more inexperienced riders.
- **Bike Lanes:** Designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and pavement stencils. Bike lanes are most appropriate on arterial and collector streets where higher traffic volumes and speeds warrant greater separation. Bike lanes also increase safety and reduce wrong-way riding. This treatment is required on arterials and collectors when roads are newly constructed or reconstructed, per Washington County's existing Road Design Standards.
- **Buffered Bike Lanes:** Buffered bike lanes are designed to increase the space between the bike lane and the travel lane or parked cars. They allow motorists greater separation from bicyclists in the bike lane (as travel speeds increase greater separation is needed) and provide space for cyclists to pass one another without encroaching into the travel lane. Buffered bike lanes are not currently addressed in the Washington County Road Design Standards. Two pilot projects have been constructed that demonstrate the use of buffered bike lanes on NW 185th Avenue and SW Tualatin-Sherwood Road.

- **Cycle Tracks:** Cycle tracks provide added protection by separating motor vehicles and bicyclists where travel speeds and/or motor vehicle traffic volumes are high. This type of facility appeals to a wider range of bicycle users than a conventional bike lane. Cycle tracks are not currently addressed in the *Washington County Road Design Standards*. However the *Washington County Bicycle Facility Design Toolkit* identifies three types of cycle tracks:
  - Protected cycle tracks are on-street bikeway facilities that provide the safety and comfort of multi-use paths within the road right-of-way. This is accomplished by combining a painted buffer with a physical barrier such as flexible bollards, a landscaped buffer, or a parking lane.
  - Raised cycle tracks are grade separated. Commonly located above the adjacent travel lane and below the sidewalk, they can also be found at sidewalk grade.
  - Two-way cycle tracks allow for bicycle travel in two directions on the same side of the road.

Existing Bicycle Facility Network

Today the County's major bikeway system is comprised of a variety of facilities and treatments on Collector and Arterial roadways. As in many growing areas, bicycle facilities in Washington County are still developing. In some cases there are complete, continuous bike lanes; while in others, significant gaps exist in connections between facilities. The *Regional Transportation Functional Plan* requires an inventory of existing facilities that identifies gaps and deficiencies in the bicycle system. Washington County performed a complete inventory of the County's existing on-street bicycle facilities between 2011-2012 for the *Bicycle and Pedestrian Improvement Prioritization Project*. The study examined all urban Arterial and Collector streets using the latest aerial imagery to identify the presence/absence of on-street bicycle lanes five- to six-feet wide, and paved shoulders at least four-feet wide. The inventory was reviewed by the public using an online interactive map that allowed visitors to the project's website to review the mapped inventory and comment on its accuracy, as well as provide other information like system needs and route preferences. The following section provides a descriptive analysis of the existing bicycle network.

Arterials and Collectors

There are a total of 438 centerline miles of urban Arterial and Collector roadways throughout Washington County, including city, County and state facilities. Bicycle lanes exist on a number of these major routes includ¬ing Baseline Road, Evergreen Road/Parkway, Scholls Ferry Road, Tualatin-Sherwood Road, Murray Boulevard, Oregon Highway 99W and other major roadways. However, many major roads – particularly Collectors – lack bike lanes. As indicated in Table 3.15 and illustrated in Figure 3-26, approximately 38% of urban Arterials and Collectors have five- or six-foot bike lanes on both sides of the roadway, while 53% of Arterials and Collectors have no bikeway facilities. Table 3.16 shows that 11 miles of roadway feature enhanced bikeway facilities such as buffered bike lanes or cycle tracks. These facilities provide greater separation between bicycles and motor vehicles and have the potential to attract more cyclists. Table 3.17 includes information on bikeways in the rural areas of Washington County. While more than three quarters of rural Arterial and Collector roadways have no bikeway facilities, there are nearly 150 miles of rural roads with wide shoulders or bike lanes, including Roy Rogers Road, Cornelius-Schefflin Road and Oregon Highway 47 (south of Forest Grove).

Table 3.15: Arterial/Collector Bikeway Coverage, Urban Washington County

Existing Bike Lanes			
Facility Type	**Facility Location**	**Miles**	**%**
5-6-foot marked bike lane	Both sides of road	164.9	37.6%
5-6-foot marked bike lane	One side of road	24.2	5.5%
Shoulder suitable for bikes (4-foot+)	Both sides of road	9.5	2.2%
Shoulder suitable for bikes (4-foot+)	One side of road	8.1	1.9%
No bikeway facilities	N/A	231.3	52.8%
Total		**438.1**	**100.0%**

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Transportation System Plan User's Guide

Bicycle Element

Bike Lane Inventory

- Existing Both Sides
- Existing One Side
- Shoulder Suitable Both Sides
- Shoulder Suitable One Side
- None or no facility.
- Other Roads
- Urban Area
- County

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1 inch represents 12,500 feet

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Figure 3-26

Online Map: http://arcg.is/1PXZuMo

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Table 3.16: Enhanced Bikeways in Urban Washington County

Road	Jurisdiction	From	To	Type of Facility	Approximate Extent (lane miles)
SW 155th Ave	City of Beaverton	Rigert Rd	Sexton Mountain Dr	Raised cycle tracks	0.3
NW 185th Ave	Washington County	West Union Rd	Westview High School	Buffered bike lanes	0.6
NE Brookwood Pkwy	Washington County	Evergreen Pkwy	Cornell Rd	Multi-use paths	1.6
NW Evergreen Rd	Washington County	25th Ave	Brookwood Pkwy	Buffered bike lanes	1.8
Oregon Highway 47	ODOT	Pacific Ave	B St	Multi-use path	2.0
SW Scholls Ferry Rd	Washington County	Roy Rogers Rd	Teal/Horizon Blvds	Buffered bike lanes	1.3
SW Tualatin-Sherwood Rd	Washington County	Baler Way	Teton Ave	Buffered bike lanes	3.0
NE Veterans Dr	City of Hillsboro	28th Ave	Brookwood Pkwy	Raised cycle tracks	0.8
				Total	**11.4**

Table 3.17: Arterial/Collector Bikeway Coverage, Rural Washington County

	Lane miles: Rural area	% of rural area total	Washington County Maintained
Bike lanes on both sides of road	6	1%	0
Bike lane on one side of road	0	0%	1
Shoulder suitable for bikes (both sides)	134	19%	66
Shoulder suitable for bikes (one side)	9	3%	2
No separated bikeway facilities	532	77%	466
Total mileage of arterials/collectors	**681**	**100%**	**545**

Bikeway Facility Needs

Bicyclists are very sensitive to the distance between destinations, so strategies that reduce the distance between origins and destinations can make bicycling more attractive. Mixing compatible land uses can make biking more attractive for errands, and the creation of more direct routes to job centers and schools can reduce the travel time between those places by bicycle. Providing a safe, well-connected system of bicycle and pedestrian routes, as well as other bicycle facilities, can significantly increase bicycling. The *National Bicycling and Walking Study* found that "cities with higher levels of bicycle commuting have on average 70 percent more bikeways per roadway mile and six times more bike lanes per arterial mile." Equally important is how well connected available bikeways and bike lanes are. Gaps in the system of bicycle routes, and obstacles such as tunnels and bridges, can make bicycling much less feasible.

The County's major streets evolved from "farm-to-market" roads at a time when principal markets and employment centers were located in Portland. The resulting system primarily serves east-west travel needs. This historic trend, as well as topographic conditions, has resulted in a street pattern that, for the most part, has not developed into an interconnected, grid pattern. Grid pattern street systems provide multiple routes for bicycle travel on parallel roadways, some of which typically carry lower traffic volumes with lower travel speeds, making them particularly suitable for bicycle travel. Although the County has undertaken an ambitious program to improve the road system in recent years, it continues to lack adequate peak-hour capacity, and includes many substandard roadways that are more costly to maintain than roads built to County and city design standards. Because of the lack of north-south routes, the County's road system does not serve demand for north-south travel well.

Urban Bikeway Needs

Obstacles to bicycle travel in urban Washington County include physical gaps in facilities, lack of regular maintenance of bike lanes, inadequate funding for bicycle-related improvements, historic development patterns where there is poor local-street connectivity, and the presence of flood plains and topographic constraints. Intersections that are not designed for current and future traffic volumes, such as Beaverton-Hillsdale Highway at Scholls Ferry Road, and missing links in facilities such as those found along Canyon Road, 170th Avenue and other locations, are obvious obstacles to bicyclists.

Bikeways on the major street system provide direct connections for bicyclists, making them the logical choice for longer trips. At the same time, the high traffic volumes, greater speeds and the potential for conflicting turning movements at intersections, which are common on the major street network, may be considered as obstacles by some bicyclists. Identification of low-traffic-volume streets for use as "neighborhood bikeways" may be possible in some areas of the county at relatively low cost. However, many areas of Washington County lack well-connected, low-traffic-volume streets for such a system.

Due to the reality of incremental expansion and improvement of Collector and Arterial roadways, it is unlikely a complete bicycle and pedestrian system will be realized in the near term. Adopting strategies to support bicycle travel is consistent with the goals and desired outcomes of the 2014 RTP. The 2014 RTP recognizes the important role that active transportation modes play in achieving regional objectives such as: Increasing non-SOV mode share, reducing vehicle miles traveled, reducing the cost of transportation, improving public health, and meeting state goals for greenhouse gas reduction. Goals included in the 2014 RTP call for tripling the mode share of bicycling and walking for commuting over the next 25 years.

The County's TSP must comply with Metro's Regional Functional Transportation Plan Section 3.08.140, which directs local jurisdictions to pay particular attention to bicycle access to transit and essential destinations. The RTFP defines "essential destinations" as hospitals, medical centers, grocery stores, schools, and social service centers with more than 200 monthly LIFT pick-ups. A County study for the *Bicycle and Pedestrian Improvement Prioritization Project* (2012) compared the existing and planned urban bicycle network (Collector and Arterial roadways) to determine how to optimize the planned bicycle system improvements. Table 3.18 includes the prioritized list of bike lane needs identified for collectors and arterials in Washington County.[16]

Neighborhood Routes and Local Streets

Washington County also has an extensive system of local roadways. While these streets are not signed for bicycle routes, and bikeway facilities are not developed on these roads, they may be and are used as shared roadways by bicycles. It may be possible to identify areas where good local street connectivity has been established and appropriately sign these areas as secondary bicycle routes (neighborhood bikeways or bike boulevards), to supplement the primary system of bikeways on the Arterial and Collector street network. In October 2012, Washington County received an ODOT Transportation and Growth Management (TGM) grant to develop a neighborhood bikeways study that looked into these opportunities.

Rural Bikeway Needs

Outside of the Urban Growth Boundary (UGB), obstacles to bicycle travel are different than in the urban portions of the County. Although bicycling as a means of transportation is less common in rural areas of Washington County because distances between destinations are typically too long to feasibly bike between them, many rural roads are attractive riding areas for recreational cyclists. While traffic volumes are generally much lower in most of the rural area, many rural roads have narrow travel lanes with steep ditches for drainage, little or no shoulders, high vehicle speeds and occasional poor sight distance due to vertical and horizontal curves. Even with the lower traffic volumes, these conditions can create hazards for cyclists.

16 Bicycle improvements will be implemented as funding allows, and as opportunities develop through private development or roadway improvement projects.

In the rural area, improvement projects for major roadways typically include wide shoulders (four-six feet) to accommodate wide and slow-moving farm equipment. While not specifically designated as bike lanes, these wide shoulders serve as shared-roadway bikeways and are considered part of the rural bikeway system. Approximately 23 percent of the major rural road network is improved with wide shoulders (four-six feet). The majority of rural bikeway facilities (81 lanes miles) are located on state highways. The portions of the state highway system that have reasonably sized shoulders (four feet or more) that can facilitate bicycling include Highway 47 between Forest Grove and Gaston, and Highway 99W between Tigard and the County line. A limited number of County rural roads, including Roy Rogers Road and Cornelius-Schefflin Road, have been improved with wide shoulders. In total, there are approximately 69 lane miles of existing rural bikeways (minimum four-foot-wide paved shoulders) on County facilities. Washington County has jurisdiction over 548 lane miles of rural arterial and collector roads; therefore the County's rural bikeway system is approximately 13 percent complete.

Table 3.18: Identified Bike Lane Needs in Washington County*

Road Name	From	To	Total Length (lane feet)
1st Avenue	Baseline Road	500' north of Grant	7,174
65th Avenue	Sagert Street	Nyberg Street	2,466
92nd Avenue	*Garden Home*	*Scholls Ferry*	*5,310*
143rd Avenue	*Cornell Road*	*West Union Road*	*8,889*
158th Avenue/Merlo	*Jenkins Road*	*170th Avenue*	*6,682*
170th Avenue	*Merlo Road*	*Alexander Street*	*8,448*
170th Avenue	*150' S. of Heritage Ct*	*Augusta Lane*	*2,353*
170th Avenue	Baseline Road	Merlo Road	2,918
173rd Avenue	Cornell Road	Walker Road	7,956
174th Avenue	Laidlaw Road	Bronson Road	8,192
185th Avenue	Alexander Street	Blanton Street	1,966
205th Avenue	Quatama Street	Baseline Road	4,664
209th Avenue	TV Highway	Farmington Road	11,036
209th Avenue	*160' S. of Rail Road*	*300' N. of Blanton St*	*910*
Alexander Street	*178th Avenue*	*170th Avenue*	*4,880*
Barnes Road	St. Vincent's Medical Center	Leahy Road	8,617
Baseline Road	158th Avenue	Jenkins Road	4,712
Beef Bend Road	150th Avenue	Pacific Highway	20,868
Bronson Road	*185th Avenue*	*Bethany Boulevard*	*15,565*
Bull Mountain	*Hazeltree Terrace*	*120th Pl*	*939*
Brookwood Parkway	Evergreen Parkway	Sunset Highway	7,467
Cedar Hills Blvd	*Butner Road*	*Sunset-Cedar Hills Off Ramp*	*865*
Cornell Road	Main Street	25th Avenue	12,124
Cornell Road	*99th Avenue*	*102nd Avenue*	*711*
Evergreen Parkway	*Cornelius Pass Road*	*215th Avenue*	*1,214*
Farmington Road	198th Avenue	176th Avenue	6,348
Farmington Road	*171st Ave*	*173rd Ave*	*1,214*
Fischer Road	*131st Avenue*	*Pacific Highway*	*6,916*
Garden Home Road	*77th Ave*	*92nd Ave*	*3,147*
Glencoe Road	Cody Court	Tiffany Street	2,984
Glencoe Road	Cory Street	Camp Ireland Street	1,600
Greenburg Road	Hall Boulevard	Oak Street	5,540
Johnson Street	198th Avenue	185th Avenue	7,000

Road Name	From	To	Total Length (lane feet)
Johnson Street	Cornelius Pass	198th Avenue	10,873
Johnson Street	185th Avenue	170th Avenue	5,801
Kinnaman Road	*185th Avenue*	*Farmington Road*	*7,392*
Kinnaman Road	198th Avenue	185th Avenue	6,720
Langer Drive	Langer Drive	Roy Rogers Road	3,428
Murray Boulevard	*TV Highway*	*Farmington Road*	*1,138*
Oregon Street	Tualatin-Sherwood	300' east of Tonquin Road	3,563
River Road	TV Highway	Rood Bridge Road	12,488
Roy Rogers Road	Borchers Drive	Pacific Highway	2,198
Saltzman Road	*Cornell Road*	*Barnes Road*	*1,709*
Scholls Ferry road	*S. of Merry Ln*	*McKay Elementary*	*970*
Scholls Ferry road	*75' W. of Northvale Way*	*395' E. of Northvale Way*	*472*
Springville Road	*185th Avenue*	*Joss Avenue*	*8,085*
Thompson Road	East of 143rd Avenue	Saltzman Road	8,873
Thompson Road	*Bronson Creek Dr*	*143rd Ave*	*1,091*
Tualatin-Sherwood	Boones Ferry	I-5 Interchange	4,824
Walker Road	*173rd Avenue*	*185th Avenue*	*7,548*
Walker Road	185th Avenue	Von Neumann Drive	4,186
Walker Road	*180th*	*183rd Ave*	*746*
Walker Road	*178th Ave*	*180th Ave*	*572*
Walker Road	*240' W. of Bronson Creek*	*248' E. of Bronson Creek*	*488*
West Union Road	*Cornelius Pass Road*	*185th Avenue*	*15,367*
West Union Road	*Church Property*	*203rd Pl*	*2,577*
West Union Road	*185th Ave*	*Bethany Blvd*	*16,558*
West Union Road	185th Avenue	Bethany Boulevard	16,558
West Union Road	Helvetia Road	Cornelius Pass Road	16,996
		Total	**349,811**

**Bicycle improvements will be implemented as funding allows, and as opportunities occur through the development process.*

Note: Locations in italic are included in the Bicycle and Pedestrian Improvement Prioritization Project (February 2013) Top 30 Gaps.

Bicycle Parking

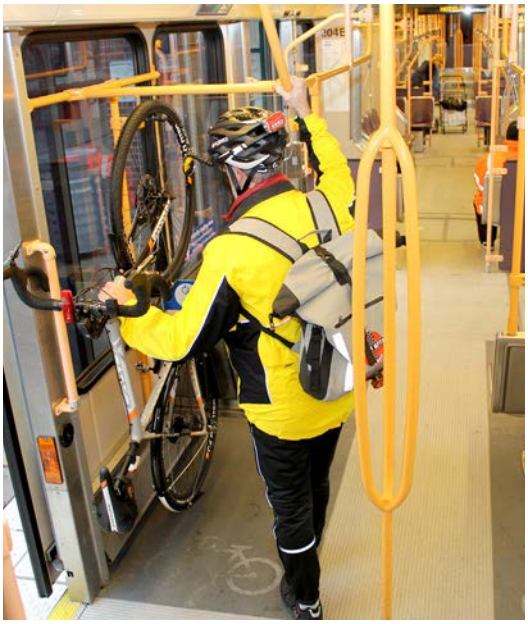
Bicyclists often note that improved facilities, such as improved bicycle parking and showers at workplaces, would make bicycling more attractive as a commute option. People may be discouraged from using a bicycle to make an otherwise appropriate trip if secure bicycle parking is not available at the destination. Bicyclists' needs for bicycle parking range from a convenient piece of street furniture that can be used to secure their bicycle, to bicycle lockers that provide weather, theft, and vandalism protection, gear storage space, and 24-hour personal access. The County's existing *Community Development Code* includes bicycle parking requirements for new development. While bicycle parking has been required in new developments since 1994 by Section 429 of the *Community Development Code*, little or no baseline information is available on the amount or quality of existing bicycle parking. However, Washington County's Development Standards for Bicycle Parking are comprehensive, with provisions in the Code for development of minimum bicycle parking facilities in conjunction with multi-family developments of four units or more, retail, office, institutional, and industrial development, transit centers, and park-and-ride lots.

Bicycle lockers at Fair Complex/Hillsboro Airport station

For those cyclists needing to dress more formally, travel longer distances, or cycle during wet or hot weather, the ability to shower, change, and store clothing can be as critical as bicycle storage. Larger employers may choose to provide additional amenities as part of the Department of Environmental Quality's Employee Commute Options (ECO) program.

Bicycles and Transit

Another important factor in encouraging bicycle travel is the connection between the bicycle and transit systems. Linking bicycles with transit mitigates some obstacles to bicycling such as lengthy trips, personal security concerns, riding at night, poor weather, or steep topography. Using a combination of bicycling and transit can enable a cyclist to avoid barriers, or facilitate longer-distance trips. Several options are available for combining bicycle and transit trips. Bike parking is available at most MAX and WES stations. Secure, enclosed parking with keycard access is provided at Sunset and Beaverton transit centers, and bicycle racks are provided at transit stations. TriMet and SMART buses have bike racks on the front of the buses that can carry two bikes; and bicyclists can bring their bike onboard MAX, WES, and the Portland Streetcar, if room is available in one of the designated bike spaces. Connections to WES and MAX are as important as connections to regional bus routes. Table 4.21 in the Existing Conditions Report (page 4-61 – 4-66) provides an assessment of bicycle accessibility to MAX and WES stations within Washington County, including stops within incorporated cities, along with other information about bicycle accessibility.



Cyclist MAX light rail train

Bicycle System Map

Figure 3-27 shows the bicycle-system classifications for specific facilities using the classifications described in the following section.

The Bicycle System Map identifies the planned bicycle network. All roadways in Washington County, with the exception of freeways, are on-street bikeways. State policy requires "bikeways" along urban Arterials and Collectors.[17] The Bicycle System Classifications provide guidance on the function of the future bicycle network. Inside the UGB on-street bikeways may consist of bike lanes, buffered bike lanes, cycle tracks, interim shared roadways along Arterials and Collectors, and shared roadways along Neighborhood Routes and Local Streets. Regional Trails are considered off-street bikeways as they are intended to serve a transportation function and are encouraged to be designed and constructed in ways that facilitate comfortable, convenient and utilitarian bicycle travel.

In the rural area, on-street bikeways may consist of wide shoulders or shared roadways. The Tualatin Valley Scenic Bikeway is also recognized in the Bicycle Element.

Bicycle System Classifications

Major Street Bikeway

All Arterials and Collectors in the urban area, inside and outside cities, are designated as Major Street Bikeways unless they are further designated as Enhanced Major Street Bikeways. On Major Street Bikeways, a six-foot bike lane or buffered bike lane is generally considered sufficient to accommodate cyclists. Bicycle improvements to Major Street Bikeways should be consistent with the Washington County Road Design and Construction Standards and should consider the *Washington County Bicycle Facility Design Toolkit*.

ADOPTED TEXT

17 *Oregon Administrative Rule 660-112-0045 (Transportation Planning Rule)*

Urban Collectors that are currently not built to standard, but have low traffic volumes and low travel speeds, may employ an interim shared roadway design such as a neighborhood bikeway. Bikeway facility types and dimensions shall be context-sensitive and determined on a case-by-case basis through engineering review by the appropriate jurisdiction. Major Street Bikeways are not mapped on the adopted Bicycle System Map. Urban Arterial and Collector designations are included in the Roadway Element.

Enhanced Major Street Bikeway

An Enhanced Major Street Bikeway is an urban Arterial or Collector roadway that has, or is planned to have, buffered bike lanes or cycle tracks on one or both sides of the road as illustrated in the Washington County Bicycle Facility Design Toolkit. Enhanced Major Street Bikeways include particular roadways and roadway segments where enhanced bicycle features are desired based on the land use context, access to transit service, and roadway characteristics. Enhanced Major Street Bikeways may have higher traffic volumes, higher travel speeds, and/or are designated for three or more lanes. In these circumstances users with diverse skill levels may desire additional separation between the bikeway and vehicular traffic. However, when separated facilities such as cycle tracks are pursued, particular attention to conflict points and sight distance is needed. Enhanced Major Street Bikeways are shown on county, state and city facilities. Designations applied to roads or other facilities not under county jurisdiction should be considered recommendations to the state, city or other jurisdiction with primary responsibility for the facility.

ADOPTED TEXT

Regional Trail

Regional Trails are included in both the Pedestrian Element and the Bicycle Element. A Regional Trail is a multi-use pathway that accommodates regional and local utilitarian pedestrian and bicycle trips. Regional Trails include off-street Pedestrian Parkways and Bicycle Parkways as identified in Metro's RTP, along with several existing or proposed multi-use trails in the rural area and a limited number of short pedestrian/bicycle connections that facilitate access to the regional transportation network. Regional Trails serve a transportation function and are encouraged to be designed and constructed in ways that facilitate comfortable, convenient travel, including:

- Using surface and sub-grade materials and following grading and storm water management practices that result in a durable, slip-resistant, watershed-friendly surface throughout the year.
- Avoiding flood-prone areas and/or managing storm water to allow year-around operation.
- Providing adequate width, as context and circumstances allow, accommodating different trail users including people walking, running, cycling, skating, walking dogs and pushing strollers.
- Minimizing sharp curves and out-of-direction travel.
- In higher-density areas, installing pedestrian-scale trail lighting sensitive to surrounding land uses and wildlife habitat.
- Keeping trails legally open at all hours.
- Regular maintenance, surface repairs and debris clearing by the responsible jurisdiction.

Regional Trails in the urban area are intended to have paved surfaces; Regional Trails in the rural area are encouraged to have paved surfaces, but may have unpaved surfaces. Regional Trails that are routed along roadways may require further determination as to whether the trail will be separated from the roadway or employ a shared roadway design. When the location of a proposed Regional Trail is being determined in concert with a development proposal or transportation project, the County shall confer with the jurisdiction or special district that is responsible for maintaining that trail to ensure that the most up-to-date assumptions of that trail's location and design features are being considered.

Regional Trail Refinement Area

A Regional Trail Refinement Area is an area where a Regional Trail is planned conceptually but the specific alignment has not yet been determined. A feasibility study or master plan is necessary to determine the specific alignment. Before development may occur on land within a Regional Trail Refinement Area, in addition to other requirements, the development application must demonstrate how the Regional Trail will (at a minimum) not be precluded by the proposed development. Regional Trail Refinement Areas include:

- Turf-to-Surf Trail between Banks and Beaverton
- Council Creek Trail between Banks and Forest Grove and between Forest Grove and Hillsboro
- Cooper Mountain Trail
- River Terrace Trail
- Fanno Creek Greenway Trail between Bonita Road and the Tualatin River

Rural Bikeway

The rural roadways of Washington County are popular bicycle routes for both recreational and commuting travel. Rural roadways have conflicting travel needs for different users that need to be considered and monitored. Minor enhancements (consistent with OAR 660-012-0065) may be appropriate along all major rural roadways (Arterials and Collectors), considering the following:

- Location of existing and committed bicycle facilities (wide shoulders and striped bike lanes);
- Location of rural cities and communities;
- Location of existing and planned recreational facilities (State, Regional or County parks);
- Existing and anticipated (year 2035) roadway volumes;
- Presence/absence of parallel routes consisting of other bicycle facilities or low traffic volume roadways;
- Known traffic and/or terrain characteristics such as the presence of significant hills and/or grades, high truck volume and or traffic speeds.

Rural Bikeways are not shown in the adopted Bicycle System Map. Rural Arterial and Collector designations are adopted in the Roadway Element.

Rural Road Enhancement Study Corridor

Certain rural roads are designated as Rural Road Enhancement Study Corridors. Rural Road Enhancement Study Corridors are defined in the Roadway Element. Rural Road Enhancement Study Corridors are considered part of the Bicycle Element as they may address conflicts between cyclists, cars, trucks and farm equipment.

Tualatin Valley Scenic Bikeway

The Tualatin Valley Scenic Bikeway (TVSB) is a 30-mile on-road bicycle route connecting Rood Bridge Park and the Banks-Vernonia Trail through rural Washington County and the City of Forest Grove. The route was designated by the Oregon Parks and Recreation Department in partnership with Washington County and the Washington County Visitors Association. The TVSB consists of a signed route along existing roadways maintained by Washington County and other jurisdictions. A majority of the TVSB is a shared roadway facility where cyclists and motorists share the same roadway space. Enhancements such as shoulder widening and intersection safety improvements may be appropriate at some locations along the TVSB, subject to engineering review.

ADOPTED TEXT

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Transportation System Plan User's Guide

Bicycle Element

Bicycle System

- B — Bicycle Transit Facility
- Enhanced Major Street BIkeway
- Major Street Bikeway
- Proposed Major Street Bikeway
- Tualatin Valley Scenic Bikeway

Existing/Proposed Trails

- Regional Trail
- Regional Trail Refinement Areas
- Other Roads
- Urban Area
- County

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.

N

1 inch represents 12,500 feet

0 1.25 2.5 Miles

Figure 3-27

Online Map: http://arcg.is/1F57Zjz

Department of Land Use & Transportation
Planning and Development Services Division

Effective: November 27, 2015

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TRANSIT ELEMENT

Washington County's location in the Portland region makes it part of one of the most successful and pioneering public transportation systems in the nation. Transit is a critical component of the County transportation system, reducing automobile trips and congestion, providing travel options for people without vehicles or those who choose not to drive, curbing greenhouse gas and other emissions, and reducing transportation costs for individuals and families. The American Public Transportation Association reports that residents of the Portland region save an average of $867 per month if they use transit instead of owning and driving a car. This section provides an overview of existing and planned transit service, transit stop access and amenities, and an assessment of transit needs in Washington County.

Transit Providers

The following five public transit operators provide transit service in Washington County:

- Tri-County Metropolitan Transit District of Oregon (TriMet),
- South Metro Area Regional Transit (SMART),
- Yamhill County Transit Area,
- Columbia County Transit Division, and
- Tillamook County Transportation District.

Six private, non-profit, or employer-based transit services also operate in Washington County, including:

- Ride Connection, a non-profit that provides rural transit and urban paratransit services;
- OC&W Coachways, operator of the Northwest Point inter-city bus service between Portland, Cannon Beach, and Astoria;
- Tualatin Chamber of Commerce, operator of the Tualatin Shuttle;
- Intel employee shuttles
- Nike employee shuttles; and
- Portland Community College buses

TriMet

TriMet is the principal public transit provider in Washington County, with 30 bus routes, one light rail line (including two routes), a commuter rail line, and nearly 2,000 transit stops. The TriMet service district extends west to Forest Grove, north to Bethany, and south to Sherwood. In spring 2012, TriMet recorded an average of 114,331 weekday boardings and alightings ("ons/offs") at Washington County transit stops during its quarterly passenger census, accounting for 17 percent of system wide ons/offs. TriMet transit routes in Washington County generally exhibit a radial pattern following major corridors from downtown Portland or Beaverton, along with several north-south "cross-town" routes and localized loop routes. Two rail lines and four bus lines provide "frequent service," with 15-minute or better peak-hour headways and late-night service on all or portions of their alignments. These routes are shown in bold type in Table 3.19. Table 3.19 provides further details on all TriMet rail and bus routes in Washington County, including: route name and number, terminus location, approximate service headways, and days of service.

The TriMet #57 bus route along TV Highway has the highest total ridership of all bus lines in Washington County.

In addition to the fixed routes described in Table 3.19, TriMet provides LIFT paratransit service - a shared ride advance-reservation service for people who cannot use regular buses or trains due to a disability or disabling health condition. Users must meet ADA eligibility criteria and be registered with TriMet. The LIFT vehicle fleet includes small buses, vans, and taxis, serving the area generally extending 0.75 miles beyond the outer limits of TriMet bus and MAX lines, but no further than the TriMet service district boundary. The nonprofit Ride Connection, described later, offers paratransit service in a larger area of Washington County.

Systemwide, TriMet has seen year-to-year ridership increases in all but two years since 1999; there were decreases in 2006 and 2010. In fiscal year 2012, TriMet boardings surpassed 102 million, an all-time high. Between 2000 and 2010, boardings increased 23 percent, significantly higher than the tri-county population increase of 14 percent during the same decade. Between 2011 and 2012, the greatest gains by service type occurred on WES Commuter Rail, with a 13percent increase in boardings, compared to a two percent increase on MAX and bus lines. The highest weekday ridership figures occurred on lines that offer frequent service and have long routes, such as the MAX Blue Line and Route 57-TV Highway.

All TriMet buses have ramps or lifts to accommodate persons who have difficulty with steps or who use mobility devices. As of 2012, low-floor buses with ramps make up about two-thirds of the fleet. On MAX, every train has at least one low-floor car to accommodate people with disabilities. All WES commuter trains have accessible level boarding from station platforms. TriMet records the location and frequency of all bus ramp/lift deployments to understand where additional bus stop or other access improvements may be needed.

TriMet bus stops range from signposts along unimproved road shoulders to more functional and fully-accessible stops with sidewalk connections, concrete pads, bus shelters, benches, trash cans and lighting. MAX and WES stations and transit centers generally have more amenities than individual bus stops, with shelters and seating, real-time arrival displays, bicycle parking, public art, and at some locations, food vendors. TriMet has guidelines and standards for bus stops and amenities. Due to budget limitations TriMet typically provides shelters and benches only at the highest ridership bus stops (and at all rail stations). Out of 1,993 transit stops in Washington County in spring 2012, 318 (16 percent) had a shelter, bench and trash can. Several “major bus stops” (stops with 100 or more boardings during an average weekday) have no amenities; many of these deficient stops are on busy roadways like Cedar Hills Boulevard or Hall Boulevard.

Table 3.19: TriMet Transit Routes Serving Washington County

Route (Weekday frequent service routes in bold)	Terminus (outbound)	Terminus (inbound)	Headways (weekday peak/ mid-day, minutes)	Days of Service
MAX Blue Line	Hillsboro	Gresham	7/15	7 days
MAX Red Line	Beaverton/ Hillsboro	Portland Airport	15/15	7 days
Westside Express Service (WES) Commuter Rail	Wilsonville	Beaverton	30/NA	M-F peak
12 – Barbur/Sandy Blvd	Tigard TC	Parkrose- Sumner TC	15/15	7 days
20 – Burnside/Stark	Beaverton TC	Gresham TC	15/40	7 days
36 – South Shore	Tualatin Park & Ride	Lake Oswego TC or Portland	30/90	M-F
37 – Lake Grove	Tualatin Park & Ride	Lake Oswego TC	45/90	M-F
38 – Boones Ferry Rd	Tualatin Park & Ride	Portland City Center	30/NA	M-F peak

Route (Weekday frequent service routes in bold)	Terminus (outbound)	Terminus (inbound)	Headways (weekday peak/ mid-day, minutes)	Days of Service
43 – Taylors Ferry Rd	Washington Square TC	Portland City Center	50/60	M-F
45 – Garden Home	Tigard TC	Portland City Center	20/60	7 days
46 – North Hillsboro	Hillsboro TC	Shute/Dawson Creek Rd.	60/60	M-F
47 – Baseline/Evergreen	Hillsboro TC	PCC Rock Creek	15/30	M-F
48 – Cornell	Hillsboro TC	Sunset TC	30/30	7 days
50 – Cedar Mill (loop)	Sunset TC	Sunset TC	45/NA	M-F peak
52 – Farmington/185th	PCC Rock Creek	Beaverton TC	10/20	7 days
53 – Arctic/Allen	Beaverton TC	Beaverton TC	30/NA	M-F peak
54 – Beaverton-Hillsdale Hwy*	Beaverton TC	Portland City Center	30/30	7 days
55 – Hamilton	Raleigh Hills	Portland City Center	60/NA	M-F
56 – Scholls Ferry Rd*	Washington Square TC	Portland City Center	30/30	7 days
57 – TV Hwy/Forest Grove	Forest Grove	Beaverton TC	15/15	7 days
58 – Canyon Rd	Beaverton TC	Portland City Center	20/30	7 days
59 – Walker/Park Way	Willow Creek TC	Sunset TC	60/NA	M-F peak
61 – Marquam Hill/Beaverton	Beaverton TC	Marquam Hill	15/NA	M-F peak
62 – Murray Blvd	Washington Square TC	Sunset TC	30/30	7 days
64 – Marquam Hill/Tigard	Tigard TC	Marquam Hill	20/NA	M-F peak
67 – Bethany/158th	PCC Rock Creek	Merlo Rd / SW 158th	15/30	M-Sat
76 – Beaverton/Tualatin*	Legacy Meridian Park Hospital	Beaverton TC	30/30	7 days
78 – Beaverton/Lake Oswego*	Lake Oswego TC	Beaverton TC	30/30	7 days
88 – Hart/198th	Willow Creek TC	Beaverton TC	30/30	7 days
92 – South Beaverton Express	Murrayhill	Portland City Center	20/NA	M-F peak
93 – Tigard/Sherwood	Sherwood	Tigard TC	30/45	7 days
94 – Pacific Hwy/Sherwood	Sherwood	Tigard TC or Portland	7/45	M-F
96 – Tualatin/I-5	Commerce Circle	Portland City Center	10/NA	M-F peak

Source: TriMet, December 2015
**Only the shared portion of lines 54 and 56 on Beaverton-Hillsdale Highway have frequent service.*

Park and Ride Lots

In the suburban setting that characterizes much of Washington County, park-and-ride lots provide a convenient option for people who are not within reasonable walking or bicycling distance of a transit stop, but have access to an automobile. TriMet provides designated automobile parking at a majority of its rail stations in Washington County, on property either owned or leased by TriMet. Park-and-ride lots are available at other locations through leases and agreements with churches, businesses, and shopping centers. Many of these secondary locations are available Monday through Friday only. Table 3.20 lists TriMet-approved park-and-ride lot locations, which provide a total of 5,447 parking spaces.

Transit and Bicycles

Bicycling is a convenient method of traveling to and from transit stops that may be too far to reach by walking, or inconvenient to reach by car. Bicyclists may bring their bicycle aboard the transit vehicle, or park the bicycle at the transit stop. All regular TriMet buses and full-size SMART buses are equipped with retractable bike racks on the front of the vehicle, with room for two bicycles. MAX and WES cars also provide designated space for standard-size bicycles. Demand exceeds capacity on many trains serving Washington County, especially during peak hours. Most MAX and WES stations feature staple or loop-style bicycle racks – the most secure type of non-enclosed bicycle parking. TriMet also offers bicycle lockers at every MAX and WES station in Washington County, except at Tuality Hospital/SE 8th Avenue. As of October 2012, all TriMet bike lockers in Washington County were rented, with waiting lists in effect. In addition, TriMet recently installed electronic bike lockers at the Tigard WES Station and the Orenco MAX Station, which are available on demand as opposed to in six-month cycles for keyed bike lockers. The Sunset and Beaverton transit centers offer European-style bicycle parking facilities called bike-and-rides. These enclosed, secure facilities are accessed through a digital key card.

Table 3.20: TriMet Park and Ride Locations in Washington County

At Rail Stations	
Location (West to east, then north to south)	**Parking Spaces**
Hillsboro Parking Garage (Hatfield Government Center)	250
Hillsboro Intermodal Transit Facility (Tuality Hospital/SE 8th Ave)	85
Fair Complex/Hillsboro Airport MAX station	396
Orenco Station/NW 231st Ave MAX station	180
Quatama/NW 205th Ave MAX station	310
Willow Creek/NW 185th Ave Transit Center	595
Elmonica/SW 170th Ave MAX station	430
Beaverton Creek MAX station	417
Millikan Way MAX station	400
Sunset Transit Center	627
Hall/Nimbus WES station	50
Tigard Transit Center (Tigard WES station)	100
Tualatin South Park & Ride* (Tualatin WES station)	147
TOTAL	**3,987**

At Other Locations	
Location	**Parking Spaces**
Bethel Congregational Church* 5150 SW Watson Ave	50
Boones Ferry Community Church* 20500 SW Boones Ferry Rd	20
Cedar Hills United Church of Christ* 11695 SW Park Way	46
Cedar Mill Bible Church* 12208 NW Cornell Rd	16
Christ the King Lutheran Church* 11305 SW Bull Mountain Rd	30
Mohawk Park & Ride SW Martinazzi & Mohawk	232
Progress Park & Ride SW Scholls Ferry & Hwy 217	122
Seventh Day Adventist Church* 14645 SW Davis St	113
Sherwood Park & Ride* SW Main & Railroad	30
Sherwood Regal Cinemas* 15995 SW Tualatin-Sherwood Rd	50
Somerset Christian Church* 16255 NW Bronson Rd	30
Southminster Presbyterian Church* 12250 SW Denney Rd	20
Tigard Park & Ride SW 74th & Pacific Hwy	220
Tualatin Park & Ride SW 72nd & Bridgeport	466
Valley Community United Presbyterian Church,* 8060 SW Brentwood St	15
TOTAL	**1,460**

Source: TriMet, http://trimet.org/parkandride/index.htm

**Parking available Monday through Friday only.*

Other Public Transit Providers

SMART

South Metro Area Regional Transit (SMART) operates seven fixed-route bus or shuttle routes in the Wilsonville area. Two SMART routes have stops in Washington County. Route 2X connects the Wilsonville WES station and Wilsonville Civic Center area with TriMet's Tualatin Park-and-Ride Lot in Washington County and Barbur Transit Center in southwest Portland. Route 5 has a northern terminus at SW Commerce Circle near the I-5/Elligsen Road interchange in Washington County. This location provides connections to TriMet's #96 express buses to downtown Portland. Route 5 proceeds southward on SW 95th Avenue through a major Wilsonville employment area, ultimately terminating at the Wilsonville WES commuter rail station. Route 6 connects the Canyon Creek Business Park east of I-5 with the Wilsonville WES station. Other SMART bus routes provide service to Washington County residents by offering connections from the Wilsonville WES station to other locations in Wilsonville, as well as to Salem and Canby. For example, Washington County residents can commute to State of Oregon jobs in Salem using a combination of WES commuter rail and SMART's 1X express bus.

Yamhill County Transit Area

The Yamhill County Transit area (YCTA) provides a hub-and-spoke network of bus routes centered in McMinnville. Two YCTA routes extend into Washington County. Route 33 connects McMinnville, Carlton, Yamhill, Gaston, Forest Grove, and Hillsboro. The 99W Link consists of three related bus routes that connect McMinnville, Lafayette, Dayton, Dundee, Newberg, Sherwood, and Tigard. The 99W Link service terminates at Tigard Transit Center, providing connections to TriMet's WES and bus #12-Barbur/Sandy.

Columbia County Transit Division

Columbia County operates a system of shuttle buses collectively called the "CC Rider," including two routes that extend southward into Washington County. The Nehalem Valley Route provides service between Vernonia, Stub Stewart State Park, Staley's Junction, and TriMet's Willow Creek Transit Center, generally following Highway 47, Highway 26, and 185th Avenue. The St Helens/Scappoose to Hillsboro/Beaverton route connects St Helens and Scappoose in Columbia County with destinations in central Washington County, including the Portland Community College Rock Creek Campus, the Tanasbourne Regional Center, and Willow Creek Transit Center.

Tillamook County Transportation District

Tillamook County's bus service, known as "The Wave," includes a route from Tillamook to the Portland metro area. Route 5 Tillamook-Portland provides two round trips per day, seven days a week, with stops at the Tillamook Forest Center, Banks, North Plains, Tanasbourne, and the Sunset Transit Center. The route continues to Union Station in downtown Portland.

Private and Non-Profit Transit Providers

Ride Connection

Ride Connection, a Portland-based non-profit organization, provides several kinds of service in Washington County: door-to-door paratransit for seniors and people with disabilities; rural transportation for the general public; rural and urban job access for transportation-disadvantaged commuters; circulator routes for seniors in King City and Beaverton; and four fixed-route transit services. The latter services consist of GroveLink serving Forest Grove, the Washington County Community Bus connecting Forest Grove, North Plains, Banks and Hillsboro, the Tualatin Shuttle, and North Hillsboro Link. Ride Connection also offers a number of educational programs intended for older adults and people with disabilities, including one-on-one travel training and group travel training. Ride Connection is funded through an agreement with TriMet, and with grants from federal, state, foundation, corporate and individual entities. In 2011 Ride Connection provided over 416,000 rides, and offered travel training to over 1,000 participants in 2011.

OC&W Coachways

Northwest POINT (Public Oregon Intercity Transit) is one of three inter-city shuttle bus routes in Oregon operated by the private sector OC&W Coachways, with supplemental funding from ODOT. This particular route -provides twice-daily round trips between Portland Union Station, Cannon Beach, and Astoria. The service includes a "flag stop" in Manning along Highway 26 in western Washington County.

Employee and Student Shuttles

Washington County's two largest employers, Intel and Nike, each operate fleets of employee shuttles. In addition to transporting employees between various corporate campuses in the County, the shuttles also provide connections to public transit. The shuttles are a valuable service, encouraging employees to use transit instead of driving, and reducing the inconvenience of the "last mile" gap between transit and the workplace. The most significant employee shuttles that connect with transit are:

PCC Shuttle Bus

- The Intel shuttle connecting Orenco Station MAX station with Ronler Acres campus;
- The Intel shuttle connecting Fair Complex MAX station with Jones Farm campus; and
- A group of Nike shuttles that connect to Millikan Way, Beaverton Creek, and Elmonica MAX stations. Nike reported 84,000 person trips on its five employee shuttles in fiscal year 2012 (roughly 350 trips per average weekday).

Ridership data on Intel shuttles was not available, but the company provides:

- 16 scheduled morning trips from Orenco Station MAX to Ronler Acres;
- 18 scheduled evening trips from Ronler Acres to Orenco Station MAX;
- 19 scheduled morning trips from Fair Complex MAX to Jones Farm; and
- 12 scheduled evening trips from Jones Farm to Fair Complex MAX.

Portland Community College (PCC) operates free shuttles for students, faculty, and staff traveling between different campuses. The shuttles operate weekdays only, and do not run during the summer term. Two PCC shuttles operate within Washington County:

- The PCC Blue Line shuttle provides 11 weekday round trips between PCC Rock Creek Campus, Sunset Transit Center and PCC Sylvania Campus in southwest Portland.
- The PCC Red Line shuttle provides 10 roundtrip weekday round trips between PCC Rock Creek Campus, Sunset Transit Center and PCC Cascade Campus in North Portland.

System wide ridership of PCC's shuttles has doubled in the past five years, totaling 265,190 trips in Fiscal Year 2011-12.

Transit Needs

While Washington County enjoys a relatively robust transit system compared to other suburban/rural American counties, plenty of transit service and amenity needs remain. As Washington County continues to grow, new transit service improvements and expansions will be necessary. This section summarizes existing and future transit needs based on public comment, technical analysis, and planning efforts undertaken by other agencies.

Public Comments about Transit

Public involvement conducted for the TSP Update, combined with community input from other planning projects (including the *Aloha-Reedville Study and Livable Community Plan* and *TV Highway Corridor Plan*), revealed a variety of concerns about transit service, amenities, and safety in Washington County. Major themes and particular concerns raised during the public involvement process are summarized below:

- The TriMet network in Washington County disproportionately accommodates travel to and from downtown Portland, while inadequately serving trips within Washington County.
- It is often difficult to reach major employment areas by transit.
- Better north-south service is needed, particularly along the Cornelius Pass Road/Century Boulevard corridor.
- Southern Washington County has poor transit service, including the Tualatin-Sherwood employment area and southern Tigard.
- Transit service in Forest Grove is lacking beyond the terminus of the #57 bus downtown.
- Transit service is needed on Cooper Mountain as it becomes increasingly developed.
- Better transit service is needed in the rural area, including service to Gaston.
- Direct bus service between Bethany Town Center and Sunset Transit Center would be more convenient than the current connection to MAX at Merlo Road.
- Bus stop amenity and access improvements are needed along busy, wide roads like TV Highway, Hall Boulevard and Evergreen Parkway.
- Future MAX or other rail service has public support in Forest Grove and Cornelius.
- Bad behavior and crimes occur on MAX, potentially due to the isolation of the operator.
- SMART, with its smaller vehicles, may be a good example of more flexible, community-serving transit.

High-density housing near Orenco Max station

Analysis of Transit Service and Density

A geographic analysis of transit service and land-use patterns informs the discussion of transit deficiencies and future needs. Figure 3-28 compares existing transit service with household and employment distributions anticipated in 2035, based on the assumptions and methodologies described in the following paragraphs.

A location is considered to be "served by transit" if it is within reasonable walking distance of a transit stop. Commonly used thresholds to define walking distance to transit are one-fourth mile for bus service and one-half mile for rail service. This analysis follows suit, except that one-half mile is also used for frequent service bus routes (those with 15-minute peak headways). The analysis uses Euclidean (straight line) buffers of bus routes (lines) and rail stations (points), rather than network distance and individual bus stops. This means that transit service areas may be overrepresented in some locations, especially near major linear barriers such as freeways and creeks.

Transit frequency level of service (LOS) is defined by weekday peak-hour headways on each existing transit route. LOS classes are customized to TriMet's current portfolio of service frequencies and differ from guidelines in the *Highway Capacity Manual* published by the Transportation Research Board. LOS delineations for the purposes of this transit analysis are provided below:

- LOS A: 1 – 8.99-minute headways (includes routes with 7.5-minute or more frequent service)
- LOS B: 9 – 17.99-minute headways (includes 15-minute service)
- LOS C: 18 – 25.99-minute headways (includes 20-minute service)
- LOS D: 26 – 36.99-minute headways (includes 30-minute service)
- LOS E: 36-minute or greater headways (includes 45 and 60-minute service)
- LOS F: No regular service available.

Transit-supportive densities are based on the number of households and jobs per acre in traffic analysis zones (TAZs) as forecast for 2035 in the Regional Travel Demand Model. The generally accepted minimum density needed to support regular transit service is three households per acre or four jobs per acre. This analysis goes further, matching increasing densities with more frequent transit service. First, households and jobs are combined into a single unit of measurement – "household/job equivalent units" (HHJEUs) – by multiplying the number of jobs in a TAZ by 0.75 and then adding them to the number of households in that TAZ. Dividing the resulting number by the gross acreage of the TAZ results in density; which is then assigned to one of the following classes:

- 0 – 2.99 HHJEU/acre: not a transit-supportive density,
- 3 – 5.99 HHJEU/acre: appropriate for LOS E (45-60-minute or less frequent headways),
- 6 – 8.99 HHJEU/acre: appropriate for LOS D (30-minute headways),
- 9 – 11.99 HHJEU/acre: appropriate for LOS C (20-minute headways),
- 12 – 19.99 HHJEU/acre: appropriate for LOS B (15-minute headways), or
- 20 HHJEU/acre or greater: appropriate for LOS A (7.5-minute or more frequent headways).

Transit service areas, classified by frequency level of service, are overlaid with TAZs, classified by households and jobs per acre. The two measures are compared by performing a spatial join. Any given location can then be described as not served, underserved, appropriately served, or well served by transit. These conditions are illustrated in Figure 3-29. According to the analysis, areas that would be underserved by existing transit service in 2035 include:

- Northwestern Forest Grove (prior to the implementation of GroveLink service)
- Most of job-rich north Hillsboro, from Brookwood Parkway eastward to the Tanasbourne/Amberglen area,
- The entire urban portion of the Cornelius Pass Road corridor, from West Union to South Hillsboro,
- Areas of Bethany that are not near the town center or Bethany Boulevard, including North Bethany, Laidlaw Road (east of Bethany), and 174th Avenue,
- Cedar Mill Town Center,
- The 158th Avenue corridor from Sunset Highway to Jenkins Road,
- Raleigh West industrial area in Beaverton, centered on the intersection Western Avenue and Allen Boulevard,
- Washington Square Regional Center on both sides of Highway 217,
- Progress Ridge, Bull Mountain and urban reserves to the north and west,
- The Tigard Triangle and 72nd Avenue employment areas near the I-5/217 interchange,
- Southern areas of Tigard, especially along Durham Road,
- The Tualatin-Sherwood industrial employment area, and
- Southern and western neighborhoods of Sherwood.

Many of these areas are underserved based on present densities and transit service. Areas shown as well- served include less-densely developed places than what a high-frequency transit route would typically serve. Such areas often correspond with single-family neighborhoods and suburban retail areas near frequent service transit lines including MAX, bus #57–TV Highway and bus #52–Farmington/185th. Portions of Aloha, Cornelius, Rock Creek, and Raleigh Hills meet this description and benefit from it. Being well served by transit does not mean that transit service should be reduced or that transit headways should be longer in these locations. It may indicate where denser development could be feasible, if a number of other criteria were met, including support by the community and local officials. Many other factors play a role in transit demand and ridership, including the demographic and socio-economic characteristics of neighborhoods (especially income and age), the safety and "walkability" of areas near transit stops, the reliability of transit service, and qualitative perceptions about the transit experience.

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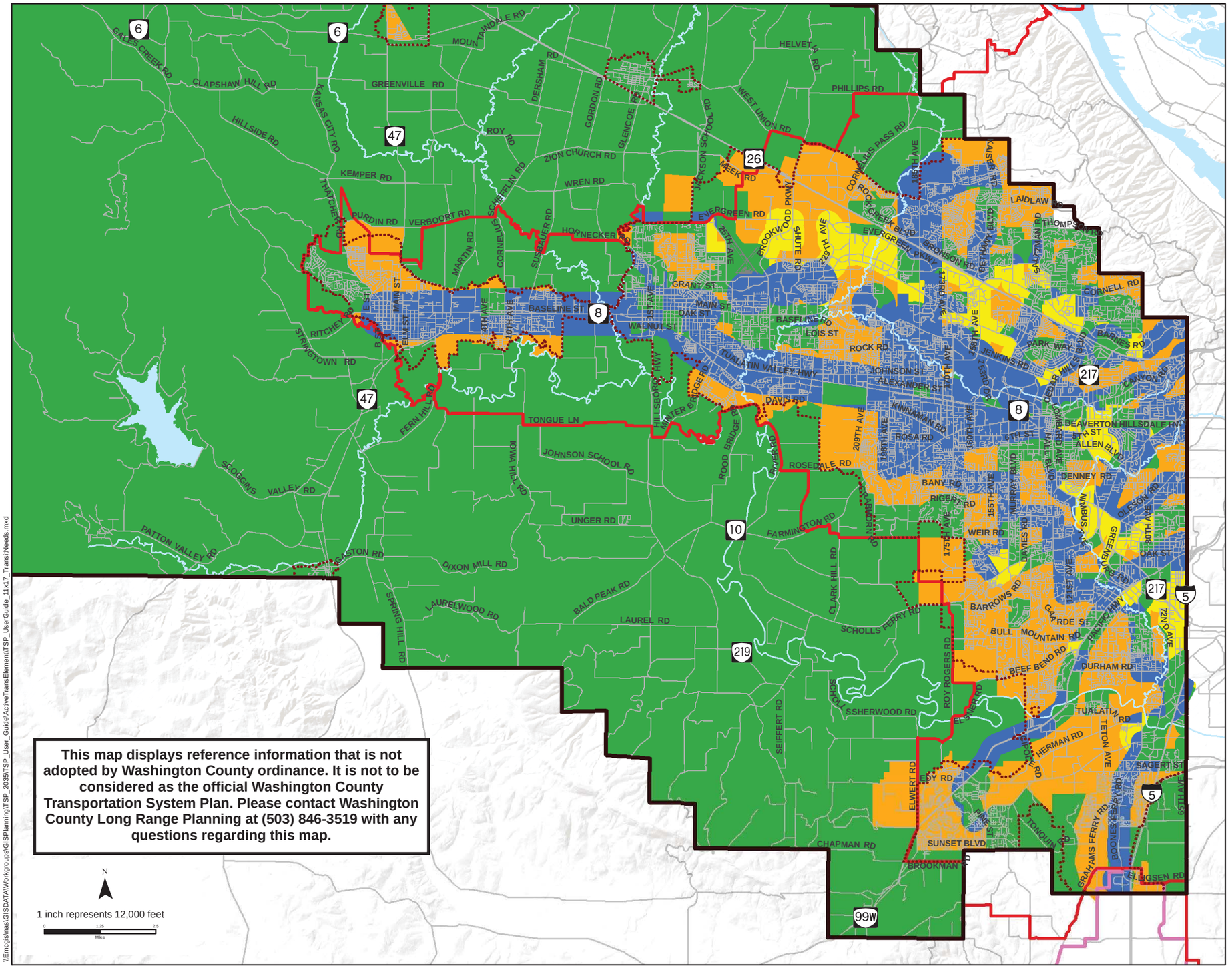
Transportation System Plan User's Guide

Transit Element

Transit Service Needs Analysis



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.

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- Well-served by Transit
- Appropriately Served by Transit
- Underserved by Transit
- Underserved - No Transit
- TriMet Service District
- SMART District
- Steets
- Urban Area
- County

Figure 3-28

Online Map: http://arcg.is/1N7Z4yl

Department of Land Use & Transportation
Planning and Development Services Division

Effective: November 27, 2015

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TriMet Service Enhancement Plans

In 2012, TriMet began a study of transit service needs throughout the Portland region, starting with the *Westside* and *Southwest Service Enhancement Plans*, which collectively cover TriMet's entire service district within Washington County. Data collection included a public survey of resident and worker travel habits and perceptions, interviews with study-area stakeholders, and a geographic analysis of residential concentrations, employment hubs, and commuting travel patterns. TriMet's findings reveal existing or future needs for transit service in many of the areas described in Washington County's analysis above, including:

- Laidlaw Road and 174th Avenue in Bethany,
- 170th Avenue south of Elmonica MAX station,
- Century Boulevard (including present-day 229th and 231st avenues and a future bridge over Rock Creek) from Gordon Faber Recreation Complex to the South Hillsboro plan area,
- Brookwood Parkway/Avenue from Fair Complex or Hawthorne Farm MAX station to the South Hillsboro/ Witch Hazel area,
- Evergreen Road/Parkway, Shute Road and Butner Road in north Hillsboro,
- Horizon Boulevard and Barrows Road in the Progress Ridge area of south Beaverton,
- Durham Road in Tigard, and
- Tualatin-Sherwood Road.

For many of the corridors listed above, significant development and infrastructure investment would need to occur before TriMet provides new service. For example, a route along the Century Boulevard corridor would likely be prompted by major development in the South Hillsboro plan area and construction of the Century Boulevard Bridge over Rock Creek. In the near term, TriMet plans to focus largely on restoring more frequent service on existing bus routes that were impacted by prior service cuts. TriMet's service enhancement plan recommendations are incorporated into the Transit System Map with a small number of minor differences.

Bus Stop Amenity Needs

As mentioned earlier, TriMet does not have sufficient resources to provide the full array of amenities (shelters, benches, trash cans) at every bus stop. TriMet works with partner jurisdictions including Washington County to appropriately match amenities with transit patronage at each stop. TriMet generally does not provide shelters and benches at locations that lack sidewalks and curbs. The geographic comparison of major bus stops and stops without amenities reveals stops that may warrant amenity improvements. Concentrations of such stops include:

- Baseline Street in Cornelius,
- TV Highway between River Road and Brookwood Avenue in Hillsboro,
- Cedar Hills Boulevard between Sunset Highway and Hall Boulevard,
- Beaverton-Hillsdale Highway between Lombard Street and Oleson Road,
- Hall Boulevard in the Washington Square Regional Center,
- Downtown Hillsboro, and
- Downtown Beaverton.

Access to Transit Needs

TriMet's *2011 Pedestrian Network Analysis Project* assessed the availability of pedestrian amenities, such as sidewalks and crosswalks, near high-ridership transit stops throughout the region. Locations with a significant concentration of high-ridership transit stops, a relatively high density and mix of land uses, and an observed deficiency of pedestrian facilities, were advanced as "focus areas" for further site study and consideration of solutions. According to the analysis,

Washington County contains four focus areas where safer access to transit should be prioritized. The analysis recommends specific solutions to address these needs, including wider sidewalks, enhanced and more frequent pedestrian crossings, pedestrian pathways, and bus shelters. Each focus area includes at least a one-half-mile buffer around the location listed in the table. The focus areas are:

- SW Farmington Road and Murray Boulevard,
- Tanasbourne Regional Center,
- Tigard Transit Center, and
- SW Beaverton-Hillsdale Highway and Scholls Ferry Road.

Detailed recommendations for each site are included in the *Existing Conditions & Future Needs Report*.

Other Transit Needs

Based on observed conditions and public input, other transit needs in Washington County are summarized below:

- Additional and higher-quality bicycle parking at MAX and WES stations, including more bicycle lockers, bike-and-ride facilities, or other secure bike parking solutions. Based on ridership and major employment locations, bicycle parking improvements could particularly benefit MAX stations at Willow Creek, Millikan Way, Hatfield Government Center, Orenco Station, and Fair Complex. Outside of Washington County, a bike-and-ride at Goose Hollow MAX station in Portland would provide significant utility for travelers who commute from Portland to Washington County, and could potentially reduce demand for bringing bikes aboard MAX.
- Bus pull-outs or other operational treatments at in-lane bus stops on roadways with congestion problems, including TV Highway and 185th Avenue; companion solutions may also be helpful, such as queue-jump lanes in which buses can proceed through an intersection using a right-turn lane before or after a bus stop. Transit signal priority is another tool that can improve transit service reliability along with general traffic operations. It extends a traffic signal green phase by a few seconds if an approaching bus is observed to be running behind schedule.
- Real-time transit arrival displays at any rail stations that lack them, and at appropriate major bus stops.
- A comprehensive look at park-and-rides, including demand, capacity, pricing, redevelopment considerations, and structured parking. The most obvious location where demand exceeds capacity is at the Sunset Transit Center. Car parking here is usually unavailable after 7:30 AM on weekdays, which may discourage some transit use.
- A comprehensive rider's guide for the many overlapping transit services in Washington County. Information about other services is posted on the TriMet website at: *http://trimet.org/schedules/othertransit.htm*.

High Capacity Transit Planning

Metro completed a *Regional High Capacity Transit (HCT) System Plan* in 2010; the first comprehensive HCT vision for the Portland region since 1982. The HCT Plan explored the feasibility of new light rail, commuter rail, rapid streetcar, or bus rapid transit lines in the region to improve mobility and transit performance, and to support land use goals set out in the *Metro 2040 Growth Concept*. HCT routes are envisioned to connect the region's centers - those areas with higher densities, mixed land uses, walkable streets, and higher expectations for non-automobile modal targets. Metro developed the HCT Plan in coordination with TriMet, counties, cities, and a range of private stakeholders. The HCT Plan also included public workshops in communities throughout the region.

Starting with 55 potential HCT corridors collected from past plans, stakeholder interviews and public workshops, the project team used a screening process based on ridership, cost, environmental constraints, equity, connectivity, congestion, land use and travel demand. This resulted in 18 refined HCT corridors divided into four tiers. Eight proposed HCT corridors are located within Washington County The tiers and proposed corridors are described in the Transit System Map section and mapped in Figure 3-28. In 2013 planning began on the Southwest Corridor HCT connecting Tualatin, Tigard and Portland.

Transit System Map

The Transit Element identifies the future transit network as envisioned in the TriMet *Westside Service Enhancement Plan* and *Southwest Service Enhancement Plan* and the Metro *Regional High Capacity Transit System Plan*. It also responds to the Transit Service Needs Analysis (Figure 3-28 in this User's Guide) included in the *TSP Existing Conditions and Future Needs Report* and assumes the continuation of existing transit services. The Transit Element also identifies a number of "point" features including Transit Centers, Park-and-Rides, Bicycle Transit Facilities, and Major Transit Stops. The Transit Element does not identify or map paratransit services. However, it does identify potential areas for community shuttle service. Figure 3-29 includes the Transit System Map.

Transit System Classifications

Existing High Capacity Transit

High Capacity Transit (HCT) is a transit service that carries high volumes of passengers quickly and efficiently between locations. Defining characteristics of HCT include the ability to bypass traffic and avoid delay by operating in exclusive or semi-exclusive rights-of-way, faster overall travel speeds due to station spacing, frequent service, transit priority street and signal treatments, and premium station and passenger amenities. Transit modes most commonly associated with HCT include light rail, commuter rail, rapid rail, rapid streetcar and bus rapid transit. Existing HCT routes shown on the Transit Element include West Side MAX light rail (Blue and Red lines) and WES Commuter Rail.

High Capacity Transit Study Corridors

HCT Study Corridors represent future HCT routes as shown in Metro's Regional High Capacity Transit System Plan 2035, adopted in 2010. HCT Study Corridors require further refinement and coordination among all affected jurisdictions in order to determine the location, transit mode and right-of-way needs associated with each corridor. The Transit Element map shows HCT Study Corridors as wide lines that occasionally spread into larger areas in cases where multiple routes are possible. Metro's Regional High Capacity Transit System Plan 2035 divides HCT corridors into four implementation tiers. Within Washington County, the tiers and proposed corridors are defined as follows:[18]

Near term regional priority corridors: Corridors currently most viable for implementation:

- Corridor 11: Portland to Sherwood in the vicinity of Highway 99W (the "Southwest Corridor"),
- Corridor 34: WES commuter rail service improvements to 15-minute all-day service.

Next phase regional priority corridors: Corridors where future HCT investment may be viable if recommended planning and policy actions are implemented:

- Corridor 17: Sunset Transit Center to Hillsboro in the vicinity of Highway 26/Evergreen Parkway
- Corridor 17D: Tanasbourne/Amberglen extension
- Corridor 28: Clackamas Town Center to Washington Square in the vicinity of Portland & Western Railroad
- Corridor 29: Clackamas Town Center to Washington Square in the vicinity of I-205/Highway 217
- Corridor 32: Beaverton to Hillsboro in the vicinity of TV Highway

Developing regional priority corridors: Corridors where projected 2035 land use and commensurate ridership potential are not supportive of HCT implementation, but which have long-term potential due to political aspirations to create HCT-supportive built form:

- Corridor 12: Hillsboro to Forest Grove extension.

18 *Metro Regional High Capacity Transit System Plan 2035 Summary Report, 2010*

ADOPTED TEXT

Regional vision corridors: Corridors where projected 2035 land use and commensurate ridership potential are not supportive of HCT implementation:

- Corridor 38S: Sherwood to Tualatin

As of this writing, refinement planning is underway for the Southwest Corridor (Corridor 11). The exact location and transit mode of Southwest Corridor HCT is not yet identified. The Transit Element map shows a broad swath that includes the routes that are currently under consideration.

Refinement planning for HCT in the TV Highway Corridor between Hillsboro and Beaverton (Corridor 32) is a key recommendation of the 2013 TV Highway Corridor Plan. The Transit Element map shows the corridor as a wide line that includes TV Highway, the adjacent Portland & Western Railroad and several other potential routes. An HCT Study is needed to determine the transit mode, location and right-of-way needs for future HCT along TV Highway. This need for further study is also reflected in the Refinement Area shown in the Roadway Element.

Frequent Bus Service
Frequent Bus Service is fixed-route bus service with 15-minute or shorter headways (times between arriving buses) all day, seven days a week, with the potential exception of longer headways during early morning and late night hours.

Regular Bus Service
Regular Bus Service is fixed-route bus service with 15-minute headways during weekday peak periods and 20 to 30-minute headways at other times.

Peak Period Bus Service
Peak Period Bus Service is fixed-route bus service that operates during the weekday morning and evening peak periods only.

Community Connector Service Area
A Community Connector Service Area is an area that is currently served, or could potentially be served, by lower-cost fixed-route bus service or flexible-route shuttle service. These are areas where regular bus service may not be feasible due to lower densities and/or historically low transit ridership.

Interregional Bus and Air Service
Interregional Bus and Air Services provide for longer-distance transit service that connects Washington County with locations outside of the immediate Portland metropolitan region, such as Yamhill County, Columbia County and the Oregon Coast and beyond. Interregional bus and air services and routes are not identified on the transit system map.

Transit Center and Bus or Air Terminal
A Transit Center and/or Bus or Air Terminal is a transit hub served by several bus routes and/or air or rail transit facilities. Transit Centers and Bus or Air Terminals allow riders to transfer between different transit services and/or modes in a safe, comfortable environment. Typical features of include shelters, benches, lighting, bicycle parking, traveler information and layover facilities for transit operators. Transit Centers and/or Bus or Air Terminal may include automobile parking, drop-off zones and retail uses.

ADOPTED TEXT

Park & Ride

A Park & Ride is a location where people are allowed to park private vehicles and access one or more transit services. A Park & Ride is typically a parking lot or parking structure adjacent to a transit stop. Most Park & Rides are on public property; however they also exist on private properties that allow parking through a lease or other agreement with the appropriate transit agency. As of 2013 there were 28 Park & Rides with more than 5,400 parking spaces combined in Washington County.

Bicycle Transit Facility

A Bicycle Transit Facility is a location at or near a transit stop that provides secure, enclosed bicycle parking accessed by a key card or other technology. The purpose of a Bicycle Transit Facility is to improve the viability and convenience of combining bicycle and transit modes for trips, and to address the "last mile" connection between a transit stop and a residence, place of employment or other location. Existing Bicycle Transit Facilities are found at Beaverton Transit Center and Sunset Transit Center. Proposed Bicycle Transit Facility locations are recommended in the TriMet Westside Service Enhancement Plan and include facilities at eight additional MAX stations, at Portland Community College Rock Creek Campus and in the proposed South Hillsboro town center.

Major Transit Stops[19]

Major transit stops include:

- Existing High Capacity Transit stations
- Transit Centers
- Bus stops on existing or planned Frequent Bus Service lines that are intended to provide a higher degree of passenger amenities.

Major transit stops may include traveler amenities such as shelters, lighting, seating, bicycle parking, real-time traveler information and/or other passenger amenities. Major transit stops are intended to be highly accessible and visible to adjacent building, while providing for quick and efficient transit service. The role of Washington County is to facilitate safe, comfortable access to Major Transit Stops through pedestrian enhancements and through Community Development Code provisions that promote transit-oriented building and site designs. Supportive pedestrian enhancements near Major Transit Stops may include (but are not limited to) sidewalk infill, pedestrian crossings (compliant with R&O 10-107, the Washington County Mid-Block Crossing Policy), curb cuts, street lighting, concrete pads between the sidewalk and curb and improvements that provide compliance with the federal Americans with Disabilities Act (ADA).

19 Washington County Community Development Code Section 380 – Convenient Access to Transit Overlay District – refers to Major Bus Stops. Provisions in Section 380 apply only to Major Bus Stops mapped in the Washington County Community Plans, not those mapped in the TSP. The Community Plans and/or Community Development Code may be updated in the future to include the Major Transit Stops as shown in the TSP.

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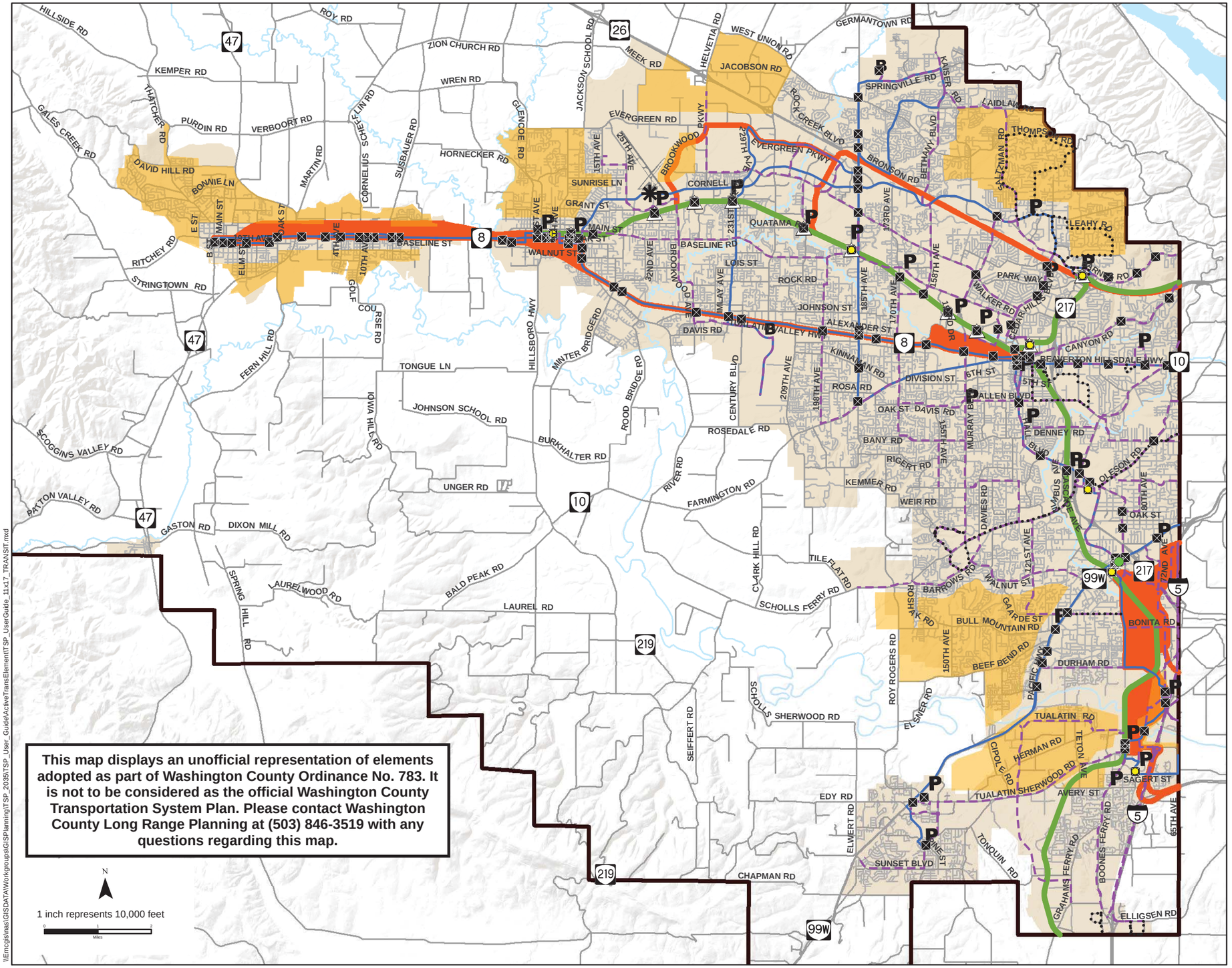
Transportation System Plan User's Guide



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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Transit Element

Transit System

- Air Terminal
- Bus Terminal
- Transit Center
- Major Transit Stop
- MAX w/ Bike Facility
- Bicycle Transit Facility
- Park and Ride
- Peak Period Bus Service
- Regular Bus Service
- Frequent Bus Service
- Existing High Capacity Transit
- High Capacity Transit Study Corridor
- Community Connector Service Area
- Other Roads
- County
- Urban Area

Figure 3-29

Online Map: http://arcg.is/1ED3l4g

Department of Land Use & Transportation
Planning and Development Services Division

Effective: November 27, 2015

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Transportation System Management and Operations Element

The Transportation System Management and Operations element of the Transportation System Plan (TSP) identifies systems and operational strategies for Washington County to pursue over time. This section focuses on the provision of systems to improve the management and operation of the integrated multimodal transportation network. Transportation System Management & Operations includes four functional areas: multimodal traffic management, traveler information, traffic incident response, and transportation demand management. These topics are organized into the three major sections shown below.

- MultiModal Traffic Management, Operations and Traveler Information
  - Traffic Control & Traveler Information
  - Bicycle & Pedestrian
  - Rural
- Traffic Incident Response
- Travel Demand Management Strategies

Washington County's Intelligent Transportation System Plan combines multimodal traffic management and operations and traveler information systems into a coordinated transportation system management architecture. At this time, Washington County does not envision development of a county-based traffic incident response program. The county coordinates with ODOT, which provides a dedicated and efficient incident response program (formerly known as Corridor Management Teams or COMET). Beyond the ODOT incident response program, Washington County relies on emergency services departments (such as the county Sheriff's Office and Tualatin Valley Fire & Rescue) to respond to incidents throughout the transportation system.

MULTIMODAL TRAFFIC MANAGEMENT, OPERATIONS, AND TRAVELER INFORMATION

Washington County seeks to improve the safety, security and movement of goods, people and services for all modes of the transportation network by using advanced technologies, coordinated management techniques, and by providing real-time traveler information. Building and managing a smarter, more efficient transportation system requires cooperation between Washington County, ODOT, and local agencies. Improving the management and operations of the integrated multi-modal transportation network necessitates a combined strategy of capital projects, use of technology, and public transportation. Many of these strategies may be used on corridors where Washington County operates the traffic signals. Washington County will lead these efforts and will coordinate with local agencies and ODOT on the implementation, as applicable.

Washington County, in partnership with numerous stakeholders, has developed an Intelligent Transportation System (ITS) Plan for the county's roadways. The ITS plan will guide the deployment of advanced technologies and management techniques to improve the safety and efficiency of the county's transportation system. The goals of the ITS Plan include:

- Improve the safety and security of our transportation system
- Improve the efficiency of the transportation system
- Provide improved traveler information
- Deploy functional and cost efficient ITS infrastructure
- Integrate regional ITS projects with local and regional partners

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The ITS plan provides a framework of policies, procedures, and strategies for integration of Washington County's existing resources to effectively meet future regional transportation needs and expectations. Key concepts include the following:

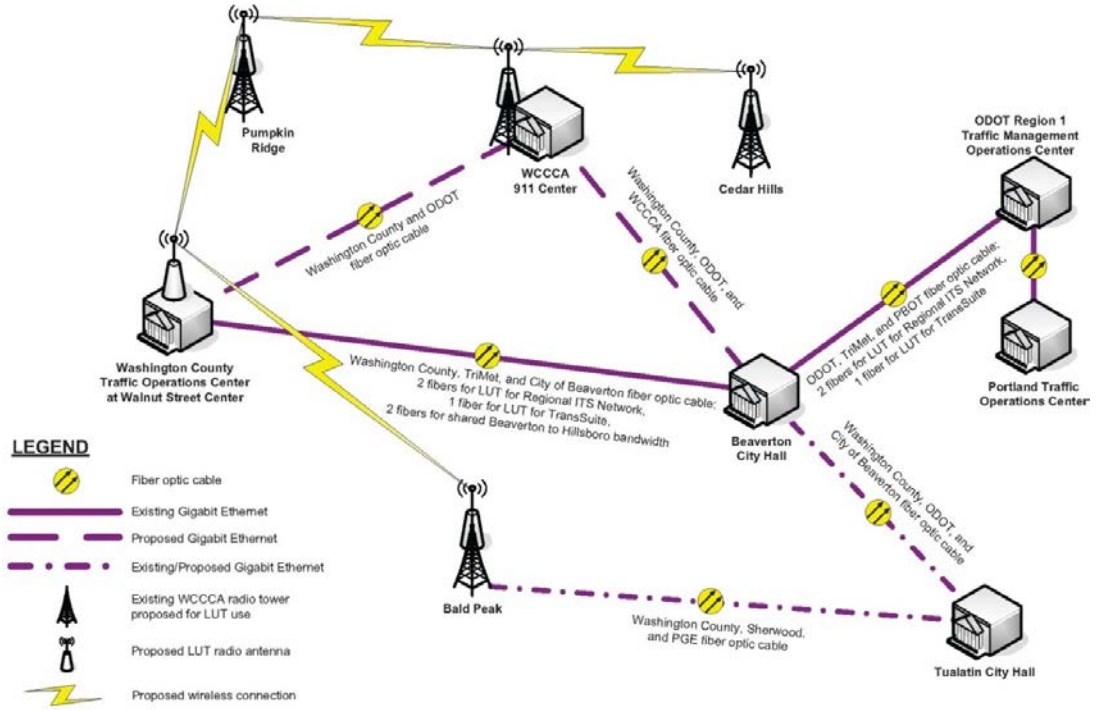
- The region cannot build itself out of congestion
- The region endeavors to maximize the efficiencies and improve the safety of the existing infrastructure
- The County strives to deliver better information about traffic conditions
- The plan fosters multi-agency coordination system operations.
- The Federal Highway Administration requires that all ITS projects funded through the Highway Trust Fund shall be in conformance with the National ITS Architecture and applicable standards

Traffic Control and Traveler Information

The ITS plan focus on two major categories of systems: 1) Communication Backbone & Centers, and 2) Arterial Management System and Traveler Information Systems. Figure 3-30 depicts the high-level network architecture to connect the operations centers operated by Washington County, with regional operations centers operated by other agencies.

ODOT traveler information signs on Highway 26

Figure 3-30: ITS Communications Backbone



Washington County operates four operations centers:

- Washington County Traffic Operations Center (TOC) at Walnut Street Center,
- Washington County Consolidated Communications Agency (WCCCA) 911 Center,
- Beaverton City Hall, and
- Tualatin City Hall.

Regional operations centers operated by other agencies include:

- ODOT Region 1 Traffic Management Operations Center, and
- City of Portland Bureau of Transportation TOC

Washington County Intelligent Transportation System

Communications Backbone

The communications backbone network uses a combination of fiber optic cable and wireless communications to connect the centers. The wireless paths shown in Figure 3-31 were identified through a planning level radio frequency analysis. In addition to center-to-center communications, several wireless paths were also identified to provide connectivity to some field devices based on line-of-sight analysis.

Arterial Management System and Traveler Information Systems

Washington County has identified a number of ITS strategies for improving corridor management and operations over time. These strategies include:

- Routine traffic signal maintenance/operations,
- Enhanced traffic signal timing operations,
- Transit signal priority,
- Traffic surveillance (cameras or detection),
- Trail counters,
- Event management,
- Arterial performance monitoring,
- Real-time traffic flow conditions, and
- Fiber optic cable backbone.

Washington County has deployed several arterial management projects. These projects are aimed at improving the safety and operational efficiency of the existing transportation infrastructure. Potential benefits for the transportation system and travelers include:

- Improved travel time reliability,
- Reduced travel delay,
- Reduced fuel consumption and greenhouse gas emissions,
- Reduced crashes and improved safety, and
- Comprehensive information for travelers to make informed decisions.

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Bicycle and Pedestrian ITS Strategies

Bicycle and pedestrian ITS strategies include information systems to collect data about bicycle and pedestrian travelers, as well as operational systems to enhance the transportation network for these travelers. Information systems may include bicycle detection and trail counters. Bicycle Detection at traffic signals supports the operation of the signal and collects information that the signal has responded to the detection of bicycles (i.e., the presence of the cyclist is counted). Washington County continues to work with county and local Parks and Recreation departments to install bicycle and pedestrian counters where trails cross arterial roadways.

System enhancements for bicycles and pedestrians may include the types of improvements described below.

- Pedestrian Signal Countdown Timers – Pedestrian signal countdown timers can be installed based on the requirements of the Manual of Traffic Control Devices.
- Bicycle/Pedestrian Crossing Enhancements – Enhance visibility of bicycles and pedestrians at crossings, pushbutton-activated beacons or traffic signals
- Bicycle/Pedestrian Based Signal Timing – Adjust signal timing to accommodate bicyclists and/or pedestrians. Including prohibiting flashing yellow arrow when there is a pedestrian call. Reduce pedestrian and bicycle delay at locations with high pedestrian and/or bicycle demand. Bicycles may require longer minimum green times, and longer clearance intervals.

Rural

Rural systems enhance the operation and safety of rural roadways. These systems are often prioritized at locations with a higher number of collisions. Rural systems may include:

- Weather Stations - Monitor adverse conditions and provide traveler information
- Intersection Warning Systems - Notify drivers of an upcoming intersection or cross-traffic with active warning systems
- Curve Warning Systems - Notify drivers of an upcoming curve using active warning systems
- Queue Warning Systems - Notify drivers that a queue exists ahead using active warning systems
- Size & Speed Warning Systems - Notify drivers of height, length, width, or speed restrictions, typically applied on roadways with compliance issues
- Speed Feedback Systems - Measure and display the speed of approaching vehicles in advance of locations where a slower speed is appropriate

TRAFFIC INCIDENT RESPONSE

At this time, Washington County does not envision development of a traffic incident response program. Washington County coordinates with ODOT, which provides a dedicated and efficient incident response program (formerly known as Corridor Management Teams or COMET). Beyond the ODOT incident response program, Washington County relies on emergency services departments (such as the Washington County Sheriff Office and Tualatin Valley Fire & Rescue) to respond to incidents throughout the transportation system.

TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is the general term used to describe any activity that provides an alternative to single occupant vehicle trips. Demand management encompasses a range of strategies such as carpooling, staggered work shifts or telecommuting. Strategies may encourage ridesharing (e.g., on site showers, lockers or bike parking), walking to work or providing flexible working hours. Such strategies are viewed as relatively low-cost initiatives that can help reduce traffic congestion and air quality problems. 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 will help accommodate this growth. Travel demand management strategies and programs have taken on increased importance and emphasis over time, particularly as interest in green-house gas reductions have increased.

Employers with more than 100 employees at a single work site are subject to the Department of Environmental Quality's Employee Commute Options (ECO) rule. Such employers are required by state regulations to have programs in place intended to reduce the percentage of employees who drive alone to work, and to regularly survey their employees about their commute patterns. An employer participating in an equivalent commute trip reduction program who does not achieve its target auto trip rate by the target compliance date must demonstrate that a good faith effort was made to achieve the target rate.

Washington County coordinates with the Westside Transportation Alliance (WTA) on a variety of employer based TDM strategies. The WTA, the primary Transportation Management Association (TMA) within Washington County, works with its partners and Washington County employers to offer workplace services and programs that help employees commute to work by transit, carpool, vanpool, bicycling and walking. These services include transportation fairs, assistance with ECO Rule compliance, surveying, events, incentive programs, and participation on local and regional transportation planning committees.

Travel Demand Management programs may include a wide variety of commute options and incentives, such as:

- Free TriMet passes for all employees
- Preferential parking for carpooling vehicles
- Bike storage and showers in locker rooms
- Compressed work weeks
- Telecommuting
- Individual Marketing Programs

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Part 4 – Implementation and Funding

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Ultimately, the value of the Transportation System Plan (TSP) will be determined by the success of its implementation. In order to assure that the transportation system effectively meets the needs of county residents and businesses, Washington County must make the commitments necessary to pursue implementation. How provisions are carried out is at least as important as what is in the TSP. Among the most important provisions, the TSP stresses the need for efficient management of the system over time. The TSP implementation element consists of a number of interrelated activities and processes that should be carried out on a regular basis. Implementation objectives and strategies are addressed in the following three goals: Goal 9: Coordination, Goal 10: Funding, and Goal 11: Maintenance.

This element provides background information on Coordination, Funding, and Maintenance, along with the goals, objectives, and strategies associated with each element.

MONITORING THE TSP

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Public capital improvement programs cover a broad range of scale and type of improvements and funding categories. Development of capital improvement and maintenance programs rely heavily on the TSP monitoring activities. Information provided by regular system monitoring is needed in order to make informed decisions regarding selection of construction and maintenance projects. Coordination with state, regional and local jurisdictions and their transportation planning processes is imperative in order to develop unified requests for funds and to help secure optimum benefits for the transportation systems within Washington County. A periodic review of funding and maintenance should include items such as an inventory of capital and maintenance expenditures, updates of planning-level project costs, estimates of anticipated revenues and an update of the long-term revenue forecasts.

Likewise, public involvement is critical during the development and implementation of the TSP. Such public involvement ensures that transportation needs are appropriately defined and met. Engagement of interested groups and members of the public in transportation planning, programming and project development activities ensures that system implementation is reasonably and fairly carried out.

Monitoring

Transportation system operating characteristics are influenced by a number of different factors, which should be reviewed regularly to determine whether changes in project lists, prioritization or general plan policies are needed. Characteristics to monitor include population and employment growth, changes in travel patterns or modes, development activity, traffic volumes and accident analysis transportation facility construction and condition and plan amendments that occur over time.

Periodic reviews of the TSP help Washington County achieve satisfactory transportation and land use benefits as well as progress towards achieving regional mode share targets. Amendments and administrative adjustments are necessary to enable Washington County to ensure implementation actions are consistent with and advancing Plan goals and objectives. Washington County amends and adjusts the TSP as necessary, according to the following procedural descriptions:

Legislative Plan Amendments

Changes which involve the creation, broad scale implementation, or revision of public policy, including map changes where property owners are directly affected may be processed as legislative plan amendments, including public hearings as provided for in the Community Development Code (CDC). These include but are not limited to the Functional Classification Map and descriptions, Bicycle System map (excluding alignment modifications to off-street pathways);, Plan goals, objectives and strategies, modification to the general location of facilities identified in the Plan and selection of the general location of facility in a Corridor Study Area.

Quasi-Judicial Amendments

When property is proposed for development and is affected by (i.e., contiguous to or traversed by) a proposed road alignment as shown on the functional classification map, a modification to the proposed road alignment may be processed as a quasi-judicial plan amendment. Such quasi-judicial plan amendments are provided for in the CDC. Quasijudicial plan amendments may include a public hearing when the road alignment affects other properties in the immediate vicinity. Applications for quasi-judicial plan amendments may be initiated by the County Board of Commissioners, the Director of the Department of Land Use & Transportation or the owners of property affected by the proposed alignment. A quasi-judicial plan amendment may be approved only if all the following criteria are satisfied:

1. The new alignment maintains the intent and purpose of the proposed alignment as originally shown on the Plan maps;
2. The new alignment will not adversely affect the carrying capacity, safety, or integrity of the transportation system;
3. The new alignment is necessary to preserve a significant natural feature, minimize engineering or construction constraints, or would result in a significant enhancement of the development potential of the affected properties;
4. The new alignment will not significantly increase the cost or complexity of any off-site improvements;
5. The new alignment does not have significant adverse effects on nearby property; and
6. The new alignment does not render a parcel unbuildable unless the owner consents.

Minor Adjustments include:

1. Adjustments to reflect minor modifications of existing roads outside an Urban Growth Boundary (UGB) that are determined to comply with the provisions of OAR 660-12-065.
2. Adjustments to reflect minor modification of a proposed road alignment that is part of a proposed development action within the UGB when the proposed change is contained within the subject site and does not adversely affect an adjacent property.

When these criteria are met, the change in alignment may be processed as part of a development application without separate notice or hearing. The Minor Adjustment criteria do not apply to adjustment of Special Area Streets.

Special Area Streets

For Special Area Streets, adopt road alignment corridor maps in Community Plans which allow limited movement of road centerlines through a Type II process. Modifications to streets to a greater extent than

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is allowed through a Type II process may be allowed through a Type III process subject to the criteria in the CDC. Modifications that do not meet the Type III criteria shall be subject to a quasi-judicial or legislative plan amendment process.

Director's Determination
The Director of the Department of Land Use & Transportation shall determine if a proposed road alignment modification is legislative, quasi-judicial or a minor adjustment.

COORDINATION

Coordination is essential in the implementation of the County's TSP. Input from community residents and businesses, a broad range of public agencies, elected officials, non-profit organizations, and special interest groups is needed in order to develop a transportation plan that meets the transportation needs and aspirations of the County in an efficient and equitable manner.

Public Involvement

Engaging the general public and interested stakeholders is imperative to ensure that the transportation system effectively meets the needs of all County residents and businesses, and to ensure that recommended transportation system improvements are implemented in a fair and equitable manner. Public involvement is critical during plan development to ensure that transportation needs are appropriately defined and that solutions are identified that will meet the community's aspirations. Washington County uses an active citizen involvement program during all stages of transportation planning and project development. Methods for engaging the public, interested stakeholders, and community groups are constantly evolving. In 2014 the County adopted *Public Involvement Guidelines for Transportation Planning*, Programs and Projects through Resolution & Order 14-115. As stated in the Guidelines,

Washington County TSP booth at the Beaverton Winter Market in February 2014.

> *Public input provides transportation decision makers with community insights that illuminate the issues being considered. Community input is an important consideration along with technical data, analysis, and professional expertise in helping decision makers reach an informed decision. LUT is committed to providing access to information and meaningful public participation opportunities in our transportation planning, programs, and projects.*

The Guidelines are a resource for:

- LUT staff and project team members involved in transportation planning, project selection, and project development, or final design and construction of capital transportation projects;
- Transportation planning, program, or project decision makers, stakeholders, and other participants; and
- The general public.

The guidelines describe the means and opportunities for public involvement in LUT transportation planning efforts, programs, and policies. They also include public information and involvement tools, techniques, and strategies to guide LUT's efforts to keep residents and project stakeholders informed and to enlist their help in planning, identifying, programming, and developing Washington County's future transportation improvements.

Agency Coordination

Agency coordination is essential in Washington County, where the State of Oregon, Metro, TriMet, 16 local governments, several special services districts (including Tualatin Hills Park & Recreation District), and a number of private enterprises either provide or rely on the transportation system. Local governments in Washington County have succeeded in coordinating and integrating their respective transportation plans, policies, programs, and transportation system improvements through a variety of activities conducted on an on-going basis; and through special committees or processes associated with individual planning and programming efforts.

Regular discussions at monthly meetings of the Washington County Coordinating Committee (WCCC) have strengthened consensus on transportation issues, funding, and investment strategies. The WCCC is composed of local elected leaders of Washington County and the cities within the County who review and comment on major land use and transportation issues, plans, and projects. It provides a forum for discussion of transportation issues, resulting in recommendations for a coordinated approach when appropriate. The WCCC's primary function is to establish positions of consensus on land use and transportation issues among Washington County's local governments, which may be carried into regional and state discussions as "countywide" positions. In addition, the WCCC has a specific role and authority in two countywide programs: the Major Streets Transportation Improvement Program (MSTIP) and the Transportation Development Tax (TDT) program.

The WCCC is supported by the WCCC Transportation Advisory Committee (WCCC TAC), which is composed of senior staff representatives from local governments. Submission of transportation activities, programs, and policies to the WCCC is voluntary and at the discretion of elected representatives.

Plan Coordination and Consistency Requirements

As noted in the Introduction to this Users' Guide, public policies at the state, regional, county, and local levels provide direction and legal requirements for transportation planning in Washington County. Coordinating and achieving consistency with other planning work is an important part of TSP development. Washington County's TSP Update was developed to be consistent with the following documents and policies summarized below.

Oregon Transportation Planning Rule (TPR)

Oregon Administrative rule 660-012 is referred to as the *Transportation Planning Rule* (TPR). It implements Statewide Planning Goal 12: Transportation. The purpose of the TPR is to ensure adequate coordination of transportation and land use planning for transportation system plans and in project development. The TPR is the legislative mandate that requires Washington County to prepare and update its transportation system plan.

Oregon Highway Plan (OHP)

The *Oregon Highway Plan* sets vision, policies, and strategies for investing in state and federal highways in Oregon. Since adoption of the last Washington County transportation system plan in 2002, there have been two major amendments to the OHP that affect Washington County. These are described in Part 1 of this document, under Framework Documents.

2014 Regional Transportation Plan (2014 RTP)

There are several key items in the RTP that affect transportation planning in Washington County. These include the designation of mobility corridors, performance targets, and mobility standards. These requirements, along with desired outcomes for the RTP are included in Part 1 of this document. Most of the adopted city transportation system plans and the Metro 2014 RTP use 2035 as their plan horizon year, and include some consideration of Urban Reserves adopted by Metro. Washington County's 2035 horizon planning year must be updated to match the regional transportation plan when it is updated.

Regional Transportation Functional Plan (RTFP)

The RTFP implements the goals, objectives, and policies of the RTP. If a transportation system plan is consistent with the RTFP, then it is also consistent with the 2014 RTP. Cities and counties in the Metro region carry out regional directives through the development and implementation of their respective transportation system plans. The RTFP includes requirements for the design of streets, transit systems, pedestrian systems, bicycle systems, freight systems and transportation system management and operations. The RTFP also includes specific requirements for the development and update of transportation system plans, the identification of transportation needs, assessment of solutions, and the use of performance targets and standards.

Local Adopted Transportation System Plans

Most cities in Washington County have adopted transportation system plans. Some cities are in the process of updating their plans. The Washington County TSP is consistent with adopted local transportation system plans; it will be updated, as appropriate, to reflect changes in local adopted transportation system plans.

Programming and Development Review

Many transportation system investments are completed by the development community as conditions of development approval. Implementing the TSP includes working with members of the development community to provide transportation system improvements proportional to the impacts of developments on transportation, and to ensure that the resulting transportation conditions reflect the aspirations of the community. Recognizing that many types of transportation improvements are defined by law as land use decisions, the County has adopted a specific land use review process, and standards for review of transportation improvements within unincorporated Washington County. The review procedures and standards are included in the county's Community Development Code (CDC); transportation development application notice requirements to the public and transportation service providers are also listed in the CDC.

The CDC implements the Washington County Comprehensive Plan through the adoption and coordination of planning and development regulations which provide for the health, safety and general welfare of the citizens of Washington County. Standards and requirements of the Community Plans, the Rural/Natural Resource Plan, and the TSP that are applicable to development applications, including but not limited to, urban land divisions, are specified in the CDC.

In general, Article V of the CDC identifies those public facilities and services that are necessary at a minimum level to accommodate development, including transportation facilities. Land within incorporated areas of Washington County may also be subject to Article V requirements, depending on the location of the development and if access to county roadways is contemplated.

Article VII of the CDC identifies public transportation improvements authorized by the TSP that are subject to development review, and establishes the standards and procedures for such review. A Project Review Committee consisting of Washington County Department of Land Use & Transportation (DLUT) staff evaluates applications for completeness and provides a recommendation to the DLUT Director and/or Hearings Officer.

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Goal 9: Coordination

Implement the Transportation System Plan by working with the public, community groups, transit providers, cities and other government agencies.

Objective 9.1 Improve the effectiveness of the planning process, by providing opportunities for citizens to participate in the planning and development of transportation plans, processes and projects.

- Strategy 9.1.1 Obtain a broad representation of public input and feedback on transportation system related planning, capital improvement programming and project selection pursuant to Washington County's Citizen Involvement Program, by:
  - Proactively undertaking community visioning.
  - Engaging citizens early and throughout the planning process.
  - Utilizing Citizen Participation Organizations and the Committee for Citizen Involvement as the primary ongoing citizen outreach forums.
  - Participating in and soliciting feedback from transportation related interest groups.
- Strategy 9.1.2 Utilize input from the Urban Road Maintenance District Advisory Committee (URMDAC) and the Rural Roads Operations and Maintenance Advisory Committee (RROMAC). Identify needs for advisory committee membership and fill the positions.
- Strategy 9.1.3 Utilize existing information programs, newsletters and media outreach. Investigate and incorporate new technological solutions to improve public participation.
- Strategy 9.1.4 Seek to involve and incorporate feedback from populations that are historically underserved by the existing transportation system or underrepresented in transportation planning in a culturally relevant and equitable manner.
- Strategy 9.1.5 Ensure the availability and transparency of transportation related data resources as appropriate.

Objective 9.2 Improve internal consistency and coordination with other Washington County plans and regulations.

- Strategy 9.2.1 Utilize the development review process to review development applications, apply transportation related standards (including parking and other requirements) and require transportation related improvements and/or right-of-way dedication.
- Strategy 9.2.2 Resolve conflicts between the TSP and transportation elements of Community Plans or the Rural/Natural Resource Plan in favor of the TSP.
- Strategy 9.2.3 Involve Project Review Committee in the project development and design process, as appropriate and exempt from review those types of improvements which generally do not have significant impacts or which involve final engineering, design, construction, operation, maintenance, repair or preservation decisions.
- Strategy 9.2.4 Require that project development and development review procedures are consistent with the goals of the TSP.
- Strategy 9.2.5 When amending the TSP, utilize text in the Implementation section and use the land use ordinance process as described in Chapter X (ten) of the Washington County charter, to engage the public in the Planning Commission and County Board of Commissioners hearing process.

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Objective 9.3 Coordinate with cities and agencies of Washington County as well as regional agencies to cooperatively plan and operate a seamless network of transportation systems and services.

- Strategy 9.3.1 Work with the Washington County Coordinating Committee (WCCC) and the County Board of Commissioners for countywide transportation coordination with cities in Washington County as needed.
- Strategy 9.3.2 Work with cities and other agencies to plan for transportation systems that account for Urban and Rural Reserves. For Urban Reserves, coordinate concept plans to provide transportation systems for these areas, including finance strategies to implement these plans. Coordinate the transportation planning of the urban area to avoid and or limit impacts on Rural Reserves areas.
- Strategy 9.3.3 Coordinate with cities and other agencies on the development of concept plans prior to annexation.
- Strategy 9.3.4 Work with cities and agencies of Washington County to operate the transportation system in a manner that is seamless to the traveling public. This includes but is not limited to design standards, the implementation of the advanced transportation control systems, operation and coordination of signal systems, signage, maintenance schedules and procedures and repairs.
- Strategy 9.3.5 Coordinate with the cities to resolve conflicts and transfer roads to the appropriate jurisdiction as urban unincorporated areas are annexed and urban expansion occurs.
- Strategy 9.3.6 Where appropriate, facilitate the annexation of Neighborhood Routes and Local Roads to cities, by designating these roads as “local access” routes.
- Strategy 9.3.7 Participate in the regional technical and policy decision-making processes.
- Strategy 9.3.8 Coordinate with Metro to develop, update and comply with the Regional Transportation Plan and the Regional Transportation Functional Plan requirements.

Objective 9.4 Ensure consistency with state and federal guidelines and coordinate planning activities, as appropriate, with state and federal agencies.

- Strategy 9.4.1 Work jointly with Oregon Department of Transportation (ODOT) to identify and resolve state/county issues.
- Strategy 9.4.2 Coordinate with ODOT and Department of Land Conservation and Development and others to comply with the requirements of the Oregon Statewide Planning Goals, other state requirements and review all plan amendment requests for consistency with the applicable provisions of the Transportation Planning Rule as set forth in OAR 660-12-060.

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FUNDING

The transportation funding element identifies transportation revenue sources and describes the County's overall funding strategy for needed transportation improvements. The information in this section reflects the funding conditions at the time the document was prepared. Projected revenues and estimated project costs are expected to change over time. Further, the list of candidate transportation improvements is anticipated to evolve as development occurs and new opportunities and challenges develop.

Washington County's transportation system funding currently is based on numerous revenue sources. The main principle in the use of these revenues has been the creation of a sustainable funding program to implement improvements over time. Figure 4-1 illustrates the current Countywide transportation funding structure and recent program revenues. The TSP assumes that transportation needs will outstrip available funding resources. The challenge is two-fold: 1) to make the best use of existing resources; and 2) to generate the support necessary to provide additional resources to implement the transportation system improvements and services that Washington County residents and businesses desire. The ongoing Countywide funding programs, such as the Gas Tax, the Urban Road Maintenance District (URMD) and Major Streets Transportation Improvement Program (MSTIP) are consistent sources of revenue that can be programmed for improvements over a period of time.

Figure 4-1: Transportation Funding Strategy

Washington County
Transportation Funding Strategy
"Three Legged Stool"

Existing Safety/ Capacity Deficiencies

Property Taxes (MSTIP)

- MSTIP 1: $27 million (1986-1989)
- MSTIP 2: $60 million (1989-1995)
- MSTIP 3: $265 million (1995-2004)
- MSTIP 3b: $65 million (2004-2007)
- MSTIP 3c: $138 million (2007-2013)
- MSTIP 3d: $175 million (2013-2018)
  Approx. $35 million/year
- ***Total to date:*** $730 million
- MSTIP 3e: $175 million (2018-2023)
  Approx. $35 million/year

System Maintenance

Gas Tax and User Fees

- Road Fund: State and county fuel taxes, state vehicle registration fees and weight-mile tax
  Approx. $24 million/year for maintenance-related activities
  Prioritization policy focuses on major transportation system first
- Urban Road Maintenance District (Property tax)
  Approx. $4 million/year
  Unincorporated Area Local Streets

Keeping Up with Growth

- TIF/TDT: Average $13 million/year since 1990
- North Bethany Transportation SDC and County Service District
- Proposed Bonny Slope West Transportation SDC

Funding and expenditures are divided into two primary types: capital and maintenance. While these categories are not mutually exclusive, many funding sources are dedicated primarily toward one type of expenditure or the other. Table 4.1 summarizes the major funding sources for capital improvements and maintenance in Washington County.

Table 4.1: Countywide Transportation Funding Programs

Source	Use	2013 Estimated Amount
State and County Gas Tax	For maintenance and operation of Arterials and Collectors	$23 million annual
Urban Road Maintenance District (URMD)	For maintenance and operation of unincorporated neighborhood and local streets, plus minor safety improvements	$3.7 million annual property tax
Major Streets Transportation Improvement Program (MSTIP)	To meet existing deficiencies on Arterials, Collectors and other major system improvements as determined by the Board of Commissioners	$35 million annual property tax (enacted 3 times, due to state law changes is now part of the general fund)
Transportation Development Tax (TDT)	For future capacity primarily on Arterials, Collectors and other major system improvements	Tax on new development, used for future needs. Varies based on amount of development
Special District Funding Sources	Dedicated funding for specific improvements within, or that directly benefit, the special district.	Varies

Capital Funding Programs

Capital projects include improvements that expand, enhance, or extend the current transportation system. The TSP identifies projects consistent with the financially constrained list of projects included in Metro's *2014 Regional Transportation Plan*. The TSP projected financial resources that will be available over the planning horizon are consistent with Metro requirements. The resulting revenue projections were compared to the identified project list to identify the gap between transportation system needs and the funding projected to be available for transportation system improvements to address these needs.

Major Streets Transportation Improvement Program (MSTIP)

MSTIP is an innovative pay-as-you-go program that is a key piece of Washington County's transportation funding strategy. MSTIP has been praised across the state as a smart and balanced response to transportation needs. Between 1986 and 2013, MSTIP built 111 multimodal projects (totaling $555 million) that County residents and businesses rely upon every day. MSTIP is a property tax measure that was passed by Washington County voters three different times during the 1980s and 1990s. Each of the three ballot measures identified a specific list of improvements that would be completed if the measure passed. In the late 1990s two statewide tax reform measures led to MSTIP being rolled into the County's general property tax rate. Those property tax revenues support the County's General Fund, which is used at the discretion of the Board of Commissioners. Thus far, the Board has invested the revenue generated by MSTIP in transportation improvements. The TSP funding structure assumes that MSTIP will continue to fund transportation improvements at the same rate. Periodically there have been discussions of a new MSTIP ballot measure. A new measure could ask voters to increase the Countywide property tax to pay for additional transportation investments. A new MSTIP ballot measure or other MSTIP increase is not included in the revenue assumptions for the TSP financial analysis (consistent with the requirements for a financially constrained regional transportation plan.)

Transportation Development Tax (TDT)

The TDT replaced the previous charge known as the Traffic Impact Fee (TIF), which was enacted in 1986. The TIF imposed fees on new development in unincorporated Washington County. In 1990, the TIF was enacted Countywide, including within the cities in the County. This was one of the first transportation-related development impact fees in the nation. The TDT is imposed on all new development in Washington County and is collected prior to the issuance of a building permit. In cases where no building permit is required (such as for golf courses or parks), the TDT is imposed prior to final approval of a development application. The TDT is based on the estimated traffic that will be generated by each type of development. The amount of TDT revenue generated varies by the amount and type of development that occurs during any given time frame. Revenue is held in a dedicated account and allocated toward transportation capital improvements as revenue becomes available.

North Bethany Transportation Funding

The North Bethany subarea has two additional funding programs: the North Bethany Transportation System Development Charge and the North Bethany County Service District for Roads. These charges provide additional revenue to fund specific capital improvements needed to serve the planned development. Together, these charges are intended to raise more than $35 million to be used towards 14 specific transportation projects. The timeline for the complete development of North Bethany is unknown. The funding strategy was designed to implement transportation improvements as development occurs and funding becomes available. These two funding programs will sunset once the area has developed and the specified improvements have been implemented and paid for.

New residential construction in North Bethany

New transportation districts are likely to be established in the future in conjunction with major developments, including within cities. Some of these may contribute financially to Washington County facilities. These districts have yet to be defined and therefore are not considered in this element.

Federal and State Funding

Federal and state transportation capital improvement funds are awarded through a variety of competitive programs. These programs allocate funds to the most competitive projects based on needs, system benefits, and available funding. Metro currently uses a process known as the Regional Flexible Fund Allocation (RFFA) to distribute Metropolitan Transportation Improvement Program (MTIP) funds to specific projects. The MTIP includes all federally funded transportation projects in the Portland metropolitan area, including projects planned by TriMet, the Oregon Department of Transportation, and local agencies receiving federal funds allocated by Metro. Regional Flexible Funds currently come from three federal grant programs: the Surface Transportation Program, the Congestion Mitigation/Air Quality Program, and the Transportation Alternatives Program. The RFFA process identifies which projects included in the RTP will receive funding. Regional Flexible Funds are allocated every two years and are included in the MTIP. Project and program applications may be nominated by jurisdictions or by transportation or transit agencies operating within the region. These funds can be spent on a number of different types of improvements, except for local street construction.

The MTIP also incorporates the Statewide Transportation Improvement Program (STIP), which is Oregon's four-year transportation capital improvement program. The STIP includes projects on the federal, state, city, and county transportation systems; multimodal projects (highway, passenger rail, freight, public transit, bicycle, and pedestrian); and projects in the National Parks, National Forests, and Native American tribal lands.

Local Improvement Districts (LIDs)

In addition to the Countywide transportation funding programs, there are a number of dedicated programs within Washington County specifically targeted toward local improvements. Frequently, LIDs are established to finance improvements or changes to identified streets. The additional property tax generated in these districts is dedicated to fund the improvements identified for the LID. LIDs are often needed to pay for paving of local roads or to otherwise maintain or preserve existing or new roadways. LIDs have been implemented in several areas in the County to finance installation or improvement of traffic management devices within neighborhoods.

Maintenance Funding Programs

In order to maximize the effectiveness of maintenance-related resources, the Board of Commissioners has adopted target service levels for all types of assets. The primary tool used for selecting road maintenance projects is the Road Maintenance Priority Matrix described in TSP Goal 11: Maintenance.

Urban Road Maintenance District (URMD)

The Urban Road Maintenance District was created by the voters in urban unincorporated Washington County in 1987; voters approved funding for the district in 1994. URMD provides preventive road maintenance services for public roads within URMD boundaries, except roads that are designated as Arterials or Collectors on the Functional Classification Map included as Figures 3-9 and 3-10 in this Users' Guide. Funding for maintenance for these roads comes from the Road Fund described below. In 2011 the Board expanded the services eligible for URMD funding to include construction of safety improvements. All roads under County jurisdiction within the District are eligible for safety improvements, including Arterials and Collectors.

Road Fund

Washington County receives a portion of state highway funds generated by Oregon's 30-cents-per-gallon tax on gasoline, truck weight-mile fees, and vehicle registration fees. Anyone who buys gasoline, drives a truck that meets requirements for weight-mile fees, or registers a vehicle in Oregon pays the tax. This fund is currently distributed 50 percent to the state, 30 percent to the county, and 20 percent to the cities. Washington County also collects a local one-cent-per-gallon tax on gasoline. Anyone who buys gas/diesel in Washington County pays this tax. These revenues are used by Washington County to maintain roads under County responsibility. In the future, these gas-tax related programs may change; however, it is not possible to speculate on the nature of potential changes. For the revenue projections in this Funding Element, no increases or other significant changes to the Road Fund are assumed.

Goal 10: Funding
Seek adequate and reliable funding for transportation.

Objective 10.1 Preserve existing transportation assets by providing adequate maintenance.

- Strategy 10.1.1 Look for opportunities to reduce maintenance costs through cooperative partnerships with other agencies and private enterprises, as well as periodic reviews and evaluations of best practices.
- Strategy 10.1.2 Consider long-term maintenance liabilities when planning and designing new transportation facilities.
- Strategy 10.1.3 Recognizing that recent declines in Gas Tax revenue are expected to continue, seek new or enhancement of existing funding sources for maintenance.

Objective 10.2 Promote equitable, sustainable and fiscally responsible transportation system funding.

- Strategy 10.2.1 Strive to distribute funding so that it is balanced between the various needs of the community, including modal and geographic considerations.
- Strategy 10.2.2 When considering the TSP or amendments to the plan, evaluate potential transportation system options with consideration for reasonable funding levels, given existing and anticipated future funding sources.
- Strategy 10.2.3 Regularly provide transparent reports on transportation funding sources and related investments.

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- Strategy 10.2.4 As appropriate, prior to allowing urban development within urban growth boundary expansion areas, develop and implement financing strategies that provide adequate funding for the transportation systems and services necessary for the anticipated urban development.

Objective 10.3 Monitor revenue sources, to meet transportation system needs.

- Strategy 10.3.1 Monitor Road Fund and Urban Road Maintenance District (URMD) revenue to anticipate the occurrence and magnitude of potential funding shortfalls.
- Strategy 10.3.2 Monitor the Transportation Development Tax (TDT) and the proportion of the future growth needs being met by development related revenue and credits.
- Strategy 10.3.3 Continue the commitment of the Major Streets Transportation Improvement Program (MSTIP) revenue to fund transportation needs.
- Strategy 10.3.4 Rely upon the Road Fund to continue to maintain and operate the Arterial and Collector roadway system, as appropriate.

Objective 10.4 Strategically invest in the transportation system to accomplish the other goals within the TSP.

- Strategy 10.4.1 Seek to establish new and/or enhance existing funding mechanisms to adequately support the capital and maintenance needs identified in the TSP.
- Strategy 10.4.2 Work with regional and state partners to investigate alternatives to or enhancements of the Gas Tax, as appropriate.
- Strategy 10.4.3 Seek non-traditional funding alternatives and sources to enhance the transportation system.
- Strategy 10.4.4 Consider active transportation projects and improvements for appropriate sources of available funding.
- Strategy 10.4.5 All funding decisions should be consistent with the TSP goals.

Objective 10.5 Seek adequate funding for transportation improvements that benefit Oregon as well as the Portland metropolitan region.

- Strategy 10.5.1 Work with state, regional and local agencies and elected officials to leverage and increase state funding for transportation projects within Washington County.
- Strategy 10.5.2 Coordinate with the Oregon Congressional Delegation to pursue adequate federal transportation funding for Oregon and the Portland metropolitan region.
- Strategy 10.5.3 Seek funding for transportation projects in Washington County through the Metro Transportation Improvement Program (MTIP) and Oregon Department of Transportation's (ODOT) Statewide Transportation Improvement Program (STIP).
- Strategy 10.5.4 Coordinate with other agencies and organizations to establish adequate, uniform and equitable methods for funding local transportation system needs.

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Transportation Project Development

Capital Project Priorities

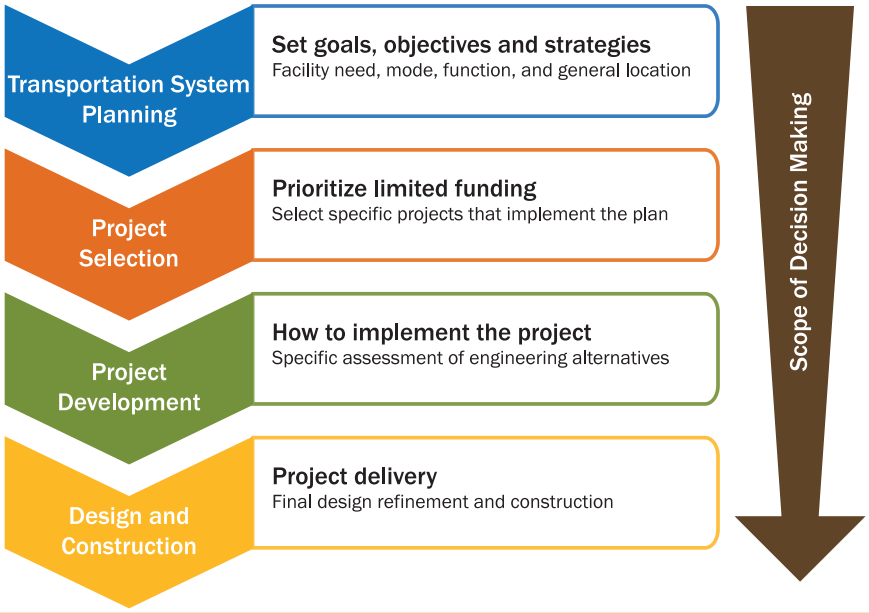
The goals, objectives and strategies of the TSP establish funding priorities. These priorities reflect a balance of important criteria to be considered when selecting projects for funding. Each funding program has different rules, criteria, and/or criteria weighting, which may change over time. Changes to the funding program rules and criteria are generally established through an independent process and are not directly linked to the County's TSP. Prioritizing proposed projects to meet the different goals of the TSP must be based on the specific situations being addressed. Therefore, the TSP must be flexible enough to respond to the rules and criteria established by the various funding programs. Identifying how a particular project may score against the established rules and criteria of each funding program is critical in determining which funding sources would be most appropriate for individual projects and in applying for funds from different programs. In many cases, it is important to demonstrate within the funding application how a particular project is consistent with the goals of the TSP, while meeting the specific requirements of the funding source.

The TSP identifies the need, mode, function, and general location of transportation system improvements, but does not establish specific project priorities. The Oregon *Transportation Planning Rule* (TPR) requires that transportation planning be divided into two phases: Transportation System Planning and Transportation Project Development. Transportation System Planning is a land use action and establishes a network of facilities and services to meet overall transportation needs including their function, mode, and general location. Transportation Project Development implements the TSP by determining the precise location, alignment, and design of the improvements included in the TSP. Projects authorized in an acknowledged transportation system plan are not subject to further justification with regard to their need, function, or general location.

Project Development Process

Figure 4-2 illustrates the transportation project development process for Washington County. This begins with establishing the need, mode, function, and general location of a transportation facility within the TSP, and proceeds through construction of the project. The figure depicts the four major steps in the transportation system planning and project lifecycle. Each stage of the process yields key decisions that shape the transportation system. The scope of decision-making becomes more narrowly focused as projects advance through these stages. "Bigger-picture" decisions occur during the planning and project selection stages; more specific project-level decisions occur in the project development and the design/construction stages. The public is kept informed and involved, as appropriate, throughout each of the transportation project development process steps.

Figure 4-2: Transportation Project Development Process



Bethany Boulevard project completed in 2014

Washington County Capital Project List

The Capital Project List included as Appendix C to this Users' Guide identifies transportation improvement project "candidates" that respond to identified transportation needs, along with associated order-of-magnitude costs for each project. An identified transportation improvement remains a project candidate until it has been funded, after which it becomes a "project." The Capital Project List in Appendix C represents a snapshot in time based on current assumptions. The timeframe associated with each candidate project is derived from the *2014 Regional Transportation Plan* project list, in which candidates were assigned a "time bucket" for modeling and funding target purposes. While the Capital Project List conveys a sense of which projects would be particularly beneficial in addressing the County's transportation needs, it is not a prioritization tool. It is possible that candidates not on this list may become priorities in the future, while some candidates on this list may become less important and ultimately not pursued. In Washington County, transportation project prioritization and selection occurs through the various funding programs. For example, Major Streets Transportation Improvement Program (MSTIP) projects are selected through a collaborative, public process by the Washington County Coordinating Committee and the Board of Commissioners.

The TSP Capital Project List focuses on projects in which Washington County has transportation and/or land use jurisdiction, as well as a small number of additional projects that have been identified as important County priorities. Specifically, the list includes:

- Projects on County roadways in the unincorporated area (urban and rural),
- Projects on County roadways within cities,
- Projects on state highways in the unincorporated area,
- Trail projects in the unincorporated area (both within and outside of the Tualatin Hills Park & Recreation District),
- Transit projects in the unincorporated area,
- Washington County sponsored projects on the Regional Transportation Plan project list that do not otherwise meet the above criteria, and
- Regional-scale projects in which the County has made a funding commitment and that do not otherwise meet the above criteria (such as Southwest Corridor project development).

The Capital Project List does not include projects on city roadways or on trails wholly within cities, nor does it include all of the projects on the *2014 Regional Transportation Plan* project list located within Washington County. The TSP Modal Element maps depict an ultimate complete system that will be implemented gradually through capital projects and private development. The County reserves the right to "condition" right-of-way dedications and half-street improvements during development review based on designations shown on the TSP Modal Element maps, regardless of whether a particular road segment is included in the Capital Project List.

MAINTENANCE

Preserving Washington County's investment in its transportation infrastructure is the principle purpose of maintenance. Adequate system maintenance is critical since it is much less expensive in the long run to maintain assets in a deliberate manner rather than allow them to deteriorate to the point where major improvements or reconstruction are needed. Competing interests and limited funds present a challenging task for those charged with maintaining a complex transportation network. Civic leaders must make difficult choices that are sometimes unpopular. Washington County's situation of an aging infrastructure coupled with a reduced revenue stream is not unique. In fact, the maintenance difficulties facing Washington County are similar to other transportation agencies throughout the region and across the country.

The Operations & Maintenance Division (OPS) of LUT strives to apply the appropriate level of resources at the right time to ensure the most cost-effective use of available funds to maintain the best overall condition of the County's transportation system assets. There are nearly 1,300 centerline miles of paved and gravel roads, almost 200 bridges, more than 3,000 culverts, close to 900 miles of drainage ditches, and numerous miles of roadside vegetation to maintain in Washington County. Achieving the best overall condition of the transportation system requires cooperation, creativity, and collaboration. To help achieve the needed balance for roadway maintenance investments, OPS utilizes a variety of tools including County policies, empirical analysis, professional judgment, and citizen input to decide where to spend road maintenance funds.

The maintenance goal of the County's Department of Land Use & Transportation (LUT) is to protect public safety and personal property, make effective use of available funds and preserve the public and private investments in the transportation system. In addition, LUT also strives to preserve and protect the natural environment.

Maintenance Priorities

The four different types of priorities associated with maintenance are listed below in priority order:

- **Emergencies/Hazards Work** related to abating or managing an immediate threat to public safety, private property, or environmental resources. These occurrences may cause a road to become impassable, or an operator of a vehicle to lose control. These occurrences may require prompt action in order to protect human life or welfare and/or access.
- **Mandated Work** related to regulatory or legislative requirements that require the agency to perform certain activities. The specific authorization may vary by the type of activity.
- **Essential Work** that maximizes the efficiency of the transportation system but is not required, by law to be performed. This can include general maintenance and preventative activities required to keep a road or other facility in good condition.
- **Non-Essential Work** is typically for aesthetic or non-functional enhancements related to the movement of vehicles, bicycles, and/or pedestrians. This can include both minor improvements and reconstruction. Minor improvements may go beyond general maintenance, but can be completed in conjunction with general maintenance activities. Reconstruction projects rebuild substandard or deteriorated facilities. Such projects may be considered a comprehensive form of maintenance.

Washington County road maintenance crew

A long-standing tool used for selecting road maintenance projects in Washington County is the *Road Maintenance Priority Matrix* shown in Table 4.2. This guideline has been in place since it was adopted in the 1988 Washington County Transportation Plan and focuses on the functional classification of the roadway for the selection process.

Table 4.2: Road Maintenance Priority Matrix*

Activity	Arterial	Collector	Rural Resource Route**	Neighborhood Route	Local Road
Emergencies / Hazards	1	1	1	1	1
Mandated	1	1	1	1	1
General Maintenance	2	3	4	5	8
Minor Improvements	6	7	11	13	14
Reconstruction	9	10	12	15	16

**"1" is the highest priority; "16" is the lowest.*
***Resource Routes are an identified network of rural local roads important to the economy and connectivity in the county. Their designation may be adjusted periodically as needed as part of the Board-adopted annual maintenance program.*

Target Service Levels

Each year LUT develops an Annual Road Maintenance Program. The Board of Commissioners evaluates the transportation system based on available resources and risks and adopts the Road Maintenance Program. This program becomes the department's plan for scheduled work during the fiscal year and focuses on preservation of existing transportation assets and safety. The target service levels provide a guideline for the department to use when establishing the annual road maintenance work program, responding to emergencies and service requests, selecting projects, and developing budgets. The target service levels supplement the Maintenance Priority Matrix to improve the process for selecting maintenance activities. The major assets that represent the foundation of the transportation system generally fall into the following categories:

- **Bridge:** A structure that typically consists of vertical supports and horizontal members connecting at least two segments that allows safe and efficient passage over an obstacle such as a body of water, a road, or a railway. In some instances, large culverts are considered bridges.
- **Culvert:** A structure underneath the roadway used to allow storm water to pass through a roadway fill section.
- **Pavement:** The hard surface of a road or other facility. The pavement can be made of bituminous material (asphalt or chip seal) or Portland cement concrete.
- **Gravel Road:** A facility that has crushed aggregate material as the wearing surface.
- **Ditch:** An open channel adjacent to a roadway used for the collection and conveyance of storm runoff.
- **Landscaped Area:** A region in the public right-of-way with ornamental trees, shrubs, and/or ground cover intended to provide erosion control, environmental mitigation, traffic calming, and aesthetic value.

Washington County bridge maintenance crew

The target service levels are intended to provide staff with formal guidance to plan maintenance work on the transportation system. The target service levels are intended to be the nexus between the maintenance budget and the annual work program to ensure the goals and priorities of the Board of County Commissioners are being realized. It is important to note that the identified service levels are merely "targets" and not mandates.

Goal 11: Maintenance

Adequately maintain Washington County's transportation facilities.

Objective 11.1 Preserve the public's investment in transportation facilities.

- Strategy 11.1.1 Inspect the transportation system as necessary to identify current and future roadway maintenance and reconstruction needs.
- Strategy 11.1.2 Prioritize road maintenance and reconstruction expenditures using the Road Maintenance Priority Matrix as a guide, to be reviewed and approved by the County Board of Commissioners.
- Strategy 11.1.3 Implement an asset management program to maintain an accurate inventory and condition rating of pavements, bridges, culverts, gravels roads, roadside drainage facilities and landscape areas.
- Strategy 11.1.4 Design projects considering future maintenance needs and costs.
- Strategy 11.1.5 Evaluate best maintenance practices for financial efficiencies.
- Strategy 11.1.6 Employ a right-of-way permitting program to protect and restore road assets to full functionality and service life thereby conserving maintenance dollars.

Objective 11.2 Program maintenance activities through the annual Washington County Road Maintenance Program.

- Strategy 11.2.1 Utilize the asset management system to systematically select maintenance activities based on adopted service levels.
- Strategy 11.2.2 Review maintenance service levels and annual work programs with and seek feedback from the Urban Road Maintenance District Advisory Committee (URMDAC) and the Rural Roads Operations and Maintenance Advisory Committee (RROMAC).
- Strategy 11.2.3 Annually program transportation maintenance expenditures, as adopted by the County Board of Commissioners.

Objective 11.3 Maintain transportation facilities, within funding limitations, to adequately protect public safety, private property and the environment, and to provide a system that is structurally sound and reliable.

- Strategy 11.3.1 Utilize URMDAC to assist in evaluating the cost effectiveness and efficiency of the Urban Road Maintenance District.
- Strategy 11.3.2 Utilize RROMAC to assist with identifying and evaluating the cost effectiveness and efficiency of maintenance program activities in the rural area.
- Strategy 11.3.3 Consult with both URMDAC and RROMAC to establish appropriate service levels for pavements, bridges, culverts, gravel roads, roadside drainage facilities and landscape areas.
- Strategy 11.3.4 Continue the practice of vegetation removal by county crews to address vegetation-related hazards and protect public safety.
- Strategy 11.3.5 Strive to limit soil disruption and/or damage to drainage tiles when conducting maintenance activities in rural agricultural areas.

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Objective 11.4 Monitor the efficiency and cost effectiveness of transportation maintenance procedures and revise as needed, to provide effective use of available maintenance funds.

- Strategy 11.4.1 Where practicable, limit construction maintenance related administrative costs.
- Strategy 11.4.2 Where practicable, implement efficient and cost effective maintenance operations by efforts to:
  - Consolidate maintenance activity geographically,
  - Monitor, identify and correct failures,
  - Determine cause, and modify practices, and
  - Take advantage of opportunities to leverage resources through cooperative arrangements with other agencies, regional utilities, and local businesses.

Objective 11.5 Distinguish between countywide and local maintenance responsibilities. Address transportation system maintenance needs through mechanisms that recognize the primary responsibility of system users.

- Strategy 11.5.1 Confine countywide road maintenance and reconstruction program (i.e. Road Fund) activities to roads that have been formally accepted as "County Roads". Limit expenditures on noncounty roads (i.e. local access or public roads) to those prescribed by the Oregon Revised Statutes and the direction of the County Board of Commissioners.
- Strategy 11.5.2 Where appropriate, finance the reconstruction, minor improvement or maintenance of Neighborhood Routes and Local Streets through localized funding mechanisms, such as the Urban Road Maintenance District (URMD) or Local Improvement Districts (LIDs).

Objective 11.6 Encourage the adequate maintenance of facilities intended for nonauto use.

- Strategy 11.6.1 When and where appropriate, maintain the element of the transportation infrastructure intended for non-auto use by:
  - Incorporating the non-auto facilities within the right-of-way into the regular maintenance program.
  - Integrating pedestrian and bicycle improvements with road maintenance projects, such as resurfacing or shoulder widening, to take advantage of cost-sharing opportunities.
- Strategy 11.6.2 Consider a maintenance program to keep pedestrian facilities along County roads in adequate condition.
- Strategy 11.6.3 Consider developing supplemental funding sources for the maintenance of the non-auto system facilities.

Appendices

APPENDIX A – GLOSSARY - DEFINITIONS[1]

2040 Growth Concept – A long-range regional growth management and urban form concept adopted by Metro in 1995. The concept classifies land into ten urban form categories, including intensely developed centers and corridors, open spaces and rural reserves intended for preservation, and neighborhood areas that will remain mostly unchanged. Local comprehensive plans must demonstrate compatibility with the concept.

Access – The ability to have direct ingress and egress to or from a specific property or other location along a roadway. Local Streets providing direct access to individual properties generally have better access than Arterial roads or Freeways, whose primary purpose is to serve through travel. Access can also apply to non-roadway facilities such as trails.

Accessibility – The relative ease with which a given destination or land use can be reached by one or more modes of travel. Locations that can be accessed by many people using a variety of modes of transportation generally have high accessibility.

Access management – Measures that regulate or restrict access to roadways from private driveways, parking lots or other roadways. Measures may include but are not limited to restrictions on the siting and quantity of driveways, restrictions on the spacing and traffic control of intersections, and use of physical devices such as medians and traffic signals to reduce the impacts of traffic intersecting or approaching the main facility.

Accessway – A paved pathway that provides pedestrian and bicycle access when a full street connection is not practicable.

Active transportation – Human powered travel, including walking, bicycling, skateboarding and the use of mobility devices such as wheelchairs (including motorized wheelchairs). Active transportation is sometimes considered to include public transit because accessing transit stops typically involves walking or bicycling.

Adaptive signal control – An intelligent transportation system technology that uses real-time traffic information collected from camera or other sensors to coordinate and optimize signal timing at multiple signalized intersections in a corridor. The primary goal of adaptive signal control is to reduce congestion, delay and travel times.

Advanced Traffic Management System (ATMS) – Traffic management techniques that use computer processing and communications technologies to optimize performance of motor vehicle, freight and public transportation systems.

American Community Survey – An ongoing statistical survey administered by the US Census Bureau that samples a small percentage of the population every year to provide demographic, socio-economic and other community information. Transportation-related data includes travel modes and travel times for the commute to work.

ADOPTED TEXT

1 *Source: A-Engrossed Ordinance No. 768, with amendments included in A-Engrossed Ordinance No. 783, and A-Engrossed Ordinance No. 799.*

Americans with Disabilities Act (ADA) – Federal civil rights legislation enacted by Congress in 1990 that mandates equal opportunity for people with disabilities in employment, transportation, public accommodation, public services and telecommunications. Transportation implications of ADA include the design of sidewalks and curb cuts, accommodation of mobility devices on transit vehicles, provision of door-to-door paratransit service, and availability of parking spaces for the disabled.

Arterial – A functional class of roadways intended to provide general mobility for travel within the region. 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 link major commercial, residential, industrial and institutional areas.

Average daily traffic (ADT) – The number of motor vehicles that pass through a particular point on a roadway during an average day. ADT is a relatively generic term that may refer to one of several federally-defined traffic volume indicators, including annual average daily traffic (AADT) and annual average weekday daily traffic (AAWDT). Because a true 365-day, 24-hour counting process is not practical in most cases, ADT is typically sampled over the course of one or more days and repeated annually.

Bicycle – A vehicle having two tandem wheels (a minimum of 14 inches in diameter) propelled solely by human power, upon which a person or persons may ride. A three-wheeled adult tricycle is considered a bicycle. In Oregon, a bicycle is legally defined as a vehicle. Bicyclists have the same right to the roadways and must obey the same traffic laws as the operators of other vehicles.

Bicycle facility – A general term denoting improvements and provisions made to accommodate or encourage bicycling, including on-street bikeways, multi-use trails, bicycle parking facilities, and devices that allow bicycles to brought on transit vehicles.

Bike lane – A portion of a roadway that has been designated by striping, signing and pavement markings for the use of people riding bicycles. The Washington County Road Design and Construction Standards call for six-foot-wide bike lanes, though exceptions may be granted by the County Engineer for five- or four-foot-wide bike lanes in cases of constricted right-of-way.

Bikeway – A bikeway exists on any road that has the appropriate design treatment to accommodate bicyclists based on motor vehicle traffic volumes and speed. The basic design treatments used for bicycle travel on roads are shared roadways, shoulder bikeways and bike lanes. Enhanced versions of bikeways on roads include buffered bike lanes, cycle tracks and neighborhood bikeways (also called neighborhood greenways or bike boulevards). Off-street shared-use paths (also called multi-use trails) are also a type of bikeway.

County Board of Commissioners (BCC or Board) – The governing body of Washington County, Oregon, consisting of five elected members, including four district representatives and an at-large chair. Washington County has a council-manager form of government, giving the Board legislative responsibility and designating administrative authority to a Board-appointed professional county administrator. The commissioners also serve as the governing board for Clean Water Services, a public utility providing wastewater, stormwater and other services.

Boulevard – A roadway design overlay intended to improve the pedestrian environment in specified locations throughout the metropolitan area. A boulevard may have three or more lanes and may include landscaped medians, on-street parking, landscape buffered sidewalks, enhanced pedestrian crossings and special lighting. These roadways also include bicycle lanes and wide sidewalks that can accommodate transit enhancements such as benches or bus shelters.

Buffered Bike Lane – A bike lane that is further separated from automobile traffic by a two- to three-foot wide painted buffer, typically with diagonal hatching. Buffered bike lanes may be appropriate on roadways with 10,000 or more average daily vehicles and speeds of 25 mph or greater.

Bus Rapid Transit (BRT) – An enhanced bus system that operates in exclusive lanes, or in mixed traffic with bypassing capabilities, in order to combine the flexibility of buses with the efficiency of rail. By doing so, BRT generally operates at faster speeds, provides greater service reliability, and offers additional customer amenities compared to traditional bus service.

Business Access/Transit (BAT) Lane – A roadway travel lane with the dual purpose of allowing all vehicles to make turns into adjacent properties or onto intersecting streets allowing transit vehicles – typically buses or BRT vehicles – to proceed in the forward direction along the roadway and bypass traffic queues at intersections.

Capacity – The maximum number of vehicles (vehicle capacity) or people (person capacity) that can pass over a given roadway segment, intersection, transit line or pedestrian/bicycle facility in one or both directions during a given period of time under prevailing operating conditions.

Capital Improvements Program (CIP) – A document that lists projects to be undertaken in the next five- to ten-year timeframe, the estimated costs and funding sources for those projects. If funding has been committed to a project, a schedule for the funded work, which may be design, right-of-way acquisition, construction, or all three, may be included on the project list.

Carpool/Vanpool – A group of two or more people who share the use and/or cost of a car or van for transportation to and from a destination.

Collector – Collector streets provide both access and circulation between residential, commercial, industrial and agricultural community areas and the Arterial system. Collectors tend to carry fewer motor vehicles than Arterials, with reduced travel speeds and may serve as freight access routes, providing local connections to the Arterial network.

Community Advisory Committee (CAC) – A group of community members representing various interests who volunteer (and in some cases are appointed) to advise the county on a specific issue, project or process. This TSP update included an 18-member CAC appointed by the County Board of Commissioners.

Community Development Code (CDC) – The component of the Washington County Comprehensive Plan that establishes standards that builders and developers must meet to protect the health, safety and welfare of citizens. Transportation facility standards are a major component of Article IV (Development Standards), Article V (Public Facilities and Services), and Article VII (Public Transportation Facilities).

Complete street – A street that is designed to serve all modes of travel, including bicycles, freight delivery vehicles, transit vehicles and pedestrians of all ages and abilities.

Corridor study – A study that is directed toward specifically defining projects and strategies for meeting identified needs in a transportation corridor. Also known as a corridor refinement plan.

Cycle track – An on-street bikeway facility that provides the safety and comfort of a multi-use path within the road right-of-way. This is accomplished by combining a painted buffer with a physical barrier, a landscaped buffer, or a parking lane. The added protection further separates motor vehicles and bicyclists where travel speeds and/or motor vehicle traffic volumes are high. Variations on cycle tracks include raised cycle tracks and two-way cycle tracks.

Deficiency – A performance, design or operational constraint that limits travel by a given mode.

Deficiency area – A location where certain transportation system elements (usually referring to roadways) are expected to exceed acceptable performance measures and no appropriate feasible solution has been identified. Deficiency areas are identified through evaluation of future travel conditions based upon the projects identified the TSP. Additional strategies to address the movement of people and goods in these areas will be approached on a case by case basis.

Development review – The process of reviewing a proposed development action for conformance with the county's Community Development Code (CDC) and the applicable standards and requirements of the Comprehensive Plan as specified by the CDC.

Director – The Director of Washington County's Department of Land Use & Transportation.

Environmental justice (EJ) populations – People living in poverty, people with low income as determined annually by the U.S. Department of Health and Human Services Low Income Index, including people of color, elderly, children, people with disabilities, and other populations protected by Title VI and related nondiscrimination statutes.

Essential destinations – Locations where people typically go to meet basic needs, including grocery stores, schools, hospitals, medical centers and social service providers.

Functional classification – A mechanism for classifying roadways according to the function they perform in the transportation system. Classifications typically range from Arterials, which are intended to facilitate relatively high speed traffic over long distances, to Local Streets, which facilitate access to properties. When properly combined, roadways with different functional classifications provide a system that meets both the access and mobility needs of the communities it serves.

Gap – Refers to a missing link or barrier in the transportation network for any mode where a connection would otherwise be expected to exist. A gap functionally prohibits travel or makes it significantly more difficult or less desirable to travel in that location.

High capacity transit (HCT) – A form of public transit that carries high volumes of passengers quickly and efficiently from one place to another. Other defining characteristics of HCT service include the ability to bypass traffic and avoid delay by operating in exclusive or semi-exclusive rights-of-way, faster overall travel speeds due to wide station spacing, frequent service, transit priority street and signal treatments, and premium station and passenger amenities. The transit modes most commonly associated with high capacity transit include light rail transit, bus rapid transit, rapid streetcar and commuter rail.

High-occupancy vehicle (HOV) – A vehicle that is carrying two or more persons, including the driver. An HOV could be a carpool, vanpool, transit bus, private charter bus, or any other vehicle that meets the minimum occupancy requirements of the specific facility. Some jurisdictions have established HOV lanes on freeways, where only vehicles with two or more persons are allowed to occupy the lane during designated hours or at all times.

Intelligent Transportation System – The application of advanced technologies and proven management techniques to solve transportation problems, enhance safety, provide services to travelers and assist transportation system operators in implementing suitable management strategies. Intelligent Transportation Systems focus on increasing the efficiency of existing transportation infrastructure.

Inter-agency Coordinating Committee (ICC) – A technical committee consisting of representatives from cities in Washington County, Tualatin Hills Park & Recreation District, TriMet, Metro, Port of Portland and Oregon Department of Transportation, that provided input and advice during the development of the TSP and considered the policy implications within the jurisdictions they represent.

Intermodal facility – A transportation element that allows passenger and/or freight connections between modes of transportation. Examples include airports, rail stations, marine terminals, and railyards that facilitate the transfer of containers or trailers.

Joint Policy Advisory Committee on Transportation – A committee of elected officials and representatives of agencies involved in transportation that make recommendations to the Metro Council on transportation needs in the Portland metropolitan region.

Lane numbers – The maximum number of vehicle travel lanes that can be built without a plan amendment as identified on the Road Lane Numbers Map in the TSP, and as subject to certain exceptions related to turn lanes and auxiliary lanes.

Level of Service (LOS) – A qualitative measure describing the operational conditions of a particular transportation facility or service based on the perception of users, and sometimes supported by quantitative measures. Motor vehicle LOS describes roadway operating conditions in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience and safety. A letter score of 'A' through 'F' is assigned based on these conditions. For motor vehicle LOS, the scores represent the following conditions on a roadway:

A. Virtually free flow; completely unimpeded
B. Stable flow with slight delays; reasonably unimpeded
C. Stable flow with delays; less freedom to maneuver
D. High Density but stable flow
E. Operating conditions at or near capacity; unstable flow
F. Forced flow, breakdown conditions

LOS can be applied to other modes as well, including pedestrian LOS, bicycle LOS and transit LOS.

Local Improvement District (LID) – A method by which a group of property owners can share the cost of transportation infrastructure improvements such as building sidewalks. LIDs are typically created on a voluntary basis with the agreement of the majority of affected property owners. The cost of the improvements is split among these owners and typically assessed on property tax bills.

ADOPTED TEXT

Local Street – 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 impacts the effectiveness of the Arterial and Collector system when local travel is restricted by a lack of connecting routes, and local trips are forced onto the Arterial street network. In the urban area, local roadway system designs often discourage "through traffic movement", however, in the rural area local roads are sometimes the only facilities available for access to dispersed rural land uses.

Major bus stop – Includes most Frequent Service bus stops, most transfer locations between bus lines (especially when at least one of the bus lines is a frequent service line), stops at major ridership generators (e.g., schools, hospitals, concentrations of shopping, or high density employment or employment), and other high ridership bus stops. These stops may include shelters, lighting, seating, bicycle parking, or other passenger amenities and are intended to be highly accessible to adjacent buildings while providing for quick and efficient bus service.

Major Streets Transportation Improvement Program – A portion of the Washington County property tax used to construct major transportation improvements countywide. MSTIP projects commonly include road reconstructions to install pedestrian and bicycle facilities and additional travel or turn lanes, as well as new roadways to serve developing areas. MSTIP began as a series of serial levies (1986, 1989 and 1995), and voters rolled it into the county's fixed tax rate in the late 1990s. The current installment of MSTIP funds is known as MSTIP 3d, and will be used to construct transportation improvements through the year 2019. MSTIP also includes an Opportunity Fund that can be used to match grants or other funds for transportation improvements or programs.

Major transit stop – Major bus stops, transit centers, light rail stations and commuter rail stations.

Metro – The regional government and designated metropolitan planning organization of the Portland metropolitan area. Metro is governed by a 7-member Metro Council elected by and representing districts within Metro's jurisdictional boundaries – generally the urban portions of Clackamas, Multnomah and Washington counties. Metro is responsible for the Oregon Zoo, solid waste landfills, the Oregon Convention Center, and the Portland Center for the Performing Arts. Metro also establishes and maintains the Urban Growth Boundary. Metro is responsible for regional transportation planning activities, such as the preparation of the RTP, and the planning of regional transportation projects including high-capacity transit.

Mid-Block Crossing – A rare and necessary link for our pedestrian and bike trails, mid-block crossings provide safer crossings for pedestrians and bicyclists between road intersections.

Minor Betterments – A Washington County transportation improvement program funded by an allocation from the Road Fund (gas taxes) and used to fund small-scale interim improvements which are beyond routine maintenance but not large enough to be programmed as capital improvements. Minor Betterment projects are site-specific enhancements to the county's transportation system. The projects are typically interim and are intended to supplement routine maintenance and capital improvements.

Minor modification – A minor modification to a roadway including channelization or realignment that does not have significant land use or traffic impacts beyond the immediate neighborhood.

Mobility – The ability to move people and goods to destinations efficiently and reliably.

ADOPTED TEXT

Mode – Means of travel, such as driving, walking, bicycling or taking transit.

Modal – Pertaining to the different modes of travel to be accommodated by the transportation system.

Motor vehicle – This includes automobiles, motorcycles, recreational vehicles and all types of trucks, including those used for freight. It does not include buses as those are considered an element of another mode (transit).

Multi-modal – Accommodating or pertaining to multiple means of travel, including walking, bicycling, driving and taking transit.

Multi-use trail – A transportation facility that is physically separated from motor vehicle traffic by an open space or barrier for exclusive use by bicyclists and pedestrians, including persons using mobility devices, skates and skateboards. Off-street trails may be located in a road right of way or within an independent right-of-way or public property.

Neighborhood Route – Neighborhood Routes are in residential neighborhoods and provide connectivity to the Collector and Arterial system. 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 may be established via the land development process.

Neighborhood bikeway – A low speed, low traffic Non-Arterial Street designated as a facility intended to accommodate bicyclists with a wide range of abilities and levels of experience. Neighborhood bikeways are also called neighborhood greenways and bike boulevards in other jurisdictions.

Paratransit – A shared-ride service for those unable to use regular buses and trains.

Peak two-hour period – The highest hour of motor vehicle travel demand on a given facility or segment and the hour immediately following the highest hour of demand. Known more generally as the “peak period,” each weekday has a morning (AM) peak and an evening (PM) peak.

Pedestrian – A person on foot, in a mobility device such as a wheelchair or walking a bicycle.

Pedestrian facility – An improvement provided for the benefit of pedestrian travel, including sidewalks, crosswalks, illumination, signals and benches.

Pedestrian-scale – Having a proportional relationship to human dimensions, in reference to elements of the built environment such as buildings, streets and street lights.

Performance measure – A measurement derived from technical analysis aimed at determining whether a planning policy is achieving the expected outcome or intent associated with the policy.

Person trips – The total number of discrete trips by individuals using any mode of travel.

Place-Making Amenities – Features intended to improve the quality of public spaces by creating active, unique, interesting and/or visually attractive locations. Such features may include public art, plazas, ornamental lighting, banners, seating areas, wayfinding signage, transit shelters and/or bicycle parking. These features are intended to work in tandem with building features to create locations that people care about and in which they want to live, work, learn and play.

Planning period – The period to which the Plan applies.

Placeholder projects – A "placeholder" project is used as a surrogate for a project that has not yet been defined. Placeholder projects are generally used in study areas, and serve primarily as mechanisms for estimating the impacts on the rest of the transportation system of a project that will be identified later as part of study area analysis.

Principal Arterial – Principal Arterials (Freeways and Highways) form the backbone of the motor vehicle network. These routes connect over the longest distance (often miles) and are spaced less frequently than other Arterials or Collectors. These highways generally span several jurisdictions and often have statewide importance. At a minimum, highways that are classified by ODOT as Interstate or Statewide Highways are considered Principal Arterials.

ADOPTED TEXT

Project Review Committee – Project Review Committee (PRC) acts in a technical advisory capacity for the review of all public transportation improvement applications for completeness and conformance with the applicable requirements of Article VII of the Community Development Code, the applicable Community Plan or Rural/Natural Resources Plan, and the Transportation Plan. The PRC consists of representatives of all affected Department of Land Use & Transportation divisions, and may include representatives of other county departments and affected agencies as appropriate. The PRC provides recommendations to the Review Authority.

Queue – A line of stopped vehicles in a roadway travel lane, typically delayed by congestion at an intersection, interchange or other element of the roadway system.

Regional Street Design Overlay – Identifies 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.

Regional Transportation Functional Plan (RTFP) – The Regional Transportation Functional Plan codifies the requirements that local plans must comply with to be consistent with the Regional Transportation Plan.

Regional Transportation Plan (RTP) – The official intermodal transportation plan that is developed through a regional transportation planning process and adopted by Metro.

Refinement Area – 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.

Right-of-Way (ROW) – Land or an easement over land dedicated for public road purposes. Including the right to construct, operate and maintain a public road, all customary associated uses and appurtenant facilities.

Road Design and Construction Standards – Standards set forth in the Washington County Code. The Road Design and Construction Standards set out engineering standards for road improvements, and provide guidance for the design and construction of public roads and associated improvements to the county's transportation system.

Road Fund – The State Highway funds generated by the State gasoline tax and other revenues, allocated to unincorporated Washington County, plus the local Washington County gasoline tax. These funds are used for road maintenance.

Roadway segment – A portion of a street right-of-way developed for vehicular traffic.

Rural Reserves - means land reserved to provide long-term protection for agriculture, forestry or important natural landscape features that limit urban development or help define appropriate natural boundaries of urbanization, including plant, fish and wildlife habitat, steep slopes and floodplains.

Rural Roads Operation and Maintenance Advisory Committee (RROMAC) – RROMAC works with county staff and advises the Board of Commissioners on issues related to rural roads.

Safety Priority Index System (SPIS) – A method of compiling crash histories for identifying potential safety problems.

Service Request System – The County Operations & Maintenance Division relies on a complaint driven system, generally referred to as the Service Request System, to identify problems. A reported problem is documented in the system and forwarded for inspection to assess whether a repair is warranted.

Sidewalk – A walkway that is separated from the roadway by a curb, planter area or roadside ditch that is built to adopted standards.

Significant Natural Resource – Mapped components of the natural and built environments identified in the County's Comprehensive Plan. The mapped components include the Mineral Aggregate Overlay Districts, Water Areas and Wetlands, Wildlife Habitat, Water Areas, Wetland & Fish and Wildlife Habitat, Significant Natural Areas, Historic and Cultural Resources, and Scenic Resources.

Single-occupancy vehicle – This term refers to vehicles that are carrying one person.

Special Area Street – A sub-category of 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 RTP 2040 center and station community area designations with good transit service. They are identified on the Special Area Street Overlay Map as well as in the Community Plans. Special Area Street design standards are included in the Washington County Uniform Road Improvement Design Standards.

ADOPTED TEXT

Streetscape – The cross section design and features that make up a roadway. The streetscape includes the entirety of the public right-of-way and in some cases may include the visual aspects of private land and/or building facades adjacent to the public right-of-way.

System Development Charge (SDC) – A uniform framework for the imposition of growth and development charges that may be used for capital improvements.

Telecommute – This term refers to a transportation demand management strategy whereby an individual substitutes working at home for commuting to a work site on either a part-time or full-time basis.

Traffic calming – Street design or operational features intended to maintain low motor vehicle travel speed to enhance safety for pedestrians, other non-motorized modes and adjacent land uses.

Traffic Impact Fee (TIF) – A former tax on development levied countywide, paid at the time of building permit, and used toward traffic improvements. This was the precursor of the Transportation Development Tax.

Transit – This term refers to publicly funded and managed transportation services and programs within the urban area, including light rail, regional rapid bus, frequent bus, primary bus, secondary bus, minibus, paratransit and park-and-ride.

Travel Demand Management (TDM) – Actions which are designed to change travel behavior in order to improve performance of transportation facilities and to reduce need for additional road capacity. Methods may include, but are not limited to, the use of alternative modes, ride-sharing and vanpool programs,and trip-reduction ordinances.

Transportation Development Tax (TDT) – A System Development Charge (SDC) levied countywide on development that replaced the Traffic Impact Fee, paid at time of building permit, and used toward transportation capital improvements.

Transportation Disadvantaged – Individuals who have difficulty accessing, using or affording transportation because of their age, income, physical or mental disability.

Transportation Management Association (TMA) – This term refers to non-profit coalitions of local businesses and/or public agencies dedicated to reducing traffic congestion and pollution and improving commuting options for employees.

Transportation Planning Rule (TPR) – The implementing rule of statewide planning goal#12 dealing with transportation, as adopted by the state Land Conservation and Development Commission (LCDC). Among its many provisions, the rule includes requirements to preserve rural lands, reduce vehicle miles traveled (VMT) per capita by 20 percent in the next 20 years, reduce the number of parking spaces and to improve mutli-modal transportation systems.

Transportation System Management and Operations (TSMO) – Strategies and techniques for increasing the efficiency, safety, capacity or level of service of a transportation facility without major new capital improvements. This may include signal improvements, intersection channelization, access management, HOV lanes, ramp metering, incident response, targeted traffic enforcement and programs that smooth transit operations.

ADOPTED TEXT

TriMet – Tri-County Metropolitan Transportation District, which is the primary transit provider for most of Clackamas, Multnomah and Washington counties.

Urban Growth Boundary (UGB) – The legally defined boundaries adopted by WashingtonCounty, Metro or appropriate incorporated cities, and acknowledged by LCDC, which identify and separate urbanized land from rural and natural resource land.

Urban Reserves – means lands outside an urban growth boundary that will provide for: (a) future expansion over a long-term period; and (b) the cost-effective provision of public facilities and services within the area when the lands are included within the urban growth boundary.

Urban Roads Maintenance District (URMD) – A county service district formed to provide road maintenance for Local Streets and Neighborhood Routes in urban unincorporated areas of Washington County. A portion of this fund can be set aside for safety improvements to any roadway within the district boundary.
Urban Roads Maintenance District Advisory Committee (URMDAC) – URMDAC works with county staff and advises the Board of Commissioners on issues related to services provided by the Urban Road Maintenance District (URMD).

Vehicle Miles Traveled (VMT) – Automobile vehicle miles of travel. Automobiles, for purposes of this definition, include automobiles, light trucks, and other similar vehicles used for movement of people. The definition does not include buses, heavy trucks and trips that involve commercial movement of goods.

Walkway – A hard-surfaced transportation facility built for use by pedestrians, including persons using wheelchairs, such as a sidewalk, off-street trail, accessway or path.

ADOPTED TEXT

APPENDIX B - ABBREVIATIONS, ACRONYMS, AND INITIALIZATIONS[2]

ADOPTED TEXT

ACS	American Community Survey
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
ATMS	Advanced Traffic Management System
BAT	Business Access/Transit (lane)
BCC	County Board of Commissioners
BRT	Bus Rapid Transit
CAC	Community Advisory Committee
CD	Collector/Distributor (road)
CDC	(Washington County) Community Development Code
CIP	Capital Improvements Program
DEQ	(Oregon) Department of Environmental Quality
DLCD	(Oregon) Department of Land Conservation and Development
EJ	Environmental Justice
EPA	Environmental Protection Agency
ESL	English as a Second Language
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HCT	High Capacity Transit
HOV	High Occupancy Vehicle
I-5	Interstate 5
ICC	Inter-agency Coordinating Committee
ITS	Intelligent Transportation Systems
JPACT	Joint Policy Advisory Committee on Transportation
LCDC	(Oregon) Land Conservation and Development Commission
LID	Local Improvement District
LIFT	TriMet's paratransit service (not an acronym)
LOS	Level of Service
LUT	(Washington County Department of) Land Use and Transportation
MAX	Metropolitan Area Express (light rail)
MPH	Miles per Hour
MPO	Metropolitan Planning Organization
MSTIP	Major Streets Transportation Improvement Program
MTIP	Metropolitan Transportation ImprovementProgram
OAR	Oregon Administrative Rule
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
OPS	(Washington County) Operations and Maintenance Division
OR	Oregon
ORS	Oregon Revised Statute
PMT	Project Management Team
PRC	Project Review Committee
RFFA	Regional Flexible Fund Allocation
ROW	Right-of-Way
RROMAC	Rural Road Operations and Maintenance Advisory Committee
RTFP	Regional Transportation Functional Plan
RTP	Regional Transportation Plan
SDC	System Development Charge
SDL	Service District for Lighting
SPIS	Safety Priority Index System
STIP	Statewide Transportation Improvement Program
TDM	Travel Demand Management
TDT	Transportation Development Tax
THPRD	Tualatin Hills Park and Recreation District
TIF	Traffic Impact Fee

2 *Source: A-Engrossed Ordinance No. 768.*

TMA	Transportation Management Association
TPR	Transportation Planning Rule
TriMet	Tri-County Metropolitan Transportation District
TSDC	Transportation System Development Charge
TSMO	Transportation System Management and Operations
TSP	Transportation System Plan
TV Highway	Tualatin Valley Highway
UGB	Urban Growth Boundary
URMD	Urban Road Maintenance District
URMDAC	Urban Road Maintenance District Advisory Committee
US	United States
V/C	Volume to Capacity (ratio)
VMT	Vehicle Miles Traveled
WES	Westside Express Service (commuter rail)
WCCC	Washington County Coordinating Committee
WCCC TAC	Washington County Coordinating Committee Technical Advisory Committee
WTA	Westside Transportation Alliance

APPENDIX C – CAPITAL PROJECT CANDIDATE LIST

The Capital Project List included in Appendix C identifies transportation improvement "candidates" that respond to identified transportation needs, along with associated order-of-magnitude costs. An identified transportation improvement remains a project candidate until it has been funded, after which it becomes a "project." The Capital Project List in Appendix C represents a snapshot in time of current assumptions. The timeframe associated with each candidate is derived from the *2014 Regional Transportation Plan* project list, in which candidates were assigned a "time bucket" for modeling and funding target purposes.

While the Capital Project List conveys a sense of which projects would be particularly beneficial in addressing the County's transportation needs, it is not a prioritization tool. It is possible that candidates not on this list may become priorities in the future, while some candidates on this list may become less important and ultimately not pursued. In Washington County, transportation project prioritization and selection occurs through the various funding programs. For example, Major Streets Transportation Improvement Program (MSTIP) projects are selected through a collaborative, public process by the Washington County Coordinating Committee and the Board of Commissioners.

The TSP Capital Project List focuses on projects in which Washington County has transportation and/or land use jurisdiction, as well as a small number of additional projects that have been identified as important County priorities. Specifically, the list includes:

- Projects on County roadways in the unincorporated area (urban and rural) of Washington County,
- Projects on County roadways within cities in Washington County,
- Projects on state highways in the unincorporated area,
- Trail projects in the unincorporated area (both within and outside of the Tualatin Hills Park & Recreation District),
- Transit projects in the unincorporated areas of Washington County,
- Washington County sponsored projects on the Regional Transportation Plan project list that do not otherwise meet the above criteria, and
- Regional-scale projects in which the County has made a funding commitment and that do not otherwise meet the above criteria (such as Southwest Corridor project development).

The Capital Project List does not include projects on city roadways or on trails wholly within cities, nor does it include all of the projects on the *2014 Regional Transportation Plan* project list within Washington County. The TSP Modal Element maps depict an ultimate complete system that will be implemented gradually through capital projects and private development. The County reserves the right to "condition" right-of-way dedications and half-street improvements during development review based on designations shown on the TSP Modal Element maps, regardless of whether a particular road segment is included in the Capital Project List.

Table C-1: Capital Project Candidate List

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
10545	OR 10: Oleson Rd. Improvement Phase 1	Oleson Rd. south of OR10	Oleson Rd. at Scholls Ferry	Address recurring safety issue.	Realign Oleson Rd. 500 feet to east and reconfigure Oleson intersections with OR10 and Scholls Ferry Rd.	$34,200,000	Medium
10546	170th Ave. Improvements	Alexander St.	Merlo Rd.	Provide congestion relief.	Widen roadway to 4 lanes with left turn lanes at major intersections, sidewalks, and bike lanes or cycle tracks.	$15,277,000	Medium
10547	173rd/174th Under Crossing Improvement	Cornell Rd.	Bronson Rd.	Provide congestion relief.	Construct four-lane road under Hwy. 26 with bike lanes and sidewalks.	$58,640,000	Long
10548	174th Ave. Improvements	Bronson Rd.	Meadowgrass Ln.	Address recurring safety issue.	Add turn lanes, bike lanes and sidewalks	$16,230,000	Long
10549	Cornell @ 143rd Improvements	Science Park Dr.	143rd Ave.	Address recurring safety issue.	Realign 143rd with Science Park Dr. @ Cornell as a 4-way signalized intersection.	$12,400,000	Long
10550	185th Avenue Improvement	West Union Rd.	Springville Rd.	Provide congestion relief.	Widen 185th Ave. from two to five lanes with bike lanes and sidewalks	$5,400,000	Near
10552	Cornell/Cornelius Pass Interchange	N/A	N/A	Provide congestion relief.	Grade separate Cornell at Cornelius Pass.	$21,200,000	Long
10553	209th Improvements	T.V. Hwy.	Farmington Rd.	Address recurring safety issue.	Widen roadway to 4 lanes with left turn lanes at major intersections, access management, sidewalks, and bike lanes or buffered bike lanes.	$27,391,000	Near
10557	Murray/TV Hwy. Intersection	Farmington Rd.	TV Hwy.	Provide congestion relief.	Intersection improvements at TV Hwy. and Farmington with Murray Blvd.	$25,000,000	Long
10558	Cornell Rd. Improvements	113th Ave.	107th Ave.	Provide congestion relief.	Widen from two to three lanes with bike lanes and sidewalks.	$9,941,000	Near

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
10559	Cornell Improvements	Murray Blvd.	Hwy. 26	Provide congestion relief.	Widen Cornell from three to five lanes with bike lanes and sidewalks.	$40,620,000	Long
10560	Farmington Rd. Improvements	185th Ave.	Kinnaman Rd.	Provide congestion relief.	Widen roadway from 2/3 lanes to 4 lanes with turn lanes at major intersections, bike lanes, sidewalks, access management, realignment of Rosa/179th intersection.	$27,299,000	Medium
10561	Jenkins Rd. Improvements	158th Ave.	Murray	Provide congestion relief.	Widen roadway from three to five lanes with bike lanes and sidewalks.	$15,530,000	Near
10563	Kaiser/143rd Ave. Improvements	Bethany Blvd.	Cornell Rd.	Address recurring safety issue.	Widen from two to three lanes with bike lanes and sidewalks.	$38,357,000	Long
10564	Kaiser Improvements	Springville Rd.	Bethany Blvd.	Provide congestion relief.	Widen from two to three or five lanes with bike lanes and sidewalks.	$6,100,000	Long
10565	Springville Rd. Improvements	185th Ave.	PCC Driveway	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	$11,100,000	Near
10566	Springville Rd. Improvements	PCC Driveway	Kaiser Rd.	Address recurring safety issue.	Widen from two to three lanes with bike lanes and sidewalks.	$3,600,000	Near
10567	Taylors Ferry Extension	Oleson Rd.	Washington Dr.	Improve connectivity.	Construct new two lane extension with bike lanes and sidewalks.	$4,390,000	Long
10568	Tualatin-Sherwood Rd. Improvements	Langer Farms Parkway	Teton Ave.	Provide congestion relief.	Widen from three to five lanes with bike lanes and sidewalks.	$49,150,000	Near
10569	Walker Rd. Improvements	Amberglen	185th Ave.	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	$17,611,000	Medium
10571	West Union Rd. Improvements	185th Ave.	143rd Ave.	Address recurring safety issue.	Widen from two to three lanes with bike lanes and sidewalks.	$34,870,000	Long

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
10572	Barnes Rd. Improvements	St. Vincent's Hosp. entrance	Leahy Rd.	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	$8,933,000	Near
10573	Barnes Rd. Improvements	Leahy Rd.	Multnomah Co. Line	Address recurring safety issue.	Widen from two to three lanes with bike lanes and sidewalks.	$17,326,000	Long
10575	West Union Rd.	Cornelius Pass Rd.	185th Ave.	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	$26,192,000	Near
10577	Scholls Ferry Improvements	Allen Blvd.	Beaverton-Hillsdale Hwy.	Address recurring safety issue.	Widen roadway from two to three lanes with bike lanes and sidewalks.	$22,587,000	Long
10578	Merlo/158th Improvements	170th Ave.	Walker Rd.	Provide congestion relief.	Widen roadway to five lanes with bike lanes and sidewalks.	$24,735,000	Medium
10579	Barnes Rd. Improvements	Cedar Hills Blvd.	118th Ave.	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks. Add double turn lanes.	$4,000,000	Medium
10580	Butner Rd. Improvements	Murray Blvd.	Cedar Hills Blvd.	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	$18,515,000	Long
10582	185th Ave. Improvements	Blanton St.	Farmington Rd.	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks	$12,163,000	Long
10584	Alexander St. Improvements	192nd Ave.	178th Ave.	Economic development and address safety issues.	Add sidewalks, lighting, streetscape features, bike boulevard treatments, signal at 185th Ave, turn lanes at major intersections.	$9,293,000	Medium
10585	Johnson St. Improvements	Cornelius Pass Rd.	185th Ave.	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	$24,333,000	Long
10586	197th/198th Ave. Improvements	Baseline Rd.	T.V. Hwy.	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	$19,297,000	Long
10587	Cornelius Pass Rd. Improvements	Frances St.	T.V. Hwy.	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks.	$11,307,000	Near

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
10588	Grahams Ferry Rd. Improvements	Helenius St.	Washington/ Clackamas County line	Provide freight access and capacity to link the Coffee Creek I RSIA and the industrial area north of Wilsonville Road as well as the I-5/ Wilsonville Road Interchange.	Widen Grahams Ferry Rd. to three lanes, add bike/ pedestrian connections to regional trail system and fix undersized railroad overcrossing.	$28,000,000	Medium
10589	95th Ave. Ped/ Bike Connection	Morrison St.	Sunset Transit Center	Improve connectivity.	Pedestrian/bicycle pathway, lighting, bridge over Johnson Creek, grade-separated crossing of Barnes Road.	$11,546,000	Medium
10590	Tonquin Rd. Improvements	Grahams Ferry Rd.	Oregon St.	Address recurring safety issue.	Realign and widen to three lanes with bike lanes and sidewalks and street lighting.	$15,000,000	Medium
10591	Glencoe Rd. Improvements	Evergreen Rd.	Jackson Ave.	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	$26,016,000	Long
10592	205th Ave. Improvements	Quatama Rd.	Baseline Rd.	Provide congestion relief.	Widen road to five lanes with bike lanes and sidewalks. Widen bridge over Beaverton Creek to four lanes with bike lanes and sidewalks.	$31,000,000	Medium
10593	Kinnaman Rd. Improvements	209th Ave.	Farmington Rd.	Address recurring safety issue.	Reconstruct with sidewalks, bike lanes and turn lanes at major intersections; consolidate offset intersection at 198th Ave.	$26,810,000	Long
10594	Greenburg Rd. Improvements	Summit Dr.	Locust St.	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks.	$3,780,000	Long

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
10595A	Hall Blvd. in Washington Square Improvements	Scholls Ferry Rd.	Oleson Rd.	Provide congestion relief.	Provide continuous five-lane cross-section with right turn lanes as needed, reconstruct bike lanes and sidewalks accordingly.	$2,327,000	Long
10595B	Hall Blvd. in Metzger Improvements	Oleson Rd.	Pfaffle St.	Address recurring safety issue.	Provide continuous three-lane cross section with bike lanes and sidewalks.	$13,762,000	Long
10595C	Hall Blvd. in Tigard Improvements	Hwy. 99W	Durham Rd.	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks.	$42,500,000	Long
10596	Scholls Ferry Rd. Improvements	Hwy. 217	121st Ave.	Provide congestion relief.	Widen to seven lanes with bike lanes and sidewalks.	$19,749,000	Long
10598	I-5/99W Connector Southern Arterial	Hwy. 99W	I-5	Provide congestion relief.	Purchase Right-of-Way.	$53,000,000	Long
10599	Hwy. 217/72nd Ave. Interchange Improvements	N/A	N/A I-5	Address recurring safety issue and improve pedestrian and bicycle facilities. Purchase ROW	Complete interchange reconstruction with additional ramps and bridge structure replacement	$20,000,000	Near
10605	Hillsboro Area ITS	N/A	N/A	Provide congestion relief.	Install advanced traffic management systems including adaptive signals, communications, dynamic messaging signs, and surveillance and management equipment.	$10,888,000	Near
10606	Washington Square Regional Center Pedestrian Improvements	Wash. Sq. Regional Center		Complete gap in pedestrian system.	Complete 7400 feet of sidewalk improvements.	$8,954,000	Long
10607	Sunset TC Station Community Pedestrian Improvements	Sunset TC Station Community		Complete gap in pedestrian system.	Sidewalks, pedestrian crossings, accessways, ped/bike bridges over creeks.	$6,006,000	Long

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
10608	Aloha-Reedville Pedestrian Improvements	Aloha-Reedville Study Area		Complete gap in pedestrian system.	Sidewalk infill, pedestrian crossings, accessways, ped/bike bridges over creeks, at-grade ped/bike crossings of Portland and Western Railroad.	$27,045,000	Medium
10609	Science Park Dr. Bike	Murray Blvd.	Cornell Rd.	Complete gap in pedestrian system.	Complete 3600 feet of bike lanes in town center.	$2,124,000	Long
10610	Saltzman Rd. Bike	Cornell Rd.	Barnes Rd.	Complete gap in bike system.	Complete 950 feet of bike lanes in town center.	$1,000,000	Near
10611	Locust Ave. Bike	Hall Blvd.	80th Ave.	Complete gap in bike system.	Complete 1650 feet of bike lanes in regional center.	$3,417,000	Long
10612	Greenburg Rd. Bike	Hall Blvd.	Hwy. 217	Complete gap in bike system.	Complete 3400 feet of bike lanes in regional center.	$3,610,000	Long
10613	Cornell Rd. Bike	Saltzman Rd.	119th Ave.	Complete gap in bike system.	Complete 1750 feet of bike lanes in town center.	$1,036,000	Long
10614	Butner Rd. Bike	Cedar Hills Blvd.	Park Way	Complete gap in bike system.	Complete 7800 feet of bike lanes to transit corridor.	$3,520,000	Long
10615	Bronson Rd. Bike	185th Ave.	Bethany Blvd.	Complete gap in bike system.	Complete 15000 feet of bike lanes to transit corridor.	$5,490,000	Medium
10617	Farmington Rd.	Murray Blvd.	Hocken Ave.	Safety (high crash location), fill gaps in bike/ped system, and congestion relief at intersections of Murray and Hocken.	Construct turn lanes and intersection improvements; signalize where warranted; add bike lanes and sidewalks in gaps. Includes multi-modal improvements to Murray: TV Hwy. to Farmington.	$10,700,000	Near

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
10641	102nd/103rd 2 lane multimodal connection	Western Ave.	Walker Rd.	Complete a gap.	Connect streets and construct bike lanes and sidewalks. Realign intersection at BH Hwy. and Western.	$16,500,000	Long
10644	110th Ave. sidewalk gaps	Beaverton Hillsdale Hwy.	Canyon Rd.	Complete a gap.	Construct sidewalks.	$1,400,000	Near
10674	Oregon-Tonquin Roundabout	Oregon Street	at Tonquin	Safety improvements. Congestion relief. Economic development for undeveloped industrial area.	Reconstruct and realign three-leg intersection with a roundabout (partial two-lane) approx. 400 feet northeast of existing roundabout at SW Oregon St. & Murdock Rd. ROW, PE, and construction.	$2,300,000	Near
10680	Elwert-99W-Sunset Blvd. Improvements	99W	Kruger-Cedar Brook Way	Safety improvements. Congestion relief.	Relocate Kruger Rd. intersection 600' northeast along Elwert Rd. Construct roundabout at Elwert-Kruger-Cedar Brook. Widen Sunset Blvd. approach. Reconstruct 99W intersection and replace signal. PE, construction.	$4,000,000	Near
10708	Roy Rogers Rd. / Tualatin-Sherwood Road	Langer Farms Parkway	Borchers Dr.	Economic development and address safety issues.	Construct road to five lane collector standard.	$1,900,000	Near
10717	Cipole	ORE 99W	Tualatin-Sherwood Rd.	Economic development and freight movement.	Reconstruct/widen to three lanes from 99W to Tualatin-Sherwood Road and include multi-use path, includes signal at Cipole and Herman	$20,030,000	Medium
10736	124th Ave. Extension	Tualatin-Sherwood Rd.	Grahams Ferry Rd.	Economic Development.	New road to facilitate development of industrial lands, grade separated rail crossing South of Tonquin.	$31,000,000	Near

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
10749	Washington Square Regional Center Pedestrian Improvements	Various	Various	Sidewalk and trail infill to improve safety and access to transit.	Improve sidewalks, lighting, crossings, bus shelters, and benches at Washington Square.	$3,900,000	Near
10809	Bronson Creek Trail (Community)	Bronson Creek Park Cornell Rd. (THPRD)	Laidlaw Rd.	Complete a community trail segment in THPRD's Trail Master Plan.	To design and construct a community trail segment in a greenway corridor, 8'-10' wide paved.	$3,500,000	Medium
10810	Westside Trail (Regional)	Hwy 26	THPRD Nature Park	Complete a regional trail segment in THPRD's Trail Master Plan.	To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved.	$4,000,000	Medium
10811	Beaverton Creek Trail (Regional)	SW 194th Ave.	Fanno Creek Trail	Complete a regional trail segment in THPRD's Trail Master Plan.	To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved.	$7,000,000	Medium
10824	Cornell Rd.	Arrington	Main Street	Provide congestion relief.	Improve to five lanes with bike lanes and sidewalks.	$9,248,000	Long
10836	Evergreen Rd. Bike Lanes	Glencoe Rd.	25th	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks.	$5,440,000	Medium
10844	Cornelius Pass Road	TV Hwy.	Rosedale Rd.	Provide congestion relief.	Extend as a five lane facility with buffered bike lanes/sidewalks.	$26,500,000	Medium
10873	US 26W: Widen highway to 6 lanes	185th Ave.	Cornelius Pass Road	Increase capacity.	Widen highway to 6 lanes.	$25,000,000	Near

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
10907	High Capacity Transit: Southwest Corridor (Portland to Tualatin via Tigard) - Project Development	N/A	N/A	To further develop and advance the Near Term corridor identified in the HCT System Plan through ROW acquisition to include in conformity modeling.	Project Development through ROW acquisition/ early construction for High Capacity Transit project between Portland and Tualatin via Tigard. The project or a portion of the project is outside the designated urban growth boundary as of March 2014.	$75,000,000	Near
11045	Baseline @ 185th Ave. Improvement	185th Ave.	Baseline	Provide congestion relief. And improve transit operations.	Grade separate intersection and MAX.	$24,700,000	Long
11089	92nd Ave. Ped.	Garden Home Blvd.	Allen Blvd.	Complete gap in pedestrian system.	Complete 3800 feet of sidewalk improvements to transit corridor	$3,922,000	Long
11090	Cornell Rd.	Arrington	25th Ave.	Complete gap in bike system.	Complete 2100 feet of bike lanes in transit corridor	$4,740,000	Long
11134	Westside Trail (Regional)	Bronson Creek Trail (Kaiser Ridge Park)	Rock Creek Trail (Kaiser Woods Park)	Complete a regional trail segment in THPRD's Trail Master Plan.	To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved.	$2,675,000	Near
11140	Brookwood Parkway	Ihly Way	Cornell Rd.	Improve capacity and safety.	Widen to five lanes with off-street sidewalk and bikeway	$9,000,000	Medium
11149	Helvetia Rd.	Schaaf Rd.	West Union Rd.	Improve capacity and safety.	Construct three-lane roadway with bike lanes on both sides and sidewalk on urban side.	$4,000,000	Long

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
11158	206th Ave.	Baseline	Rock Rd.	Improve safety, bike/ped, school, transit access	Widen to provide bike lanes and sidewalks.	$3,000,000	Medium
11211	Bridge crossing of Hwy. 26 by the Westside Trail			Allows for a more direct travel route	Would avoid out-of-direction bike/ped trips on a major regional trail	$9,000,000	Medium
11233	Walker Rd. Improvements	185th Ave.	173rd Ave.	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	$13,570,000	Medium
11234	Walker Rd. Improvements	173rd Ave.	Murray Blvd.	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	$16,600,000	Near
11235	Walker Rd. Improvements	Murray Blvd.	Hwy. 217	Provide congestion relief and enhance safety.	Widen from two to four lanes with turn lanes, intersection treatments, bike lanes, sidewalks and street lighting.	$33,000,000	Near
11236	Cedar Hills Blvd. Improvements	Butner Rd.	Celeste Ln.	Provide congestion relief, complete gap in bike system.	Widen to five lanes thru Barnes, turn lane improvements at US26, signalize US26 EB, continuous bike lanes and sidewalks through interchange area.	$4,000,000	Medium
11238	Cedar Mill Local Street Connectivity	Cedar Mill Town Center		Reduce arterial congestion through Improved local street connectivity.	Connect local streets to reduce out of direction travel and use of arterial roads for local trips.	$10,000,000	Medium
11239	Washington County Neighborhood Bikeways	N/A	N/A	Improve bicycle connectivity.	30 miles of neighborhood bikeways (bike boulevards) on low-traffic streets throughout unincorporated urban Washington County, including enhanced at-grade crossings of arterials.	$16,000,000	Medium

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
11240	Murray Blvd. Bike lane & sidewalk	Farmington Rd.	TV Hwy.	Improve bicycle connectivity.	Construct a six-foot wide bike lane on west side of Murray and replace existing asphalt path with six-foot wide concrete sidewalk and five-foot wide planting strip. Move railroad equipment.	$2,900,000	Near
11241	Evergreen Rd. Bike Lanes	NW 215th Ave.	Cornelius Pass Rd.	Improve bicycle connectivity.	Construct six-foot wide bike lanes east and westbound and correct vertical alignment.	$2,000,000	Near
11279	US-26 at 185th/ Stucki Interchange Capacity Improvements	N/A	N/A	Improve capacity at US-26 and 185th interchange.	Refinement planning and construction of interchange improvements.	$25,000,000	Long
11284	Farmington Rd.	185th Ave.	198th Ave.	Improve capacity and safety, bike/ped and transit access	Widen to five lanes with bike lanes and sidewalks.	$24,000,000	Long
11285	Farmington Rd.	198th Ave.	209th Ave.	Improve capacity and safety, bike/ped and transit access	Widen to five lanes with bike lanes and sidewalks.	$18,000,000	Long
11339	I-5/99W Connector Southern Arterial	Hwy. 99W	124th Ave. Extension	Provide congestion relief.	Construct two/ three lane arterial with bike lanes and sidewalks.	$130,000,000	Long
11340	I-5/99W Connector Southern Arterial	Hwy. 99W	124th Ave. Extension	Provide congestion relief.	Widen road to five lanes.	$80,000,000	Long
11341	West Union Rd.	Helvetia Rd.	Cornelius Pass	Improve capacity and safety	Construct three lane roadway with bike lanes and sidewalks	$25,000,000	Long
11386	198th Ave. Improvements - South	TV Hwy.	Alexander St.	Provide congestion relief	Widen to five lanes with bike lanes and sidewalks	$3,000,000	Medium

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
11395	Baseline Rd. Improvements	231st Ave.	Brookwood Ave.	Provide congestion relief.	Improve to five lanes with bike/ped facilities, storm drainage, street lighting	$9,000,000	Near
11405	Westside Trail (Regional)	Highway 26	Bronson Creek	To complete remaining gaps in the trail	To design and construct multi-use regional trail segments 10'-12' wide paved.	$5,000,000	Long
11422	Tualatin-Sherwood Road	Boones Ferry Road	124th Ave. Extension	Provide congestion relief.	Add eastbound right turn lane on Tualatin-Sherwood at Boones Ferry Rd. and add right-turn lane on Tualatin-Sherwood to 124th Ave.	$1,112,000	Near
11436	Basalt Creek East-West Arterial Overcrossing	Boones Ferry Rd.	East of I-5	Provide congestion relief.	Extend new four-lane overcrossing over I-5 from Boones Ferry Rd. to 65th and Stafford Rd.	$38,000,000	Long
11437	Oleson Rd. Bridge	North of Fanno Creek	South of Fanno Creek	Address safety issue.	Bridge Replacement.	$5,800,000	Near
11438	Tonquin / Grahams Ferry Intersection Improvements	N/A	N/A	Economic development and address safety issues.	Raise intersection elevation, widen approaches to three lanes, provide sidewalks and bike lanes, install traffic signal.	$3,353,000	Near
11439	Southbound Hwy. 217 Allen/Denny Split Diamond Interchange	Allen Blvd.	Denny Rd.	Address recurring safety issue, provide congestion relief.	Consolidate Allen Blvd. and Denney Rd. SB interchanges with split diamond interchange and collector/distributor roads.	$5,941,000	Near
11440	TV Hwy. (and Canyon Rd.) Corridor Safety and Access to Transit	209th Ave.	107th Ave.	Access to transit.	Bus stop improvements, ADA improvements, sidewalk infill, enhanced pedestrian crossings, signal priority, queue jumps.	$1,614,000	Near

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
11441	TV Highway in Aloha-Reedville Safety and Operational Improvements	19500 block	160th Ave.	Address recurring safety issues, improve pedestrian and bicycle connectivity, access to transit.	Enhanced pedestrian crossings, sidewalk infill, bike lane infill, street lighting, bus stop enhancements, intersection safety and operational improvements.	$11,667,500	Near
11442	Cornell/ Evergreen/229th Ave. Corridor Safety and Access to Transit	Hillsboro TC	Sunset TC	Access to transit.	Bus stop improvements, ADA improvements, sidewalk infill, enhanced pedestrian crossings, signal priority.	$560,000	Near
11443	Walnut St.	116th Ave.	Tiedeman	Provide congestion relief.	Widen from two to three lanes with bike lanes and sidewalks.	$4,000,000	Near
11444	Joss Ave.	Shackelford Rd.	Existing terminus	Economic development.	Extend Joss Rd. to Shackel Rd. to serve development of North Bethany Area.	$4,100,000	Near
11445	160th Ave	Brugger Rd.	Springville Rd.	Economic development.	New two lane road with sidewalks, bike and street lighting.	$2,300,000	Near
11446	Tigard/Tualatin/ Sherwood Area ITS	N/A	N/A	Provide congestion relief.	Install advanced traffic management systems including adaptive signals, communications, dynamic messaging signs, and surveillance and management equipment.	$2,853,000	Near
11447	Baseline Rd. Improvements	197th Ave.	Lisa Dr.	Provide congestion relief.	Eastbound: Widen to five lanes with bike lanes and sidewalks.	$4,600,000	Near
11448	198th Ave. Improvements - South	T.V. Hwy.	Farmington Rd.	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	$27,900,000	Near

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
11449	TV Highway HCT Study	Forest Grove	Beaverton	Increase transit mode share, help meet land use and economic development goals.	High capacity transit study, including alternatives analysis, to determine transit mode, alignment, station/stop locations, operational characteristics and phasing options for a high capacity transit service between Forest Grove and Beaverton TC.	$1,000,000	Near
11451	Saltzman Rd	Laidlaw Rd.	Bayonne Ln.	Address recurring safety issue.	Realign and widen to three lanes with bike lanes and sidewalks.	$11,100,000	Near
11452	Scholls Ferry Rd. Improvements	West of Tile Flat Rd.		Address recurring safety issue.	Realign curves to improve safety.	$4,300,000	Near
11453	Jackson School Road	Meek Rd.	Scotch Church Rd.	Address recurring safety issue.	Realign intersection and construct a round-about.	$1,000,000	Near
11454	Jackson School Road	US 26 and Jackson School Road		Address recurring safety issue.	Signalize ramp intersections.	$1,000,000	Near
11455	Brugger Rd.	Joss Ave.	Kaiser Rd.	Economic Development	Widen from two to three lanes with sidewalks, bike lanes, street lighting, and community features.	$3,200,000	Near
11456	Shackelford Rd.	185th Ave.	Bridge	Provide congestion relief.	Build new three lane road with bike/ped facilities, storm drainage, street lighting to serve North Bethany.	$12,000,000	Near
11457	Shackelford Rd. Bridge			Provide congestion relief.	Build new three lane road with bike/ped facilities, storm drainage, street lighting to serve North Bethany.	$14,600,000	Near

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
11458	Shackelford Rd.	Bridge	Kaiser Rd.	Provide congestion relief.	Build new three lane road with bike/ped facilities, storm drainage, street lighting to serve North Bethany.	$18,100,000	Near
11459	Shackelford Rd.	Kaiser Rd.	Springville Rd.	Provide congestion relief.	Build new three lane road with bike/ped facilities, storm drainage, street lighting to serve North Bethany.	$9,900,000	Near
11460	OR 10: Oleson Rd. Improvement Phase 2	Beaverton-Hillsdale Hwy.	Oleson Rd. and Scholls Ferry	Address recurring safety issue.	BHOS Phase 2 improvements to project 10545.	$35,000,000	Medium
11461	Reedville Trail North Segment	Wilkins St.	T.V. Hwy.	Improve pedestrian and bicycle connectivity.	Multi-use trail following BPA Pearl-Keeler Powerline.	$6,240,000	Medium
11462	Reedville Trail South Segment	T.V. Hwy.	Rosedale Rd.	Improve pedestrian and bicycle connectivity.	Multi-use trail following BPA Pearl-Keeler Powerline.	$5,640,000	Medium
11463	Thompson Rd. Realignment	Saltzman Rd.	Circle A Dr.	Address recurring safety issue.	Realign as three lane arterial, with sidewalks, bike and street lighting	$9,000,000	Medium
11464	Jenkins Rd. Improvements	Murray Blvd.	Cedar Hills Blvd.	Provide congestion relief.	Widen from three lanes to five lanes with bike lanes, sidewalks and street lighting	$10,000,000	Medium
11465	Metzger Area Bike/Ped Improvements			Address recurring safety issue.	Metzger Area Bike / Ped Improvement program.	$16,000,000	Medium
11466	Laidlaw Improvements	Skycrest	Lakeview	Address recurring safety issue.	Straighten curves, widen to three lanes with bike lanes and sidewalks.	$10,000,000	Medium
11467	Fischer Rd. Interim Bike and Pedestrian Improvements	131st Ave	Pacific Hwy (99W)	Improve pedestrian and bicycle connectivity.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	$4,580,000	Medium

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
11468	Washington County Pedestrian Arterial crossings	N/A	N/A	Complete gap in pedestrian system.	Construct 12 enhanced at-grade pedestrian crossings of 170th Avenue, 185th Avenue, Baseline Road, Cornell Road and Walker Road.	$3,585,000	Medium
11469	124th Ave. Improvements	Tualatin-Sherwood Rd.	Grahams Ferry Rd.	Economic development.	Widen 124th from two lanes to five lanes with bike lanes and sidewalks.	$14,000,000	Medium
11470	Basalt Creek East-West Arterial	Grahams Ferry Rd.	Boones Ferry Rd.	Economic development.	Extend new five-lane Arterial with bike lanes, sidewalks and street lighting.	$57,900,000	Medium
11471	Laidlaw Improvements	Saltzman Rd.	Countyline	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	$22,000,000	Medium
11472	160th Ave Improvements	TV Hwy.	Farmington Rd.	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	$15,000,000	Medium
11473	111th Ave. / Rainmont Rd. / 113th Ave.	McDaniel Rd.	Cornell Rd.	Address recurring safety issue.	Construct sidewalks.	$9,000,000	Medium
11474	113th Ave.	McDaniel Rd.	Rainmont Rd.	Complete cap in the system	Construct new two-lane Collector Rd with sidewalks bike lanes and street lighting.	$6,000,000	Medium
11475	Beaverton Area ITS	N/A	N/A	Provide congestion relief.	Install advanced traffic management systems including adaptive signals, communications, dynamic messaging signs, and surveillance and management equipment.	$10,450,000	Medium
11476	Saltzman Rd.	Bayonne Ln.	Bauer Woods Dr.	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	$8,000,000	Medium

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
11477	Kaiser Rd.	Shackelford Rd.	Springville Rd.	Provide congestion relief.	Widen from two to three lanes with sidewalks, bike lanes, street lighting, and community features.	$7,800,000	Medium
11478	185th Ave.	Springville Rd.	Shackelford Rd.	Address recurring safety issue.	Widen from two lanes to five lanes with bike lanes and sidewalks.	$57,000,000	Medium
11479	Council Creek Trail: East-West Segment	Hwy. 47 (Forest Grove)	1st Ave. (Hillsboro)	Improve pedestrian and bicycle connectivity.	Multi-use trail connecting Hillsboro, Cornelius, Forest Grove, unincorporated Washington County.	$20,100,000	Medium
11481	Garden Home Rd. Improvements	92nd Ave.	Oleson Rd.	Address recurring safety issue.	Improvements to enhance safety, and bike / ped accessibility.	$9,000,000	Long
11483	Turf-to-Surf Trail: South Hillsboro / Reedville Segment	Century Blvd.	Shaw St.	Improve pedestrian and bicycle connectivity.	Multi-use trail along south side of Portland & Western Railroad.	$5,600,000	Long
11484	Westside Trail: Segment 2	Tigard City Limit	Beef Bend Rd.	Improve pedestrian and bicycle connectivity.	Multi-use trail following BPA powerline.	$4,300,000	Long
11485	North Hillsboro Active Transportation Connections	N/A	N/A	Improve pedestrian and bicycle connectivity.	Multi-use trails, cycle tracks and grade-separated bike/ped crossings connecting Intel Ronler Acres, Hillsboro Ballpark, Fred Meyer shopping center, Rock Creek Trail, Oregon Electric Railway Trail and Cornelius Pass Road.	$12,000,000	Long
11486	Roy Rogers Rd.	Scholls Ferry Rd.	UGB	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks	$20,000,000	Long

RTP Project ID	Project/ Program Name	Project Start Location	Project End Location	Project Purpose	Description	Estimated Cost (2014 dollars)	Time Period
11574	Cornell Road	107th Ave.	Countyline	Address recurring safety issue.	Widen from two to three lanes with sidewalks, bike lanes, street lighting, and community features.	$21,000,000	Long
11575	Leahy Rd.	Cornell Rd.	Barnes Rd.	Address recurring safety issue.	Construct sidewalks.	$2,500,000	Long
11576	Bull Mountain Rd.	Roy Rogers Rd.	HWY 99W	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	$34,000,000	Long
11577	Beef Bend Rd.	150th Ave.	HWY 99W	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	$30,000,000	Long
11578	80th Ave.	Oleson Rd.	Oak St.	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	$13,000,000	Long
11579	119th Ave.	McDaniel Rd.	Cornell Rd.	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	$12,000,000	Long
11580	McDaniel Rd.	119th Ave.	Countyline	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	$21,000,000	Long
11581	Thompson Rd. Realignment	Saltzman Rd.	Countyline	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	$37,000,000	Long

Washington County is committed to planning, building and maintaining a great transportation system, ensuring the safety of all roadway users, and operating the County roadway system in a cost-effective and environmentally responsible manner.

Department of Land Use & Transportation
Planning and Development Services Division

155 N. First Avenue, Suite 350 Hillsboro, OR 97124
503-843-4530 • www.co.washington.or.us/lut