Oregon
Theodore R. Kulongoski, Governor

Department of Land Conservation and Development
635 Capitol Street, Suite 150
Salem, OR 97301-2540
(503) 373-0050
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www.lcd.state.or.us

NOTICE OF ADOPTED AMENDMENT

07/07/2014

TO: Subscribers to Notice of Adopted Plan or Land Use Regulation Amendments

FROM: Plan Amendment Program Specialist

SUBJECT: City of Sherwood Plan Amendment
DLCD File Number 001-14

The Department of Land Conservation and Development (DLCD) received the attached notice of adoption. Due to the size of amended material submitted, a complete copy has not been attached. A Copy of the adopted plan amendment is available for review at the DLCD office in Salem and the local government office.

Appeal Procedures*

DLCD ACKNOWLEDGMENT or DEADLINE TO APPEAL: Tuesday, July 22, 2014

This amendment was submitted to DLCD for review prior to adoption pursuant to ORS 197.830(2)(b) only persons who participated in the local government proceedings leading to adoption of the amendment are eligible to appeal this decision to the Land Use Board of Appeals (LUBA).

If you wish to appeal, you must file a notice of intent to appeal with the Land Use Board of Appeals (LUBA) no later than 21 days from the date the decision was mailed to you by the local government. If you have questions, check with the local government to determine the appeal deadline. Copies of the notice of intent to appeal must be served upon the local government and others who received written notice of the final decision from the local government. The notice of intent to appeal must be served and filed in the form and manner prescribed by LUBA, (OAR Chapter 661, Division 10). Please call LUBA at 503-373-1265, if you have questions about appeal procedures.

*NOTE: The Acknowledgment or Appeal Deadline is based upon the date the decision was mailed by local government. A decision may have been mailed to you on a different date than it was mailed to DLCD. As a result, your appeal deadline may be earlier than the above date specified. NO LUBA Notification to the jurisdiction of an appeal by the deadline, this Plan Amendment is acknowledged.

Cc: Bob Galati, City of Sherwood
Gordon Howard, DLCD Urban Planning Specialist
Anne Debbaut, DLCD Regional Representative
Gary Fish, DLCD Transportation Planner

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001-14

DLCD FORM 2

NOTICE OF ADOPTED CHANGE TO A COMPREHENSIVE PLAN OR LAND USE REGULATION

FOR DLCD USE (20313)
File No.: [17928]
Received: 7/1/2014

Local governments are required to send notice of an adopted change to a comprehensive plan or land use regulation **no more than 20 days after the adoption**. (*See* OAR 660-018-0040). The rules require that the notice include a completed copy of this form. **This notice form is not for submittal of a completed periodic review task or a plan amendment reviewed in the manner of periodic review.** Use Form 4 for an adopted urban growth boundary including over 50 acres by a city with a population greater than 2,500 within the UGB or an urban growth boundary amendment over 100 acres adopted by a metropolitan service district. Use Form 5 for an adopted urban reserve designation, or amendment to add over 50 acres, by a city with a population greater than 2,500 within the UGB. Use Form 6 with submittal of an adopted periodic review task.

Jurisdiction: City of Sherwood

Local file no.: **PA 14-01**

Date of adoption: June 17, 2014 Date sent: Uploaded 7/12014

Was Notice of a Proposed Change (Form 1) submitted to DLCD?
Yes: Date (use the date of last revision if a revised Form 1was submitted): April 11, 2014
No

Is the adopted change different from what was described in the Notice of Proposed Change? Yes No
If yes, describe how the adoption differs from the proposal:

Project lists were updated, policies and strategies in the Comprehensive Plan Chapter 6 (Transportation) were amended and in some cases deleted. Revisions to the manner in which Transportation Impact Analyses are conducted were made.

Local contact (name and title): Brad Kilby, Planning Manager

Phone: 503-625-4206 E-mail: kilbyb@sherwoodoregon.gov

Street address: 22560 SW Pine Street City: Sherwood, OR Zip: 97140-

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PLEASE COMPLETE ALL OF THE FOLLOWING SECTIONS THAT APPLY

For a change to comprehensive plan text:
Identify the sections of the plan that were added or amended and which statewide planning goals those sections implement, if any:

Chapter 6 (Transportation) of the Sherwood Comprehensive Plan - Implements TPR - Goal 12

For a change to a comprehensive plan map:
Identify the former and new map designations and the area affected:

Change from to acres. A goal exception was required for this change.

Change from to acres. A goal exception was required for this change.

Change from to acres. A goal exception was required for this change.

Change from to acres. A goal exception was required for this change.

Location of affected property (T, R, Sec., TL and address):

The subject property is entirely within an urban growth boundary

The subject property is partially within an urban growth boundary

If the comprehensive plan map change is a UGB amendment including less than 50 acres and/or by a city with a population less than 2,500 in the urban area, indicate the number of acres of the former rural plan designation, by type, included in the boundary.

Exclusive Farm Use – Acres:	Non-resource – Acres:
Forest – Acres:	Marginal Lands – Acres:
Rural Residential – Acres:	Natural Resource/Coastal/Open Space – Acres:
Rural Commercial or Industrial – Acres:	Other: – Acres:

If the comprehensive plan map change is an urban reserve amendment including less than 50 acres, or establishment or amendment of an urban reserve by a city with a population less than 2,500 in the urban area, indicate the number of acres, by plan designation, included in the boundary.

Exclusive Farm Use – Acres:	Non-resource – Acres:
Forest – Acres:	Marginal Lands – Acres:
Rural Residential – Acres:	Natural Resource/Coastal/Open Space – Acres:
Rural Commercial or Industrial – Acres:	Other: – Acres:

For a change to the text of an ordinance or code:
Identify the sections of the ordinance or code that were added or amended by title and number:

16.10 Definitions
16.80 Plan Amendments
16.90 Site Plan Review
16.94 Off-Street Parking and Loading
16.106 Transportation Facilities

For a change to a zoning map:
Identify the former and new base zone designations and the area affected:

Change from	to	Acres:
Change from	to	Acres:
Change from	to	Acres:
Change from	to	Acres:

Identify additions to or removal from an overlay zone designation and the area affected:

Overlay zone designation:	Acres added:	Acres removed:

Location of affected property (T, R, Sec., TL and address):

List affected state or federal agencies, local governments and special districts: ODOT, METRO, Washington County

Identify supplemental information that is included because it may be useful to inform DLCD or members of the public of the effect of the actual change that has been submitted with this Notice of Adopted Change, if any. If the submittal, including supplementary materials, exceeds 100 pages, include a summary of the amendment briefly describing its purpose and requirements.

Attached is a copy of the Transportation System Plan, Volume I is the policy document, and Volume II is the background materials supporting the policy document.

City of Sherwood Oregon

Home of the Tualatin River National Wildlife Refuge

ORDINANCE 2014-012

AMENDING CHAPTER 6 OF THE SHERWOOD COMPREHENSIVE PLAN (PART 2), AMENDING THE TRANSPORTATION STREET FUNCTIONAL CLASSIFICATION MAP, ADOPTING A NEW TRANSPORTATION SYSTEM PLAN, ESTABLISHING AN EFFECTIVE DATE, AND REPEALING ORDINANCE 2000-1104 ESTABLISHING THE CAPACITY ALLOCATION PROGRAM (CAP)

WHEREAS, the City of Sherwood (City) Transportation System Plan (TSP) that was adopted in 2006 by Ordinance 2005-006 has become outdated and an updated Transportation System Plan is needed to meet requirements of the State Transportation Planning Rule (OAR 660-012), Regional Transportation Plan policies, Metro Urban Growth Management Functional Plan standards, and to manage development expected in the next twenty years; and

WHEREAS, the City application (File No. PA 14-01) proposes amending Chapter 6 of the Sherwood Comprehensive Plan (Part 2) and the Transportation Street Functional Classification Map, and adopting a new TSP in order to update the public facility element for planned transportation facilities to be consistent with recent and projected growth; and

WHEREAS, the City applied for and obtained a State Transportation Growth Management (TGM) grant for updating the existing TSP; and

WHEREAS, the Sherwood Planning Commission held public work sessions on December 12, 2013 and February 13, 2014, and conducted a public hearing on May 27, 2014, at which time the Commission approved a recommendation that the City Council approve PA 14-01; and

WHEREAS, the Sherwood City Council conducted a public hearing on the proposed plan map and text amendment on June 17, 2014; and

WHEREAS, the Community Development and Zoning Code Sections 16.080.010 through 16.080.030 set forth the approval criteria for a Comprehensive Plan Map and Text amendment; and

WHEREAS, the Planning Commission reviewed whether to continue the Capacity Allocation Program (CAP) in light of the TSP amendments and the City Engineering Design and Standard Details Manual and recommended that the CAP be discontinued; and

WHEREAS, by repealing the CAP the City Council intends that any condition or requirement in an earlier land use decision or City ordinance shall no longer be effective and the property relieved of compliance with the condition or requirement

NOW, THEREFORE, THE CITY OF SHERWOOD ORDAINS AS FOLLOWS:

Section 1 - Planning Commission Review & Public Hearings: File No. PA 14-01 amending the Transportation Street Functional Classification Map and Chapter 6 of the Comprehensive Plan (Part 2), and proposing a new Transportation System Plan (Volumes 1 and 2) as a technical appendix to the Comprehensive Plan (Part 2), was subject to full and proper review, including public hearings before the Planning Commission on May 27, 2014, and the City Council on June 17, 2014.

Section 2. – Findings: That after full and due consideration of the application, the evidence and testimony in the record, and the proposed findings, the Council finds that the proposed plan map and text amendments and TSP comply with the applicable criteria as described in Exhibit 1 (Planning Commission Recommendation to City Council with Exhibits A-J) to this Ordinance.

Section 3 – Decision: The Transportation Street Functional Classification Map Amendment, the Comprehensive Plan Text Amendments and TSP in File No. PA 14-01 are hereby APPROVED as described in Exhibit 1, and such amendments constitute changes to Chapter 6, Volume II of the Comprehensive Plan and applicable sections of Volume III (Sherwood Zoning and Community Development Code) of the Comprehensive Plan (Attachments B and C to Exhibit 1), Transportation Street Functional Classification Map (Exhibit 2), and Transportation System Plan, Volumes 1 and 2, dated May 2014 (Attachments E and F to Exhibit 1), as attached to this Ordinance.

Section 4 – Repeal of the Capacity Allocation Program (CAP): Ordinance 2000-1104, establishing the Capacity Allocation Program, is repealed and any condition or requirements in a prior land use decision or City ordinance that implements or relies on the CAP shall not have any force or effect.

Section 5 – Manager Authorized: The Planning Manager is hereby directed to take such action as may be necessary to document this amendment.

Section 6 – Effective Date: This Ordinance becomes effective 30 days from the date of its adoption by the City Council.

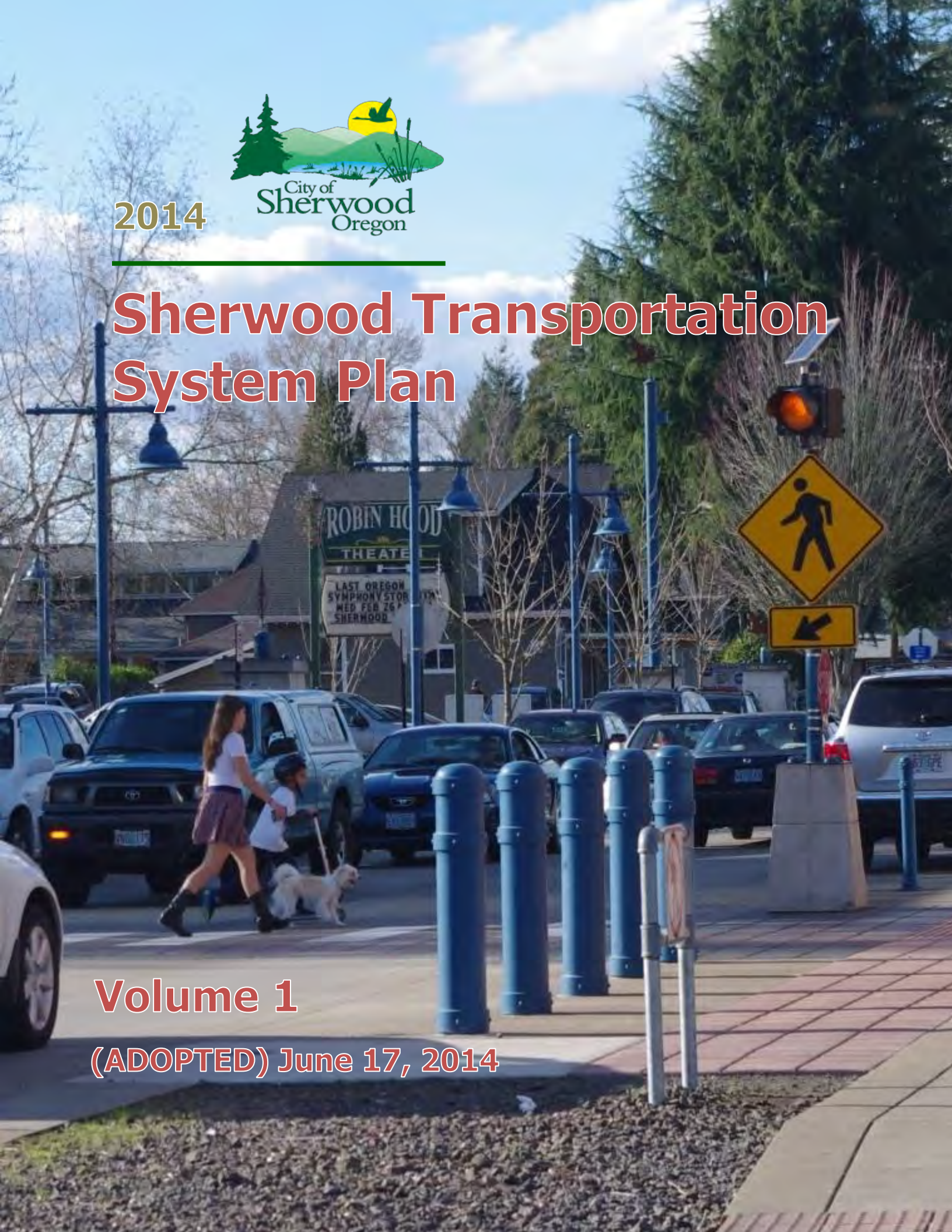
Duly passed by the City Council this 17th day of June 2014.

Bill Middleton, Mayor

Attest:

Sylvia Murphy, MMC, City Recorder

	AYE	NAY
Clark	✓	
Langer	✓	
Butterfield	✓	
Folsom	✓	
Grant	Absent	
Henderson	✓	
Middleton	✓	



2014

Sherwood Transportation System Plan

Volume 1

(ADOPTED) June 17, 2014

Project Team

City of Sherwood

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ODOT

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Acknowledgements

The 2014 Sherwood Transportation System Plan was a collaborative process among various public agencies, key stakeholders and the community. Input, assistance and outreach by the following helped make the Plan possible:

- *Citizen Advisory Team*
- *Technical Advisory Team*

A special acknowledgement goes out to all the Sherwood residents, business owners, and visitors who attended community meetings or submitted comments. Your input helped make this Plan possible.

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Moving Ahead for Progress in the 21st Century ("MAP-21"), local government, and the State of Oregon funds.

The contents of this document do not necessarily reflect views or policies of the State of Oregon.

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Appendix (Volume 2)

Figures

Tables

Acronyms

Note: Definitions for these and other key terms are provided in the Appendix (Volume II) Section K

CAC: Community Advisory Committee

CAP: Capacity Allocation Program

HCT: High Capacity Transit

LOS: Level of Service

MSTIP: Major Streets Transportation Improvement Program

ODOT: Oregon Department of Transportation

RTFP: Regional Transportation Functional Plan

RTP: Regional Transportation Plan

SOV: Single Occupant Vehicle

TAC: Technical Advisory Committee

TDM: Transportation Demand Management

TGM: Transportation Growth and Management

TIA: Traffic Impact Analysis

TSM: Transportation System Management

TSMO: Transportation System Management and Operations

TSP: Transportation System Plan

TVFR: Tualatin Valley Fire and Rescue

UGB: Urban Growth Boundary

V/C: Volume-to Capacity

VHD: Vehicle-Hours of Delay

VMT: Vehicle-Miles Travelled

How to use this Document

The Transportation System Plan (TSP) serves the following general purposes:

- Identifies general vision and strategies
- Identifies future improvements
- Provides an overview of standards.

Project List

The prioritized project list identifies improvements that the City is anticipated to pursue through year 2035 given the projected revenue. The inclusion of projects does not commit the City to funding or constructing these projects. Rather, the list is a guide for determining how the City of Sherwood is generally assumed to allocate its funding towards transportation investments. New development, the likelihood for atypical funding opportunities, and the potential for unforeseen circumstances, may shift identified transportation improvement priority.

The project list includes conceptual street alignments at a system planning-level. Before construction of any of the projects can begin, more detailed surveys will need to be undertaken to identify hydrological, topographical, or other geological constraints that could hinder the alignment of the planned streets.

Transportation Standards

The standards documented in the TSP are for guiding new improvements to the transportation system and for identifying deficiencies in the current system. These apply to city facilities; facilities owned by other jurisdictions will have their own standards to follow.

Street Cross-Sections: New streets shall meet the design requirements in Sherwood's TSP per the functional class in the TSP. In constrained situations, a design exception may be allowed through a design exception process.

Access Spacing: New street connections shall meet the access spacing standards in the TSP. In constrained situations, a design exception may be allowed through design exception process. Generally, existing facilities are not required to be modified to meet these standards. However, if a site redevelops, or a street is upgraded, access to the site may be subject to redesign to achieve or work towards achieving access spacing standards.

Traffic Calming: After determining the need for traffic calming along a facility, the appropriate technique shall be determined using engineering judgment by the Sherwood Community Development Department. A toolbox of potential traffic calming techniques and their typical application is provided in Volume 2 of the TSP.

Local Connectivity: Figure 18 indicates the general location where new local streets could potentially be installed, and is not a comprehensive map of all potential future local connections. Connections shown on the figure do not necessarily incorporate topographic, environmental or manmade constraints. All future local connections must go through City review—whether or not the connection is shown on the figure—to determine the appropriate location.

Mobility Targets: For all Traffic Impact Analysis (TIA) studies conducted in Sherwood, the TIA shall evaluate its impact on the transportation system using the mobility targets in the TSP. Additional requirements are provided in the City's Development Code.

Truck Routes: If an improvement is proposed along a truck route shown on Figure 19, it must comply with the special design standards for truck routes set by the facility owner. Reductions to vehicle-carrying capacity are not often allowed along truck routes.

Section 1

The Context

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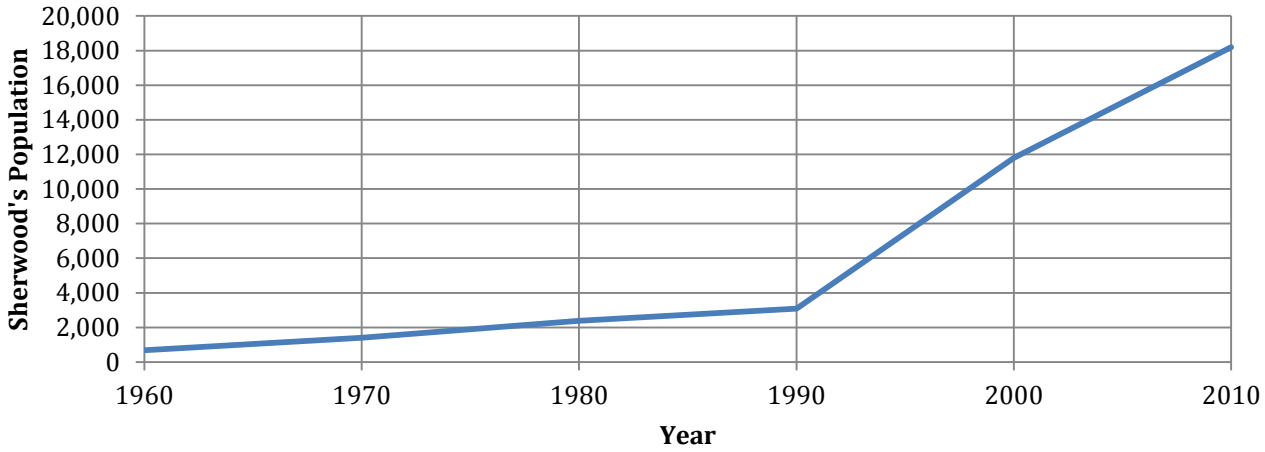
THE CONTEXT

The City of Sherwood lies in southwest Washington County, only fourteen miles from downtown Portland. The lush landscape led to the establishment of the farming community in the late 1800's, and agriculture and manufacturing have dominated the economy of Sherwood until recent decades.

Sherwood is now roughly four square miles, and home to approximately 18,575 residents.[2] The city has a downtown grid (Old Town) where the town was originally platted around the Portland and Willamette Valley Railway. Beyond the historic downtown, the city has commercial retail areas, manufacturing and industrial parks, as well as suburban neighborhoods mixed with green space, recreational trails, and is adjacent to the Tualatin River National Wildlife Refuge.

The City of Sherwood has grown rapidly since 1990, as shown in Figure 1, from a population of 3,093 to 18,194 in 2010.[3] The population is younger and wealthier on average than typical residents of Washington County or Oregon. The average household size is 2.8 persons compared to 2.5 statewide, and 20% of Sherwood residents are under 10 years old compared to less than 14% for Washington County and 13% statewide. The prevalence of young families translates to specific transportation needs to serve children who are likely to walk or bike to get around.

Figure 1: Historical Population Growth in Sherwood



[2] 2013 Portland State Population Research Center population projection.

[3] United States Census Bureau.

While the growth in population has been accommodated through increases in housing, it has created a housing and jobs imbalance in the community. Currently, with the higher than average income levels, 70% of employed residents commute outside of the city for work to seek higher wage jobs. To help remedy this, a concept plan for a 300 acre "employment land" area to the east of the city (Tonquin Employment Area) has been adopted to guide development. In addition, there are 70 acres of smaller, vacant parcels throughout the city that are available for non-residential development. These planned areas may have capacity needs for moving freight, or multimodal needs for accessing smaller sites in town.

The Challenge

Sherwood, like many jurisdictions, faces the challenge of accommodating population and employment growth while maintaining acceptable service levels on its transportation network. With major regional facilities (e.g., Highway 99W, Tualatin-Sherwood Road) dividing the city, trying to meet acceptable levels of service for motor vehicles is likely to come at a cost to other modes—therefore, achieving a balanced, multi-modal transportation system through a series of system improvements is difficult. Furthermore, the City must balance its investments to ensure that the existing and future transportation system adequately serves all members of the community and is well maintained.

The Transportation System Plan

The Transportation System Plan (TSP) is intended to prepare for and accommodate the future growth through year 2035 in the most efficient manner possible. Without the big picture that the TSP provides, maintaining acceptable transportation network performance could not be achieved in an efficient manner. This Plan updates Sherwood's original TSP, which was adopted in the year 2005 for a horizon year of 2020.

What is a TSP?

The TSP provides a long term guide for city transportation investments by incorporating the vision of the community into an equitable and efficient transportation system.

The plan evaluates the current transportation system and outlines strategies and projects that are important to protecting and enhancing the quality of life in Sherwood through 2035. The TSP also provides a foundation from which to evaluate and determine what improvements could or should be required as part of private development projects. Plan elements can be implemented by the City, private developers, and state or federal agencies.

A TSP is required by the State of Oregon to help integrate the City's transportation investment plans into the statewide transportation system. The plan balances the needs of walking, bicycling, driving, transit and freight into an equitable and efficient transportation system.

Section 2

The Process

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THE PROCESS

The Sherwood TSP Update was a collaborative process among various public agencies, key stakeholders and the community. Throughout this project, the project team took time to understand multiple points of view, obtain fresh ideas and resources, and encourage participation from the community.

Project staff conducted technical group meetings (referred to as the TAC), hosted citizen advisory group meetings (referred to as the CAC), held meetings with decision makers, and conversed informally with members of the community.

The process (shown in Figure 2) was broken into four manageable pieces:

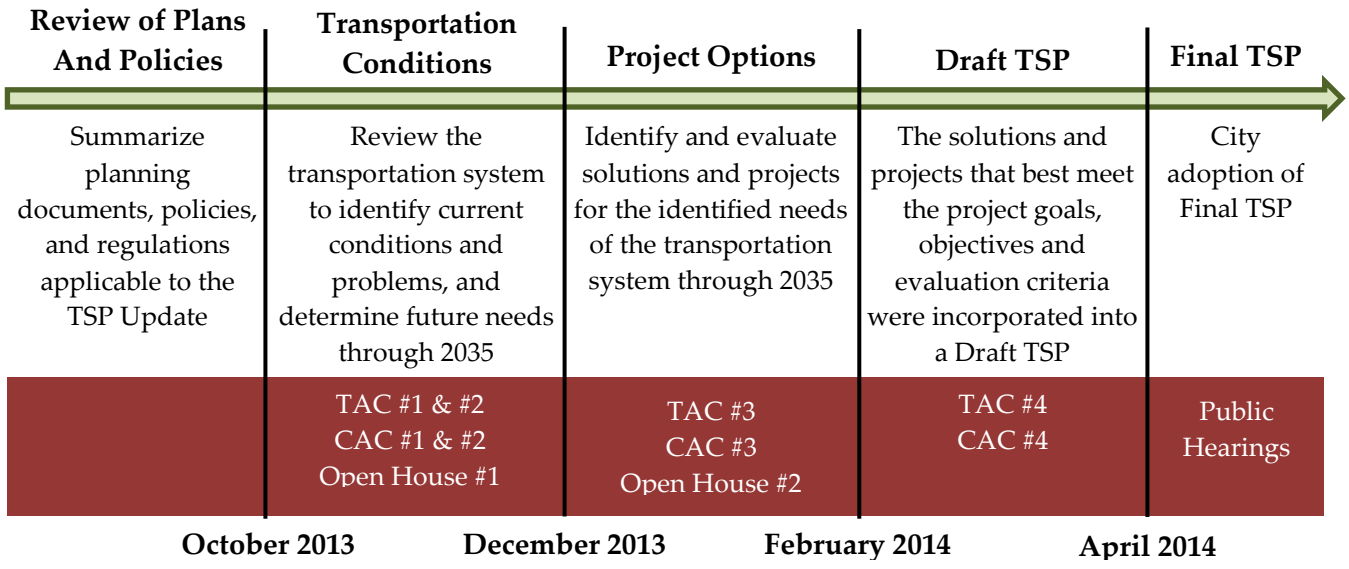
- Plan and Policy Summary Report
- Existing Conditions Technical Report
- Needs, Opportunities, Constraints and Tools Technical Report
- Project Options Technical Report

Each report was posted to the project website (which presented an email address for the public to submit comments and concerns) and presented at an open house, giving residents an opportunity to provide feedback and keep up-to-date with the project.

The project team then revised the draft reports based on feedback received from the TAC, CAC, decision makers, and the public. The revised documents were reposted to the TSP website. Material from these reports was ultimately used to create the Draft TSP.

Subsequent public hearings with the Planning Commission and City Council on the Draft TSP ultimately led to adoption of the 2014 Sherwood Transportation System Plan.

Figure 2: TSP Update Process



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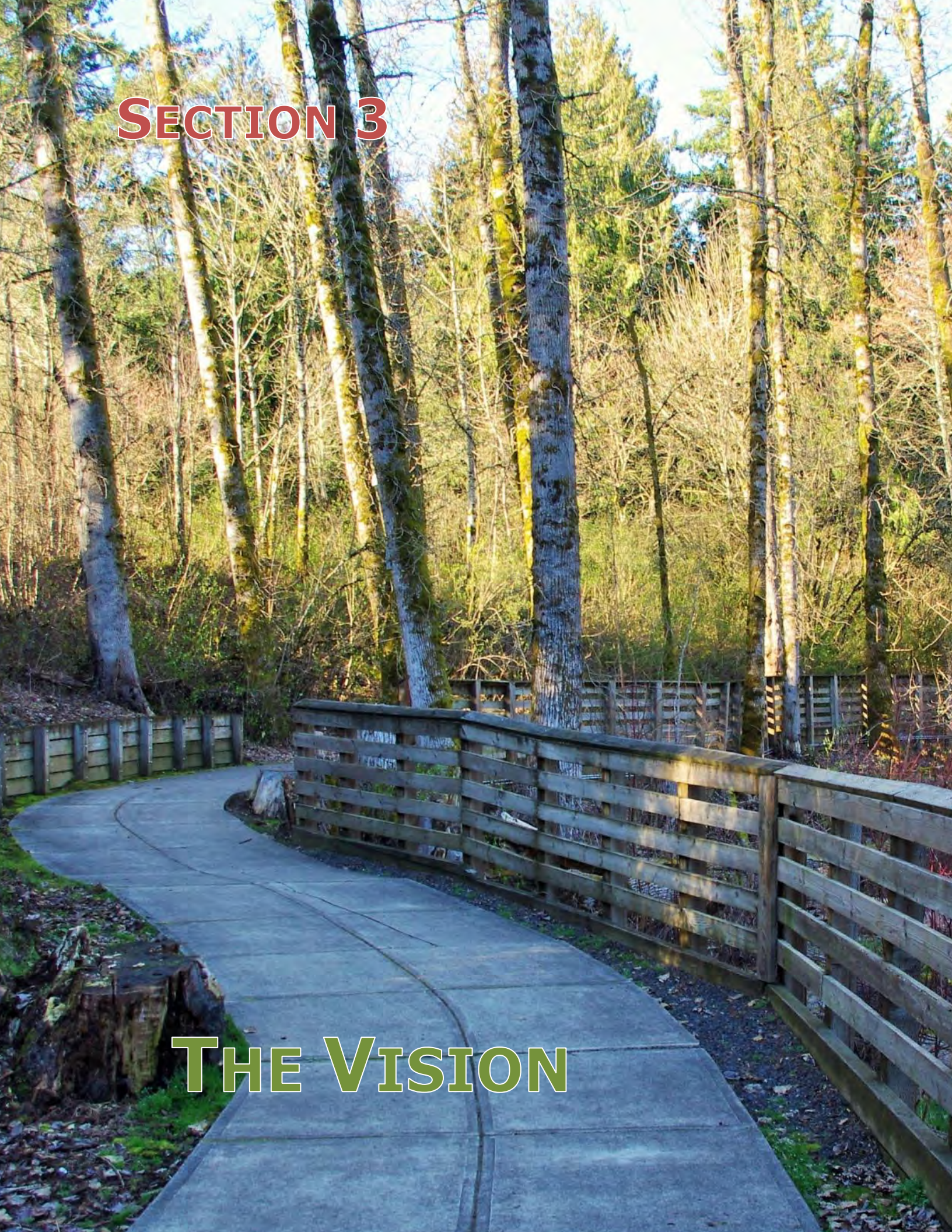

Section 3

The Vision

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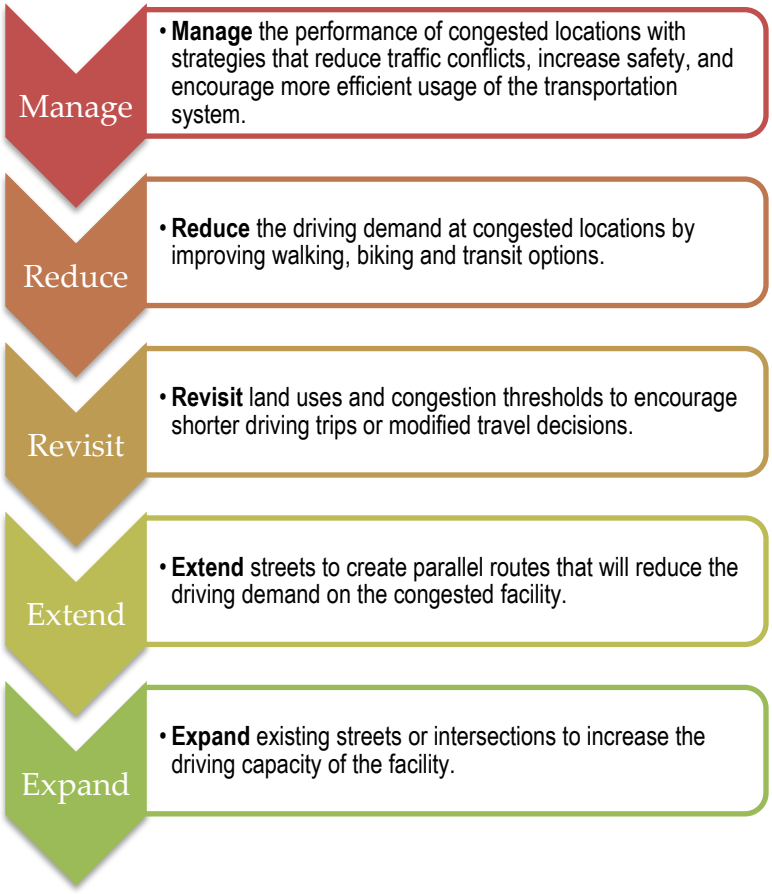
The Vision

In the past, a typical response to congestion from communities in the region was to expand streets to add additional travel lanes. This practice created significant barriers to walking and biking and detracted from the livability, health, safety, and fiscal wellbeing of the community.

Sherwood's approach to developing the TSP placed more value on investments in smaller cost-effective solutions for the transportation system rather than larger, more costly solutions. Consistent with statewide planning policies and the Metro Regional Transportation Functional Plan, the approach emphasized a multi-modal network-wide approach to identifying transportation system solutions. As shown in Figure 3, this approach followed a five-step process that considered solutions from top to bottom until a viable solution was identified. This enables more cost-effective solutions to improve transportation system operations and will help to encourage multiple travel options, increase street connectivity, and promote a more sustainable transportation system.

Figure 3: Transportation Solutions Identification Process



How do we reflect Sherwood's Vision in the Plan?

Sherwood's Comprehensive Plan (Chapter 6 Section B) includes eight transportation goals with several strategies to achieve each goal. As shown in Figure 4, these strategies were grouped and condensed into evaluation criteria that project stakeholders felt to be most important to the community to measure how well the transportation solutions addressed Sherwood's existing goals. The following strategies for each goal[4] were applied as project evaluation criteria:

Goal 1: Provide a supportive transportation network to the land use plan that provides opportunities for transportation choices and the use of alternative modes serving all neighborhoods and businesses

Circulation: Improves mobility through separation of local and through traffic

Goal 2: Develop a transportation system that is consistent with the City's adopted comprehensive land use plan and with the adopted plans of state, local, and regional jurisdictions

Compatibility: Compatible with other jurisdiction's plans and policies (including adjacent cities, counties, Metro, or ODOT)

Agency Standards: Consistent with the standards of the city, region, and state as a whole

Figure 4: Reflecting our Vision in the Plan

Goal 3: Establish a clear and objective set of transportation design and development regulations that addresses all elements of the city transportation system and that promote access to and utilization of a multi-modal transportation system

Land Development Standards: Promotes standardized processes for developers to access and accommodate transportation impacts from development

[4] Note that minor wording amendments to the transportation goals are being made through the TSP update. However, these amendments will not change the overall intent of the goals and have no resulting impact on the evaluation criteria that were used.

Goal 4: Develop complementary infrastructure for bicycles and pedestrian facilities to provide a diverse range of transportation choices for city residents

Pedestrian and Bicycle Facilities: Adds bikeway and walkways that fill in system gaps, improve system connectivity, and are accessible to all users

Goal 5: Provide reliable convenient transit service to Sherwood residents and businesses as well as special transit options for the city's elderly and disabled residents

Expands Transit Service: Adds hours, additional routes, stops, or special ride services

Transit Supportive Infrastructure: Improves transit supportive infrastructure and facilities

Goal 6: Provide a convenient and safe transportation network within and between the Sherwood Old Town (Town Center) and Six Corners area that enables mixed use development and provides multi-modal access to area businesses and residents

Design Standards: Develops or refines special standards to facilitate pedestrian and transit friendly development in Old Town and Six Corners

Corridor Connectivity: Improves connectivity through acquisitions and dedications to achieve better street spacing and enhance off-street trail system

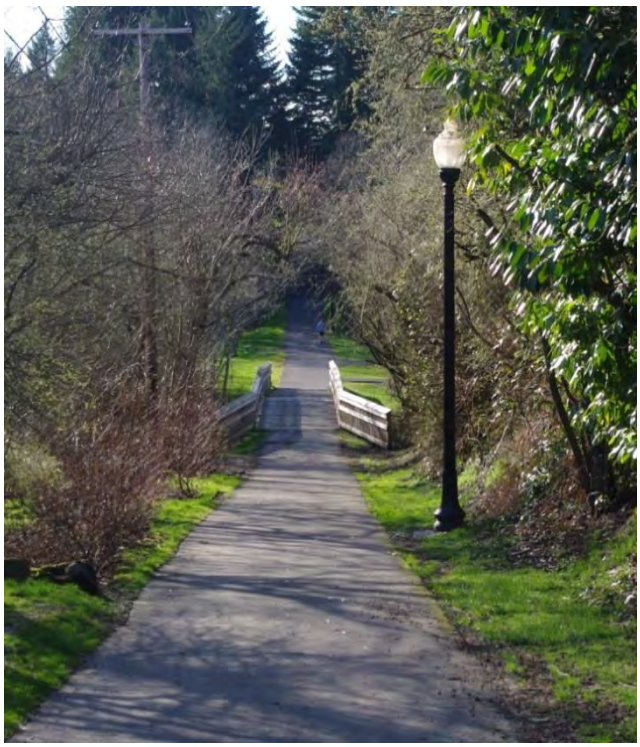
Goal 7: Ensure that efficient and effective freight transportation infrastructure is developed and maintained to support local and regional economic expansion and diversification consistent with City economic plans and policies

Freight Mobility: Invests in infrastructure and services needed to meet current and future demand

Freight Access: Regulates and improves access, including loading and transfer facilities

Goal 8: The Sherwood transportation network will be managed in a manner that ensures the plan is implemented in a timely fashion and is kept up to date with respect to local and regional priorities

Funding: Leverages local, regional, state, federal, or private funds



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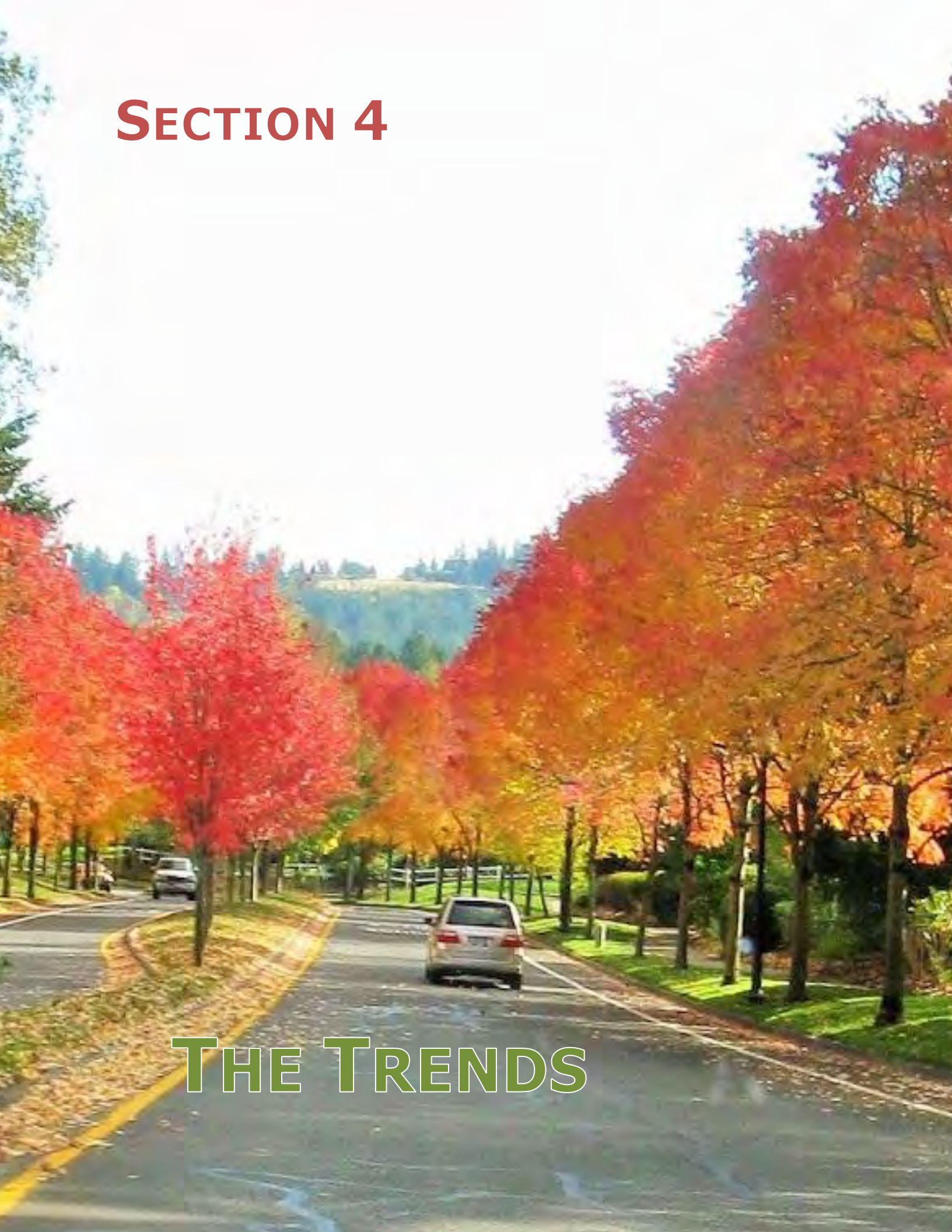
Section 4



The Trends

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THE TRENDS

The current travel conditions were reviewed and future growth and travel trends were forecasted through the year 2035 to determine what investments are needed for Sherwood's transportation system. For this assessment of needs, it was assumed that only the transportation projects with committed funding would be built and that no further investments would be made in order to prioritize and plan projects that are not currently funded. The following sections explain where growth is expected, how the transportation system will perform, and where solutions will be needed.

Snapshot of Sherwood in 2035

Today, the Sherwood area (both land within the existing city limits as well as outlying rural area) is home to 7,500 households and accounts for over 8,800 jobs. Based on Metro's regional growth projections[5] for the Sherwood area, between now and year 2035 employment is expected to increase nearly 5.0 percent a year, slightly outpacing household growth over the same period (4.5 percent). By 2035, based on regional growth forecasts, the Sherwood area (including the urban reserves) is expected to be home to almost 16,000 households and over 19,800 jobs, a 113 and 124 percent increase respectively from 2010.[6] With more people and more jobs in Sherwood, the transportation network will face increased demands.

More People, More Jobs

As shown in Figure 5, much of the population and employment growth is expected to occur around the undeveloped edges of Sherwood.

Employment growth is expected to be highest in the following areas:

- The Tonquin Employment Area, including the area bound by Tualatin-Sherwood Road to the north, Oregon Street to the South, Langer Farms Parkway to the west, and the 124th Avenue alignment to the east
- North of Tualatin-Sherwood Road between Highway 99W and Cipole Road
- The urban reserves west of the city
- The areas adjacent to Brookman Road
- The areas adjacent to Tonquin Road
- The area bound by Highway 99W, Elwert Road, and Edy Road

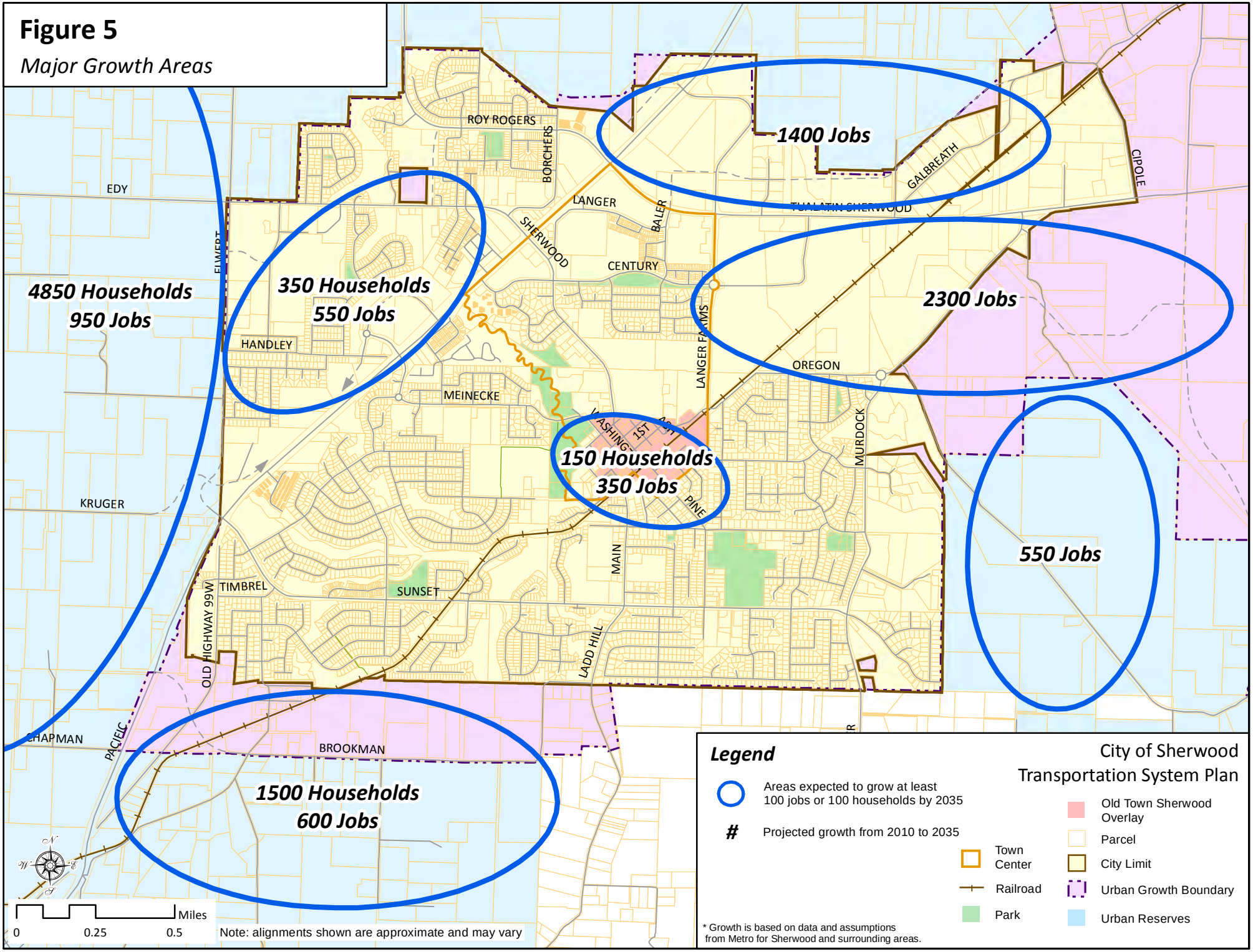
Old Town Sherwood is also expected to see moderate employment growth.

[5] Metro 2035 Gamma land use forecasts.

[6] Analysis is based on Metro Gamma land use forecasts for zones in and around Sherwood.

Figure 5

Major Growth Areas



By the year 2035, household growth is expected to be highest in the following areas:

- The urban reserves west of the city
- The areas adjacent to Brookman Road

Old Town Sherwood and the area bound by Highway 99W-Elwert Road-Edy Road are also expected to see moderate household growth.

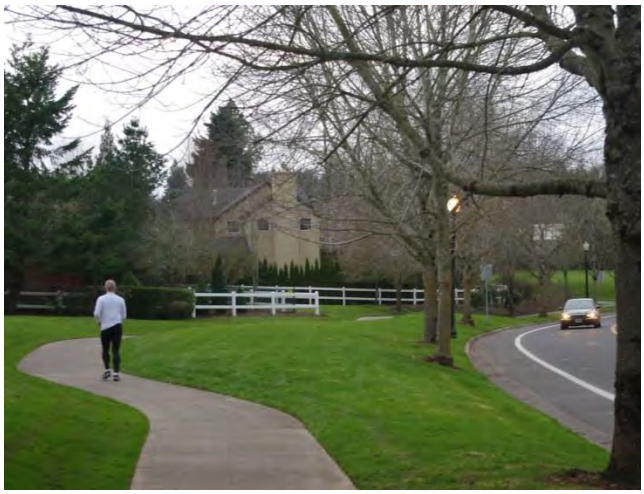
More Driving

The projected growth in housing and employment is likely to lead to increased activity and person-trips in Sherwood. Even with enhancements to pedestrian and bicycle opportunities, and an increase in jobs near residential areas, and progress towards non-driving trips, there is projected to be an increase of approximately 65% weekday peak hour vehicle trips in the Sherwood area by 2035. Along with this growth, the total vehicle distance travelled in Sherwood is projected to increase, even though the distance travelled per person (average distance) is projected to decrease[7]. This increased overall vehicle travel will place additional strain on Sherwood's streets.

More Congestion

More travel means more congestion. Evening peak hour motor vehicle trips beginning or ending in Sherwood are expected to increase by 63 percent through 2035. Through travel, or trips that do not begin or end in Sherwood, is also expected to increase through 2035 and is generally representative of growth in the region, including surrounding cities such as Tualatin and Newberg. Figure 6 indicates the general amount of traffic projected to use streets in the Sherwood area (based on the width of the color) and the general level of congestion (noted by warmer colors). The following road segments were identified as locations that are projected to be congested during evening peak hour conditions and may require additional capacity improvements or management strategies by the year 2035:

- Highway 99W north of SW Tualatin-Sherwood Road
- SW Roy Rogers Road west of Highway 99W
- SW Tualatin Sherwood Road east of Highway 99W
- SW Edy Road west of Highway 99W
- Highway 99W south of SW Edy Road
- SW Oregon Street east of SW Murdock Road
- SW Sunset Boulevard between SW Pinehurst Drive and SW Murdock Road
- SW Langer Farms Parkway south of SW Century Drive



[7] The projected increase in vehicle trips (65%) is less than the projected increase in land use (approximately 115% and 125% growth in households and jobs, respectively). As a result, the average distance travelled per person is projected to decrease. Section 9 (The Outcome) includes additional information.

More Walking, Biking, and Transit Use

Old Town and other areas of the Town Center (an area defined as south of Highway 99W and Tualatin-Sherwood Road, east of Cedar Creek, and west of Langer Farms Parkway) continue to develop in ways that will support multimodal activity. Amenities such as Cannery Square and the Cedar Creek Trail will attract activity and the amount of pedestrian, bicycle, and transit use in the area is expected to grow.

The future needs for walking, biking, and transit in Sherwood were determined by reviewing major growth areas of the city and evaluating how they were served by existing facilities. In addition, the areas of the city in close proximity to key destinations (such as schools, transit stops, and shopping) with potential to attract significant walking and biking trips and areas with existing deficiencies were identified and reviewed to determine prioritized walking, biking, or transit investments.

Key routes with bike and/or pedestrian deficiencies include:

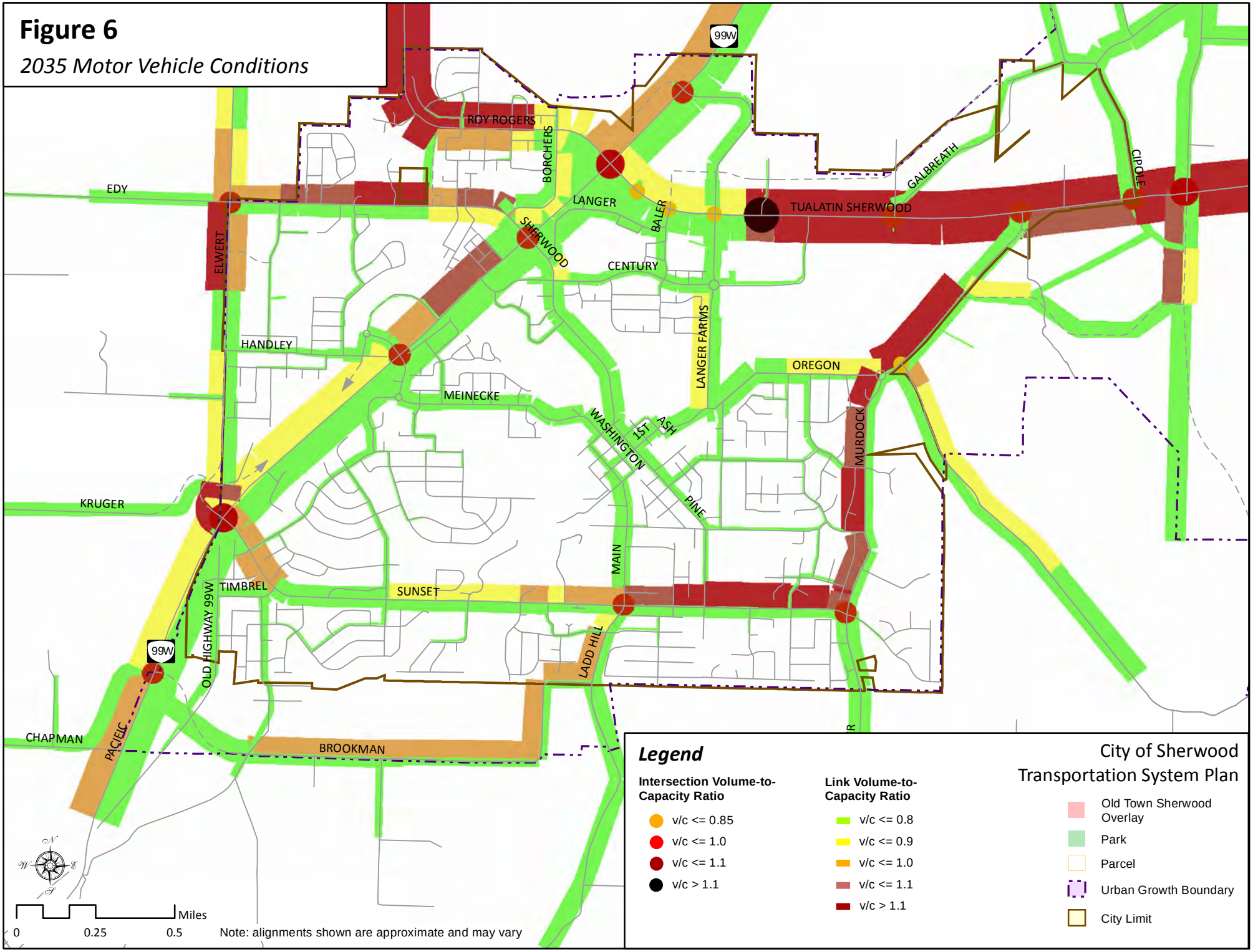
- 12th Street
- Borchers Drive
- Highway 99W
- Langer Drive
- Main Street
- Oregon Street
- Pine Street
- Sherwood Boulevard
- Sunset Boulevard
- Washington Street

Key transit deficiencies in Sherwood include:

- Limited regional connections
- Lack of a local circulation route
- Limited transit stop amenities
- Incomplete pedestrian and bicycle connections to transit stops

Figure 6

2035 Motor Vehicle Conditions



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Section 5

The Investments

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The Investments

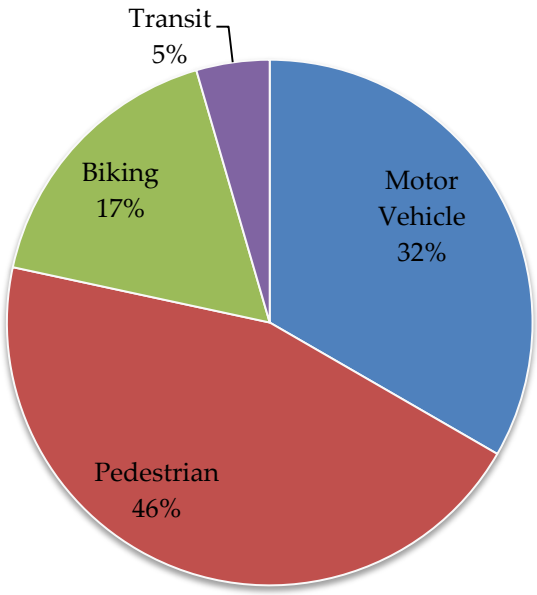
The Sherwood approach to developing transportation solutions placed more value on investments in smaller cost-effective solutions for the transportation system rather than larger, more costly ones as the City and regional partners will have a limited amount of funding to spend on these solutions through 2035. The approach helped to encourage multiple travel options, increase street connectivity and promote a more sustainable transportation system.

Taking the network approach to transportation system improvements, the projects in this plan—listed in Table A1 of Volume 2, Section E—are grouped into several modal categories. The following categories list the number of projects and their costs (which are in 2013 dollar amounts, and are the City's estimated share of the total cost) for each mode:

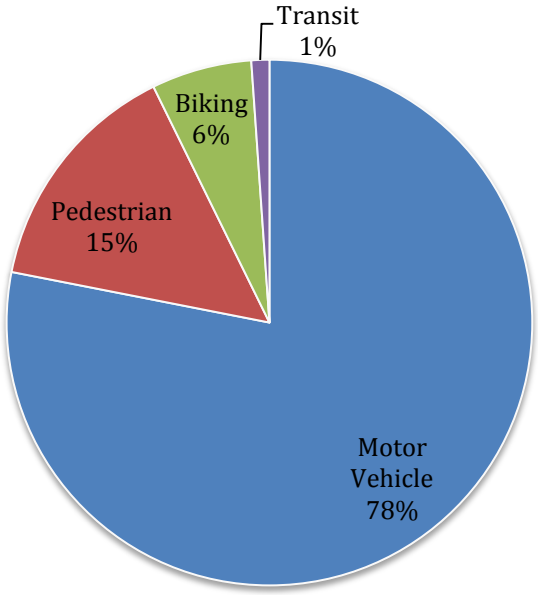
- **Motor vehicle** projects to improve connectivity, safety, and mobility throughout the city. Sherwood identified 36 projects to improve driving conditions and will cost the City an estimated $87.8 million to complete.
- **Pedestrian** projects for sidewalk infill, local and regional trails, and shared-use paths to provide seamless connections for pedestrians throughout the city. Sherwood identified 51 sidewalk projects that will cost the City an estimated $15.9 million to complete.
- **Biking** projects including an integrated network of bicycle lanes, marked on-street routes, and shared-use paths to facilitate convenient travel citywide. Sherwood identified 19 biking projects that will cost the City an estimated $6.7 million to complete.
- **Transit** projects to provide wider coverage, more frequent service, and more better amenities. A total of 6 transit projects were identified that will cost the City an estimated $1.2 million to complete.

Overall, Sherwood identified 112 transportation solutions, totaling an estimated $350 million worth of investments—$112 million of which is assumed to be city funded. The remainder is the assumed share for the county and state for projects not on city owned facilities. As shown in Figure 7, only about 32 percent of the improvements in the Plan are motor vehicle projects, yet these projects account for nearly 78 percent of the total future project expenses in the Plan.

Figure 7: Breakdown of Projects and Expenses in the Plan



Projects in the TSP by Mode



Projects Expenses in the TSP by Mode

Section 6

The Funding

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The Funding

With an estimated $112 million worth of transportation solutions identified to potentially be funded by the City, Sherwood must make investment decisions to develop a set of transportation improvements that are reasonably likely be funded to meet identified needs through 2035. As summarized in the Existing Conditions Technical Report (Section B in the Volume 2), it is estimated that Sherwood would have approximately $11.3 million to spend on capital improvement projects through 2035 based on historical growth that has occurred over the last several years.

However, assuming the level of growth related to urbanization of surrounding areas through 2035, Sherwood's available funds for transportation projects would grow to approximately $60 million. Therefore, both the $11.3 million funding estimate (referred to as "conservative funding") and the $60 million funding estimate (referred to as "projected funding") will be considered as funding scenarios.

Funding Shortfall

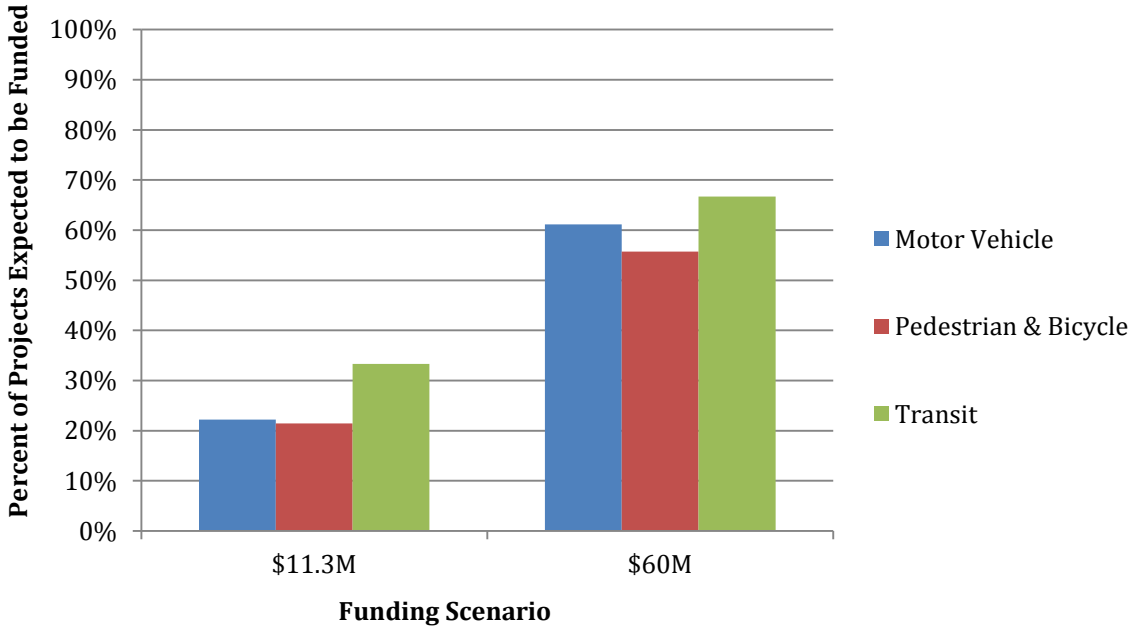
Over $87 million worth of motor vehicle projects, nearly $23 million worth of pedestrian, bicycle, and shared-use path and trail improvements, and about $1 million worth of transit projects were identified for city funding, totaling approximately $111.6 million.

Unless additional funds are developed, Sherwood will be short as much as $100 million to fund desired transportation projects if growth in the city continues as it has over the last few years. If the level of growth in the area is consistent with the regional land use growth projections, the City would be short nearly $52 million to fund transportation projects. However, the funding estimates do not consider developer contributions that would likely apply to a handful of investments shown in the TSP—therefore, the funding gap is likely to be less than $52 million, yet significant nonetheless.

As shown in Figure 8, approximately 22 percent of the motor vehicle projects, 21 percent of the pedestrian and bicycle projects, and 33 percent of the transit projects could be funded under the conservative funding estimate of $11.3 million. Under the projected funding estimate of $60 million, approximately 61 percent of the motor vehicle projects, 56 percent of the pedestrian and bicycle projects, and 67 percent of the transit projects could be funded.

In addition to Sherwood's funding shortfall, state and county funding limitations may further constrain the degree of transportation investments made in the city. Even though Sherwood may dedicate a match to support funding an investment along a state or county facility, it is not guaranteed that the county or state could provide the remaining match to complete the investment.

Figure 8: Evaluation of the Fundable Plans



Section 7

The Plan

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As detailed in the Funding section, the City is projected to have up to $60 million to cover the $112 million in project costs. Clearly, most of the transportation solutions identified for the city are not reasonably likely to be funded through 2035. For this reason, the transportation solutions were grouped into three categories based on the timing of anticipated implementation:

- The Conservatively Fundable Plan
- The Projected Fundable Plan
- The Aspirational Plan

The highest priority projects that fall within the $11.3 million scenario were included in the Conservatively Fundable Plan, the highest priority projects that fall within the $60 million scenario were included in the Projected Fundable Plan, and the complete projects list—regardless of expected funding—is referred to as the Aspirational Plan.

Determining the Investments that made the Fundable Plans

The complete list of transportation projects (documented in Section E of Volume 2) were prioritized based on a three-tier evaluation process, which included:

- **Tier 1: Screening for Needs**—Projects previously identified in plans prior to the update (e.g., prior transportation plans, concept plans, etc.) were screened to determine if they addressed a specific need identified in the TSP update process. Projects that were previously identified but did not directly address a given need were given a "long-term phasing status (regardless of Tier 2 and Tier 3 evaluation). Additional projects were developed to address the needs that were not otherwise addressed with previously identified projects.
- **Tier 2: Primary Evaluation Criteria**—Evaluation criteria were applied to projects across all modes based on consistency with Sherwood's transportation goals. These criteria provided a means to evaluate very different projects using the broad criteria that was applied to all project types.
- **Tier 3: Secondary Criteria**—In order to further differentiate projects that received the same primary evaluation score within a given mode, sets of secondary criteria were applied. These criteria were different for each mode and were only used to compare projects relative to other projects of the same mode. The criteria were:
  - Pedestrian/Bicycle—Project location and proximity to schools and other activity generators.
  - Motor Vehicle—Hierarchy of projects based on regional strategies (intersection improvements are highest priority and major corridor widening is lowest priority).

Incorporating the funding scenarios with the prioritized list of projects, the solutions were

grouped into the fundable plans. Each transportation solution was then assigned a time frame for the expected investment need, based on a project's contribution to achieving the transportation goals of Sherwood.

Conservatively Fundable Plan

The Conservatively Fundable Plan identifies the highest priority transportation solutions that are anticipated to be funded by 2035, based on historical funding data. Transportation solutions within the Conservatively Fundable Plan were recommended as short-term investments.

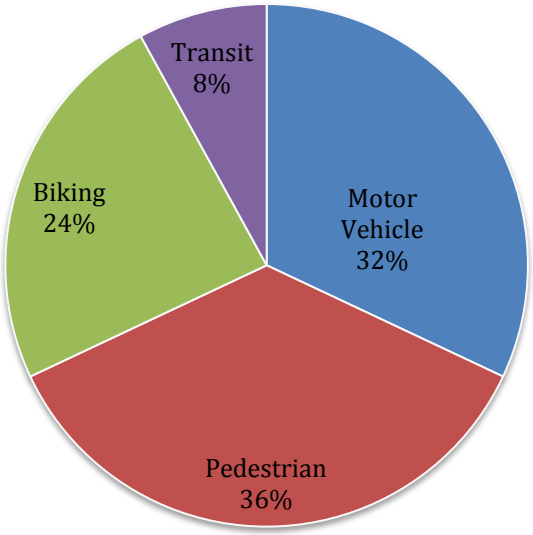
Over $11 million worth of investments are included in the Conservatively Fundable Plan. As shown in Figure 9, about 32 percent of these investments are motor vehicle improvements, 36 percent are pedestrian improvements, 24 percent are biking improvements, and about 8 percent of these investments are transit improvements.

The Conservatively Fundable transportation solutions are highlighted in red in Table 1 and illustrated in Figures 11 to 14. The projects numbered on Figures 11 to 14 correspond with the project numbers in Table 1. The project numbers are denoted as follows:

- Driving ("D")
- Pedestrian ("P")
- Biking ("B")
- Transit ("T")

Planning level cost estimates for the projects can be found in Table A1 of the TSP Volume 2, Section E.

Figure 9: Breakdown of Projects in the Conservatively Fundable Plan



Projected Fundable Plan

The Projected Fundable Plan identifies additional high priority transportation solutions that reasonably could be funded by 2035, assuming the same level of growth related to urbanization of surrounding areas. Transportation solutions within the Projected Fundable Plan that were not included in the Conservatively Fundable Plan were recommended as medium-term investments.

Nearly $60 million worth of investments are included in the Projected Fundable Plan. As shown in Figure 10, about 34 percent of these investments are motor vehicle improvements, 38 percent are pedestrian improvements, 22 percent are biking improvements, and about 6 percent of these investments are transit improvements.

The Projected Fundable transportation solutions are also listed in Table 1 and illustrated in Figures 11 to 14. Planning level cost estimates for the projects can be found in Table A1 of the TSP Volume 2, Section E.

Figure 10: Breakdown of Projects in the Projected Fundable Plan

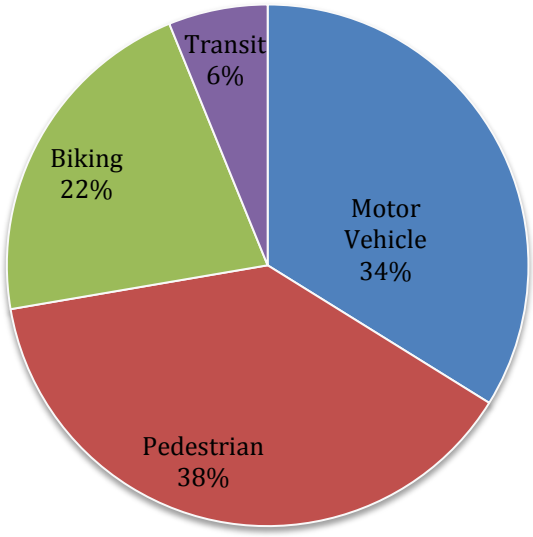


Table 1: The Fundable Transportation System

Project #	Project Name	Project Details	Priority
Projects with Committed Funding			
D13	Tualatin-Sherwood Improvements – Phase 1	Widen Tualatin-Sherwood Road/Roy Rogers Road between Borchers Drive and Baler Way to five lanes. Includes intersection modifications at Highway 99W, the Sherwood Market Center, and at Baler Way.	(Funded Through MSTIP)
D19	124th Avenue Extension	Extend 124th Avenue as an arterial from Tualatin-Sherwood Road to Tonquin Road.	(Funded Through MSTIP)
D22	Kruger/Elwert Intersection Safety Improvement	Realign Elwert Road to provide more storage at Highway 99W, and realign the Kruger Road intersection to the Cedarbrook extension as a single lane roundabout.	(Funded Through MSTIP)
P13	Ice Age Tonquin Trail Segment 8	Implement Tonquin Trail Segment 8 improvements from immediately north of Park Street to immediately south of Highway 99W.	(Funded through Metro regional flex funds)
Motor Vehicle Projects (See Figure 11)			
D3	Oregon Street Intersection Improvements at Murdock and Tonquin	Install a roundabout at the Tonquin Road/Oregon Street intersection with dual westbound through lanes and a single eastbound through/right lane. Consider creating a "Dumbbell Roundabout" with the Oregon/Murdock roundabout by disallowing the west circulating lane at Oregon/Tonquin and disallowing the east circulating lane at Oregon/Murdock. Add a second westbound approach lane to the Murdock Road Oregon Street roundabout for separated westbound left and westbound through lanes. Keep three lanes on the bridge structure.	Short-Term
D4	Elwert Road Improvements	Upgrade Elwert Road (from Highway 99W to Edy Road) to a three lane arterial with bike lanes and sidewalks. This project may be phased with D30 for design and construction purposes.	Medium-Term
D6	Edy Road Improvements	Upgrade Edy Road (from Borchers Drive to City Limits) to a three lane collector with bike lanes and sidewalks.	Medium-Term
D7	Ladd Hill Road Improvements	Upgrade Ladd Hill Road (from Sunset Boulevard to the Urban Growth Boundary) to a three arterial with bike lanes and sidewalks.	Medium-Term
D8	Oregon Street Improvements	Upgrade Oregon Street (from Murdock Road to the railroad crossing) to a three lane collector with sidewalks on south side and a shared-use path on the north side (part of the Ice Age Tonquin Trail).	Medium-Term
D12	Extension of Langer Farms Parkway at 99W	Extend Langer Farms Parkway from 99W west as a collector road.	Medium-Term
D14	Highway 99W/Brookman Traffic Signal and Realignment	Realign Brookman Road to intersect with Highway 99W approximately 1/4 mile north of its existing intersection; This alignment would provide future separation from the Southern Arterial connection at Highway 99W and would improve safety and driver expectancy for the intersection on the highway by moving it within the urbanized context (within future urbanized area of Brookman Concept Plan area). This improvement includes a traffic signal at the realigned intersection with a westbound left and southbound right turn lane, and a grade separated railroad crossing. All traffic signals on the state highway system would need to be approved by the state traffic engineer and design coordination with ODOT would be	Medium-Term

Project #	Project Name	Project Details	Priority
		needed to ensure that the improvements were done in a manner that would improve driver expectancy and safety.	
D15	Sunset Boulevard Improvements	Upgrade Sunset Boulevard (from Aldergrove Avenue to Eucalyptus Terrace) to a three lane arterial with sidewalks and bike lanes. Address vertical crest sight distance issues near Pine Street.	Medium-Term
D16	Edy/Highway 99W Intersection Improvements	Restripe the westbound Sherwood Boulevard approach to have a single left turn lane, a single through lane, and a single right turn lane. Eliminate the split phase timing for the side streets, and maintain the existing green time on Highway 99W for the northbound and southbound through movements. Add the missing crosswalk to the south approach. Consider implementing P3 alongside this project.	Short-Term
D17	Meinecke/Highway 99W Intersection Improvements	Change the eastbound and westbound left turn phasing on Meinecke Road from permitted to permitted/protected and maintaining the existing green time on Highway 99W for the northbound and southbound through movements. Consider implementing P3 alongside this project.	Medium-Term
D18	Langer Drive Improvements	Construct improvements to Langer Drive between Baler Way and Sherwood Boulevard that are consistent with the Sherwood Town Center Plan. Major improvements include: buffered bike lanes, on-street parking, wider sidewalks, narrower travel lanes, removal of the center turn lane, and landscaping.	Short-Term
D24	Sherwood Boulevard Intersection Modifications	Remove the Sherwood Boulevard/Langer Drive traffic signal (allow right-in, right-out, and left-in movements only), and install a traffic signal at the Sherwood Boulevard/Century Drive intersection (add eastbound and westbound left turn lanes).	Medium-Term
D25	Sunset/Pine Improvements	Restripe Sunset Boulevard at Pine Street to add eastbound and westbound left turn lanes.	Medium-Term
D27	Baker Road Improvements	Upgrade Baker Road (from Sunset Boulevard to the urban growth boundary) to a two lane arterial with bike lanes and sidewalks.	Medium-Term
D30	Elwert/Edy Roundabout	Install a single lane roundabout at the Elwert Road/Edy Road intersection. This project may be phased with D4 for design and construction purposes.	Medium-Term
D31	Highway 99W/Sunset Improvements	Add westbound and eastbound left turn lanes at Highway 99W/Sunset Boulevard with protective-permissive phasing. Consider implementing D22 and P3 alongside this project.	Short-Term
D33	Sunset/Murdock Turn Lanes	Add a southbound right turn lane and a northbound left turn lane at the Sunset Boulevard/Murdock Road intersection.	Medium-Term
D34	Brookman/Middleton Traffic Control Enhancements	Move the stop signs to the north and south approaches, and add a southbound left turn lane at the Brookman Road/Middleton Road intersection.	Medium-Term
D35	Area 59 Neighborhood Route	Build a neighborhood roadway, connecting Elwert Road and Copper Terrace as identified in the Area 59 concept plan.	Medium-Term
Pedestrian Projects (See Figure 12)			
P1	Handley Street Sidewalk Infill	Construct sidewalk along the north side of Handley Street from Elwert Road to the existing sidewalk terminus approximately 250 feet east of Elwert Road.	Medium-Term
P2	Highway 99W Sidewalk Infill	Construct sidewalks along both sides of Highway 99W between the north Urban Growth Boundary and the south Urban Growth Boundary.	Medium-Term

Project #	Project Name	Project Details	Priority
P3	Highway 99W Crosswalks	Add missing crosswalks at existing traffic signal locations on Highway 99W between Edy Road and Sunset Boulevard. The crosswalk enhancements may be phased individually with their corresponding intersection improvements (D16, D17, D31).	Medium-Term
P4	Ice Age Tonquin Trail/Highway 99W Connection	Construct a shared use path that connects the proposed Cedar Creek/Tonquin Trail to Highway 99W.	Medium-Term
P5	10th Street Neighborhood Greenway	Add sidewalks and shared lane markings to 10th Street and Gleneagle Drive from Sherwood Boulevard to the planned Cedar Creek/Ice Age Tonquin Trail connection.	Medium-Term
P6	Sherwood Boulevard Improvements	Construct improvements to Sherwood Boulevard between Langer Drive and 3rd Street that are consistent with the Sherwood Town Center Plan. Major improvements include: a shared-use path on the east side, wider sidewalks on the west side, narrower travel lanes, and landscaping.	Short-Term
P12	Ice Age Tonquin Trail Segment 7	Implement Tonquin Trail Segment 7 improvements from immediately west of the Tonquin/Oregon Street intersection to immediately north of Park Street.	Short-Term
P14	Ice Age Tonquin Trail Segment 9	Implement Tonquin Trail Segment 9 improvements from immediately south of Highway 99W to Roy Rogers Road (including Roy Rogers intersection).	Short-Term
P16	Ice Age Tonquin Trail Segment 11	Implement Tonquin Trail Segment 11 improvements from immediately east of the Tonquin Road/Oregon Street intersection to immediately west of Cipole Road.	Medium-Term
P18	Cipole Road Sidewalk Infill	Construct sidewalk along the east side of Cipole Road from approximately 1,250 feet north of Tualatin-Sherwood Road to the existing sidewalk terminus approximately 450 feet north.	Medium-Term
P19	12th Street Sidewalk Infill	Construct sidewalk along the south side of 12th Street from Highway 99W to Sherwood Boulevard.	Short-Term
P20	Division Street Sidewalk Infill	Construct sidewalk along both sides of Division Street from Main Street to Cuthill Place.	Medium-Term
P21	Meinecke Road Sidewalk Infill	Construct sidewalk along the north side of Meinecke Road from Lee Drive to the existing sidewalk terminus to the east (approximately 400 feet).	Medium-Term
P22	Pine Street Sidewalk Infill Segment 1	Construct sidewalk along the west side of Pine Street from Willamette Street to Columbia Street.	Short-Term
P23	Pine Street Sidewalk Infill Segment 2	Construct sidewalk along the east side of Pine Street from Division Street to Sunset Boulevard, and fill the sidewalk gap along the west side of Pine Street just north of Sunset Boulevard.	Short-Term
P26	Highway 99W Grade Separated Crossing	Build a grade-separated crossing of Highway 99W for pedestrians and bicyclists, providing a direct connection for the Ice Age Tonquin Trail east and west of the highway.	Medium-Term
P30	Sunset Boulevard/St Charles Way Crossing Improvements	Install marked crosswalks at the Sunset Boulevard/St Charles Way intersection.	Medium-Term
P31	Sunset Boulevard/Redfern Drive Crossing Improvements	Install enhanced pedestrian crossing at the Sunset Boulevard/Redfern Drive intersection.	Medium-Term

Project #	Project Name	Project Details	Priority
P32	Sunset Boulevard/Galewood Drive Crossing Improvements	Install enhanced pedestrian crossing at the Sunset Boulevard/Galewood Drive intersection.	Medium-Term
P44	Oregon Street Sidewalk Infill	Construct sidewalk along the south side of Oregon Street between Hall Street and Orland Street.	Short-Term
P45	Murdock Road Sidewalk Infill Segment 1	Construct sidewalk along the east side of Murdock Road from Willamette Street to Oregon Street.	Medium-Term
P48	Downtown Streetscapes Master Plan Phases 1 and 2 (Old Town Core)	Complete Phase 1 (Old Town Core) and Phase 2 (Cannery Arterials) of the Downtown Streetscapes Master Plan.	Medium-Term
P49	Downtown Streetscapes Master Plan Phase 3 (Old Town Secondary Streets)	Complete Phase 3 (Old Town Secondary Streets) of the Downtown Streetscapes Master Plan.	Short-Term
P50	Downtown Streetscapes Master Plan Phase 4 (Old Town Residential Neighborhoods)	Complete Phase 4 (Old Town Residential Neighborhoods) of the Downtown Streetscapes Master Plan.	Short-Term
Biking Projects (See Figure 13)			
B1	Murdock Shared-Use Path	Build a shared-use path along the west side of Murdock Road from Oregon Street to Upper Roy Street.	Medium-Term
B2	Meinecke Bike Lanes	Add bike lanes on Meinecke Road from Marshall Street to 3rd Street.	Short-Term
B5	Main Street Shared Lane Markings	Add shared lane markings to Main Street between 1st Street and Sherwood Boulevard.	Medium-Term
B6	Pine Street Shared Lane Markings	Add shared lane markings to Pine Street between 3rd Street and Sherwood Boulevard.	Medium-Term
B7	Borchers Bike Lanes	Build bike lanes on Borchers Road between Edy Road and Roy Rogers Road.	Short-Term
B8	3rd Street Shared Lane Markings	Add shared lane markings on 3rd Street from Washington Street to Sherwood Boulevard.	Medium-Term
B9	1st Street Shared Lane Markings	Add shared lane markings on 1st Street from Main Street to Pine Street.	Medium-Term
B10	Century Drive Shared-Use Path	Widen the sidewalk on the south/east side of Century Drive between Tualatin-Sherwood Road and the existing terminus to provide a shared-use path	Short-Term
B12	Old Highway 99W Shared-Use Path	Widen the sidewalk along the west side of Old Highway 99W between Timbrel Lane and Crooked River Lane to provide a shared-use path	Medium-Term
B13	Old Highway 99W Improvements Segment 2	Upgrade Old Highway 99W (from Crooked River Lane to Brookman Road) to a two lane collector with a shared use path on the west side and sidewalks on the east side.	Short-Term
B16	Baler Way Bike Lanes	Rebuild Baler Way to a collector between Century Drive and Tualatin-Sherwood Road to include bike lanes.	Short-Term
B17	12th Street Bike Lanes	Add bike lanes on 12th Street between Highway 99W and Sherwood Boulevard.	Short-Term

Project #	Project Name	Project Details	Priority
B18	Washington Street Shared Lane Markings	Add shared lane markings on Washington Street between 3rd Street and 1st Street.	Medium-Term
B19	Sunset Boulevard Bike Lanes	Add bike lanes on Sunset Boulevard between Aldergrove Avenue and Murdock Road	Medium-Term
Transit Projects (See Figure 14)			
T1	Provide Transit Amenities at Major Transit Stops	Provide Transit Amenities at Major Transit Stops.	Medium-Term
T2	Improve Pedestrian Connections to Transit Facilities	Improve Pedestrian Connections to Transit Facilities.	Short-Term
T3	Increase Density Adjacent to Transit	Increase Density Adjacent to Transit.	Short-Term
T6	Support Regional Service to Tualatin	Support potential transit connections to Tualatin	Medium-Term

Full project list (including aspiration projects) can be found in Volume 2, Section E
Projects may be constructed through private development

Aspirational Plan

The projects within the fundable plans will significantly improve Sherwood's transportation system. If the City is able to implement a majority of the Projected Fundable Plan, nearly two decades from now Sherwood residents will have access to a safer, more balanced multimodal transportation network.

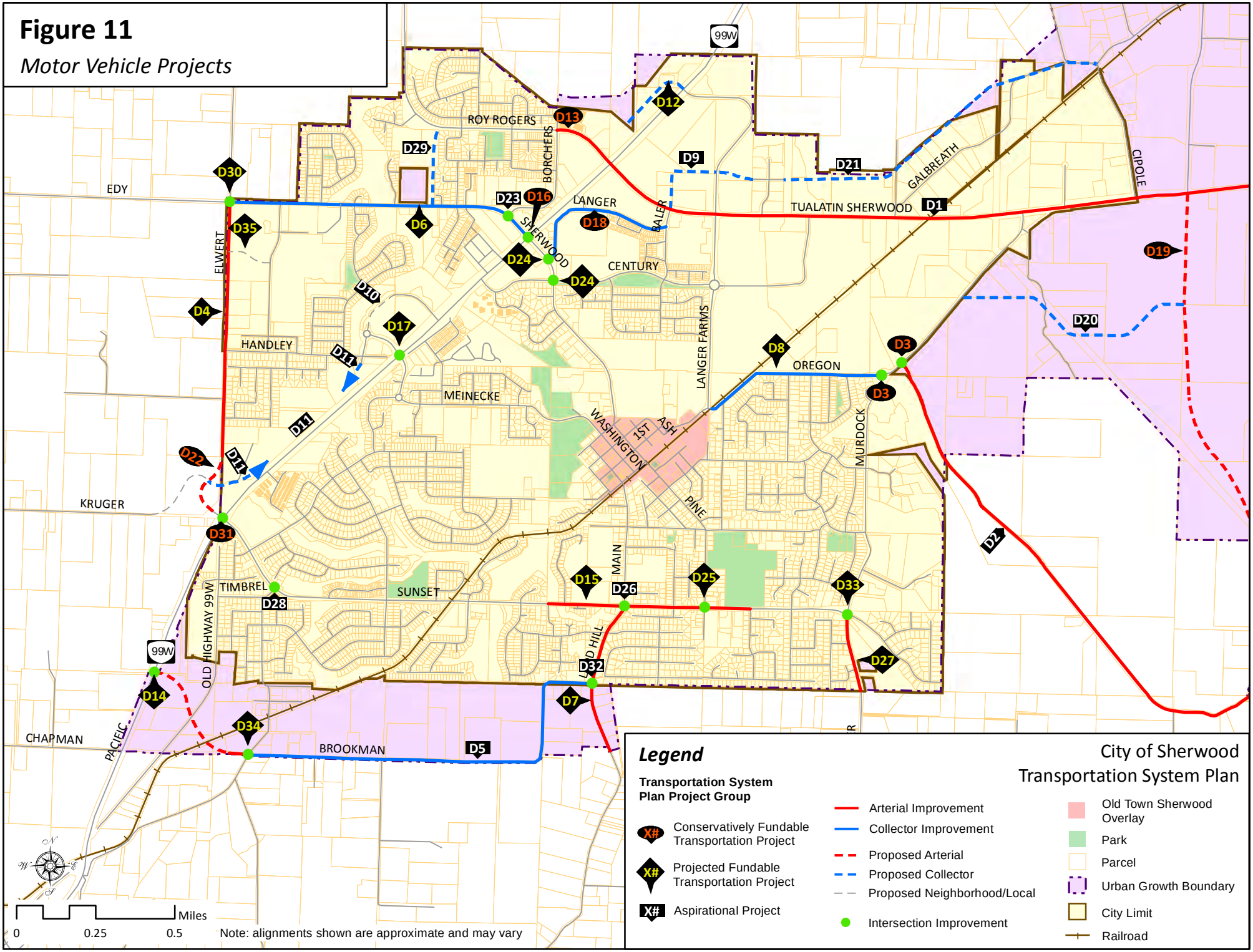
The Aspirational Plan identifies those transportation solutions that are not reasonably expected to be funded by 2035, but many of which are critically important to the transportation system. Some of the projects will require funding and resources beyond what is available in the time frame of this plan. Others are contingent upon redevelopment that makes it possible to create currently missing infrastructure, such as street connections.

The Aspirational Plan solutions are illustrated in Figures 11 to 14 and summarized in the TSP Volume 2, Section E. The Aspiration Transportation Plan includes about $112 million worth of investments. Planning level cost estimates for the projects can be found in Table A1 of the TSP Volume 2, Section E.

Transportation solutions within the Aspirational Plan, but not in a fundable plan, were recommended as long-term investments.

Figure 11

Motor Vehicle Projects



Legend

Transportation System Plan Project Group

- X# Conservatively Fundable Transportation Project
- X# Projected Fundable Transportation Project
- X# Aspirational Project

- Arterial Improvement
- Collector Improvement
- Proposed Arterial
- Proposed Collector
- Proposed Neighborhood/Local
- Intersection Improvement

- Old Town Sherwood Overlay
- Park
- Parcel
- Urban Growth Boundary
- City Limit
- Railroad

City of Sherwood
Transportation System Plan

Figure 12

Pedestrian Projects

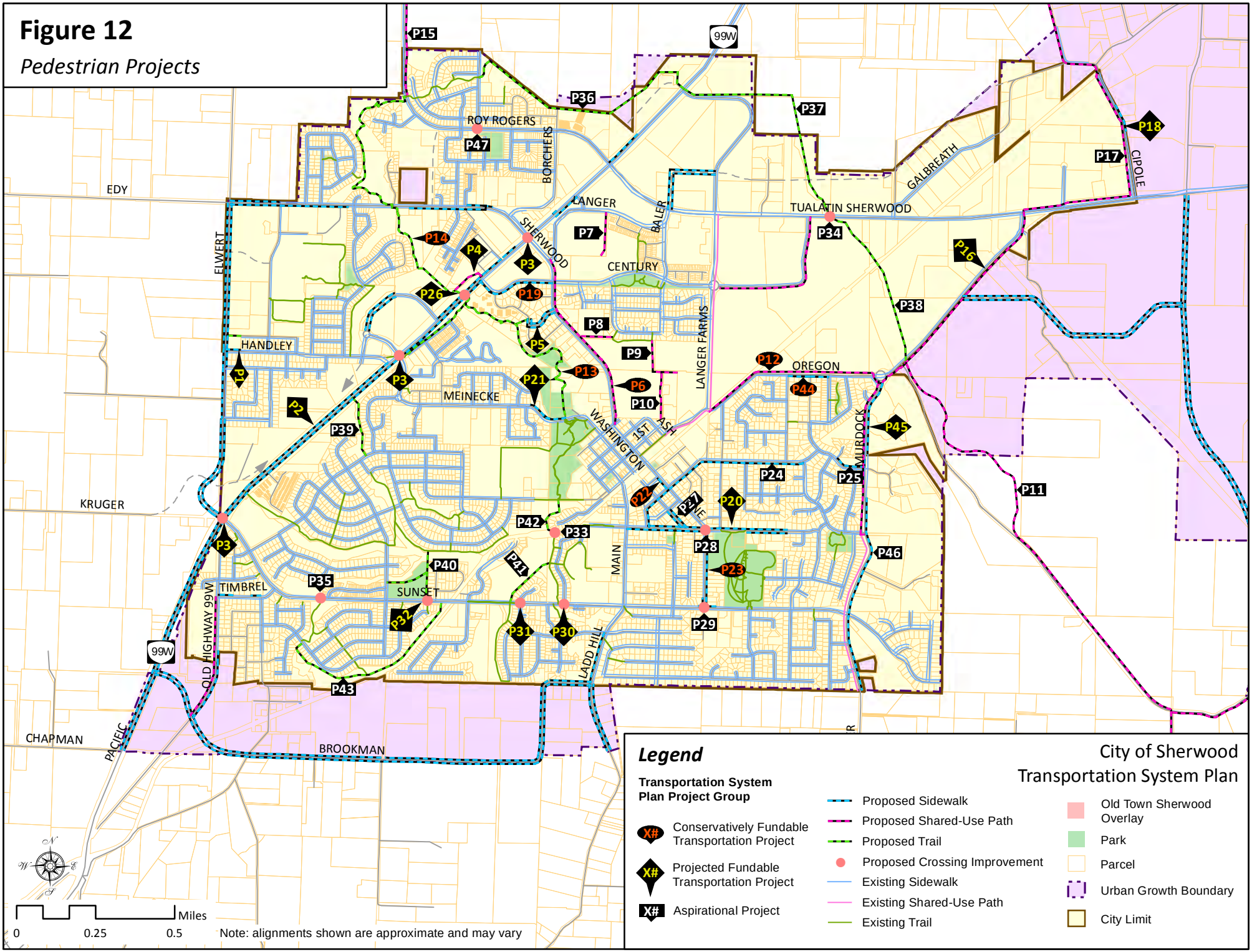
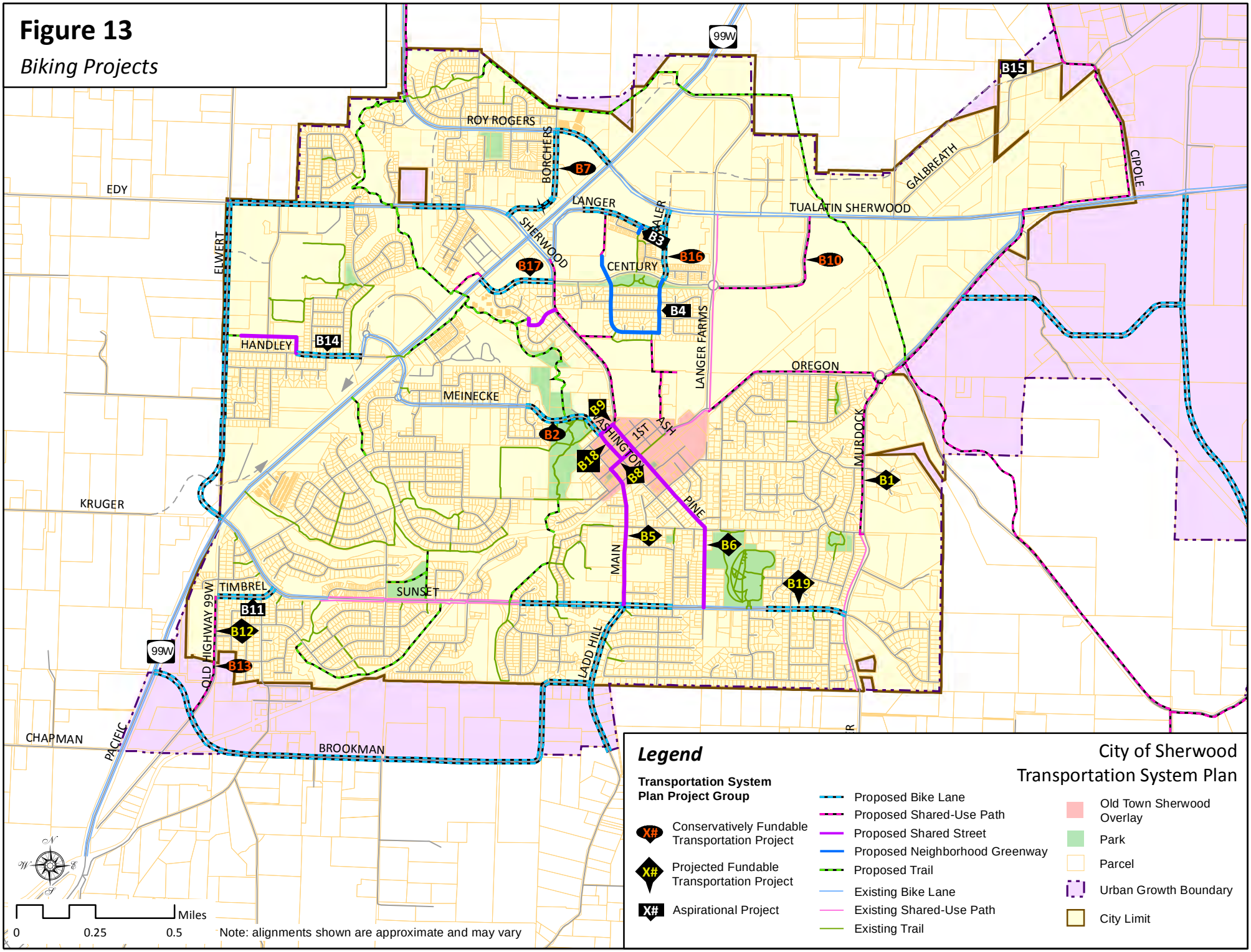


Figure 13

Biking Projects



Legend

Transportation System Plan Project Group

- X# Conservatively Fundable Transportation Project
- X# Projected Fundable Transportation Project
- X# Aspirational Project

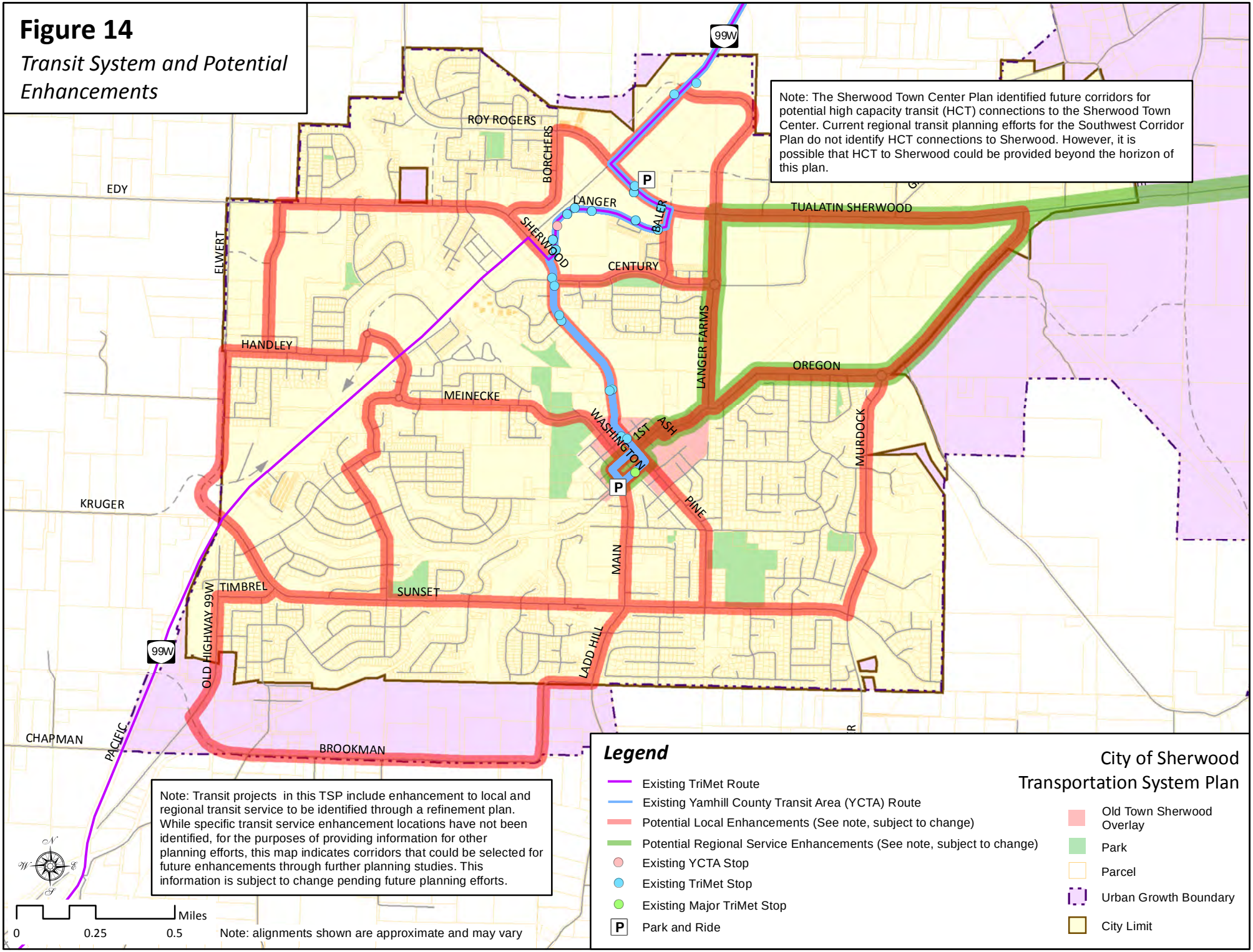
- Proposed Bike Lane
- Proposed Shared-Use Path
- Proposed Shared Street
- Proposed Neighborhood Greenway
- Proposed Trail
- Existing Bike Lane
- Existing Shared-Use Path
- Existing Trail

City of Sherwood
Transportation System Plan

- Old Town Sherwood Overlay
- Park
- Parcel
- Urban Growth Boundary
- City Limit

Figure 14

Transit System and Potential Enhancements



Section 8

The Standards

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The Standards

The standards are intended to ensure that future development in Sherwood is consistent with the City's vision for its transportation system.

Functional Classification for Sherwood Streets

Roadway design typically focuses on the safety and flow of motor vehicle traffic. However some streets have other functions that might take precedent over vehicle mobility, such as ensuring sidewalks or bike facilities are available for vulnerable users like children or the elderly.

While the functional classification system is designed to serve transportation needs within the community, sometimes competing priorities can have opposing effects. For example, as access increases, the facility design dictates slower speeds, narrower travelways, and non-exclusive facilities. The goal of selecting functional classes for particular roadways is to provide a suitable balance between competing objectives, which are depicted in Figure 15.

Figure 15 shows that as street classes progress from local to collector to arterial to freeway (top left corner to bottom right corner) the following occur:

- Mobility Increases
- Integration of Pedestrian and Bicycles Decreases
- Access Decreases
- Facility Design Standards Increase

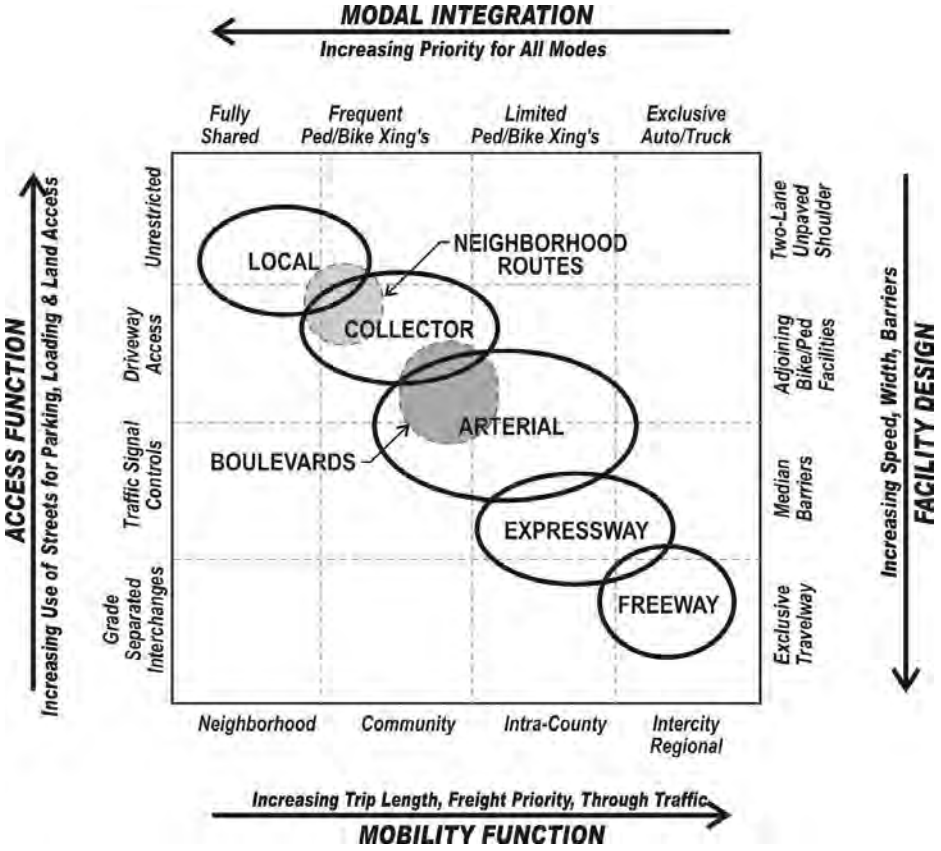


Figure 15: Functional Classification Matrix

The City of Sherwood links functional class to road design standards, and this has enabled the City to construct uniform high-quality improvements that were much needed to support recent growth. However, the City also recognized that relying on this system has limitations. Functional classification has commonly been mistaken as a determinate for traffic volume, road size, urban design land use and various other features which collectively are the elements of a roadway but do not represent function. These factors can be outcomes of function, but do not define the function.

Functional Classification Designations

The types of roadways designated in Sherwood are described below.

Principal Arterials are typically freeways and state highways that are access controlled and provide the highest level of connectivity. These routes connect over the longest distance (sometimes miles long) and are less frequent than other arterials or collectors. These highways generally span several jurisdictions and often have statewide importance (as defined in the State Highway Classification System). In Sherwood, Highway 99W is the only route designated as a Statewide Highway.

Arterial streets serve to interconnect and support the principal arterial highway system. These streets link major commercial, residential, industrial and institutional areas. Arterial streets are typically spaced about one mile apart to assure accessibility and reduce the incidence of traffic using collectors or local streets for through traffic in lieu of a well place arterial route. Arterials are typically multiple miles in length and many connect to cities surrounding Sherwood.

Collector streets provide both access and circulation within and between residential and commercial/ industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function, do not require as extensive control of access (compared to arterials), and penetrate residential neighborhoods, distributing trips from the neighborhood and local street system. Collectors are typically greater than 0.5 to 1.0 miles in length.

Neighborhood routes are usually long relative to local streets and provide connectivity to collectors or arterials. Because neighborhood routes have greater connectivity, they general have more traffic than local streets and are used by residents in the area to get into and out of the neighborhood, but do not serve citywide/ large area circulation. Traffic from cul-de-sacs and other local streets may drain onto neighborhood routes to gain access to collectors or arterials. Because traffic needs are greater than a local street, certain measures should be considered

to retain neighborhood character and livability of these routes.

Neighborhood traffic management measures are often appropriate (including devices such as speed humps, traffic circles and other devices). However, it should not be construed that neighborhood routes automatically get speed humps or any other measures. While these routes have special needs, neighborhood traffic management is only one means of retaining neighborhood character and vitality.

Local streets have the sole function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design.

Characteristics of Streets for each Functional Classification

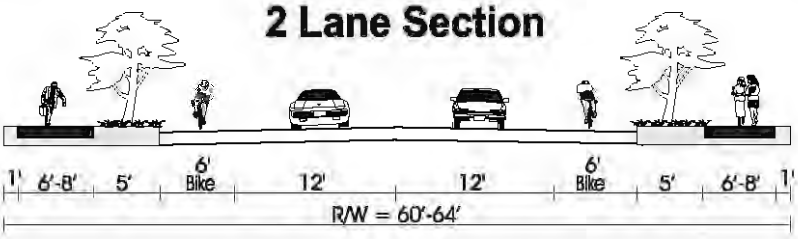
The design characteristics of streets in Sherwood were developed to meet the function and demand for each facility type. Because the actual design of a roadway can vary from segment to segment due to adjacent land uses and demands, the objective was to define a system that allows standardization of key characteristics to provide consistency, but also to provide criteria for application that provides some flexibility, while meeting standards.

Under some conditions a design exception process to the adopted street cross-section may be requested from the City Engineer. Typical conditions that may warrant consideration of a design exception include—but are not limited to—the following:

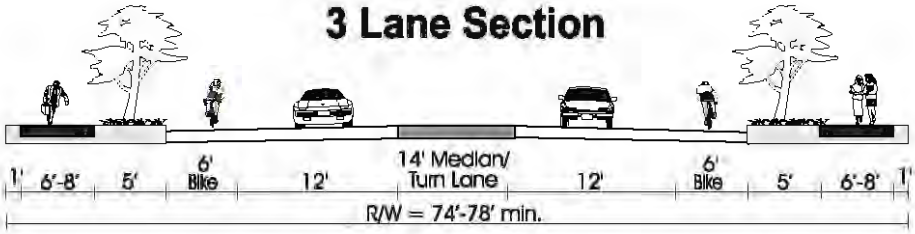
- Infill sites
- Innovative designs (such as shared streets known as "woonerfs")
- Severe topographic constraints
- Existing developments and/or buildings that make it extremely difficult or impossible to meet the design standards

The street cross sections for each facility type in the city can be found in Figures 16A through 16F. Streets under ODOT control (Highway 99W) are subject to the design criteria in the Oregon Highway Plan and Highway Design Manual. Streets under Washington County's control are subject to County design standards.

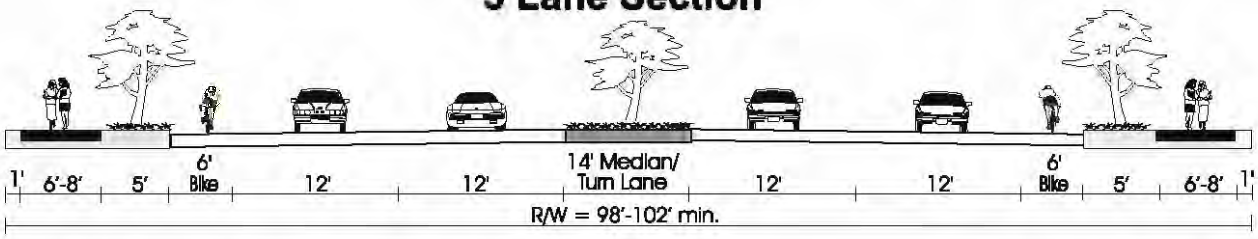
2 Lane Section



3 Lane Section

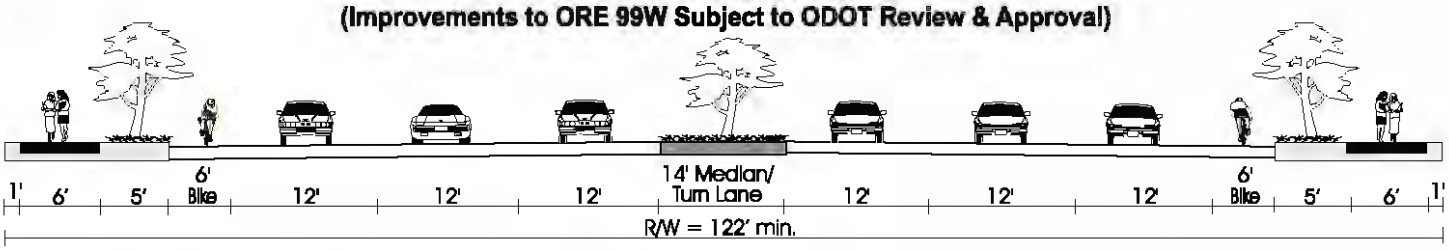


5 Lane Section



7 Lane Section

(Improvements to ORE 99W Subject to ODOT Review & Approval)



A variance requires demonstration of hardship or other exceptional circumstances resulting from conditions of the property. Variances must meet Sherwood Development Code and TPR criteria.

Arterial Street Design Characteristics

Characteristic	Arterials
Vehicle Lane Widths (Turn Lane - 12-14 ft.)	12 ft.
On-Street Parking	Only in (i.e. downtown) (8 ft.)
Bicycle Lanes (minimums)	6 ft.
Sidewalks (minimums)	6-8 ft. *1
Landscape Strips	Required
Raised Medians	Required
Neighborhood Traffic Management (NTM)	Prohibited
Transit	Appropriate
Turn Lanes	When Warranted *2
Access Control	See Later Discussion

Notes:

1. 8 feet for residential streets, 6 feet in commercial/industrial areas.
2. Turn lane warrants should be reviewed using Highwey Research Record No. 211, NCHRP Report No. 279 or other updated/superseding reference.

Figure 16A
ARTERIAL STREETS
SHERWOOD
STREET CROSS SECTIONS

7 Lane Section

Notes:

1.) *Highway transitions to five lanes south of Edy Road and north of Roy Rogers Road.*

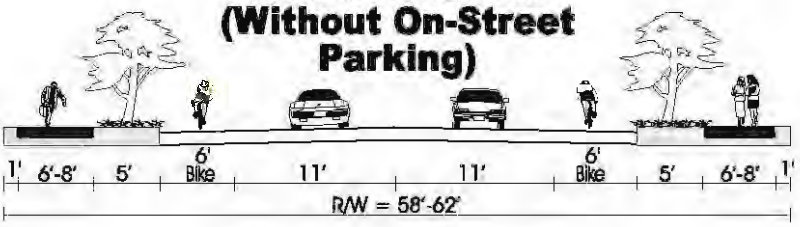
2.) *Median width varies from 16 feet to 60 feet, and includes some grade-separated segments.*

3.) *Right-of-way width varies from 96 feet to 270 feet.*

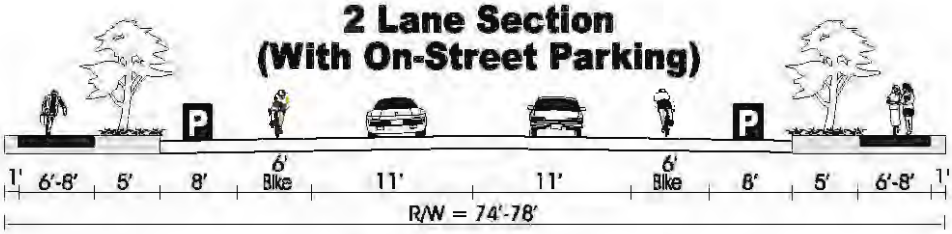
4.) *Where frontage improvements are needed, a 10-foot walkway shall be provided within a 25-foot landscaped strip adjacent to the roadway. The path may include a slight meander as determined case-by-case.*

Figure 16B
ORE99W ODOT STANDARD
STREET CROSS SECTION

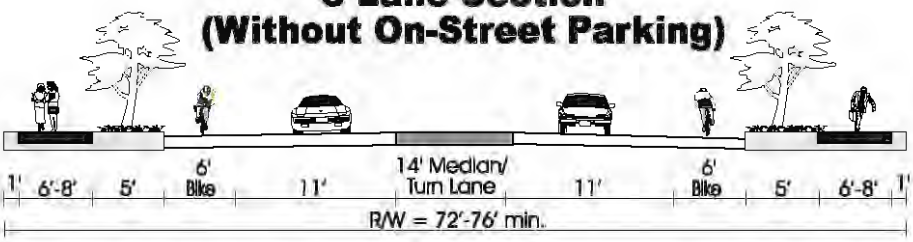
2 Lane Section (Without On-Street Parking)



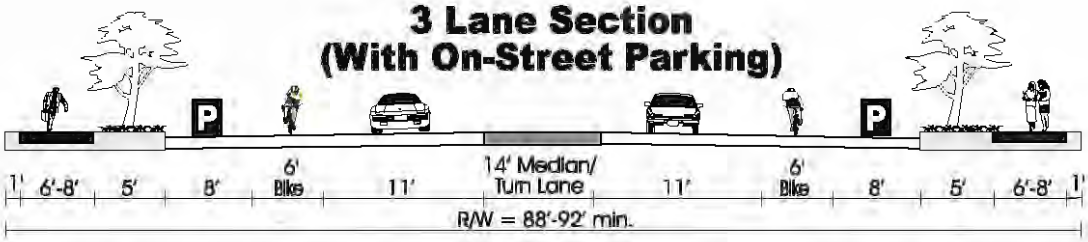
2 Lane Section (With On-Street Parking)



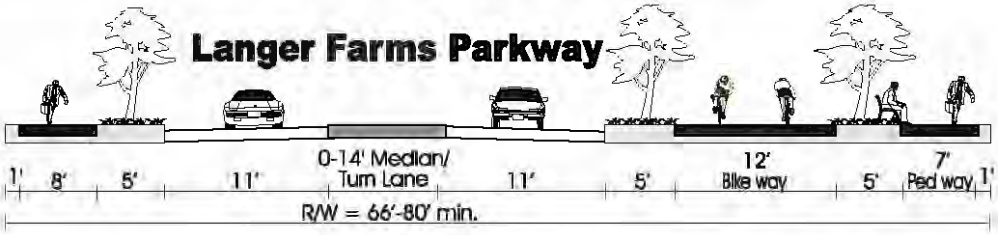
3 Lane Section (Without On-Street Parking)



3 Lane Section (With On-Street Parking)



Langer Farms Parkway



A variance requires demonstration of hardship or other exceptional circumstances resulting from conditions of the property. Variances must meet Sherwood Development Code and TPR criteria.

Collector Street Design Characteristics

Characteristic	Collectors
Vehicle Lane Widths (Turn Lane - 12-14 ft.) *1	11 ft.
On-Street Parking	8 ft.-Optional
Bicycle Lanes (minimums)	6 ft.
Sidewalks (minimums)	6-8 ft. *2
Landscape Strips	Required
Raised Medians	Optional (Required where 3-lane section used)
Neighborhood Traffic Management (NTM)	Under Special Conditions
Transit	Appropriate
Turn Lanes	When Warranted *3
Access Control	See Later Discussion

P - *On-street Parking Lane (except at intersections)*

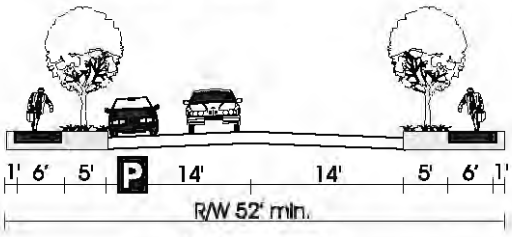
Notes:

1. *In constrained conditions on collectors a minimum width of 10 feet may be considered (i.e. for intersection turn lanes).14-feet is desirable for continuous two-way left turn lanes.*
2. *8 feet for residential streets, 6 feet in commercial/industrial areas.*
3. *Turn lane warrants should be reviewed using Highway Research Record No. 211, NCHRP Report No. 279 or other updated/superseding reference.*

Figure 16C
COLLECTOR STREETS
SHERWOOD
STREET CROSS SECTIONS

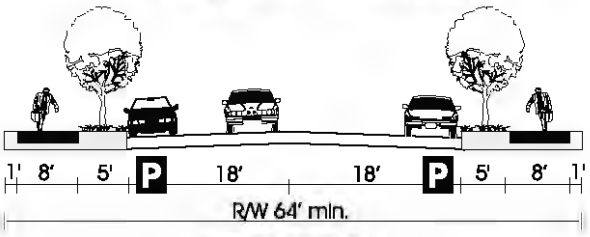
A variance requires demonstration of hardship or other exceptional circumstances resulting from conditions of the property. Variances must meet Sherwood Development Code and TPR criteria.

28' Standard Residential*



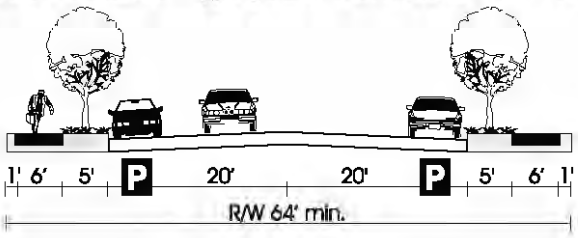
<1,000 vpd

36' Neighborhood Route

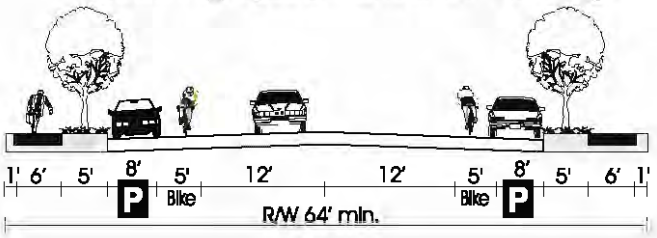


>1,000 vpd

40' Standard Commercial/Industrial Not Exceeding 3,000 Vehicles Per Day



50' Standard Commercial/Industrial Exceeding 3,000 Vehicles Per Day



Local Street Design Characteristics

(typically minimums unless stated otherwise)

Characteristic	Neighborhoods	Locals	Comm/Ind
Vehicle Lane Widths (Bus Route - 11 ft.)	10 ft.	10 ft.	20 ft.*
On-Street Parking	8 ft.		
Sidewalks (minimums)	8 ft.	6 ft.	6 ft.
Landscape Strips	Required	Required	Required
Neighborhood Traffic Management (NTM)	Acceptable	Should Not be Necessary	Acceptable
Transit	Special Circumstances	Not Appropriate	Acceptable

* Combined travel/parking lane.

Legend

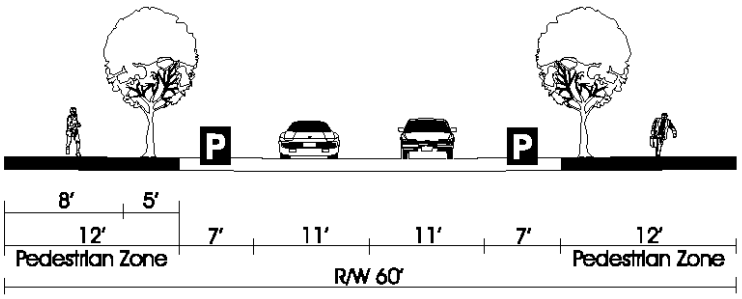
P - On-street Parking Lane

* - Parking can be provided on both sides if it can be demonstrated that curb cuts make up at least 40% of street frontage.

Figure 16D
LOCAL/NEIGHBORHOOD STREETS
SHERWOOD
STREET CROSS SECTIONS

A variance requires demonstration of hardship or other exceptional circumstances resulting from conditions of the property. Variances must meet Sherwood Development Code and TPR criteria.

Pedestrian Streets**



** *No Curbs*

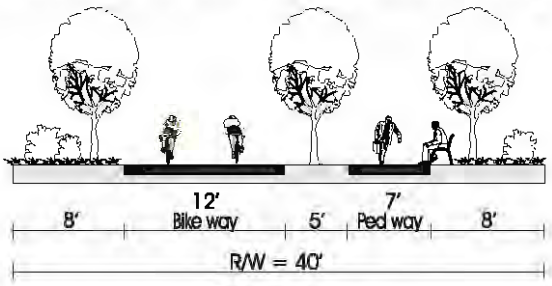
Legend

P - *On-street Parking Lane (except at intersections)*

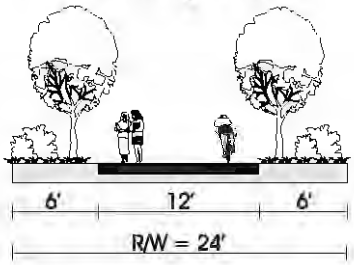
Figure 16E
DOWNTOWN STREET STANDARDS
RESIDENTIAL/PEDESTRIAN

A variance requires demonstration of hardship or other exceptional circumstances resulting from conditions of the property. Variances must meet Sherwood Development Code and TPR criteria.

Pedestrian/Bicycle Greenway



Primary Trail



Feeder Trail

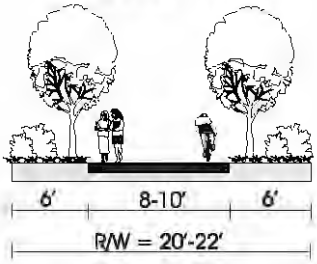


Figure 16F
TRAIL STANDARDS
SHERWOOD
CROSS SECTIONS

Functional Classification Changes

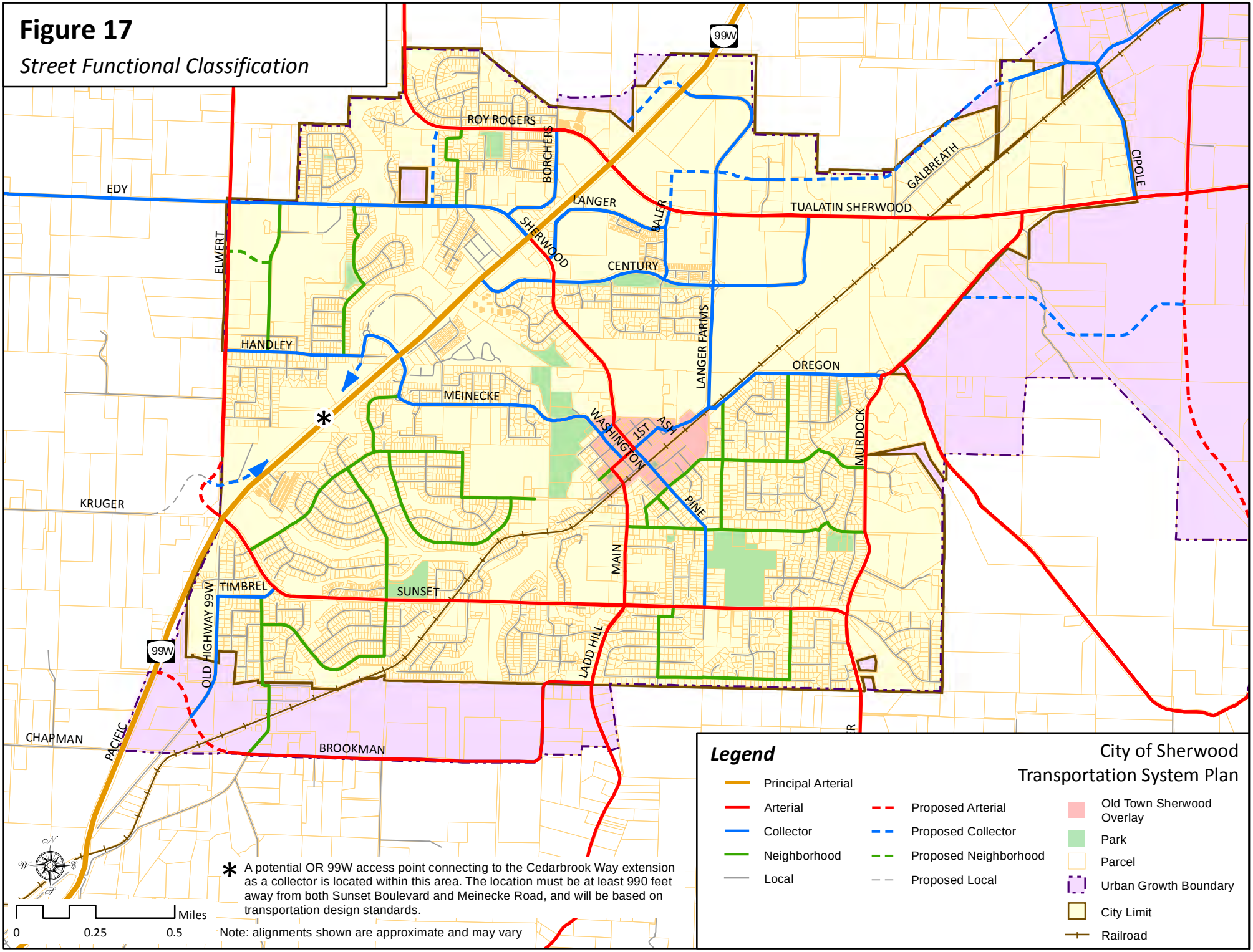
Figure 17 shows the street functional classification system in the city, including the proposed functional classification of roadway extensions. Streets where the functional classification has changed with the adoption of the 2014 TSP are listed in Table 2.

Table 2: Functional Classification Changes

Street	Existing Class	Revised Class	Comment
Gerda Lane	Collector	Local	The future Herman Road extension will replace Gerda Lane/Galbreath Drive as the collector facility in the area
Galbreath Drive	Collector	Local	The future Herman Road extension will replace Gerda Lane/Galbreath Drive as the collector facility in the area
Herman Road	Local	Collector	Herman Road will be rebuilt as a collector and extended west as part of the I-5 to 99W Connector project
Baler Way (between Langer Drive and Century Drive)	Local	Collector	Removal of the signal at Sherwood Boulevard/Langer Drive will shift demand to Century Drive and Baler Way
Brookman Road (Ladd Hill to Hwy 99W)	Collector	Arterial	Brookman Road and the Concept Plan area have been identified as areas for future refinement. Refer to Section 9 (The Outcome) for additional information

Figure 17

Street Functional Classification



Access Spacing Standards

Access Management is a broad set of techniques that balance the need to provide efficient, safe and timely travel with the ability to allow access to the individual destination. ODOT and Washington County have clear access management policies and the supporting documentation to ensure that the highway system is managed as wisely as possible for the traveling public.

Access management is the control or limitation of access on arterial and collector facilities to preserve their functional capacity. Several access management strategies that have been developed in prior plans are noted below to improve access and mobility in Sherwood:

- Provide left turn lanes where warranted for access onto cross streets
- Work with land use development applications to consolidate driveways where feasible
- Meet ODOT and Washington County access requirements on arterials and collectors under their jurisdiction
- For streets under the City's control, implement the spacing standards established in the *City Code*[9]

Sherwood's minimum access spacing standards on locally owned streets are designated in the *City Code*[10] (which takes precedence) and are listed in the TSP for reference purposes only:

- Local streets – 10 feet from the point of curvature or 25 feet if no radius exists
- Neighborhood routes – 50 feet
- Collectors – 100 feet
- Arterials – 600 feet

Access management is not easy to implement and requires long institutional memory of the impacts of short access spacing – increased collisions, reduced capacity, poor sight distance and greater pedestrian exposure to vehicle conflicts. Many of the pre-existing driveways that do not meet access spacing requirements were put in when traffic volumes were substantially lower and no access spacing criteria were mandated. With higher traffic volume in the future, the need for access control on all arterial roadways is critical—the outcome of not managing access properly is inefficient roadways with poor mobility, which leads to building additional wider roadways to compensate for the mobility inefficiency.

Traffic Calming

Traffic calming refers to street design techniques used to create safer, slower residential and mixed-use streets to mitigate the impacts of motor vehicle traffic volume and speed in neighborhoods and business districts where a greater balance between safety and mobility is needed. Traffic calming seeks to influence driver behavior through physical and psychological means, resulting in lower vehicle speeds or through-traffic volumes. Physical traffic calming techniques include:

- Narrowing the street by providing curb extensions or bulbouts, or mid-block pedestrian refuge islands
- Deflecting the vehicle path vertically by installing speed humps, speed tables, or raised intersections

[9] Sherwood Municipal Code, Section 16.106.040.M.2.

[10] Ibid.

- Deflecting the vehicle path horizontally with chicanes, roundabouts, and traffic circles

Narrowing travel lanes and providing visual cues such as placing buildings, street trees, on-street parking, and landscaping next to the street also create a sense of enclosure that prompts drivers to reduce vehicle speeds.

Determining the appropriate traffic calming technique will require careful thought as well as coordination with the Tualatin Valley Fire and Rescue (TVFR) as each situation is unique and there is no standard solution. Section F in Volume 2 of the TSP provides a complete list of traffic calming techniques and their applicability to assist in the decision-making process.

Local Street Connectivity

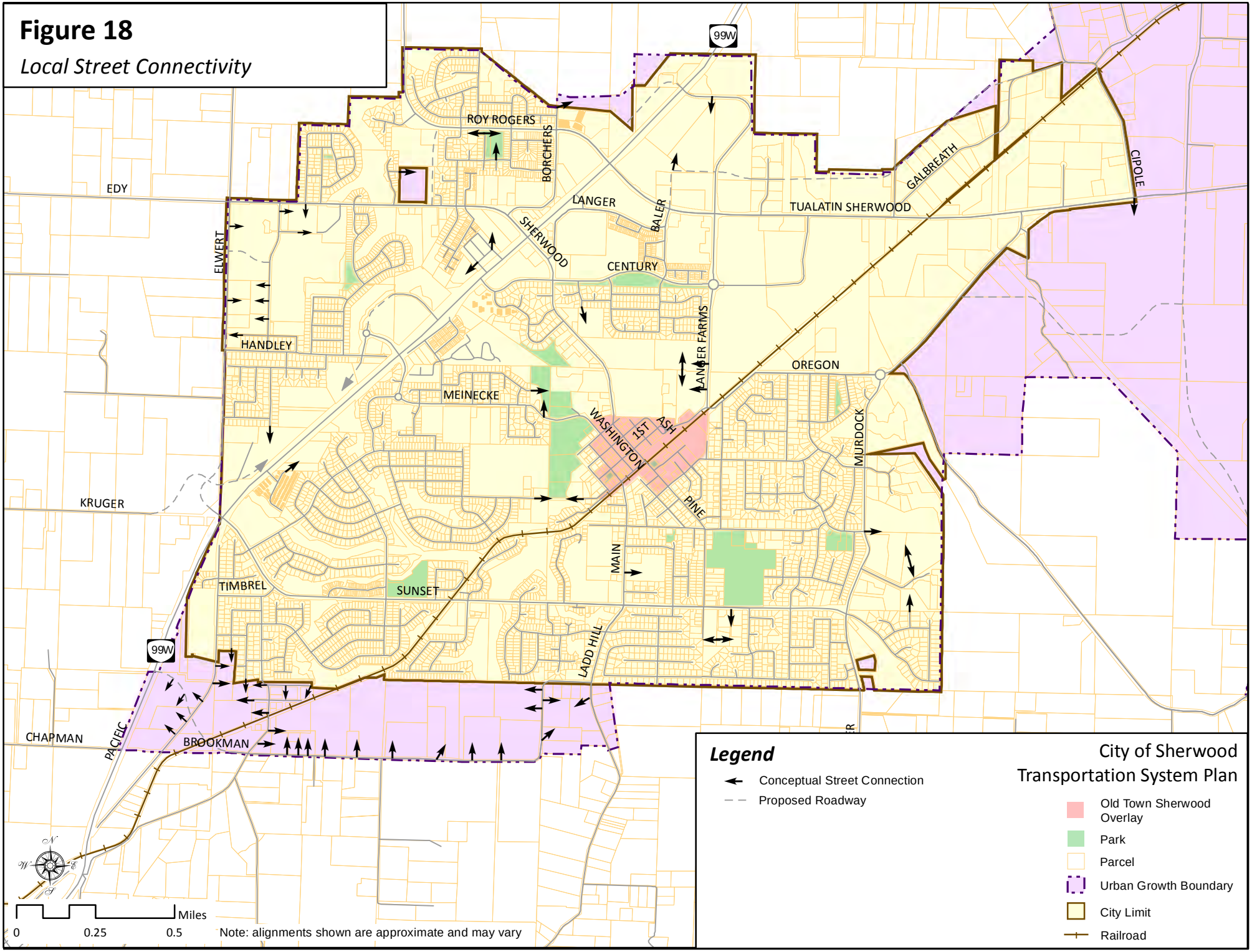
The aggregate effect of local street design impacts the effectiveness of the regional system when local travel is restricted by a lack of connecting routes, and local trips are forced onto the regional network[11]. Therefore, streets should be designed to keep through motor vehicle trips on arterial streets and provide local trips with alternative routes. Street system connectivity is critical because roadway networks provide the backbone for bicycle and pedestrian travel in the region. Metro's local street connectivity principal encourages communities to develop a connected network of local streets to provide a high level of access, comfort, and convenience for bicyclists and walkers that travel to and among centers.

A local connectivity plan for Sherwood is shown in Figure 18. It specifies the general location where new local streets could potentially be installed as nearby areas are developed or as the opportunity arises. The conceptual locations shown consider block length and access spacing requirements but do not necessarily reflect develop-ability due to topographic, environmental or manmade constraints. Locations identified are conceptual and must still go through City review to determine the appropriate location for a local street connection in the vicinity. The purpose of the plan is to ensure that new developments accommodate circulation between adjacent neighborhoods to improve connectivity for all modes of transportation.

[11] Metro 2035 Regional Transportation Plan, Local Street Network Concept.

Figure 18

Local Street Connectivity



Mobility Targets

Establishing new mobility targets for intersections in Sherwood will help encourage a sustainable transportation system by providing a metric to assess the impacts of new development on the existing transportation system. Two mobility targets that are commonly used by agencies include level of service (LOS) or volume-to-capacity (V/C) ratios.

- LOS – A "report card" rating (grade A through F) based on the average vehicle delay
- V/C – A ratio of how much available use or "how much of the pipe" is being used for a roadway or intersection. Values range from 0 to 1.0 in actual conditions but are sometimes expressed over 1.0 for projected conditions (where traffic demand or the amount that wants to use the system exceeds what can really fit in the system)

Metro does not permit agencies to adopt mobility targets that are less restrictive (lower level of service or volume to capacity ratio) than the regional targets on facilities where the regional targets apply. In addition, facilities that are under the jurisdiction of ODOT or Washington County have precedence over the city target. However, for remaining transportation facilities in Sherwood under the City's jurisdiction, the local city targets apply.

The mobility targets are to be applied based on facility type and location in the following manner and precedence:

- Regional—For all streets designated on the Arterial and Throughway Network in the Metro Regional Transportation Plan[12], intersections should comply with the mobility targets included in the Regional Transportation Functional Plan (RTFP)[13].
  - All streets within the Sherwood Town Center boundary (1.1 v/c in the highest p.m. peak hour and 0.99 v/c in the second hour).
  - All streets not in the Town Center, but on the Arterial and Throughway Network (0.99 v/c in both the highest and second hour in the p.m. peak hour). These streets include Tualatin-Sherwood Road, Roy Rogers Road, Tonquin Road, Sunset Boulevard, Murdock Road, Oregon Street (east of Murdock Road), Elwert Road, Main Street, and Ladd Hill Road.

[12] 2035 Regional Transportation Plan, Metro, June 2010.

[13] Regional Transportation Functional Plan, Chapter 3.08, Metro, Effective August 2010.

- Other Agency—For county-owned streets not on the Arterial and Throughway Network and not within the Town Center, intersections should comply with the Washington County TSP[14] (0.99 v/c in the highest hour in the p.m. peak and 0.90 in the second hour). Most county facilities are on the Arterial and Throughway Network, however. ODOT controlled streets (Highway 99W) outside the Town Center should meet the appropriate mobility target designated in the Oregon Highway Plan[15] (currently 0.99 v/c for Highway 99W outside the Town Center in both the highest and second hour in the p.m. peak).
- For city-owned streets not on the Arterial and Throughway Network and not within the Town Center, intersections should comply with Sherwood's target. The city target for signalized, all way stop (AWSC), or roundabout intersections is level of service D or a volume to capacity ratio equal to or less than 0.85. The target for unsignalized two way stop control (TWSC) intersections is level of service E or a volume to capacity ratio equal to or less than 0.90. Mobility should be evaluated by methods approved by the City Engineering Department (e.g., Highway Capacity Manual). These measures shall be assessed and reported for the critical movement for TWSC, for each approach for roundabouts, and for an overall intersection basis for AWSC and signalized intersections. For all intersections, level of service performance would first be assessed and if it is not met the v/c target would be considered. Information for both measures should be provided with traffic studies for the consideration of City staff review.

Truck Routes

Truck routes are designated in Sherwood to ensure trucks can efficiently travel through and access major destinations in the city. Efficient truck movement plays a vital role in the economical movement of raw materials and finished products. The designation of through truck routes provides for this efficient movement, while maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system.

Truck routes should provide mobility for freight movement and therefor are generally located on facilities that are classified as mobility-focused corridors (collectors and arterials). These facilities

[14] Washington County 2020 Transportation System Plan, Washington County, November 2003.

[15] 1999 Oregon Highway Plan, OHP Policy 1F Revision, ODOT, Adopted December 2011.

typically include design elements (such as managed access and sufficient lane width) to accommodate trucks. Such design elements, as well as signing to identify these routes, will help maintain freight movement and keep through trucks off of the local street system.

Washington County identifies through truck routes in the Sherwood area as Highway 99W and Tualatin-Sherwood Road-Roy Rogers Road, as shown in Figure 19. In addition, ODOT has several designations for Highway 99W (a Statewide facility) related to mobility and goods movement, including:

- National Highway System
- National Network
- Freight Route
- Reduction Review Route

These designations can limit reductions to vehicle-carrying capacity and (under the Reduction Review Route designation) subjects proposed reductions to review (ORS 366.215).

Washington County is currently in the process of updating their TSP, which is proposing the 124th Avenue extension as a truck route. This route would connect Tualatin-Sherwood Road with Tonquin Road and Grahams Ferry Road.

Transportation System Management & Operations

Transportation System Management and Operations (TSMO) is a set of integrated transportation solutions for improving the performance of existing transportation infrastructure through a combination of system and demand management strategies and programs. The Sherwood TSMO plan incorporates planned improvements and strategies detailed in the Metro Regional TSMO Plan[16].

Transportation System Management

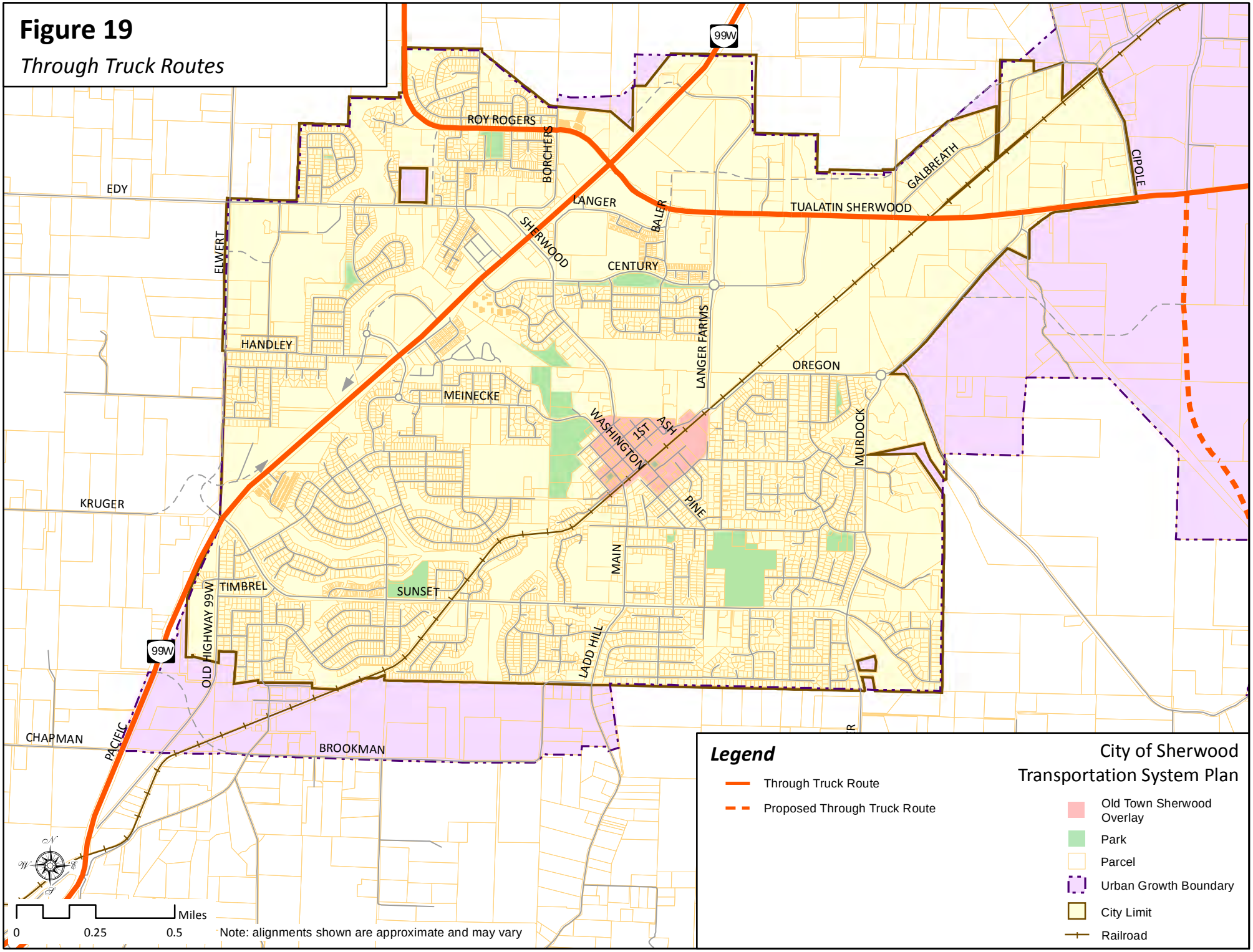
Transportation System Management (TSM) focuses on low cost strategies to enhance operational performance of the transportation system. Measures that can optimize performance of the transportation system include signal improvements, intersection channelization, access management (noted in prior section), rapid incident response, and programs that smooth transit operation. The most significant measure that can provide tangible benefits to the public is traffic signal system improvements since these directly address intersection bottleneck locations.

In developing a set of improvements for Sherwood's motor vehicle system, the TSP took a TSM approach, prioritizing low cost improvements that provide significant operational and safety benefits. These projects include traffic signal modifications, traffic control enhancements, or additional turn lanes.

[16] 2010 – 2020 Regional Transportation System Management and Operations Plan, Metro, June 2010.

Figure 19

Through Truck Routes



Transportation Demand Management

Transportation Demand Management (TDM) solutions encourage travelers to choose alternatives to driving alone in their car by providing services, incentives, supportive infrastructure and awareness of travel options. These strategies improve the performance of the existing system by having fewer vehicles on the roadway system.

State and regional policy both call for encouraging and promoting transportation demand management. The policy of this plan calls for the City to support TDM. Unlike the motor vehicle, pedestrian, and biking projects, implementation of this policy does not require capital infrastructure. The TDM plan for Sherwood consists of:

- Support efforts by Washington County, Metro and ODOT to develop productive TDM measures that reduce commuter vehicle miles and peak hour trips. The City currently requires preferential carpool parking for new development with at least twenty employees.
- Encourage the development of high speed communication in all parts of the city (e.g., fiber optic). The objective would be to allow employers and residents the maximum opportunity to rely upon other systems for conducting business and activities than the transportation system during peak periods. Fiber optic broadband is currently provided through much of the city.
- Encourage developments that effectively mix land uses to reduce vehicle trips. These plans may include development of linkages (particularly non-auto) that support greater use of alternative modes. Mixed land use projects have demonstrated the ability to reduce vehicle trips by capturing internal trips between land use types, encouraging walk/bike trips and producing shorter vehicle trips.

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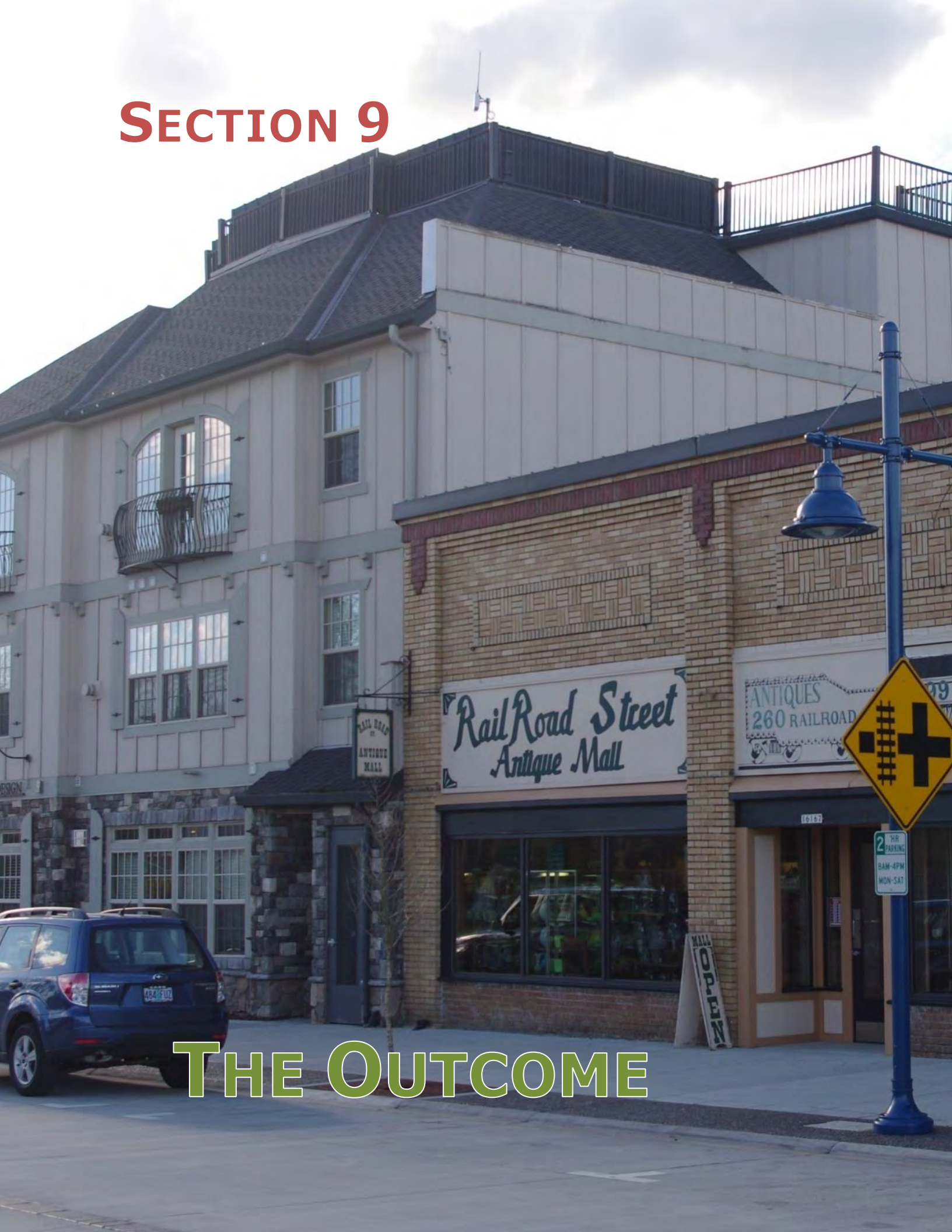
Section 9



The Outcome

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The Outcome

The Sherwood TSP employs a performance based approach, focusing on measurable outcomes of investments to the transportation system. The approach allows the City to measure the degree to which its investments support regional and city-wide priorities. In this manner, the City is able to track how its investment decisions impact a set of performance objectives through 2035. While the performance objectives do not represent the complete picture, they do offer a baseline against which to assess how the policies, investments, and planning decisions made in this plan may affect the future.

Tracking Performance of Transportation System Investments

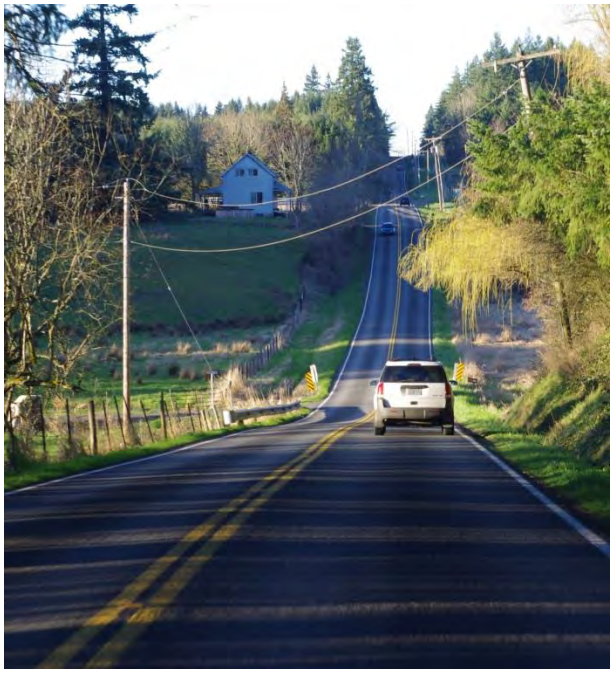
The Metro 2035 Regional Transportation Plan (RTP)[17] identifies performance targets for the Portland Metropolitan region to work towards a multi-modal transportation system that meets the goals and objectives of the regional plan. These measures focus on "high level" area-wide trends based on overall strategies, rather than focusing on minute details of specific locations (such as an individual property or intersection). The intent of these measures is to determine if local agency planning efforts are consistent with making progress towards the overall regional strategies related to transportation and the region's vision for the future. The performance measures include:

Economy

- **Safety:** Reduce fatalities and serious injuries by 50 percent.
- **Congestion:** Reduce vehicle hours of delay (VHD) per person by 10 percent, and work towards meeting intersection mobility targets.
- **Freight Reliability:** Reduce delay for truck trips by 10 percent.

Environment

- **Travel:** Reduce the vehicle miles traveled (VMT) per person by 10 percent.
- **Active Transportation:** Work towards achieving the non-single occupant vehicle (SOV) mode share targets.



[17] 2035 Regional Transportation Plan, Metro, June 2010.

Putting the Plan to the Test

To understand how the investment decisions of the TSP (the projected funding of $60 million worth of projects), improve the performance of the transportation network in Sherwood, the plan's transportation system improvements were evaluated against the performance measures to determine long-term trends through 2035. The results of the individual measures are presented in the following sections.

> *Overall, Sherwood meets or is making progress towards meeting each of the performance requirements of the RTFP and is therefore consistent with regional planning requirements and the RTFP.*

Collision Severity is Expected to Remain Low

Over the past five years of available collision data (between 2008 and 2012), there have been zero fatalities and ten serious injury-collisions within the city, averaging two serious injury-collisions a year. This equates to 1.5% of the collisions involving a serious injury. With investments in improved street crossings, multimodal facilities, and improvements to high collision locations, the severity of collisions in the city is expected to remain low.

Progress is expected to be made towards Mitigating Future Congestion

Regional strategies that focus on low-cost improvements to better manage existing transportation infrastructure will allow a better return on investment for capital expenses. The transportation system management and operations projects (which include intersection traffic control and intersection lane geometry) have relatively lower impact and lower cost than corridor widening projects, yet can provide efficiency benefits by targeting system bottlenecks (which typically are located at intersections).

Vehicle Hours of Delay (VHD): The RTP objective envisions decreasing delay by approximately ten percent through 2035 (measured from an existing year point of 440 VHD in the evening peak hour). However, without transportation improvements beyond those that already have committed funding, the future trend for delay along Sherwood streets during the evening peak hour is expected to increase. The VHD is projected to triple (1,420 VHD) by year 2035 without additional investments to the transportation system, which is largely due to the rapid growth expected in the Sherwood area, including the urban reserves.

With the $60 million worth of planned transportation investments, the total VHD during the evening peak hour would decrease to 1,250 VHD. This reduction would not meet the overall target due to funding limitations, however it would present progress towards the targets and an improvement over the conditions that would exist without the planned projects.

Intersection Mobility: Following a similar trend to the overall system VHD, intersection mobility would make progress towards improvement for year 2035 conditions with the additional investments. The motor vehicle project list focused on improving system efficiency through TSMO projects, which include intersection traffic control and lane channelization at several locations. Intersections that would require additional improvements beyond the projected $60 funding

package are primarily located along Roy Rogers Road and Tualatin Sherwood Road, where intersection management options would be exhausted and additional corridor widening would be needed.

Progress is Expected to be made Towards Reducing Freight Delay

Like the overall system VHD, progress for reducing delay along freight routes is projected to occur with the projected $60 million funding package. Total delay (VHD) in year 2035 along the freight corridors (Highway 99W, Roy Rogers Road, and Tualatin-Sherwood Road) is projected to decrease from 870 VHD with only the committed investments to 780 VHD (a 10% reduction) with the projected funding package. While this is an increase from present levels (estimated at 240 VHD), this represents improved progress towards meeting the target. In addition, widening the Tualatin-Sherwood Road and Roy Rogers Road arterial corridors to five lanes would make significant strides in reducing freight delay in Sherwood.

Motor Vehicle Travel is Expected to Outperform the Travel Target

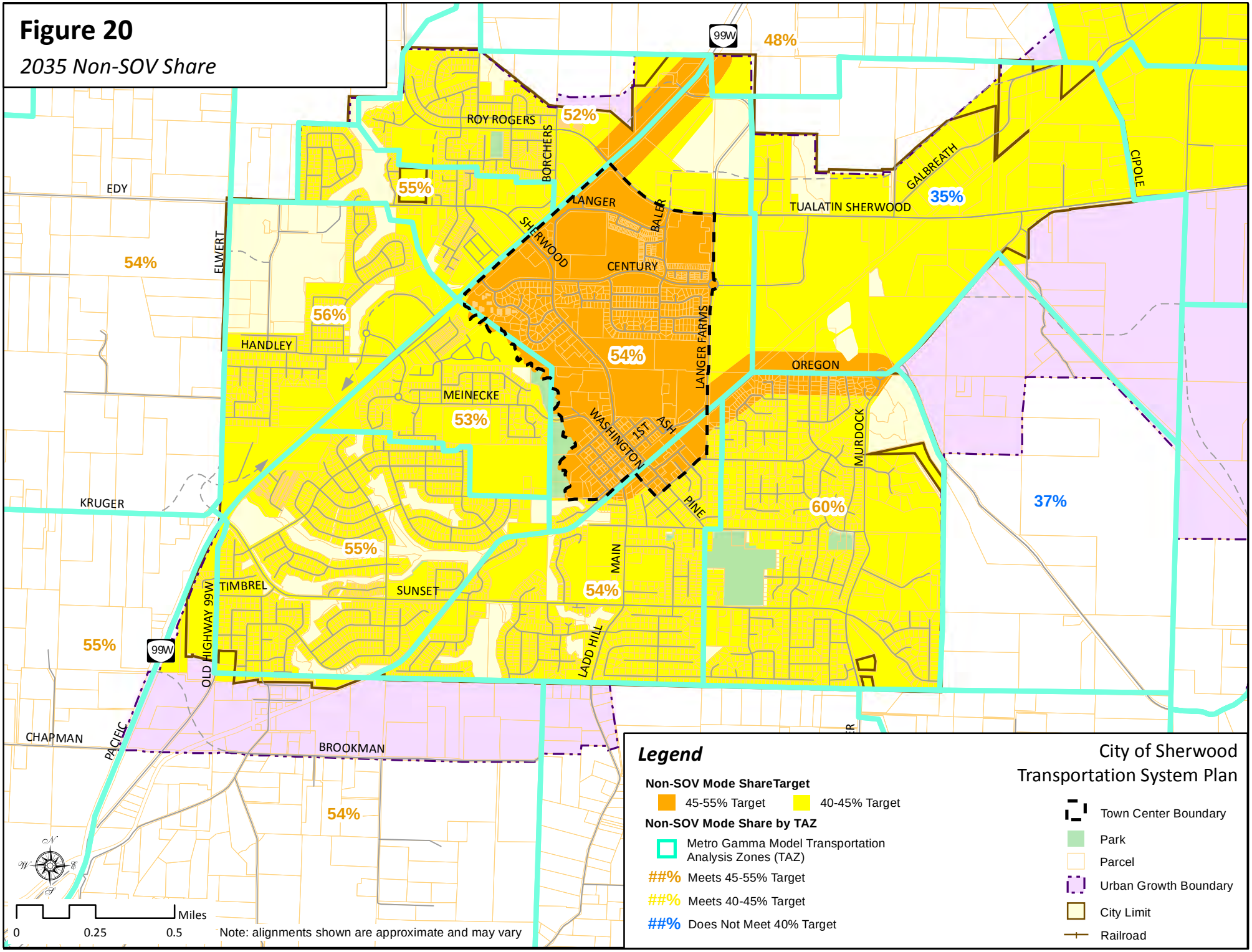
While the overall distance traveled by vehicles is projected to increase in the future along with future population and employment growth, the average motor vehicle distance traveled per person in Sherwood is projected to decrease from 1.4 vehicle miles traveled (VMT) / capita to 1.3 VMT/capita in year 2035. This decrease represents a reduction of seven percent, which nearly meets the ten percent target. In general, this decrease is consistent with Metro's goals related to reducing reliance on the motor vehicle.

A Reduction in Single Occupant Vehicle Travel is expected

Figure 20 summarizes the level of non-SOV mode share estimated for 2035 in comparison to the modal targets set in Metro's Regional Transportation Plan (RTP). These non-SOV targets are aggregated by design type groupings and colored in Figure 20 as orange (45-55% target) and yellow (40-45% target). For each area, the 2035 non-SOV share is listed. The 2035 non-SOV share for each zone is also colored to indicate the highest target that is satisfied (orange for 45-55% target, and yellow for 40-45% target). Based on the model data, it appears that the targets are typically achieved for the western areas but not met for areas east of Langer Farms Parkway. As these areas develop, a continued focus on multimodal amenities and availability of travel options may further reduce the reliance on SOV.

Figure 20

2035 Non-SOV Share



Areas for further Refinement

In addition to the investment decisions of the 2014 Sherwood TSP, several areas have been identified through the TSP Update process that will need to be explored through 2035 and beyond. These items have been identified as requiring more attention and detail beyond the scope of a local TSP effort and/or the greater involvement and coordination with other stakeholders or agencies

Function and Design of Brookman Road and Concept Plan Area Update

Brookman Road is a rural corridor that sits on the southern edge of the Urban Growth Boundary (UGB). Through the Brookman Addition Concept Plan, it was identified that the road was needed to provide access to areas south of Sunset Road. The I-5 to 99W Connector project had conceptually identified the "Southern Arterial" as the primary east-west mobility route through the area, with an alignment along or just south of Brookman Road. Since the time of those planning efforts, additional planning efforts in the Basalt Creek area have refined the eastern portion of the "Southern Arterial". To establish additional clarity about the western portion of the facility, a coordinated multiagency effort is needed to determine the future function and general capacity and design needs for Brookman Road and the Southern Arterial. These efforts will help ensure that appropriate right of way can be reserved as the area is urbanized while providing accessibility to future development.

In the interim, to provide for future flexibility, Brookman Road has been designated by Washington County as an arterial with 5-lanes of right-of-way needed. 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 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 to provide access 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.

Highway 99W Cross-Sections

The cross section for Highway 99W through Sherwood currently identifies sidewalks and bike lanes for the extent of the highway. Additional refinement to the planned location, width, and elements that comprise the multimodal components would help to address pedestrian and bicycle needs through the area. This process would potentially identify segments where it may be advantageous to provide multimodal facilities with more of a barrier from the highway and would include collaboration with ODOT.

Transit Service Enhancements

Sherwood's location at the edge of the Portland Metropolitan area limits the current availability of transit service as a travel options. Limited route coverage and long headways between buses both challenges ridership. As further development occurs in the Town Center and other areas urbanize, the

need for improving transit connectivity within the city for residents will increase. Placeholder projects have been identified to provide regional connections to Tualatin, and to provide local transit service to enhance regional service.

While it has been determined that High Capacity Transit (HCT) will not be provided from Portland to Sherwood through the current Southwest Corridor planning process, it is possible that HCT to Sherwood may be reconsidered in the long term, but any decision to do so would require a separate public process.

Parking Management Plan

The City should pursue implementation of the parking management plan for the Sherwood Town Center as the opportunity arises. This will help ensure that development within the Town Center aligns with the objectives of the TSP and region as a whole.

Geological Hazards

All proposed street extensions included in this plan are shown with conceptual alignments. These conceptual street alignments represent a planning-level illustration that street connectivity enhancements are needed in these areas. Before construction of any of the projects can begin, more detailed surveys will need to be undertaken to identify hydrological, topographical, or other geological constraints that could hinder the alignment of the planned streets. Final street alignments will be identified after these surveys have been completed.

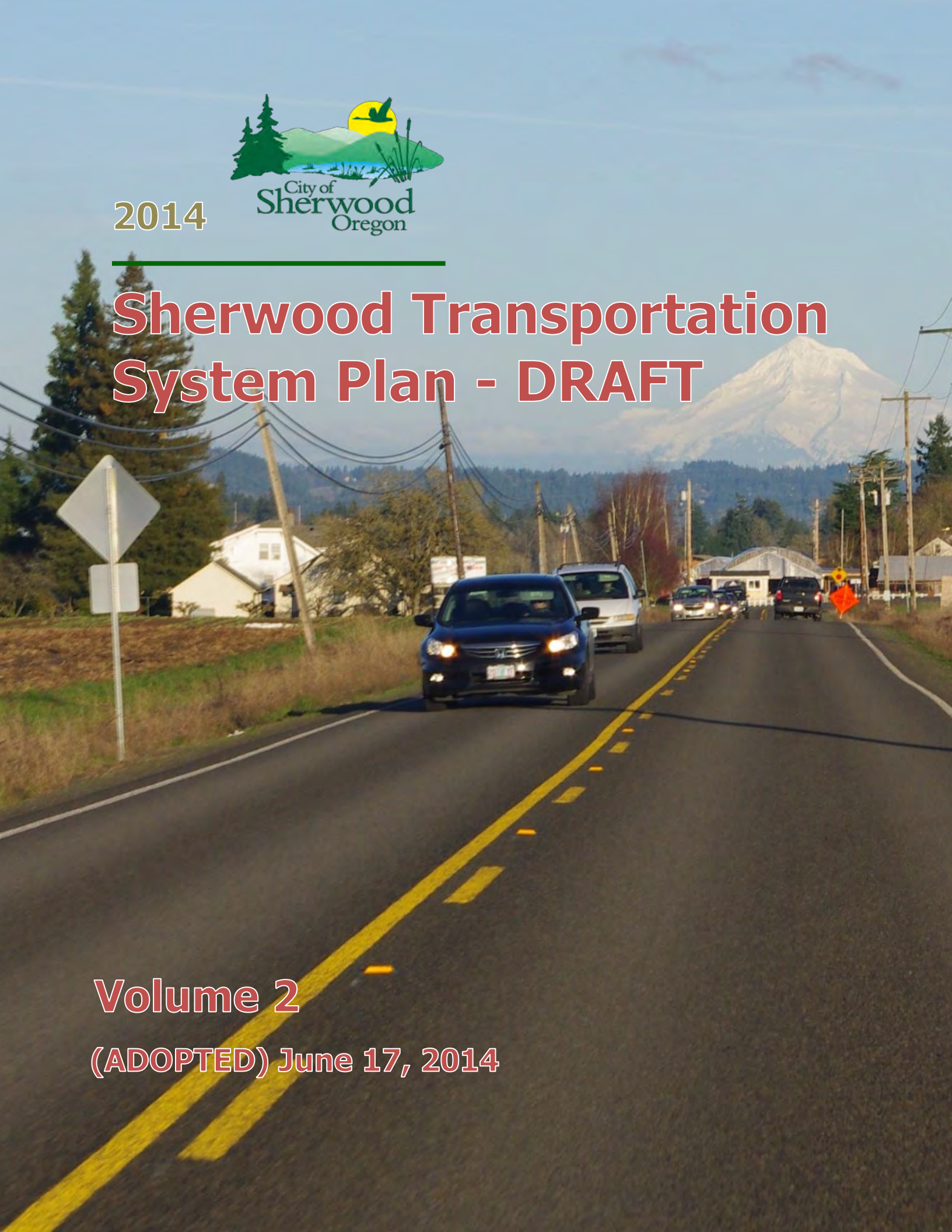
Bypass Route Support

The City may consider additional policies to support and explore future options for potential bypass routes that would remove regional through trips from Sherwood. These policies could include continued support and development of previous regional efforts (including I-5 to 99W Connector projects such as the Southern Arterial and northern arterial components including the extension of Herman Road from Cipole Road to Langer Farms Parkway) as well as participation in future endeavors such as Washington County's Westside Solution Study. Due to the regional nature of bypass routes, multi-agency coordination would be needed and it is not anticipated that this effort would be led by Sherwood.

2014

City of Sherwood Oregon

Sherwood Transportation System Plan - DRAFT



Volume 2

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- *Citizen Advisory Team*
- *Technical Advisory Team*

A special acknowledgement goes out to all the Sherwood residents, business owners, and visitors who attended community meetings or submitted comments. Your input helped make this Plan possible.

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The contents of this document do not necessarily reflect views or policies of the State of Oregon.

Contents

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Section A

Plan and Policy Summary Report

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This report summarizes the planning documents, policies, and regulations that are applicable to the City of Sherwood Transportation System Plan (TSP) update (see Appendix A for a complete list). The City's current TSP will serve as the foundation for the update process, upon which new information obtained from system analysis and stakeholder input will be applied to address changing transportation needs through the year 2035. Policies and requirements reviewed here will guide the TSP update; new strategies for addressing transportation needs and TSP recommendations will need to be coordinated with, and in some cases comply with, the plans, policies, and regulations described herein.

Transportation System Planning in Oregon

The Oregon Transportation Plan (OTP)[1] establishes goals, policies, strategies and initiatives that address the core challenges and opportunities facing transportation in Oregon. These are further refined in the Oregon Highway Plan (OHP) and implemented through the adopted targets and standards in this plan.[2] In addition, TSPs for cities within metropolitan planning organizations (MPOs) must also comply with the regional transportation plan, which is adopted to meet specific Federal requirements.

Transportation System Planning in Oregon is required by state law as one of the 19 statewide planning goals[3] (Goal 12- Transportation). The Transportation Planning Rule (TPR), OAR 660-012[4], defines how to implement State Planning Goal 12. Specifically, the TPR requires:

- The state to prepare a TSP, referred to as the Oregon Transportation Plan (OTP);
- Metropolitan planning organizations (MPOs) to prepare a Regional Transportation Plan (RTP) that is consistent with the OTP (the Metro RTP[5] applies to the City of Sherwood); and
- Counties and cities to prepare local TSPs that are consistent with the OTP and RTP.

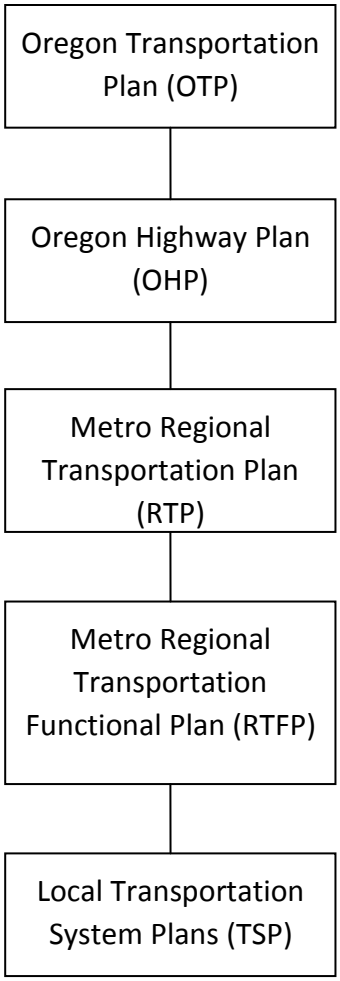
The TPR directs TSPs to integrate comprehensive plan land use with transportation needs and to promote systems that serve statewide, regional and local transportation needs. These requirements aim to improve community livability by encouraging land use patterns and transportation systems that make it more convenient for people to walk, bicycle, use transit and drive less to meet their daily needs. An evaluation of how the existing TSP and implementing code language meet requirements of the TPR and specific recommendations for changes will be included in the Needs, Opportunities, Constrains and Tools Report.

[1] Oregon Transportation Plan: http://www.oregon.gov/ODOT/TD/TP/ortransplanupdate.shtml
[2] Oregon Highway Plan: http://www.oregon.gov/ODOT/TD/TP/orhwyplan.shtml
[3] Statewide Planning Goals: http://www.oregon.gov/LCD/goals.shtml
[4] Transportation Planning Rule: http://arcweb.sos.state.or.us/rules/OARS_600/OAR_660/660_012.html
[5] Metro Regional Transportation Plan: http://www.oregonmetro.gov/index.cfm/go/by.web/id=25038

Why does the City of Sherwood need an Updated TSP?

The City's current TSP was adopted in 2005. Since then, new requirements have been made in the OTP, OHP and Metro RTP. Several regional planning efforts have also taken place since the TSP was adopted, and several Sherwood plans have also been updated or completed, including the Parks Master Plan, the Town Center Plan and concept plans for areas brought into the Urban Growth Boundary. The last 10+ years of regulatory, land use and transportation system changes will be considered in this TSP update.

ODOT's Transportation System Plan Guidelines[6] direct TSP updates to address recent policy and regulatory changes, and calls out changes to the OTP, OHP, TPR, and federal changes implemented into the RTP. Since adoption of the 2005 City of Sherwood TSP, the OTP was updated (2006) to emphasize maintaining assets in place, optimizing existing system performance through technology and better system integration, creating sustainable funding, and investing in strategic capacity enhancements. Policy 1F (Mobility Standards) of the OHP was amended in 2011 to recognize and emphasize opportunities for developing alternative mobility targets where such a tool better identifies transportation needs and solutions and better balances state and local community needs and objectives. OHP Goal 3, Access Management, and its associated policies and standards were also modified in 2011, with text changes touching on balancing local economic development and state mobility needs, jurisdictional transfer agreements, and medians.



Metro's Regional Transportation Functional Plan[7] **(RTFP)** directs how the City of Sherwood should implement the RTP through the TSP and land use regulations. The RTFP codifies existing and new requirements that local plans must comply with to be consistent with the RTP. If a TSP is consistent with the RTFP, Metro will find it to be consistent with the RTP.

The RTFP provides guidance on several areas including transportation design for various modal facilities, system plans, regional parking management plans and amendments to comprehensive plans. The following directives specifically pertain to updating local TSPs:

[6] ODOT Transportation System Plan Guidelines: http://www.oregon.gov/ODOT/TD/TP/pages/plans.aspx
[7] Metro Regional Transportation Functional Plan: http://www.oregonmetro.gov/index.cfm/go/by.web/id=274

- Include regional and state transportation needs identified in the 2035 RTP along with local needs
- Local needs must be consistent with RTP in terms of land use, system maps and non-SOV modal targets (portion of trips that are not "drive alone" in a single occupant vehicle)
- When developing solutions, local jurisdictions shall consider a variety of strategies, in the following order:
    - TSMO (Transportation System Management Operations)
    - Transit, bicycle and pedestrian improvements
    - Traffic calming
    - Land use strategies in OAR 660-012-0035(2)[8]
    - Connectivity, including pedestrian and bicycle facilities
    - Motor vehicle capacity improvements
- Local jurisdictions can propose regional projects as part of RTP process
- Local jurisdictions can propose alternate performance and mobility standards, however, changes must be consistent with regional and statewide planning goals
- Local parking regulations shall be consistent with the RTFP

[8] As part of the TSP update effort, general strategies that have the potential to impact land use designations, densities, and design standards will be considered to meet local and regional transportation needs.

How is the Transportation System Defined?

The following sections summarize the state highway classifications and regional land use designations for areas in the City of Sherwood. This information ultimately determines the adopted standards and regulations that apply to state highways in the city.

ODOT State Highway Classifications

OHP Policy 1A (State Highway Classification System) categorizes state highways for planning and management decisions. In Sherwood, OR 99W (Highway 99W) is classified as a Statewide Highway, National Highway System (NHS), National Network, Freight Route, and Reduction Review Route. It is intended to provide mobility, safe and efficient, high-speed, continuous-flow operation, and connections between and within cities and regions in the state, including connections to larger urban areas and areas that are not directly served by Interstate Highways. The designations can limit reductions to vehicle-carrying capacity and (under the Reduction Review Route designation) subjects proposed reductions to review.

State Highway Freight System: OHP Policy 1C addresses the need to balance the movement of goods and services with other uses. It states that the timeliness of freight movements should be considered when developing and implementing plans and projects on freight routes. OR 99W is a classified Freight Route and Truck Route.

Updates to the TSP will support the existing OR 99W state classifications and will enhance the ability of the highway to serve in their defined functions.

Metro Land Use Designations

Metro's 2040 Growth Concept[9] in the RTP applies land use designations to the Portland region. The 2040 Growth Concept is the region's long range plan for managing growth by integrating land use and transportation. The concept concentrates mixed use and higher density development in areas of the region designated as "Centers," "Station Communities," and "Main Streets." The 2040 Growth Concept land uses are arranged in a hierarchy, with the primary and secondary land uses, referred to as 2040 Target Areas, as the focus of RTP investments. The hierarchy also serves as a framework for prioritizing RTP investments.

Primary land uses in Sherwood include:

- Tualatin-Sherwood Industrial Area[10]

[9] Metro 2040 Growth Concept: http://www.oregonmetro.gov/index.cfm/go/by.web/id=29882

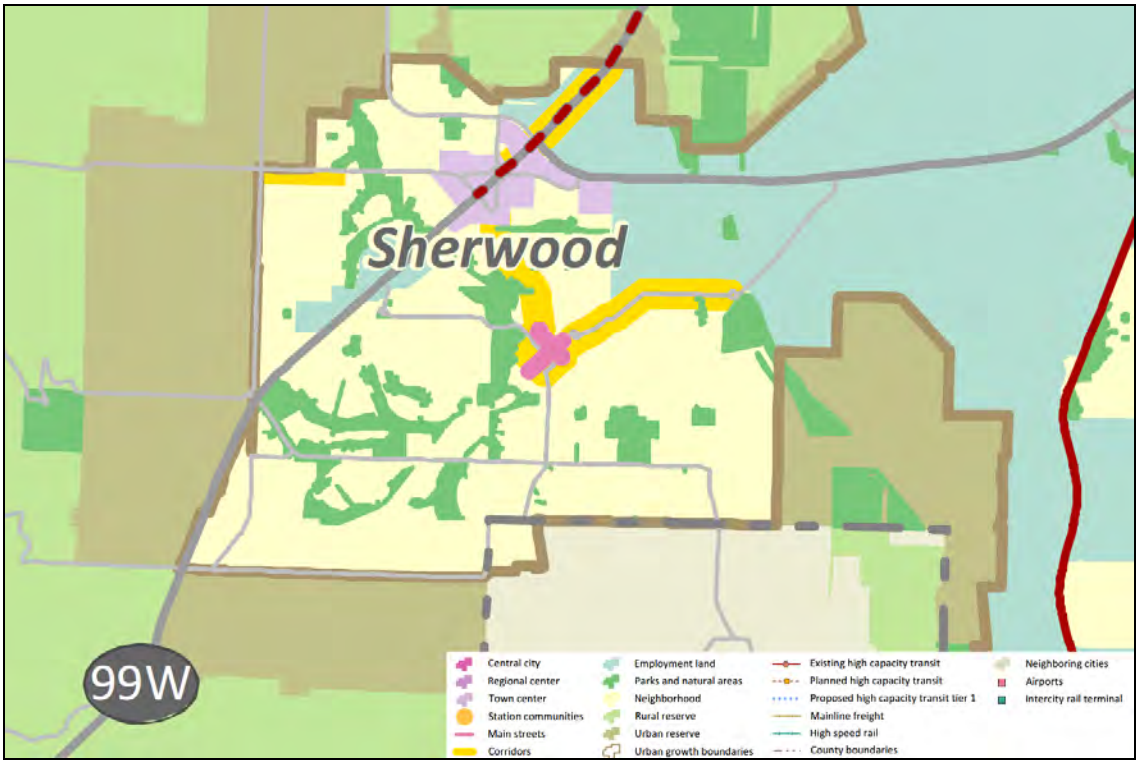
[10] This area is shown on Metro's 2040 Growth Concept Map along the SW Tualatin-=Sherwood Road corridor.

Secondary land uses in Sherwood include:

- The Sherwood Town Center.[11]
- The "Main Streets" along SW Pine Street and SW 1st Street in Old Town.
- The "Barbur Boulevard/Highway 99W/I-5 Corridor," generally running down Highway 99W from the northeast, turning south down Sherwood Boulevard to Old Town, and then moving back to the northeast along Railroad Street and turning east on Oregon.[12]
- "Employment Land," generally located west of Langer Farms Parkway and north of Tualatin-Sherwood Road, as well as an area along Highway 99W west of Cedar Brook Way.

The remaining areas of Sherwood are designated as Neighborhood land uses. These areas have the lowest priority for RTP investments.

Figure 1: Excerpt of the 2040 Metro Growth Concept Map, Land Use in the City of Sherwood, OR



[11] As noted later in this document, the Sherwood Town Center designation and accompanying plan is currently being considered for local adoption.

[12] Note that this corridor designation generally follows the Southwest Corridor Plan study area, reviewed later in this document.

How is the Transportation System Managed?

State Highway Mobility Targets: OHP Policy 1F sets mobility targets for ensuring a reliable and acceptable level of mobility on the highway system. The following targets are applicable to OR 99W in Sherwood (pursuant to Policy 1F, Table 7). These targets relate to the "peak first hour" (hour of the day with the most traffic) as well as the "peak second hour" (hour with the second most traffic during the day):

- In the designated **Town Center** the mobility target indicates that the highway should operate at or below a volume to capacity (v/c) ratio of 1.1 during the peak first hour, and 0.99 during the peak second hour.
- Outside of the Town Center, the target for OR 99W is to operate at or below a volume to capacity (v/c) ratio of 0.99 during the peak first and second hours.

City and County Mobility Standards: The City of Sherwood Transportation System Plan (TSP)[13] identifies level of service (LOS) as the primary indicator of performance, measured by letter grade (ranging from A through F), similar to a report card rating. The City identifies LOS D as the minimum performance standard for both signalized and unsignalized intersections under the city's jurisdiction. In addition, the Roadway Element of the Washington County TSP sets target and acceptable performance measures (based on volume-to-capacity or V/C ratios) for different locations following Metro's 2040 Design Types. The V/C ratio performance measures range from 0.9 to 0.99 depending on location and first/second peak hour of congestion. These standards are applied for signalized and unsignalized intersections on roadways under county jurisdiction.

Access Management on State Highways: The Oregon Access Management Rule[14] (OAR 734-051) attempts to balance the safety and mobility needs of travelers along state highways with the access and economic development needs of property and business owners. ODOT's rule sets guidelines for managing access to the state's highway facilities in order to maintain highway function, operations, safety, and the preservation of public investment consistent with the policies of the OHP. Access management rules allow ODOT to control the issuing of permits for access to state highways, state highway rights of way and other properties under the State's jurisdiction

In addition, the ability to close existing approaches, set spacing standards and establish a formal appeals process in relation to access issues is identified. These rules enable the State to set policy and direct location and spacing of intersections and approaches on state highways, ensuring the

[13] Sherwood TSP, p. 3-22, Adopted March 2005.

[14] Access Management Rule:
http://arcweb.sos.state.or.us/rules/OARS_700/OAR_734/734_051.html

relevance of the functional classification system and preserving the efficient operation of state routes.[15]

OHP Policy 3A sets access spacing standards for driveways and approaches to the state highway system.[16] The standards are based on state highway classification and posted speed.

Access Management on Local Roadways: The adopted City of Sherwood TSP identifies minimum intersection and driveway spacing standards for public roadways under the city's jurisdiction.[17] Washington County also provides minimum access spacing requirements for County facilities.[18] Access spacing guidelines for both jurisdictions are shown in Table 1.

Table 1: City of Sherwood and Washington County Intersection Spacing Standards

Street Facility	Maximum Spacing of Roadways and Driveways	Minimum Spacing of Roadways and Driveways
City of Sherwood, [Washington County]		
Arterial	1,000 feet	600 [600]* feet
Collector	400 feet	100 [100] feet
All roads	Require an access report stating that the driveway/ roadway is safe as designed meeting adequate stacking, sight distance and deceleration requirements as set by ODOT, Washington County and AASHTO.	

Note: * Direct access to County arterials shall be from collector or other arterial streets.

[15] Amendments to OAR 734-051 were adopted in early 2012 based on passage of Senate Bill 1024 and Senate Bill 264 in the 2010 and 2011 Oregon Legislature respectively. The amendments were intended to allow more consideration for economic development when developing and implementing access management rules, and involved changes to how ODOT deals with approach road spacing, highway improvements requirements with development, and traffic impact analyses requirements for approach road permits. Senate Bill 408, which passed in the 2013 legislative session and becomes effective January 1, 2014, is expected to result in further rulemaking. This bill provides new requirements for development of facility plans and directs ODOT to develop an access management strategy for each highway modernization or improvement project.

[16] ODOT Access Management Standards (Appendix C): http://www.oregon.gov/ODOT/TD/TP/orhwyplan.shtml

[17] 2005 City of Sherwood TSP, Table 8-12: Access Spacing Standards for City Street Facilities

[18] Article V: Public Facilities and Services, 501 Public Facilities and Service Requirements.

RTP Performance targets: The Metro RTP established new performance targets (see Table 2) for safety, congestion, freight reliability, climate change, active transportation, sidewalk/trail/transit infrastructure, clean air, travel, affordability, and access to daily needs. The performance targets are regional goals that the updated City of Sherwood TSP should work toward achieving.

Table 2: 2035 RTP Performance Targets

Objective	Target by 2035
Safety	Reduce serious injuries and fatalities in all modes of travel by 50% (vs. 2005)
Congestion*	Reduce vehicle hours of delay (VHD) by 10% per person (vs. 2005)
Freight reliability	Reduce VHD per truck trip by 10% (vs. 2005)
Climate change	Reduce transportation greenhouse gas emissions by 40% (vs. 1990)
Active transportation	Triple walking, biking and transit mode share (vs. 2005)
Basic infrastructure	Increase by 50% access times to sidewalks, trails and transit (vs. 2005)
Clean air	Ensure 0% population exposure to at-risk levels of pollution[19]
Travel	Reduce vehicle miles traveled per person by 10% (vs. 2005)
Affordability	Reduce average household combined cost of housing and transportation by 25% (vs. 2000)
Access to daily needs	Increase by 50% the number of essential destinations within 30 minutes by bike, transit for low-income, minority, disabled pop. (vs. 2005)

[19] The region is expected to meet the target for carbon monoxide and ozone (VOC and NOX) exposure from transportation sources. Carbon monoxide is estimated at 836,484 lbs/day, 29% below the regional motor vehicle emissions budget for 2035; Hydrocarbons (VOC) is estimated at 17 tons/day, 58% below the regional motor vehicle emissions budget for 2035. A regional standard for air toxics is under development. For more information see RTP Table 2.3 and Metro's 2010 Air Quality Conformity Determination http://www.oregonmetro.gov/index.cfm/go/by.web/id=6502.

* Interim volume-to-capacity ratio (v/c) measures still apply

In addition to supporting the performance targets, the TSP will need to incorporate transportation system management and operations (TSMO) into planning. The following RTP policies provide the foundation for TSMO in the region:

- Use advanced technologies, pricing strategies and other tools to actively manage the transportation system
- Provide comprehensive real-time traveler information to people and businesses
- Improve incident detection and clearance times on the region's transit, arterial and throughway networks
- Implement incentives and programs to increase awareness of travel options and incent change

RTP Non-Single Occupancy Vehicle (SOV) Target: The RTP also established regional mode share targets that are intended to be goals for cities and counties to work toward as they implement the 2040 Growth Concept at the local level. Increases in walking, bicycling, ridesharing and transit mode shares will be used to demonstrate compliance with per capita travel reductions required by the state Transportation Planning Rule. The following modal targets apply to RTP land uses in Sherwood:

- Town Centers and Corridors: Non-SOV (non-drive alone) modal target of 45 to 55 percent
- Industrial areas, Employment areas and Neighborhoods: Non-drive alone modal target of 40 to 45 percent

As required by the RTP and the TPR, jurisdictions within the Metro region must adopt policies and actions that encourage a shift towards non-SOV modes. The Metro Non-Single Occupancy Vehicle (SOV) Target Actions Study summarizes the required non-SOV strategy requirements for local jurisdictions to implement:

- Adopt 2040 modal targets in TSP policies
- Adopt street connectivity plans and implementing ordinances
- Adopt maximum parking ratios to implement the parking requirements of Title 2 of the Urban Growth Management Functional Plan
- Adopt transit strategies, including planning for adequate transit facilities and service; pedestrian facility planning and infrastructure that support transit use; location and design of buildings in transit zones that encourages transit use; and adoption of a transit system map, consistent with Metro requirements.

The following measures are additional strategies to be considered in the City of Sherwood TSP update:[20]

- Continue to require transportation-efficient development through efforts to meet density and other land use targets in centers and corridors as part of compliance with Metro's RTFP and related requirements.
- Construct bicycle and pedestrian improvements, consistent with state, federal and local government requirements. Local governments and Metro should prioritize improvements that enhance connectivity of the bicycle and pedestrian system and access to transit.
- Continue to support TriMet and other transit agencies in providing frequent, reliable and comprehensive transit service, and local implementation of pedestrian and bicycle infrastructure to improve access to transit. Credit local jurisdictions with efforts to support transit agencies in these efforts.
- Support and encourage efforts to implement employer-based transportation demand management (TDM) strategies that reduce reliance on single occupant motor vehicles. Coordinate with employers even in areas where the formation of transportation management associations (TMAs) that have organized TDM plans is not required.
- Encourage and assist in implementing parking cash-out programs or other techniques to eliminate employer subsidies for parking. Consider requiring local governments to eliminate free employee parking and provide informational materials and technical assistance to employers interested in implementing such programs.
- Support and coordinate Safe Routes to School programs and projects. Local jurisdictions and Metro should support and help coordinate these efforts through project funding and technical assistance.

Major Improvements: OHP Policy 1G requires maintaining performance and improving safety by improving efficiency and management before adding capacity. The intent of policy 1G and Action 1G.2 is to ensure that major improvement projects to state highway facilities have been through a planning process that involves coordination between state, regional, and local stakeholders and the public, and that there is substantial support for the proposed improvement.

Off-System Improvements: OHP Policy 2B establishes ODOT's interest in improvements on local roads that maintain or improve safety and mobility performance on state roadways, and supports local jurisdictions in adopting land use and access management policies. The TSP development will consider existing and future land use patterns, access management, and implementation measures.

[20] From Metro's 2005 non-SOV Target Actions Study, *Evaluation of Potential Measures for Achieving Modal Targets*.

Traffic Safety: OHP Policy 2F identifies the need for projects in the state to improve safety for all users of the state highway system through engineering, education, enforcement, and emergency services. One component of the TSP is to identify existing crash patterns and rates and to develop strategies to address safety issues. Proposed improvements will aim to reduce the vehicle crash potential and/or improve bicycle and pedestrian safety by providing upgraded facilities that meet current standards.

Alternative Passenger Modes: OHP Policy 4B, Action 4B.4 requires that highway projects encourage the use of alternative passenger modes to reduce local trips. The TSP will develop ways to support and increase the use of alternative passenger modes to reduce trips on highways and other facilities. This will include improvement to bicycle and pedestrian facilities and consideration of transit movement along roadways.

Improvements on State Highways: The Highway Design Manual[21] (HDM) provides uniform standards and procedures for ODOT and is in general agreement with the 2001 American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets*. Some key areas where guidance is provided are the location and design of new construction, major reconstruction, and resurfacing, restoration or rehabilitation (3R) projects. The HDM should be used for all projects on OR 99W to determine design requirements, including the maximum allowable volume to capacity ratios for use in the design of highway projects.

Other Background Information for the TSP Update

The following sections summarize additional background information or guidance documents that will be used in updating the City of Sherwood TSP.

Projects to be considered in Future Transportation Analysis

Several of the documents reviewed identified transportation improvement projects that will be considered in future transportation analysis in Sherwood. The projects are listed below, under the documents in which they are found, and include:

2010-2013 Statewide Transportation Improvement Program[22] (STIP) projects:

- Pavement preservation on OR-99W from Tualatin River Bridge to Sunset Boulevard.
- Traffic Signal Modernization on OR-99W from milepost 14.66 to 19.92.
- Cedar Creek/Tonquin Trail: Roy Rodgers Road, Bicycle trail construction to better accommodate pedestrian access.

[21] ODOT Highway Design Manual: http://www.oregon.gov/ODOT/HWY/ENGSERVICES/hwy_manuals.shtml

[22] ODOT STIP: http://www.oregon.gov/ODOT/HWY/STIP/

- Traffic operation improvements: Upgrade traffic signal systems and install video detection system on various Highways.

Metro RTP: Needed improvements were identified along Metro Mobility Corridor #20, Tigard to Sherwood and Sherwood to Newberg. Investment strategies prioritize the following:

Near-term (1-4 years)

- System and demand management along mobility corridor and parallel facilities for all modes of travel
- Address arterial connectivity and crossings
- Complete mobility corridor refinement plan.
- Complete alternatives analysis for high capacity transit (HCT) corridor. High capacity transit, as defined by Metro is *"any form of public transit that has an exclusive right of way, a non-exclusive right of way or a possible combination of both. High capacity transit vehicles make fewer stops, travel at higher speeds, have more frequent service and carry more people than local service transit such as typical bus lines. High capacity transit includes options such as light rail, commuter rail and bus rapid transit*."[23]
- Complete land use planning of HCT corridor as part of HCT System Expansion Policy.
- Complete gaps and make crossing improvements in the sidewalk and bike network.
- Implement the Tigard OR 99W Corridor Improvement and Management Plan.

Medium-term (5-10 years)

- Complete gaps in the arterial network.
- Intersection improvements, consistent with refinement plan.
- Coordinate TSM/TDM strategies.
- Implement the Tigard OR 99W Corridor Improvement and Management Plan.

Long-term (10-25 years)

- Implement the Tigard OR 99W Corridor Improvement and Management Plan.

TriMet Transit Investment Plan[24] **(TIP):** Sherwood is served by TriMet bus lines 93 (local service between Sherwood and Tigard via OR 99W) and 94 (weekday service between Sherwood and

[23] Defining high capacity transit, http://www.oregonmetro.gov/index.cfm/go/by.web/id=28462

[24] TriMet Transit Improvement Plan: http://trimet.org/tip/index.htm

Tigard and express service between Tigard and Portland City Center).[25] TriMet's Transit Investment Priorities (TIP) program is the organization's roadmap for investments in bus and rail service, capital projects and customer information, as well as financial stability and partnerships over the next five years. Over the long term, TIP priorities are to:

1. Build the Total Transit System - Safe, secure trips on frequent, reliable and convenient service, easy access to transit, amenities at stops and stations, and clear customer information.
2. Expand high-capacity transit - Invest in MAX Light Rail, Commuter Rail, Bus Rapid Transit and Streetcar service along key corridors to connect Regional Centers.
3. Expand Frequent Service - Add to TriMet's network of bus lines that run every 15 minutes or better, every day.
4. Improve local service - Work with local jurisdictions to improve transit service in specific local areas.

Once existing Frequent Service lines have been restored to a basic level of 15-minute or better service seven days a week, TriMet will work toward expanding the number of bus lines that are included in Frequent Service and extending service on current lines. The extension of Line 12 – Barbur/Sandy from Durham Rd to Sherwood is a Tier 3 Priority for Frequent Service expansion, based upon criteria of ridership productivity, transit/pedestrian friendly streets, density of transit-dependent population, RTP designation, relationship to existing or proposed high-capacity transit, land use connectivity, and transportation demand management.

Tualatin-Sherwood Road Improvements: Tualatin-Sherwood Road between Adams Avenue and Borchers Drive currently experiences heavy traffic congestion, primarily during peak travel hours. In addition, this section of roadway intersects with OR 99W which is also heavily traveled. The Tualatin-Sherwood (Adams to Borchers) project[26] funded by Washington County through Major Streets Transportation Improvement Program (MSTIP) proposes to make needed enhancements to this section of roadway in order to improve traffic circulation in the area, address safety for all modes of transportation and accommodate existing and future capacity needs.

[25] TriMet service changes became effective September 1, 2013. New Line 93-Tigard/Sherwood runs between Sherwood and the Tigard Transit Center. It serves all stops and run weekdays and weekends. Line 94-Highway 99W/Sherwood runs weekdays between Sherwood and downtown Portland from approximately 5:45 a.m. to 7:30 p.m. The line no longer serves Tigard Transit Center and does not run weekends. http://trimet.org/alerts/service-change/index.htm

[26] Washington County link: http://www.co.washington.or.us/LUT/TransportationProjects/tualatin-sherwood-adams-to-borchers.cfm

In addition to the planned road improvements through the MSTIP project, the county also has plans to implement the second phase of an Intelligent Transportation System (ITS) upgrade on Tualatin-Sherwood Road. ITS helps improve traffic flow by adapting traffic signals in real time as traffic conditions change. Phase 1 upgraded the signals between Teton Avenue and Interstate 5 in 2011. Phase 2 would upgrade the signals between Teton Avenue and Highway 99W beginning in 2013.

Sherwood Capital Improvement Plan: Sherwood's Capital Improvement Plan (CIP) includes planned improvements based on current needs and priorities of the City. The CIP includes planned allocation of funds for projects through year 2018 in transportation, storm, sanitary, water, and general construction. Construction of projects in future years is subject to funding. The following transportation projects and year of planned budget allocation are currently included in the CIP:

- Cedar Brook Way Analysis (2013/2014)
- Adams Avenue North Construction (2013/2014)
- Kruger-Elwert/Hwy 99W Design and Construction (2014/2015, 2015/2016)
- Oregon St/Tonquin Rd (2016/2017)
- Pine St Phase 2 (2014/2015)

Sherwood Town Center Plan: The draft Town Center Plan, once adopted, will update the comprehensive plan and established a vision and implementing strategies for growth and improvement in an area designated as the city's Town Center. The plan includes recommendations for "complete streets" along Langer Drive and Sherwood Boulevard, as well as specific improvements to the bicycle and pedestrian system.[27] The plan also has updated policies and strategies pertaining to parking and transit.

The recommended bicycle and pedestrian improvements are shown on Map 2 of the Town Center Plan and include:

- General bicycle/pedestrian improvements throughout central Old Town Sherwood (#1)
- Neighborhood Greenway improvements on Gleneagle Drive and 10th Street (#11)
- Shared use path on east side of Sherwood Blvd. between Langer Drive and Old Town (#12)
- Shared use path connecting Langer Dr. and Trumpeter Dr. (#13)

[27] http://www.sherwoodoregon.gov/sherwoodtowncenter/page/sherwood-town-center-plan

- Neighborhood Greenway improvements on Holland Lane (#16)
- Neighborhood Greenway improvements on Baler Way (#17)
- Shared use path on north side of Hopkins Elementary School (#18)
- Shared use path on east side of Hopkins Elementary School (#20)
- Shared use path on east side of Sherwood Middle School (#21)
- Neighborhood Greenway improvements on Oregon Street (#22)

The Town Center Plan lays out policies and strategies to guide future planning and development within the town center. Town center goals, policies, and strategies will be incorporated into the City's Comprehensive Plan.

Policy 8 of the Town Center Plan reads: "The City will balance the need for vehicular mobility within and adjacent to the Town Center with the other transportation and land use goals and priorities identified in the Town Center Plan." Strategies relevant to this policy include:

- Through the TSP update, examine changes to the City's OR 99W Capacity Allocation Program (CAP) to ensure that it doesn't restrict future growth that supports and implements the Town Center vision and recommendations. (Strategy 8.1)
- Through the TSP update, identify strategic road capacity improvement projects to address congestion within and adjacent to the Town Center. Necessary transportation improvements will be analyzed and evaluated for how they support a vibrant walkable Town Center. (Strategy 8.2)
- Through the TSP update, establish transportation mobility targets for new development within and adjacent to the Town Center that are appropriate for a Town Center context and capture the community's priorities. (Strategy 8.3)
- The City will work with the County, ODOT, and local stakeholders to enhance vehicular and pedestrian access from the Town Center to developments adjacent to the Town Center. (Strategy 8.4)

Ice Age Tonquin Trail Master Plan (2013): 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 connects with the Westside Trail at a proposed ped/bike bridge over the Tualatin River near King City. The western prong passes through the City of Sherwood as the Cedar Creek Trail.

The Trail Master Plan identifies a conceptual alignment alternative, trail type, and recommended improvements and opportunities across several jurisdictions. Recommended improvements and opportunities within the City of Sherwood can be found on Tile Maps 7-13 in the plan; selected items are listed below with reference numbers:

- Trail alignment could follow existing unimproved roadway; final alignment to be determined in coordination with Sherwood's Tonquin Employment Area Concept Plan (which includes a future east-west road in this area) (7D)
- Widen sidewalk on Oregon Street's south side between Tonquin Road and Murdock Road to accommodate trail (8B)
- Widen sidewalk on SW and southeast (SE) sides of roundabout to accommodate trail (8C)
- City of Sherwood to coordinate shared roadway treatments on Railroad Street (including wayfinding) (8L)
- City of Sherwood to conduct further analysis to determine specific trail alignment in this area; trail design to be based on guidance provided in the Ice Age Tonquin Trail Master Plan specific to the Cedar Creek corridor (9E)
- Proposed trail/wildlife undercrossing of Pacific Highway/Oregon 99W (subject to ODOT approval) (9G)
- Potential to create future trail/wildlife undercrossing of Edy Road (10D)
- Potential motorist sight distance issues on horizontal curve of Roy Rogers Road; signalization proposed to provide protected bicyclist/pedestrian crossings (10E)
- Widen existing sidewalk on east side of Roy Rogers Road to accommodate trail (vegetation removal necessary) (11A)
- Widen existing bridge over Chicken Creek to accommodate trail, or construct cantilevered bridge or independent structure immediately east of Roy Rogers Road; retaining walls/bank stabilization necessary immediately north and south of creek crossing (11B)
- Trail alignment to follow Oregon Street's east side between Tonquin Road and Tualatin-Sherwood Road; alignment to be sited immediately east of power line corridor (vegetation removal necessary in several locations); property easements/acquisitions could occur as part of Tonquin Employment Area Concept Plan implementation. (12A)
- Use existing signalized intersection of Tualatin-Sherwood Road and Oregon Street; potential need to relocate existing signal poles and utility boxes on intersection's SE and northeast (NE) corners to accommodate trail (12E)
- Tualatin's Transportation System Plan proposes widening Cipole Road to three vehicle travel lanes, plus bike lanes and sidewalks; trail alignment to follow Cipole Road's west side between Tualatin-Sherwood Road and Pacific Highway/OR 99W; trail should be constructed in lieu of a sidewalk on the roadway's west side (13A)

- Vegetation removal and utility pole/mailbox relocation necessary in several locations to accommodate future Cipole Road widening and trail development between Tualatin-Sherwood Road and Herman Road (13B)
- Use existing at-grade railroad/roadway crossing at Cipole Rd; upgrade crossing treatments on roadway's west side (in tandem with future roadway widening) to accommodate trail (13D)

The Trail Master Plan also describes design guidelines for shared use paths, shared use paths adjacent to roadways, on street facilities, trail-roadway intersections, grade separated crossings, and special design requirements such as Bonneville Power Administration (BPA) requirements for trails within powerline corridors, Westside Express Service (WES) commuter rail, trail features and signage, educational elements, and environmentally sensitive construction. The following table describes plan actions for which Sherwood is responsible.

Table 3: Tonquin Ice Age Trail Plan Actions

Segment	Responsibility	Funding	Operation/ Maintenance	Issues	Actions	Responsibility for Actions
Immediately west of Tonquin Road/OregonStreet intersection to immediately north of Park Street (Old Town Sherwood)	Sherwood	To be determined in coordination with Metro and ODOT.	Sherwood	Sherwood will work with Metro and ODOT to determine if 2014-15 Regional Flex Funds award for Cedar Creek trail will include design and construction of this segment. Need to acquire easement/land for trail from 2 land owners.	Refine cost estimates for Cedar Creek trail project to see if the award amount will cover proposed improvements. Sherwood and Metro to determine acquisition strategy.	Sherwood, Metro, ODOT
Immediately north of Park Street to immediately south of Hwy 99	Sherwood	Design and construct.	Sherwood	None	Sherwood will design and construct by 2016	Sherwood with involvement of Metro and partners as needed.
Immediately south of Highway 99 to Roy Rogers Road, including Roy Rogers	Sherwood	To be determined in coordination with Metro and ODOT.	Sherwood	Sherwood to work with Metro and ODOT to determine scope of work for this segment pursuant to 2014-15 Regional Flex Funds award for Cedar Creek trail. Hwy 99	Public involvement needed to determine alignment in this area. Sherwood may need to	Sherwood Sherwood, ODOT Sherwood, ODOT with support of Metro and

Segment	Responsibility	Funding	Operation/ Maintenance	Issues	Actions	Responsibility for Actions
intersection)				undercrossing not included in 2014-15 Regional Flex Funds award.	acquire land for trail. Sherwood will apply in 2012 for ODOT/ STIP Enhance funds to design/construct Hwy 99 undercrossing.	partners.
Roy Rogers Road north to Tualatin River National Wildlife Refuge trailhead	Sherwood or Washington County	None	Sherwood may consider role in owning/building/operating and maintaining once the Cedar Creek portion of the trail is built.	Segment is in unincorporated Washington County, no obvious trail provider. Need to acquire land from one land owner.	Sherwood and Washington County determine ownership and O&M agreements.	Sherwood, Washington County
Immediately east of Tonquin Road/Oregon Street intersection to immediately north of Tualatin-Sherwood Road.	Sherwood	None	Sherwood	Funding not identified for design/construction. Need to acquire land from 8 land owners between Tonquin Rd. and Oregon St.	Sherwood to identify funding strategy Include trail in Sherwood's TSP update. Update trail description in Metro's 2035 RTP, including the Financially Constrained list. Sherwood to acquire trail.	City of Sherwood
Immediately north of Tualatin-Sherwood Road to immediately west of Cipole Road	Sherwood	None	Sherwood	Trail is recommended on north side of road in Right of Way. Funding not identified for design/construction	Include trail in Sherwood and Washington County TSP updates. Update trail description in Metro's 2035 RTP, including the Financially Constrained list. Sherwood to identify funding strategy	Sherwood, Tualatin, Washington County, Metro

Approved Ordinances: Since its adoption, the TSP has been amended by ordinance several times by City Council. Amendments have included modifications to support adopted concept plans for urban growth boundary (UGB) expansion areas and reclassification of local roadways to support development. The following is a brief summary of land use amendments and the associated adopted transportation system changes that will need to be incorporated into the plan development (and alternatives analysis) in the updated TSP document.

- Area 59.[28] Area 59, bordered on Elwert and Edy Road, is an area that was designated by Metro and brought into the Sherwood UGB in 2002. City Council adopted a concept plan in April 2006. In January 2007, the Council adopted amendments to the Comprehensive Plan to implement the concept plan, including amendments to TSP Figure 8-1 Functional Class. Classifications of Elwert and Handley (Arterial and Collector, respectively), are consistent with the Council amendments, but proposed local roadways are not reflected in the current TSP's.

- Brookman Road Concept Plan.[29] Brought into the UGB in 2002, the city adopted the Brookman Road Concept Plan in 2009. The project identified future land uses and public facilities, including parks and open space, civic uses, and transportation corridors. In order to implement the plan, amendments to the comprehensive plan, zoning code, and public facility plans are needed. The Brookman area will remain in unincorporated Washington County until voter-approved annexation brings it into the city.

- Adams Avenue North Concept Plan.[30] Metro also added this 33 acres north of Tualatin-Sherwood Road Metro as part of the 2002 regional UGB expansion. Metro's primary purpose was to allow for development of a road connection (Adams Avenue) between OR 99W and SW Tualatin-Sherwood Road. The North Adams Area was annexed in November 2009 and is zoned primarily Light Industrial with a portion of the area along 99W-zoned Office Commercial. The City's 2005 Transportation System Plan (TSP) identifies a new collector street through portions of land identified in the Metro Ordinance. The TSP identifies this project as "Adams Avenue, Tualatin-Sherwood Road to Home Depot" (Table 8-11, City Street Projects, ID 2). This portion of Adams Avenue will complete a direct connection between OR 99W and Old Town, an area where significant urban renewal investment has occurred and is planned.

[28] http://www.sherwoodoregon.gov/planning/page/area-59

[29] http://www.sherwoodoregon.gov/planning/page/brookman-road-concept-plan

[30] http://www.sherwoodoregon.gov/planning/page/adams-avenue-north-concept-plan

- Sherwood Cannery Square.[31] The Cannery Planned Unit Development (PUD) is located at the site of the former cannery in Old Town near the railroad tracks. The PUD proposal included a TSP amendment to change the classification of Columbia Street from a collector to a local street, an action City council approved in 2010. The proposal includes a mixed-use development with up to 10 construction phases and includes construction of new streets, public plaza, retail, office and residential. Public streets will be constructed prior to construction of development phases. While some improvements associated with the project have already been completed, the following transportation projects related to the site (that are not yet completed) have the potential to impact traffic circulation in the Old Town area:

    - Construct improvements to improve the operations of Pine Street/1st Street to meet City performance standards and mitigate queuing impacts at the Pine Street railroad crossing. This shall be accomplished by implementing a modified circulation for the downtown streets that includes:
        - Install a diverter for south-westbound on 1st Street at Ash Street or Oak Street to require vehicles travelling towards Pine Street to divert to 2nd Street.
        - Remove one side of on-street parking Ash Street-2nd Street or Oak Street-2nd Street to provide two 12-foot travel lanes from the diverter to Pine Street. Convert to one-way traffic flow approaching Pine Street for this segment.
        - Install an all-way stop at Pine Street/2nd Street. Stripe the south-westbound approach of 2nd Street to have a left turn lane and a shared through/right-turn lane.
        - Install traffic calming measures on 2nd Street southwest of Pine Street to manage the impact of the added traffic.
    -

- Tonquin Employment Area. The Tonquin Employment Area was brought into the UGB in 2002 and the City adopted a concept plan in 2010 that amended the Comprehensive Plan, Community Development Code, and TSP. Amendments to the TSP include a proposed east-west collector, the extension of SW Blake Street (as proposed in the Southwest Tualatin Concept Plan) through the area and connecting to Oregon Street. The proposed extension of SW 124th Avenue south was adopted as a proposed Arterial.

[31] http://www.sherwoodoregon.gov/planning/project/cannery-pud

- Cedar Brook Way. In 2012 the functional classification of SW Cedar Brook Way was changed from a local to a collector road connecting SW Elwert Road to SW Handley Street. The TSP amendment also identified one connection to SW Pacific Hwy along the extension, the location of which was to be determined at a later date.

Actions or Strategies to be considered in Updating the TSP

Several of the regional and local documents reviewed for this project identified transportation actions or strategies that will be considered in updated the City of Sherwood TSP. Relevant actions or strategies are summarized below.

Metro State of Safety Report (2012): It is the Portland Metro region's adopted goal to reduce the number of pedestrians, bicyclists, and automobile occupants killed or seriously injured on the region's roadways by 50% by 2035, compared to a 2005 baseline. The State of Safety report indicates that Sherwood has a lower rate of injury crashes and fatal crashes than the region, and is ranked 24th in the region for serious crashes per million residents (Tables 4-5 and Figure 1).

Table 4: Number of Automobile Crashes[32]

Jurisdiction	Annual Crashes	Fatal Crashes (per capita)	Injury A	Injury B	Injury C	All Injury	Fatal/Incapac (per capita)
Sherwood	111	0.3	1	14	30	45	1.3
METRO	18263	NA	481	1907	5174	7562	532

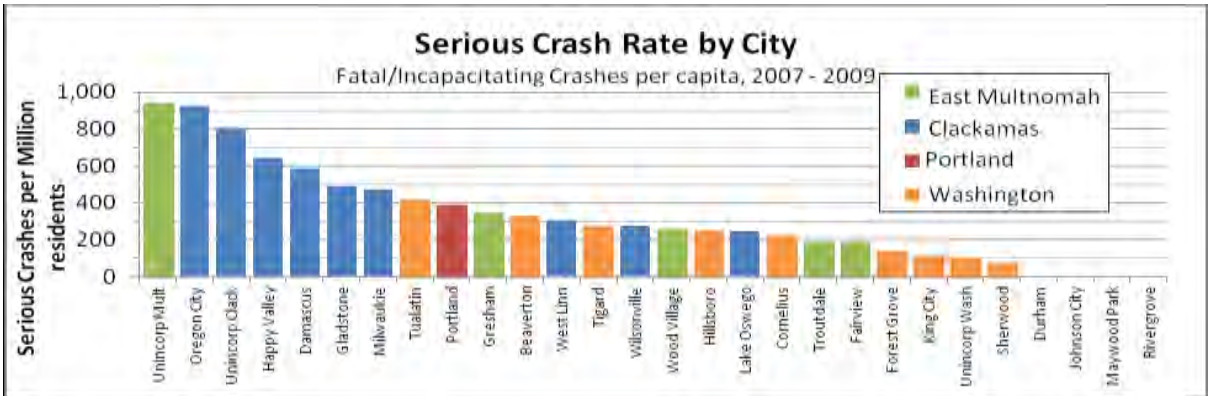
Table 5: Crashes per million residents[33]

Jurisdiction	Population	All injury (per million)	Fatal/incapac. (per million)	Ped. Injury Crashes (per Million)	Ped Fatal/Incapac. (per million)	Bike Injury Crashes	Bike Fatal/ Incap
Sherwood	18,207	2453	73	54.9	18.3	91.5	0.0
METRO	1,481,118	5106	359	190.6	40.7	230.9	27.2

[32] Crash rates were determined per capita. See p. 15 of the 2012 Metro State of Safety Report, http://www.oregonmetro.gov/index.cfm/go/by.web/id=42790, under "Related Documents.

[33] 2012 Metro State of Safety Report, pp. 16, 42, 63

Figure 1: Serious Crash Rate by City[34]



Section 10 – Findings and Strategies states:

- Arterial roadways comprise 59% of the region's serious crashes, 67% of the serious pedestrian crashes, and 52% of the serious bike crashes, while accounting for 40% of vehicle travel.
- Arterials have the highest serious crash rate per road mile and per VMT.

The safety report lists high-level strategies for implementation, several of which are relevant to this TSP update, including:

- Policies that reduce the need to drive, and therefore limit vehicle-miles travelled
- Strategies to reduce the prevalence of speeding and aggressive driving on surface streets
- Revisions to state, regional, and local mobility standards to consider safety as equally important, at a minimum, as vehicular capacity
- A focus on crosswalk and intersection lighting where pedestrian activity is expected
- Policies to improve the quality and frequency of pedestrian crossings on arterials and multi-lane roadways
- A focus on safe cycling facilities and routes, particularly in areas where serious crashes are occurring

Draft Regional Active Transportation Plan (August 2013): The need for a regional Active Transportation Plan (ATP) was identified as a follow up activity in the 2035 RTP. A regional Stakeholder Advisory Committee composed of staff from cities and counties and advocacy groups has been working to develop a strategy to complete and expand regional pedestrian and bicycle networks, including way to integrate non-motorized networks with transit and increase

[34] 2012 Metro State of Safety Report, p. 16

competitiveness for active transportation-related funding. The Ice Age Tonquin Trail and Western Trail and are shown as Regional Bicycle Parkways and Regional Pedestrian Parkways on the recommended Regional Bicycle Network and Regional Pedestrian Network.[35] While this document will remain a draft until it is proposed for adoption as a component of the RTP in July 2014, the TSP update will take into consideration design guidelines, policies and implementation actions related to trails and proposed improvements in Sherwood, where transportation system alternatives impact these facilities.

Southwest Corridor Plan: The Southwest Corridor Plan addresses the Barbur Boulevard/Highway 99W/I-5 corridor between Portland and Sherwood Town Center (see Figure 2.) The plan is being developed through a partnership of the cities of King City, Portland, Sherwood, Tigard, and Tualatin, Clackamas and Multnomah counties, ODOT, TriMet, and Metro. The intent of this project is to let the local plans and aspirations help shape and inform ultimate improvements so that all potential projects and ideas are screened through a local lens.

A brief overview of the project is summarized below:

- 2009 – The Joint Policy Advisory Committee on Transportation (JPAC) and the Metro Council designated the corridor as the next regional priority for high capacity transit (HCT) expansion. Based on existing traffic and transit counts, the Southwest Corridor shows the greatest ridership projections for potential HCT corridors in the region.

- December 2010 – Metro received a $2 million grant from the Federal Transit Administration to analyze alternatives for improving transit in the corridor.

- Spring 2012 – Metro completed a public involvement process to determine a vision and goals for the Southwest Corridor Plan. The outcomes of this process include: 1) bus rapid transit, light rail, roadway expansions/new roadways, rapid streetcar, and increasing local bus capacity are all transportation alternatives that must be included in the analysis. 2) Opportunities to expand the bicycle network and improve pedestrian mobility will also be studied.

- July 2013 – The Southwest Corridor Plan Steering Committee recommended transit alternatives for further study along with a set of potential roadway, bicycle, pedestrian, parks, trails and natural area investments that support land use, transportation and community-building goals in the corridor as part of the Southwest Corridor Shared Investment Strategy.

[35] http://www.oregonmetro.gov/index.cfm/go/by.web/id=39005

As part of the Shared Investment strategy, the transit recommendation directs TriMet to work with Southwest corridor jurisdictions and stakeholders to develop the Southwest Service Enhancement Plan. Plan implementation is intended to provide transit service that connects key Southwest corridor locations quickly and reliably to one another and to a potential high capacity transit line. Locations for future transit improvements include downtown Sherwood; however, the Steering Committee removed a high capacity transit (HCT) connection between Tigard and Sherwood on Highway 99W from further consideration to avoid impacts to auto and freight movement as well as to commercial

Recommended Roadway and Active Transportation projects in Sherwood are listed below and include the project reference number, which are keyed to maps in the Steering Committee Recommendation:[36]

- Arrow Street (Herman Road) - Build 3 lanes with sidewalks and bike lanes. Construct new road to collector standards (Project 1062). Build new 3 lane roadway with stream crossing and with bike lanes and sidewalks from Langer Farms Parkway Phase 2 to Gerda Lane/Galbreath Drive.

- Town Center Signal & Intersection Improvements (Downtown Sherwood) – Project 1068)- Improve intersection at Edy & Borchers; remove traffic signal at Baler/Tualatin-Sherwood Road; on Sherwood Boulevard remove traffic signal at Langer and disallow left turns from Langer to Sherwood, and add traffic signal at Century Drive.

- Tualatin-Sherwood Rd. (Langer Parkway to Teton Ave.) - Widening to 5 lanes with ped./bike (Project 1154). Widen from 3 to 5 lanes with bike lanes and sidewalks from Langer Parkway to Teton Avenue.

- Oregon-Tonquin Intersection & Street Improvements (Project 5020). Intersection improvements (consider roundabout) on Oregon at Tonquin Road; sidewalks and bike access through the intersection.

- 99W Sherwood TC Bicycle/Ped. Bridges (Project 6042). Ped/bike under/overcrossings of 99W at Sunset, Meinecke, Edy. Listed as a Regional Bicycle Parkway in the Regional Active Transportation Plan (5/9/13).

- Tonquin Trail (Project 9003). Construct multi-use trail with some on-street segments connecting multiple communities in Washington and Clackamas County. Listed as a

[36] See Steering Committee Recommendation "Attachment A," http://www.oregonmetro.gov/index.cfm/go/by.web/id=35309

Regional Bicycle Parkway and Regional Pedestrian Parkway in the Regional Active Transportation Plan (5/9/13).

- Westside Trial Segments (Project 9029). Tail opportunities within easements of BPA and PGE for connectivity. Listed as a Regional Bicycle Parkway and Regional Pedestrian Parkway in the Regional Active Transportation Plan (5/9/13).

Note that the bicycle/pedestrian and trail projects are only considered a priority where HCT is extended to the City of Sherwood. Widening Tualatin-Sherwood Road (Project 1154) is considered "critical" in this scenario, but less so if HCT does not extend to Sherwood.

With the first phase of the plan is completed, next steps will include implementation of the shared investment strategy and identifying projects to be packaged with the HCT alternative(s) for consideration in a Draft Environmental Impact Statement.

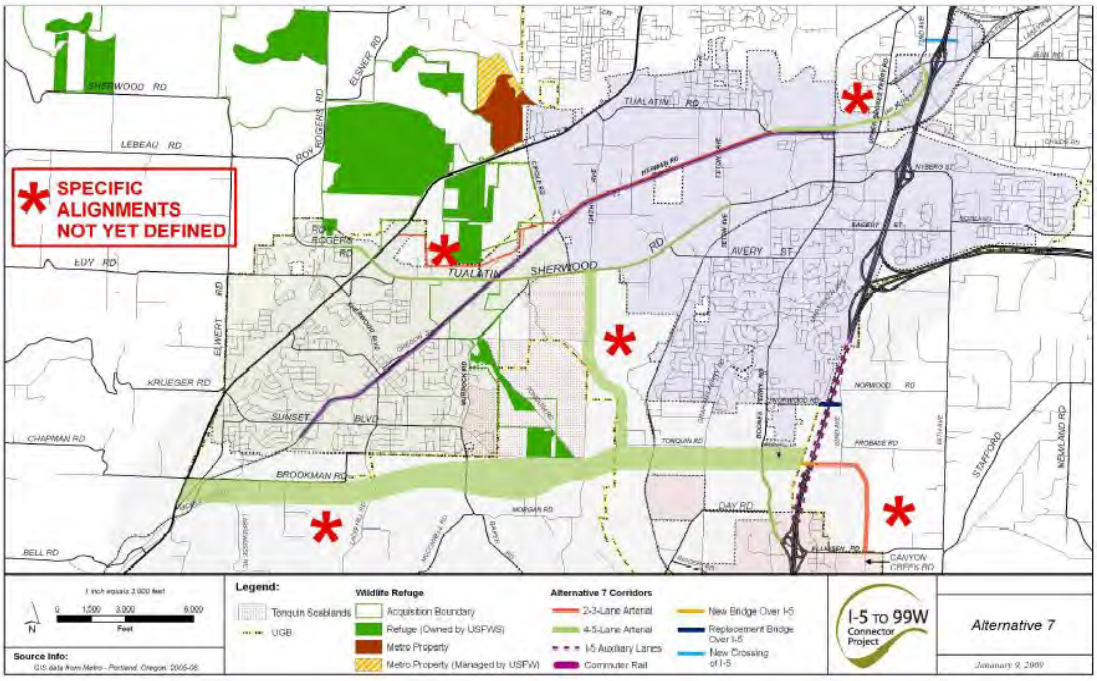
I-5 to 99W Connector Project: The I-5 to 99W Connector Project[37] is intended to develop long-term solutions to improving mobility between I-5 and OR 99W and is a collaboration between ODOT, Metro, Washington County, and other affected agencies and jurisdictions.

The project identified a number of improvements to support access to 2040 land uses, address existing deficiencies and serve increased travel demand. One primary function of this route is to connect the Washington Regional Center to the cities of Tigard, Tualatin and Sherwood, as well as to provide access to the Tualatin/Sherwood Industrial Area and Tualatin National Wildlife Refuge. The corridor provides short-line heavy rail access the region from the Willamette Valley and connects agricultural areas to the interstate highway system in this region, while serving as a secondary gateway to the region.

The study recommended a variety of transportation investments to improve the area's road, transit, bicycle, pedestrian and trail networks and to distribute traffic across a network of three arterials so that no single route would function as a defacto "connector." The Metro 2035 RTP places additional conditions on the Three Arterial Corridors Alternative recommendation and implementation. A map of Alternative 7 is provided in Figure 2.

[37] http://www.i5to99w.org/

Figure 2. I-5 to 99W Connector Alternative 7 (2009)



Alternative 7 is based on arterial development in a set of three northern, central, and southern arterial corridors. The central arterial projects are focused in Sherwood, although a proposed northern arterial project and area-wide projects affect Sherwood as well.

As noted in the figure, alignments are not yet final. The Alternative 7 recommendations that are relevant to Sherwood include the projects below. Cost estimates provided are conceptual costs in 2008 dollars.

Northern Arterial Project

- SW Herman Road – Construct a 3-lane extension between Tualatin Road and OR 99W; $30 million.[38]

Central Arterial Projects

[38] Since the completion of the I-5 to 99W Connector Project and Alternative 7 recommendations, the City of Tualatin has taken actions that impact the implementation of the project recommendations. These actions include removing the Tualatin River bridge (a component of the northern arterial) from urban renewal funding project list. In addition, Tualatin recently updated the City's TSP and removed most of the northern arterial components from the TSP. While improvements to the northern arterial corridor (Tualatin Road and Herman Road) are still included in the City's TSP, the outcome for the "northern arterial" as a package of improvements to improve east-west mobility is unknown.

- Tualatin–Sherwood Road – Widen to 5 lanes from OR 99W to SW 124th Avenue; $25 million.
- Tualatin–Sherwood Road – Widen to 5 lanes from SW 124th Avenue to Teton Avenue; $20 million.
- Roy Rogers Road – Widen to 5 lanes between Borchers Road and OR 99W; $5 million.

Other Projects

- TSM / TDM – Regional trail system, bike lanes, sidewalks, and bus stops; $30 million.
- Commuter Rail – Rail extension to Sherwood; $40 million.
- SW 124th Avenue – Extend 4-5 lane roadway between Tualatin-Sherwood Road and the Southern Arterial; $70 million.

The 2010-2013 STIP includes programmed funding for planning work related to the project. The 2035 Regional Transportation Plan (RTP) includes the following components related to the I-5 99W Connector, including those denoted in the financially-constrained (FC) project list:

- RTP 11179 (FC) – I-5 to 99W Replacement Projects – Construct improvements consistent with recommendations from I-5/99W Connector process
- RTP 10598 – I-5/99W Southern Arterial Right of Way – Purchase right-of-way when all project conditions are met: including integration with land use plans for UGB expansion areas and Urban Reserves, Conducting the I-5 South Corridor Refinement Plan, including Mobility Corridors[39] 2, 3, and 20 and resolution of access between I-5 and southern arterial with no negative impacts to I-5 and I-205 beyond the forecasted No-Build condition, addressing National Environmental Policy Act (NEPA)[40] compliance to determine the preferred alignment and addressing any conditions associated with land use goal exception for southern arterial.

[39] Metro has defined 24 "mobility corridors" that connect regional areas. These corridors include the following linkages: Corridor 2 (Portland Central City to Tualatin), Corridor 3 (Tualatin to Wilsonville), and Corridor 20 (Tualatin to Sherwood and Sherwood to Newberg).

[40] For some large scale projects, agencies are required to prepared documentation known as an Environmental Impact Statement (EIS) through a formalized process that demonstrates compliance with NEPA by showing that environmental values are integrated into the decision making process along with reasonable alternatives.

- RTP 11339 I-5/99W Southern Arterial Improvements – Construct the initial 2-3 lane arterial phase of the Southern Arterial from OR99W to the SW 124th Ave. Extension when all project conditions are met: including integration with land use plans for UGB expansion areas and Urban Reserves, Conducting the I-5 South Corridor Refinement Plan, including Mobility Corridors 2, 3, and 20 and resolution of access between I-5 and southern arterial with no negative impacts to I-5 and I-205 beyond the forecasted No-Build condition, addressing NEPA to determine the preferred alignment and addressing any conditions associated with land use goal exception for southern arterial.

- RTP 11340 – I-5/99W Southern Arterial Improvements – Expand to 4-5 lanes to serve growth in the area after improvements to Tualatin-Sherwood Rd. and an improved connection from SW Tualatin Rd. to the I-5/Lower Boones Ferry Rd. Interchange and when all project conditions are met: including integration with land use plans for UGB expansion areas and Urban Reserves, Conducting the I-5 South Corridor Refinement Plan, including Mobility Corridors 2, 3, and 20 and resolution of access between I-5 and southern arterial with no negative impacts to I-5 and I-205 beyond the forecasted No-Build condition, addressing NEPA to determine the preferred alignment and addressing any conditions associated with land use goal exception for southern arterial.

- RTP 11342 – I-5/99W Connector Southern Arterial/I-5 Interface –Connect the Southern Arterial to I-5 or other surface arterials in the vicinity of the N. Wilsonville interchange when all project conditions are met: including integration with land use plans for UGB expansion areas and Urban Reserves, Conducting the I-5 South Corridor Refinement Plan, including Mobility Corridors 2, 3, and 20 and resolution of access between I-5 and southern arterial with no negative impacts to I-5 and I-205 beyond the forecasted No-Build condition, addressing NEPA to determine the preferred alignment and addressing any conditions associated with land use goal exception for southern arterial.

City of Sherwood Comprehensive Plan (1991): The City of Sherwood originally adopted the Comprehensive Plan II in 1991. Elements of the Plan have been periodically updated, including the last update in 2009. Given the original adoption date, note that some data, findings, policies, and strategies in the Plan are outdated. The purpose of the Plan is to guide the physical growth and development of the community consistent with City policy goals and State Goals and Guidelines. The Plan is intended to articulate the City of Sherwood's perception of what it is, what it seeks to be and how it will achieve its desired future. Its aim is to preserve what is essential to its identity, develop what it needs to be economically and environmentally healthy and meet the needs of the people who contribute to its community life and make use of its land use resources.

Chapter 6, Transportation, provides goals, policies, and strategies relevant to the City's transportation system. The TSP update will need to combine transportation analysis with the application of the goals, objectives and policies described in this chapter.

The goals and policies described in this chapter are nearly identical from the 2005 Transportation System Plan, with the following exceptions:

- TSP Goal 1 Policy 5 is omitted from the comprehensive plan Policy 5 ("The City shall work cooperatively with the Port of Portland and local governments in the region to ensure sufficient air and marine passenger access for Sherwood residents.")

- Comprehensive Plan Goal 3, Policy 10 is not part of the Transportation System Plan ("The City of Sherwood will establish a set of guidelines and standards for traffic calming measures to retrofit existing streets and as part of land use review.")

Comprehensive Plan policies will need to be made consistent with modified and new transportation policies developed as part of the TSP update.

Sherwood Zoning and Development Code: The Zoning and Development Code ("code") implements the City's Comprehensive Plan by establishing zoning designations and use and other development regulations for the zones, as well as regulations and procedures for land division and application review. The following highlights code sections that address transportation-related requirements.

Access Management

Subsection .040.M of Chapter 16.106 (Transportation Facilities) addresses access management, and establishes required minimum spacing between driveways and intersections for local roads, neighborhood routes and collectors (25 feet, 50 feet, and 100 feet respectively). The subsection also refers to the Engineering Design and Standard Details Manual for street standards.[41] Minimum and maximum roadway and driveway spacing standards for city arterials and collectors are provided in the 2005 TSP.

Performance Standards and Targets

As referred to earlier in this report, the 2005 TSP and Roadway Element of the Washington County TSP establish level-of-service standards for both signalized and unsignalized intersections under their jurisdiction. This report also addresses regional performance targets from the RTP and RTFP regarding issues such as safety, congestion, freight reliability, and active transportation that will be integrated into the updated TSP.

[41] The purpose of the city's Engineering Design and Standard Details Manual is to set standards for the construction of new public improvements and for the reconstruction of existing facilities to upgrade existing infrastructure. These standards are primarily geared towards construction design; however, where applicable, this engineering document will need to be consistent with, and implement, the standards that are proposed in the updated TSP, as well as those reflected in development code requirements.

These standards and targets do not need to "live" in the code, but to ensure compliance with performance standard requirements a traffic impact analyses (TIA) requirement should be established in the code. Existing code sections 16.90.030.D and 16.106.040 include general TIA requirements for development proposals based on the type of proposed development, whether they are subject to site plan review, and their projected average daily vehicle trips (ADT).

Coordinated Review and Conditions of Approval

Written notice of Type II, III, IV, and V quasi-judicial and legislative actions is sent to Oregon Department of Transportation (ODOT), Metro, applicable transit service providers, and other affected or potentially affected agencies (Section 16.72.020.C). Also, pre-application conferences established in existing code (Section 16.70.010) are an opportunity to coordinate with other transportation facility and service providers.

General approval criteria for development applications grant authority to the Hearing Authority and Appeal Authority to approve the application with conditions (Section 16.72.010.C.1).

Plan and Land Use Regulation Amendments

The TPR seeks to protect transportation facilities by requiring consistency of land use with the function, capacity, and performance standards of transportation facilities. Existing Sherwood code provisions regarding approval criteria for plan amendments address TPR compliance, although the provisions do not necessarily reflect more recent TPR amendments (Section 16.80.030.C).

Pedestrian and Bicycle Access, Circulation, and Amenities

Requirements for on-site pedestrian, bicycle, and vehicular circulation are established in existing code (Chapter 16.96). Standards for residential and non-residential development require that a private pathway/sidewalk system extend throughout the site that connects existing development, building entrances, adjacent development, future phases of development, public rights-of-way, open space, and parking and storage areas.

Bicycle parking is required for uses including multi-family housing, office and most other commercial uses, institutional uses, and park-and-ride facilities (Section 16.94.020.C). The provisions address location and design of bicycle parking, and allow for long-term parking but do not require it.

Transportation Demand Management

Existing off-street parking regulations allow for shared parking, blended parking rates, on-street parking credits, preferential carpool/vanpool parking, residential parking districts, and reduced parking requirements in environmentally sensitive areas (Section 16.94.010).

On-site pathway/sidewalk systems addressed in Chapter 16.96 require the system to connect to transit facilities within 500 feet of the site. This is reinforced by language in the transportation

facilities section that requires site connections to transit streets, as designated in the TSP, and either provision of or allowance for transit amenities and/or easements (Section 16.106.040.J). Commercial, multi-family, institutional, and mixed-use development must be oriented to existing and planned transit facilities and be built with no or minimal setbacks according to underlying zoning and site plan provisions (Section 16.90.030.D.7).

Transportation System Design and Connectivity

Street design guidelines are provided in a transportation facilities section of existing code (Section 16.106.010). The narrowest street is a 28-foot local street, which is also shown in a cross-section in the 2005 TSP.

Street spacing is an element of network connectivity; currently, street collector spacing is addressed in the Engineering Design and Standard Details manual and 2005 TSP, as discussed above. Existing code (Section 16.106.30) establishes maximum block lengths of 530 feet for new streets, except for arterials, which have a maximum block length requirement of 1,800 feet. Where full street crossings occur at distances of more 1,200 feet, bicycle and pedestrian crossings must be provided at an average of 530 feet. Section 16.106.30 also requires consistency with a local connectivity plan established in the 2005 TSP.

Code requirements will need to be consistent with the recommendations of the updated TSP. An evaluation of the code and an assessment of how regulatory provisions meet the state TPR and regional RTFP will be included in the Needs, Opportunities, Constraints and Tools Report.

Sherwood Parks Master Plan (2006): The Sherwood Parks and Recreation Master Plan involves a comprehensive review of the existing inventory of land, recreation facilities, and recreation opportunities; development of a mission statement; development of a strategic set of goals, objectives, and actions for the next twenty years; survey of the needs of residents; identification of land for future parks and open space acquisition, preservation, or conservation; development of conceptual designs for parks; provision of a capital improvement schedule, and review of existing finance strategies; and development of recommendations to fund improvements.

High priority recommendations include:

- Preservation of natural areas, particularly the Tualatin River National Wildlife Refuge, as new development occurs to preserve and connection of such areas with the fabric of the community
- The creation of new trails wherever the opportunity arises, and provision of ten new walking loops.

The Plan also notes the following acquisitions and developments of Pedestrian & Bike Paths:

- from Edy Road south along Cedar Creek

- from the Senior Center to Stella Olsen Park
- Cedar Creek Trail and Land in the UGB expansion area.

The updated pedestrian and bicycle elements of the TSP will need need to be consistent with path and trail acquisitions and the recommendations of the Parks Master Plan.

Sherwood Urban Renewal Plan (Adopted 2000, updated through 2012): The Sherwood Urban Renewal Plan aims to eliminate blighting influences found in the Renewal Area and to implement the goals and objectives of the Sherwood Comprehensive Plan and the Vision for Old Town-2000. The boundary of the Renewal Area includes Old Town, Six Corners, and a portion of Sherwood High School.

Transportation improvements eligible for urban renewal funding may include streetscape enhancements, existing roadways reconstruction, new streets construction, and pedestrian and bicycle access improvements. Aesthetic improvements on the N. Sherwood Boulevard corridor connecting Old Town and Six Corners, creating vehicular and pedestrian linkages between Highway 99 and the Old Town area, and improving access to Stella Olson Park are mentioned specifically. Parking improvements called for in the plan include construction of public parking to support Old Town businesses and activities, and provision of separate areas for employee parking so close-in parking can be available for customers.

Appendix A: Applicable Plan and Policies

The following plans and policies were reviewed for the City of Sherwood TSP Update:

State of Oregon

- Transportation System Planning Guidelines
- Transportation Planning Rule (OAR 660-012-0010)
- Oregon Statewide Planning Goals
- Oregon Access Management Rule (OAR 734-051)
- Oregon Transportation Plan
- Oregon Highway Plan
- ODOT Highway Design Manual
- 2010-2013 Statewide Transportation Improvement Program

Metro/Regional Plans

- Metro 2035 Regional Transportation Plan
- Metro 2035 Regional Transportation Functional Plan
- Metro 2040 Growth Concept
- Metro Non-Single Occupancy Vehicle (SOV) Target Actions Study
- Metro State of Safety Report
- Regional Active Transportation Plan (August 2013 draft)
- Southwest Corridor Plan
- I-5 – 99W Connector Study
- Ice Age Tonquin Trail Master Plan

City of Sherwood

- 2005 City of Sherwood Transportation System Plan (and amendments)
- City of Sherwood Capital Improvement Plan
- City of Sherwood Comprehensive Plan
- City of Sherwood Zoning and Development Code
- City Engineering Design and Standard Details Manual
- City of Sherwood Urban Renewal Plan
- Sherwood Town Center Plan
- Sherwood Parks Master Plan
- Sherwood Capital Improvement Plan

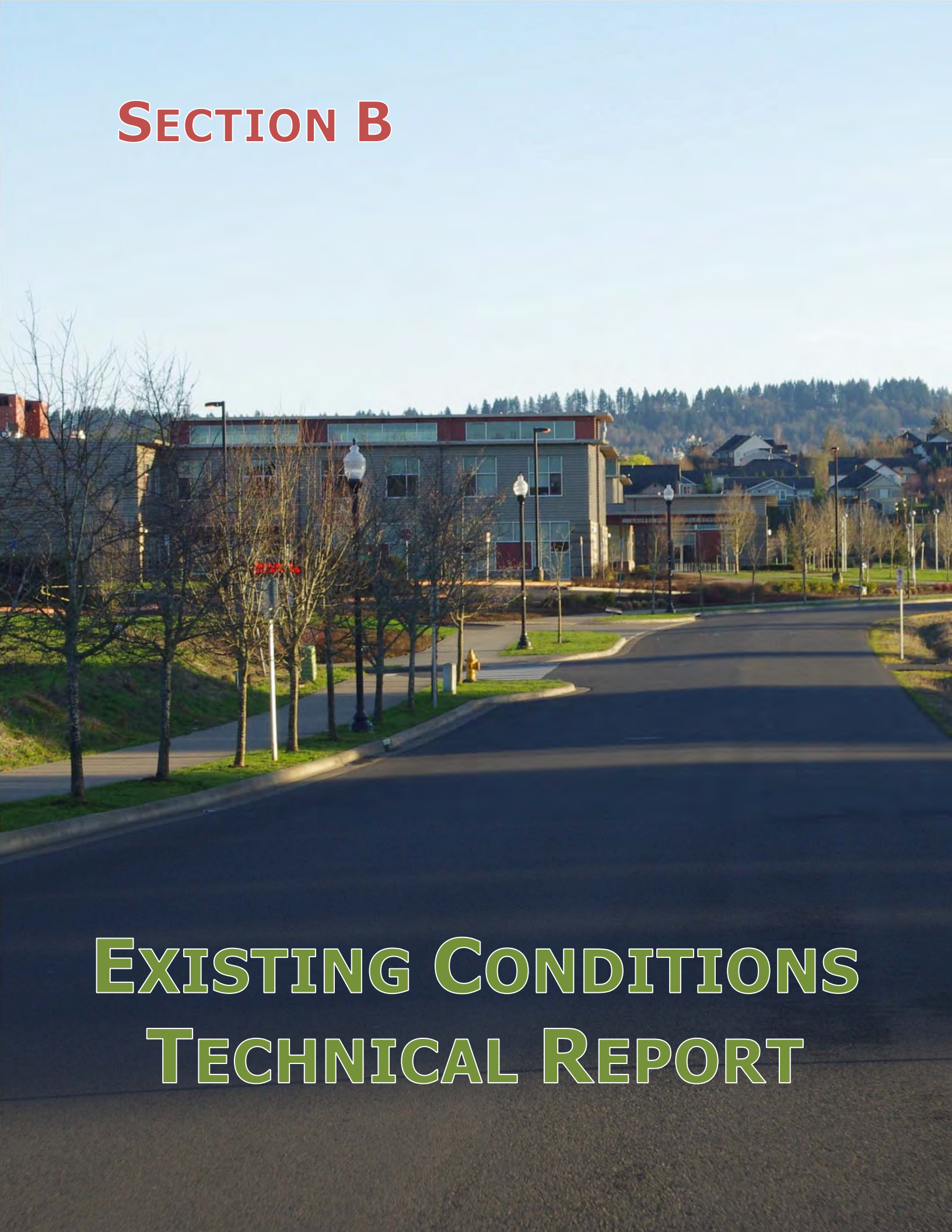
Washington County

- Washington County Transportation System Plan

TriMet

- TriMet Transit Investment Plan

Section B



Existing Conditions Technical Report

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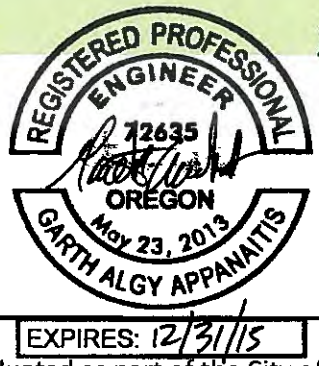

EXISTING CONDITIONS

Existing transportation inventories were collected and evaluated as part of the City of Sherwood Transportation System Plan (TSP) for transportation facilities serving various travel modes (pedestrians, bicycles, transit, motor vehicles, freight, water, air, and pipelines). This 2013 inventory of Sherwood's multimodal transportation infrastructure establishes existing transportation needs in Sherwood.

Study Area

The general TSP study area (Figure 1) includes the Sherwood city limits and the adjacent unannexed area within the existing urban growth boundary (UGB). Figure 1 also shows Sherwood's land use zoning, which includes a concentration of commercial uses along Highway 99W and in Old Town, Sherwood's historic core. For the purposes of this project, its boundaries are generally defined by the Old Town Overlay District on the City's zoning map. The City's industrial uses are generally located in the northeast area along Tualatin-Sherwood Road (including the Tonquin Employment Area) and the Portland & Western (P&W) Railroad track. The remainder of the City primarily includes residential uses of varying densities (i.e., low, medium, and high). The City has completed concept plans for areas that have not yet been annexed into the City, including the Brookman Addition area (southern edge) and Tonquin Employment Area (eastern edge).

Sherwood's transportation system includes infrastructure that supports the ability of residents and visitors to move around town. Figure 2 shows the locations of multiple "activity generators" (locations that attract various activity) around Sherwood. The highest concentration of generators is located in the Old Town area. Along the northern section of Highway 99W, there are multiple shopping centers. Bus stops are located along the roads having fixed transit routes (Langer Drive and Sherwood Boulevard). Schools and parks are the primary activity generators scattered throughout the community and intermixed with the residential areas. The location of these activity generators is important to consider when assessing the gaps and needs of various modes of travel. Having a well-connected transportation network that provides options for travel to and from these locations can be an asset to the community.

Street System

Sherwood's street system is hierarchal in nature and includes five functional classes, where streets with a higher classification (such as arterial streets) emphasize a higher level of mobility for through-movement versus access. They look and function very differently than a street with a lower classification (such as local streets), which emphasize land access. Higher classification streets tend to be higher traffic volume and speed roadways, though they can vary depending on land use context. The functional classification also provides helpful context for determining the desired spacing and general citywide street layout of the various types of facilities.

Figure 1

Study Area and Zoning

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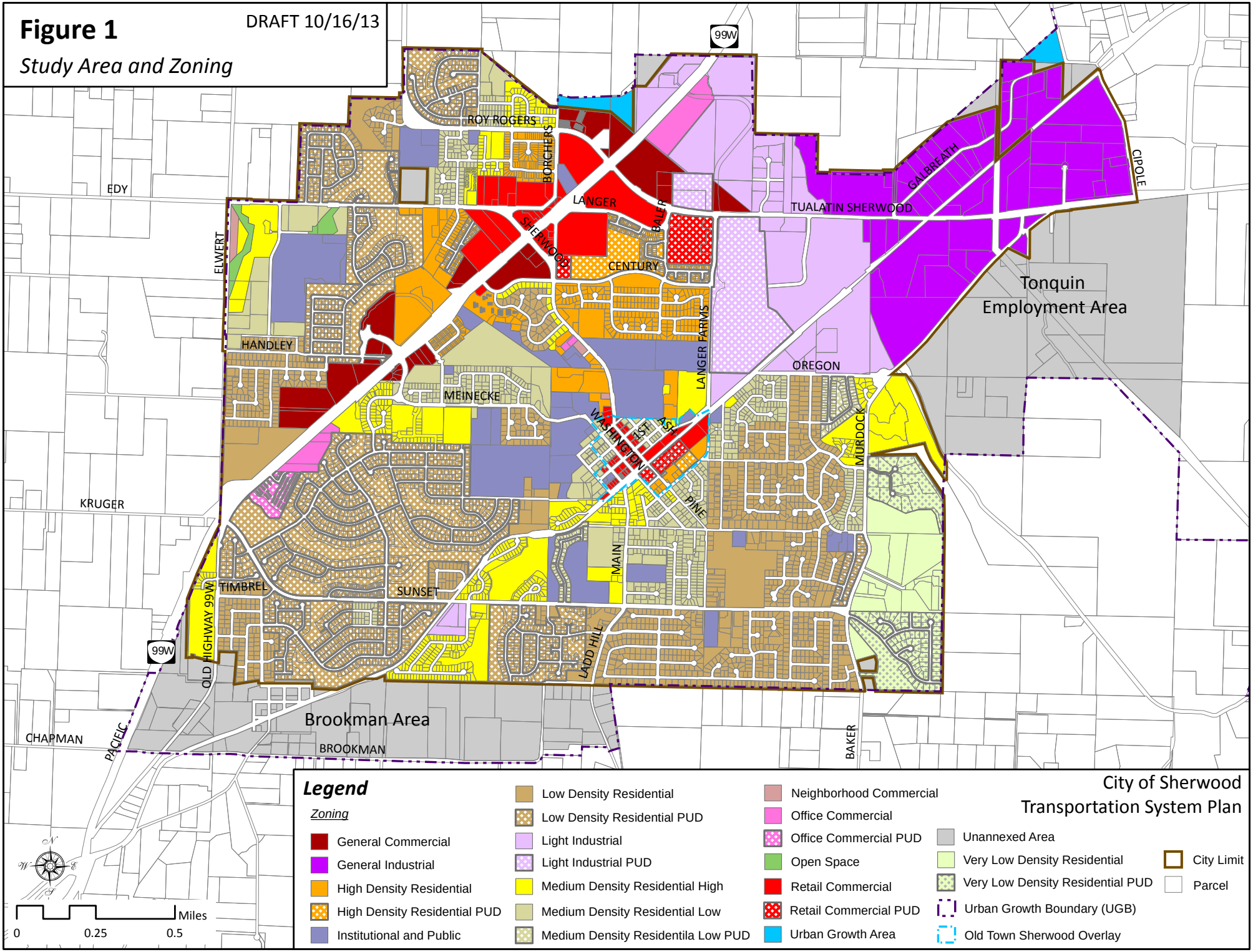

Figure 2

Key Activity Generators

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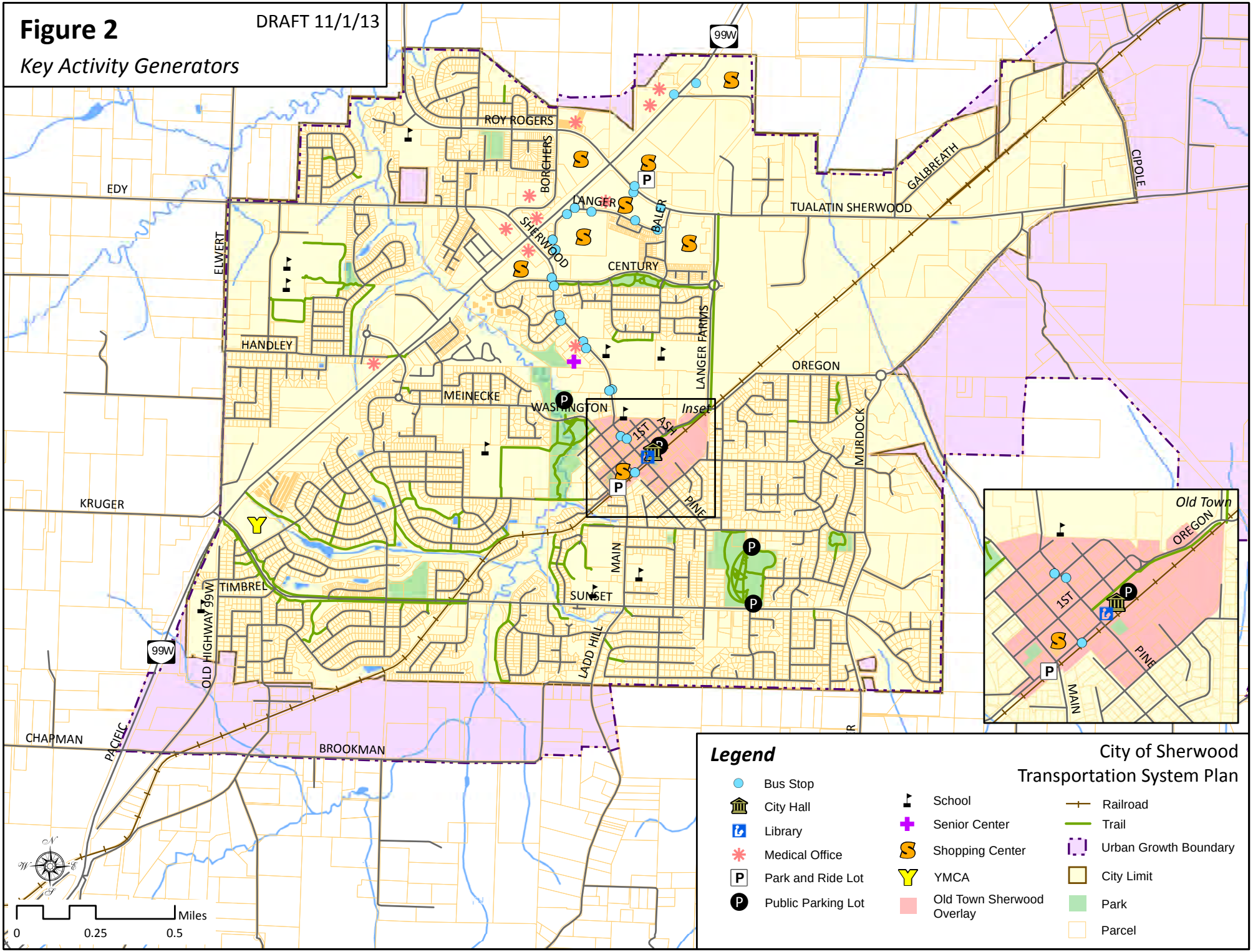

Functional Classification

Sherwood has five functional classes for streets:

- **Principal Arterials** are access controlled highways that span several jurisdictions and provide a high level of mobility. They generally have four or more travel lanes, bicycle lanes (or shoulders), and limited access (preferably connecting primarily with arterials).
- **Arterials** serve as the major roadways within Sherwood and link major commercial, residential, industrial and institutional areas. Many of these roadways also extend beyond Sherwood and connect to other nearby cities. Limited access is a key feature of arterials to ensure increased mobility through town.
- **Collectors** have the primary role of facilitating circulation within Sherwood by funneling traffic from residential, commercial, and industrial areas to the arterial street network. They do not require as extensive control of access (compared to arterials).
- **Neighborhood Routes** are the primary roadways used to access residential neighborhoods. They serve a similar function as collector roadways but are designed to feel more like a neighborhood street.
- **Local Streets** have the sole function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design.

Figure 3 shows the functional classifications of Sherwood's roadways. The primary regional roadway providing mobility to residents and connecting the City of Sherwood with the surrounding area is Highway 99W, which is classified as a Principal Arterial. Highway 99W runs northeast-southwest through the northern half of the City and connects to the Portland Metropolitan Area to the northeast and Newberg, McMinnville, and other areas of Yamhill County to the southwest. Through Sherwood, Highway 99W has limited access, including five signalized intersections, which serve as the primary crossing locations between land uses on either side of the highway. There are only a few other accesses with local roads and private driveways, and these are all limited to right-in/right-out movements except Bookman Road.

The other major roadways within Sherwood (classified as Arterials) are the primary mobility routes that provide regional connections through Sherwood. These arterials include Tualatin-Sherwood Road (connecting to Tualatin), Roy Rogers Road (connecting to Beaverton), Oregon Street, Murdock Road, Sherwood Boulevard, Main Street, Sunset Boulevard, and Elwert Road.

Figure 3

Street Functional Classification

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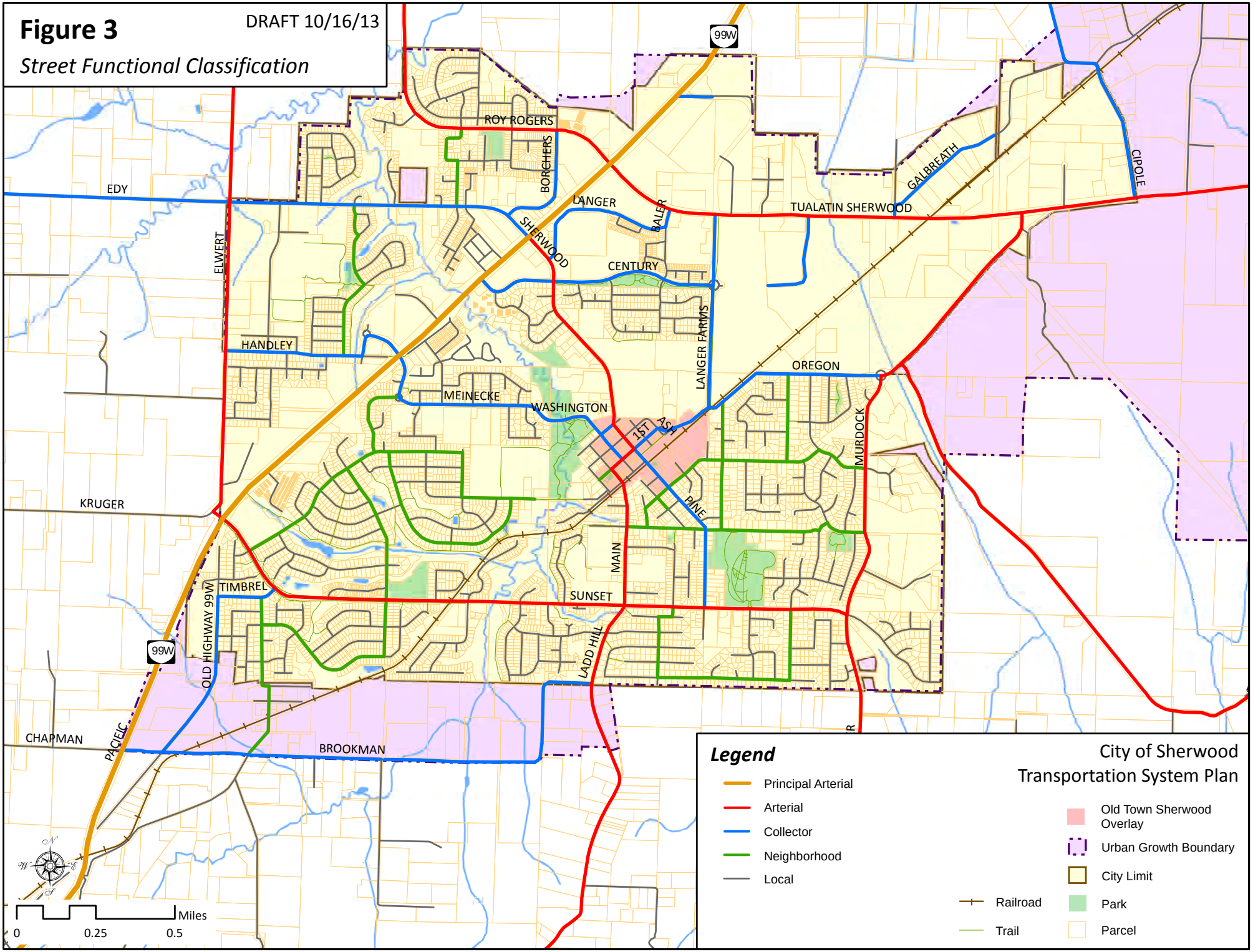
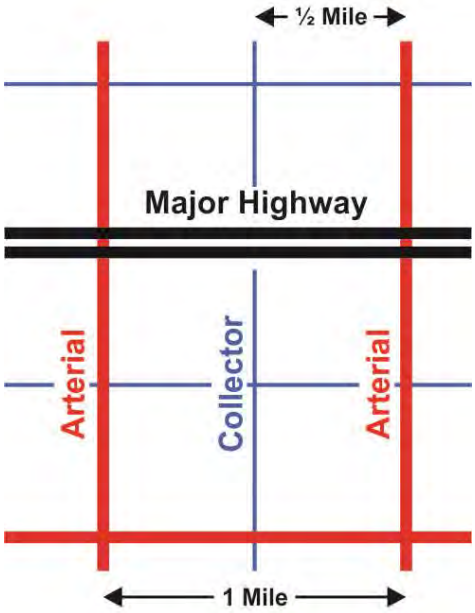


System Connectivity

The Metro Regional Transportation Functional Plan (RTFP) requires that each city incorporate street connectivity guidelines into local TSPs. The image at right shows the recommended spacing for arterial streets (approximately one-mile) and collector streets (approximately half-mile). There is allowance for deviations to this spacing based on the presence of significant barriers, such as topography, rail lines, freeways, existing development, and the presence of natural areas.[1] The roadway network spacing guidelines were recommended to support walking, biking, and access to transit, as well as improved connectivity to reduce demand on the arterial roadway system.



Based on these street connectivity guidelines, Sherwood currently has the following system connectivity characteristics in its arterial and collector network. Specific gaps (as numbered) are shown in Figure 3A.

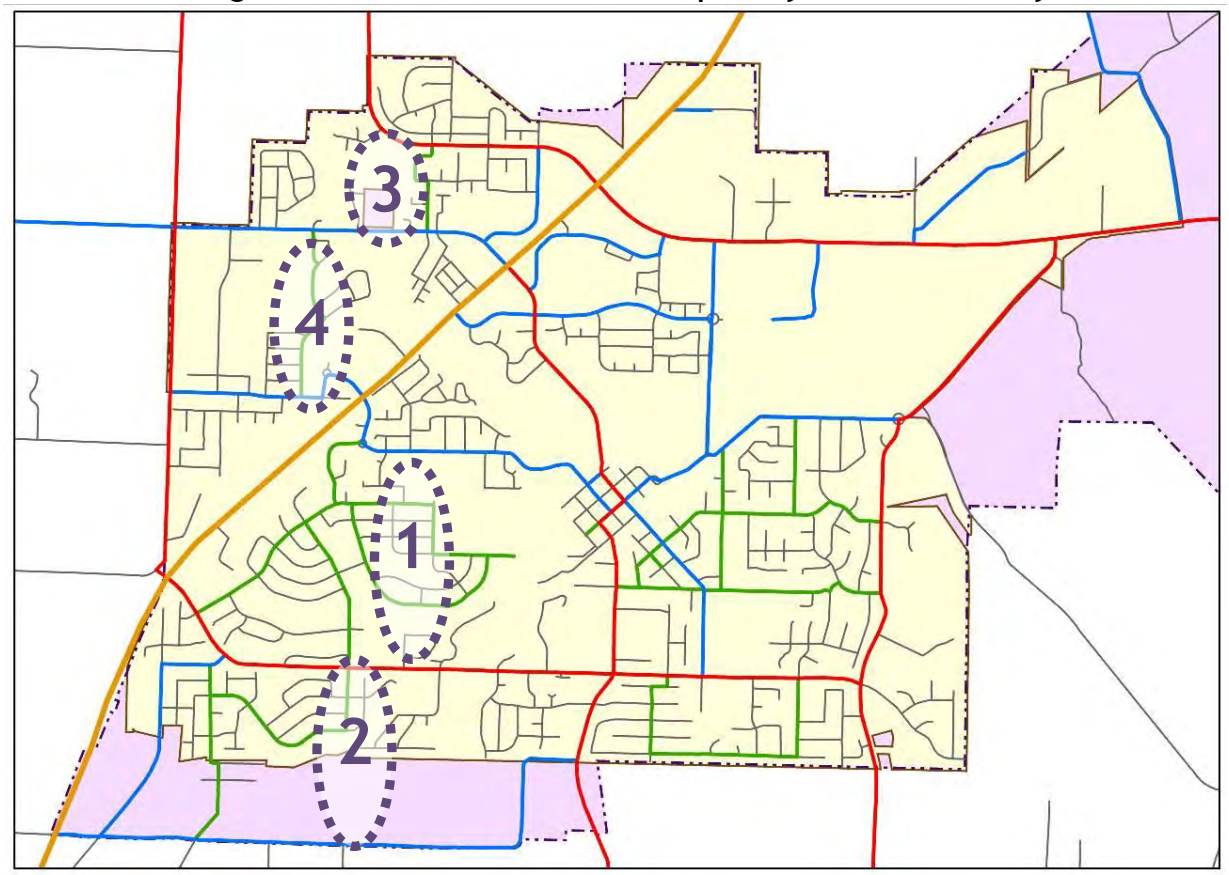
- **East-West Roadways (South of Highway 99W):** Tualatin-Sherwood Road and Sunset Boulevard are the two east-west arterials in Sherwood south of Highway 99W. They are spaced approximately 1¼ miles apart, which only slightly exceeds the desired one-mile arterial spacing guideline. Oregon Street and Meinecke Road are collectors that provide east-west connectivity located approximately midway between Tualatin-Sherwood Road and Sunset Boulevard (approximately ½ mile from each arterial). Brookman Road, a collector, also is located approximately ½ mile south of Sunset Boulevard.
- **North-South Roadways (South of Highway 99W):** Sherwood Boulevard – Main Street and Oregon Street-Murdock Road are the primary north-south arterials on the southern side of Highway 99W. Highway 99W also accommodates north-south travel. In general, these roadways are spaced between ¾ and 1 ¼ miles apart, which is generally consistent with the one-mile arterial spacing guideline. Langer Farms Parkway, a collector, provides north-south travel between Tualatin-Sherwood Road and Oregon Street and is located approximately ½ to ¾ mile from the adjacent arterial facilities. South of Oregon Street, Pine Street is the collector between Main Street and Murdock Road. However, west of Main Street the collector gaps are larger, including:
    - There is no collector (gap 1) that links Meinecke Road and Sunset Boulevard. This area is constrained by established residential neighborhoods, the rail line, and the creek. Dewey Drive and Pinehurst Drive serve as neighborhood routes to the west.

[1] Metro's Regional Transportation Functional Plan (RTFP), Title 1 section 3.08.110(C)

- South of Sunset Boulevard, there is a gap of approximately 1 ¼ miles (gap 2) east to Ladd Hill Road to Old Highway 99W and Timbrel Lane. While Pinehurst Drive (a neighborhood route) extends south of Sunset Boulevard, it ends in a residential neighborhood that backs against the rail line.

- **North of Highway 99W:** The two arterials north of Highway 99W, Roy Rogers Road and Elwert Road, are spaced approximately ½ miles apart to the north and 1 ½ miles apart near Highway 99W due to the curvature in Roy Rogers Road. Between the two arterials, Edy Road and Handley Street provide east-west connectivity. However, north-south collector connectivity is limited.
  - There is a north-south collector gap of nearly a mile (gap 3) between Borchers Drive and Elwert Road north of Edy Road. While a neighborhood route is located along Houston Drive and Lynnly Way, area to the west is somewhat constrained by the creek.
  - There is a north-south gap of approximately a mile south of Edy Road (gap 4). The neighborhood route of Bedstraw Terrace-Ladyfern Drive-Roellich Avenue is located in the general area that would meet the collector spacing guidelines. However, these roads are fronted by residential development that has direct access to the facility and would restrict the mobility function of a collector.

Figure 3A: Arterial and Collector Gaps in System Connectivity



Roadway Characteristics

Figure 4 shows the speed limits on Sherwood's roadways and the traffic control used for the City's intersections. Most of the roadways have 25 mile per hour (mph) speed limits, with some of the arterial roadways having higher speeds of 35, 45, or 55 mph. The majority of the City's traffic signals are also on the arterial roadways, while roundabouts are located at various intersections around town. Old Town Sherwood has a large concentration of the City's all-way stops, and there are also a number of all-way stops on Sunset Boulevard.

Figure 4

Roadway Characteristics

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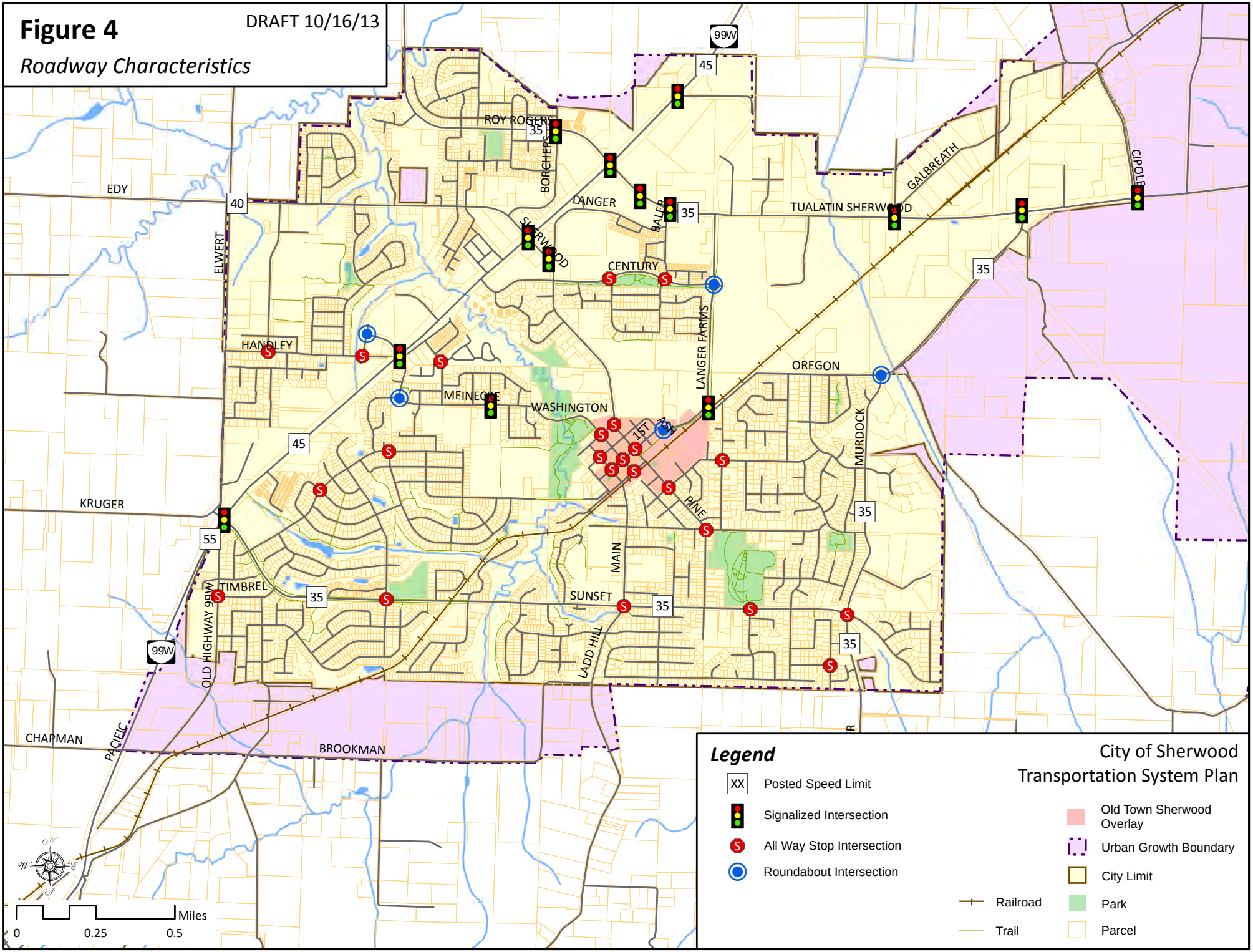

Pedestrian Facilities

Figure 5 shows the existing pedestrian facilities in Sherwood. Sidewalk connectivity is provided on a majority of the arterials, collectors, and local roadways including Tualatin-Sherwood Road and Sherwood Boulevard. In addition, connectivity and pedestrian linkages are relatively good for parks and schools. Roadways lacking sidewalk connectivity in key locations include the following:

- **Highway 99W** has significant gaps in sidewalk connectivity, especially a large portion south of Sherwood Boulevard that does not have sidewalks on either side of the highway.
- **Edy Road** along most of its length between Highway 99W and Elwert Road lacks sidewalks on at least one side of the road.
- **Division Street** along most of its length between Main Street and Mansfield Street lacks sidewalks on at least one side of the road.
- **Oregon Street** along most of its length between Langer Farms Parkway and Murdock Road lacks sidewalks on both sides of the road; however, the northern side of the road has undeveloped land.
- **12th Street** between Highway 99W and Sherwood Boulevard lacks sidewalks on the south side of the street.
- **Glen Eagle Neighborhood** lacks sidewalks along all streets (12th Street, Gleneagle Drive, Glenco Court, 11th Court, and 10th Street), including those that front homes.

Currently, trail facilities along Oregon St, Langer Farms Parkway and Century Drive connect Old Town to Tualatin Sherwood Road and Langer Park. In addition, the City of Sherwood is in the process of planning and constructing portions of the Cedar Creek Trail, which will connect to the regional Ice Age Tonquin Trail. The intended alignment of this trail will follow Oregon Street through Old Town and run along Cedar Creek to the north. In the short term, the nearest crossing of Highway 99W will be at Meinecke Road, but a grade-separated crossing of Highway 99W may be considered as a long-term

Sherwood's streets have a mix of pedestrian facilities that include sidewalks and meandering paths.

solution. This trail will serve as an important bicycle and pedestrian connection between land uses on the northwest side of Highway 99W and Old Town, as well as the other neighborhoods adjacent to the trail's alignment. It will also provide regional connectivity to the cities of Tualatin and Wilsonville to the east.

The railroad right-of-way is not a legal pedestrian use corridor. While pedestrian use is illegal, the railroad, which is rarely active, is sometimes used as a trail from southern/central neighborhoods to the high school, Stella Olsen Park, and Old Town. The illegal use by some pedestrians, indicates the desire for travel between these areas of the City. The railroad corridor will not be included in system connectivity analysis for pedestrians. However, the desire for travel between these key areas (southern/central neighborhoods and central/northern attractions) will be considered.

Street crossings are another important feature of Sherwood's pedestrian system. While controlled pedestrian crossings are provided at all major signalized intersections, there are some roadways where major intersections are spaced far apart, which results in crossing barriers for pedestrians. This is the case with Highway 99W, which only has five crossing locations in the three-mile section through town, with particularly long spacing on the 3/4-mile stretch between Sunset Boulevard and Meinecke Road.

The Highway 99W crossings are located at signals, and each signal only allows pedestrian crossings on one leg of Highway 99W (with the other crossing being closed). In addition, the west crosswalk on Sherwood Boulevard at the intersection of Langer Drive is also closed. These closures can increase the crossing movements required by pedestrians to reach their destination. In some cases, a pedestrian may be required to cross three legs on an intersection rather than the desired (closed) leg. This increases the travel time for pedestrians as well as potential conflicts with motor vehicles.

Another major feature impeding pedestrian mobility is the large area of developed land without public rights of way through the properties between Old Town and the residential area to the north. While this area contains schools, a church, and other uses, it does not provide dedicated pedestrian connections between Sherwood Boulevard and Langer Farms Parkway. There are also major gaps in the undeveloped areas of Sherwood. One area with an existing pedestrian gap includes the undeveloped land between Tualatin-Sherwood Road and the section of Oregon Street west of Murdock Road.

Figure 5

Existing Pedestrian Facilities

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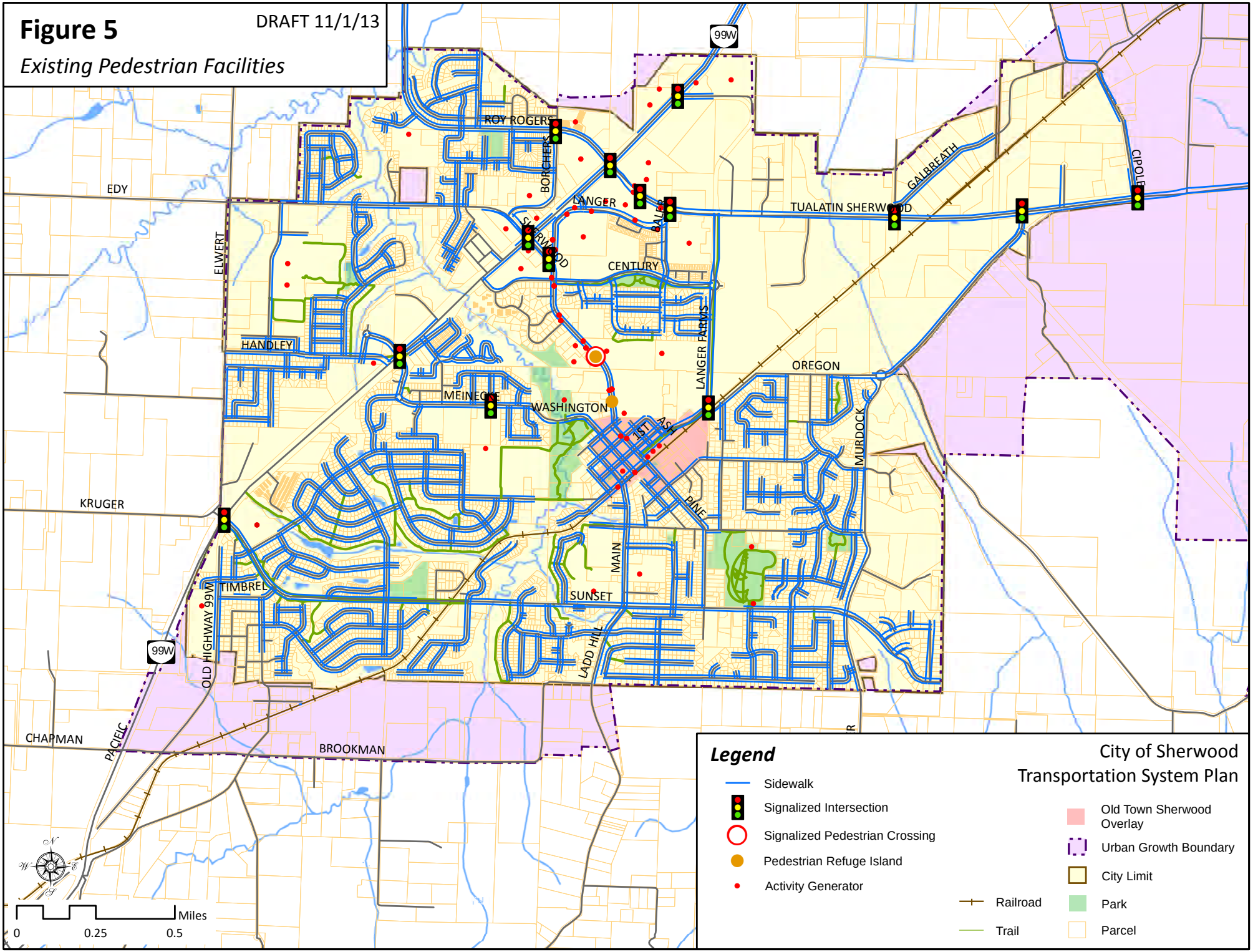

Bicycle Facilities

Figure 6 shows the existing bicycle facility inventory in Sherwood. Besides Highway 99W and Tualatin-Sherwood Road, most of the roadways do not provide bike lanes, although the majority of the residential road vehicle volumes and speed may be low enough (typically under 3,000 vehicles per day and 25 miles an hour) to be safe for bicycle travel. While the need for types of bicycle treatment vary by system context, typically roads with speeds lower than 25 miles an hour are appropriate for shared lanes, sharrows or bike boulevards. The current barriers to pedestrian travel (e.g., Highway 99W crossing opportunities, lack of connectivity north of Old Town, etc.) also affect bicyclists. The Tualatin-Sherwood Road bike lanes have been modified with an additional stripe to create "buffered bike lanes" that serve to create space and dedicated separation between bicyclists and motor vehicles.

Off-street path systems can serve both pedestrians and bicyclists and are typically preferred to on-street facilities. At the moment, Sherwood has existing trail facilities along Langer Farms Parkway, Century Drive, and Sunset Boulevard. Future trails are planned both within Sherwood and connecting to the southeast. The proposed Ice Age Tonquin Trail will connect Old Town to Highway 99W as well as Tonquin Road, the City of Tualatin, the City of Wilsonville, and the Willamette River to the east. This new trail will provide opportunities for bicycle users and pedestrians to make long distance commutes or recreational travel to nearby communities.

The bicycle lanes on Tualatin-Sherwood Road were restriped to create "buffered bike lanes" that serve to create space and dedicated separation between bicyclists and motor vehicles.

Figure 6

Existing Bicycle Facilities

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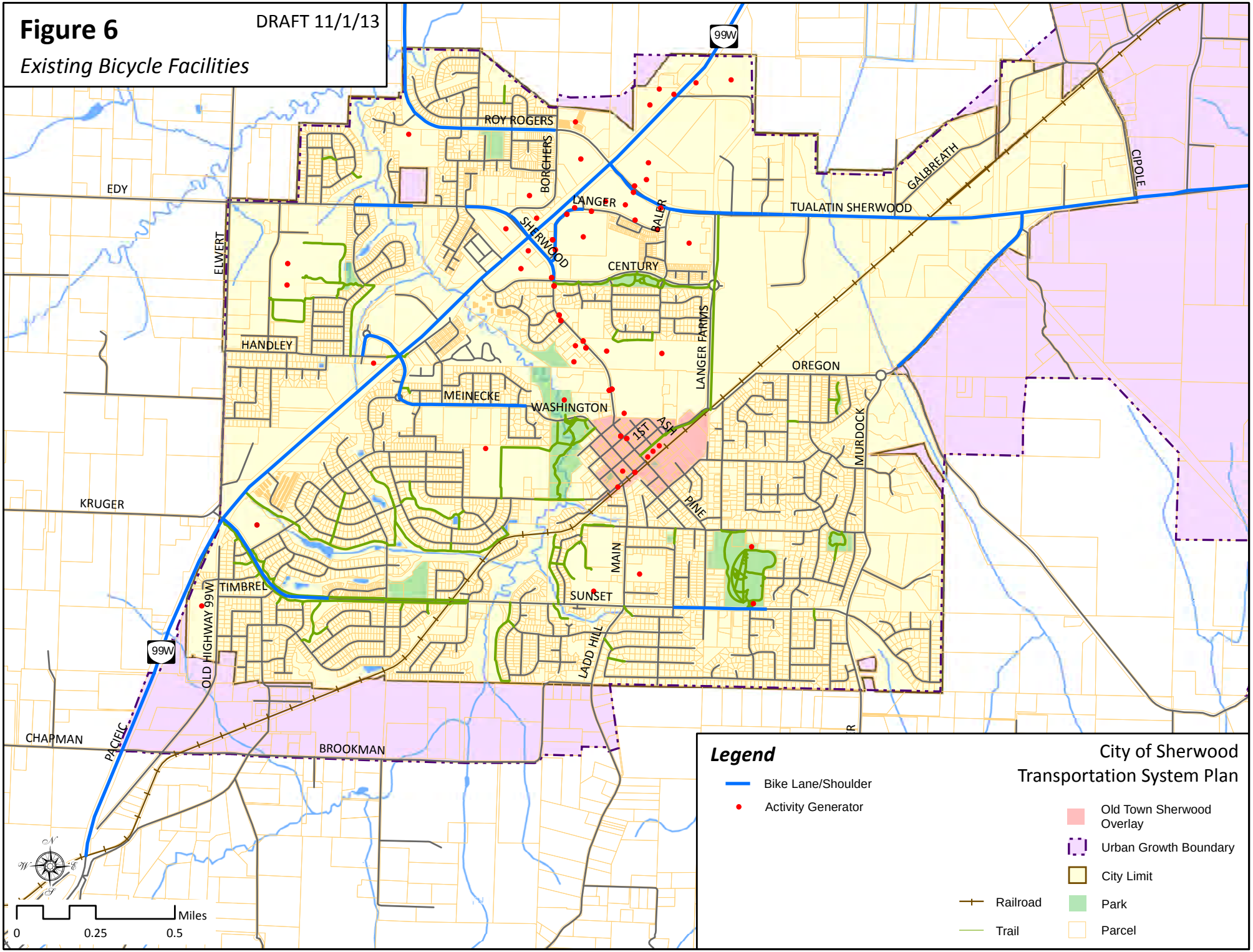


Transit Facilities

Transit service is provided by the Tri-County Metropolitan District of Oregon (TriMet) and the Yamhill County Transit Area District (YCTA). TriMet provides service and connections within the Portland Metro region (such as to Tigard, Beaverton, Portland, etc.), while YCTA connects Sherwood to Yamhill County and Tigard. Figure 7 shows the bus routes and bus stops of each transit service provider. In addition, the Metro RTP identifies the TriMet stop located at Railroad Street and Washington Street in Old Town Sherwood as a major transit stop. TriMet also provides park-and-ride lots at two of its stops in Sherwood; these include Old Town Sherwood on Railroad Avenue and off of Tualatin-Sherwood Road at the Regal Cinemas parking lot.

TriMet Lines 93 and 94 connect Old Town Sherwood to Highway 99W and run to/from the north. The focus of the service is to connect Sherwood with Tigard, Downtown Portland, and the greater Portland Metropolitan Area. Line 93 runs from Old Town Sherwood (Railroad Street/Washington Street) to the Tigard Transit Center. It operates seven days a week and runs approximately every 30-45 minutes or less during the weekdays from 4:30 AM to 11:30 PM. During the weekends, Line 93 runs approximately the same schedule as the weekdays. The typical travel time on this route between Old Town Sherwood and the Tigard Transit Center is 20-25 minutes.

Line 94 is an Express bus that runs between Old Town Sherwood and Downtown Portland. It only operates on weekdays, with short headways during the peak commuting hours (in the peak direction only) and longer headways during the off-peak hours. In the northbound direction (to Downtown Portland) the bus runs from about 5:45 AM to 8 AM with service every 15 minutes or less. Then, from 8 AM to 5:15 PM it provides service every 45 minutes. In the southbound direction (to Sherwood) the bus runs from 7:30 AM to 2 PM every 45 minutes. Then, from 2:00 PM to 7:00 PM the bus provides service every 15 minutes or less. During peak hours, the typical travel time from Downtown Portland to Old Town Sherwood is approximately one hour.

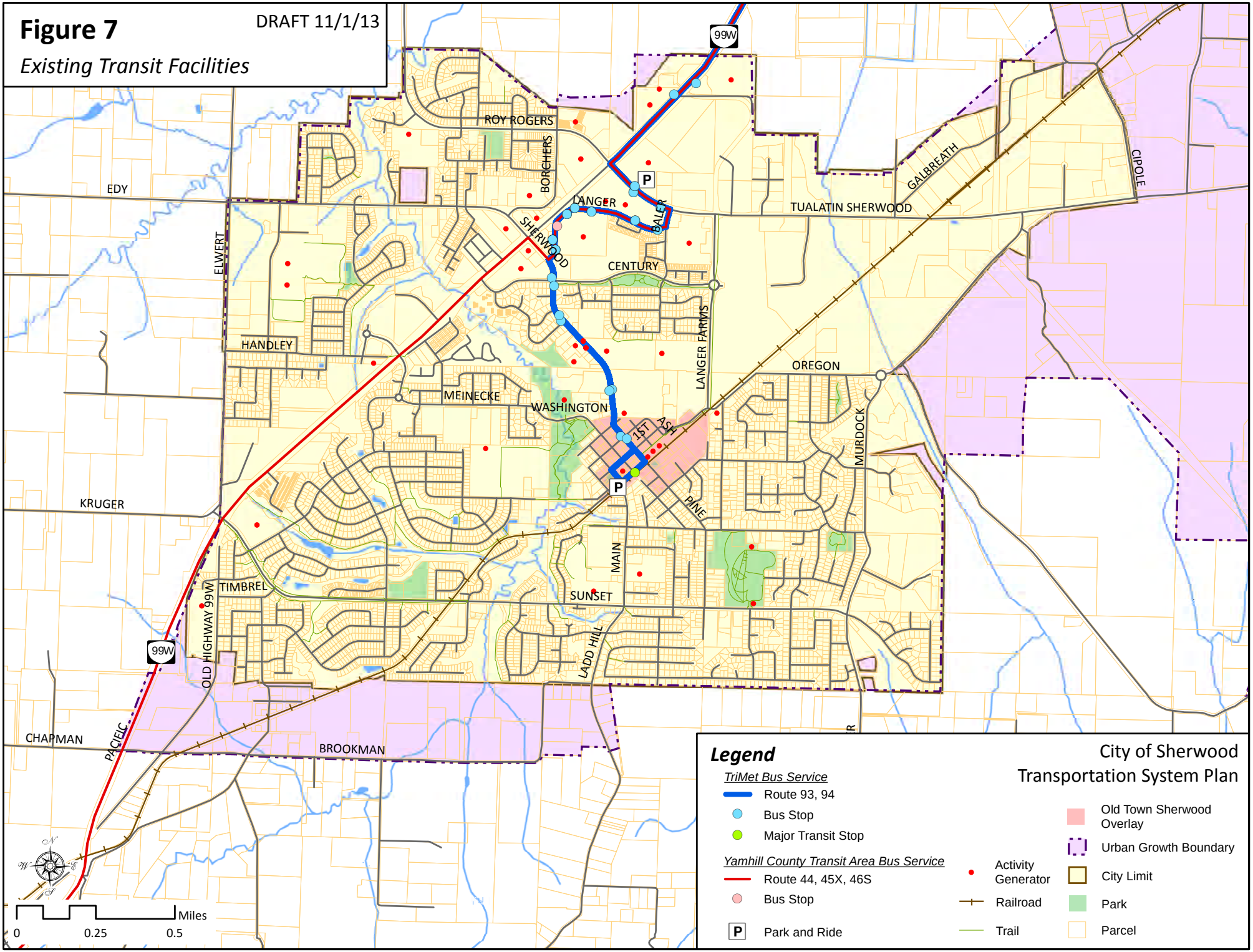
Some bus stops in Sherwood include amenities such as benches and shelters.

In addition to the two TriMet bus lines, the YCTA operates three bus lines; Routes 44, 45x (Express), and 46S (Saturday). These bus lines all travel between McMinnville and Tigard, with stops at the various cities along the corridor, including Sherwood. The only stop in Sherwood is located on SW Langer Drive near Shari's. Route 44 runs from about 6:00 AM to 7:00 PM, with service every hour during peak times and every two hours during off-peak times. Line 45X operates only two trips every weekday, one at 7:00 AM in the southbound direction and one at 5:45 PM in the northbound direction, which serves those traveling from residences in Sherwood to Yamhill County (potentially for employment) during the typical commute times.

Figure 7

Existing Transit Facilities

DRAFT 11/1/13



Legend

TriMet Bus Service
- Route 93, 94
- Bus Stop
- Major Transit Stop

Yamhill County Transit Area Bus Service
- Route 44, 45X, 46S
- Bus Stop

P Park and Ride

Activity Generator

Railroad

Trail

Old Town Sherwood Overlay

Urban Growth Boundary

City Limit

Park

Parcel

City of Sherwood
Transportation System Plan

Freight Routes

Efficient truck movement plays a vital role in the economical movements of raw materials and finished products. The designation of through truck routes provides for this efficient movement while at the same time maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system. The Washington County TSP identifies through truck routes in the Sherwood areas as Highway 99W and Tualatin-Sherwood Road/Roy Rogers Road, which are shown in Figure 8. In addition, Highway 99W (a Statewide facility) has several designations related to mobility and goods movements, including National Highway System, National Network, Freight Route, and Reduction Review Route.[2] These designations can limit reductions to vehicle-carrying capacity and (under the Reduction Review Route designation) subjects proposed reductions to review.

Other Modes

There are four other transportation modes often considered for transportation systems: rail, pipeline, air, and water. Sherwood does not have any designated airports/heliports or navigable waterways. However, it does have rail and pipeline facilities, which are shown in Figure 9.

The rail line in Sherwood is operated by Portland & Western (P&W), a sister company of Willamette & Pacific (W&P) Railroad and a subsidiary of Genesee & Wyoming Incorporated. The line runs northeast-southwest through Sherwood and generally parallels Highway 99W between McMinnville and Tigard. The majority of rail crossings in the Sherwood area are gated, with the exceptions being at-grade (ungated) crossings at Brookman Road and Middleton Road (both located outside the City but within the UGB). Further south of Sherwood, the rail has a grade-separated crossing of Highway 99W.

Northwest Natural operates several high-pressure pipelines that serve Sherwood. These lines run along Elwert Road, Cipole Road, Tualatin-Sherwood Road, and Oregon Street. In addition, Kinder Morgan operates a petroleum gas line (gasoline and diesel) that runs from the Port of Portland to Eugene through the eastern part of Sherwood.

Both BPA and PGE transmission lines are located in Sherwood and generally run northwest from Tonquin Road near Tualatin. These lines cross existing roadways, including Oregon Street south of Tualatin-Sherwood Road and Tualatin-Sherwood Road east of Langer Farms Parkway. The lines constrain future roadway network layout and connections. The lines run through the Tonquin Employment Area and were considered during the concept planning process.

[2] *1999 Oregon Highway Plan*, The Oregon Department of Transportation, May 1999.

Figure 8

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Existing Through Truck Routes

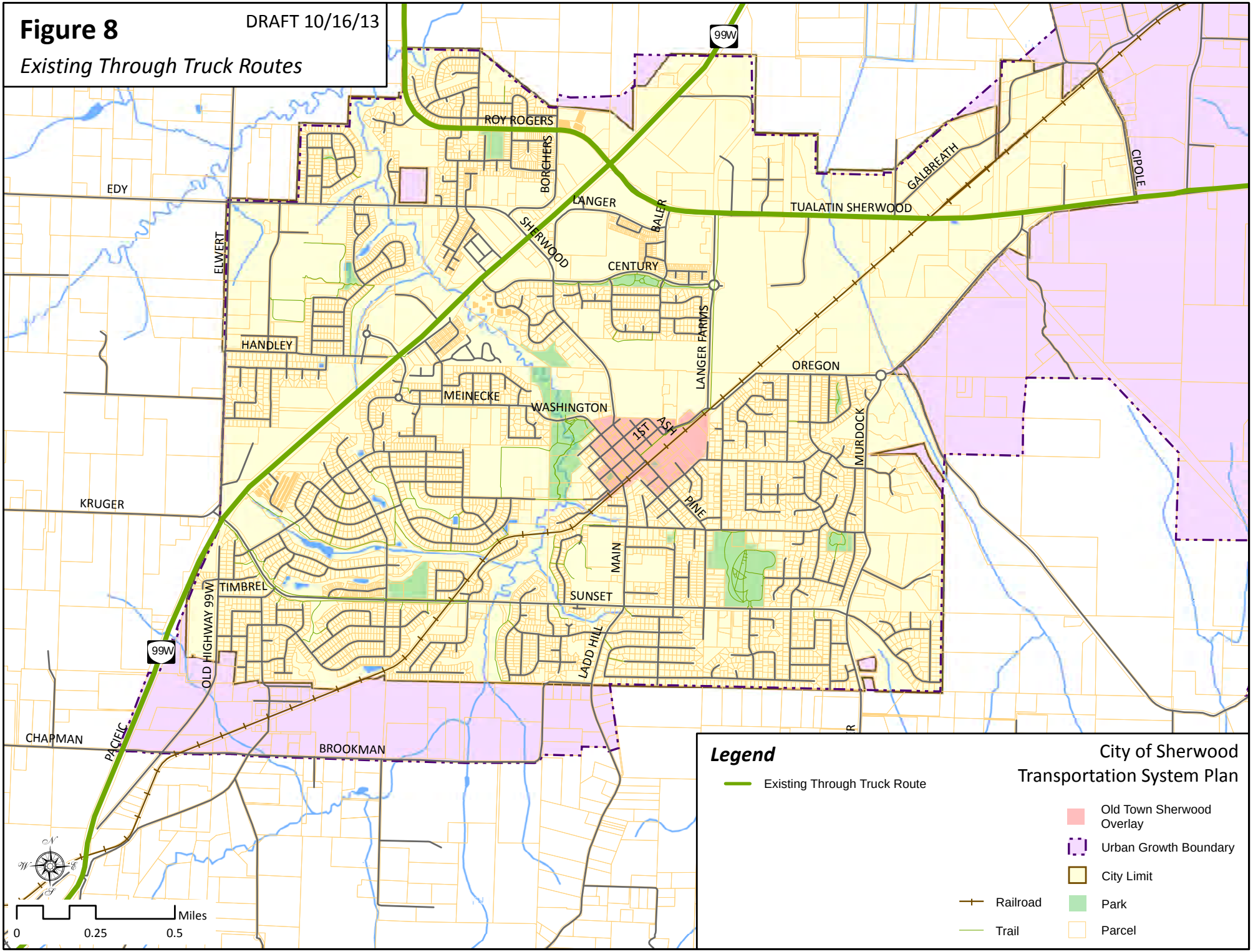

Figure 9

Other Existing Modes

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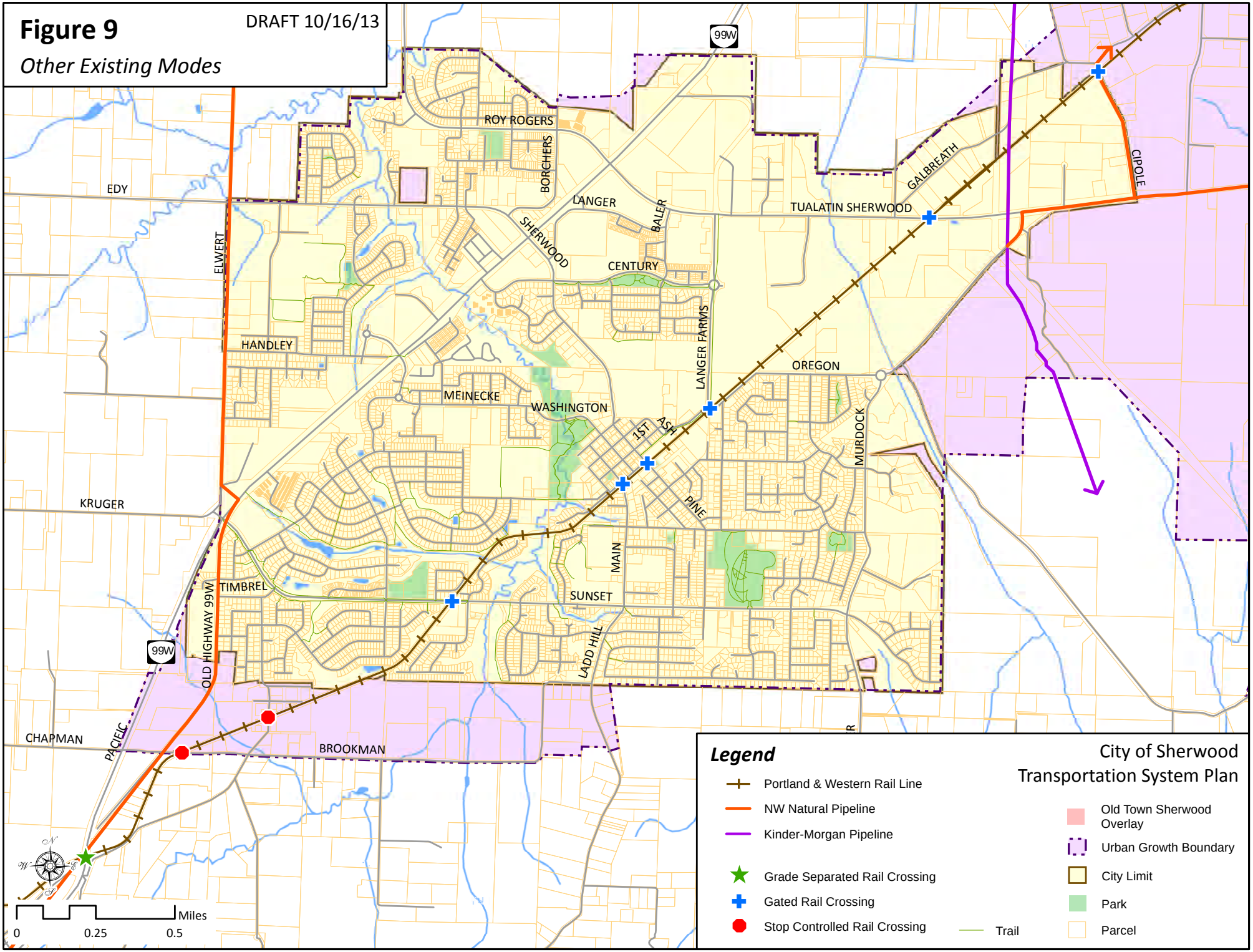

Legend

- Portland & Western Rail Line
- NW Natural Pipeline
- Kinder-Morgan Pipeline
- Grade Separated Rail Crossing
- Gated Rail Crossing
- Stop Controlled Rail Crossing
- Trail

City of Sherwood
Transportation System Plan

- Old Town Sherwood Overlay
- Urban Growth Boundary
- City Limit
- Park
- Parcel

Safety Analysis

A safety analysis of roadways within Sherwood was performed using recent collision data. In addition, the Oregon Department of Transportation (ODOT) and Washington County both have Safety Priority Index Systems (SPIS) that rank locations by collision frequency and severity that were reviewed for the Sherwood area.

Collision Data

Collision data from the past five calendar years (2008 through 2012) was obtained from ODOT and reviewed to identify the location and characteristics of all collisions involving pedestrians or bicyclists. In addition, the data was reviewed for any fatal collisions, but none occurred within Sherwood during this time period. Other auto-auto collisions were separately analyzed for higher incident locations (next section). Figure 10 shows the locations of the pedestrian and bicycle collisions in Sherwood between 2008 and 2012. There were 10 pedestrian-related collisions and 11 bicycle-related collisions. A significant cluster of both types of collisions occurred in the vicinity of the Highway 99W/Sherwood Boulevard intersection. Other general locations including pedestrians or bicycles included the Old Town and area along Sunset Boulevard.

Washington County SPIS

Washington County's Safety Priority Index System (SPIS) prioritizes which intersections are in the greatest need of safety improvements based on three years of collision data. The County's current SPIS list includes collisions that occurred between 2007 and 2009. The SPIS prioritization is derived from factors such as the number of collisions, the type of collisions, the collision severity, and traffic volumes. The collision data only includes those collisions reported to the Oregon Department of Transportation. In addition, the County SPIS list only includes intersections that have at least one county controlled approach and where three or more crashes (or one or more severe injury or fatal crash) occurred at the intersection over the three year period. Sherwood has five intersections on the most recent County SPIS list. Table 1 lists each intersection along with the number of collisions by severity. These locations were further examined in the Collision Trend Analysis section.

Table 1: Washington County SPIS Rankings in Sherwood (2007-2009)

Ranking	Street	Cross Street	Total Collisions	Fatal Collisions	Injury Collisions
29	Highway 99W	Tualatin-Sherwood Rd/Roy Rogers Rd	42	0	21
40	Elwert Rd/ Sunset Blvd	Highway 99W	25	0	11
63	Oregon St	Tualatin-Sherwood Rd	27	0	12
73	Cipole Rd	Tualatin-Sherwood Rd	25	0	11
87	Gerda Ln	Tualatin-Sherwood Rd	10	0	6

ODOT SPIS

The Oregon Department of Transportation (ODOT) also uses a SPIS to identify which state highway sections experience the greatest number and highest severity of collisions. ODOT updates its SPIS list annually based on the most recent three years of collision data. ODOT's most recent SPIS list is from 2012 (calculated using crash data from based on 2009-2011). The 2012 SPIS list identifies the following segments of Highway 99W in Sherwood as being in the top 10% (or higher) locations in the state:

- MP 14.91 to MP 15.09 (Tualatin-Sherwood Road intersection) is a top 5% SPIS location.
- MP 16.61 to MP 16.73 (Elwert Road/Sunset Boulevard intersection) is a top 5% SPIS location
- MP 15.92 to MP 16.01 (Meinecke Road intersection) is a top 10% SPIS location.

The first two locations identified on the ODOT SPIS list were also identified on the Washington County SPIS list. The Highway 99W/Meinecke Road intersection does not include any County roads and so would not have been evaluated by Washington County.

Collision Trend Analysis

Collision trends were analyzed for the six locations identified as ODOT and/or Washington County SPIS locations using ODOT collision records from the past five calendar years (2008 through 2012). Table 2 lists the collision breakdown by type for each of the locations, which all occurred at signalized intersections.

Table 2: Collision Summary of ODOT and Washington County SPIS Locations (2008 to 2012)

Intersection	Total	By Severity		By Type						
		Injury	*PDO**	*Rear-End*	*Turn Mvmt*	*Fixed Object*	*Side-swipe*	*Angle*	*Bike/ Ped*	*Other*
Hwy 99W/Roy Rogers Rd/ Tualatin-Sherwood Rd	81	42	39	56	10	2	6	4	0	3
Tualatin-Sherwood Rd/Cipole Rd	62	36	26	59	1	0	1	0	0	1
Hwy 99W/Elwert Rd/Sunset Blvd	58	33	25	48	6	2	0	2	0	0
Tualatin-Sherwood Rd/Oregon St	47	23	24	33	10	2	1	0	0	1
Tualatin-Sherwood Rd/Gerda Ln	44	30	14	37	3	2	0	0	0	2
Hwy 99W/Meinecke Rd	38	20	18	21	8	6	1	2	0	0
TOTAL COLLISIONS	***330***	***184***	***146***	***254***	***38***	***14***	***9***	***8***	***0***	***7***
Percent of Total	***100%***	***56%***	***44%***	***77%***	***11%***	***4%***	***3%***	***3%***	***0%***	***2%***

*Note: PDO – Property Damage Only

Approximately half of the collisions resulted in injuries at most locations. The exception is the Tualatin-Sherwood Road/Gerda Lane, where more than two-thirds of the collisions resulted in injuries. At all of the intersections, the large majority of collisions were rear-ends, which is common at signalized intersections on high speed/high volume facilities.

A closer review of the six intersections indicated that the major cause of collisions, which primarily applied to the rear-end collisions, was "following too close" (190 collisions or 60%). Other causes included "careless" (29 collisions or 9%), "too fast for conditions" (28 collisions or 8%), and "other improper driving" (25 collisions or 7%). A summary of each location follows.

- **Highway 99W/Tualatin-Sherwood Road/Roy Rogers Road:** The majority of the collisions occurred along Highway 99W in either direction and varied in distance from the intersection. This pattern of rear-end collisions is common at signalized intersections on high speed/high volume facilities. In addition, there were a number of collisions on the side street approaches as well. Eight of the ten turning movement collisions occurred on Tualatin-Sherwood Road and involved vehicles turning right to travel north-eastbound on Highway 99W. This indicates a pattern that could be attributed to the yield condition and geometry of the right turn movement. Vehicles starting to turn on the yield movement and then suddenly stopping before entering the highway may cause the following vehicle (that is anticipating that the first vehicle will enter the highway) to collide. The geometry and traffic control for this movement is subject to change with the Washington County improvements that are currently under design. The congestion-related collision patterns at this location (rear-end and misjudged gap-entry) may increase along with future traffic growth.
- **Tualatin-Sherwood Road/Cipole Road:** Nearly all of the collisions occurred on Tualatin-Sherwood Road and slightly more occurred in the eastbound direction (34 collisions) versus the westbound direction (26 collisions). In addition, almost one-third (19 of 62 collisions) involved more than two vehicles, which is a very high proportion of collisions and may indicate sudden breaking, possibly due to unanticipated stopping. The rear-end collision pattern is related to congestion and may be due to the mix of the rural nature of the area with urban levels of congestion. While these crashes may increase in the future along with traffic growth, the pattern also may decrease as the area becomes more urbanized and developed.
- **Highway 99W/Elwert Road/Sunset Boulevard:** Nearly all of the collisions occurred along Highway 99W, with nearly two-thirds occurring in the southbound direction. The collisions varied in distance from the intersection, and the horizontal and vertical curvature in Highway 99W may be a contributing factor. The rural nature of this location may also contribute to driver expectancy issues related to drivers being unprepared to stop. The congestion related collision patterns on Highway 99W could increase along with future traffic growth. However, the crash frequency could decrease as the area becomes more urbanized and drivers anticipate congestion and stopping on the highway.

- **Tualatin-Sherwood Road/Oregon Street:** Compared with the other SPIS intersections, this intersection had proportionally more turning movement collisions (21%), and half of the turning collisions (five of ten collisions) involved a vehicle making the westbound left turn from Tualatin-Sherwood Road onto Oregon Street with most of these occurring during the PM peak hour (four of five collisions). This pattern is likely related to congestion and could be a result of a number of related issues including drivers near the end of queue following other vehicles beyond the protected green indication. In addition, the traffic signal at this location was modified in June 2008 to allow "permitted" (flashing yellow) left turn movements that require the turning vehicle yield to oncoming traffic. Misjudgment of the oncoming vehicle speeds may have contributed to turning movement collisions at this location. Additional growth and traffic volume is likely to increase these congestion-related collision patterns.
- **Tualatin-Sherwood Road/Gerda Lane:** Similar to the Cipole Road intersection, nearly all of the collisions occurred on Tualatin-Sherwood Road. However, the directionality of collisions was reversed and the majority occurred in the westbound direction (27 collisions) instead of the eastbound direction (16 collisions). Just over half of these collisions (14 of 27 collisions) occurred during the midday or p.m. peak periods (11 a.m. to 1 p.m. or 4 p.m. to 6 p.m.), likely due to higher traffic volumes. A traffic signal was installed at this intersection in late December 2010. Two of the turning movement collisions (which are typically more dangerous) occurred before the signal was installed. The third incident, while classified as a turn movement, occurred after the signal was installed and was related to a bus following a vehicle too closely and hitting it while it yielded to a pedestrian in the crosswalk. Therefore, no traditional turn movement collisions (typically made with a vehicle going straight and hitting a conflicting left turning vehicle) occurred after the signal was installed. As is generally typical for other locations, the rate of rear-end collisions at this location increased following the installation of the traffic signal. Only 8 of the 44 collisions occurred during 2008 through 2010, while 36 occurred in the two years (2011 and 2012) following the traffic signal installation. This high incidence of rear-end collisions is likely to increase with future traffic growth along Tualatin-Sherwood Road.
- **Highway 99W/Meinecke Road:** Nearly all of the collisions occurred along Highway 99W and varied in distance from the intersection. Slightly more occurred in the southbound direction (16 of the 27 collisions on Highway 99W). This patterns of rear-end collisions is similar to the trend present at the other SPIS locations. However, this location also includes a higher portion of turn movement collisions. Half of the turn movement collisions involved multiple vehicles making a northbound right from Meinecke onto Highway 99W. These incidents may be related to overly-aggressive drivers similar to the pattern at Highway 99W/Tualatin-Sherwood Road. The third observation present at this location is related to the higher number of fixed object collisions that involve vehicles driving into the ditch. This pattern may be related to drivers misjudging the separated medians at each leg of the intersection, which has a greater separation than other intersections.

Figure 10

Collision Map

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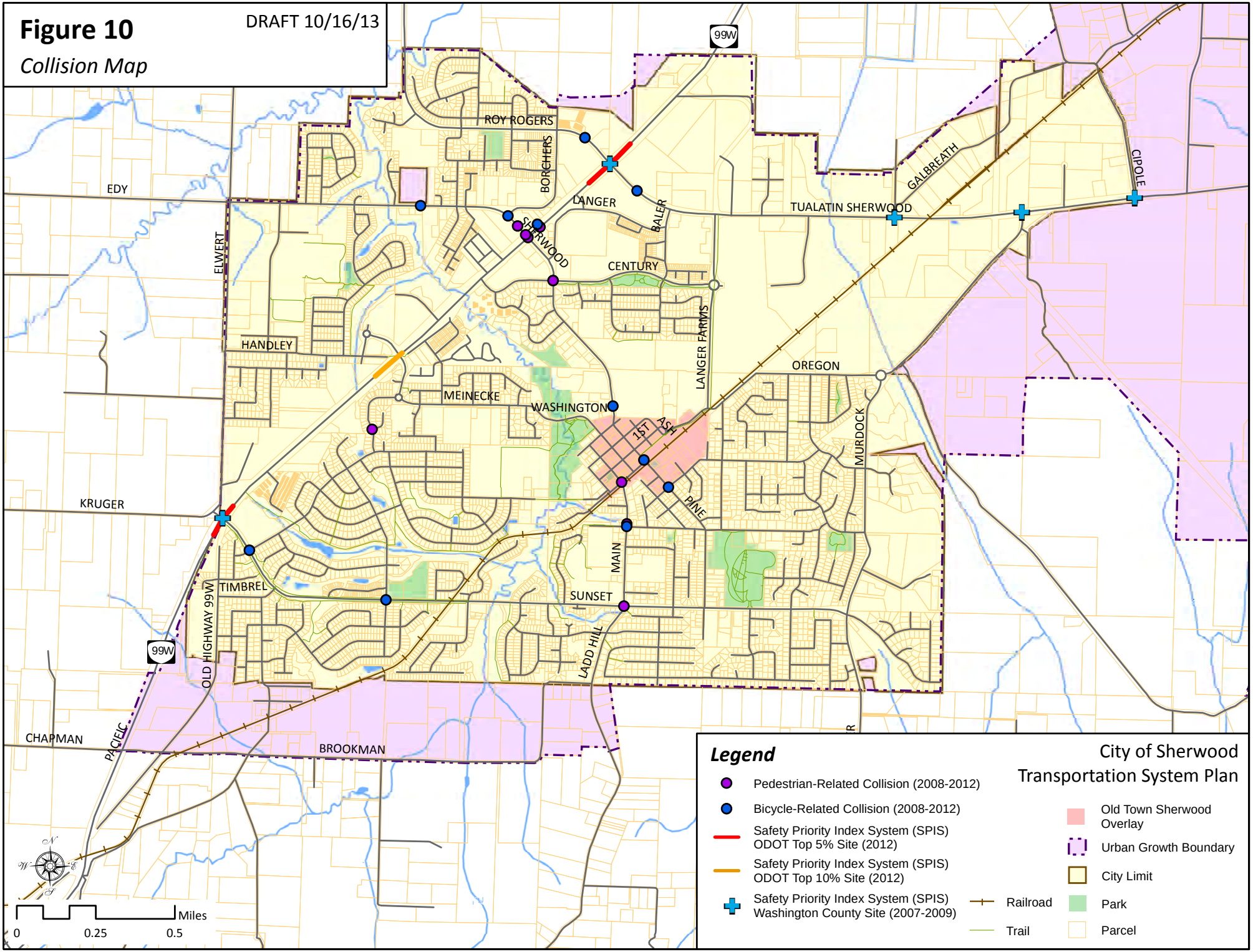

Legend

- Pedestrian-Related Collision (2008-2012)
- Bicycle-Related Collision (2008-2012)
- Safety Priority Index System (SPIS) ODOT Top 5% Site (2012)
- Safety Priority Index System (SPIS) ODOT Top 10% Site (2012)
- Safety Priority Index System (SPIS) Washington County Site (2007-2009)
- Railroad
- Trail
- Old Town Sherwood Overlay
- Urban Growth Boundary
- City Limit
- Park
- Parcel

City of Sherwood
Transportation System Plan

Transportation Funding

The City of Sherwood utilizes a number of revenue sources to fund the construction, operation, and maintenance of its transportation system. While transportation funding is commonly viewed as a user fee system (where system users pay for infrastructure through motor vehicle fees such as gas tax, registration fees, or transit fares), much of what the public views as new construction is commonly funded (partially or fully) through property tax levies, traffic impact fees, and required improvements by land development. In addition, a great share of motor vehicle user fees is used for road maintenance, operation, and preservation of the system rather than construction of new system capacity. Sherwood's budget over the last five year period was reviewed to estimate the amount of transportation revenue and expenses that are likely to occur on an annual basis.

Table 3 lists the yearly funding sources Sherwood is expected to have available to meet its transportation system needs. It also lists the City's ongoing transportation-related operational and maintenance expenses. The $1,982,000 yearly revenue is expected to exceed the $1,467,000 of ongoing yearly expenses by $515,000. This amount would be available for capital improvement projects and would provide a total of approximately $11.3 million through year 2035. However, additional construction may be facilitated through project-specific grants, intergovernmental contributions, or other means. Following the table, general descriptions of the City's funding sources and expenses are provided. In addition, potential new transportation system funding sources are identified and discussed.

Table 3: Sherwood's Yearly Transportation System Funding and Expenditures

Revenue and Expenditure Sources	Annual Amount	Use or Restrictions
Revenue		
State Apportionment of Vehicle Taxes	$995,000	Road-related expenditures
Washington County Gas Tax Allocation	$66,000	Road-related expenditures
Street Maintenance Fee	$261,000	Street maintenance only
Street Light Fee	$201,000	Street lights only
City and County SDC and TDT Charges	$250,000*	Capacity improvements only
Misc. Revenue (Operations)	$10,000	
Misc. Revenue (Capital Improvements)	$65,000	
Sidewalk Fee	Temporary	Only a 5-year program
Developer Exactions	Varies	Frontage or off-site improvements based on traffic impacts
Urban Renewal District	Varies	Approved projects within URD boundaries
Total Revenue	**$1,982,000**	
Expenses (Non-Capital)		

Revenue and Expenditure Sources	Annual Amount	Use or Restrictions
Administrative Services / Personnel	$787,000	Paid with tax allotments
Street Lighting (Electricity)	$180,000	Paid by Street Light Fee
Street/Landscape Repair and Maintenance	$500,000	Paid by Street Maintenance Fee
Total Expenses	**$1,467,000**	
Funds Available for Capital Improvements	**$515,000**	

Note: * SDC Estimate to be refined based on future growth assumptions.

Current Funding Sources and Expenditures

The City of Sherwood uses multiple funding sources to pay for the construction, operation, and maintenance of its transportation infrastructure and services. Two key financial policies that guide its funding choices[3] are: (1) the City of Sherwood will identify sustainable revenue levels and, to the extent possible, current operations will be funded by current sustainable revenues and (2) one-time revenues will be used for one-time expenditures or as contributions to reserves and will not be used to pay for established services. In general, the City observes the following practices:

- Improvements driven by new development are principally paid for using transportation system development charges (SDCs) and developer contributions.
- Improvements made to reduce blight and attract development within the City's urban renewal district (URD) are paid for by the district. Approved projects within the URD boundaries expire in year 2021.
- Other improvements undertaken by the City are paid for using a combination of various city funds depending on project components (e.g., streets, sidewalks, lighting, stormwater, etc.), some of which are paid for using a utility fee.
- Pedestrian and bicycle facilities are constructed as part of roadway projects or paid for as park improvements.
- Staff time (i.e., planning, engineering, and other administration) and supply costs are charged to the Streets Operating Fund for time spent working on transportation-related tasks and projects.

State Apportionment of Vehicle Taxes

The State of Oregon Highway Trust Fund collects various taxes and fees on fuel, vehicle licenses, and permits. A portion is paid to cities annually on a per capita basis. By statute, the money may be used for any road-related purpose. Sherwood uses it for street operating needs. Gas taxes are the primary revenue source for the Oregon Highway Trust Fund and are collected as a fixed amount per gallon of

[3] 2013-2014 Adopted Budget, City of Sherwood

gasoline served. Because there is no adjustment for inflation, the buying power of these funds has decreased over time; however, in 2010 the state legislature voted to raise the tax from 24 cents to 30 cents per gallon, which has boosted recent revenues. The State of Oregon has also considered and tested other means of collecting fees based on total miles traveled within the State, rather than on a per-gallon basis.

Washington County Gas Tax Allocation

A portion of the Washington County gas tax is distributed to cities. Sherwood uses its funds to help cover its transportation system operating expenses.

Street Maintenance Fee

The City of Sherwood charges a street maintenance fee to residential and commercial customers on their monthly utility bills. These funds go directly towards regular road repairs (i.e. patching, signage, stripe painting), exercises for longevity (i.e. crack and slurry sealing), and reconditioning (i.e. replacing an entire street). Residential customers are charged a monthly fee of $2.00 per household, while commercial customers are charged $2.00 per equivalent surface unit (ESU) per month.

Street Light Fee

The City of Sherwood charges a street light fee to residential and commercial customers on their monthly utility bills. While Portland General Electric (PGE) performs the work on the lights, the City budgets for routine and irregular maintenance for safety. Residential customers are charged a monthly fee of $2.32 per household, while commercial customers are charge $0.67 per equivalent surface unit (ESU) per month.

Sidewalk Fees

The City of Sherwood currently has two different sidewalk fees that it charges residential and commercial customers on their monthly utility bills. However, both of these fees are part of five-year programs. The first is a “Safe Sidewalks Fee” that is being used to build new sidewalks, especially in the high foot-traffic areas around schools. The “Sidewalk Repair Fee” provides funds to assist homeowners in repairing cracked and broken sidewalks in front of their homes to reduce tripping hazards. These fees were started in Fiscal Year 2012/2013. Since the five-year program is not expected to extend through the TSP horizon year of 2035, these revenues were not included in the average annual revenue for projecting total funds in 2035.

Washington County Transportation Development Tax (TDT)

The County Transportation Development Tax (TDT) is a tax on new development, approved by voters in 2008 to replace the previous tax, known as the Traffic Impact Fee (TIF). The tax is currently being phased in and has one more step increase. The TDT was approved by voters as a tax and as such is not limited by existing state statute in terms of how it is calculated or applied, though it does generally conform to statutory SDC requirements.

The Washington County TDT is levied on all new development based upon the amount of traffic added by the development and can only pay for new infrastructure needed to serve growth. TDT monies collected for development within incorporated cities are distributed back to those cities for their use on street projects in the community. There are limitations to the type of street projects that can be funded by TDT monies, and all projects must be approved by the Washington County Coordinating Committee, which consists of City and County elected officials representing each community. In order to obtain credit for the County's TDT, a project that is being constructed must appear on the County's TDT CIP list and must be built above Sherwood's minimum facility standard. The credit is only applicable for the cost portion above Sherwood's minimum facility standard.

Sherwood System Development Charges (SDCs)

The City's system development charges (SDCs) are assessed on all new residential and commercial construction within the city. These funds can only be used to construct capacity-related transportation improvements or provide a capital recovery element to compensate for existing capacity paid for by current users. The City of Sherwood currently charges $3,011.94 per single-family dwelling unit, which corresponds with one PM peak hour trip. The fee amount changes for other land use types, and the basis for the deriving the fee was the amount of traffic generated by those uses. In order to get credits for the City's SDC fee, an improvement must be to a collector roadway or higher classification and also appear on the City's CIP list.[4] Because of Washington County's TDT, which is remitted to the City when development occurs in city limits, the City's SDC fees are reduced appropriately to avoid double charging developers.

Miscellaneous Revenue

The City of Sherwood receives revenue from minor sources, such as project inspections, interest earnings, and other sales and services.

State/Regional Grants and Program Funds

The City of Sherwood applies for various grant opportunities to fund transportation projects. The City was recently awarded $5 million from Metro for the Cedar Creek Trail through the regional flexible funds program. While the various programs and grants are generally very competitive, they can provide valuable resources and opportunities. Some of these potential grant or program opportunities include Regional Flexible Funds, Enhance and Fix-It, and the Highway Safety Improvement Program (HSIP).

Developer Exactions

Exactions are improvements constructed by developers as conditions of development. Developers are generally required to mitigate traffic impacts, which may include frontage improvements and, in some cases, offsite improvements depending upon their level of traffic generation and the impact to the transportation system.

[4] Memorandum: Clarification of Credits Available for Road Construction, Sherwood Community Development Department, September 11, 2012.

Urban Renewal District

Sherwood's Urban Renewal District (URD), authorized in ORS 457, is a tax-funded district within the city that was formed in 2000 following an extensive public process. The URD is funded with the incremental increases in property taxes that result from construction of applicable improvements. This type of tax increment financing has been used in Oregon since 1960. Uses of the funding include, but are not limited to, transportation projects. Total projected transportation funding over the life of the district is $17.5 million. Approximately $16.5 million of the tax increment financing is assumed in selected street improvement projects identified in the URD and TSP.

Limitations of the District are geographic in nature with the URD covering about 15% of Sherwood. Because of the funding mechanism and its resulting cash flow over time, the City has made use of debt capacity in order to construct needed facilities.

New Funding Sources and Opportunities

The City of Sherwood may consider additional funding sources to ensure it has sufficient funds to construct needed transportation improvements. Transportation program funding options range from local taxes, assessments, and charges to state and federal appropriations, grants, and loans. All of these resources can be constrained based on a variety of factors, including the willingness of local leadership and the electorate to burden citizens and businesses, the availability of local funds to be dedicated or diverted to transportation issues from other competing City programs, and the availability and competitiveness of state and federal funds. Nonetheless, it is important for the City to consider all of its options and understand where its power may exist to provide and enhance funding for its transportation system.

The following funding sources have been used by other cities to fund the capital and maintenance aspects of their transportation programs. There may be means to begin to or further utilize these sources, as described below, to address Sherwood's transportation needs:

- **General Fund Revenues**: At the discretion of the City Council, the City can allocate General Fund revenues to pay for its Transportation program. (General Fund revenues primarily include property, use taxes, and any other miscellaneous taxes and fees imposed by the City.) This allocation is completed as a part of the City's annual budget process, but the funding potential of this approach is constrained by competing community priorities set by the City Council. General Fund resources can fund any aspect of the program, from capital improvements to operations, maintenance, and administration. Additional revenues available from this source to fund new aspects of the Transportation program are only available to the extent that either General Fund revenues are increased or City Council directs and diverts funding from other City programs.
- **Voter-Approved Local Gas Tax**: Communities such as Sandy, Woodburn, and Tillamook have adopted local gas taxes by public vote. In Sandy, the tax is 1 cent per gallon, paid to the City

monthly by distributors of fuel. The process for presenting such a tax to voters will need to be consistent with Oregon State law as well as the laws of the City of Sherwood.

- **Local Improvement District Assessment Revenue**: Subject to voter approval, the City may set up Local Improvement Districts (LIDs) to fund specific capital improvement projects within defined geographic areas, or zones of benefit. LIDs impose assessments on properties within its boundaries. LIDs may not fund ongoing maintenance costs. They require separate accounting, and the assessments collected may only be spent on capital projects within the geographic area. A vote by citizens representing 33% of the assessment can terminate a LID and overturn the planned projects so projects and costs of a LID must meet with broad approval of those within the boundaries of the LID.
- **Direct Appropriations**: The City can seek direct appropriations from the State Legislature and / or U.S. Congress for transportation capital improvements. There may be projects identified in the Plan for which the City may want to pursue these special, one-time appropriations.
- **Special Assessments**: A variety of special assessments are available in Oregon to defray costs of sidewalks, curbs, gutters, street lighting, parking and CBD or commercial zone transportation improvements. These assessments would likely fall within the Measure 50 limitations. A regional example would be the Westside LRT where the local share of funding was voter approved as an addition to property tax.
- **Employment Taxes**: TriMet collects a tax for transit operations in the Portland region through payroll and self employment taxes. Approximately $145 million are collected annually in the Portland region for transit.

Also, while not direct funding sources, debt financing can be used to mitigate the immediate impacts of significant capital improvement projects and spread costs over the useful life of a project. Though interest costs are incurred, the use of debt financing can serve not only as a practical means of funding major improvements, but is also viewed as an equitable funding strategy, spreading the burden of repayment over existing and future customers who will benefit from the projects. The obvious caution in relying on debt service is that a funding source must still be identified to fulfill annual repayment obligations.

- **Voter-Approved General Obligation Bond Proceeds:** Subject to voter approval, the City can issue General Obligation (G.O.) bonds to debt finance capital improvement projects. G.O. bonds are backed by the increased taxing authority of the City, and the annual principal and interest repayment is funded through a new, voter-approved assessment on property city-wide (a property tax increase). Depending on the critical nature of any projects identified in the Transportation Plan, and the willingness of the electorate to accept increased taxation for transportation improvements, voter-approved G.O. bonds may be a feasible funding option for specific projects. Proceeds may not be used for ongoing maintenance.

- **Revenue Bonds:** Revenue bonds are debt instruments secured by rate revenue. In order for the City to issue revenue bonds for transportation projects, it would need to identify a stable source of ongoing rate funding. Interest costs for revenue bonds are slightly higher than for general obligation bonds, due to the perceived stability offered by the "full faith and credit" of a jurisdiction.

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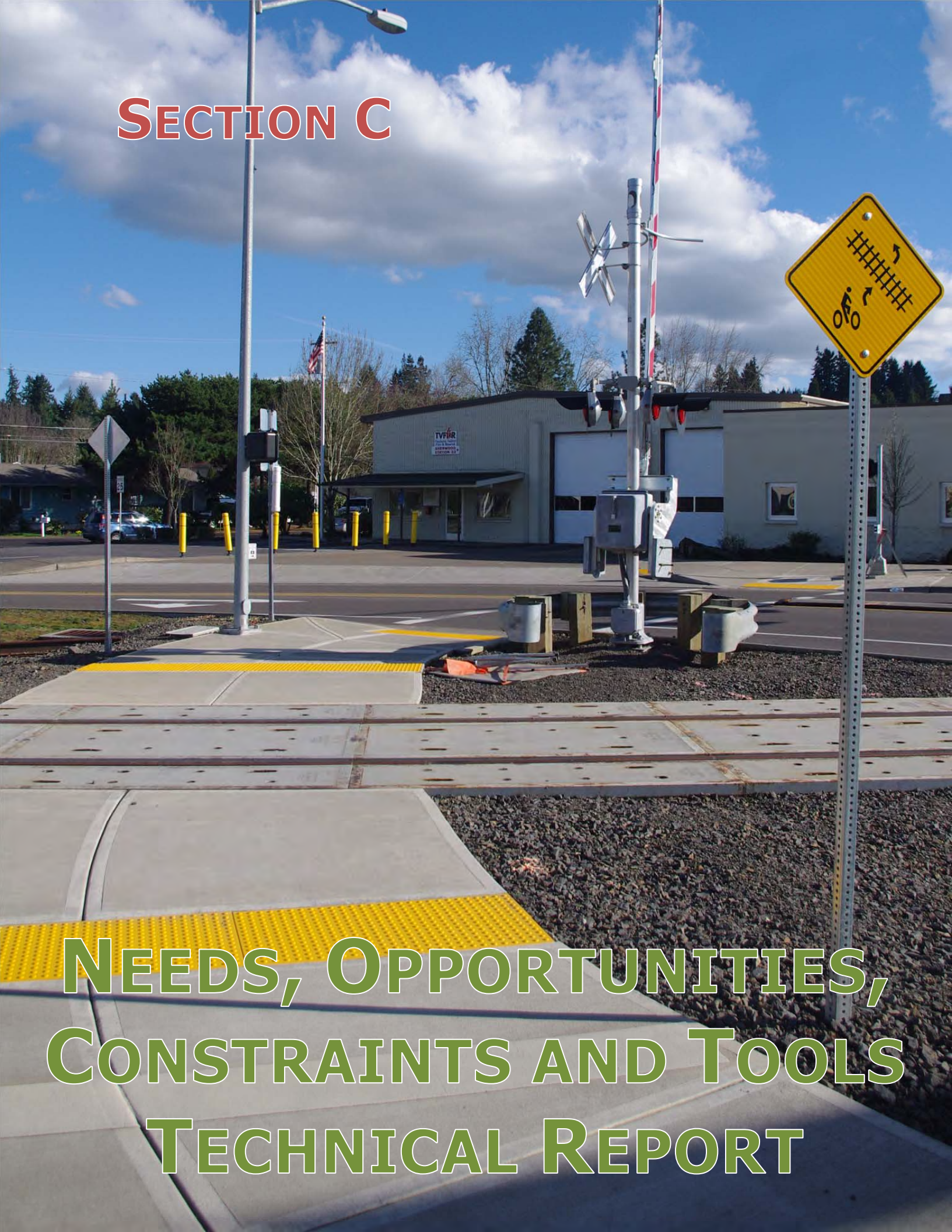

Section C

Needs, Opportunities, Constraints and Tools Technical Report

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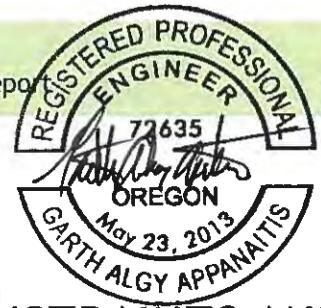

NEEDS, OPPORTUNITIES, CONSTRAINTS AND TOOLS

EXPIRES: 12/31/15

The following sections summarize the existing and future needs of Sherwood's transportation system for pedestrians, bicyclists, transit users, and drivers. The analysis conducted through the TSP update will determine solutions to address these identified needs for each mode of travel. The following items, included in this report, prepare for the analysis that will develop transportation solutions:

- A list of needs for each travel mode
- A toolbox of measures and strategies that can be used to address the identified needs.
- Opportunities and constraints for major gaps in the pedestrian, bicycle, and roadway network.
- Evaluation criteria process that will be used to prioritize projects, and
- A summary of key items in Metro's Regional Transportation Functional Plan (RTFP) compliance checklist for Sherwood to address through this TSP update.

These items will provide the groundwork for developing a prioritized project list for the Sherwood Transportation System Plan to address the needs identified in this report.

Multi-Modal Transportation System Needs

The following sections summarize the needs of Sherwood's multi-modal transportation system.

Projected Growth

To address the future needs of the transportation system, it is important to evaluate how Sherwood and surrounding area are expected to grow. Growth in and around Sherwood have the potential to add traffic in Sherwood, whether originating/destined in Sherwood or as through trips. As shown in Figure 1A, significant growth is expected in Sherwood as well as at the fringes of the city limits. Figure 1B shows regional areas where existing urban reserve areas (URA) are anticipated to develop that will also impact the transportation system. The blend of housing and employment growth is projected to increase the households (+110 percent) and jobs (+124 percent) in and around Sherwood. Table 1 summarizes projected growth in the Sherwood area, including areas outside the urban growth boundary (UGB).

Table 1: Summary of Growth in Sherwood Area from 2010 to 2035*

Land Use	Year 2010	Year 2035	Growth
Population	24,300	42,500	18,200 (+75%)
Households	7,500	15,950	8,450 (+110%)
Jobs	8,850	19,850	11,000 (+124%)

Note: Land use represents areas currently outside Sherwood city limits to capture overall growth in area, including vacant and reserve land. Land use growth and household size forecasts are consistent with Metro's projections.

Figure 1

Major Growth Areas

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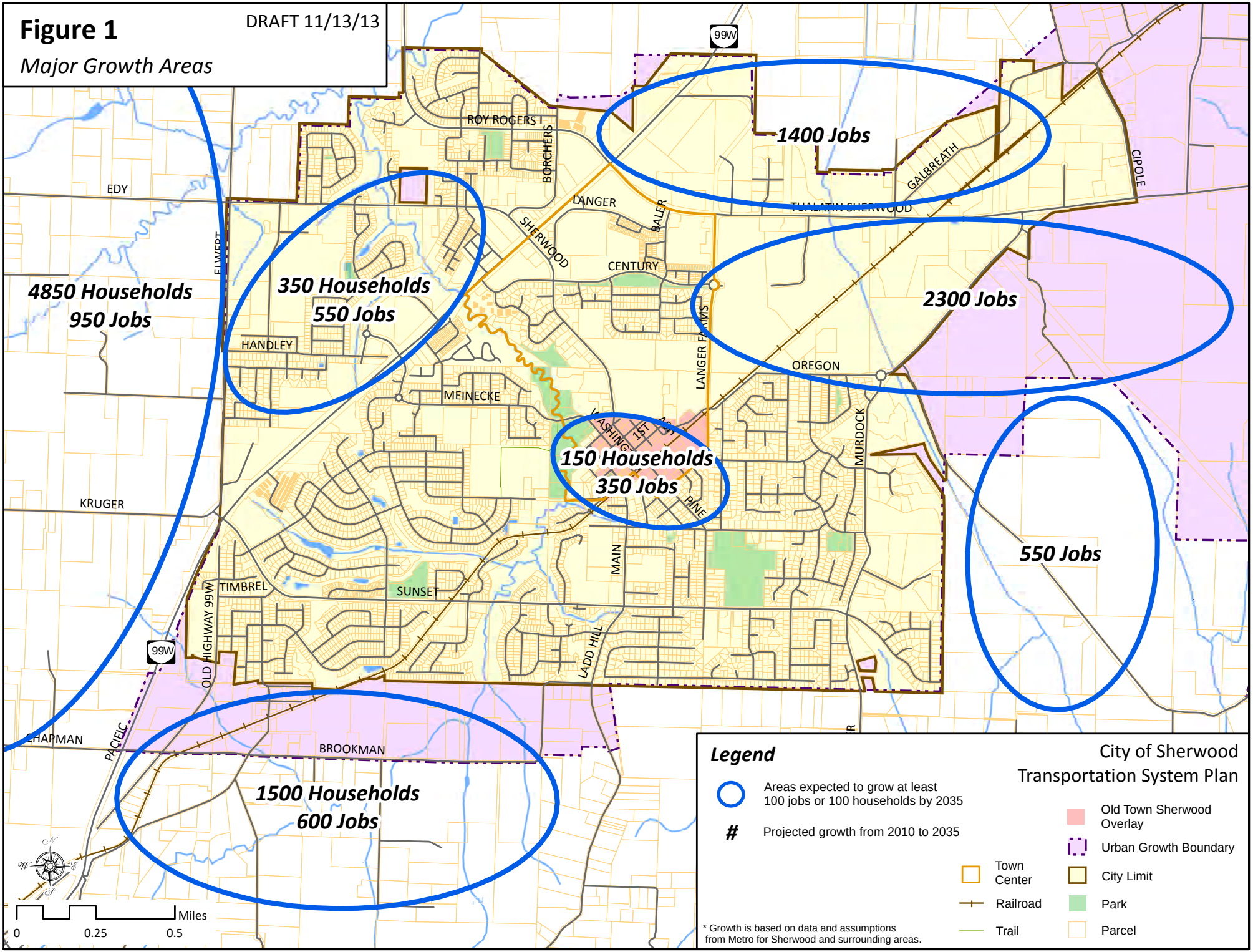


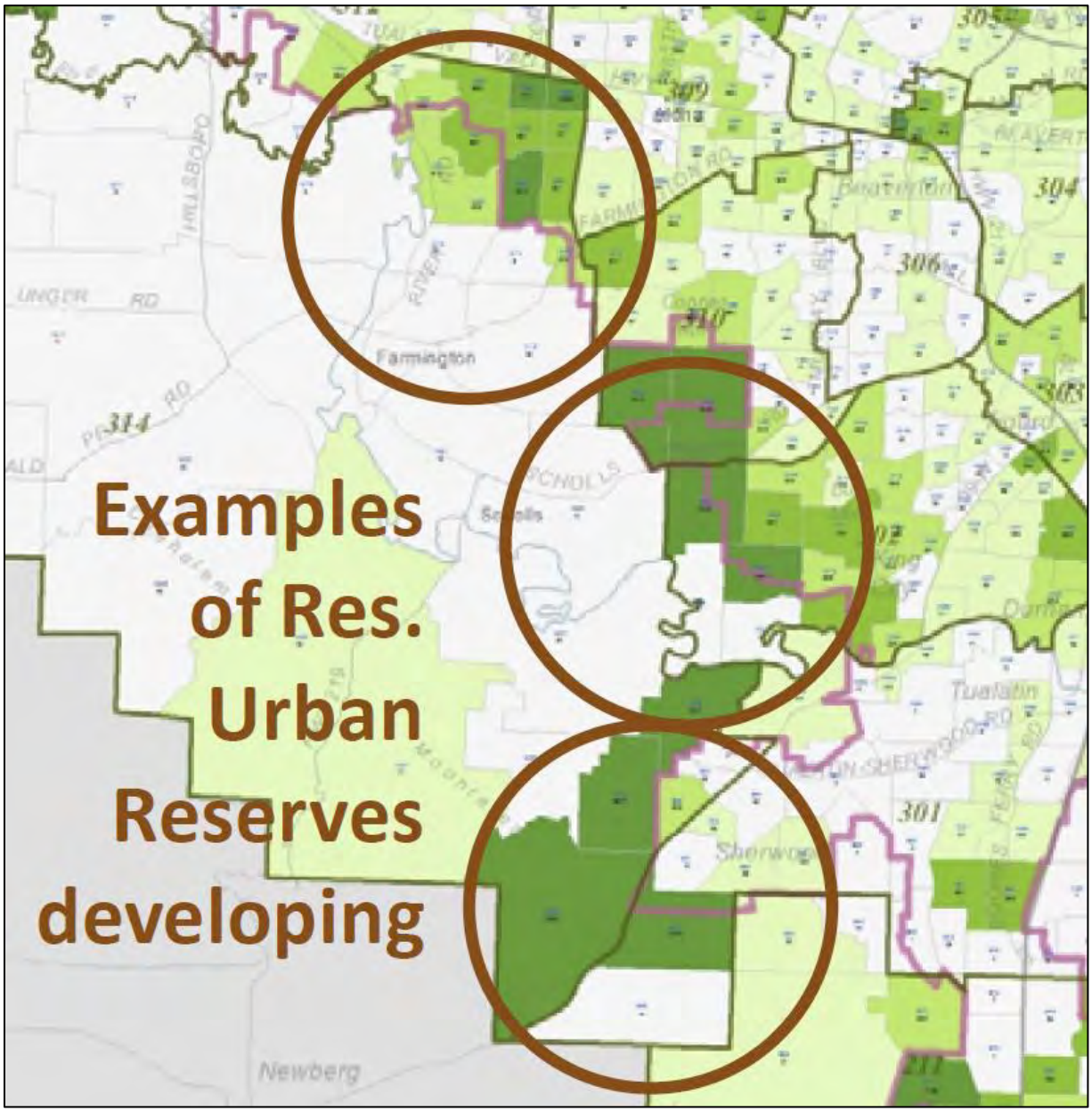


Figure 1B: Regional Residential Growth Areas (color intensity denotes growth intensity)[1]

In addition to growth within Sherwood's city limits or within the existing UGB, regional growth projections include urbanization in urban reserve areas (URA) that are currently located outside the UGB. These are areas set aside for future growth as the region expands. As a larger regional growth supply is needed in the future, the UGB will be expanded to include these areas. Figure 1B indicates that significant household growth is projected along the western edges of the UGB near Sherwood, Beaverton, and Hillsboro in areas that are currently designated as urban reserves.

[1] Source: Metro, MetroScope Jurisdiction Reviewed TAZ Gamma Forecast, DRAFT. (Disclaimer: This map is for research purposes only and does not reflect policy decisions by any jurisdictional authority.) Growth color is illustrative and is based on model zone boundaries and does not indicate growth for a specific parcel.

System Needs and Measures

System measures provide an overall assessment of Sherwood's future transportation system relative to existing conditions. Table 2 provides an overview of system measures that can be used to evaluate Sherwood's progress towards regional goals. As listed in Table 2, while the overall distance travelled by vehicles is projected to increase in the future, the average motor vehicle distance traveled per person is projected to decrease. This decrease is consistent with Metro's goals related to reducing reliance on the motor vehicle. The amount of delay in the system (including freight corridors) is anticipated to triple (an increase of 200%+) through 2035 without additional improvements to the system.

Table 2: System Performance Measures (PM Peak Hour)

Measure	Year 2010	Year 2035	Change
Total Vehicle Miles Travelled (VMT)	34,100 vmt	55,600 vmt	21,500 vmt (+63%)
VMT per capita	1.4 vmt/capita	1.3 vmt/capita	-0.1 (-7%)
Vehicle Hours of delay (VHD)	440	1,420	980 (+223%)
VHD on Freight Corridors*	240	870	630 (+263%)

Note: *Freight corridors include OR 99W, Tualatin-Sherwood Road, and Roy Rogers Road.

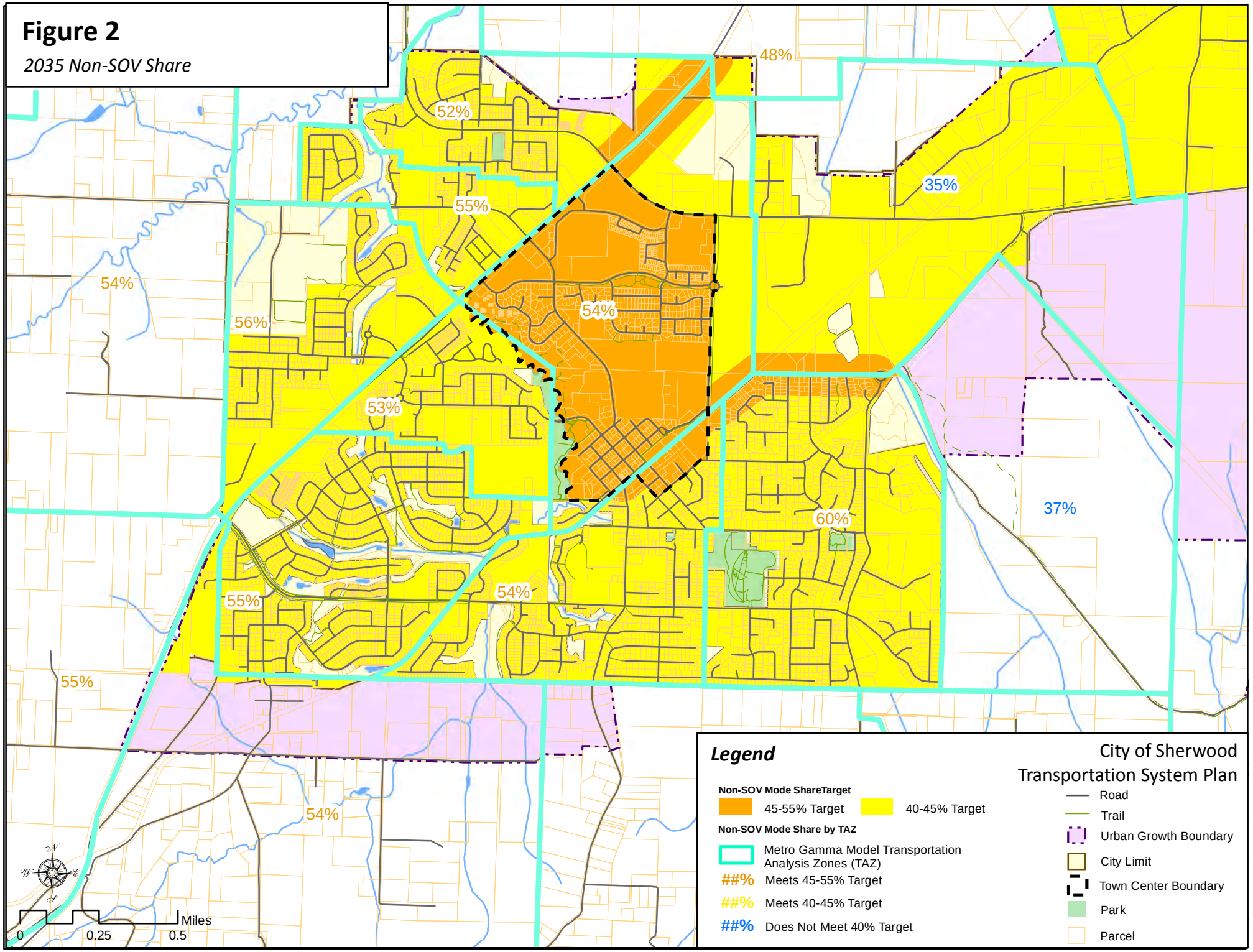
Metro also sets regional targets for the amount of trips that are made by means other than someone driving alone or a "single occupant vehicle" (SOV). These regional targets are set for the portion of non-SOV travel (trips made by pedestrian, bike, transit, carpool, etc.) based on the target land use density (the 2040 design type). The targets are structured so that more dense areas have a higher share of non-SOV trips. Each design type and non-SOV target is as follows:

- Portland Central City (60-70%)
- Regional Centers, Town Centers, Main Streets, Station Communities, Corridors, Passenger Intermodal Facilities (45-55%)
- Industrial Areas, Freight Intermodal Facilities, Employment Areas, Inner Neighborhoods, Outer Neighborhoods (40-45%)

The travel model provides estimates of the various modes of travel that can be generally assessed at the transportation analysis zone (TAZ) level. Figure 2 summarizes the level of non-SOV mode share estimated for 2035 using the regional travel demand model in comparison to the modal targets set in Metro's Regional Transportation Plan (RTP). These non-SOV targets are aggregated by design type groupings (as listed above) and colored in Figure 2 as orange (45-55% target) and yellow (40-45% target). For each TAZ, the 2035 non-SOV share is listed. The 2035 non-SOV share for each TAZ is also colored to indicate the highest target that is satisfied (orange for 45-55% target, and yellow for 40-45% target). Note that TAZ boundaries, which are the basis for the non-SOV share data, do not directly align with the 2040 design type boundaries (this is not critical). Based on the model data, it appears that the targets are typically achieved for the western areas but not met for areas east of Langer Farms Parkway.

Figure 2

2035 Non-SOV Share



Pedestrian System

While Sherwood's pedestrian network is generally well-developed, sidewalk connectivity gaps are present in key locations throughout the city, including within the Town Center, which has density and uses that support pedestrian activity. An assessment of gap locations prioritized the locations based on proximity to activity generators (such as schools, libraries, medical offices, parks, etc.). Figure 3 presents sidewalk gaps along the major street network (arterials and collectors), and indicates the preliminary prioritization based on density of activity generators. Solutions to address these gaps (including amenities on parallel facilities) will be explored during the next stage of the planning process.

Existing Needs

The *Existing Conditions Technical Report* identified the following key gaps in sidewalk connectivity:

- **Highway 99W** has significant gaps in sidewalk connectivity, especially a large portion south of Sherwood Boulevard that does not have sidewalks on either side of 99W. Several key sidewalk gaps on Highway 99W fall within high priority areas. These key gaps are adjacent to several shopping areas and medical offices. The highway also creates a barrier that is hard to cross
- **Oregon Street** along most of its length between Langer Farms Parkway and Murdock Road lacks sidewalks on both sides of the road; however, the northern side of the road has undeveloped land. These sidewalk gaps, however, are in low priority areas since they are further away from the activity generators. Some gaps may be filled by funded Cedar Creek Trail improvements.
- **Edy Road** along most of its length between Highway 99W and Elwert Road lacks sidewalks on at least one side of the road. Several key sidewalk gaps along Edy Road fall within high priority areas due to the high concentration of medical offices and elementary/middle schools.
- **12th Street** between Highway 99W and Sherwood Boulevard lacks sidewalks on the south side of the street. These sidewalk gaps fall within high priority areas as it serves shopping centers, medical offices, and the major transit route through the city.
- **Division Street** along most of its length between Main Street and Mansfield Street lacks sidewalks on at least one side of the road. As a neighborhood facility, its gaps are not shown in Figure 2. However, it falls within a high priority area due to its proximity to Old Town.
- **Gleneagle Neighborhood** lacks sidewalks along all streets (12th Street, Gleneagle Drive, Glenco Court, 11th Court, and 10th Street), including those that front homes. This network of local roads falls within high priority areas due to their proximity to the major transit route through the city, medical offices, shopping centers, and schools.

Other high priority gap locations include:

- **Meinecke Road** lacks sidewalk along the north side of the street east of Lee Drive for approximately 400 feet. This route is a major connection serving Old Town, which is dense with activity generators.

The appendix includes a complete prioritized list of sidewalk gaps on collector and arterial facilities.

Figure 3

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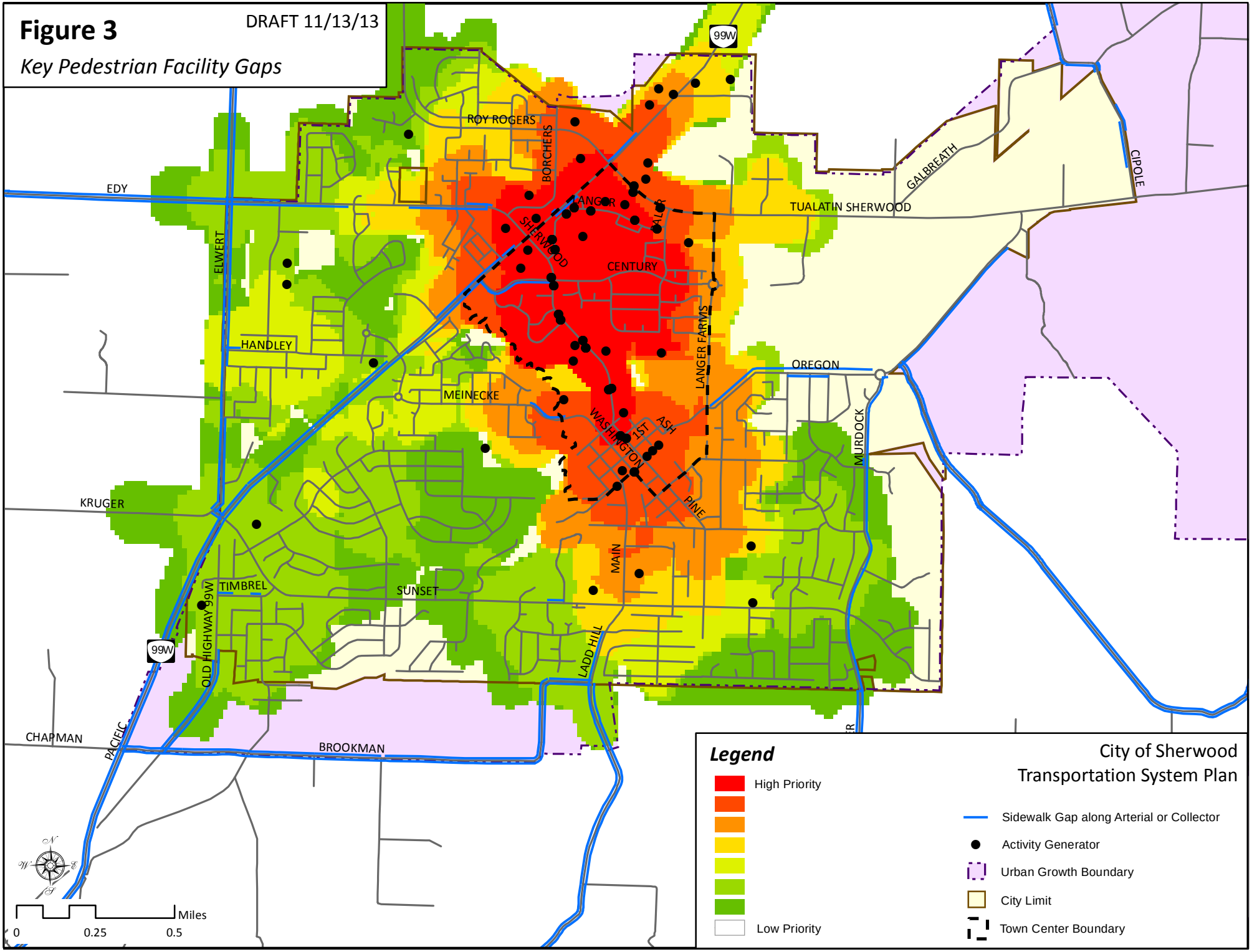
Key Pedestrian Facility Gaps



Street crossings are another important feature of Sherwood's pedestrian system. While controlled pedestrian crossings are provided at all major signalized intersections, there are some roadways where major intersections are spaced far apart, which results in crossing barriers for pedestrians. Highway 99W only has five crossing locations in the three-mile section through town, with particularly long spacing on the 3/4-mile stretch between Sunset Boulevard and Meinecke Road. Another pedestrian crossing gap located along a major roadway is located on Sunset Boulevard between Pinehurst Drive and St Charles Way.

The Highway 99W crossings are located at signals, and each signal only allows pedestrian crossings on one leg of Highway 99W (with the other crossing being closed). In addition, the west crosswalk on Sherwood Boulevard at the intersection of Langer Drive is also closed. In some cases these closures may have been made to address traffic operation needs to improve the flow of traffic by removing conflicting pedestrian movements. However, these closures are a tradeoff that can increase the crossing movements required by pedestrians to reach their destination. In some cases, a pedestrian may be required to cross three legs on an intersection rather than the desired (closed) leg. This increases the travel time for pedestrians as well as potential conflicts with motor vehicles.

Another major feature impeding pedestrian mobility is the large area of developed land without public rights of way through the properties between Old Town and the residential area to the north. While this area contains schools, a church, and other uses, it does not provide dedicated pedestrian connections between Sherwood Boulevard and Langer Farms Parkway.

There are also existing gaps in regional connectivity between Sherwood and neighboring communities. To address this issue, coordination will be required with Washington County and neighboring communities to develop regional trail connections. The Ice Age Tonquin Trail is an example of a regional facility that will provide regional connections between Sherwood, Tualatin, and Wilsonville.

Future Needs

As Sherwood grows, demand on the pedestrian system and the need to connect the city will also grow. Gaps in the sidewalk network within significant growth areas include: Brookman Road, Elwert Road, Oregon Street, and Tonquin Road. While pedestrian demand along these facilities is low today, they will become more critical routes by 2035. Several major arterials along the fringes of the city (e.g., Murdock Road, Oregon Street, Tualatin-Sherwood Road, Elwert Road) are expected to serve large growth areas by 2035, and will pose as major barriers to pedestrians without well-spaced pedestrian crossings. As these areas develop, enhanced pedestrian crossings will be needed along these facilities. Finally, increased activity within the Town Center will continue to highlight the need for pedestrian and bicycle improvements to enhance options for multimodal travel.

Bicycle System

With the exception of Highway 99W and Tualatin-Sherwood Road, most roadways do not provide bike lanes. An assessment of bicycle lane gaps on major roads and their proximity to activity generators was conducted. Figure 4 shows bike lane gaps along major roads (arterials and collector facilities), and indicates a preliminary prioritization based on density of activity generators. Several of these prominent locations are within the Town Center area, which is shown as having high potential for bicycle need due to the proximity to a number of activity generators.

Existing Needs

There are several key roadway segments without bicycle facilities that are located in high bicycle demand areas. These priority gap locations (which may not include the entire street length) include:

- **Edy Road** from Houston Drive to Elwert Road (near medical offices and schools)
- **Borchers Drive** from Edy Road to Roy Rodgers Road (near medical offices and shopping)
- **Roy Rodgers Road** from Highway 99W to Borchers Drive (near a concentration of medical offices, and near a shopping center)
- **Langer Drive** from Baler Road to the northbound Highway 99W right-in-right-out access (along the major transit route through the city, and near shopping centers and medical offices)
- **Baler Road** from Tualatin Sherwood Road to Langer Drive (along the major transit route through the city, and near shopping centers and medical offices)
- **12th Street** from Highway 99W to Sherwood Boulevard (near the major transit route through the city, shopping centers, and medical offices)
- **Sherwood Boulevard** from 12th Street to 3rd Street (along the major transit route and near medical offices, schools, and the senior center)
- **Pine Street** from 3rd Street to Sunset Boulevard (near Old Town)
- **Meinecke Road-Washington Street** from Lee Drive to 1st Street (near Old Town)
- **Main Street** from 1st Street to Sunset Boulevard (near Old Town)

Bike gap along Sherwood Boulevard near Clyde Hopkins Elementary School

- **Oregon Street** from Langer Farms Parkway to Murdock Road (near Old Town and schools)

There are also gaps in regional connectivity. To address this issue, coordination will be required with Washington County and neighboring communities to develop regional trail connections. The Ice Age Tonquin Trail is an example of a regional facility that will provide regional connections between Sherwood, Tualatin, and Wilsonville.

Figure 4

Key Bicycle Facility Gaps

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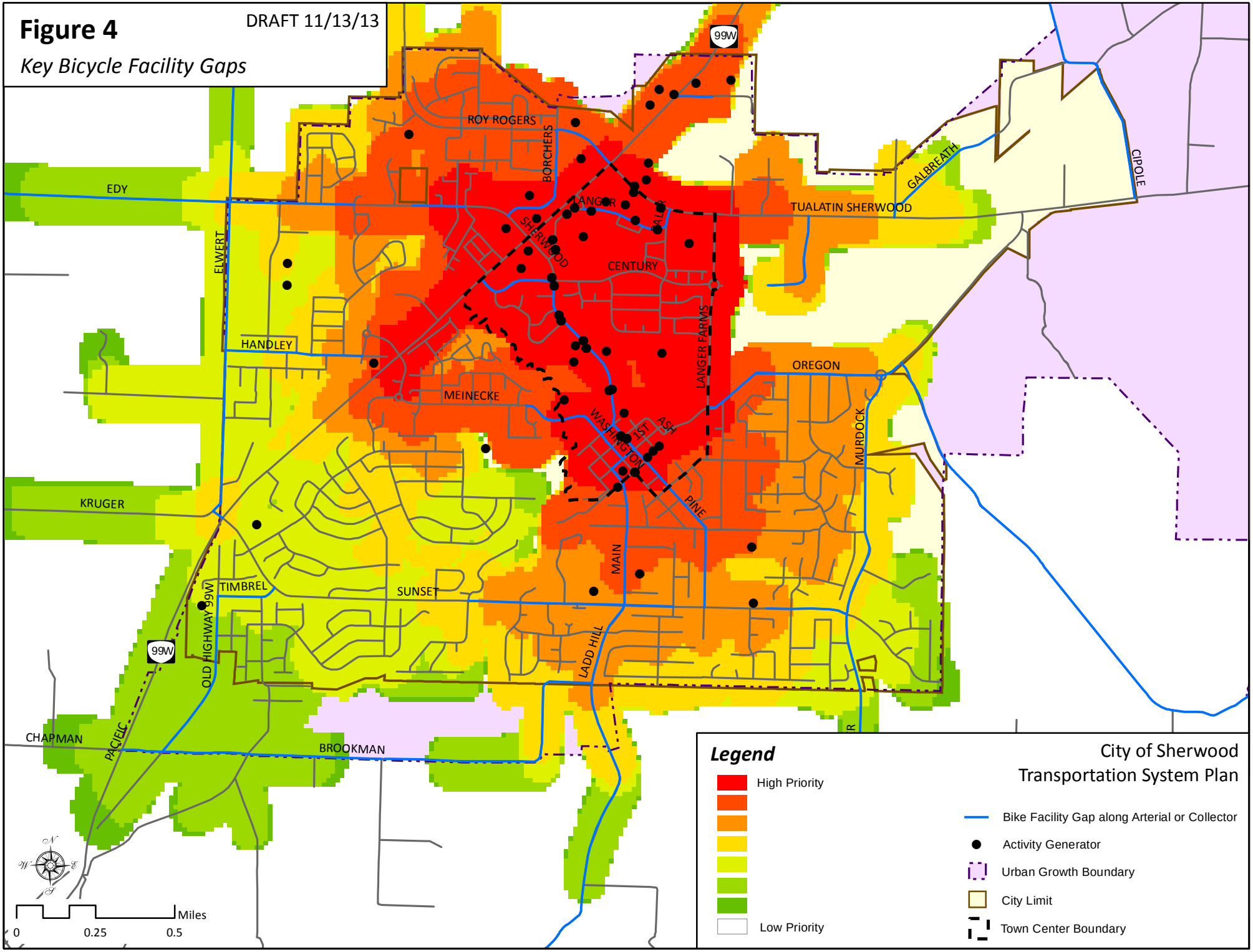


Future Needs

Many identified growth areas are absent of adequate bicycle facilities. As motor vehicle volumes increase and bicycle demand grows, there will be a greater need to separate bicycles from the travel lane. Bicycle gaps in key growth areas include: Brookman Road, Old Highway 99W, Handley Street, Galbreath Drive, Tonquin Road, Elwert Road, Edy Road, and Pine Street.

Transit System

Transit service in Sherwood is provided by the Tri-County Metropolitan District of Oregon (TriMet) and the Yamhill County Transit Area (YCTA). TriMet provides service and connections within the Portland Metro region, while YCTA connects Sherwood to Yamhill County and Tigard. The following sections discuss the existing needs of the transit system and the projected needs of the transit system as the city grows through 2035.

Existing Needs

- **Transit stop amenities:** Only some of the bus stops in Sherwood offer benches and shelters.[2] Provision of passenger amenities at bus stops creates a more pleasant and attractive environment for bus riders and may encourage people to use the transit system.
- **Sidewalk connections to transit stops:** In general, Sherwood's sidewalk network is well built, especially near transit stops. However, filling gaps and expanding the existing sidewalk network near transit stops will make the transit system more attractive to potential users.
- **YCTA service:** YCTA bus routes currently stop at SW Langer Drive near Shari's. While demand may not facilitate expanding service within Sherwood, YCTA could consider implementing stops at the existing park and ride lots. While extending service to the major transit stop in Old Town Sherwood would increase travel times along the existing bus routes, it would provide a more manageable transit option for Sherwood residents and employees traveling to and from Yamhill County.
- **Development a transit center:** The Old Town Sherwood transit stop along SW Railroad Street is identified as a major transit stop. This stop could act as a major transit center for TriMet and YCTA routes, as well as a potential local circulation route. While this stop provides shelter, seating, signage, and trash amenities, there is still potential for further streetscape and amenity improvements (e.g., bicycle parking, sidewalk

Old Town major transit stop

[2] Sherwood is at the edge of the Metro area which dictates that passengers are generally getting off in the southbound direction and thus the stops generally do not have shelters. The northbound locations are more likely to have shelters since boardings are more common.

infill, pedestrian crossing enhancements). It is important to note right-of-way at this transit stop is constrained by the railroad just to the south.

- **Local transit circulation:** There is a need for a local Sherwood circulation route or expanded service as a large population of residents live outside a comfortable walking distance to existing transit. This route could connect residents to major trip attractors, especially TriMet and YCTA transit stops.

Future Needs

- **Transit service in future growth areas:** As shown in Figure 1, the Sherwood region will continue to grow internally as well as outside of the city limits. As these areas grow, so will demand for transit. Sherwood's public transit system should be proactively planned to meet the needs of the growing city. This includes expanding sidewalk connectivity, improving existing amenities, developing new transit stops, improving frequency, and expanding operational hours in these growth areas.

Motor Vehicle System

The motor vehicle street system was reviewed to identify major street (collector and arterial) gaps in the street grid network as well as future year 2035 capacity needs.

Connectivity Gaps

Four collector gaps within the city were previously identified in the Existing Conditions Technical Report. These gaps were determined by comparing existing street spacing to the Metro Regional Transportation Functional Plan (RTFP) recommended spacing for arterial and collector streets. It was determined that arterial spacing in Sherwood is acceptable. Collector gaps in the city include:

1. Meinecke Road to Sunset Boulevard between Highway 99W and Main Street
2. Sunset Boulevard to Brookman Road between Old Highway 99W and Ladd Hill Road
3. Roy Rodgers Road to Edy Road between Borchers Drive and Elwert Road
4. Edy Road to Handley Street between Highway 99W and Elwert Road

These locations are mapped and described in further detail in the Opportunities and Constraints section.

Mobility Needs

A travel demand model was used to estimate future year 2035 conditions on the roadway system. The model was based on Washington County's latest 2035 Gamma model with additional refinements and detail (all public roads, lane turn lanes, and intersection control) to capture estimated future circulation patterns and congestion. The model was applied as a screening tool to identify potential locations that may require additional operational or capacity improvements. The model assumed the following changes to the transportation system because of investments already committed or reasonably likely to be committed:

- Improvements consistent with Washington County's Tualatin-Sherwood Road project between Borchers Drive and Langer Farms Parkway (road cross section, intersection control, etc.)
- Improvements consistent with the developer agreement for Langer PUD (extension of Langer Farms Parkway from Tualatin-Sherwood Road to Highway 99W, Century Drive connection, traffic signal at Tualatin-Sherwood Road/Langer Farms Parkway).
- Major transportation elements of Tonquin Employment Area (new east-west collector with roundabout at Oregon Street and traffic signal at 124th Avenue)
- Major transportation elements of Brookman Area (traffic signal at Brookman Road and 99W)
- Traffic signal at Scholls-Sherwood Road/Roy Rogers intersection.

Even with the above transportation system improvements, the additional growth on the transportation system through year 2035 would increase congestion at many locations. Figure 5 and Figure 6 show the general operational performance for all roadway segments and intersections using level of service (LOS) and volume-to-capacity (V/C) performance measures. LOS is similar to a report card rating to indicate general level of condition based on average delay. The V/C ratio indicates the portion of overall capacity or "how full" a road or intersection is operating. On both figures, segments and intersections shown in green are those that will operate relatively well, while those in warmer colors (up to dark red) indicate increasing levels of congestion

Figure 5 indicates the general amount of traffic projected to use streets in the Sherwood area (based on the width of the color) and the general level of congestion (noted by warmer colors). The following road segments were identified as locations that are projected to be congested during evening peak hour conditions and may require additional capacity improvements by year 2035. Locations along freight corridors are designated with *.

- OR 99W north of SW Tualatin Sherwood Rd*
- SW Roy Rogers Rd West of OR 99W*
- SW Tualatin Sherwood Rd east of OR 99W*
- SW Edy Rd west of OR 99W
- OR 99W south of SW Edy Rd*
- SW Oregon St east of SW Murdock Rd
- SW Sunset Blvd between SW Pinehurst Dr and SW Murdock Rd
- SW Langer Farms Pkwy south of SW Century Dr

Many of the intersections expected to experience higher delays by 2035 are along these roadway segments. These intersection locations are mapped in Figure 5 (based on v/c ratio) and Figure 6 (based on LOS). Many of these locations have high overall traffic volumes (such as traffic signals along Highway 99W) or are unsignalized locations where side streets have delay waiting to make a turn (such as along Sunset Boulevard). For a complete list of flagged intersections that may require additional capacity improvements by 2035, refer to the appendix.

Figure 5: Year 2035 Projected Congestion Locations (V/C)

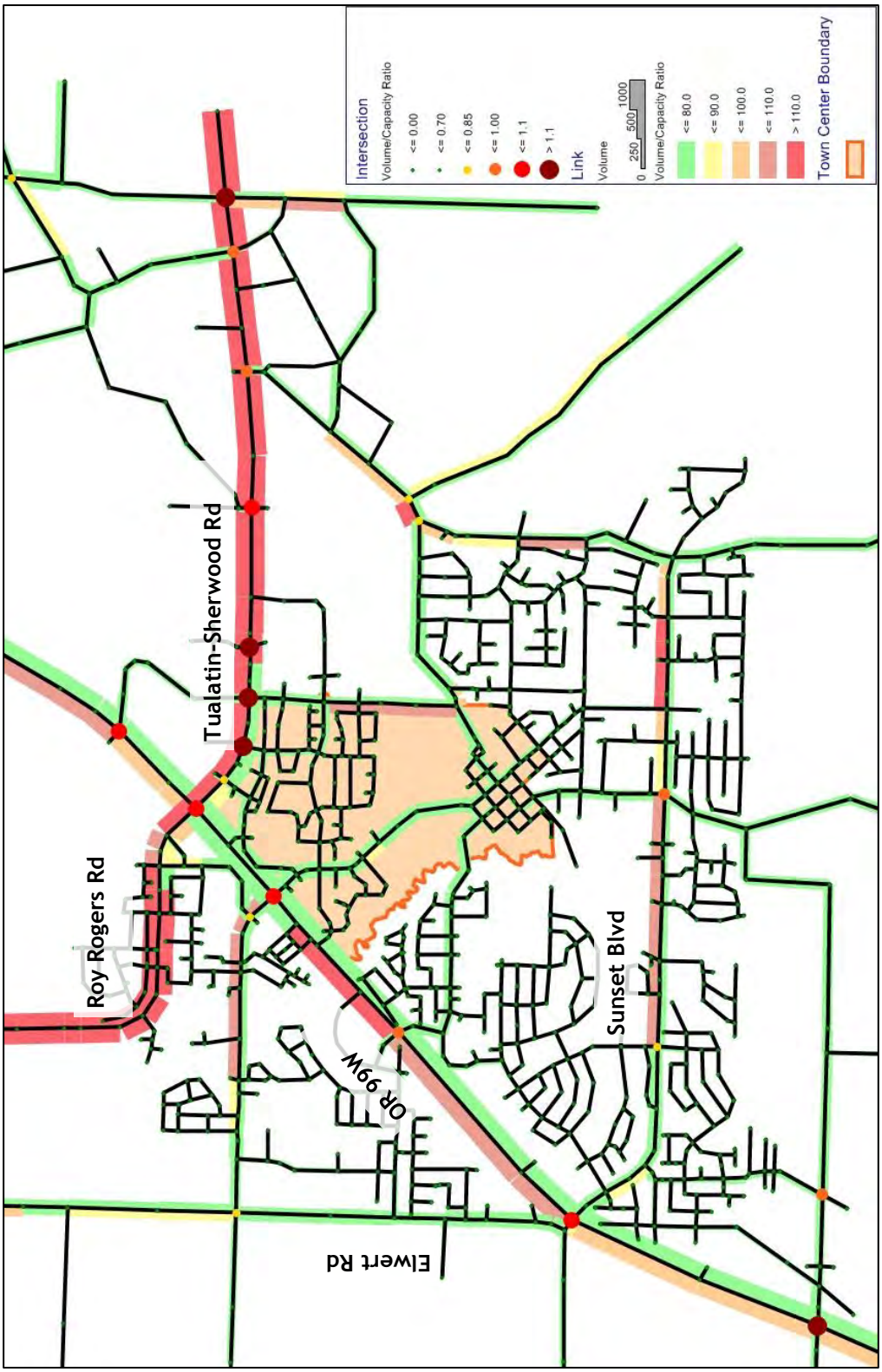
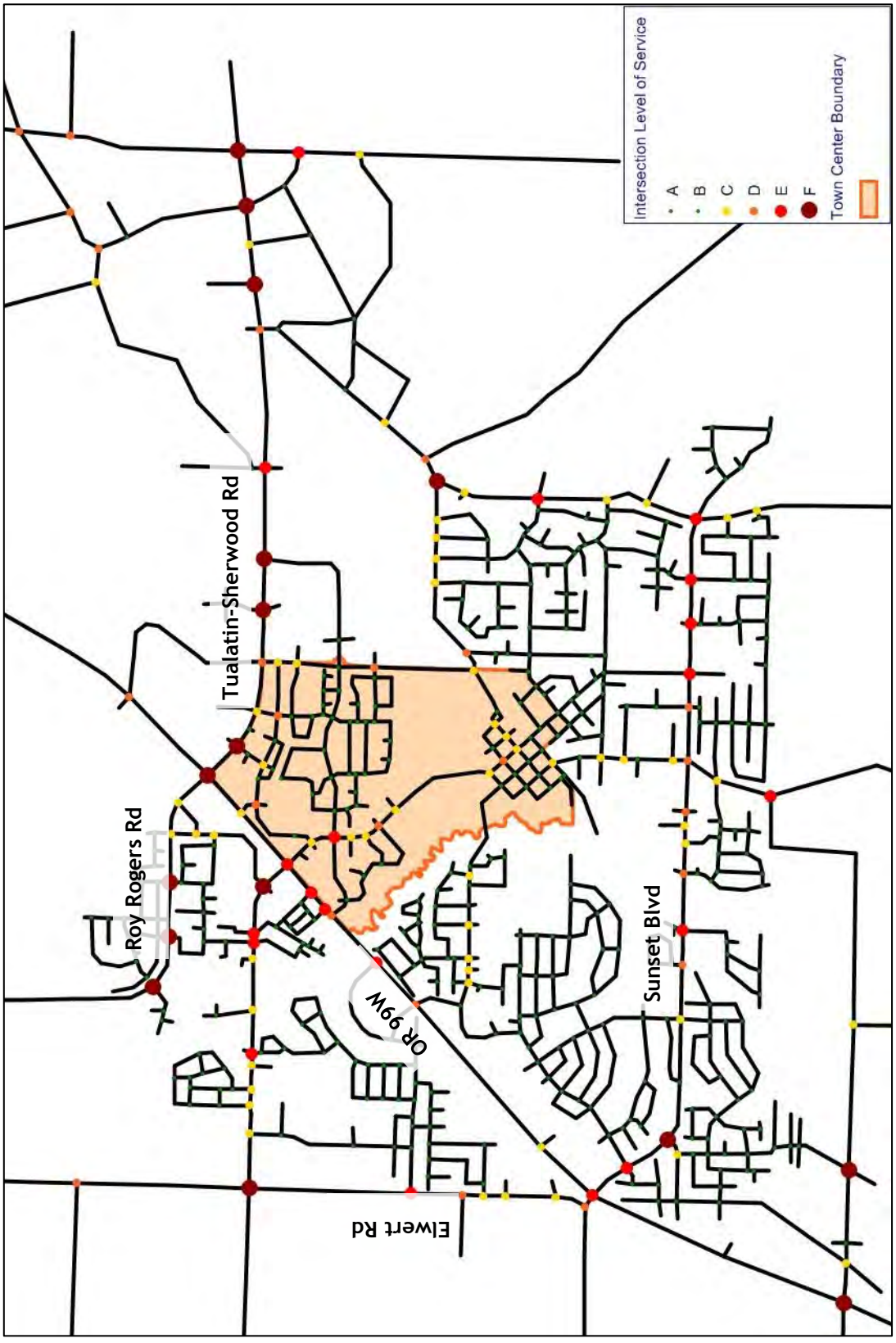


Figure 6: Year 2035 Projected Congestion Locations (LOS)



Freight Needs

The motor vehicle capacity analysis conducted with the travel demand model was also summarized for freight corridors (OR 99W, Tualatin-Sherwood Road, and Roy Rogers Road). These corridors are major facilities that serve freight as well as high volumes of non-freight traffic. Due to the high level of traffic on these corridors, they account for the majority of the existing congestion (delay) in the system. The existing delay on these corridors is approximately 55 percent of the system total. In 2035, the amount of delay on these corridors is projected to grow to 60 percent of the total. A number of roadway segments and intersections identified as capacity constraints are located along the freight corridors. Capacity constraints at these locations will need to be addressed in order to ensure the mobility of freight through the system.

Safety Needs

The following locations were identified as having safety needs based on a review of collision data.

- Road segments along Highway 99W
    - MP 14.91 to MP 15.09 (Tualatin-Sherwood Road intersection)
    - MP 16.61 to MP 16.73 (Elwert Road/Sunset Boulevard intersection)
    - MP 15.92 to MP 16.01 (Meinecke Road intersection)
- Intersections
    - Highway 99W/Tualatin-Sherwood Road/Roy Rogers Road:
        - The majority of the collisions occurred along Highway 99W in either direction and varied in distance from the intersection. This pattern of rear-end collisions is common at signalized intersections on high speed/high volume facilities.
        - There were a number of collisions on the side street approaches as well. Eight of the ten turning movement collisions occurred on Tualatin-Sherwood Road and involved vehicles turning right to travel north-eastbound on Highway 99W. This indicates a pattern that could be attributed to the yield condition and geometry of the right turn movement. Vehicles starting to turn on the yield movement and then suddenly stopping before entering the highway may cause the following vehicle (that is anticipating that the first vehicle will enter the highway) to collide. The geometry and traffic control for this movement is subject to change with the Washington County improvements that are currently under design. The congestion-related collision patterns at this location (rear-end and misjudged gap-entry) may increase along with future traffic growth.
    - Tualatin-Sherwood Road/Cipole Road:
        - Nearly all of the collisions occurred on Tualatin-Sherwood Road and slightly more occurred in the eastbound direction (34 collisions) versus the westbound

direction (26 collisions). In addition, almost one-third (19 of 62 collisions) involved more than two vehicles, which is a very high proportion of collisions and may indicate sudden breaking, possibly due to unanticipated stopping. The rear-end collision pattern is related to congestion and may be due to the mix of the rural nature of the area with urban levels of congestion. While these crashes may increase in the future along with traffic growth, the pattern also may decrease as the area becomes more urbanized and developed.

- Highway 99W/Elwert Road/Sunset Boulevard:
  - Nearly all of the collisions occurred along Highway 99W, with nearly two-thirds occurring in the southbound direction. The collisions varied in distance from the intersection, and the horizontal and vertical curvature in Highway 99W may be a contributing factor. The rural nature of this location may also contribute to driver expectancy issues related to drivers being unprepared to stop. The congestion related collision patterns on Highway 99W could increase along with future traffic growth. However, the crash frequency could decrease as the area becomes more urbanized and drivers anticipate congestion and stopping on the highway.
  - Sherwood Police Department indicated that there are many near collisions for traffic crossing the highway. This is related to the shared lanes and traffic quickly maneuvering around vehicles that are stopped while yielding to on-coming traffic. These vehicles are obscured to the oncoming left turn vehicles.
- Tualatin-Sherwood Road/Oregon Street:
  - Compared with the other SPIS intersections, this intersection had proportionally more turning movement collisions (21%), and half of the turning collisions (five of ten collisions) involved a vehicle making the westbound left turn from Tualatin-Sherwood Road onto Oregon Street with most of these occurring during the PM peak hour (four of five collisions). This pattern is likely related to congestion and could be a result of a number of related issues including drivers near the end of queue following other vehicles beyond the protected green indication. In addition, the traffic signal at this location was modified in June 2008 to allow “permitted” (flashing yellow) left turn movements that require the turning vehicle yield to oncoming traffic. Misjudgment of the oncoming vehicle speeds may have contributed to turning movement collisions at this location. Additional growth and traffic volume is likely to increase these congestion-related collision patterns.
- Tualatin-Sherwood Road/Gerda Lane:
  - Similar to the Cipole Road intersection, nearly all of the collisions occurred on Tualatin-Sherwood Road. However, the directionality of collisions was reversed

and the majority occurred in the westbound direction (27 collisions) instead of the eastbound direction (16 collisions). Just over half of these collisions (14 of 27 collisions) occurred during the midday or p.m. peak periods (11 a.m. to 1 p.m. or 4 p.m. to 6 p.m.), likely due to higher traffic volumes. A traffic signal was installed at this intersection in late December 2010. Two of the turning movement collisions (which are typically more dangerous) occurred before the signal was installed. The third incident, while classified as a turn movement, occurred after the signal was installed and was related to a bus following a vehicle too closely and hitting it while it yielded to a pedestrian in the crosswalk. Therefore, no traditional turn movement collisions (typically made with a vehicle going straight and hitting a conflicting left turning vehicle) occurred after the signal was installed.

- As is generally typical for other locations, the rate of rear-end collisions at this location increased following the installation of the traffic signal. Only 8 of the 44 collisions occurred during 2008 through 2010, while 36 occurred in the two years (2011 and 2012) following the traffic signal installation. This high incidence of rear-end collisions is likely to increase with future traffic growth along Tualatin-Sherwood Road.

- Highway 99W/Meinecke Road:
  - Nearly all of the collisions occurred along Highway 99W and varied in distance from the intersection. Slightly more occurred in the southbound direction (16 of the 27 collisions on Highway 99W). This patterns of rear-end collisions is similar to the trend present at the other SPIS locations.
  - This location also includes a higher portion of turn movement collisions. Half of the turn movement collisions involved multiple vehicles making a northbound right from Meinecke onto Highway 99W. These incidents may be related to overly-aggressive drivers similar to the pattern at Highway 99W/Tualatin-Sherwood Road. The third observation present at this location is related to the higher number of fixed object collisions that involve vehicles driving into the ditch. This pattern may be related to drivers misjudging the separated medians at each leg of the intersection, which has a greater separation than other intersections.

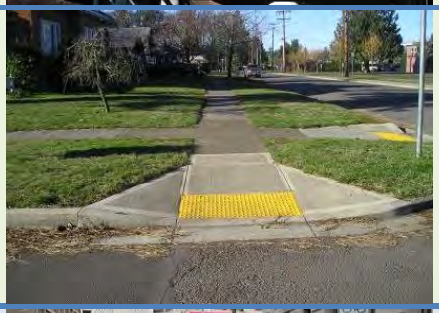
The Tools to Address Identified Needs

A variety of potential improvements to address the needs of the transportation system through 2035 are displayed in Table 3. These potential solutions are organized by improving walking, improving biking, improving transit, and improving driving in Sherwood.

Table 3: Potential Tools to Address the Needs of the Transportation System

MODE	TOOL	EXAMPLE
walking	**Crosswalks** High-visibility markings, often consisting of a "zebra" striping pattern, can be effective at locations with high pedestrian crossing volumes, near schools, and/or areas where motorist awareness of pedestrian crossings may be poor.	
walking	**Pedestrian Refuge Islands** Refuge islands allow pedestrians to cross one segment of the street to a relatively safe location out of the travel lanes, and then continue across the next segment in a separate gap in traffic. Refuge islands are most appropriate at midblock crossings where right-of-way allows for adequate space between opposing travel lanes.	
walking	**Sidewalks and Sidewalk Infill** Good sidewalks are continuous, accessible to everyone, provide adequate travel width and feel safe. Sidewalks can provide social spaces for people to interact and contribute to quality of place. Completing sidewalk gaps improves the connectivity of the pedestrian network. Sidewalk gap infill should be prioritized in higher demand areas. Sidewalk infill can often be addressed as frontage improvements when land develops or redevelops.	

MODE	TOOL	EXAMPLE
walking	**Curb Extensions** Curb extensions reduce the pedestrian crossing distance and improve motorists' visibility of pedestrians waiting to cross the street. Curb extensions can also serve as good locations for bike parking, benches, public art, and other streetscape features. Curb extensions are most appropriate where travel lanes are excessively wide, or where on-street parking is provided.	
walking	**Rectangular Rapid Flashing Beacon (RRFB)** The RRFB is designed to encourage greater motorist compliance at crosswalks. The RRFB is a rectangular shaped lightbar with two high intensity LED lightheads that flash in a wig-wag flickering pattern. The lights are installed below the pedestrian crosswalk sign (located on each side of the road near the crosswalk button) and are activated when a pedestrian pushes the crosswalk button. RRFB's are most applicable at midblock locations when pedestrians must cross multi-lane roadways, near schools, at locations with pedestrian safety issues, and at locations where pedestrian visibility is restricted.	
walking	**Streetscape Improvements** Streetscape improvements are features that enhance the pedestrian experience. These include public art, pocket parks, ornamental lighting, gateway features and street furniture. Many of these improvements can easily integrate environmentally- friendly "green" elements. Potential streetscape improvements are often constrained by available right-of-way, and do not directly address the connectivity or gap needs. Streetscape improvements can typically be provided along facilities where sidewalks are greater than six feet in width, or where roadways are excessively wide.	

MODE	TOOL	EXAMPLE
walking	**Pedestrian Countdown Signals** Countdown signals display the number of seconds remaining for a pedestrian to complete a crossing, enabling users to make their own judgment whether to cross or wait based on their speed and comfort. The allotted time can be adjusted to accommodate slower pedestrians, such as seniors or children.	
walking	**Curb Ramp Retrofits** Retrofitting ADA-compliant curb ramps to existing sidewalks greatly improves mobility and accessibility for mobility-impaired users. Curb ramps also improve the walking environment for pedestrians with strollers, delivery carts, and other "wheel" devices.	
biking	**Bike Lanes** Designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and also include pavement stencils. Bike lanes are typically recommended along arterials and collectors, especially for roadways with high vehicle volumes and speeds. Right-of-way often constrains quick installation of bike lanes and can often lead to tradeoffs with parking availability.	
biking	**Bike Box** A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of stopped traffic during the red signal phase. When a bike box is present, vehicles are prohibited from turning right during a red phase. Bike boxes may not be appropriate at signalized intersections with existing or expected congestion issues.	
biking	**Bike Box for Left-turns at Signalized Intersections** A bike box for left turns (otherwise known as a Copenhagen Left) allows bicyclists to make left-turns at intersections without having to veer across traffic. A bicyclist turns left by traveling through the intersection in the direction they are heading, and then waiting in the designated left-turn box before proceeding across the street on a green light. These are most appropriate for multi-lane roadways, especially those with high vehicles volumes and speeds.	

MODE	TOOL	EXAMPLE
biking	**Share the Road Signage** 'Share the Road' signage can be used to raise awareness and legitimize the presence of bicycles on the roadways. This signage is applicable to roadways where bike lanes are not necessarily appropriate (e.g., roadways with low vehicle volumes and speeds). 'Share the Road' signage can be used to supplement shared lane markings.	
biking	**Shared Lane Marking** Shared-lane markings or "sharrows" are designed to inform motorists to expect cyclists to be in the middle of the travel lane, and to inform cyclists that they should be in the travel lane and away from parked cars. An uphill bike lane and downhill shared lane markings can be used on hilly routes that do not have room to accommodate bike lanes in both directions. Shared lane markings should not be used on facilities where vehicle speeds are significantly greater than bicyclist speeds. Roads with under 3,000 vehicles per day and speeds under 25 miles per hour are typically best suited for shared lane markings.	
biking	**Bicycle Boulevard/Neighborhood Greenway** Traffic calming can be used to optimize neighborhood streets for bicycle and pedestrian travel. Intersection improvements can be made to assist bicyclists at difficult roadway crossings. A roadway should only be converted to a bicycle boulevard where it is appropriate to discourage through-motor vehicle traffic. Bicycle boulevards work well when a parallel route is available to motorists.	
Biking/walking	**Shared-use paths** Shared-use paths can provide a desirable facility particularly for novice riders, recreational trips, and cyclists of all skill levels preferring separation from traffic. Facilities may be constructed adjacent to roads, through parks, or along linear corridors such as active or abandoned railroad lines or waterways. Shared-use paths are a useful tool when both bicycle and pedestrian gaps are present, especially when right-of-way is constrained along one side of the roadway. When right-of-way is constrained, shared-use paths may provide a less impactful solution to providing full pedestrian and bicycle facilities than a typical cross-section with bike lanes and sidewalks.	

MODE	TOOL	EXAMPLE
biking	**Wayfinding Signage and Pavement Markings** Directional signage indicating locations of destinations and travel time/distance to those destinations increases users' comfort and accessibility to the pedestrian and bicycle systems. Pavement markings can be used on bicycle boulevards, which are low-traffic bike routes without bike lanes. Wayfinding signage also helps direct bicyclists to routes with comfortable bicycle facilities.	
biking	**Colored Bike Lanes** Colored bike lanes are used in areas where automobiles and bicycles cross paths and it is not clear who has the right-of-way. Colored bike lanes and accompanying signs assign priority to the bicyclist. Due to required maintenance of repainting the bike lane, colored bike lanes are not typically a system-wide solution.	
biking	**Bicycle Detection at Signalized Intersections** Bicycle-activated loop detectors are installed within the roadway to allow the presence of a bicycle to trigger a change in the traffic signal. Detectors that are sensitive enough to detect bicycles should have pavement markings to instruct cyclists how to activate them. Bicycle detection is most effective at locations with significant bicycle activity and where traffic signal phases are often skipped due to low motor vehicle traffic.	
biking	**Bicycle Parking** <u>Short-term parking:</u> parking meant to accommodate visitors, customers and others expected to depart within two hours; requires approved standard rack, appropriate location and placement, and weather protection. <u>Long-term parking:</u> parking meant to accommodate employees, students, residents, commuters, and others expected to park more than two hours. This parking should be provided in a secure, weather-protected manner and location. Bicycle parking is typically most appropriate at bus stops, schools, parks, major commercial or employment locations, and other trip attractors.	

MODE	TOOL	EXAMPLE
transit	**Transit Stop Enhancements** Provision of passenger amenities at bus stops creates a more pleasant and attractive environment for bus riders and may encourage people to use the transit system. Common amenities include: shelters, benches, trash cans, and bus route information. Shelters should be placed at least 2 feet from the curb when facing away from the street and at least 4 feet away when facing toward it. The adjacent sidewalk must still have a 5-foot clear passage. Orientation of the shelter should consider prevailing winter winds.	
transit	**Construct Bus Pullouts** Bus pullouts allow transit vehicles to pick up and drop off passengers in an area outside the traveled way and are generally provided on high-volume and/or high-speed roadways. They are frequently constructed at bus stops with a high number of passenger boardings such as large shopping centers and office buildings. By removing stopped buses from travel lanes, delay to traffic is considerably reduced and safety is enhanced by removing an obstruction from the traveled way. They also help better define bus stop locations, can be used for bus layovers, and create a more relaxed environment for loading and unloading. Available right-of-way often constrains the ability to provide a bus pullout.	
transit	**Move Bus Stops to Far Side of Signalized Intersections** On multi-lane streets or streets with wide shoulders where motor vehicles may pass uncontrolled around a stopped bus, bus stops located on the far side of intersections are preferred to provide needed sight distance. At signalized intersections, bus stops may be located on either the near side or far side of the intersection. However, in locations where bus pullouts are desired, far-side stops should be used. In general, far-side bus stops are desired because they reduce conflicts with right turning vehicles, encourage pedestrians to cross behind the bus, minimize the area needed for curbside bus zones, make it easier for buses to reenter traffic at signalized intersections, and have fewer impacts on roadway capacity. However, far-side stops also require passengers to access the bus further from the crosswalks, may interfere with right turns from the side street, and where pullouts are not used, can result in blockages of an intersection.	

MODE	TOOL	EXAMPLE
driving	**Construct Turn Lanes to separate Turning Vehicles from Through Traffic** The provision of turn lanes (left or right) removes slowing or stopped vehicles attempting to turn off of a roadway from faster moving through traffic. This not only provides significant safety benefits, but also enhances system capacity.	
driving	**Modernization to meet Design Standards** The modernization of a roadway generally refers to upgrading elements to meet current design standards and capacity needs. Outdated roadway designs may not be serving present day demands due to insufficient number and width of lanes, poor geometry, or failure to accommodate a particular mode of travel (e.g., no bike lanes).	
driving	**Modify Intersection Approach Geometry** When the configuration of through and turn lanes at intersection approaches does not properly reflect the demand for these movements, the right of way at signalized intersections cannot be efficiently utilized. Also, poor alignment of opposing lanes or mismatched left turn treatments often require signal phasing that may not be the most effective option for maximizing through capacity. By reconfiguring the number and type of lanes approaching a signalized intersection, significant improvements in capacity may be achieved.	
driving	**Signal Timing Enhancements** The assignment of right of way to competing movements at an intersection plays a critical role in the overall capacity of that intersection and the roadway itself. Old signal timing plans may not be appropriately serving current demands or may not be designed to accommodate fluctuating demands throughout the day or week. Also, timing plans can be created based on specific priorities, such as giving preference to the mainline during peak travel periods. In some situations, signal timing may be adequate, but adjacent signals are not equipped to communicate with each other or are too close together to coordinate properly. Signal timing enhancements can be a quick and cheap solution to reducing congestion at signalized intersections.	

MODE	TOOL	EXAMPLE
driving	**Intelligent Transportation Systems (ITS)** Intelligent Transportation Systems (ITS) come in many forms and have numerous applications. In general, they include any number of ways of collecting and conveying information regarding roadway operations to agency staff managing the facility or to motorists. This can allow both operators and motorists to make informed decisions based on real-time information, leading to quicker responses to incidents, diversion away from congestion, and increased efficiencies in roadway operation.	
driving	**Restriction of Left Turns at Traffic Signals** Because left turn and through movements are often competing for limited right of way, the removal of left turns from an intersection, either completely or during a specific time of day, can significantly improve through traffic capacity. If left turns are restricted, a practical alternative route should be available. While removing left turns at signalized intersections can improve conditions at the respective intersection, it could have detrimental effects to the transportation system as a whole and may "move the problem".	
driving	**Restrict Turning Movements at Approaches** The number of conflict points on a roadway introduced by a particular approach can be significantly reduced by restricting turn movements, such as allowing only right-in and right-out movements, allowing only right-in movements, or prohibiting only left-out movements (as shown in graphic). This treatment is most appropriate for developments with several accesses or where left turns out of the access are difficult due to high conflicting volumes. Restricting turning movements can also present the opportunity to install non-traversable medians.	
driving	**Construct Non-traversable Medians** The construction of non-traversable medians is a means of reducing the number of conflict points introduced on a roadway by approaches. Non-traversable medians can be simple concrete islands or barriers or can be constructed to include landscaping or other decorated treatments. Stamping colored concrete with a brick or rock pattern is a simple median treatment that may be more aesthetically pleasing that plain concrete. They can also be used to accommodate pedestrian refuges or can have breaks allowing for limited or full turning movements.	

MODE	TOOL	EXAMPLE
driving	**Provide Alternate Access through Improved Local Street Connectivity** Reasonable alternate access can be provided where it does not currently exist by constructing new roadways adjacent to properties that abut a high volume roadway. Such roadways can take the form of frontage roads, backage roads, or can simply be new collector or local streets.	
driving	**Move Approaches to Lower Volume Facilities** This treatment is often a good option for properties fronting high volume streets (such as Tualatin-Sherwood Road) that also have frontage along lower volume road. However, where existing site circulation or building locations create a dependency for the pre-existing access, the ability to change site access may require total or partial site redevelopment. Also, before access is reestablished to a side street, it should be confirmed that there would be adequate separation between the new driveway and the intersection with the high volume roadway to avoid turning conflicts or frequent obstruction by vehicle queues.	
driving	**Consolidate Multiple Approaches to Single Properties** A common method of reducing approach density is to eliminate multiple approaches to a single property where feasible. This can be done where it has been determined that the property can adequately be served with fewer approaches than it currently maintains. However, where existing site circulation or building locations create a dependency for the pre-existing roadway access, the ability to change site access may require total or partial site redevelopment.	
driving	**Create Shared Approaches to Properties using Easements or under Common Ownership** Sharing an approach to a roadway is a means of consolidating approaches while providing direct access to properties that might not otherwise have it. This tool is most advantageous when applied between two landlocked properties that have no other means of reasonable access than to a high volume roadway. Such properties would typically be provided their own approach. However, when a shared approach can be arranged, the end result is only one approach to the roadway rather than two.	
driving	**Intersection or Roadway Capacity Enhancements** Capacity improvements at intersections (adding turn lanes or changing traffic control) are considered system management measures and are generally preferred over widening an entire corridor. Roadway widening improvements should only be considered if all other strategies have been explored and considered insufficient (see the Evaluation Criteria section).	

Opportunities and Constraints

This section identifies the opportunities and constraints of transportation system gaps previously identified in this memorandum. These items will be considered as solutions are identified and assessed during the next phase of the planning process. Due to the limitations in local and regional transportation funding opportunities, issues related to project cost can become significant obstacles. As projects are identified and prioritized, general considerations for project cost can impact project feasibility.

Pedestrian and Bicycle Gaps

For each of the identified existing and high priority pedestrian and bicycle gaps, opportunities and constraints are discussed at a high-level.

- **Highway 99W Sidewalks:** With at least 180 feet of right-of-way and existing pavement widths around 140 feet, there is ample space to build a complete sidewalk network along Highway 99W.
- **Oregon Street Sidewalks:** West of Murdock Road, a sidewalk gap exists along a strip of residences between Hall Street and Orland Street—there are no significant constraints regarding infill at this location. East of Murdock Road, a long sidewalk gap exists along the east side of Oregon Street—sidewalks could be built at this location as the adjacent properties develop.
- **Edy Road Sidewalks:** Several sidewalk gaps exist along Edy Road. Infill may be possible with minimal right-of-way impacts. Just east of Settlement Drive, a guardrail lines the south side of the street—sidewalk infill at this location may be difficult.
- **12th Street Sidewalks:** While residences line the sidewalk gap along the south side of 12th Street, available right-of-way appears to extends south past the roadway. Therefore, there is potential for building sidewalk south of the roadway. There is also an opportunity to reduce the motor vehicle width of the roadway to provide additional space for sidewalk if necessary, as the two-lane facility is at least 35 feet wide with parking allowed on the south side only.
- **Meinecke Road Sidewalks:** While the gap of sidewalk along Meinecke Road is located near wetland, sidewalk infill may be possible without impact to the wetland. However, design opportunities may be constrained by the wetland proximity.
- **Division Street Sidewalks:** Many sidewalk gaps exist along Division Street. While street and right-of-way widths change frequently, providing continuous pedestrian facilities is likely possible. It is important to note that while sidewalk infill would likely be built within right-of-way, it would be built across the frontage of many residential properties in the area.
- **Glen Eagle Neighborhood Sidewalks:** Building a sidewalk network in the Glen Eagle neighborhood would require building sidewalk along the frontage of residences in the area. In some locations these improvements may be achieved within existing right-of-way. Lower impact options could include building sidewalk on only one side of the street, or building sidewalk over existing pavement (effectively removing on-street parking).

- **Edy Road Bike Facilities:** Several gaps in bicycle facilities existing along Edy Road, especially on the south side. To provide adequate separated facilities for bicycles, the roadway would need to be widened. Widening the roadway for bikes, and filling sidewalk gaps may be difficult within existing right-of-way. Also, just east of Settlement Drive, a guardrail lines the south side of the street, which would make roadway widening difficult at this location, especially considering adjacent wetland areas. No adjacent parallel facilities exist that could provide alternative facilities for bikes.
- **Borchers Drive Bike Facilities:** Borchers Drive is a relatively wide facility that may be able to accommodate bike lanes through striping. There is a short pinch-point near Daffodil Street that would need to be widened along the east side, which could be addressed as the adjacent property is developed.
- **Roy Rodgers Road Bike Facilities:** The Tualatin Sherwood Road (SW Borchers Drive to SW Adams Avenue) project is currently being designed. It is likely that buffered bike lanes will soon be constructed through this bike gap as a continuation of the buffered bike lanes located to the east on Tualatin-Sherwood Road.
- **Langer Drive Bike Facilities:** Langer Drive is not wide enough to accommodate bicycle facilities, unless the center turn lane is removed. There is potential to widen the roadway to accommodate bike lanes. However, this would require removing and rebuilding sidewalks and landscaping, which is currently in good condition. The Sherwood Town Center Plan[3] recommends reallocating the center turn lane to provide for buffered bike lanes or a cycle track.
- **Baler Road Bike Facilities:** There may be enough right-of-way to widen this short section of roadway (approximately 240 feet) to accommodate bike lanes. However, bike lanes may not be appropriate in the northbound direction as the majority of northbound travelers turns left or right at the Tualatin-Sherwood Road intersection. There is also potential to remove the southbound left turn refuge to provide a southbound bike lane. The Sherwood Town Center Plan proposes accommodating bike lanes along Baler Road from Tualatin-Sherwood Road to Century Drive.
- **12th Street Bike Facilities:** 12th Street is a two-lane facility with on-street parking along the south side. There is potential for reducing the motor vehicle with of the roadway to accommodate bike lanes, which may result in a loss of on-street parking. However, the need for pedestrian facilities along the south side of the street may restrict the potential to widen the roadway for bike lanes. The Sherwood Town Center Plan identifies that this facility is planned to accommodate bike lanes.
- **Sherwood Boulevard Bike Facilities:** Dieting the road to provide bicycle facilities would requirement removal of the center turn lane. This is an unfavorable option as the center turn

[3] Sherwood Town Center Plan, City of Sherwood, June 2013.

lane provides refuge for motorists turning left into the numerous accesses along the facility, and allows for the pedestrian refuge islands at the two midblock school crossings. The Sherwood Town Center Plan recommends replacing the sidewalk on the east side with a wider shared-use path to accommodate bicyclists.

- **Pine Street Bike Facilities:** In Old Town Sherwood, Pine Street is a two-lane facility with on-street parking along both sides of the street. Widening the roadway would impact buildings, especially City Hall. Bicycles can either be accommodated through shared street signing and/or pavement marking. The traffic speed and volumes in Old Town are likely to remain within thresholds for shared lane bikeways.

  South of Old Town Sherwood, Pine Street is a narrow two-lane facility. To accommodate bike lanes, the roadway would need to be widened. It may be possible to widen the roadway within available right-of-way. It is important to note that widening the roadway would cut into the frontage of the residential corridor. The Sherwood Town Center Plan identifies that this facility is planned to be a shared roadway.

- **Meinecke Road-Washington Street Bike Facilities:** West of Old Town Sherwood, the cross-section of Meinecke Road-Washington Street has significant variation. North of the bridge, the roadway narrows to two-lanes. It may be possible to widen the roadway to include bike lanes and sidewalks while staying within existing right-of-way. At the bridge, separated bicycle facilities cannot be provided. South of the bridge, the roadway is wide enough to stripe bike lanes. However, this would require prohibiting on-street parking, thus removing a handful of parking spaces near the Woodhaven Community Church. The Sherwood Town Center Plan identifies that this facility is planned to accommodate bike lanes.

  Within Old Town Sherwood, the only opportunity to provide separate bicycle facilities would involve removal of on-street parking. The preferred option here is likely to sign/stripe the roadway as a shared facility. The traffic speed and volumes in Old Town are likely to remain within thresholds for shared lane bikeways.

- **Main Street Bike Facilities:** There is not available right-of-way to widen the cross-section to include bike lanes along Main Street. While this narrow 24-foot roadway cannot provide for bike lanes, separated sidewalks line the corridor. A likely unfavorable option would be to remove the landscape buffer between the roadway and sidewalks, and dedicate the space for bike lanes. Given this constraint, the facility may continue to be a shared roadway, where bicyclists have the option to ride along the sidewalk. The Sherwood Town Center Plan identifies that this facility is planned to be a shared roadway.

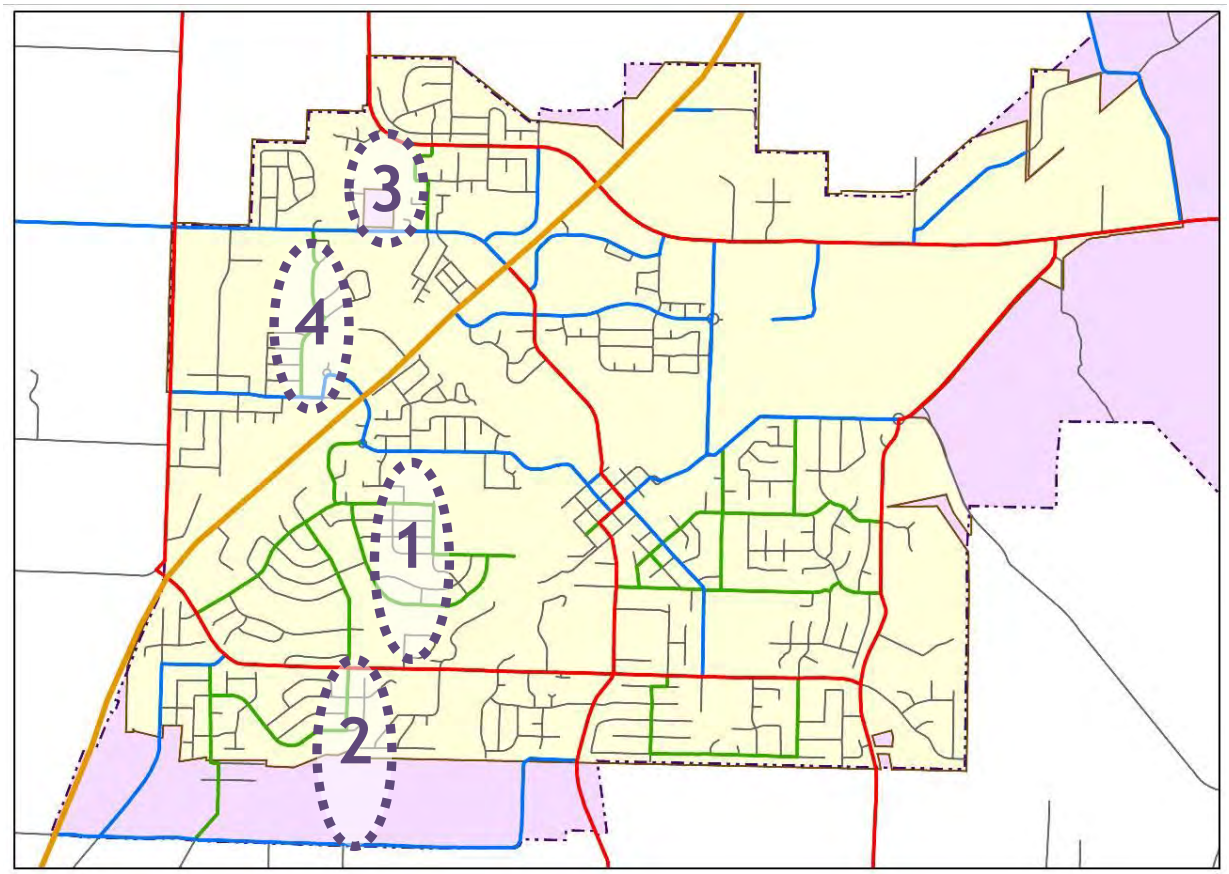
- **Oregon Street Bike Facilities:** The south side of Oregon Street is lined with residences, and the north side is bordered by a rail line and undeveloped property. The rail line and developed properties may constrain the potential for widening the roadway to include bike lanes. With the need for sidewalk along the south side of the street, extending the shared-use path that ends at

Langer Farms Parkway is a potential solution, and is identified in the Sherwood Town Center Plan as a planned improvement.

Street Network (Collector Facility) Gaps

Opportunities and constraints for each of the collector roadway gaps are discussed in the following section. The connectivity gaps are shown in Figure 7 and summarized in Table 4

Figure 7: Arterial and Collector Gaps in System Connectivity



These locations, as mapped in Figure 7, have the following opportunities and constraints:

1. **North-South gap - Meinecke Road to Sunset Boulevard (between Highway 99W and Main Street):** This area is heavily constrained by established residential neighborhoods, in addition to the rail line and the creek. Building a new collector facility through this area is infeasible. Pinehurst Drive and Dewey Drive are neighborhood routes that provide north-south connectivity in the area. However, due to the number of residences and driveways along these routes, upgrading the streets to a collector classification may not be optimal for a mobility function.
2. **North-South gap - Sunset Boulevard to Brookman Road (between Old Highway 99W and Ladd Hill Road):** This area is also constrained by established residential neighborhoods and the rail

line. Pinehurst Drive presents an ideal conceptual alignment for a collector in this area. However, it is lined with residences and driveways. In addition, to continue Pinehurst Drive south, it would require acquiring two residences at the south terminus. This combination of constraints make this gap difficult to address.

3. **North-South gap - Roy Rodgers Road to Edy Road (between Borchers Drive and Elwert Road):** While the Houston Drive and Lynnly Way facilities provide a north-south neighborhood route in the area, there is potential to create a more direct collector route just to the west. A new collector through this area may impact a small number of properties, though rail and environmental constraints do not appear to exist.

4. **North-South gap - Edy Road to Handley Street (between Highway 99W and Elwert Road):** The Bedstraw Terrace-Ladyfern Drive-Roellich Avenue neighborhood route fits the ideal collector spacing. However, this route is lined with residences and driveways the entire length, and is kinked by two three-leg intersections. Therefore, upgrading this route to a collector facility is not ideal as mobility would be significantly restricted. There are no opportunities for parallel routes due to wetland constraints to the east and existing development (e.g., established residences, Laurel Ridge Middle School) constraints to the west of the neighborhood route.

Table 4: Summary of Connectivity Gap Opportunities and Constraints

Location	Constraints			Opportunities	
	Environmental	Rail	Development	Undeveloped ROW (Future Connection)	Existing Facility
1) Meinecke Road to Sunset Boulevard between Highway 99W and Main Street	X	X	X		X
2) Sunset Boulevard to Brookman Road between Old Highway 99W and Ladd Hill Road		X	X	X	X
3) Roy Rodgers Road to Edy Road between Borchers Drive and Elwert Road			X	X	
4) Edy Road to Handley Street between Highway 99W and Elwert Road	X		X		X

Evaluation Criteria

When determining the prioritization and inclusion of projects in the Sherwood TSP Update, proposed projects will be evaluated based on the Metro Regional Transportation Functional Plan (RTFP) hierarchy of strategies. As outlined in section 3.08.022, the hierarchy of strategies is as follows:

This includes Transportation Demand Management (TDM), safety, operational, and access management improvements.

Improving connectivity and providing better amenities for pedestrians, bicyclists, and transit users presents motorists with an attractive alternative to driving.

Improving safety (or perceived safety) for bicyclists and pedestrians through traffic calming techniques may increase non-motorized travel.

These land use strategies—set forth in the Oregon Administrative Rules (OAR), section 660-012-0035 (2)—are designed to reduce trip distances and to promote walking, biking, and transit use.

Connectivity improvements to provide parallel routes, which include pedestrian and bicycle facilities. This includes connectivity improvements for roadways of all functional classifications.

These improvements will only be considered if it is determined that other strategies are not appropriate or cannot adequately address identified transportation needs.

As shown in the above hierarchy, TSMO projects will be prioritized above all other projects, and motor vehicle capacity improvement projects will be considered last.

Potential evaluation criteria were developed based on the content of Sherwood's transportation goals and policies. These potential criteria, listed in Table 5, may be implemented on a qualitative and quantitative basis to determine how potential transportation improvements align with local objectives.

Table 5: Potential Evaluation Criteria for Project Analysis

Policy Measure	Evaluation Score	
Goal 1. Provide a transportation network supportive to land use plans and alternative modes		
Circulation Improves mobility through separation of local and through traffic	+1	Increases separation of through and local trips on differentiated facilities
	0	No change
	-1	Further mixes local and through traffic on same facilities
Hierarchy Classifies and improves roadways according to designation and accompanying design standards	+1	Adds roadway improvement consistent with roadway intent/purpose
	0	No change
	-1	Doesn't follow hierarchy and accompanying design standards
Encourages non-auto modes of travel Adds bikeway, walkways, trails, transit facilities or other projects to encourage alternative modes of travel	+1	Encourages non-auto trips
	0	No change
	-1	Discourages non-auto trips
Pollution Impact Minimizes transportation related pollution to air and water	+1	Minimizes impacts to air or water quality
	0	Has average environmental impact
	-1	Has greater environmental impact than alternatives
Demand Management Invests in demand management strategies	+1	Reduces demand for single occupant trips
	0	Has no impact
	-1	Increases SOV demand on network
Goal 2. Develop a transportation system consistent with adopted local, state and regional plans		
Compatibility Compatible with other jurisdiction's plans and policies, (including adjacent cities, counties, Metro or ODOT).	+1	Compatible with other plans and contributes to their implementation
	0	Compatible with other plans, but does not necessarily contribute to their implementation
	-1	Not compatible with other plans
Agency Standards Consistent with the standards of the City, Region, and State as a whole.	+1	Consistent with all standards
	0	May require some deviations to standards, but likely to be approved
	-1	Inconsistent with standards and not expected that deviations would be approved
Modal Targets Contributes to the establishment of, and achievement toward meeting non-single occupant modal targets for all design types established in 2040 Growth Concept	+1	Contributes to meeting modal targets
	0	No impact on mode share
	-1	Negative impact on meeting modal targets

Policy Measure	Evaluation Score	
Goal 3. Establish design and development regulations to promote multi-modal transportation		
Land Development Standards Promotes standardized processes for developers to assess and accommodate transportation impacts from development	+1	Creates or abides by standardized development procedures
	0	No impact on development processes
	-1	Avoids standardizing procedures
Roadway Design Standards Promotes standardized cross-sections that ensure sufficient right of way for bikeway and pedestrian movements.	+1	Promotes standardized cross-sections that accommodate all modes
	0	Has no effect on roadway design
	-1	Does not meet design standards for applicable modes
Access Management Standards Promotes standardized property access and spacing standards for all roadway classifications	+1	Creates or applies access and spacing standards
	0	Has no impact on access and spacing
	-1	Does not meet or apply standards to access and spacing
Traffic Calming Measures Promotes standards and guidelines that encourage traffic calming and pedestrian friendly environments	+1	Promotes or builds traffic calming measures
	0	Has no effect on traffic calming initiatives
	-1	Undermines pedestrian friendly environment
Goal 4. Develop bicycle & pedestrian infrastructure to provide residents more options		
Pedestrian and Bicycle Facilities Adds bikeway and walkways that fill in system gaps, improve system connectivity, and are accessible to all users.	+1	Improves pedestrian or bicycle connectivity or accessibility
	0	No change
	-1	Reduces connectivity or accessibility
Connections to Regional Trails Supports connections to regional pedestrian and bicycle trails, particularly to recreation areas	+1	Connectivity to regional trails
	0	Has no impact on connectivity to regional trails
	-1	Negative impact on connectivity to regional trails
Access for All Eliminate physical and architectural barriers from public spaces that limit disabled and elderly access	+1	Improves accessibility to public spaces
	0	No change
	-1	Negative affect on accessibility

Policy Measure	Evaluation Score	
Goal 5. Provide reliable, convenient transit service and special options to residents and businesses		
Expands Transit Service Adds service hours, additional routes, stops, or special ride services.	+1	Improves/ increases transit service
	0	No change
	-1	Negative impact on transit services
Transit Supportive Infrastructure Improves transit supportive infrastructure and facilities	+1	Improves transit infrastructure
	0	No change
	-1	Negatively impacts transit infrastructure
Future Needs Supports preservation and development of future right of way (ROW) to support commuter rail services	+1	Preserves future ROW
	0	No change
	-1	Endangers ROW preservation
Goal 6. Provide safe and convenient connections within and between Old Town and the Six Corners Area		
Design Standards Develops or refines special standards to facilitate pedestrian and transit friendly development in Old Town and Six Corners	+1	Contributes to pedestrian & transit friendly environment in Old Town/ Six Corners Area
	0	No change
	-1	Has adverse effect on pedestrian or transit environment in Old Town/ Six Corners Area
Corridor Connectivity Improves connectivity through acquisitions and dedications to achieve better street spacing and enhance off-street trail system	+1	Improves roadway connectivity
	0	No change
	-1	Negative impact on roadway connectivity
Goal 7. Develop and maintain freight infrastructure to support local and regional economic expansion and diversification goals		
Freight Mobility Invests in infrastructure and services needed to meet current and future demand	+1	Improves freight mobility
	0	No change
	-1	Degrades freight mobility
Freight Access Regulates and improves access, including loading and transfer facilities	+1	Improves freight access
	0	No change
	-1	Degrades freight mobility

Policy Measure	Evaluation Score	
Intermodal Connectivity Partners with local, regional and state entities to support intermodal facilities for seamless freight transfer.	+1	Promotes intermodal freight connections
	0	Has no effect on intermodal freight
	-1	Degrades intermodal freight connections
Goal 8. Manage the system to ensure timely implementation and updates to comply with evolving local and regional priorities		
Funding Leverages local, regional, state, federal or private funds.	+1	Funding sources and partnerships available
	0	Feasible costs, but no identified funding
	-1	High costs and no identified funding
Project Compatibility Project or policy is listed on Capital Improvement Plan, or other approved planning document	+1	Project identified in other approved plans
	0	Project previously identified, but not approved in plan
	-1	Project doesn't exist in other planning documents

Plan and Policy Compliance

Sherwood's TSP and land use regulations were evaluated for compliance with state and regional requirements identified in the Plan and Policy Summary Report. Specifically, the evaluation focused on compliance with the State's Transportation Planning Rule (TPR) and Metro's Regional Transportation Functional Plan (RTFP). In conducting this evaluation, we reviewed the following documents:

- 2005 TSP;
- City of Sherwood Title 16, Zoning and Community Development Code ("development code" or "code"); and
- City of Sherwood Engineering Design and Standard Details Manual ("engineering manual"), Sections 120 (Street Design), 210 (Street Design), 420 (Shared-Use Paths), 430 (On-Street Facilities), and 440 (Bicycle Parking Standards).

The findings and recommendations are intended as starting points in identifying and discussing specific amendments that may be necessary to implement the recommendations of the updated TSP, as well as to meet regional and state requirements. The full set of requirements and additional findings about how the requirements are addressed through the existing plans and policies are provided in the appendix.

Summary of Recommendations

A detailed review of how the City's TSP update will comply with the RTFP and an evaluation of adopted development code and engineering standards for compliance with the RTFP and the TPR have been conducted. The following tables highlight issues identified in this detailed evaluation that will need to be discussed and addressed as part of the TSP update:

- Table 6: Issues Related to TSP Elements
- Table 7: Issues Related to the Development Code
- Table 8: Issues Related to Policy
- Table 9: Issues Related to the Engineering Manual.

Note that the numbering in these tables does not indicate importance, but is provided for reference and to aid in future discussions. RTFP and TPR citations also are provided for reference.

Table 6: Issues Related to TSP Elements

	Notes/Recommendations for Updating the TSP	TPR or RTFP Reference
TSP-1	Identify bike and pedestrian improvements needed to connect to transit stops, considering the proximity of transit stops to activity generators and the available facilities that connect them.	• RTFP Section 3.08.120A Transit System Design
TSP-2	Re-inventory and reevaluate the City's transit network, using Chapter 7 (Transit) of the current TSP as a starting point. Reprioritize the prior projects and identify new projects as necessary, with particular emphasis on connecting and integrating all travel modes.	• RTFP Section 3.08.120B.1 Transit System Design
TSP-3	Evaluate the City's collector and arterial grid system and identify system gaps and deficiencies, including regional needs consistent with the RTP.	• RTFP Section 3.08.210 Transportation Needs
TSP-4	Address the needs of youth, seniors, people with disabilities, and environmental justice populations through ADA compliant design standards and transit service improvements.	• RTFP Section 3.08.210 Transportation Needs
TSP-5	Evaluate prioritized list of RTFP strategies and their anticipated effect on the transportation system (see list in RTFP). Provide list of recommended strategies and projects, with preference given to those strategies at the top of the list. Include documentation and analysis of all recommendations and coordinate with Washington County, Metro, TriMet, and/or ODOT for projects on the City outskirts and for larger projects serving regional needs.	• RTFP Section 3.08.220 Transportation Solutions

Table 7: Issues Related to the Development Code

	Recommendations for Updating the Development Code	TPR or RTFP Reference
DC-1	Identify and update all references to the TSP in the code.	
DC-2	Ensure that code requirements in Chapter 16.96 (On-site Circulation) and Chapter 16.106 (Transportation Facilities) related to access spacing/management and design of streets, bikeways, sidewalks, and accessways/paths are consistent with the standards established in the updated TSP.	• TPR Section -0045(2)(a) Access Control • TPR Section -0045(3)(b) On-site Pedestrian and Bicycle Circulation and Connections • TPR Section -0045(7) Minimizing Roadway Width • RTFP Section 3.08.110B

	Recommendations for Updating the Development Code	TPR or RTFP Reference
		Street System Design for Pedestrian and Bicycle Access
DC-3	Define or update the following terms and ensure consistency between the TSP, code, and engineering manual: accessway, multi-use path, and shared-use path.	• TPR Section -0045(3)(b) On-site Pedestrian and Bicycle Circulation and Connections • RTFP Sections 3.08.110B & E Street System Design
DC-4	Consider whether providing additional guidance in Code Sections 16.90.030.D and 16.106.040, and/or a new section, regarding the preparation of TIAs is desired.	• TPR Section -0045(2)(b) Standards to Protect Roadways
DC-5	Given TPR requirements for coordinated review, consider whether inviting transportation facility and service providers to pre-application conferences would be helpful to the review process and thus would be language to include in the code (Section 16.70.010).	• TPR Section -0045(2)(d) Coordinated Review of Land Use Decisions
DC-6	Consider providing more guidance about the meaning/definition of "preferential" carpool and vanpool parking spaces in parking provisions in Section 16.94.010.E.3.a.	• TPR Section -0045(4)(d) Employee Parking
DC-7	Consider code changes if there are TDM program elements developed for the updated TSP that lend themselves to implementation in code.	• TPR Section -0045(5)(b) Transportation Demand Management (TDM) Programs
DC-8	Consider addressing structured parking in Chapter 16.94, including exemptions from maximum parking space standards.	• TPR Section -0045(5)(d) Parking Management
DC-9	[Administrative amendments note: Address editorial changes in the footnotes for the parking standards table in Section 16.94.020.]	• TPR Section -0045(5)(d) Parking Management
DC-10	Consider the feasibility of allowing a local street cross-section of 20-28 feet and under what conditions.	• TPR Section -0045(7) Minimizing Roadway Width
DC-11	Consider modifying the code provisions for plan and land use regulation amendments in Section 16.80.030.C (Transportation Rule Consistency) to make simpler reference to Section -0060 in order to capture all of its requirements and allowances related to reviewing plan and land use regulation amendments.	• TPR Section -0060 Plan and Land Use Regulations Amendments
DC-12	Variances – Provide a variance process in Chapter 16.84 (Variances and Adjustments) and/or Chapter 16.94 (Off-	• RTFP Section 3.08.410

	Recommendations for Updating the Development Code	TPR or RTFP Reference
	Street Parking and Loading) that allows maximum parking standards to be exceeded.	Parking Management
DC-13	Major driveways – Define major driveways in the code for mixed-use and residential developments, and add requirements in Chapter 16.90 (Site Planning) and Chapter 16.128 (Land Division Design Standards) to align major driveways with existing and/or planned streets.	
DC-14	On-street loading – Add on-street loading provisions in "appropriate locations" such as downtown. These new provisions would include specific conditions for when on-street loading would be permitted.	
DC-15	Bicycle parking – Require, rather than allow, long-term (protected and secured) parking in Section 16.94.020.C.	
DC-16	Consider whether having a hierarchy of management to capacity strategies (RTFP Section 3.08.220A) would be effective as part of traffic impact analysis and legislative decision conditions of approval.	• RTFP Sections 3.08.510 A & B Comprehensive Plan and TSP Amendments

Table 8: Issues Related to Policy

	Recommendations for Updating Policy	TPR or RTFP Reference
P-1	As noted in Table 5, the City has considered transportation solutions in 3.08.220A as part of the TSP update process.	• RTFP Sections 3.08.510 A & B Comprehensive Plan and TSP Amendments
P-2	Ensure that the policy and strategies related to parking from the Town Center Plan are integrated and consistent with updated policies in the TSP.	• RTFP Section 3.08.410I Parking Management

Table 9: Issues Related to the Engineering Standards

	Recommendations for Updating the Engineering Manual	TPR or RTFP Reference
EM-1	Ensure that code requirements in Sections 120 (Street Design), 210 (Street Design), 420 (Shared-Use Paths), 430 (On-Street Facilities), and 440 (Bicycle Parking Standards) related to access spacing/management and design of streets, bikeways, sidewalks, and accessways/paths are consistent with the standards established in the updated TSP.	• TPR Section -0045(2)(a) Access Control • TPR Section -0045(3)(b) On-site Pedestrian and Bicycle Circulation and Connections • TPR Section -0045(7)

	Recommendations for Updating the Engineering Manual	TPR or RTFP Reference
		Minimizing Roadway Width • RTFP Section 3.08.110B Street System Design
EM-2	Define or update the following terms and ensure consistency between the TSP, code, and engineering manual: accessway, multi-use path, and shared-use path.	• TPR Section -0045(3)(b) On-site Pedestrian and Bicycle Circulation and Connections
EM-3	Amend the cul-de-sac standards in Section 210.7 to be consistent with and implement the standards of the updated TSP and code.	• RTFP Section 3.08.110E Street System Design
EM-4	Ensure that the engineering manual (Section 440) is consistent with the code (Section 16.94.020.C) regarding bicycle parking requirements.	• RTFP Section 3.08.410 Parking Management

TECHNICAL APPENDIX
NEEDS, OPPORTUNITIES, CONSTRAINTS AND TOOLS

Pedestrian System Gaps Priority List

This list categorizes pedestrian system gaps along arterials and collector roadways into high, medium, and low priority gaps. These gaps are grouped based on their proximity to activity generators within a ½ mile walking distance, as shown in Figure 3.

High Priority Gaps

- Highway 99W (west side only) between Roy Rogers Road and the existing sidewalk terminus to the north (approximately 600 feet north of Roy Rogers Road).
- Highway 99W between Tualatin-Sherwood Road and Meinecke Road. This includes discontinuous gaps along both sides of the highway.
- 12th Street (south side only) between Highway 99W to Sherwood Boulevard.
- Meinecke Road (north side only) between Lee Drive and the existing sidewalk terminus to the east (approximately 400 feet east of Lee Drive).
- Edy Road (both sides) between Borchers Drive and Trailblazer Place.
- Division Street pedestrian gaps are not shown in Figure 3 as it is a neighborhood collector. However, it was highlighted in the Existing Conditions Technical Report as a major gap, and falls within a high pedestrian demand area.
- Gleneagle neighborhood pedestrian gaps are not shown in Figure 3 as they are local roads. However, they were highlighted in the Existing Conditions Technical Report as major gaps, and fall within a high pedestrian demand area.

Medium Priority Gaps

- Highway 99W (both sides) between Meinecke Road and Sunset Boulevard.
- Edy Road (both sides) between Trailblazer Place and Elwert Road.
- Elwert Road (both sides) between Highway 99W and Edy Road.
- Handley Street (north side only) between Elwert Road and existing sidewalk terminus to the east (approximately 250 feet east of Elwert Road).
- Timbrel Lane (north side only) between Old Highway 99W and Middleton Road. This includes two short sidewalk gaps.

- Old Highway 99W (both sides) from Brookman Road to existing sidewalk terminus to the north (approximately 1,800 feet north of Brookman Road).
- Sunset Boulevard (north side only) from Eucalyptus Terrace to St Charles Way.
- Ladd Hill Road (west side only) from Willow Drive to Brookman Road.
- Baker Road (east side only) from Sunset Boulevard to Lavon Lane.
- Murdock Road (west side) from Willamette Street to existing sidewalk terminus to the north (approximately 130 feet north of Willamette Street).
- Murdock Road (east side only) from Willamette Street to Upper Roy Street.
- Murdock Road (east side only) from Upper Roy Street to Sunset Boulevard. While the pedestrian facilities on the west side act as a shared-use path, there will likely be demand for pedestrian facilities along the east side as the area develops.

Low Priority Gaps

- Highway 99W (both sides) south of Sunset Boulevard.
- Edy Road (both sides) west of Elwert Road.
- Elwert Road (both sides) north of Edy Road.
- Ladd Hill Road (both sides) south of Brookman Road.
- Brookman Road (both sides) between Highway 99W and Ladd Hill Road.
- Baker Road (both sides) south of Lavon Lane.
- Murdock Road (east side only) from Oregon Street to Willamette Street.
- Oregon Street (south side) from Hall Street to Orland Street.
- Oregon Street (north side) from Murdock Road to Langer Farms Parkway.
- Oregon Street (south side) from Murdock Road to existing sidewalk terminus to the east (approximately 2,700 feet east of Murdock Road).
- Tonquin Road (both sides) south of Oregon Street.
- Cipole Road (west side) from Tualatin-Sherwood Road to existing sidewalk terminus to the north (approximately 1,250 feet north of Tualatin-Sherwood Road).
- Cipole Road (east side) from existing terminus (approximately 1,250 feet north of Tualatin-Sherwood Road) to the north for approximately 450 feet.

Bicycle System Gaps Priority List

This list categorizes bicycle system gaps along arterials and collector roadways as high, medium, and low priority gaps. These gaps are grouped based on their proximity to activity generators within a mile biking distance, as shown in Figure 4.

High Priority Gaps

- Roy Rogers Road between Highway 99W and Borchers Drive.
- Borchers Drive between Roy Rogers Road and Edy Road.
- Langer Drive between Baler Way and the Highway 99W northbound access.
- Baler Drive between Tualatin-Sherwood Road and Langer Drive.
- 12th Street between Highway 99W and Sherwood Boulevard.
- Sherwood Boulevard between 12th Street and 3rd Street.
- Pine Street between 3rd Street and Sunset Boulevard.
- Meinecke Road-Washington Street between Lee Drive and 1st Street.
- 3rd Street between Washington Street and Sherwood Boulevard
- 1st Street between Main Street and Pine Street.
- Century Drive between Tualatin-Sherwood Road and existing terminus.
- Oregon Street between Murdock Road and Langer Farms Parkway.
- Sunset Boulevard between Greengate Drive and Cinnamon Hill Place.
- Ladd Hill Road between Sunset Boulevard and Brookman Road.
- Home Depot access road between Highway 99W and existing terminus.
- Edy Road between Cherry Orchards Street and Trailblazer Place.
- Edy Road between Wagontrain Place and Elwert Road.

Medium Priority Gaps

- Ladd Hill Road between Brookman Road and Oberst Lane.
- Brookman Road between Highway 99W and Ladd Hill Road.
- Timbrel Lane between Sunset Boulevard and Old Highway 99W.
- Old Highway 99W between Timbrel Lane and Brookman Road.
- Handley Street between Brook Way and Elwert Road.
- Murdock Road between Oregon Street and Sunset Boulevard.

- Sunset Boulevard between Aldergrove Avenue and Murdock Road.
- Galbreath Drive between Gerda Lane and city limits.
- Gerda Lane between Tualatin-Sherwood Road and Galbreath Drive.
- Baker Road between Sunset Boulevard and McConnell Road.
- Elwert Road between Highway 99W and Edy Road.

Low Priority Gaps

- Tonquin Road south of Oregon Street.
- Cipole Road north of Tualatin-Sherwood Road.
- Ladd Hill Road south of Oberst Lane.
- Edy Road west of Elwert Road.
- Elwert Road north of Edy Road.

Intersections with Potentially High Levels of Congestion

The following intersections are expected to experience higher levels of congestion by 2035. These intersections are indicated by warmer colors in Figure 5 and Figure 6. Intersections with an asterisk denote the intersection to be along a freight corridor.

- Highway 99W and Home Depot access road/Langer Farms Parkway (extension)*
- Highway 99W and Tualatin Sherwood Road*
- Highway 99W and Edy Road/Sherwood Boulevard*
- Highway 99W and Sunset Boulevard*
- Highway 99W and Brookman Road*
- Highway 99W and Red*
- Highway 99W and future road (south of Red)*
- Highway 99W and 12th St*
- Highway 99W and Cedar Brook Way*
- Highway 99W and Meinecke Road*
- Tualatin-Sherwood Road and Baler Way*
- Tualatin-Sherwood Road and Langer Farms Parkway*
- Tualatin-Sherwood Road and Olds Place*
- Tualatin-Sherwood Road and Gerda Lane*
- Tualatin-Sherwood Road and Langer Drive*
- Tualatin-Sherwood Road and Wildrose Place*
- Tualatin-Sherwood Road and Cipole Road*
- Tualatin-Sherwood Road and 124th Avenue*
- Roy Rogers Road and Cedarview Way*
- Roy Rogers Road and Lynnly Way*
- Roy Rogers Road and Lavender Place*
- Cipole Road and Herman Road
- Herman Road and 129th Avenue
- 124th Avenue and Myslony Street
- 124th and Cipole Road (extension)
- Langer Drive and Langer Drive
- Langer Drive and Baler Way
- Elwert Road and Conzelmann Road
- Elwert Road and Edy Road
- Elwert Road and Handley Street
- Elwert Road and Haide Road
- Elwert Road and Sunset Boulevard
- Edy Road and Bedstraw Terrace
- Edy Road and Houston Drive
- Edy Road and Madeira Terrace
- Edy Road and Borchers Drive
- Sherwood Boulevard and 12th Street
- Sherwood Boulevard and Gleneagle Drive
- Langer Farms Parkway and Whetstone Way
- Oregon Street and Murdock Road
- Oregon Street and Tonquin Road
- Oregon Street and Lincoln Street
- Murdock Road and Willamette Street
- Pine Street and 2nd Street
- Sunset Boulevard and Woodhaven Drive
- Sunset Boulevard and Timbrel Lane
- Sunset Boulevard and Richen Park Terrace
- Sunset Boulevard and Greengate Place
- Sunset Boulevard and Redfern Place
- Sunset Boulevard and Myrica Court
- Sunset Boulevard and Main Street
- Sunset Boulevard and Cinnamon Hills Place
- Sunset Boulevard and Pine Street
- Sunset Boulevard and Aldergrove Avenue
- Sunset Boulevard and Brittany Place
- Sunset Boulevard and Murdock Road
- Ladd Hill Road and Brookman Road
- Brookman Road and Middleton Road

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SECTION D

PROJECT OPTIONS TECHNICAL REPORT

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PROJECT OPTIONS

This document summarizes the transportation system improvements needed to accommodate existing and future travel needs in Sherwood. The following sections include a summary of the process used to develop and analyze the project options, summaries of each projects for locations that have multiple options, and an initial prioritization of the project list using the evaluation criteria. Additional appendix material provides the comprehensive list of transportation needs and full set of transportation projects that were considered.

Document Reader Guide

These items summarize key elements of the analysis methodology presented in this document.

- Developing a List of Potential Projects
  - The list of potential projects includes projects that were previously identified in prior plans as well as new projects to address the needs that have been identified through the TSP update process.
  - The complete list of projects is included in the Appendix and is shown in Figures 1, 2, and 3.
- Initial Project Evaluation
  - An initial project evaluation was conducted using criteria based on Sherwood's transportation goals and policies. This primary evaluation provided a basis for comparing projects with different transportation elements that serve different modes.
  - Secondary criteria were applied to distinguish between projects within each mode that received the same evaluation score.
- Assessment of Alternative Projects
  - A summary of project advantages and disadvantages was provided in cases where multiple options have been identified to address a particular transportation need.
  - A dashed line appears around the project options that initially appear to be most favorable for addressing a given transportation need. This is primarily based on the evaluation criteria but may consider other factors. Note that this is only the initial assessment and that the project evaluation has not been fully vetted by TSP review committees and the public.
  - Transportation needs that have only a single identified fix are not described in additional detail. However, these projects are included in the overall project list.

- Improvements to Mobility
    - Motor vehicle projects were grouped by project type based on the regional strategies included in the Regional Transportation Functional Plan (RTFP) hierarchy. Some of these groups were not analyzed directly since they would require analysis outside the scope of the TSP update. The groups that were assessed, and corresponding RTFP level, include:
        - Group 1 – TSMO Projects (RTFP Level 1)
        - Group 2 – Connectivity Projects (RTFP Level 5)
        - Group 3 – Widening Projects (RTFP Level 6)

- Prioritization of Potential Projects
    - An initial prioritization was performed based on potential revenue streams and the project evaluation. This prioritization has not yet been fully vetted by the TSP review committees and the public and is subject to change.

Developing a List of Potential Projects

Transportation projects that have been previously identified but have not been constructed were reviewed to determine how they address the needs identified in the *Needs, Opportunities, Constraints and Tools Technical Report* (a summary of these needs appears in the Appendix). While not all of these previously planned projects satisfy the specific needs that were identified through the TSP update, many of these projects do complement the goals and policies of the Sherwood TSP. Therefore, these projects were carried forward for consideration with this TSP update since they could address other needs that were not directly assessed through this update. Projects from the following plans were used to identify the initial project list:

- Sherwood TSP
- Metro RTP
- Ice Age Tonquin Trail Master Plan
- Sherwood Town Center Plan
- Concept Plans (Brookman Addition, Tonquin Employment Area, Adams Avenue North)

Where needs are unsatisfied by previously planned projects, new solutions were developed. In some cases, multiple alternative solutions are presented to meet a need. A complete list of potential projects is provided in the Appendix and displayed in Figures 1 through 3.

Figure 1

Motor Vehicle Projects

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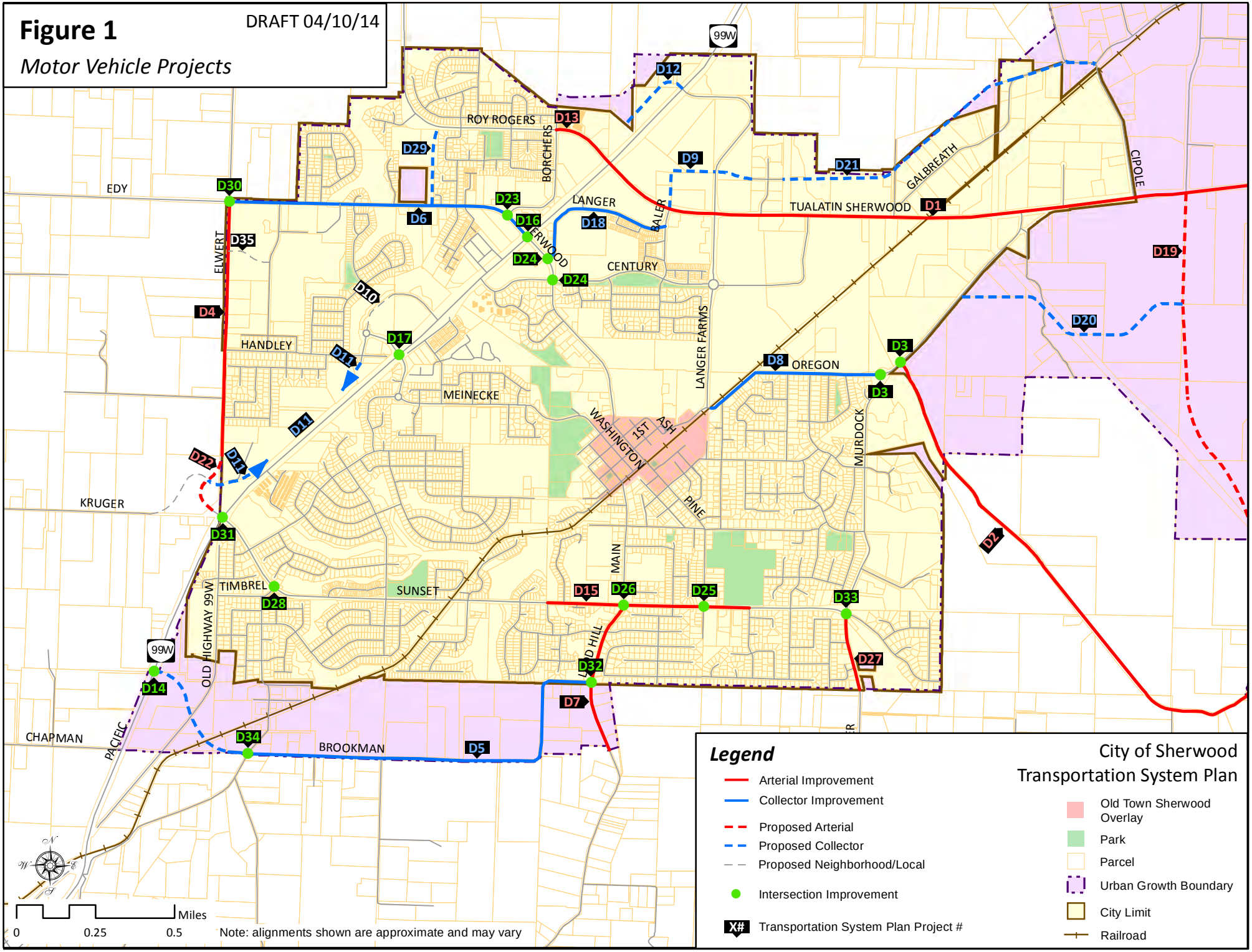


Legend

- Arterial Improvement
- Collector Improvement
- Proposed Arterial
- Proposed Collector
- Proposed Neighborhood/Local
- Intersection Improvement
- X# Transportation System Plan Project #

City of Sherwood
Transportation System Plan

- Old Town Sherwood Overlay
- Park
- Parcel
- Urban Growth Boundary
- City Limit
- Railroad

Figure 2

Pedestrian Projects

DRAFT 04/10/14

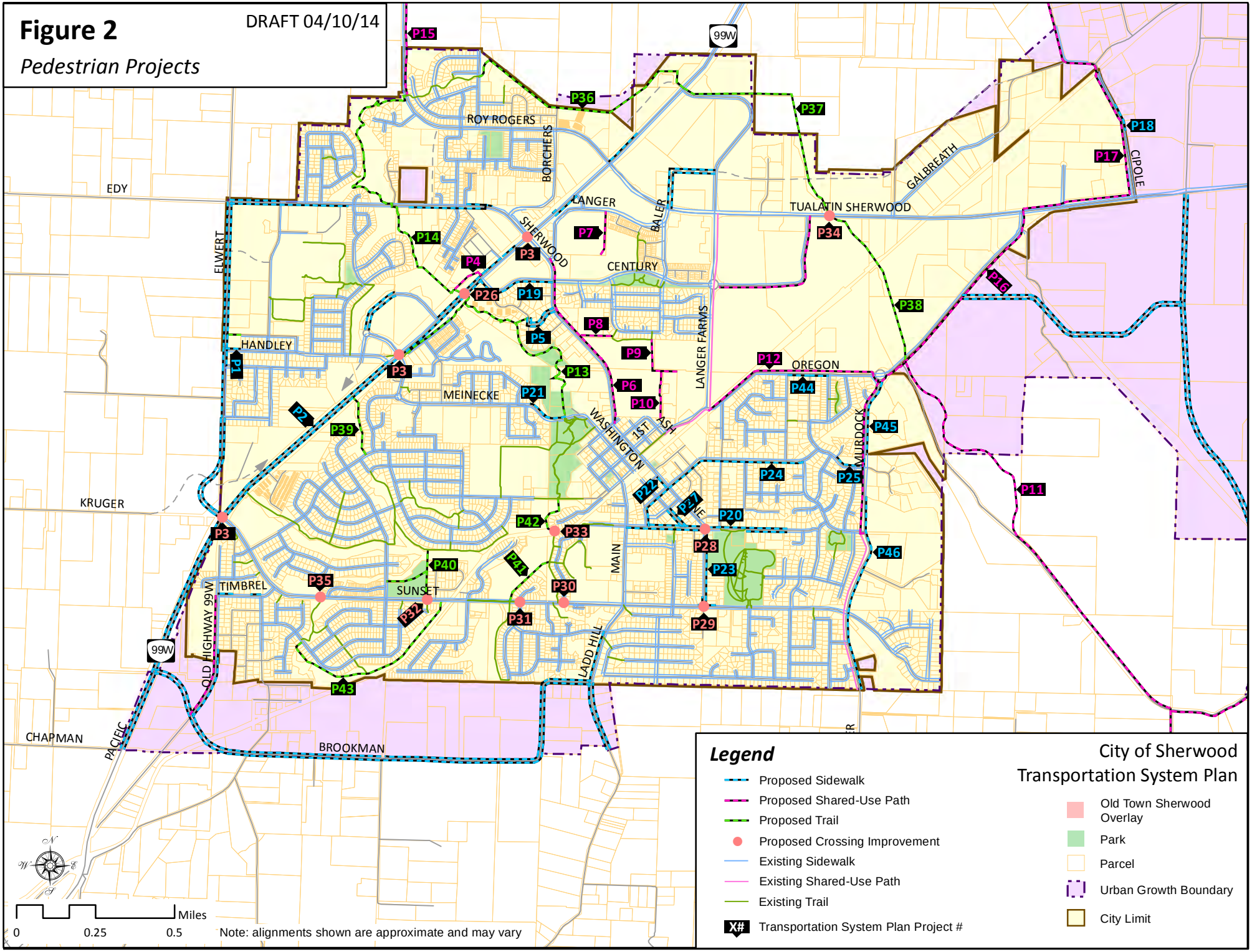
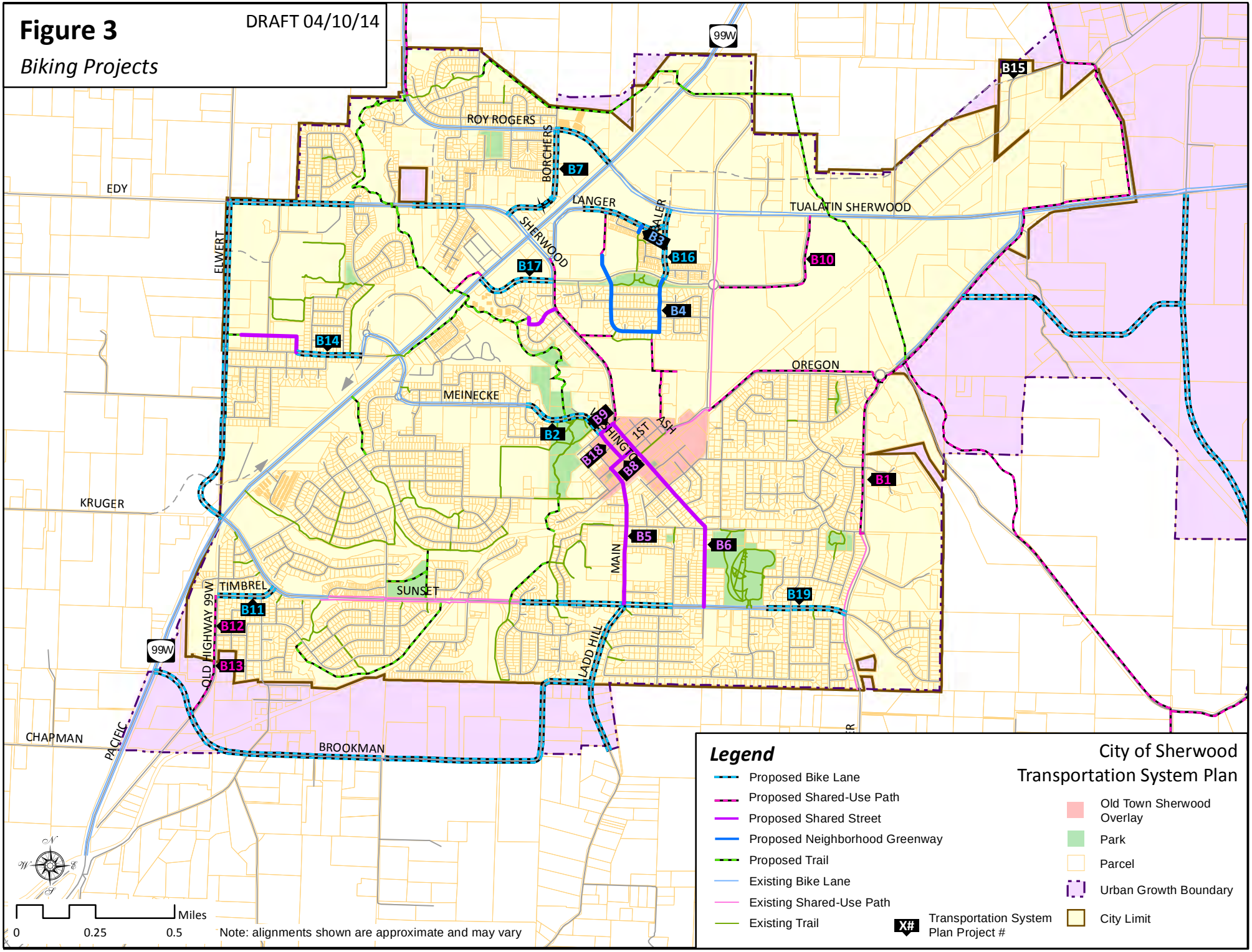


Figure 3

Biking Projects

DRAFT 04/10/14



Initial Project Evaluation

The identified projects were evaluated with evaluation criteria to provide a relative comparison across all modes of travel. This evaluation provides an initial prioritization of projects to determine funding priorities for the City through year 2035.

Evaluation Criteria

Sherwood's Comprehensive Plan includes eight transportation goals with several objectives and strategies to achieve the goals. These strategies were grouped and condensed into draft evaluation criteria to measure how well transportation projects addressed Sherwood's goals. Feedback received from the TSP Citizen Advisory Committee was used to focus on specific measures that represented the community. Through this process, the final evaluation criteria were developed by taking the top one or two performance metrics for each transportation goal. In cases that more than one strategy was identified for a goal, each strategy was given half of the score so that all eight of the goals remained equally weighted.

Table 1 lists the evaluation criteria used to assess potential projects. The full scoring of projects is included in the Appendix.

Table 1: Evaluation Criteria for Project Analysis

Policy Measure	Evaluation Score	
Goal 1: Provide a transportation network supportive to land use plans and alternative modes.		
Circulation Improves mobility through separation of local and through traffic	+1	Increases separation of through and local trips on differentiated facilities
	0	No change
	-1	Further mixes local and through traffic on same facilities
Goal 2: Develop a transportation system consistent with adopted local, state and regional plans		
Compatibility Compatible with other jurisdiction's plans and policies, (including adjacent cities, counties, Metro or ODOT)	+1/2	Compatible with other plans and contributes to their implementation
	0	Compatible with other plans, but does not contribute to implementation
	-1/2	Not compatible with other plans
Agency Standards Consistent with the standards of the City, Region, and State as a whole	+1/2	Consistent with all standards
	0	May require some deviations to standards, but likely to be approved
	-1/2	Inconsistent with standards and not expected that deviations would be approved
Goal 3: Establish design and development regulations to promote multi-modal transportation		
Land Development Standards Promotes standardized processes for developers to assess and accommodate transportation impacts from development	+1	Creates or abides by standardized development procedures
	0	No impact on development processes
	-1	Avoids standardizing procedures
Goal 4: Develop bicycle & pedestrian infrastructure to provide residents more options		
Pedestrian and Bicycle Facilities Adds bikeway and walkways that	+1	Improves pedestrian or bicycle connectivity or accessibility
	0	No change

fill in system gaps, improve system connectivity, and are accessible to all users	-1	Reduces connectivity or accessibility
Goal 5: Provide reliable, convenient transit service and special options to residents and businesses		
Expands Transit Service Adds service hours, additional routes, stops or special ride services	+1/2	Improves/ increases transit service
	0	No change
	-1	Negatively impact on transit services
Transit Supportive Infrastructure Improves transit supportive infrastructure and facilities	+1/2	Improves transit infrastructure
	0	No change
	-1/2	Negatively impacts transit infrastructure
Goal 6: Provide safe and convenient connections within and between Old Town and the Six Corners Area		
Designs Standards Develops or refines special standards to facilitate pedestrian and transit friendly development in Old Town and Six Corners	+1/2	Contributes to pedestrian & transit friendly environment in Old Town/ Six Corners Area
	0	No Change
	-1/2	Has adverse effect on pedestrian or transit environment in Old Town/ Six Corners Are
Corridor Connectivity Improves connectivity through acquisitions and dedications to achieve better street spacing and enhance off-street trail system	+1/2	Improves roadway connectivity
	0	No change
	-1/2	Negative impact on roadway connectivity
Goal 7: Develop and maintain freight infrastructure to support local and regional economic expansion and diversification goals		
Freight Mobility Invests in infrastructure and services needed to meet current and future demand	+1/2	Improves freight mobility
	0	No change
	-1/2	Degrades freight mobility
Freight Access Regulates and improves access, including loading and transfer facilities	+1/2	Improves freight access
	0	No change
	-1/2	Degrades freight mobility
Goal 8: Manage the system to ensure timely implementation and updates to comply with evolving local and regional priorities		
Funding Leverages local, regional, state, federal or private funds	+1	Funding sources and partnerships available
	0	Feasible costs, but no identified funding
	-1	High costs and no identified funding

The evaluation criteria listed in Table 1 represent the primary basis for evaluating projects across all modes. A secondary set of criteria were applied to provide a basis for sub-prioritize projects that received the same evaluation score. These criteria were based on the following items:

- Pedestrian/Bicycle – Project location and proximity to activity generators (as previously mapped).
- Motor Vehicle – Hierarchy of projects based on regional strategies (intersection improvements are highest priority and major corridor widening is lowers priority).

Assessment of Alternative Projects

There are several transportation needs that were identified where multiple options are available. This section lists the alternative projects that could be carried forward to the TSP project list and describes the advantages and disadvantages for each option. In addition, the evaluation score is listed for each alternative and the most favorable alternative is highlighted by a dashed box—note that the highest scoring alternative is not necessarily the recommended improvement as there are context factors to consider that might not be captured in the evaluation criteria.

Note that this section only addresses locations where multiple options have been identified. The Appendix includes the full set of projects (which are mapped in Figures 1, 2 and 3).

Reader Notes

- A summary of project advantages and disadvantages was provided in cases where multiple options have been identified to address a particular transportation need. This summary is provided in the blue boxes on the following pages.
- A dashed line appears around the project options that initially appear to be most favorable for addressing a given transportation need. This is primarily based on the evaluation criteria but may consider other factors. Note that this is only the initial assessment and that the project evaluation has not been fully vetted by TSP review committees and the public.
- Transportation needs that have only a single identified fix are not described in additional detail (i.e., they do not appear in the blue boxes on the following pages). However, these projects are included in the overall project list (see Appendix).

Motor Vehicle Project Alternatives

Need: Traffic control enhancement at Oregon Street/Tonquin Road.

D3.A: Install a traffic signal

Advantages: A traffic signal at this location will have a smaller footprint and will likely have a lower cost than a roundabout as a roundabout would likely require additional right-of-way

Disadvantages: Queues from the signal could potentially back into the Murdock roundabout, which could impact safety and mobility

Evaluation Score: **4.0**

D3.B: Install a single lane roundabout with dual westbound through lanes

Advantages: Roundabouts typically experience 25% less crashes than signalized and unsignalized intersections[1]; queuing issues likely less than queuing issues related to a signal. The hybrid configuration would allow both intersections (Tonquin/Oregon and Murdock/Oregon) to operate well and meet mobility standards. This option would continue to offer a full accessibility of movements, unlike a combined "dumbbell" configuration. The additional westbound lane could fit within the existing roadway width.

Disadvantages: Roundabouts have large footprints, and the area is constrained by wetlands—it may be difficult to fit a roundabout within the available space. The existing roundabout at Oregon/Murdock would need to be reconfigured in order for the westbound lane configuration to fit.

Evaluation Score: **4.0**

D3.C: Install a "dumbbell" (elongated oval) roundabout with combined with the existing roundabout at Murdock. The combined configuration would require that a vehicle would pass through both intersections to make a left turn movement.

Advantages: Roundabouts typically experience 25% less crashes than signalized and unsignalized intersections[2]; this solution would fully mitigate the queuing issue between intersections since the space between the roundabouts two intersections would be part of the roundabout circulation.

Disadvantages: It may be difficult to fit a roundabout within the available space, travel distances would be increased, and delays would likely be greater than two individual roundabouts due to more circulating vehicles

Evaluation Score: **1.5**

[1] CMF Clearinghouse, www.cmfclearinghouse.org.

[2] Ibid.

Need: Roadway improvements along Brookman Road.

D5.A: Rebuild Brookman Road as a three lane collector facility

Advantages: Provides a balance of mobility and access to Brookman Concept area, which in turn provides relief to Sunset Boulevard from future urban growth.
Disadvantages: N/A
Evaluation Score: **2.5**

D5.B: Rebuild Brookman Road as a five lane arterial

Advantages: Further increases east-west mobility for through traffic
Disadvantages: Would inhibit access to the Brookman Concept Area and is not consistent with findings and recommendations of the Concept Plan or the I-5 to 99W Connector Project. The I-5 to 99W Connector project proposed a new, separate access-restricted facility to serve as a regional corridor and provide mobility for traffic between 99W and I-5. Concept planning for the Brookman area identified Brookman Road to serve the function of providing access to the area for future urban development. Limiting access to future development in Brookman area would force traffic to the north and further burden Sunset Boulevard.
Evaluation Score: **1.5**

Need: Traffic control enhancement at Sherwood Boulevard/Century Drive.

D24.A: Install a traffic signal

Advantages: A traffic signal at this location will have a smaller footprint and will likely have a lower cost than a roundabout as a roundabout would likely require acquiring additional right-of-way
Disadvantages: High side street delay
Evaluation Score: **4.0**

D24.B: Install a roundabout

Advantages: Roundabouts typically experience 25% less crashes than signalized and unsignalized intersections[3]; could provide for gateway treatments for the Town Center; provides U-turn opportunities for traffic leaving businesses west of Sherwood Boulevard
Disadvantages: Roundabouts have large footprints and could require acquiring additional right-of-way; the property on the southwest corner may be significantly impacted
Evaluation Score: **4.0**

[3] Ibid.

Need: Traffic control enhancement at Edy Road/Borchers Drive.

D23.A: Install a traffic signal

Advantages: A traffic signal at this location will have a smaller footprint and will likely have a lower cost than a roundabout as a roundabout would likely require acquiring additional right-of-way; a signal could coordinate with the Highway 99W/Edy Road signal, which would require coordination with ODOT

Disadvantages: Potential for queuing to back up to the Highway 99W/Edy Road intersection due to limited space, which has the potential to impact both safety and mobility

Evaluation Score: **3.5**

D23.B: Install a roundabout

Advantages: Roundabouts typically experience 25% less crashes than signalized and unsignalized intersections[4]; high turn volumes from Borchers could be served without having to wait for a green signal if no conflicting volumes are present

Disadvantages: There is potential for queuing from the Highway99W/Edy Road intersection to back up to the intersection, which can gridlock a roundabout and poses a safety concern if a queued vehicle is stopped in the roundabout due to sight issues; roundabout have large footprints and could require acquiring additional right-of-way; through movements on Edy Road may experience more delay due to high turn volumes

Evaluation Score: **3.5**

D23.C: Prohibit left turn movements from Borchers and install a roundabout west on Edy Road

Advantages: Mitigates safety issues related to potential vehicle queue stacking between adjacent Highway 99W/Edy Road intersection that could existing with either a traffic signal or roundabout treatment; provides opportunity for a new roundabout to the west that could be used for U-turns and potential future connections to Roy Rogers Road and/or access for future development along 99W frontage to avoid need for highway access.

Disadvantages: Increases travel distance by removing left turn movements from Borchers Drive, may cause some traffic to shift to other routes. This alternative would need to provide internal access from medical offices to new roundabout at west since left turns from Borchers would be removed. Adjacent roundabout project would not be well-suited to existing roadway network and may be difficult to place without a roadway extension to the north or development access to the south.

Evaluation Score: **3.0**[5]

[4] Ibid.

[5] While this project does not score as highly as the other two options, it provides additional safety benefits.

Need: Traffic control enhancement at Elwert Road/Edy Road.

D30.A: Install a traffic signal

Advantages: A traffic signal would have a smaller footprint than a roundabout and would best fit in the constrained space

Disadvantages: Opportunities for additional turn lanes at the traffic signal are limited due to constrained right of way; the signal would need to be signed well to alert drivers with advanced warning.

Evaluation Score: **1.5**

D30.B: Install a roundabout

Advantages: Roundabouts typically experience 25% less crashes than signalized and unsignalized intersections[6]; delay will likely be less than as a signalized intersection.

Disadvantages: Roundabouts have large footprints and could require acquiring additional right-of-way; while adjacent properties are undeveloped, the adjacent creek and wetlands would make widening for a roundabout difficult

Evaluation Score: **2.5**

Need: Traffic control enhancement at Brookman Road/Highway 99W.

D14.A: Install a traffic signal

Advantages: Provides access to future growth areas; provides relief to Sunset Boulevard; may increase safety at Sunset due to improving expectancy for traffic as the urban fringe is shifted south

Disadvantages: Increases the potential for rear-end incidents on Highway 99W due to signal located on the urban fringe

Evaluation Score: **4.0**

D14.B: Install a traffic signal and realign Brookman Road to the north to be located in urban area

Advantages: Consistent with Brookman Concept Plan and provides spacing for potential I-5 to 99W connection to south. Provides access to future growth areas; provides relief to Sunset Boulevard; may increase safety at Sunset due to improving expectancy for traffic as the urban fringe is shifted south. Realigning the road to the north would provide urban context and move it away from the southern fringe, providing a safety benefit due to driver expectancy.

Disadvantages: May impact future connections north/west of 99W (Chapman Road) as urban growth areas urbanize.

Evaluation Score: **5.0**

[6] Ibid.

Bicycle Project Alternatives

Need: Bicycle facilities on Murdock Road between Oregon Street and the Urban Growth Boundary.

B1.A: Widen the roadway to provide bike lanes

Advantages: Provides bicycle facilities on both sides of the roadway; cross-section would fit within existing right-of-way

Disadvantages: Requires extensive roadway widening

Evaluation Score: **2.0**

B1.B: Build a shared-use path between Oregon Street and Upper Roy Street

Advantages: Connects the existing shared-use path south of Upper Roy Street to the proposed path on Oregon Street, and has fewer impacts

Disadvantages: Replaces existing sidewalk and therefore provides little benefit to pedestrians; northbound bicyclists may be inclined to ride in the two-lane roadway

Evaluation Score: **3.0**

Need: Bicycle facilities on Timbrel Lane between Sunset Boulevard and Old Highway 99W.

B11.A: Widen the roadway to provide bike lanes

Advantages: Provides dedicated space for bicycle travel that is separated from the motor vehicle space

Disadvantages: Requires widening the roadway, which would require obtaining an additional 4 feet of right-of-way

Evaluation Score: **2.0**

B11.B: Provide shared lane markings

Advantages: Low cost solution, and is located along a low volume and low speed roadway in a school zone for an elementary school

Disadvantages: Bicyclists must share the roadway with vehicles and it does not meet the standard design for collector roadways

Evaluation Score: **3.0**

Need: Bicycle facilities on Century Drive between Tualatin-Sherwood Road and its existing terminus.

B10.A: Widen the roadway to provide bike lanes

Advantages: Provides an alternative route to riding along an arterial, meets collector standards, and provides dedicated space for bicyclists
Disadvantages: Requires widening the newly built facility; would require obtaining an additional 12 feet of right-of-way
Evaluation Score: **4.0**

B10.B: Direct bicyclists to use Tualatin-Sherwood Road and Langer Farms Parkway instead of Century Drive east of Langer Farms Parkway

Advantages: Low cost solution
Disadvantages: Bicyclists must travel on an arterial for a longer distance, bike facilities would not be available for bicyclists using this segment of Century Drive, and it does not meet the standard design for collector roadways
Evaluation Score: **1.0**

B10.C: Add shared lane markings

Advantages: Low cost solution
Disadvantages: This facility could become a higher volume facility as an alternative route to Tualatin-Sherwood Road; this facility is also adjacent to commercial land uses
Evaluation Score: **1.5**

B10.D: Continue the Century Drive path along this segment by widening sidewalk on the north/west side

Advantages: Provides a continuous path from Sherwood Boulevard to Tualatin-Sherwood Road
Disadvantages: Eastbound bicyclists may be inclined to ride in the roadway; would require obtaining additional right-of-way to widen sidewalk
Evaluation Score: **4.5**

Need: Bicycle facilities on Old Highway 99W between Timbrel Lane and Crooked River Lane.

B12.A: Remove on-street parking to provide bike lanes

Advantages: Low cost solution, and provides dedicated space for bicycle travel that is separated from the motor vehicle space

Disadvantages: Requires removing parking on the east side of the roadway, which may be critical for school and resident parking

Evaluation Score: **4.0**

B12.B: Provide shared lane markings

Advantages: Low cost solution and is located in a low speed facility in a school zone for an elementary school

Disadvantages: Bicyclists must share the roadway with vehicles; it does not meet the standard design for collector roadways, and bicyclists would be forced back into the roadway if the segment from Brookman Road to Crooked River Lane is widened to provide bike lanes

Evaluation Score: **3.0**

B12.C: Widen the roadway to provide bike lanes

Advantages: Provides dedicated space for bicycle travel that is separated from the motor vehicle space, and maintains parking

Disadvantages: Requires widening the roadway, which would require obtaining an additional 3 feet of right-of-way from the east side of the roadway, and is the highest cost option

Evaluation Score: **3.0**

B12.D: Widen the sidewalk along the west side to provide a shared-use path

Advantages: Does not impact the physical roadway space, parking, or private properties

Disadvantages: Does not provide bike facilities on the east side of the roadway; the path could be heavily populated with young children during drop-off and pick-up times

Evaluation Score: **2.5**

Need: Bicycle facilities on Handley Street between Cedar Brook Way and Elwert Road.

B14.A: Remove curb extensions and chokers to provide bike lanes

Advantages: Provides dedicated space for bicycle travel that is separated from the motor vehicle space

Disadvantages: Requires removing chokers and curb extensions, which calm traffic speeds along this 25mph facility; removal of curb extensions increase pedestrian crossing distance and reduce visibility of pedestrians; it would also remove on-street parking, which is minimal

Evaluation Score: **1.0**

B14.B: Provide shared lane markings

Advantages: Low cost solution, is a low speed facility (25 mph), and space is available between curb extensions for bicyclists to move out of the motor vehicle way

Disadvantages: Bicyclists must share the roadway with vehicles, and it does not meet the standard design for collector roadways

Evaluation Score: **2.0**

Need: Bicycle facilities on Baler Way between Tualatin-Sherwood Road and Century Drive.

B16.A: Rebuild Baler Way between Tualatin-Sherwood Road and Century Drive to provide bike lanes (Sherwood Town Center project)

Advantages: Provides dedicated space for bicycle travel that is separated from the motor vehicle space, and provides a continuous treatment between Tualatin-Sherwood Road and Century Drive

Disadvantages: Requires removing on-street parking and curb extensions along the local road segment between Langer Drive and Century Drive; removal of curb extensions increase pedestrian crossing distance and reduce pedestrian visibility

Evaluation Score: **3.0**

B16.B: Add neighborhood greenway improvements between Century Drive and Langer Drive, and rebuild Baler Way between Langer Drive and Tualatin-Sherwood road to provide bike lanes

Advantages: Lower cost solution, and maintains on-street parking, and provides a more appropriate treatment to the local segment of Baler Way, and ties into the planned neighborhood greenway improvements on Baler Way south of Century Drive

Disadvantages: Bicyclists must share the roadway with vehicles between Baler Way and Langer Drive; however, this segment is a 25mph local road

Evaluation Score: **4.0**

Need: Bicycle facilities on Galbreath Drive/Gerda Lane between Tualatin-Sherwood Road and City Limits.

B15.A: Remove on-street parking on Galbreath Drive and widen Gerda Lane to provide bike lanes

Advantages: Lower cost solution than widening Galbreath Drive, and provides dedicated space for bicycle travel that is separated from the motor vehicle space

Disadvantages: Requires removing parking on both sides of Galbreath Drive, which is currently used as overflow parking for adjacent businesses

Evaluation Score: **3.5**

B15.B: Widen Galbreath Drive and Gerda Lane to provide bike lanes and to maintain parking on Galbreath Drive

Advantages: Provides dedicated space for bicycle travel that is separated from the motor vehicle space, and maintains parking on Galbreath Drive

Disadvantages: High cost, and bicycle demand along this facility is likely low; widening may impact site circulation and on-site parking; would require obtaining an additional 6 feet of right-of-way

Evaluation Score: **3.0**

B15.C: Direct bikes to use the future Herman Road extension instead of Galbreath Drive and Gerda Lane

Advantages: Bicyclists using Galbreath can potentially take refuge from motor vehicles in the on-street parking space when not occupied

Disadvantages: Bike facilities would not be available for bicyclists using this corridor, travel distance for rerouted bicyclists may increase, and it does not meet the standard design for collector roadways; this is also contingent on the Herman Road extension, which is not a guaranteed project and the location of its western terminus is currently undecided

Evaluation Score: **3.5**

Pedestrian Project Alternatives

Need: Pedestrian crossing across Tualatin-Sherwood Road at Rock Creek Trail.

P34.A: Install a marked crosswalk with pedestrian refuge islands

Advantages: Low cost project; provides pedestrians refuge crossing a five lane arterial
Disadvantages: Refuge may conflict with motorists turning left onto Century Drive
Evaluation Score: **3.5**

P34.B: Install a marked crosswalk with pedestrian refuge islands and Rectangular Rapid Flashing Beacons (RRFBs)

Advantages: Provides pedestrians refuge crossing a five lane arterial, and alerts oncoming motorists of crossing pedestrians
Disadvantages: Higher cost; refuge may conflict with motorists turning left onto Century Drive
Evaluation Score: **3.5**

Improvements to Mobility in Sherwood

Motor vehicle projects were evaluated to address system mobility needs that have been identified in Sherwood. Projects that match identified needs were grouped into three system alternatives (based on similar project types) and were analyzed at both a system-level and location-specific perspective to determine:

- Would the project address the identified mobility need? (Individual Need)
- Would the group of projects provide an overall system benefit? (System Measures)

The following sections describe how the projects were grouped into system alternatives and the results of the mobility analysis. Previously identified projects that do not address any of the identified needs are still included in the overall project list but were not included in this analysis.

Motor Vehicle System Alternatives

The evaluation process was based on Metro's Regional Transportation Functional Plan (RTFP) requirements that local TSPs consider lower cost and impact intersection enhancement projects before assessing major projects related to corridor widening. This general order for considering six different types of projects is summarized in Figure 4.

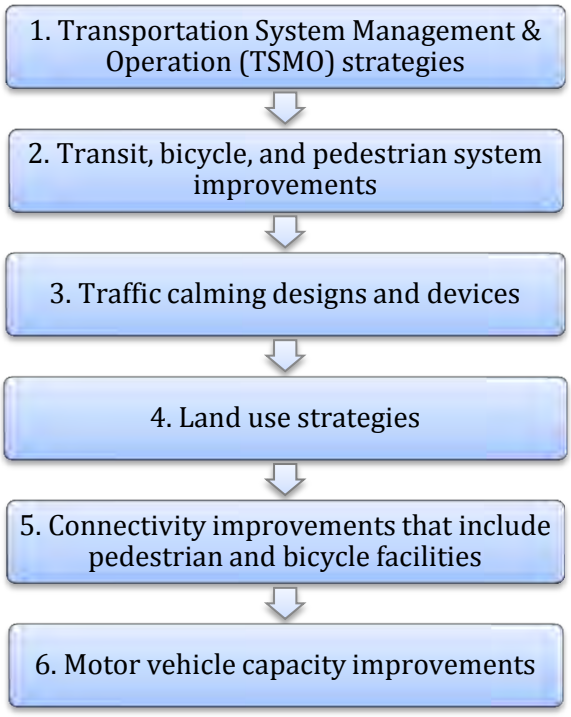


Figure 4: RTFP Project Hierarchy

Motor vehicle projects that had been identified to address Sherwood's mobility needs were grouped into three categories based on the RTFP project hierarchy: Transportation System Management and Operations (TSMO) projects (Group 1), connectivity projects (Group 2), and widening projects (Group 3). Group 1 projects are lower-cost improvements at the intersection level, and will be prioritized before Group 2 and Group 3 projects. Group 2 projects will be prioritized over Group 3 projects as new connections not only reduce vehicle demand on existing facilities, but they also improve connectivity for pedestrian and bicycle modes. Group 2 projects will only include collector and arterial connections.

Group1: TSMO Projects

- **D3**: Install a roundabout at Tonquin Road/Oregon Street intersection with dual westbound through lanes and a single eastbound through/right lane. Add a second westbound approach lane to the Murdock Road/Oregon Street roundabout for separated westbound left and westbound through lanes. Keep three lanes on the bridge structure.
- **D16**: At the Highway 99W/Edy Road intersection, restripe the east approach to have exclusive left, through, and right turn lanes, and change the eastbound left and westbound left turn phasing to protective-permissive phasing.
- **D17**: Change the eastbound left and westbound left turn phasing to protective-permissive phasing at the Highway 99W/Meinecke Road intersection.
- **D22**: Realign Elwert Road to provide more storage at Highway 99W and realign the Kruger Road intersection to the Cedarbrook extension as a single lane roundabout.
- **D23**: Add traffic control enhancements to the Edy Road/Borchers Drive intersection. Model assumes D23.A: install a traffic signal.
- **D24**: Remove the signal at the Sherwood Boulevard/Langer Drive intersection. Change the intersection to a two-way stop-control intersection with right-in, right-out, left-in movements allowed. Add traffic control enhancements to the Sherwood Boulevard/Century Drive intersection. Model assumes D24.A: add a traffic signal and add eastbound left and westbound left turn lanes.
- **D28**: Install a single lane roundabout at the Sunset Boulevard/Timbrel Lane intersection.
- **D30**: Add traffic control enhancements to the Elwert Road/Edy Road intersection. Model assumes D30.A: install a traffic signal with an added westbound right turn lane (all other approaches are single lane approaches).
- **D32**: Add a southbound right turn lane at the Ladd Hill Road/Brookman Road intersection.
- **D33**: Add a southbound right turn lane and a northbound left turn lane at the Murdock Road/Sunset Boulevard intersection.
- **D34**: Move the existing stops signs at the Brookman Road/Middleton Road intersection to the north and south approaches, and add a southbound left turn lane.
- **D14**: Install a signal at the realigned Highway 99W/Brookman Road intersection, and add a westbound left and southbound right turn lane.
- **D31**: Add westbound and eastbound left turn lanes at Highway 99W/Sunset Boulevard with protective-permissive phasing.
- **D25**: Restripe Sunset Boulevard at Pine Street to add eastbound and westbound left turn lanes.

Group 2: Connectivity Projects

- **D29**: Build a new collector connection between Edy Road and Roy Rogers Road.

Group 3: Widening Projects

- **D1**: Widen Tualatin-Sherwood Road to five lanes from Langer Farms Parkway to 124th Avenue

Mobility Improvements – Local Evaluation

The travel demand model developed for the TSP was used to estimate future year 2035 system mobility for each alternative. The model was based on Washington County's latest 2035 Gamma model with additional refinements and detail (all public roads, lane turn lanes, and intersection control) to capture estimated future circulation patterns and congestion. The figures on the following pages show the mobility conditions[7] for each of the three groups that were analyzed. Key findings include:

- **Group 1 (TSMO Projects) [Figure 5]** – The majority of motor vehicle capacity needs would be met with the addition of these projects, which generally include intersection control or additional turn lanes. Locations that would not meet standards include:
    - Edy/Elwert – With the addition of a traffic signal or roundabout this intersection would operate near capacity. Additional turn lanes for a traffic signal would be beneficial, however may not fit within the available right of way.
    - 99W/Sunset – With the additional turn lanes (that would require the reconfiguration of the Kruger/Elwert intersection) this intersection would continue to operate just over capacity during the PM peak hour.
    - Roy Rogers and Tualatin-Sherwood corridor - The high amount of future traffic projected on the corridor indicates the need for future widening to five lanes.
    - Sunset corridor – High traffic volumes on Sunset Road would lead to higher side street delay at intersections east of Main Street, which are primarily low volume approaches.
- **Group 2 (Connectivity Projects) [Figure 6]** – The north-south collector connection between Roy Rogers Road and Edy Road would provide limited additional benefit to Roy Rogers Road. However this project would have the potential to reduce neighborhood cut-through traffic.
- **Group 3 (Widening Projects) [Figure 7]** – This group of projects included major corridor widening to increase throughput.
    - **Tualatin-Sherwood Road** - Widening to Tualatin-Sherwood Road (east of Langer Farms Parkway) to five lanes would provide the needed capacity for this corridor. This widening has been identified in Washington County's TSP and Metro's RTP.
    - **Roy Rogers Road** – The high amount of traffic projected on the corridor indicates the need for future widening to five lanes. This widening has not been previously identified in plans but may be explored through Washington County's current TSP update.

[7] Mobility needs were measured using volume-to-capacity (V/C) ratios rather than level of service (LOS) to focus on system mobility and filter out locations that may experience high side street delay but serve low traffic volumes.

Figure 5: Year 2035 PM Peak Hour Projected Congestion Locations (V/C) - Group 1 (TSMO)

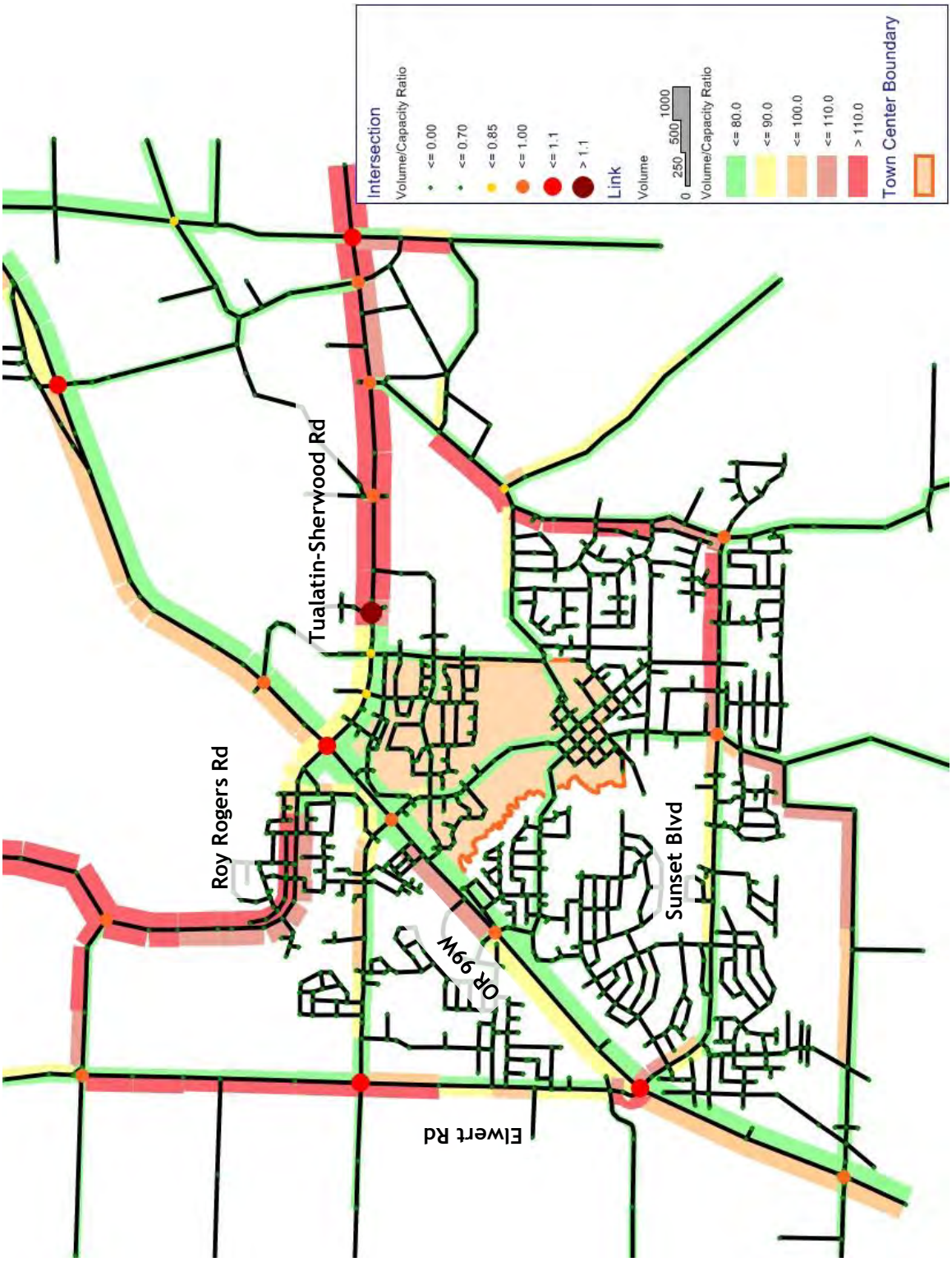


Figure 6: Year 2035 PM Peak Hour Projected Congestion Locations (V/C) - Group 2 (Connectivity)

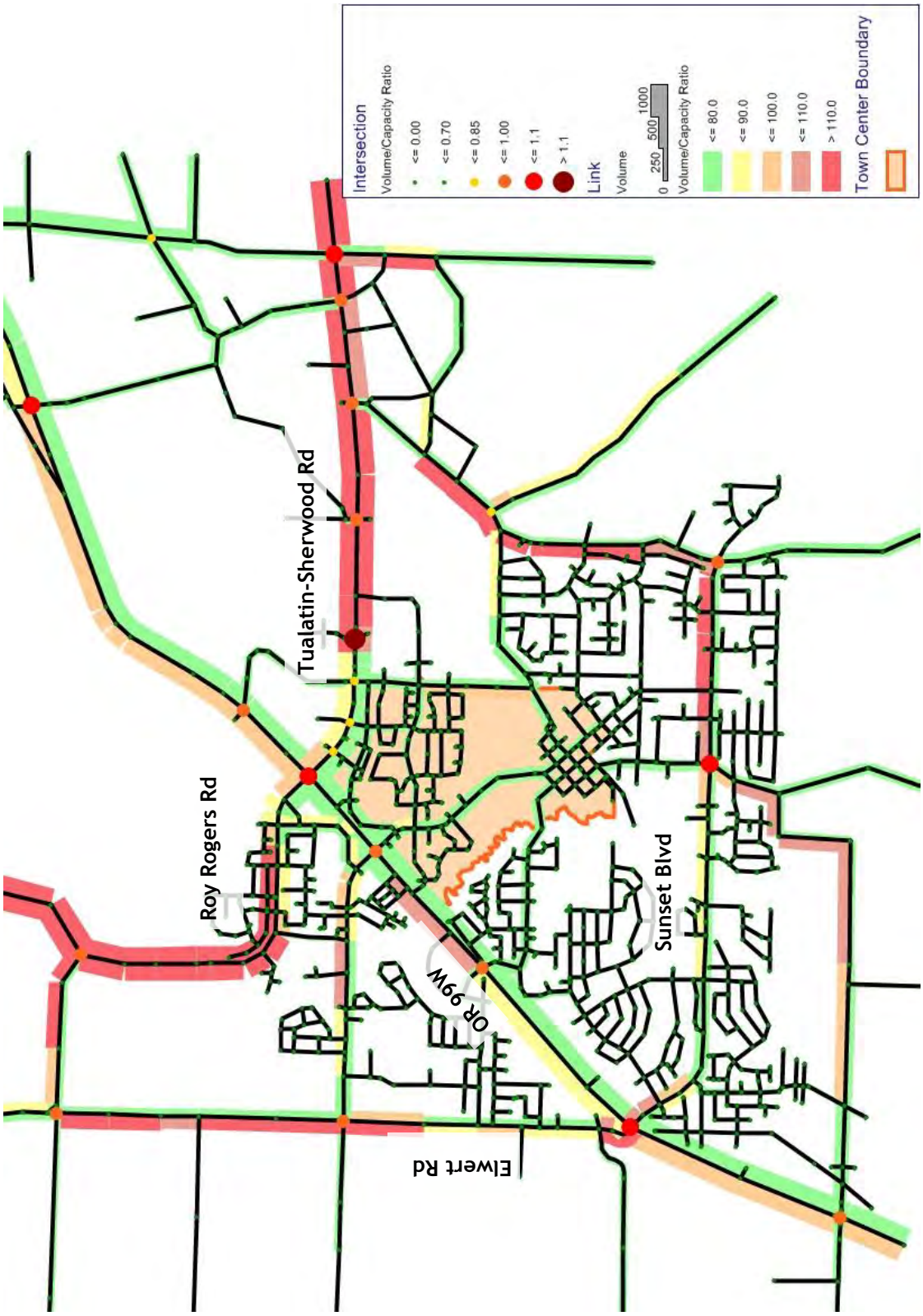
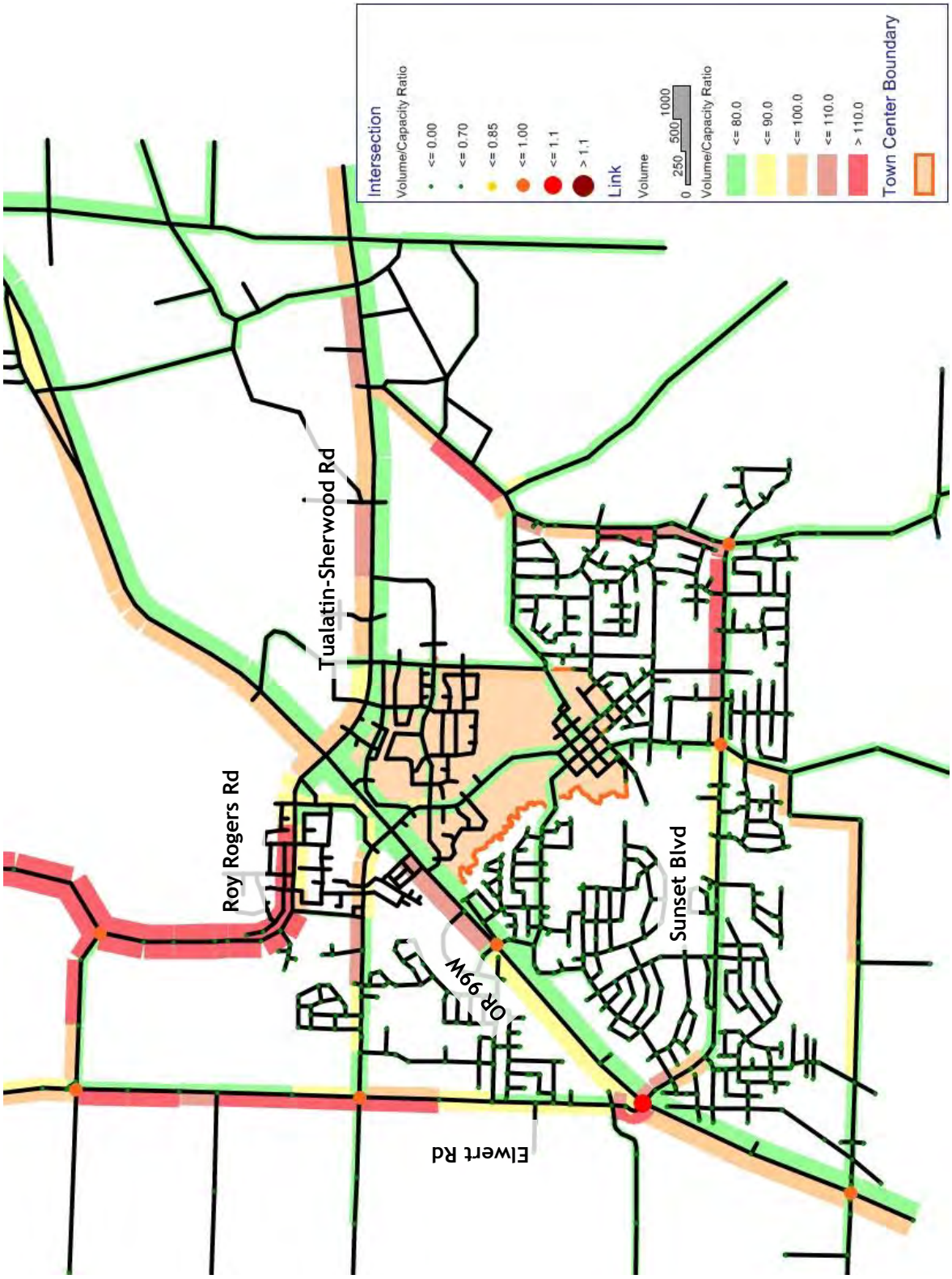


Figure 7: Year 2035 PM Peak Hour Projected Congestion Locations (V/C) - Group 3 (Widening)



Mobility Improvements – System Evaluation

A system planning-level evaluation of the transportation conditions for each of the three year 2035 alternative scenarios was conducted using the travel demand model. The alternatives were evaluated during the p.m. peak hour based on the following system measures of effectiveness (MOE's):

- **Vehicle Miles Travelled (VMT), VMT per capita -** VMT is the total vehicle miles of travel associated with the study-area trips (vehicle trips beginning and/or ending in the study area) on roadways within the Metro region boundary. The VMT per person living in the study area is estimated by traffic volumes from the travel demand model and the 2035 population estimates provided by Metro.
- **Vehicle Hours of Delay (VHD), VHD on Freight Corridors –** VHD is the difference between the total vehicle travel time under congested conditions and free-flow conditions. The study-area VHD is a measure of the overall congestion in the study area. The freight corridors include Roy Rogers Road, Tualatin-Sherwood Road, and Hwy 99W.

The MOE's collectively can generally be considered as a rough proxy for several other measures such as fuel use and greenhouse-gas emissions. One of the primary goals of the transportation improvements is to positively impact the above MOE's. The p.m. peak hour MOE's for the base year and each of the future alternatives are listed in Table 2. Key observations for these system measures include:

- VMT would reduce due to mobility improvements and vehicles travelling on more direct routes. However, the overall VMT reduction (even with Group 3) would be less than one percent.
- VHD would improve under each group of alternatives, particularly with improvements to Tualatin-Sherwood Road. These improvements would significantly reduce freight delay along the corridor.

Table 2: System Performance Measures (PM Peak Hour)

Measure	Year 2010	Year 2035 (Baseline)	Group 1: TSMO	Group 2: Connectivity	Group 3: Widening
Total Vehicle Miles Travelled (VMT)	34,100 vmt	55,600 vmt	55,550 vmt	55,500 vmt	55,350 vmt
VMT per capita	1.4 vmt/capita	1.3 vmt/capita	1.3 vmt/capita	1.3 vmt/capita	1.3 vmt/capita
Vehicle Hours of delay (VHD)	440	1,420	1,360	1,360	1,130
VHD on Freight Corridors*	240	870	960	950	780

Note: *Freight corridors include OR 99W, Tualatin-Sherwood Road, and Roy Rogers Road.

Prioritization of Potential Projects

The previous sections summarized how the full project list was developed and evaluated. The following section describes the process that was used to determine the initial prioritization of the project list.

Developing the Prioritized List of Projects

The list of potential projects was prioritized to identify which projects could likely be funded through 2035 based on transportation funding assumptions and the project prioritization process.

Transportation Funding

Sherwood must make investment decisions to develop a set of transportation improvements that could reasonably be funded to best meet identified transportation needs through 2035. As summarized in the Existing Conditions Technical Report, it is estimated that Sherwood would have approximately $11.3 million to spend on capital improvement projects through 2035 based on historical growth that has occurred over the last several years. However, assuming the level of growth related to urbanization of surrounding areas through 2035 (which in turn leads to additional trips and triggers transportation needs), Sherwood's available funds for transportation projects would grow to approximately $60 million. These potential funding levels were both considered in the development of the project lists and the prioritization process.

Prioritization Process

The prioritized project list was developed based on a three-tier evaluation process, which included:

- **Tier 1: Screening for Needs** – Previously identified projects were screened to determine if they addressed a specific need identified in the TSP update. Additional projects were developed to address the needs that were not otherwise addressed with previously identified projects. Projects that were previously identified but did not directly address a given need were given a "low" priority (regardless of the Tier 2 and Tier 3 evaluation).

- **Tier 2: Primary Evaluation Criteria** – Evaluation criteria were applied to projects across all modes based on consistency with Sherwood's transportation goals. These criteria provided a means to evaluate very different projects using the broad criteria that was applied to all project types.

- **Tier 3: Secondary Criteria** – In order to further differentiate projects that received the same primary evaluations score within a given mode, sets of secondary criteria were applied. These criteria were different for each mode and were only used to compare projects relative to other projects of the same mode. These criteria were:

    - Pedestrian/Bicycle – Project location and proximity to schools and other activity generators (previously mapped).

- Motor Vehicle – Hierarchy of projects based on regional strategies (intersection improvements are highest priority and major corridor widening is lowers priority).

Through application of the above criteria and consideration for the City's transportation budget available for capital improvements, the following general prioritization groups were identified.

- Short-term priority – The highest scoring projects (based on evaluation criteria) that fall within Sherwood's anticipated transportation budget for capital improvements through 2035. assuming an historical revenue stream of $11 million

- Medium-term priority – Projects that would require funding beyond the historical revenue stream of $11 million, but that are anticipated to be achievable through the projected revenue stream of $60 million.

- Long-term priority – Projects that address an identified transportation need but exceed the anticipated available funding, and projects that were previously identified that do not directly address one of the identified needs.

Short-term Priority Projects

Projects that are currently identified as short-term priority (those assumed likely to be funded through 2035) are listed in Table 3 (total funds of approximately $11 million) These project groups were identified based on initial assumptions about approximate project costs. However, the project lists will be further refined as project costs are developed. The full prioritized project list is located in the Appendix. The Short-term priority project list includes:

- Bicycle Projects (6)
- Motor vehicle projects (8)
- Pedestrian Projects (9)
- Transit Projects (2)

Medium-term Priority Projects

The additional Group 2 medium-term priority projects (assuming a revenue stream of $60 million) are listed in Table 4. While there are many projects that are not expected to be funded through 2035, improvements to Sherwood's revenue stream, project-specific grants, and intergovernmental contributions can help Sherwood build additional projects. The initial prioritization of the project list is likely to be refined as additional information is provided about unique elements of project needs and constraints that were not captured in the overall system analysis. Additionally, assumptions about project costs and potential funding sources can affect the overall project list.

Table 3: Preliminary Short-term Priority (Conservatively Funded) Project List

Project #	Project Name	Project Description
Bicycle Projects		
B2	Meinecke Bike Lanes	Add bike lanes on Meinecke Road from Marshall Street to 3rd Street.
B7	Borchers Bike Lanes	Build bike lanes on Borchers Road between Edy Road and Roy Rogers Road.
B10	Century Drive Shared-Use Path	Widen the sidewalk on the south/east side of Century Drive between Tualatin-Sherwood Road and the existing terminus to provide a shared-use path
B13	Old Highway 99W Improvements Segment 2	Upgrade Old Highway 99W (from Crooked River Lane to Brookman Road) to a two lane collector with a shared use path on the west side and sidewalks on the east side.
B16	Baler Way Bike Lanes	Rebuild Baler Way to a collector between Century Drive and Tualatin-Sherwood Road to include bike lanes.
B17	12th Street Bike Lanes	Add bike lanes on 12th Street between Highway 99W and Sherwood Boulevard.
Motor Vehicle Projects		
D3	Oregon Intersections Improvements at Murdock and Tonquin	Install a roundabout at the Tonquin Road/Oregon Street intersection with dual westbound through lanes and a single eastbound through/right lane. Consider creating a "Dumbbell Roundabout" with the Oregon/Murdock roundabout by disallowing the west circulating lane at Oregon/Tonquin and disallowing the east circulating lane at Oregon/Murdock. Add a second westbound approach lane to the Murdock Road Oregon Street roundabout for separated westbound left and westbound through lanes. Keep three lanes on the bridge structure.
D13	Tualatin-Sherwood Improvements – Phase 1	Widen Tualatin-Sherwood Road/Roy Rogers Road between Borchers Drive and Baler Way to five lanes. Includes intersection modifications at OR 99W, the Sherwood Market Center, and at Baler Way.
D16	Edy/Highway 99W Intersection Improvements	Restripe the westbound Sherwood Boulevard approach to have a single left turn lane, a single through lane, and a single right turn lane. Eliminate the split phase timing for the side streets, and maintain the existing green time on OR 99W for the northbound and southbound through movements. Add the missing crosswalk to the south approach. Consider implementing P3 alongside this project.
D18	Langer Drive Improvements	Construct improvements to Langer Drive between Baler Way and Sherwood Boulevard that are consistent with the Sherwood Town Center Plan. Major improvements include: buffered bike lanes, on-street parking, wider sidewalks, narrower travel lanes, removal of the center turn lane, and landscaping.
D19	124th Avenue Extension	Extend 124th Avenue as an arterial from Tualatin-Sherwood Road to Tonquin Road.

Project #	Project Name	Project Description
D22	Kruger/Elwert Intersection Safety Improvement	Realign Elwert Road to provide more storage at Highway 99W, and realign the Kruger Road intersection to the Cedarbrook extension as a single lane roundabout. Consider implementing D31 with this project.
D24	Sherwood Boulevard Intersection Modifications	Remove the Sherwood Boulevard/Langer Drive traffic signal (allow right-in, right-out, and left-in movements only), and install a traffic signal at the Sherwood Boulevard/Century Drive intersection (add eastbound and westbound left turn lanes).
D31	Highway 99W/Sunset Improvements	Add westbound and eastbound left turn lanes at Highway 99W/Sunset Boulevard with protective-permissive phasing. Consider implementing D22 and P3 alongside this project.
Pedestrian Projects		
P6	Sherwood Boulevard Improvements	Construct improvements to Sherwood Boulevard between Langer Drive and 3rd Street that are consistent with the Sherwood Town Center Plan. Major improvements include: a shared-use path on the east side, wider sidewalks on the west side, narrower travel lanes, and landscaping.
P12	Ice Age Tonquin Trail Segment 7	Implement Tonquin Trail Segment 7 improvements from immediately west of the Tonquin/Oregon Street intersection to immediately north of Park Street.
P13	Ice Age Tonquin Trail Segment 8	Implement Tonquin Trail Segment 8 improvements from immediately north of Park Street to immediately south of Highway 99W.
P14	Ice Age Tonquin Trail Segment 9	Implement Tonquin Trail Segment 9 improvements from immediately south of Highway 99W to Roy Rogers Road (including Roy Rogers intersection).
P19	12th Street Sidewalk Infill	Construct sidewalk along the south side of 12th Street from Highway 99W to Sherwood Boulevard.
P22	Pine Street Sidewalk Infill Segment 1	Construct sidewalk along the west side of Pine Street from Willamette Street to Columbia Street.
P23	Pine Street Sidewalk Infill Segment 2	Construct sidewalk along the east side of Pine Street from Division Street to Sunset Boulevard, and fill the sidewalk gap along the west side of Pine Street just north of Sunset Boulevard.
P48	Downtown Streetscapes Master Plan Phase 3 (Old Town Secondary Streets)	Complete Phase 3 (Old Town Secondary Streets) of the Downtown Streetscapes Master Plan.
P49	Downtown Streetscapes Master Plan Phase 4 (Old Town Residential Neighborhoods)	Complete Phase 4 (Old Town Residential Neighborhoods) of the Downtown Streetscapes Master Plan.
Transit Projects		
T2	Improve Pedestrian Connections to Transit Facilities	Improve Pedestrian Connections to Transit Facilities.
T3	Increase Density Adjacent to Transit	Increase Density Adjacent to Transit.

Table 4: Preliminary Medium-Term (Projected Funded) Project List

Project #	Project Name	Project Description
Bicycle Projects (plus Short-Term)		
B1	Murdock Shared-Use Path	Build a shared-use path along the west side of Murdock Road from Oregon Street to Upper Roy Street.
B5	Main Street Shared Lane Markings	Add shared lane markings to Main Street between 1st Street and Sherwood Boulevard.
B6	Pine Street Shared Lane Markings	Add shared lane markings to Pine Street between 3rd Street and Sherwood Boulevard.
B8	3rd Street Shared Lane Markings	Add shared lane markings on 3rd Street from Washington Street to Sherwood Boulevard.
B9	1st Street Shared Lane Markings	Add shared lane markings on 1st Street from Main Street to Pine Street.
B12	Old Highway 99W Shared-Use Path	Widen the sidewalk along the west side of Old Highway 99W between Timbrel Lane and Crooked River Lane to provide a shared-use path
B18	Washington Street Shared Lane Markings	Add shared lane markings on Washington Street between 3rd Street and 1st Street.
B19	Sunset Bike Lanes	Add bike lanes on Sunset Boulevard between Aldergrove Avenue and Murdock Road
Motor Vehicle Projects (plus Short-Term)		
D4	Elwert Road Improvements	Upgrade Elwert Road (from Highway 99W to Edy Road) to a three lane arterial with bike lanes and sidewalks. This project may be phased with D30 for design and construction purposes.
D6	Edy Road Improvements	Upgrade Edy Road (from Borchers Drive to City Limits) to a three lane collector with bike lanes and sidewalks.
D7	Ladd Hill Road Improvements	Upgrade Ladd Hill Road (from Sunset Boulevard to the Urban Growth Boundary) to a three arterial with bike lanes and sidewalks.
D8	Oregon Street Improvements	Upgrade Oregon Street (from Murdock Road to the railroad crossing) to a three lane collector with sidewalks on south side and a shared-use path on the north side (part of the Ice Age Tonquin Trail).
D12	Extension of Langer Farms Parkway at 99W	Extend Langer Farms Parkway from 99W west as a collector road.
D14	Highway 99W/Brookman Traffic Signal and Realignment	Realign Brookman Road to intersect with Highway 99W approximately 1/4 mile north of its existing intersection; this improvement includes a traffic signal at the realigned intersection with a westbound left and southbound right turn lane, and a grade separated railroad crossing.
D15	Sunset Boulevard Improvements	Upgrade Sunset Boulevard (from Aldergrove Avenue to Eucalyptus Terrace) to a three lane arterial with sidewalks and bike lanes. Address vertical crest sight distance issues near Pine Street.

Project #	Project Name	Project Description
D17	Meinecke/Highway 99W Intersection Improvements	Change the eastbound and westbound left turn phasing on Meinecke Road from permitted to permitted/protected and maintaining the existing green time on OR 99W for the northbound and southbound through movements. Consider implementing P3 alongside this project.
D25	Sunset/Pine Improvements	Restripe Sunset Boulevard at Pine Street to add eastbound and westbound left turn lanes.
D27	Baker Road Improvements	Upgrade Baker Road (from Sunset Boulevard to the urban growth boundary) to a two lane arterial with bike lanes and sidewalks.
D30	Elwert/Edy Roundabout	Install a single lane roundabout at the Elwert Road/Edy Road intersection. This project may be phased with D4 for design and construction purposes.
D33	Sunset/Murdock Turn Lanes	Add a southbound right turn lane and a northbound left turn lane at the Sunset Boulevard/Murdock Road intersection.
D34	Brookman/Middleton Traffic Control Enhancements	Move the stop signs to the north and south approaches, and add a southbound left turn lane at the Brookman Road/Middleton Road intersection.
D35	Area 59 Neighborhood Route	Build a neighborhood roadway, connecting Elwert Road and Copper Terrace as identified in the Area 59 concept plan.
Pedestrian Projects (plus Short-Term)		
P1	Handley Street Sidewalk Infill	Construct sidewalk along the north side of Handley Street from Elwert Road to the existing sidewalk terminus approximately 250 feet east of Elwert Road.
P2	Highway 99W Sidewalk Infill	Construct sidewalks along both sides of Highway 99W between the north Urban Growth Boundary and the south Urban Growth Boundary.
P3	Highway 99W Crosswalks	Add missing crosswalks at existing traffic signal locations on Highway 99W between Edy Road and Sunset Boulevard. The crosswalk enhancements may be phased individually with their corresponding intersection improvements (D16, D17, D31).
P4	Ice Age Tonquin Trail/Highway 99W Connection	Construct a shared use path that connects the proposed Cedar Creek/Tonquin Trail to Highway 99W.
P5	10th Street Neighborhood Greenway	Add sidewalks and shared lane markings to 10th Street and Gleneagle Drive from Sherwood Boulevard to the planned Cedar Creek/Tonquin Trail connection.
P16	Ice Age Tonquin Trail Segment 11	Implement Tonquin Trail Segment 11 improvements from immediately east of the Tonquin Road/Oregon Street intersection to immediately west of Cipole Road.
P18	Cipole Road Sidewalk Infill	Construct sidewalk along the east side of Cipole Road from approximately 1,250 feet north of Tualatin-Sherwood Road to the existing sidewalk terminus approximately 450 feet north.
P20	Division Street Sidewalk Infill	Construct sidewalk along both sides of Division Street from Main Street to Cuthill Place.

Project #	Project Name	Project Description
P21	Meinecke Road Sidewalk Infill	Construct sidewalk along the north side of Meinecke Road from Lee Drive to the existing sidewalk terminus to the east (approximately 400 feet).
P26	Highway 99W Grade Separated Crossing	Build a grade-separated crossing of Highway 99W for pedestrians and bicyclists, providing a direct connection for the Ice Age Tonquin Trail east and west of the highway.
P30	Sunset Boulevard/St Charles Way Crossing Improvements	Install marked crosswalks at the Sunset Boulevard/St Charles Way intersection.
P31	Sunset Boulevard/Redfern Drive Crossing Improvements	Install enhanced pedestrian crossing at the Sunset Boulevard/Redfern Drive intersection.
P32	Sunset Boulevard/Galewood Drive Crossing Improvements	Install enhanced pedestrian crossing at the Sunset Boulevard/Galewood Drive intersection.
P44	Oregon Street Sidewalk Infill	Construct sidewalk along the south side of Oregon Street between Hall Street and Orland Street.
P45	Murdock Road Sidewalk Infill Segment 1	Construct sidewalk along the east side of Murdock Road from Willamette Street to Oregon Street.
P47	Downtown Streetscapes Master Plan Phases 1 and 2 (Old Town Core)	Complete Phase 1 (Old Town Core) and Phase 2 (Cannery Arterials) of the Downtown Streetscapes Master Plan.
Transit Projects (plus Short-Term)		
T1	Provide Transit Amenities at Major Transit Stops	Provide Transit Amenities at Major Transit Stops.
T5	Provide Local Service	Provide local service to enhanced regional service.

Needs List

Need #	Needs
Pedestrian Needs (High Priority Gaps)	
1	Highway 99W (west side only) between Roy Rogers Road and the existing sidewalk terminus to the north (approximately 600 feet north of Roy Rogers Road).
2	Highway 99W between Tualatin-Sherwood Road and Meinecke Road. This includes discontinuous gaps along both sides of the highway.
3	12th Street (south side only) between Highway 99W to Sherwood Boulevard.
4	Meinecke Road (north side only) between Lee Drive and the existing sidewalk terminus to the east (approximately 400 feet east of Lee Drive).
5	Edy Road (both sides) between Borchers Drive and Trailblazer Place.
6	Pine Street (west side only) from Willamette Street to Columbia Street.
7	While Division Street is a neighborhood collector, it was highlighted in the Existing Conditions Technical Report as a major gap, and falls within a high pedestrian demand area.
8	While Gleneagle neighborhood pedestrian gaps are along local roads, they were highlighted in the Existing Conditions Technical Report as major gaps, and fall within a high pedestrian demand area.
Pedestrian Needs (Medium Priority Gaps)	
9	Highway 99W (both sides) between Meinecke Road and Sunset Boulevard.
10	Edy Road (both sides) between Trailblazer Place and Elwert Road.
11	Elwert Road (both sides) between Highway 99W and Edy Road.
12	Handley Street (north side only) between Elwert Road and existing sidewalk terminus to the east (approximately 250 feet east of Elwert Road).
13	Timbrel Lane (north side only) between Old Highway 99W and Middleton Road. This includes two short sidewalk gaps.
14	Old Highway 99W (both sides) from Brookman Road to existing sidewalk terminus to the north (approximately 1,800 feet north of Brookman Road).
15	Sunset Boulevard (north side only) from Eucalyptus Terrace to St Charles Way.
16	Ladd Hill Road (west side only) from Willow Drive to Brookman Road.
17	Baker Road (east side only) from Sunset Boulevard to Lavon Lane.
18	Murdock Road (west side) from Willamette Street to existing sidewalk terminus to the north (approximately 130 feet north of Willamette Street).
19	Murdock Road (east side only) from Willamette Street to Upper Roy Street.
20	Murdock Road (east side only) from Upper Roy Street to Sunset Boulevard. While the pedestrian facilities on the west side act as a shared-use path, there will likely be demand for pedestrian facilities along the east side as the area develops.
21	Pine Street (east side) from Division Street to Sunset Boulevard, and Pine Street (west side) just north of Sunset Boulevard.
Pedestrian Needs (Low Priority Gaps)	
22	Highway 99W (both sides) south of Sunset Boulevard.
23	Edy Road (both sides) west of Elwert Road.
24	Elwert Road (both sides) north of Edy Road.
25	Ladd Hill Road (both sides) south of Brookman Road.
26	Brookman Road (both sides) between Highway 99W and Ladd Hill Road.
27	Baker Road (both sides) south of Lavon Lane.
28	Murdock Road (east side only) from Oregon Street to Willamette Street.
29	Oregon Street (south side) from Hall Street to Orland Street.
30	Oregon Street (north side) from Murdock Road to Langer Farms Parkway.
31	Oregon Street (south side) from Murdock Road to existing sidewalk terminus to the east (approximately 2,700 feet east of Murdock Road).
32	Tonquin Road (both sides) south of Oregon Street.
33	Cipole Road (west side) from Tualatin-Sherwood Road to existing sidewalk terminus to the north (approximately 1,250 feet north of Tualatin-Sherwood Road).
34	Cipole Road (east side) from existing terminus (approximately 1,250 feet north of Tualatin-Sherwood Road) to the north for approximately 450 feet.
Pedestrian Needs (Connectivity)	
35	Crossings along Highway 99W
36	Crossings along Sunset Boulevard between Pinehurst Drive and St Charles Way
37	Pedestrian connection between Old Town and residential area to the north
38	Regional Pedestrian Connections
Bicyle Needs (High Priority Gaps)	
39	Roy Rogers Road between Highway 99W and Borchers Drive.
40	Borchers Drive between Roy Rogers Road and Edy Road.
41	Langer Drive between Baler Way and the Highway 99W northbound access.
42	Baler Way between Tualatin-Sherwood Road and Langer Drive.
43	12th Street between Highway 99W and Sherwood Boulevard.
44	Sherwood Boulevard between 12th Street and 3rd Street.
45	Pine Street between 3rd Street and Sunset Boulevard.
46	Meinecke Road-Washington Street between Lee Drive and 1st Street.
47	3rd Street between Washington Street and Sherwood Boulevard
48	1st Street between Main Street and Pine Street.
49	Century Drive between Tualatin-Sherwood Road and existing terminus.
50	Oregon Street between Murdock Road and Langer Farms Parkway.
51	Sunset Boulevard between Greengate Drive and Cinnamon Hill Place.
52	Main Street between 1st Street and Sunset Boulevard
53	Ladd Hill Road between Sunset Boulevard and Brookman Road.
54	Home Depot access road between Highway 99W and existing terminus.
55	Edy Road between Cherry Orchards Street and Trailblazer Place.
56	Edy Road between Wagontrain Place and Elwert Road.
Bicyle Needs (Medium Priority Gaps)	
57	Ladd Hill Road between Brookman Road and Oberst Lane.
58	Brookman Road between Highway 99W and Ladd Hill Road.

59	Timbrel Lane between Sunset Boulevard and Old Highway 99W.
60	Old Highway 99W between Timbrel Lane and Brookman Road.
61	Handley Street between Cedar Brook Way and Elwert Road.
62	Murdock Road between Oregon Street and Sunset Boulevard.
63	Sunset Boulevard between Aldergrove Avenue and Murdock Road.
64	Galbreath Drive between Gerda Lane and city limits.
65	Gerda Lane between Tualatin-Sherwood Road and Galbreath Drive.
66	Baker Road between Sunset Boulevard and McConnell Road.
67	Elwert Road between Highway 99W and Edy Road.
Bicyle Needs (Low Priority Gaps)	
68	Tonquin Road south of Oregon Street.
69	Cipole Road north of Tualatin-Sherwood Road.
70	Ladd Hill Road south of Oberst Lane.
71	Edy Road west of Elwert Road.
72	Elwert Road north of Edy Road.
Transit Needs	
73	Provide full range of amenities at bus stops, including shelters, seating, route signage, and trash amenities.
74	Sidewalk connections to transit stops.
75	Improve YCTA accessibility.
76	A Sherwood Transit Center.
77	Local transit circulation.
Motor Vehicle Needs (Connectivity)	
78	Collector Gap: Meinecke Road to Sunset Boulevard between Highway 99W and Main Street.
79	Collector Gap: Sunset Boulevard to Brookman Road between Old Highway 99W and Ladd Hill Road.
80	Collector Gap: Roy Rodgers Road to Edy Road between Borchers Drive and Elwert Road.
81	Collector Gap: Edy Road to Handley Street between Highway 99W and Elwert Road.
Motor Vehicle Needs (Corridor Mobility)	
82	OR 99W north of SW Tualatin Sherwood Rd*
83	SW Roy Rogers Rd West of OR 99W*
84	SW Tualatin Sherwood Rd east of OR 99W*
85	SW Edy Rd west of OR 99W
86	OR 99W south of SW Edy Rd*
87	SW Oregon St east of SW Murdock Rd
88	SW Sunset Blvd between SW Pinehurst Dr and SW Murdock Rd
89	SW Langer Farms Pkwy south of SW Century Dr
Motor Vehicle Needs (Intersection Operations)	
90	Highway 99W and Home Depot access road/Langer Farms Parkway (extension)*
91	Highway 99W and Tualatin Sherwood Road*
92	Highway 99W and Edy Road/Sherwood Boulevard*
93	Highway 99W and Sunset Boulevard*
94	Highway 99W and Brookman Road*
95	Highway 99W and Red*
96	Highway 99W and future road (south of Red)*
97	Highway 99W and 12th St*
98	Highway 99W and Cedar Brook Way*
99	Highway 99W and Meinecke Road*
100	Tualatin-Sherwood Road and Baler Way*
101	Tualatin-Sherwood Road and Langer Farms Parkway*
102	Tualatin-Sherwood Road and Olds Place*
103	Tualatin-Sherwood Road and Gerda Lane*
104	Tualatin-Sherwood Road and Langer Drive*
105	Tualatin-Sherwood Road and Wildrose Place*
106	Tualatin-Sherwood Road and Cipole Road*
107	Tualatin-Sherwood Road and 124th Avenue*
108	Roy Rogers Road and Cedarview Way*
109	Roy Rogers Road and Lynnly Way*
110	Roy Rogers Road and Lavender Place*
111	Cipole Road and Herman Road
112	Herman Road and 129th Avenue
113	124th Avenue and Myslony Street
114	124th and Cipole Road (extension)
115	Langer Drive and Langer Drive
116	Langer Drive and Baler Way
117	Elwert Road and Conzelmann Road
118	Elwert Road and Edy Road
119	Elwert Road and Handley Street
120	Elwert Road and Haide Road
121	Elwert Road and Sunset Boulevard
122	Edy Road and Bedstraw Terrace
123	Edy Road and Houston Drive
124	Edy Road and Madeira Terrace
125	Edy Road and Borchers Drive
126	Sherwood Boulevard and 12th Street
127	Sherwood Boulevard and Gleneagle Drive
128	Langer Farms Parkway and Whetstone Way
129	Oregon Street and Murdock Road

130	Oregon Street and Tonquin Road
131	Oregon Street and Lincoln Street
132	Murdock Road and Willamette Street
133	Pine Street and 2nd Street
134	Sunset Boulevard and Woodhaven Drive
135	Sunset Boulevard and Timbrel Lane
136	Sunset Boulevard and Richen Park Terrace
137	Sunset Boulevard and Greengate Place
138	Sunset Boulevard and Redfern Place
139	Sunset Boulevard and Myrica Court
140	Sunset Boulevard and Main Street
141	Sunset Boulevard and Cinnamon Hills Place
142	Sunset Boulevard and Pine Street
143	Sunset Boulevard and Aldergrove Avenue
144	Sunset Boulevard and Brittany Place
145	Sunset Boulevard and Murdock Road
146	Ladd Hill Road and Brookman Road
147	Brookman Road and Middleton Road
Safety Needs (Road Segments)	
148	MP 14.91 to MP 15.09 (Tualatin-Sherwood Road intersection)
149	MP 16.61 to MP 16.73 (Elwert Road/Sunset Boulevard intersection)
150	MP 15.92 to MP 16.01 (Meinecke Road intersection)
Safety Needs (Intersections)	
151	Highway 99W/Tualatin-Sherwood Road/Roy Rogers Road
152	Tualatin-Sherwood Road/Cipole Road
153	Highway 99W/Elwert Road/Sunset Boulevard
154	Tualatin-Sherwood Road/Oregon Street
155	Tualatin-Sherwood Road/Gerda Lane
156	Highway 99W/Meinecke Road

Sherwood TSP Update - Project List - ADOPTED 06/17/14

Legend

Financially Constrained Group 1 ($11 million through 2035)

Financially Constrained Group 2 ($60 million through 2035)

Project List

Project #	Project Name	Primary Mode	Project Start Point	Project End Point	Project Details	Evaluation Score	Need Reference #
D1	Tualatin-Sherwood Road Improvements - Phase 2	Roads/bridges	Langer Farms Parkway	Teton Avenue	Widen Tualatin-Sherwood Road (from Langer Farms Parkway to Teton Avenue) to five lanes with bike lanes and sidewalks.	2.5	102-107
D2	Tonquin Road Safety Improvements	Roads/bridges	Grahams Ferry Road	Oregon Street	Widen Tonquin Road (from Grahams Ferry Road to Oregon Street) to provide shoulders.	2.5	32, 68
D3	Oregon Intersections Improvements at Murdock and Tonquin	Roads/bridges	Oregon Street/Tonquin Road	Oregon Street/Murdock Road	Install a roundabout at the Tonquin Road/Oregon Street intersection with dual westbound through lanes and a single eastbound through/right lane. Consider creating a "Dumbbell Roundabout" with the Oregon/Murdock roundabout by disallowing the west circulating lane at Oregon/Tonquin and disallowing the east circulating lane at Oregon/Murdock. Add a second westbound approach lane to the Murdock Road Oregon Street roundabout for separated westbound left and westbound through lanes. Keep three lanes on the bridge structure.	3.5	129, 130
D4	Elwert Road Improvements	Roads/bridges	Highway 99W	Edy Road	Upgrade Elwert Road (from Highway 99W to Edy Road) to a three lane arterial with bike lanes and sidewalks. This project may be phased with D30 for design and construction purposes.	3.5	11, 119, 120, 121
D5	Brookman Road Improvements (Three Lane Collector)	Roads/bridges	Highway 99W	Middleton Road	Implement Brookman Road Concept Plan improvements to Brookman Road from Highway 99W to Middleton Road. Major improvements include: rebuild road to a three lane collector facility, and a shared-use path along the north side. The Concept Plan identifies Brookman Road as a collector with the intended function of also providing access to neighborhoods to the north. In addition, reserve right-of-way for the potential widening to five lanes in the event that further refinements to the I-5/99W Connector Plan identify Brookman Road as the Southern Arterial to serve as the primary route for east-west mobility.	1.5	58, 146, 147, 94
D6	Edy Road Improvements	Roads/bridges	Borchers Drive	City Limits	Upgrade Edy Road (from Borchers Drive to City Limits) to a three lane collector with bike lanes and sidewalks.	4.0	5, 10, 55, 56, 122, 123, 124
D7	Ladd Hill Road Improvements	Roads/bridges	Sunset Boulevard	Urban Growth Boundary	Upgrade Ladd Hill Road (from Sunset Boulevard to the Urban Growth Boundary) to a three arterial with bike lanes and sidewalks.	3.5	53, 57, 146
D8	Oregon Street Improvements	Roads/bridges	Murdock Road	Railroad Crossing	Upgrade Oregon Street (from Murdock Road to the railroad crossing) to a three lane collector with sidewalks on south side and a shared-use path on the north side (part of the Ice Age Tonquin Trail).	3.0	28, 29, 49, 130
D9	Baler to Herman Connection	Roads/bridges	Baler Way/Tualatin-Sherwood Road	Herman Road/Langer Farms Parkway	Build a collector roadway, connecting Baler Way at Tualatin-Sherwood Road to the future terminus of the Herman Road at Langer Farms Parkway.	2.0	None (previously planned project)
D10	Cedar Brook Way Extension Segment 1	Roads/bridges	Meinecke Road	Existing Terminus	Extend Cedar Brook Way from its existing terminus to Meinecke Road as a two lane local road.	2.0	None (previously planned project)
D11	Cedar Brook Way Extension Segment 2	Roads/bridges	Handley Street	Highway 99W	Extend Cedar Brook Way from its existing terminus at Handley Street south to Elwert Road as a two lane collector road.	2.0	None (previously planned project)
D12	Extension of Langer Farms Parkway at 99W	Roads/bridges	Highway 99W	-	Extend Langer Farms Parkway from 99W west as a collector road.	2.5	None (previously planned project)
D13	Tualatin-Sherwood Improvements – Phase 1	Roads/bridges	Borchers Drive	Baler Way	Widen Tualatin-Sherwood Road/Roy Rogers Road between Borchers Drive and Baler Way to five lanes. Includes intersection modifications at OR 99W, the Sherwood Market Center, and at Baler Way.	-	None (previously planned project)
D14	Highway 99W/Brookman Traffic Signal and Realignment	Roads/bridges	Highway 99W	Middleton Road	Realign Brookman Road to intersect with Highway 99W approximately 1/4 mile north of its existing intersection; this improvement includes a traffic signal at the realigned intersection with a westbound left and southbound right turn lane, and a grade separated railroad crossing.	5.0	94
D15	Sunset Boulevard Improvements	Roads/bridges	Aldergrove Avenue	Eucalyptus Terrace	Upgrade Sunset Boulevard (from Aldergrove Avenue to Eucalyptus Terrace) to a three lane arterial with sidewalks and bike lanes. Address vertical crest sight distance issues near Pine Street.	3.5	15, 51, 139-143
D16	Edy/Highway 99W Intersection Improvements	Roads/bridges	Edy Road/Highway 99W	-	Restripe the westbound Sherwood Boulevard approach to have a single left turn lane, a single through lane, and a single right turn lane. Eliminate the split phase timing for the side streets, and maintain the existing green time on OR 99W for the northbound and southbound through movements. Add the missing crosswalk to the south approach. Consider implementing P3 alongside this project.	5.5	92
D17	Meinecke/Highway 99W Intersection Improvements	Roads/bridges	Meinecke Road/Highway 99W	-	Change the eastbound and westbound left turn phasing on Meinecke Road from permitted to permitted/protected and maintaining the existing green time on OR 99W for the northbound and southbound through movements. Consider implementing P3 alongside this project.	2.5	99
D18	Langer Drive Improvements	Roads/bridges	Baler Way	Sherwood Boulevard	Construct improvements to Langer Drive between Baler Way and Sherwood Boulevard that are consistent with the Sherwood Town Center Plan. Major improvements include: buffered bike lanes, on-street parking, wider sidewalks, narrower travel lanes, removal of the center turn lane, and landscaping.	4.5	41
D19	124th Avenue Extension	Roads/bridges	Tualatin-Sherwood Road	Tonquin Road	Extend 124th Avenue as an arterial from Tualatin-Sherwood Road to Tonquin Road.	1.0	None (previously planned project)
D20	Tonquin Employment Area East-West Collector	Roads/bridges	Oregon Street	124th Avenue Extension	Build an east-west collector facility between Oregon Street and the 124th Avenue extension in the Tonquin Employment Area; improvement includes a roundabout at the Oregon Street intersection.	2.0	None (previously planned project)
D21	Herman Road Extension	Roads/bridges	Cipole Road	Highway 99W or Langer Farms Parkway	Extend Herman Road from its existing terminus at Cipole Road west to either Highway 99W or Langer Farms Parkway as a two to three lane collector facility.	4.0	None (previously planned project)
D22	Kruger/Elwert Intersection Safety Improvement	Roads/bridges	Kruger Road/Elwert Road	-	Realign Elwert Road to provide more storage at Highway 99W, and realign the Kruger Road intersection to the Cedarbrook extension as a single lane roundabout. Consider implementing D31 with this project.	2.5	153
D23	Edy/Borchers Right-In/Right-Out and Eastbound Lefts	Roads/bridges	Edy Road/Borchers Drive	-	Convert the Edy Road/Borchers Drive intersection to only allow right-in/right-out and eastbound left in; build a roundabout on Edy Road to the west at the south property's existing driveway.	3.0	None (previously planned project)
D24	Sherwood Boulevard Intersection Modifications	Roads/bridges	Sherwood Boulevard/ Langer Drive	Sherwood Boulevard/ Century Drive	Remove the Sherwood Boulevard/Langer Drive traffic signal (allow right-in, right-out, and left-in movements only), and install a traffic signal at the Sherwood Boulevard/Century Drive intersection (add eastbound and westbound left turn lanes).	4.0	126
D25	Sunset/Pine Improvements	Roads/bridges	Sunset Boulevard/ Pine Street	-	Restripe Sunset Boulevard at Pine Street to add eastbound and westbound left turn lanes.	2.5	142

D26	Sunset/Main Traffic Control Enhancement	Roads/bridges	Sunset Boulevard/Main Street	-	Install a traffic signal at the Sunset Boulevard/Main Street intersection	4.0	None (previously planned project)
D27	Baker Road Improvements	Roads/bridges	Sunset Boulevard	Urban Growth Boundary	Upgrade Baker Road (from Sunset Boulevard to the urban growth boundary) to a two lane arterial with bike lanes and sidewalks.	3.0	17, 66
D28	Sunset/Timbrel Traffic Control Enhancement	Roads/bridges	Sunset Boulevard/ Timbrel Lane	-	Install a single lane roundabout at the Sunset Boulevard/Timbrel Lane intersection.	2.5	135
D29	Edy to Roy Rogers Collector Roadway	Roads/bridges	Edy Road	Roy Rogers Road	Build a collector roadway from Edy Road to Roy Rogers Road, between Cedarview Way and Lynnly Way.	2.5	80
D30	Elwert/Edy Roundabout	Roads/bridges	Elwert Road/Edy Road	-	Install a single lane roundabout at the Elwert Road/Edy Road intersection. This project may be phased with D4 for design and construction purposes.	2.5	118
D31	Highway 99W/Sunset Improvements	Roads/bridges	Highway 99W/Sunset Boulevard	-	Add westbound and eastbound left turn lanes at Highway 99W/Sunset Boulevard with protective-permissive phasing. Consider implementing D22 and P3 alongside this project.	3.0	93
D32	Ladd Hill/Brookman Improvements	Roads/bridges	Ladd Hill Road/Brookman Road	-	Add a southbound right turn lane at the Ladd Hill Road/Brookman Road intersection.	2.0	146
D33	Sunset/Murdock Turn Lanes	Roads/bridges	Sunset Boulevard/ Murdock Road	-	Add a southbound right turn lane and a northbound left turn lane at the Sunset Boulevard/Murdock Road intersection.	2.5	145
D34	Brookman/Middleton Traffic Control Enhancements	Roads/bridges	Brookman Road/Middleton Road	-	Move the stop signs to the north and south approaches, and add a southbound left turn lane at the Brookman Road/Middleton Road intersection.	2.5	147
D35	Area 59 Neighborhood Route	Roads/bridges	Elwert Road	Copper Terrace	Build a neighborhood roadway, connecting Elwert Road and Copper Terrace as identified in the Area 59 concept plan.	4.5	None (previously planned project)
P1	Handley Street Sidewalk Infill	Pedestrian	Elwert Road	Existing Sidewalk Terminus to the East	Construct sidewalk along the north side of Handley Street from Elwert Road to the existing sidewalk terminus approximately 250 feet east of Elwert Road.	2.0	12
P2	Highway 99W Sidewalk Infill	Pedestrian	North Urban Growth Boundary	South Urban Growth Boundary	Construct sidewalks along both sides of Highway 99W between the north Urban Growth Boundary and the south Urban Growth Boundary.	2.5	1, 2, 9, 22
P3	Highway 99W Crosswalks	Pedestrian	Edy Road	Sunset Boulevard	Add missing crosswalks at existing traffic signal locations on Highway 99W between Edy Road and Sunset Boulevard. The crosswalk enhancements may be phased individually with their corresponding intersection improvements (D16, D17, D31).	3.5	35
P4	Ice Age Tonquin Trail/Highway 99W Connection	Pedestrian	Highway 99W	Tonquin Trail	Construct a shared use path that connects the proposed Cedar Creek/Tonquin Trail to Highway 99W.	3.5	None (previously planned project)
P5	10th Street Neighborhood Greenway	Pedestrian	Sherwood Boulevard	Cedar Creek/Tonquin Trail Connection	Add sidewalks and shared lane markings to 10th Street and Gleneagle Drive from Sherwood Boulevard to the planned Cedar Creek/Tonquin Trail connection.	2.0	8
P6	Sherwood Boulevard Improvements	Pedestrian	Langer Drive	3rd Street	Construct improvements to Sherwood Boulevard between Langer Drive and 3rd Street that are consistent with the Sherwood Town Center Plan. Major improvements include: a shared-use path on the east side, wider sidewalks on the west side, narrower travel lanes, and landscaping.	4.5	44
P7	Langer to Trumpeter Shared Use Path	Pedestrian	Langer Drive	Trumpeter Drive	Construct a shared use path connecting Langer Drive and Trumpeter Drive.	4.0	None (previously planned project)
P8	Hopkins Elementary School North Shared Use Path	Pedestrian	Sherwood Boulevard	Trail south of Baler Way	Construct a shared-use path on the north side of Hopkins Elementary School, connecting Sherwood Boulevard to the existing trail south of Baler Way.	3.5	None (previously planned project)
P9	Hopkins Elementary School East Shared Use Path	Pedestrian	Trail at the northeast baseball field	St Francis south access road	Construct a shared use path on the east side of Hopkins Elementary School, connecting the existing trail south of Baler Way to the St Francis south access road.	3.5	None (previously planned project)
P10	Sherwood Middle School Shared Use Path	Pedestrian	Roundabout at the Oregon Street/Ash Street intersection	Hopkins Elementary School East Shared Use Path	Construct a shared use path on the east side of Sherwood Middle School, connecting the Hopkins Elementary School East Shared Use Path to the roundabout at the Oregon Street/Ash Street intersection.	3.5	None (previously planned project)
P11	Ice Age Tonquin Trail Segment 6	Regional Trail	Tonquin Road/Morgan Road	Tonquin Road/Oregon Street	Implement Tonquin Trail Segment 6 improvements from immediately west of the Tonquin Road/Morgan Road intersection to the Tonquin Road/Oregon Street intersection.	3.5	32, 68
P12	Ice Age Tonquin Trail Segment 7	Regional Trail	Tonquin Road/Oregon Street	Park Street	Implement Tonquin Trail Segment 7 improvements from immediately west of the Tonquin/Oregon Street intersection to immediately north of Park Street.	4.0	30
P13	Ice Age Tonquin Trail Segment 8	Regional Trail	Park Street	Highway 99W	Implement Tonquin Trail Segment 8 improvements from immediately north of Park Street to immediately south of Highway 99W.	4.0	None (previously planned project)
P14	Ice Age Tonquin Trail Segment 9	Regional Trail	Highway 99W	Roy Rogers Road	Implement Tonquin Trail Segment 9 improvements from immediately south of Highway 99W to Roy Rogers Road (including Roy Rogers intersection).	4.0	35
P15	Ice Age Tonquin Trail Segment 10	Regional Trail	Roy Rogers Road	Tualatin River National Wildlife Refuge Trailhead	Implement Tonquin Trail Segment 10 improvements from Roy Rogers Road north to Tualatin River National Wildlife Refuge trailhead.	3.5	None (previously planned project)
P16	Ice Age Tonquin Trail Segment 11	Regional Trail	Tonquin Road/Oregon Street	Cipole Road	Implement Tonquin Trail Segment 11 improvements from immediately east of the Tonquin Road/Oregon Street intersection to immediately west of Cipole Road.	3.0	31
P17	Ice Age Tonquin Trail Segment 12	Regional Trail	Cipole Road	Highway 99W	Implement Tonquin Trail Segment 12 improvements from immediately west of Cipole Road to immediately north of Highway 99W.	3.0	None (previously planned project)
P18	Cipole Road Sidewalk Infill	Pedestrian	Approximately 1,250 feet north of Tualatin-Sherwood Road	Existing Sidewalk Terminus to the North	Construct sidewalk along the east side of Cipole Road from approximately 1,250 feet north of Tualatin-Sherwood Road to the existing sidewalk terminus approximately 450 feet north.	2.0	34
P19	12th Street Sidewalk Infill	Pedestrian	Highway 99W	Sherwood Boulevard	Construct sidewalk along the south side of 12th Street from Highway 99W to Sherwood Boulevard.	3.0	3
P20	Division Street Sidewalk Infill	Pedestrian	Main Street	Cuthill Place	Construct sidewalk along both sides of Division Street from Main Street to Cuthill Place.	2.5	7
P21	Meinecke Road Sidewalk Infill	Pedestrian	Lee Drive	Existing Sidewalk Terminus to the East	Construct sidewalk along the north side of Meinecke Road from Lee Drive to the existing sidewalk terminus to the east (approximately 400 feet).	2.5	4
P22	Pine Street Sidewalk Infill Segment 1	Pedestrian	Willamette Street	Columbia Street	Construct sidewalk along the west side of Pine Street from Willamette Street to Columbia Street.	3.0	6
P23	Pine Street Sidewalk Infill Segment 2	Pedestrian	Division Street	Sunset Boulevard	Construct sidewalk along the east side of Pine Street from Division Street to Sunset Boulevard, and fill the sidewalk gap along the west side of Pine Street just north of Sunset Boulevard.	4.0	21
P24	Willamette Street Sidewalk Infill Segment 1	Pedestrian	Division Street	Upper Roy Street	Construct sidewalk along the south side of Willamette Street from Division Street to Upper Roy Street.	3.0	None (previously planned project)
P25	Willamette Street Sidewalk Infill Segment 2	Pedestrian	Cochran Drive	Murdock Road	Fill the sidewalk gap along the north side of Willamette Street from Cochran Drive to Murdock Road.	3.0	None (previously planned project)
P26	Highway 99W Grade Separated Crossing	Pedestrian	Edy Road	Sunset Boulevard	Build a grade-separated crossing of Highway 99W for pedestrians and bicyclists, providing a direct connection for the Ice Age Tonquin Trail east and west of the highway.	3.0	35

P27	Washington Street Sidewalk Infill	Pedestrian	Division Street	Tualatin Street	Construct sidewalk along both sides of Washington Street from Division Street to Tualatin Street.	3.0	None (previously planned project)
P28	Pine Street/Division Street Crossing Improvements	Pedestrian	Pine Street/Division Street	-	Install marked crosswalks at the Pine Street/Division Street intersection.	3.0	None (previously planned project)
P29	Pine Street/Sunset Boulevard Crossing Improvements	Pedestrian	Pine Street/Sunset Boulevard	-	Install marked crosswalks at the Pine Street/Sunset Boulevard intersection.	2.5	None (previously planned project)
P30	Sunset Boulevard/St Charles Way Crossing Improvements	Pedestrian	Sunset Boulevard/St Charles Way	-	Install marked crosswalks at the Sunset Boulevard/St Charles Way intersection.	2.5	36
P31	Sunset Boulevard/Redfern Drive Crossing Improvements	Pedestrian	Sunset Boulevard/Redfern Drive	-	Install enhanced pedestrian crossing at the Sunset Boulevard/Redfern Drive intersection.	2.5	36
P32	Sunset Boulevard/Galewood Drive Crossing Improvements	Pedestrian	Sunset Boulevard/Galewood Drive	-	Install enhanced pedestrian crossing at the Sunset Boulevard/Galewood Drive intersection.	3.0	36
P33	Cedar Creek Trail/Railroad Tracks Crossing Improvements	Pedestrian	Cedar Creek Trail/Railroad Tracks	-	Install a controlled crossing across the railroad tracks at the Cedar Creek Trail.	3.5	None (previously planned project)
P34	Rock Creek Trail/Tualatin-Sherwood Road Protected Crossing Improvements	Pedestrian	Rock Creek Trail/Tualatin-Sherwood Road	-	Install a marked crossing across Tualatin-Sherwood Road at the Rock Creek Trail with pedestrian refuge islands and Rectangular Rapid Flashing Beacons.	3.5	None (previously planned project)
P35	Sunset Boulevard/Existing Trail Crossing Improvements	Pedestrian	Sunset Boulevard/Existing Trail	-	Install a marked crossing across Sunset Boulevard at the existing trail just west of Heatherwood Lane.	4.0	None (previously planned project)
P36	Local Off-Street Trail Segment 1	Pedestrian	Seely Lane	Highway 99W/Home Depot Access	Construct an off-street trail from the existing trail on Seely Lane to the Highway 99W/Home Depot Access intersection (approximately 4,100 feet).	4.0	None (previously planned project)
P37	Local Off-Street Trail Segment 2	Pedestrian	Highway 99W/Home Depot Access	Tualatin-Sherwood Road	Construct an off-street trail from the Highway 99W/Home Depot Access intersection to Tualatin-Sherwood Road, approximately 150 feet east of the Century Drive intersection (approximately 4,800 feet).	4.0	None (previously planned project)
P38	Local Off-Street Trail Segment 3	Pedestrian	Tualatin-Sherwood Road	Oregon Street/Tonquin Road	Construct an off-street trail from Tualatin-Sherwood Road, approximately 150 feet east of the Century Drive intersection, to the Oregon Street/Tonquin Road intersection (approximately 2,800 feet).	4.0	None (previously planned project)
P39	Local Off-Street Trail Segment 4	Pedestrian	Highway 99W	Woodhaven Drive	Construct an off-street trail from Highway 99W to Woodhaven Drive, approximately 150 feet west of Dewey Drive (approximately 1,000 feet).	3.0	None (previously planned project)
P40	Local Off-Street Trail Segment 5	Pedestrian	Stellar Drive Trail	Sunset Boulevard	Construct an off-street trail from the Stellar Drive trail to Sunset Boulevard at the Galewood Drive pedestrian access, and on off-street trail connecting the Richen Park Terrace pedestrian access to Pinehurst Drive along the back of Woodhaven City Park (approximately 1,600 feet).	3.0	None (previously planned project)
P41	Local Off-Street Trail Segment 6	Pedestrian	Sunset Boulevard	Saint Charles Way Trail	Construct an off-street trail from Sunset Boulevard, just west of Redfern Place, to the Saint Charles Way trail (approximately 1,500 feet).	2.0	None (previously planned project)
P42	Local Off-Street Trail Segment 7	Pedestrian	Saint Charles Way Trail	Villa Road	Construct an off-street trail from the north end of the Saint Charles Way trail to Villa Road at the existing trail head (approximately 1,200 feet).	3.0	None (previously planned project)
P43	Local Off-Street Trail Segment 9	Pedestrian	Sunset Boulevard	Inkster Drive	Construct an off-street trail from Sunset Boulevard to Inkster Drive (approximately 3,500 feet).	3.0	None (previously planned project)
P44	Oregon Street Sidewalk Infill	Pedestrian	Hall Street	Orland Street	Construct sidewalk along the south side of Oregon Street between Hall Street and Orland Street.	2.5	29
P45	Murdock Road Sidewalk Infill Segment 1	Pedestrian	Willamette Street	Oregon Street	Construct sidewalk along the east side of Murdock Road from Willamette Street to Oregon Street.	2.0	18, 28
P46	Murdock Road Sidewalk Infill Segment 2	Pedestrian	Sunset Boulevard	Existing Sidewalk Terminus to the North	Construct sidewalk along the east side of Murdock Road from Sunset Boulevard to the existing sidewalk terminus approximately 600 feet north of Upper Roy Street.	2.0	20
P47	Downtown Streetscapes Master Plan Phases 1 and 2 (Old Town Core)	Pedestrian	Downtown Sherwood	-	Complete Phase 1 (Old Town Core) and Phase 2 (Cannery Arterials) of the Downtown Streetscapes Master Plan.	4.5	None (previously planned project)
P48	Downtown Streetscapes Master Plan Phase 3 (Old Town Secondary Streets)	Pedestrian	Downtown Sherwood	-	Complete Phase 3 (Old Town Secondary Streets) of the Downtown Streetscapes Master Plan.	4.5	None (previously planned project)
P49	Downtown Streetscapes Master Plan Phase 4 (Old Town Residential Neighborhoods)	Pedestrian	Downtown Sherwood	-	Complete Phase 4 (Old Town Residential Neighborhoods) of the Downtown Streetscapes Master Plan.	4.5	None (previously planned project)
P50	Downtown Streetscapes Master Plan Phase 6 (Railroad Siding Relocation)	Pedestrian	Downtown Sherwood	-	Complete Phase 6 (Railroad Siding Relocation) of the Downtown Streetscapes Master Plan.	4.5	None (previously planned project)
B1	Murdock Shared-Use Path	Bike	Oregon Street	Upper Roy Street	Build a shared-use path along the west side of Murdock Road from Oregon Street to Upper Roy Street.	3.0	62
B2	Meinecke Bike Lanes	Bike	Marshall Street	1st Street	Add bike lanes on Meinecke Road from Marshall Street to 3rd Street.	4.0	46
B3	Holland Lane Neighborhood Greenway	Bike	Langer Drive	Trail Head along Holland Lane	Add neighborhood greenway improvements (e.g., shared lane markings) to Holland Lane between Langer Drive and the existing trail head.	1.5	None (previously planned project)
B4	Baler Way Neighborhood Greenway	Bike	Trumpeter Drive	Century Drive (east intersection)	Add neighborhood greenway improvements (e.g., shared lane markings) to Baler Way between Trumpeter Drive and the eastern intersection with Century Drive.	2.0	None (previously planned project)
B5	Main Street Shared Lane Markings	Bike	1st Street	Sherwood Boulevard	Add shared lane markings to Main Street between 1st Street and Sherwood Boulevard.	2.0	52
B6	Pine Street Shared Lane Markings	Bike	3rd Street	Sherwood Boulevard	Add shared lane markings to Pine Street between 3rd Street and Sherwood Boulevard.	2.5	45
B7	Borchers Bike Lanes	Bike	Edy Road	Roy Rogers Road	Build bike lanes on Borchers Road between Edy Road and Roy Rogers Road.	3.0	40
B8	3rd Street Shared Lane Markings	Bike	Washington Street	Sherwood Boulevard	Add shared lane markings on 3rd Street from Washington Street to Sherwood Boulevard.	2.0	47
B9	1st Street Shared Lane Markings	Bike	Main Street	Pine Street	Add shared lane markings on 1st Street from Main Street to Pine Street.	2.0	48
B10	Century Drive Shared-Use Path	Bike	Tualatin-Sherwood Road	Existing Terminus	Widen the sidewalk on the south/east side of Century Drive between Tualatin-Sherwood Road and the existing terminus to provide a shared-use path	4.5	49
B11	Timbrel Lane Improvements	Bike	Sunset Boulevard	Old Highway 99W	Upgrade Timbrel Lane (from Sunset Boulevard to Old Highway 99W) to a two lane collector with bike lanes and sidewalks. Would require removal of street trees.	2.0	59
B12	Old Highway 99W Shared-Use Path	Bike	Timbrel Lane	Crooked River Lane	Widen the sidewalk along the west side of Old Highway 99W between Timbrel Lane and Crooked River Lane to provide a shared-use path	2.5	60
B13	Old Highway 99W Improvements Segment 2	Bike	Crooked River Lane	Brookman Road	Upgrade Old Highway 99W (from Crooked River Lane to Brookman Road) to a two lane collector with a shared use path on the west side and sidewalks on the east side.	3.5	60
B14	Handley Bike Facilities	Bike	Cedar Brook Way	Elwert Road	Add bike lanes along Handley Street between Cedar Brook Way and Meadow Terrace through parking removal and restriping. Add shared lane markings and signage along Meadow Terrace and Cereghino Lane as an alternative bike route to Handley Street west of Meadow Terrace. Create a bicycle/pedestrian connection between the west end of Cereghino Lane and Elwert Road.	2.0	#N/A
B15	Galbreath Drive Bike Reroute	Bike	Gerda Lane/Tualatin-Sherwood Road	City Limits	Direct bicyclists to use the Herman Road extension instead of Galbreath Drive and Gerda Lane.	3.5	64, 65

B16	Baler Way Bike Lanes	Bike	Century Drive	Tualatin-Sherwood Road	Rebuild Baler Way to a collector between Century Drive and Tualatin-Sherwood Road to include bike lanes.	3.0	42
B17	12th Street Bike Lanes	Bike	Highway 99W	Sherwood Boulevard	Add bike lanes on 12th Street between Highway 99W and Sherwood Boulevard.	3.5	43
B18	Washington Street Shared Lane Markings	Bike	3rd Street	1st Street	Add shared lane markings on Washington Street between 3rd Street and 1st Street.	1.0	46
B19	Sunset Bike Lanes	Bike	Aldergrove Avenue	Murdock Road	Add bike lanes on Sunset Boulevard between Aldergrove Avenue and Murdock Road	2.5	63
T1	Provide Transit Amenities at Major Transit Stops	Transit Capital	Citywide	-	Provide Transit Amenities at Major Transit Stops .	2.5	73
T2	Improve Pedestrian Connections to Transit Facilities	Transit Capital	Citywide	-	Improve Pedestrian Connections to Transit Facilities.	3.5	74
T3	Increase Density Adjacent to Transit	Transit Capital	Citywide	-	Increase Density Adjacent to Transit.	5.0	None (previously planned project)
T4	Decrease Headways	Transit Capital	Citywide	-	Decrease Headways.	2.5	None (previously planned project)
T5	Provide Local Service	Transit Capital	Citywide	-	Provide local service to enhanced regional service.	2.5	77

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Section E

Aspirational Project List

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Sherwood TSP Project List

Project #	Project Name	Project Details	Evaluation Score	Estimated Cost	City Cost	Priority
Motor Vehicle Projects						
D1	Tualatin-Sherwood Road Improvements - Phase 2	Widen Tualatin-Sherwood Road (from Langer Farms Parkway to Teton Avenue) to five lanes with bike lanes and sidewalks.	2.5	$43,042,500	$0	Long-Term
D2	Tonquin Road Safety Improvements	Widen Tonquin Road (from Grahams Ferry Road to Oregon Street) to provide shoulders.	2.5	$28,406,000	$0	Long-Term
D3	Oregon Intersections Improvements at Murdock and Tonquin	Install a roundabout at the Tonquin Road/Oregon Street intersection with dual westbound through lanes and a single eastbound through/right lane. Consider creating a "Dumbbell Roundabout" with the Oregon/Murdock roundabout by disallowing the west circulating lane at Oregon/Tonquin and disallowing the east circulating lane at Oregon/Murdock. Add a second westbound approach lane to the Murdock Road Oregon Street roundabout for separated westbound left and westbound through lanes. Keep three lanes on the bridge structure.	3.5	$2,945,000	$1,389,000	Short-Term
D4	Elwert Road Improvements	Upgrade Elwert Road (from Highway 99W to Edy Road) to a three lane arterial with bike lanes and sidewalks. This project may be phased with D30 for design and construction purposes.	3.5	$11,430,000	$2,286,000	Medium-Term
D5	Brookman Road Improvements (Three Lane Arterial)	Implement Brookman Road Concept Plan improvements to Brookman Road from Highway 99W to Middleton Road. Major improvements include: rebuild road to a three lane arterial facility, and a shared-use path along the north side. In addition, reserve right-of-way for the potential widening to five lanes in the event that further refinements to the I-5/99W Connector Plan identify Brookman Road as the Southern Arterial to serve as the primary route for east-west mobility.	1.5	$15,300,000	$3,060,000	Long-Term
D6	Edy Road Improvements	Upgrade Edy Road (from Borchers Drive to City Limits) to a three lane collector with bike lanes and sidewalks.	4	$8,760,000	$8,760,000	Medium-Term
D7	Ladd Hill Road Improvements	Upgrade Ladd Hill Road (from Sunset Boulevard to the Urban Growth Boundary) to a three arterial with bike lanes and sidewalks.	3.5	$6,340,000	$6,340,000	Medium-Term
D8	Oregon Street Improvements	Upgrade Oregon Street (from Murdock Road to the railroad crossing) to a three lane collector with sidewalks on south side and a shared-use path on the north side (part of the Ice Age Tonquin Trail).	3	$6,712,000	$6,712,000	Medium-Term
D9	Baler to Herman Connection	Build a collector roadway, connecting Baler Way at Tualatin-Sherwood Road to the future terminus of the Herman Road at Langer Farms Parkway.	2	$3,802,000	$3,802,000	Long-Term
D10	Cedar Brook Way Extension Segment 1	Extend Cedar Brook Way from its existing terminus to Meinecke Road as a two lane local road.	2	$596,000	$596,000	Long-Term
D11	Cedar Brook Way Extension Segment 2	Extend Cedar Brook Way from its existing terminus at Handley Street south to Elwert Road as a two lane collector road.	2	$13,000,000	$13,000,000	Long-Term
D12	Extension of Langer Farms Parkway at 99W	Extend Langer Farms Parkway from 99W west as a collector road.	2.5	$3,243,000	$3,243,000	Medium-Term
D13	Tualatin-Sherwood Improvements – Phase 1	Widen Tualatin-Sherwood Road/Roy Rogers Road between Borchers Drive and Baler Way to five lanes. Includes intersection modifications at OR 99W, the Sherwood Market Center, and at Baler Way.	-	$0	$0	Committed Funding
D14	Highway 99W/Brookman Traffic Signal and Realignment	Realign Brookman Road to intersect with Highway 99W approximately 1/4 mile north of its existing intersection; this improvement includes a traffic signal at the realigned intersection with a westbound left and southbound right turn lane, and a grade separated railroad crossing.	5	$7,020,000	$1,404,000	Medium-Term
D15	Sunset Boulevard Improvements	Upgrade Sunset Boulevard (from Aldergrove Avenue to Eucalyptus Terrace) to a three lane arterial with sidewalks and bike lanes. Address vertical crest sight distance issues near Pine Street.	3.5	$8,316,000	$8,316,000	Medium-Term
D16	Edy/Highway 99W Intersection Improvements	Restripe the westbound Sherwood Boulevard approach to have a single left turn lane, a single through lane, and a single right turn lane. Eliminate the split phase timing for the side streets, and maintain the existing green time on OR 99W for the northbound and southbound through movements. Add the missing crosswalk to the south approach. Consider implementing P3 alongside this project.	5.5	$1,070,000	$214,000	Short-Term
D17	Meinecke/Highway 99W Intersection Improvements	Change the eastbound and westbound left turn phasing on Meinecke Road from permitted to permitted/protected and maintaining the existing green time on OR 99W for the northbound and southbound through movements. Consider implementing P3 alongside this project.	2.5	$5,000	$1,000	Medium-Term
D18	Langer Drive Improvements	Construct improvements to Langer Drive between Baler Way and Sherwood Boulevard that are consistent with the Sherwood Town Center Plan. Major improvements include: buffered bike lanes, on-street parking, wider sidewalks, narrower travel lanes, removal of the center turn lane, and landscaping.	4.5	$2,000,000	$2,000,000	Short-Term
D19	124th Avenue Extension	Extend 124th Avenue as an arterial from Tualatin-Sherwood Road to Tonquin Road.	1	$82,500,000	$0	Committed Funding
D20	Tonquin Employment Area East-West Collector	Build an east-west collector facility between Oregon Street and the 124th Avenue extension in the Tonquin Employment Area; improvement includes a roundabout at the Oregon Street intersection.	2	$6,400,000	$6,400,000	Long-Term
D21	Herman Road Extension	Extend Herman Road from its existing terminus at Cipole Road west to either Highway 99W or Langer Farms Parkway as a two to three lane collector facility.	4	$8,190,000	$8,190,000	Long-Term
D22	Kruger/Elwert Intersection Safety Improvement	Realign Elwert Road to provide more storage at Highway 99W, and realign the Kruger Road intersection to the Cedarbrook extension as a single lane roundabout. Consider implementing D31 with this project.	2.5	$1,550,000	$0	Committed Funding
D23	Edy/Borchers Right-In/Right-Out and Eastbound Lefts	Convert the Edy Road/Borchers Drive intersection to only allow right-in/right-out and eastbound left in; build a roundabout on Edy Road to the west at the south property's existing driveway.	3	$2,000,000	$2,000,000	Long-Term
D24	Sherwood Boulevard Intersection Modifications	Remove the Sherwood Boulevard/Langer Drive traffic signal (allow right-in, right-out, and left-in movements only), and install a traffic signal at the Sherwood Boulevard/Century Drive intersection (add eastbound and westbound left turn lanes).	4	$900,000	$900,000	Medium-Term
D25	Sunset/Pine Improvements	Restripe Sunset Boulevard at Pine Street to add eastbound and westbound left turn lanes.	2.5	$6,000	$6,000	Medium-Term
D26	Sunset/Main Traffic Control Enhancement	Install a traffic signal at the Sunset Boulevard/Main Street intersection	4	$250,000	$250,000	Long-Term
D27	Baker Road Improvements	Upgrade Baker Road (from Sunset Boulevard to the urban growth boundary) to a two lane arterial with bike lanes and sidewalks.	3	$779,000	$779,000	Medium-Term
D28	Sunset/Timbrel Traffic Control Enhancement	Install a single lane roundabout at the Sunset Boulevard/Timbrel Lane intersection.	2.5	$300,000	$300,000	Long-Term
D29	Edy to Roy Rogers Collector Roadway	Build a collector roadway from Edy Road to Roy Rogers Road, between Cedarview Way and Lynnly Way.	2.5	$3,400,000	$3,400,000	Long-Term
D30	Elwert/Edy Roundabout	Install a single lane roundabout at the Elwert Road/Edy Road intersection. This project may be phased with D4 for design and construction purposes.	2.5	$1,500,000	$750,000	Medium-Term

D31	Highway 99W/Sunset Improvements	Add westbound and eastbound left turn lanes at Highway 99W/Sunset Boulevard with protective-permissive phasing. Consider implementing D22 and P3 alongside this project.	3	$500,000	$100,000	Short-Term
D32	Ladd Hill/Brookman Improvements	Add a southbound right turn lane at the Ladd Hill Road/Brookman Road intersection.	2	$250,000	$250,000	Long-Term
D33	Sunset/Murdock Turn Lanes	Add a southbound right turn lane and a northbound left turn lane at the Sunset Boulevard/Murdock Road intersection.	2.5	$750,000	$750,000	Medium-Term
D34	Brookman/Middleton Traffic Control Enhancements	Move the stop signs to the north and south approaches, and add a southbound left turn lane at the Brookman Road/Middleton Road intersection.	2.5	$250,000	$50,000	Medium-Term
D35	Area 59 Neighborhood Route	Build a neighborhood roadway, connecting Elwert Road and Copper Terrace as identified in the Area 59 concept plan.	4.5	$2,167,000	$2,167,000	Medium-Term
D36	Sherwood System Monitoring Program	Establish and maintain a program involving monitoring performance measures semiannually. Performance measures to be evaluated will be determined through an initial study. This program will evaluate if planning efforts are leading to performance targets, monitor growth , and identify when improvements are needed.	2.5	$400,000	$400,000	Long-Term
Pedestrian Projects						
P1	Handley Street Sidewalk Infill	Construct sidewalk along the north side of Handley Street from Elwert Road to the existing sidewalk terminus approximately 250 feet east of Elwert Road.	2	$15,000	$15,000	Medium-Term
P2	Highway 99W Sidewalk Infill	Construct sidewalks along both sides of Highway 99W between the north Urban Growth Boundary and the south Urban Growth Boundary.	2.5	$1,090,000	$218,000	Medium-Term
P3	Highway 99W Crosswalks	Add missing crosswalks at existing traffic signal locations on Highway 99W between Edy Road and Sunset Boulevard. The crosswalk enhancements may be phased individually with their corresponding intersection improvements (D16, D17, D31).	3.5	$7,000	$1,400	Medium-Term
P4	Ice Age Tonquin Trail/Highway 99W Connection	Construct a shared use path that connects the proposed Cedar Creek/Tonquin Trail to Highway 99W.	3.5	$209,000	$41,800	Medium-Term
P5	10th Street Neighborhood Greenway	Add sidewalks and shared lane markings to 10th Street and Gleneagle Drive from Sherwood Boulevard to the planned Cedar Creek/Tonquin Trail connection.	2	$10,500	$10,500	Medium-Term
P6	Sherwood Boulevard Improvements	Construct improvements to Sherwood Boulevard between Langer Drive and 3rd Street that are consistent with the Sherwood Town Center Plan. Major improvements include: a shared-use path on the east side, wider sidewalks on the west side, narrower travel lanes, and landscaping.	4.5	$2,123,500	$2,123,500	Short-Term
P7	Langer to Trumpeter Shared Use Path	Construct a shared use path connecting Langer Drive and Trumpeter Drive.	4	$292,000	$292,000	Long-Term
P8	Hopkins Elementary School North Shared Use Path	Construct a shared-use path on the north side of Hopkins Elementary School, connecting Sherwood Boulevard to the existing trail south of Baler Way.	3.5	$219,000	$219,000	Long-Term
P9	Hopkins Elementary School East Shared Use Path	Construct a shared use path on the east side of Hopkins Elementary School, connecting the existing trail south of Baler Way to the St Francis south access road.	3.5	$365,000	$365,000	Long-Term
P10	Sherwood Middle School Shared Use Path	Construct a shared use path on the east side of Sherwood Middle School, connecting the Hopkins Elementary School East Shared Use Path to the roundabout at the Oregon Street/Ash Street intersection.	3.5	$365,000	$365,000	Long-Term
P11	Ice Age Tonquin Trail Segment 6	Implement Tonquin Trail Segment 6 improvements from immediately west of the Tonquin Road/Morgan Road intersection to the Tonquin Road/Oregon Street intersection.	3.5	$7,005,000	$1,401,000	Long-Term
P12	Ice Age Tonquin Trail Segment 7	Implement Tonquin Trail Segment 7 improvements from immediately west of the Tonquin/Oregon Street intersection to immediately north of Park Street.	4	$1,770,000	$354,000	Short-Term
P13	Ice Age Tonquin Trail Segment 8	Implement Tonquin Trail Segment 8 improvements from immediately north of Park Street to immediately south of Highway 99W.	4	$4,677,000	$0	Committed Funding
P14	Ice Age Tonquin Trail Segment 9	Implement Tonquin Trail Segment 9 improvements from immediately south of Highway 99W to Roy Rogers Road (including Roy Rogers intersection).	4	$2,540,000	$508,000	Short-Term
P15	Ice Age Tonquin Trail Segment 10	Implement Tonquin Trail Segment 10 improvements from Roy Rogers Road north to Tualatin River National Wildlife Refuge trailhead.	3.5	$4,216,000	$843,200	Long-Term
P16	Ice Age Tonquin Trail Segment 11	Implement Tonquin Trail Segment 11 improvements from immediately east of the Tonquin Road/Oregon Street intersection to immediately west of Cipole Road.	3	$2,738,000	$547,600	Medium-Term
P17	Ice Age Tonquin Trail Segment 12	Implement Tonquin Trail Segment 12 improvements from immediately west of Cipole Road to immediately north of Highway 99W.	3	$11,697,000	$2,339,400	Long-Term
P18	Cipole Road Sidewalk Infill	Construct sidewalk along the east side of Cipole Road from approximately 1,250 feet north of Tualatin-Sherwood Road to the existing sidewalk terminus approximately 450 feet north.	2	$27,000	$27,000	Medium-Term
P19	12th Street Sidewalk Infill	Construct sidewalk along the south side of 12th Street from Highway 99W to Sherwood Boulevard.	3	$70,000	$70,000	Short-Term
P20	Division Street Sidewalk Infill	Construct sidewalk along both sides of Division Street from Main Street to Cuthill Place.	2.5	$327,000	$327,000	Medium-Term
P21	Meinecke Road Sidewalk Infill	Construct sidewalk along the north side of Meinecke Road from Lee Drive to the existing sidewalk terminus to the east (approximately 400 feet).	2.5	$23,500	$23,500	Medium-Term
P22	Pine Street Sidewalk Infill Segment 1	Construct sidewalk along the west side of Pine Street from Willamette Street to Columbia Street.	3	$12,000	$12,000	Short-Term
P23	Pine Street Sidewalk Infill Segment 2	Construct sidewalk along the east side of Pine Street from Division Street to Sunset Boulevard, and fill the sidewalk gap along the west side of Pine Street just north of Sunset Boulevard.	4	$68,500	$68,500	Short-Term
P24	Willamette Street Sidewalk Infill Segment 1	Construct sidewalk along the south side of Willamette Street from Division Street to Upper Roy Street.	3	$191,000	$191,000	Long-Term
P25	Willamette Street Sidewalk Infill Segment 2	Fill the sidewalk gap along the north side of Willamette Street from Cochran Drive to Murdock Road.	3	$8,500	$8,500	Long-Term
P26	Highway 99W Grade Separated Crossing	Build a grade-separated crossing of Highway 99W for pedestrians and bicyclists, providing a direct connection for the Ice Age Tonquin Trail east and west of the highway.	3	$13,300,000	$2,660,000	Medium-Term
P27	Washington Street Sidewalk Infill	Construct sidewalk along both sides of Washington Street from Division Street to Tualatin Street.	3	$11,000	$11,000	Long-Term
P28	Pine Street/Division Street Crossing Improvements	Install marked crosswalks at the Pine Street/Division Street intersection.	3	$1,000	$1,000	Long-Term
P29	Pine Street/Sunset Boulevard Crossing Improvements	Install marked crosswalks at the Pine Street/Sunset Boulevard intersection.	2.5	$1,000	$1,000	Long-Term
P30	Sunset Boulevard/St Charles Way Crossing Improvements	Install marked crosswalks at the Sunset Boulevard/St Charles Way intersection.	2.5	$1,000	$1,000	Medium-Term

P31	Sunset Boulevard/Redfern Drive Crossing Improvements	Install enhanced pedestrian crossing at the Sunset Boulevard/Redfern Drive intersection.	2.5	$10,000	$10,000	Medium-Term
P32	Sunset Boulevard/Galewood Drive Crossing Improvements	Install enhanced pedestrian crossing at the Sunset Boulevard/Galewood Drive intersection.	3	$10,000	$10,000	Medium-Term
P33	Cedar Creek Trail/Railroad Tracks Crossing Improvements	Install a controlled crossing across the railroad tracks at the Cedar Creek Trail.	3.5	$15,000	$15,000	Long-Term
P34	Rock Creek Trail/Tualatin-Sherwood Road Protected Crossing Improvements	Install a marked crossing across Tualatin-Sherwood Road at the Rock Creek Trail with pedestrian refuge islands and Rectangular Rapid Flashing Beacons.	3.5	$35,000	$35,000	Long-Term
P35	Sunset Boulevard/Existing Trail Crossing Improvements	Install a marked crossing across Sunset Boulevard at the existing trail just west of Heatherwood Lane.	4	$1,000	$1,000	Long-Term
P36	Local Off-Street Trail Segment 1	Construct an off-street trail from the existing trail on Seely Lane to the Highway 99W/Home Depot Access intersection (approximately 4,100 feet).	4	$496,000	$496,000	Long-Term
P37	Local Off-Street Trail Segment 2	Construct an off-street trail from the Highway 99W/Home Depot Access intersection to Tualatin-Sherwood Road, approximately 150 feet east of the Century Drive intersection (approximately 4,800 feet).	4	$421,000	$421,000	Long-Term
P38	Local Off-Street Trail Segment 3	Construct an off-street trail from Tualatin-Sherwood Road, approximately 150 feet east of the Century Drive intersection, to the Oregon Street/Tonquin Road intersection (approximately 2,800 feet).	4	$262,000	$262,000	Long-Term
P39	Local Off-Street Trail Segment 4	Construct an off-street trail from Highway 99W to Woodhaven Drive, approximately 150 feet west of Dewey Drive (approximately 1,000 feet).	3	$93,000	$93,000	Long-Term
P40	Local Off-Street Trail Segment 5	Construct an off-street trail from the Stellar Drive trail to Sunset Boulevard at the Galewood Drive pedestrian access, and on off-street trail connecting the Richen Park Terrace pedestrian access to Pinehurst Drive along the back of Woodhaven City Park (approximately 1,600 feet).	3	$149,000	$149,000	Long-Term
P41	Local Off-Street Trail Segment 6	Construct an off-street trail from Sunset Boulevard, just west of Redfern Place, to the Saint Charles Way trail (approximately 1,500 feet).	2	$140,000	$140,000	Long-Term
P42	Local Off-Street Trail Segment 7	Construct an off-street trail from the north end of the Saint Charles Way trail to Villa Road at the existing trail head (approximately 1,200 feet).	3	$112,000	$112,000	Long-Term
P43	Local Off-Street Trail Segment 9	Construct an off-street trail from Sunset Boulevard to Inkster Drive (approximately 3,500 feet).	3	$327,000	$327,000	Long-Term
P44	Oregon Street Sidewalk Infill	Construct sidewalk along the south side of Oregon Street between Hall Street and Orland Street.	2.5	$32,000	$32,000	Short-Term
P45	Murdock Road Sidewalk Infill Segment 1	Construct sidewalk along the east side of Murdock Road from Willamette Street to Oregon Street.	2	$77,000	$77,000	Medium-Term
P46	Murdock Road Sidewalk Infill Segment 2	Construct sidewalk along the east side of Murdock Road from Sunset Boulevard to the existing sidewalk terminus approximately 600 feet north of Upper Roy Street.	2	$201,000	$201,000	Long-Term
P47	Roy Rogers Crossing Improvement	Install a pedestrian crossing on Roy Rogers Road between Lynnly Way and Lavender Ave (e.g., at the Seely Lane alignment)	2.5	$50,000	$50,000	Long-Term
P48	Downtown Streetscapes Master Plan Phases 1 and 2 (Old Town Core)	Complete Phase 1 (Old Town Core) and Phase 2 (Cannery Arterials) of the Downtown Streetscapes Master Plan.	4.5	$2,801,032	$448,060	Medium-Term
P49	Downtown Streetscapes Master Plan Phase 3 (Old Town Secondary Streets)	Complete Phase 3 (Old Town Secondary Streets) of the Downtown Streetscapes Master Plan.	4.5	$3,457,000	$0	Short-Term
P50	Downtown Streetscapes Master Plan Phase 4 (Old Town Residential Neighborhoods)	Complete Phase 4 (Old Town Residential Neighborhoods) of the Downtown Streetscapes Master Plan.	4.5	$528,000	$0	Short-Term
P51	Downtown Streetscapes Master Plan Phase 6 (Railroad Siding Relocation)	Complete Phase 6 (Railroad Siding Relocation) of the Downtown Streetscapes Master Plan.	4.5	$637,000	$0	Long-Term
Bike Projects						
B1	Murdock Shared-Use Path	Build a shared-use path along the west side of Murdock Road from Oregon Street to Upper Roy Street.	3	$950,000	$950,000	Medium-Term
B2	Meinecke Bike Lanes	Add bike lanes on Meinecke Road from Marshall Street to 3rd Street.	4	$399,000	$399,000	Short-Term
B3	Holland Lane Neighborhood Greenway	Add neighborhood greenway improvements (e.g., shared lane markings) to Holland Lane between Langer Drive and the existing trail head.	1.5	$4,500	$4,500	Long-Term
B4	Baler Way Neighborhood Greenway	Add neighborhood greenway improvements (e.g., shared lane markings) to Baler Way between Trumpeter Drive and the eastern intersection with Century Drive.	2	$43,500	$43,500	Long-Term
B5	Main Street Shared Lane Markings	Add shared lane markings to Main Street between 1st Street and Sherwood Boulevard.	2	$10,500	$10,500	Medium-Term
B6	Pine Street Shared Lane Markings	Add shared lane markings to Pine Street between 3rd Street and Sherwood Boulevard.	2.5	$18,500	$18,500	Medium-Term
B7	Borchers Bike Lanes	Build bike lanes on Borchers Road between Edy Road and Roy Rogers Road.	3	$370,000	$370,000	Short-Term
B8	3rd Street Shared Lane Markings	Add shared lane markings on 3rd Street from Washington Street to Sherwood Boulevard.	2	$2,000	$2,000	Medium-Term
B9	1st Street Shared Lane Markings	Add shared lane markings on 1st Street from Main Street to Pine Street.	2	$3,000	$3,000	Medium-Term
B10	Century Drive Shared-Use Path	Widen the sidewalk on the south/east side of Century Drive between Tualatin-Sherwood Road and the existing terminus to provide a shared-use path	4.5	$601,000	$601,000	Short-Term
B11	Timbrel Lane Improvements	Upgrade Timbrel Lane (from Sunset Boulevard to Old Highway 99W) to a two lane collector with bike lanes and sidewalks. Would require removal of street trees.	2	$608,000	$608,000	Long-Term
B12	Old Highway 99W Shared-Use Path	Widen the sidewalk along the west side of Old Highway 99W between Timbrel Lane and Crooked River Lane to provide a shared-use path	2.5	$347,000	$347,000	Medium-Term
B13	Old Highway 99W Improvements Segment 2	Upgrade Old Highway 99W (from Crooked River Lane to Brookman Road) to a two lane collector with a shared use path on the west side and sidewalks on the east side.	3.5	$691,000	$691,000	Short-Term
B14	Handley Bike Facilities	Add bike lanes along Handley Street between Cedar Brook Way and Meadow Terrace through parking removal and restriping. Add shared lane markings and signage along Meadow Terrace and Cereghino Lane as an alternative bike route to Handley Street west of Meadow Terrace. Create a bicycle/pedestrian connection between the west end of Cereghino Lane and Elwert Road.	2	$97,000	$97,000	Long-Term
B15	Galbreath Drive Bike Reroute	Direct bicyclists to use the Herman Road extension instead of Galbreath Drive and Gerda Lane.	3.5	$1,000	$1,000	Long-Term

B16	Baler Way Bike Lanes	Rebuild Baler Way to a collector between Century Drive and Tualatin-Sherwood Road to include bike lanes.	3	$718,000	$718,000	Short-Term
B17	12th Street Bike Lanes	Add bike lanes on 12th Street between Highway 99W and Sherwood Boulevard.	3.5	$815,000	$815,000	Short-Term
B18	Washington Street Shared Lane Markings	Add shared lane markings on Washington Street between 3rd Street and 1st Street.	1	$3,000	$3,000	Medium-Term
B19	Sunset Bike Lanes	Add bike lanes on Sunset Boulevard between Aldergrove Avenue and Murdock Road	2.5	$980,000	$980,000	Medium-Term
Transit Projects						
T1	Provide Transit Amenities at Major Transit Stops	Provide Transit Amenities at Major Transit Stops .	2.5	$50,000	$10,000	Medium-Term
T2	Improve Pedestrian Connections to Transit Facilities	Improve Pedestrian Connections to Transit Facilities.	3.5	$0	$0	Short-Term
T3	Increase Density Adjacent to Transit	Increase Density Adjacent to Transit.	5	$0	$0	Short-Term
T4	Decrease Headways	Decrease Headways.	2.5	$2,000,000	$400,000	Long-Term
T5	Provide Local Service	Provide local service to enhanced regional service.	2.5	$2,000,000	$400,000	Long-Term
T6	Support Regional Service to Tualatin	Support potential transit connections to Tualatin	2.5	$2,000,000	$400,000	Medium-Term

Section F

Traffic Calming Toolbox

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Residential Traffic Calming Program Toolbox

PHASE I

Do Not Enter Sign

Description: Restrict access

Purpose:The purpose of a this sign is to indicate to drivers that they are not permitted to proceed straight ahead. When used as a traffic calming measure, it is intended to discourage through traffic from short-cutting along a street. The sign may be accompanied by a supplementary plate sign indicating the time(s) of the day and the days of the week when the regulation applies.

Advantages
- May result in significant reductions in traffic volumes

Disadvantages
- No significant effect on vehicle speeds.
- Restricts resident access.

Equipment Cost: $100 to $200 per sign, installed.

Neighborhood Speed Watch

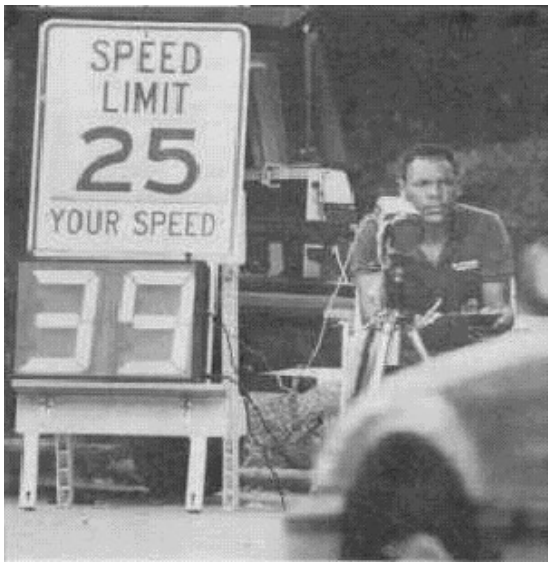
Description: Residents use radar equipment to identify speeding vehicles. The information gathered is matched with the Driver and Motor Vehicle Service (DMV) records. The City then sends a letter to the vehicle's registered owner advising the owner their vehicle was seen speeding. The letter appeals to the owner and/or driver to slow down on neighborhood streets. This program does not issue speeding tickets.

Purpose: To slow vehicle traffic, educate drivers about vehicle speeds, and allow residents to take an active part in the program.

Advantages
- Reduces speed by increasing driver awareness about speeding on residential streets and about safety.
- An effective public relations and educational tool.

Disadvantages
- Not an enforcement tool.
- Not effective in modifying long-term habits.

Cost: $500



One-Way Sign

Description: Directional movement sign.

Purpose: The purpose of a One-Way sign is to indicate to drivers that traffic is allowed to travel only in the direction of the arrow on the street or section of street. When used as a traffic calming measure, the intent of a One-Way sign is to prevent through traffic from short-cutting along a street.

Advantages
- Vehicle-vehicle and vehicle-pedestrian conflicts at intersections are reduced as there are fewer turning movements.
- Reduction in traffic volume.

Disadvantages
- Removal of traffic travelling in the opposing direction can result in an increase in vehicle speeds.
- Reduction in traffic volume may be partially offset by an increase in traffic in the remaining direction.

Cost: $100 to $200 per sign, installed.

Pavement Markings

Description: Stop bars, yield bars, turn arrows, delineators, lane markings, crosswalks, etc.

Purpose: To delineate and to transmit to motorists, bicyclists, and pedestrians important information necessary to safely travel upon the City's street.

Advantages
- Low initial cost.
- Quick application.

Disadvantages
- Maintenance cost.
- May not be visible when covered with snow.

Cost: Varies widely depending on type and amount of material used.

Police Enforcement

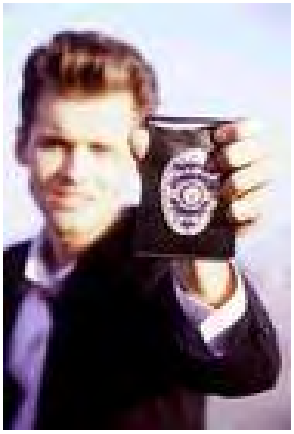
Description: Increased enforcement of speed limits on problem local streets.

Purpose:To reduce traffic speed and increase traffic safety.

Potential Advantages
- Visible enforcement could reduce speed by increasing driver awareness about speeding on residential streets and about safety.
- The approach is flexible and can be tailored to suit needs.
- Response can be quick and effective.

Potential Disadvantages
- Long-term benefits of speed reduction are unsubstantiated without regular periodic enforcement.
- It may be difficult to provide enforcement to the extent and with the frequency that residents desire.

Cost: $90,000 to $100,000 per year for one officer and equipment.



Speed Monitoring Trailer

Description: Portable radar speed meter capable of measuring vehicle speed and displaying the speed of the motorist.

Purpose: To slow vehicle traffic and to educate residents and drivers about vehicle speeds.

Advantages
- Speeds may be reduced during short intervals where the radar trailer is located.
- An effective public relations and educational tool.

Disadvantages
- Not an enforcement tool.
- Not effective in modifying long-term habits.
- Effect on speed limited to the vicinity of the trailer.
- Not effective on multi-lane roadways.

Cost: $8,000 - $13,000 per trailer.

Turn Prohibition

Description: Turn Prohibition sign

Purpose:The purpose of a Right (Left) Turn Prohibition sign is to indicate to drivers that they are not permitted to turn right (left). When used as a traffic calming measure, this sign is intended to prevent traffic from short-cutting along a street. The sign may be accompanied by a supplementary plate indicating the time(s) of the day and the days of the week when the regulation applies.

Advantages
- May result in significant reductions in traffic volumes where supported periodically with police enforcement.

Disadvantages
- No significant effect on vehicle speeds.
- Restricts resident access.

Cost: $100 to $200 per sign, installed.

PHASE II - HORIZONTAL DEFLECTION

Bulb-Outs

Description: The lane is narrowed at an intersection or mid-block by extending the curbs on one or both sides of the street toward the center of the roadway or by building detached raised islands to allow for drainage and bike lane passage. May be used in conjunction with striped crosswalks.

Purpose: To slow traffic at intersections and to improve pedestrian safety.

Potential Advantages
- May reduce vehicle speed.
- May reduce cut-through traffic.
- Reduces crossing distance for pedestrians.
- Minimal impact to emergency vehicles.
- Does not restrict access for residents.
- Can be designed to restrict truck entry.
- Can be aesthetically pleasing, if landscaped.

Potential Disadvantages
- Some designs can create conflicts for bicyclists (properly designed bulb-outs do not create such conflicts).
- Can impact drainage (depending on design and location).
- Curbside parking must be prohibited at the bulb, thus eliminating at least one space at each bulb location.
- Low impact on mid-block speeding.
- Maintenance responsibility, if landscaped.
- Can impede legitimate truck movements.

Cost: $3,000 -$5,000

Center Island Narrowing

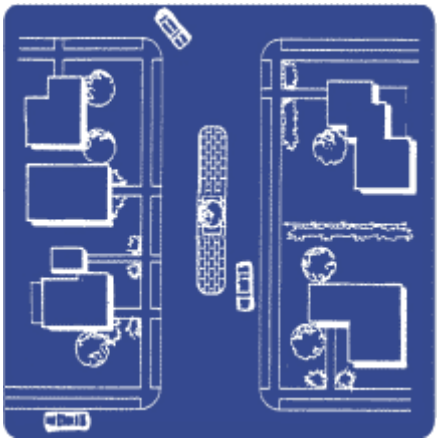
Description: Constructed or painted islands located before an intersection or mid-block along the centerline of a street.

Purpose: To reduce traffic speed by narrowing the roadway with a median, and to increase pedestrian safety by providing a refuge halfway across the street, so that only one direction of traffic need be crossed at a time.

Potential Advantages
- May reduce traffic speed.
- Improves pedestrian safety.
- Does not restrict emergency vehicle access.
- Can be aesthetically pleasing if landscaped.

Potential Disadvantages
- May divert traffic to adjacent streets without traffic calming.
- May impact parking depending on lane width.
- May eliminate the possibility of future bike lane installation on street by narrowing the travel lane.

Cost: $60 per linear foot; $7,000 to $10,000 per device



Chicanes

Description: Curb extensions or islands that alternate from one side of the street to the other, forming S-shaped curves.

Purpose: To slow vehicle speed mid-block using horizontal deflection.

Potential Advantages
- May reduce speed.
- Minimal impact to emergency vehicles.
- Does not restrict access to residents.
- Can be aesthetically pleasing if landscaped.

Potential Disadvantages
- May increase conflicts between motor vehicles and bicyclists and pedestrians.
- May create opportunities for head-on collisions on narrow streets.
- May divert traffic to parallel streets.
- Loss of curbside parking.
- Maintenance responsibility if landscaped.

Cost: $1,000 per 250 sq. ft. of offset; $22,500 - $37,000

Chokers/Slow Points

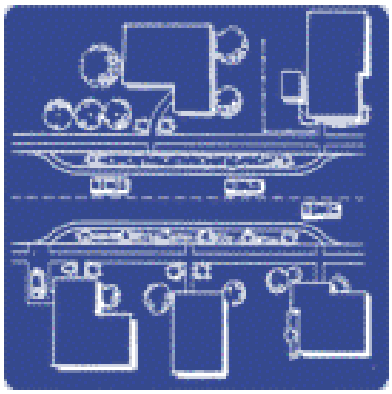
Description: Curb extensions on one or both sides of the street that narrow the street at that location. They may be designed to alter the path of travel or to create single lane, one-way traffic.

Purpose: To reduce vehicle speed mid-block; to increase pedestrian safety.

Potential Advantages
- Reduces vehicle speed (more effective when used in series).
- Can reduce crossing distance for pedestrians.
- Aesthetically pleasing if landscaped; provides visual obstruction.

Potential Disadvantages
- Some choker designs can be hazardous for cyclists; however the device can be designed to be safe and comfortable for cyclists.
- May create conflict between opposing drivers.
- May impact emergency response times.
- May divert traffic to adjacent streets without traffic calming.
- Maintenance responsibility if landscaped.
- Reduces curbside parking.

Cost: $5,000 - $15,000 per pair of offset curb extensions.



Full Closures

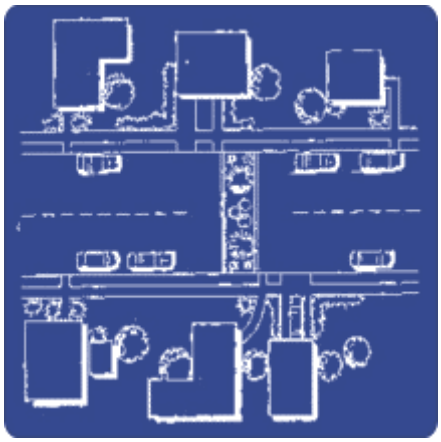
Description: Complete closure of a street either at an intersection or at a mid-block location.

Purpose: To reduce traffic volume and speed.

Potential Advantages
- Effective at reducing traffic speeds and volumes.
- Improves traffic safety.
- Can allow bicycle and pedestrian through-movements.
- Can be designed to allow emergency vehicle access.
- Aesthetically pleasing if landscaped.
- Creates effective dead-ends that may encourage pedestrian activity.

Potential Disadvantages
- May impact emergency response times.
- May divert traffic to adjacent streets.
- May increase trip length.
- May create confusion for users unless signed properly.

Cost: $5,000 - $40,000



Full Diverter

Description: Barriers placed diagonally across an intersection, blocking through movement. May be used in conjunction with stop signs.

Purpose: To reduce traffic volume.

Potential Advantages
- Reduces traffic volume on the protected street.
- Can be designed to preserve emergency vehicle access.
- Can be designed to allow pedestrian and bicycle through-movement.

Potential Disadvantages
- Diverts traffic to other streets.
- Can increase trip length.

Cost: $5,000 - $20,000

Lane Narrowing

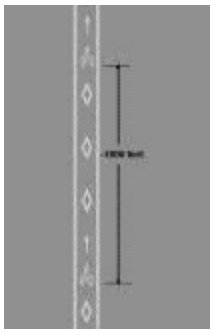
Description: Narrowing travel lanes on streets using striping (lane lines) or changes in parking configuration (angled parking or changes in parking density).

Purpose: To slow traffic speed.

Potential Advantages
- Changes can be implemented quickly.
- Striping can be modified easily if paint is used.
- Requires minimum maintenance.
- Speed may decrease and safety may be improved through the provision of positive guidance to drivers.

Potential Disadvantages
- May increase car/bike conflicts.
- Would increase regular maintenance cost.
- Residents do not always perceive striping as an effective tool for speed reduction.

Cost :The cost of lane striping is variable depending upon the type and amount installed. Crosswalks and other pavement markings are between $200 and $500 per installation. Signs are typically $200 per installation.



Median Barriers

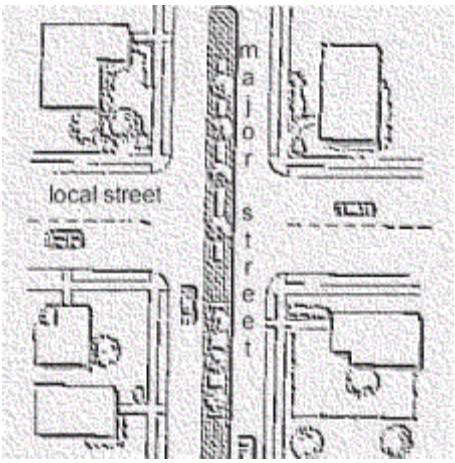
Description: Islands located along the centerline of a street and continuing through an intersection to block through movement across a major street.

Purpose: To reduce traffic speed using roadway narrowing on the street with the median, and to increase pedestrian safety. Traffic volume is reduced on cross streets because through traffic is eliminated.

Potential Advantages
- Makes intersection safer by reducing the number of conflicting turning movements.
- Can be designed to allow through-movement for cyclists traveling on local street.
- Reduces local street volumes.
- Aesthetically pleasing if landscaped.
- Eliminates the need for future traffic signal installation.

Potential Disadvantages
- May shift traffic to other locations where turn opportunities exist.
- May inconvenience local residents.
- May impact parking on the major street depending on lane width.
- Blocks emergency vehicle access and delays emergency response
- Maintenance responsibility if landscaped.

Cost: $10,000 - $20,000



Semi-Diverters

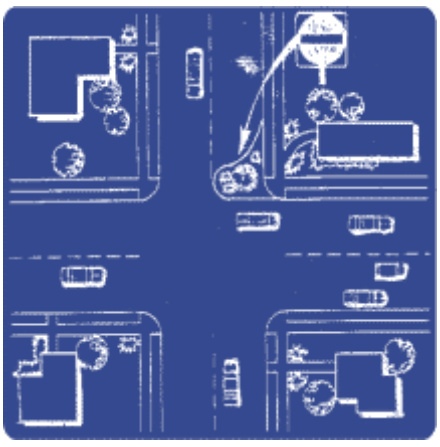
Description: Barriers that block travel in one direction for a short distance on otherwise two-way streets.

Purpose: To reduce traffic volume in the diverted direction.

Potential Advantages
- Restricts movement into a street while maintaining access and movement within the street block for residents.
- Reduces cut-through traffic.
- More self-enforcing and aesthetically pleasing than turn restriction signing.
- Reduces crossing distance for pedestrians.
- Aesthetically pleasing if landscaped.
- Emergency vehicles can travel in restricted direction.
- Can be designed to provide two-way access for bicycles.

Potential Disadvantages
- May divert traffic to parallel streets without traffic calming measures.
- May increase trip length for some residents.
- Curbside parking spaces must be eliminated adjacent to device.
- May increase emergency response times as they maneuver around the barrier.

Cost: $10,000 - $20,000



Traffic Circles

Description: Islands of varying dimensions placed in intersections around which traffic circulates.

Purpose: To slow vehicle speeds at intersections using horizontal deflection and a visual deterrent to higher speeds.

Potential Advantages
- May reduce vehicle speeds.
- Improve safety.
- Visually appealing if landscaped.
- Create a visual obstruction that deters through traffic.
- Do not restrict access for residents.

Potential Disadvantages
- Effect on vehicle speed limited to device's immediate vicinity.
- Loss of curbside parking at each corner (typically 25' to 30' of curb space is restricted at each approach).
- May increase emergency vehicle response time.
- May limit truck and bus access.
- Maintenance responsibility if landscaped.
- Automobile driver's lines of sight may be reduced if landscaped.
- May promote deliberate violation of proper movement.
- May divert traffic to parallel streets.

Cost: $5,000 to $15,000

PHASE II - VERTICAL DEFLECTION

Raised Crosswalks

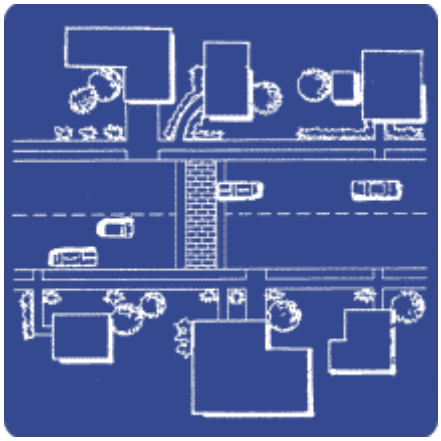
Description: Raised pavement (similar to a speed table) that may be outfitted with crosswalk markings and/or signage to channelize pedestrian crossings, providing pedestrians with a level street crossing. May be used mid-block or at intersections.

Purpose: To reduce vehicle speeds mid-block and to improve pedestrian safety.

Potential Advantages
- May reduce vehicle speeds.
- Less disruptive than speed humps.
- May improve safety for pedestrians by making them more visible.

Potential Disadvantages
- The physical forces exerted by this vertical deflection device upon fragile persons with disability may cause injury.
- Less effective at speed reduction than speed humps.
- May impact emergency vehicle response.
- May disrupt drainage depending on design.
- May divert traffic to other streets.
- May increase noise.
- May give pedestrians a false sense of security.

Cost: $2,000 per location.



Raised Intersections

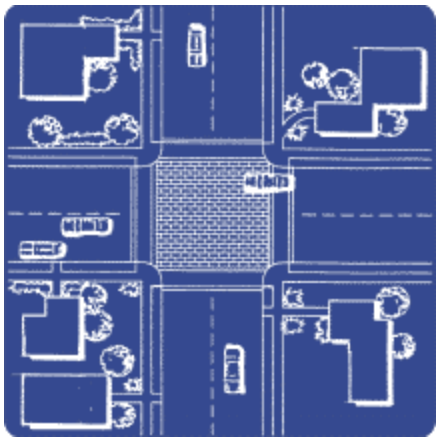
Description: Flat raised areas covering entire intersections with ramps on all approaches and often with brick or other textured materials on the flat section.

Purpose: To slow vehicle traffic at an intersection.

Potential Advantages
- Slows vehicles in intersections and therefore makes conflict avoidance easier.
- Highlights intersection.
- Improves pedestrian safety.
- Aesthetically pleasing if well designed.
- Effective speed reduction at intersection.

Potential Disadvantages
- May increase emergency response time.
- May increase turning difficulty.
- Increases maintenance.
- Impact on speed limited to within approximately 200' of intersection.
- May increase noise due to acceleration and braking.

Cost: $6,000 - $8,000



Speed Humps/Tables

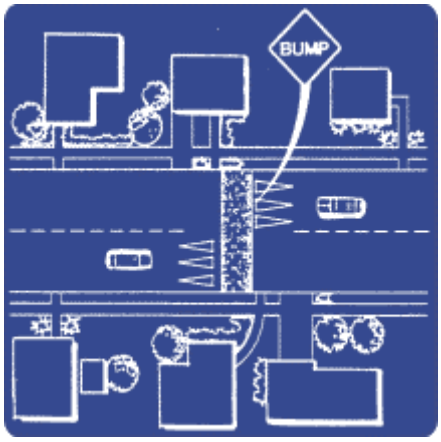
Description: Raised section of pavement across the roadway with curved transitions. Humps are generally 3.5” high and 12’ wide. Elongated speed humps (speed tables) are generally 3"-4" high x 22' wide. Impacts on vehicle speed vary with size of device.

Purpose: To reduce vehicle speed using vertical deflection.

Potential Advantages
- Reduces vehicle speed.
- Can reduce vehicular volumes.
- Does not restrict parking.
- Requires minimum maintenance.

Potential Disadvantages
- May increase emergency response times.
- May divert traffic to parallel streets.

Cost: $2,000 - $6,800



Textured Pavement

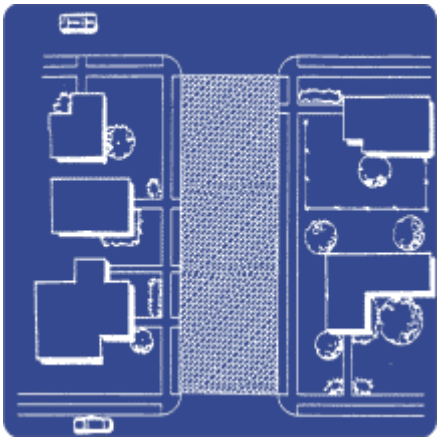
Description: A textured surface used in the roadway or crosswalk that causes drivers to feel a slight vibration over some distance, while improving the aesthetic quality of the street environment. May use brick or stone, but for safety and maintenance reasons, imprinted concrete or pavers that are less slick, less bumpy and easier to maintain are preferable.

Purpose: To reduce vehicle speed.

Potential Advantages
- Reduces vehicle speeds.
- Improves pedestrian safety.
- Can be aesthetically pleasing.

Potential Disadvantages
- Increases vehicle noise.
- Some materials can create hazards for cyclists and pedestrians, particularly when wet.
- Can be high maintenance.
- Materials like cobblestones provide too much texture and can create hazards for the disabled, particularly when the material begins to degrade.

Cost: Varies widely depending on type and amount of material used.



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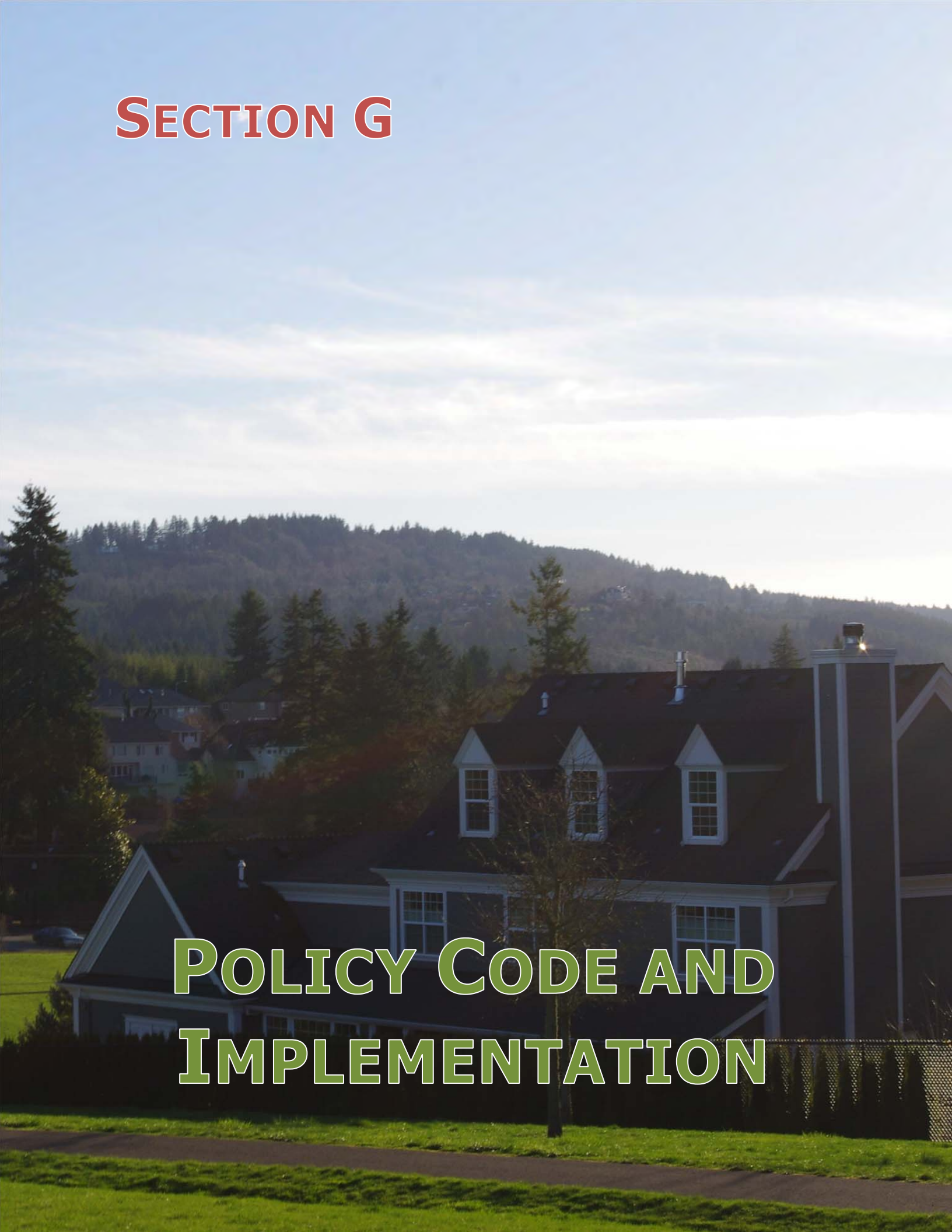

Section G

Policy Code and Implementation

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PROPOSED TRANSPORTATION GOALS AND POLICIES

The tables below focus on proposed amendments to the City's adopted transportation goals, policies and strategies that implement the updated Transportation System Plan (TSP). Identical transportation policy language is found in both Chapter 2 of the adopted TSP from 2005 and Chapter 6 of the Comprehensive Plan (Transportation). Language recommended for addition to Chapter 6 of the Comprehensive Plan is underlined and language recommended for removal is struck through. The tables in which the amendments are presented include a commentary column explaining the background and rationale for the proposed amendment.

Note that, in addition to goals, policies, and strategies (Section B, pp. 1-11), Comprehensive Plan Chapter 6 includes an introduction (Section A, p. 1) and a section addressing roadway functional classification and the transportation improvement program projects from the 2005 TSP (Section C, pp. 11-17). Proposed amendments to these sections are presented in order, in Tables 1, 2, and 3 respectively.

Table 1: Draft Proposed Amendments to SECTION A – Introduction

Existing and Proposed Text	***Commentary***
The purpose of the Transportation element of the Comprehensive Plan is to describe a multi-modal system which will serve the future transportation needs of Sherwood. The plan for the future transportation system should be capable of effective implementation, responsive to changing conditions and be consistent with plans of adjoining jurisdictions. The Plan seeks to foresee specific transportation needs and to respond to those needs as growth occurs. The original Transportation Network Plan was created in 1979. The original transportation policy element was created in 1980 as part of the first Comprehensive Plan acknowledged by the Oregon Department of Land Conservation and Development. The plan policies were updated in 1989 and a ~~new~~ Transportation Plan Update was completed in 1991. The ~~most recent~~ Transportation element ~~has been~~ was revised substantially to reflect updates ~~changes~~ in the~~an updated new~~ Transportation System Plan (TSP)~~, begun in 2003 and completed~~ in ~~March~~ 2005 and 2014. The current adopted ~~newest~~ TSP is attached as an appendix and technical reference to this Comprehensive Plan, including an analysis of the existing transportation system, changes to the functional classification of streets, an update of various inventory and plan maps, and changes to the street design standards. NOTE: The following types of capital facilities are not present within the City: 1)	*References to the TSP are updated.*

Existing and <u>Proposed</u> Text	***Commentary***
air transportation, and 2) water transportation. Therefore, they are not addressed in this plan.	

Table 2: Draft Proposed Amendments to SECTION B – Goals, Policies, and Strategies

Existing and <u>Proposed</u> Text	***Commentary***
Goal 1: Provide a supportive transportation network to the land use plan that provides opportunities for transportation choices and the use of alternative modes serving all neighborhoods and businesses.	*This is an existing goal.*
Policy 1 – The City will ensure that public roads and streets are planned to provide safe, convenient, efficient and economic movement of persons, goods and services between and within the major land use activities. ~~Existing rights of way shall be classified and improved and new streets built based on the type, origin, destination and volume of current and future traffic.~~	*Deleted text has been moved to Strategies.*
Policy 2 – Through traffic shall be provided with routes that do not congest local streets and impact residential areas. Outside traffic destined for Sherwood business and industrial areas shall have convenient and efficient access to commercial and industrial areas without the need to use residential streets.	*This is an existing policy.*
Policy 3 – Local traffic routes within Sherwood shall be planned to provide convenient circulation between home, school, work, recreation and shopping. Convenient access to major out-of-town routes shall be provided from all areas of the city.	*This is an existing policy.*
Policy 4 – The City shall encourage the use of more energy-efficient and environmentally sound alternatives to the automobile by: • The designation and construction of bike paths and pedestrian ways; • The scheduling and routing of existing mass transit systems and the development of new systems to meet local resident needs; and	*This is an existing policy.*

Existing and Proposed Text	***Commentary***
• Encouraging the development of self-contained neighborhoods, providing a wide range of land use activities within a single area.	
Policy 6 – The City shall work to ensure the transportation system is developed in a manner consistent with state and federal standards for the protection of air, land and water quality, including the State Implementation Plan for complying with the Clean Air Act and the Clean Water Act.	*This is an existing policy.*
Policy 7 – The City ~~of Sherwood~~ shall foster transportation services to the transportation disadvantaged including the young, elderly, handicapped, and poor.	*This proposed change reflects a recommendation to make all references to the City [of Sherwood] consistent throughout this section.*
Policy 8 – The City ~~of Sherwood~~ shall consider infrastructure improvements with the least impact to the environment.	*This is an existing policy.*
Policy 9 – The City ~~of Sherwood~~ shall ~~develop a transportation demand management program to complement investments in infrastructure (supply).~~ manage the transportation system to improve reliability and maximize efficient use of existing facilities.	*The proposed modification provides a more general policy and minimizes redundancy with (existing) Strategy 6.*
Strategies	
1. Establish and maintain design standards for public rights of way in accordance with the Functional Street Classification System.	*Modified language is based on existing Policy 1.*
~~1.~~2. Make traffic safety a continuing effort through effective law enforcement and educational programs.	*This is an existing strategy.*
~~2.~~ 3. Design and manage the city street system to meet ~~Adopt~~ an acceptable ~~level of service~~ mobility standard for the roadway network that is consistent with regional transportation policies.	*The proposed change reflects the City's interest in having both level of service and volume to capacity (v/c) as measures by which to evaluate mobility and provide better context for decision making. The mobility standards will be in the adopted TSP*

Existing and <u>Proposed</u> Text	***Commentary***
	and implemented through development review and the traffic impact analysis requirements.
~~3.~~ <u>4.</u> ~~Develop~~ <u>Plan for</u> an array of transportation assets and services to meet the needs of the transportation-disadvantaged.	*The proposed modification narrows the intent of this strategy to a system-level planning effort on the part of the City. Note that more specific policies regarding providing for the transportation disadvantaged can be found under Goal 5.*
~~4.~~ <u>5.</u> Evaluate, identify, and map existing and future neighborhoods for potential small scale commercial businesses to primarily serve local residents.	*This existing strategy to integrate small-scale, neighborhood commercial uses into existing neighborhoods is related to Policy 4. Note that this existing strategy does not specify the level of analysis or proposed approach to implement such a study. This strategy should be reevaluated to ensure that it continues to be relevant and match the City's priorities.*
~~5.~~ <u>6.</u> Adopt a strategy for reducing impacts of impervious surfaces to stormwater management.	*This is an existing strategy.*
~~6.~~ <u>7.</u> Identify and adopt a transportation demand management strategy <u>and program</u> to provide incentives to employers who develop transportation options for employees.	*This addition is consistent with modified Policy 9.*
<u>8. Seek strategic opportunities to improve connectivity in the city, including measures such as mid-block crossings connecting to commercial areas.</u>	*This language is based on comments from the Citizen Advisory Committee.*

Existing and Proposed Text	***Commentary***
Goal 2: Develop a transportation system that is consistent with the City's adopted comprehensive land use plan and with the adopted plans of state, local, and regional jurisdictions.	*This is an existing goal.*
Policy 1 – The City shall implement the transportation plan based on the functional classification of streets shown in ~~Table 8-1~~ Figure 16 of the TSP.	*This is existing policy with amendments proposed for updating a TSP reference.*
Policy 2 – The City shall maintain a transportation plan map that shows the functional classification of all streets within the Sherwood urban growth area. Changes to the functional classification of streets must be approved through an amendment to the Sherwood Comprehensive Plan, Part 2, Chapter 6 - Transportation Element.	*This is an existing policy.*
Policy 3 – The Sherwood transportation system plan shall be consistent with the ~~c~~City's adopted land use plan and coordinated with transportation plans and policies of other local jurisdictions, especially Washington County, Clackamas County, the City of Wilsonville, and the City of Tualatin.	*This is an existing policy with a proposed modification that indicates that City plans do not have to mirror neighboring jurisdictions' plans, but should not be inconsistent with these plans.*
Policy 4 – The City will coordinate with Metro regarding implementation of the Regional Transportation Plan and ~~related transportation sections of~~ the Metro Regional Transportation Functional Plan.	*These edits are proposed for consistency with regional plans.*
Policy 5 – The City shall adopt and maintain a street classification system that is compatible with the Washington County Functional Classification System for areas inside the Washington County Urban Area Plan and with the Washington County 2020 Transportation Plan (Ordinance 588).	*The proposed edit signifies the City's ongoing commitment to coordination with Washington County.*
Policy 6 — The City will work with Metro and other regional transportation partners to implement regional transportation system ~~demand~~ management and operations programs where appropriate.	*The proposed modifications broaden the scope of this policy to transportation system management and operations (TSMO) programs, of which transportation demand*

Existing and Proposed Text	***Commentary***
	management (TDM) is a part.
Policy 7 — The City shall work cooperatively with the Port of Portland and local governments in the region to ensure sufficient air and marine passenger access for Sherwood residents.	*This is an existing policy.*
Policy 8 – The City shall work to develop more transportation options within city limits to increase opportunities for walking, biking, and taking transit and to reduce single occupancy vehicle (SOV) trips. ~~Establish local non-Single Occupant Vehicle (SOV) modal targets, subject to new data and methodology made available to local governments, for all relevant design types identified in the RTP. Targets must meet or exceed the regional modal targets for the 2040 Growth Concept land use design types as illustrated in the following table:~~ ~~2040 Regional Modal Targets~~ ~~Non-single Occupancy Vehicles~~	*Proposed amendments reflect a recommendation to replace the existing policy with a more general statement that commits the City to reduce SOV trips.*
Strategies	
1. Develop and maintain an intergovernmental agreement between Sherwood, Washington County and the City of Tualatin, consistent with ORS 195.065, to establish urban service boundaries and responsibilities for transportation facilities within and adjacent to the City of Sherwood.	*This is an existing strategy with amendments proposed for clarity only.*
2. Work cooperatively with ODOT, Washington County, and Metro to ~~develop an interchange area management plan for the Pacific Highway 99-W and Tualatin- Sherwood Highway intersection.~~ improve regional mobility through such efforts as the Westside Solution Study and the I-5 to 99W Connector project.	*Proposed language reflects the City's interests in regional transportation planning and the fact that planning for a grade-separated interchange is not an identified transportation need.*
3. Work cooperatively with ODOT, Metro, Washington	*Proposed language reflects the*

Existing and Proposed Text	***Commentary***
County, and Tualatin to develop a corridor management plan for Pacific Highway 99W and Tualatin-Sherwood Road ~~to preserve~~ that ▫ maintains access to the highway ~~for~~ from the ~~c~~City's arterial and collector streets and ▫ improves pedestrian and bicycle mobility, connectivity and safety in the vicinity of, and crossing, the highway.	*community's focus on Highway 99W and desire for enhancements related to non-motorized modes of transportation.*
4. Participate in regional planning efforts, including the development of the Regional Transportation Plan (RTP), to secure funding for safety and capacity improvements to the City of Sherwood's arterial and collector street system that are necessary to maintain acceptable levels of service for local and through traffic.	*This is an existing strategy.*
5. Define transportation corridors in advance through long range planning efforts.	*This is an existing strategy.*
6. Coordinate ~~the~~ local transportation network planning and improvements with adjacent governmental agencies, such as Washington County, Metro, and the State. Coordinate with ODOT in implementing their Six-Year Plan and the State Highway Improvement Program.	*This is an existing strategy with amendments proposed for clarity only.*
7. Adopt performance measures that are consistent with regional modal targets for non-single occupancy vehicles and track the City's progress with meeting adopted goals and policies each successive TSP update.	*This proposed new policy acknowledges regional targets, which are reflected in the performance measures in TSP.*
8. Accommodate car-sharing programs in the city.	*This adopted strategy from the Sherwood Town Center Plan (Strategy 9.4) has been modified to apply citywide.*
9. Promote development of transportation demand management programs by employers in the city. Focus on employers with 100 employees or less that are not	*The first part of this strategy is adopted Strategy 9.5 in the Sherwood Town Center Plan. The strategy has*

Existing and <u>Proposed</u> Text	***Commentary***
<u>subject to the Oregon Department of Environmental Quality's Employee Commute Options program requirements.</u>	*been modified to apply citywide. Additional language is based on comments from the Citizen Advisory Committee.*
<u>10. Support projects that remove regional through traffic from the local transportation system or allow through traffic to bypass Sherwood.</u>	*This proposed new strategy reflects a Citizen Advisory Committee recommendation.*

Existing and Proposed Text	***Commentary***
Goal 3: Establish a clear and objective set of transportation design and development regulations that addresses all elements of the city transportation system and that promote access to and utilization of a multi-modal transportation system.	*This is an existing goal.*
Policy 1 – The City ~~of Sherwood~~ shall ~~adopt~~ require~~ments~~ that proposed ~~for~~ land developments ~~that~~ mitigate ~~the~~ adverse traffic impacts and ensure that all new development contributes a fair and proportionate share toward on-site and off-site transportation system improvement remedies.	*This is an existing policy with amendments proposed for clarity only.*
Policy 2 – The City ~~of Sherwood~~ shall require dedication of land for future streets when development is approved. The property developer shall be required to make full street improvements for their portion of the street commensurate with the proportional benefit that the improvement provides the development.	*This is an existing policy.*
Policy 3 – The City ~~of Sherwood~~ shall require applicable developments (as defined in the development code), to prepare a traffic impact analysis.	*This is an existing policy.*
Policy 4 – The City ~~of Sherwood~~ shall adopt and maintain a uniform set of design guidelines that provide one or more typical cross section associated with each functional street classification. For example, the City may allow for a standard roadway cross-section and a boulevard cross section for arterial and collector streets.	*This is an existing policy with amendments proposed to reflect existing city practices.*
Policy 5 – The City shall adopt and maintain roadway design guidelines and standards that ensure sufficient right-of-way is provided for necessary roadway, bikeway, and pedestrian improvements.	*This is an existing policy with amendments proposed to reflect existing city practices.*
Policy 6 – The City shall adopt and maintain roadway design guidelines and standards that ensure sidewalks and bikeways be provided on all arterial and collector streets for the safe and efficient movement of pedestrians and	*This is an existing policy with amendments proposed to reflect existing city practices.*

Existing and Proposed Text	***Commentary***
bicyclists between residential areas, schools, employment, commercial and recreational areas.	
Policy 7 – The City ~~of Sherwood~~ will generally favor granting property access from the street with the lowest functional classification, including alleys. Additional access to arterials and collectors for single family units shall be prohibited. ~~and~~ Residential uses should be encouraged to use access from frontage roads and local streets. Frontage roads shall be designed as local streets.	*This is an existing policy with amendments proposed for clarity only.*
Policy 8~~:~~ – The City will adopt and maintain access control and spacing standards for all arterial and collector streets to improve safety and promote efficient through street movement. Access control measures shall be generally consistent with Washington County access guidelines to ensure consistency on city and county roads.	*This is an existing policy with amendments proposed to reflect city practices.*
Policy 9 – The City will establish and maintain guidelines and standards for the use of medians and islands for regulating access and providing pedestrian refuge on arterial and collector streets.	*This is an existing policy with amendments proposed to reflect city practices.*
Policy 10 – The City ~~of Sherwood~~ will establish and maintain a set of guidelines and standards for traffic calming measures to retrofit existing streets and as part of land use review.	*This is an existing policy with amendments proposed to reflect city practices.*
Policy 11 – The City will develop and maintain uniform traffic control device standards (signs, signals, and pavement markings) and uniformly apply them throughout the city.	*This is an existing policy with amendments proposed to reflect city practices.*
Policy 12 – ~~The City of Sherwood will adopt parking control regulations for streets as needed. On-street parking shall not be permitted on any street designated as an arterial, unless allowed by special provision within the Town Center (Old Town) area or through the road modifications process outlined in the Sherwood Development Code.~~ The City will support actions that provide sufficient parking for	*Proposed amendments reflect a recommendation to replace this policy with adopted Policy 9 from the Town Center Plan and the more specific Strategies from this plan (see proposed Strategies 11-18).*

Existing and Proposed Text	***Commentary***
businesses and residents, while maximizing the efficiency of parking areas.	
Policy 13 – The City ~~of Sherwood~~ shall ~~adopt new development codes~~ explore and adopt regulatory and financing tools to fill in gaps in existing sidewalks to achieve a consistent pedestrian system.	*These modifications reflect the fact that the City needs to first have a policy discussion regarding viable funding options before development requirements would be modified to be consistent with the preferred/adopted funding methods.*
Policy 14 – The City will implement transportation system improvements and standards that increase access between residences and civic, employment, and commercial uses within the Town Center boundary and that improve safety for all modes of transportation for people traveling to, within and adjacent to the Town Center.	*This is adopted Policy 7 in the Sherwood Town Center Plan.*
Policy 15 – The City will balance the need for vehicular mobility within and adjacent to the Town Center with the other transportation and land use goals and priorities identified in the Town Center Plan.	*This is adopted Policy 8 in the Sherwood Town Center Plan.*
Strategies	
1. Ensure consistency between the Transportation System Plan, development code requirements, and the ~~Incorporate typical street cross section~~ guidelines in the City's ~~public works~~ engineering design standards ~~that address~~ regarding street cross sections and other standards related to vehicular, bicycle, pedestrian, and transit needs.	*The existing strategy is a "one time" action; proposed modifications address the ongoing need to ensure consistency between City plans and codes.*
2. ~~Include a Road Modification Process~~ Maintain a process in the ~~Sherwood D~~development ~~C~~code ~~to provide a procedure for~~ that allows the City to grant~~ing~~ variances from street design standards for parking, pedestrian facilities, signals, and other roadway features.	*The proposed modification is consistent with existing Code language and City procedures.*

Existing and Proposed Text	***Commentary***
3. Consider the ~~Metro 2040~~ Regional Transportation Plan Regional System ~~Street~~ Design Concepts ~~Elements~~ when planning for improvements to City transportation facilities, including those built by ODOT or TriMet.	*The proposed modifications are consistent with the terms used in the RTP.*
4. ~~Incorporate~~ Continue to implement guidelines in the City's development code that establish when a local street refinement plan must be prepared and the process for preparing such a plan.	*The proposed modification is consistent with existing Code language and City procedures.*
5. Periodically review the development code, and A~~a~~mend ~~the city development code~~ as necessary, to ensure that ~~regulate~~ vehicular access, spacing, circulation, and parking continues to be regulated consistent with plan policies.	*The proposed modifications are consistent with the intent of the existing policy.*
~~6. Amend the city development code as necessary to include specific guidelines for determining the proportional benefit contribution associated with requirements for street dedication and the construction of off-site transportation improvements.~~	*Proposed code amendments include a new section addressing rough proportionality, so this strategy is no longer needed.*
~~7. Amend the development code to include standards and procedures for a transportation impact analysis (TIA). Refer to Appendix for example.~~	*Proposed code amendments include a new section addressing TIA thresholds and requirements, so this strategy is no longer needed.*
~~8.~~ 6. Develop a list to prioritize refinement plan needs, such as corridor plans and interchange area management plans.	*This is an existing strategy.*
~~9.~~ 7. ~~Amend development code to include provisions for implementing traffic calming mechanisms.~~ Allow for the implementation of traffic calming mechanisms through provisions in the development code.	*The proposed modification reflects existing code language.*
~~10.~~ 8. Create a map that identifies locations targeted for on-street parking, such as in neighborhood commercial areas and the town center that support multi-modal	*This is an existing strategy.*

Existing and Proposed Text	***Commentary***
options.	
~~11.~~ 9. Regularly review, and update as necessary, the development code to ensure consistency with regional parking requirements.	*This is an existing strategy; modification reflect city practices.*
~~12.~~ 10. Develop a "conceptual new streets plan" map for all contiguous areas of vacant and redevelopable parcels of 5 (five) or more acres planned or zoned for residential or mixed-use development, and adopt the map as part of the TSP.	*This is an existing strategy.*
11. Implement the parking strategies in the Sherwood Town Center Plan, including: ▫ Evaluate and monitor parking supply and demand in Old Town. ▫ Evaluate the parking needs for townhome developments in the Town Center. ▫ Evaluate the needs of commercial uses in the Langer Drive Commercial District.	*This proposed strategy incorporates and abbreviates adopted Strategies 9.1, 9.2, 9.3 and 9.6 from the Sherwood Town Center Plan.*
~~13.~~ 12. ~~Consider a "mixed-use" overlay zone in the development code that will apply to the Six Corners area. Include design standards that will encourage a vibrant, pedestrian friendly environment through the implementation of boulevards, medians, mixed-use development and site design.~~ Support public or private development of the bicycle and pedestrian improvements shown on Map 2 of the Town Center Plan.	*The proposed amendment reflects a recommendation to replace existing Strategy 13 with adopted Strategies in the Town Center Plan. Underlined text is adopted Strategy 7.1 in the Sherwood Town Center Plan.*
13. Enhance Sherwood Boulevard for bicycle and pedestrian travel consistent with the key changes identified for this roadway in the Town Center Plan.	*This is adopted Strategy 7.2 in the Sherwood Town Center Plan.*
14. Enhance Langer Drive for pedestrian and bicycle travel to create a complete street that supports a	*This is adopted Strategy 7.3 in the*

Existing and <u>Proposed</u> Text	***Commentary***
<u>vibrant mixed use district, consistent with the key changes identified for this roadway in the Town Center Plan.</u>	*Sherwood Town Center Plan.*
<u>15. Work with ODOT to provide safe pedestrian crossing movements for all directions at 99W intersections.</u>	*This is adopted Strategy 7.4 in the Sherwood Town Center Plan.*
<u>16. Identify and consider all funding sources appropriate and available to work with property owners to fill gaps in sidewalk system along neighborhood streets.</u>	*This is adopted Strategy 7.5 in the Sherwood Town Center Plan.*
<u>17. The City will support collaborative solutions that enhance access and improve safety for pedestrians and all other modes of transportation within, adjacent to and into the Town Center.</u>	*This is adopted Strategy 7.6 in the Sherwood Town Center Plan.*
<u>18. The City will work with the County, ODOT, and local stakeholders to enhance vehicular and pedestrian access from the Town Center to developments adjacent to the Town Center.</u>	*This is adopted Strategy 8.4 in the Sherwood Town Center Plan; Strategies 8.2 and 8.3 included direction for the current TSP update process and have been addressed.*
<u>19. The City will reexamine local street standards and will explore appropriate locations within the city and circumstances under which a narrower street standard may be permitted as part of new development.</u>	*Reducing pavement width is a Transportation Planning Rule requirement. Benefits include minimizing impervious surface, diminishing run-off/pollution, freeing land for other uses, etc. The proposed strategy acknowledges that there may be situations where the City's existing local street width standard could be reduced in order to minimize impervious surface, diminish run-off/pollution, free land for other uses, etc. Because of issues regarding restricting parking and parking enforcement, among others, the City*

Existing and <u>Proposed</u> Text	***Commentary***
	needs more community discussion before a narrower local standard can be implemented; this policy commits the City to having this community conversation.

Existing and Proposed Text	***Commentary***
Goal 4: Develop complementary infrastructure for bicycles and pedestrian facilities to provide a diverse range of transportation choices for city residents.	*This is an existing goal.*
Policy 1 – The City ~~of Sherwood~~ shall provide a supportive transportation network to the land use plan that provides opportunities for transportation choices and the use of alternative modes.	*This is an existing policy.*
Policy 2 – Sidewalks and bikeways shall be provided on all arterial and collector streets for the safe and efficient movement of pedestrians and bicyclists between residential areas, schools, employment, commercial and recreational areas.	*This is an existing policy.*
Policy 3 – The City ~~of Sherwood~~ will pursue development of local and regional pedestrian trail facilities, especially a trail system connection between the city and the Tualatin National Wildlife Refuge.	*This is an existing policy.*
Policy 4—The City ~~of Sherwood~~ shall provide design standards for roadway ~~traffic calming~~ features ~~such as traffic circles, curb extensions, bulb-outs, and speed humps~~ that make roadways safer for walking and biking.	*This is an existing policy, with minor amendments proposed to broaden applicability; more specific action is in Strategy 8.*
Policy 5 – The City ~~of Sherwood~~ shall ~~include~~ require~~ments for the provision of~~ short-term and long-term bicycle parking ~~on large~~ be included as part of commercial, industrial, institutional, and multi-family residential projects.	*The TPR, RTP, and RTFP require bicycle parking for these uses in general, not just "large" projects.*
Policy 6 – The City ~~of Sherwood~~ will coordinate the bikeway system with adjacent jurisdictions, especially Tualatin, Wilsonville, Clackamas and Washington County.	*This is an existing policy.*
Policy 7 – The City will work to eliminate architectural barriers from buildings and public improvements, which limit elderly and handicapped use of the transportation system.	*This is an existing policy.*

Existing and <u>Proposed</u> Text	***Commentary***
<u>Policy 8 – The City will require new development to accommodate bicyclists and pedestrians, and to provide non-motorized transportation facilities consistent with the proposed use and pursuant to applicable code requirements.</u>	*This proposed new policy acknowledges private development's role in providing bicycle and pedestrian facilities.*
Strategies	
1. Include pedestrian and bike projects in the capital improvement plan to ensure investment in alternative modes~~;~~<u>.</u>	*This is an existing strategy.*
2. Use intergovernmental agreements with Tualatin and Washington County for the coordination of urban services per ORS 196.065 to coordinate the bikeway system and trail system~~;~~<u>.</u>	*This is an existing strategy.*
3. Include design standards for sidewalk and bikeway facilities in the ~~c~~<u>C</u>ity's roadway design guidelines~~;~~<u>.</u>	*This is an existing strategy.*
4. Include provisions for planning the location of pedestrian and bike routes for connecting residential, school, commercial, employment and recreational areas in the development code guidelines for preparing local street refinement plans~~;~~<u>.</u>	*This is an existing strategy.*
5. Include a system of bikeways along collector and arterial roadways ~~as illustrated on the Transportation Plan Map;~~<u>.</u>	*This is existing strategy with minor amendments proposed for accuracy. (The Transportation Plan Map shows recommended projects rather than bikeways along all collectors and arterials.)*
6. Include requirements in the development code for private development to provide bike and pedestrian facilities as <u>are related and proportional to the projected impacts of the proposed development and that are consistent with</u> ~~indicated on~~ the Transportation Plan <u>Map in TSP Figures 12, 13, and 14</u>~~;~~<u>.</u>	*These changes include updated references to the TSP.*

Existing and <u>Proposed</u> Text	***Commentary***
7. Include design standards for sidewalks and bicycle facilities in the <u>City's</u> roadway design guidelines~~;~~<u>.</u>	*This is an existing strategy.*
8. Pursue traffic calming techniques, such as traffic circles, curb extensions and speed humps, for neighborhood and local streets so as to provide safe passage for pedestrians and bicyclists, and a more pleasant neighborhood environment for residents.	*This is an existing strategy with proposed additions for clarity.*
9. Construct and install infrastructure, including storm drain inlets, which are pedestrian and bicycle-friendly.	*This is an existing strategy.*

Existing and Proposed Text	***Commentary***
Goal 5: Provide reliable convenient transit service to Sherwood residents and businesses as well as special transit options for the ~~c~~City's elderly and disabled residents.	*This is an existing goal.*
Policy 1 – The City shall support and encourage p~~P~~ublic transportation ~~shall be provided~~ as a~~n alternative~~ viable means of transportation in Sherwood.	*The policy has been re-written to reflect the City's supporting role in providing public transportation.*
Policy 2 – The City ~~of Sherwood~~ will work with Tri-Met to expand transit services to all parts of the City through additional routes, more frequent service, and transit oriented street improvements.	*This is an existing policy.*
Policy 3 – Park-and-ride facilities should be located with convenient access to the arterial system to facilitate rider transfer to transit and car pools.	*This is an existing policy.*
Policy 4 – The City will ~~E~~encourage the construction of bus shelters and park-n-ride lots in the vicinity of planned transit corridors.	*This is an existing policy.*
Policy 5 – The City ~~of Sherwood~~ will support the establishment of a "feeder" transit route from downtown Sherwood to Tualatin employment centers.	*This is an existing policy.*
Policy 6 – The City ~~of Sherwood~~ will support park and ride facilities that are sited for the maximum convenience of commuters and transit riders.	*This is an existing policy.*
Policy 7—The City ~~of Sherwood~~ will support regional efforts for the preservation and development of appropriate rail rights-of-way for passenger rail service, in particular for serving local and regional commuter rail needs in Washington County, Clackamas County, and Yamhill County.	*Review for consistency with the updated TSP recommendations. Note that this policy is related to new Strategy 5 (adopted Strategy 6.3 in the Sherwood Town Center Plan).*
Policy 8 – The City ~~of Sherwood~~ will encourage the provision of special transportation services (i.e., van pools, or car pools, dial-a-ride, etc.) to transportation disadvantaged by Tri-Met and community-based service	*This is an existing policy.*

Existing and Proposed Text	***Commentary***
providers.	
Policy 9 – ~~Fully integrate the City into the regional transit system by expanding hours and destinations served by transit providers.~~ The City supports transit service that serves the needs of the residents and businesses in and adjacent to the Town Center, including maintaining a robust local transit service network and planning for future local and high capacity transit service to neighboring cities.	*Deleted policy is somewhat redundant to Policy 2 and suggests that the City has authority to expand transit hours of service and routes. Proposed language is adopted Policy 6 in the Town Center Plan.*
Policy 10 – The City will meet RTP goals of providing a safe and convenient pedestrian circulation system.	*This is an existing policy.*
Policy 11 – The City will participate in and will support regional efforts that seek to improve multi-modal transportation options that benefit the residents and business in Sherwood.	*The proposed policy recognizes the City's participation in regional transportation projects such as the Southwest Corridor and Tonquin Trail projects.*
Policy 12 – The City will support providing and improving transit connections between Sherwood, Tualatin, and other communities in the region, particularly for work-related trips.	*This proposed policy language is based on comments from the Citizen Advisory Committee.*
Strategies	
1. In consultation with TriMet and consistent with their guidelines, ~~D~~develop and maintain design standards ~~to separate~~ for bus pullouts and stops on ~~buses from the~~ arterial roadways ~~while~~ to facilitate safe and efficient ~~transferring~~ passengers transfers. ~~Establish a bus turnout design for stops on arterial streets.~~	*Proposed modifications defer to TriMet regarding the preferred design for bus pullouts and stops.*
2. ~~Update development code to include design guidelines that require transit stops to be accessible to transit riders, especially the elderly and handicapped.~~ Ensure new development and redevelopment provide connections to transit streets and facilities, providing protected street crossings and bus stop amenities, if	*Existing Strategy is a "one time" action; proposed language is consistent with existing code requirements for new development in the vicinity of a transit stop.*

Existing and Proposed Text	***Commentary***
needed.	
~~3. Amend development code to require development on sites at major transit stops(defined by the City of Sherwood) to do the following:~~ ~~▫ Locate within 20 feet of (or provide a pedestrian plaza) at the major transit stop;~~ ~~▫ Provide reasonably direct pedestrian connections between the transit stop and building entrances on the site;~~ ~~▫ Provide a transit service passenger landing pad accessible to disabled persons;~~ ~~▫ Provide an easement or right-of-way dedication for a passenger shelter and underground utility connection from the new development to the transit amenity if requested by the public transit provider; and~~ ~~▫ Improve public safety by providing lighting at transit stops.~~	*Strategy is reflected in existing code requirements for new development in the vicinity of a transit stop and is no longer needed.*
~~4. Work with Tri-Met and Metro to extend transit options to Sherwood, which may include:~~ ~~▫ High capacity transit service along 99W terminating near Six Corners;~~ ~~▫ Potential extension of commuter rail line from Lake Oswego to Sherwood on the existing rail line with service to Newberg or McMinnville; and~~ ~~▫ Other regional transit service connections, such as frequent bus, interurban bus, as appropriate.~~ 3. Identify the ongoing transit needs within the community and work with Tri-Met and other transit providers to enhance services to address short and	*This existing strategy has been updated; language proposed here is Strategy 6.1 in the Town Center Plan.*

Existing and <u>Proposed</u> Text	***Commentary***
<u>long-term transit needs in the community.</u>	
<u>4. Work with Metro, as well as the cities of Tualatin and Tigard, to explore feasible modes and locations to provide high-capacity transit service to the Town Center and adjacent areas.</u>	*This is adopted Strategy 6.2 in the Sherwood Town Center Plan.*
<u>5. Periodically evaluate the feasibility of passenger service along the existing rail lines as the Town Center grows.</u>	*This is adopted Strategy 6.3 in the Sherwood Town Center Plan.*
<u>6. Continue to explore opportunities to achieve long-term transit supportive densities in the Town Center in order to increase the viability of high-capacity transit.</u>	*This is adopted Strategy 6.4 in the Sherwood Town Center Plan.*

Existing and <u>Proposed</u> Text	***Commentary***
Goal 6: Provide a convenient and safe transportation network within and between the Sherwood Old Town ~~(Town Center)~~ and Six Corners area that enables mixed use development and provides multi-modal access to area businesses and residents.	*This goal and its policies and strategies are consistent with the adopted Town Center Plan, but it is proposed that references to the Town Center be removed because the Town Center now applies to an area larger than Old Town.*
Policy 1 – The City ~~of Sherwood~~ shall continue to refine and develop existing and new design guidelines and special standards for the Old Town and Six Corners areas to facilitate more pedestrian and transit friendly development.	*This is an existing policy.*
Policy 2 – The City ~~of Sherwood~~ shall work to provide connectivity, via the off-street trail system and public right-of-way acquisitions and dedications, to better achieve street spacing and connectivity standards.	*This is an existing policy.*
Strategies	
1. Provide handicap ramps at all intersections with landings connected to sidewalk improvements, especially within Six Corners and Old Town areas.	*This is an existing strategy.*
2. <u>Work with transit service providers to</u> ~~D~~<u>d</u>esign transit stops in~~-~~ to meet ADA requirements for transit accessibility.	*This is an existing strategy with minor amendments proposed acknowledge the relationship with transit service providers in designing transit stops.*
3. Adopt design and development guidelines for the Old Town areas that facilitate pedestrian use and a mix of commercial and residential development.	*This is an existing strategy.*
~~4. Adopt parking guidelines for the Old Town areas that are compatible with the parking guidelines established in Title 2 of the Metro Urban Growth Management Functional Plan.~~	*It is recommended to replace this strategy with proposed Goal 3, Strategy 11, language that was developed as part of the Town Center Plan and reflects the need for a parking study*

Existing and <u>Proposed</u> Text	***Commentary***
	and strategy for Old Town.

Existing and <u>Proposed</u> Text	***Commentary***
Goal 7: Ensure that efficient and effective freight transportation infrastructure is developed and maintained to support local and regional economic expansion and diversification consistent with City economic plans and policies.	*This is an existing goal.*
Policy 1 — The City ~~of Sherwood~~ will collaborate with federal, state and neighboring local governments and private business to ensure the investment in transportation infrastructure and services deemed necessary by the City to meet current and future demand for industrial and commercial freight movement.	*This is an existing policy.*
Policy 2 — The City ~~of Sherwood~~ will adopt implementing regulations that provide for safe and convenient access to industrial and commercial areas for commercial vehicles, including freight loading and transfer facilities.	*This is an existing policy.*
Policy 3 — The City ~~of Sherwood~~ will work cooperatively with local, regional and state agencies to protect the viability of truck and freight service routes within, through, and around the City of Sherwood, especially for Pacific Highway 99-W, the Tualatin-Sherwood Highway, and the ~~planned~~<u>multi-corridor</u> I-5/Hwy 99-W Connector corridor <u>strategy</u>.	*This is an existing policy with minor amendments to acknowledge that multiple facilities will be involved in the I-5/Highway 99-W Connector.*
Policy 4 — The City ~~of Sherwood~~ will work cooperatively with local, regional and state governments to ensure there is adequate air transportation infrastructure to serve local needs at regional airport facilities, including the Hillsboro Airport and Portland International airport.	*This is an existing policy.*
Policy 5 — The City ~~of Sherwood~~ will strongly encourage the preservation of rail rights-of-way for future rail uses, and will work with appropriate agencies to ensure the availability of rail services to its industrial lands.	*This is an existing policy.*
Policy 6 — The City ~~of Sherwood~~ will cooperate with local, regional and state governments to provide for regional marine freight infrastructure sufficient to serve local needs.	*This is an existing policy.*

Existing and Proposed Text	***Commentary***
Policy 7 — The City ~~of Sherwood~~ will cooperate with the Portland Development Commission, Port of Portland, Washington County, and other economic development agencies to ensure the availability of inter-modal connectivity facilities deemed necessary to facilitate seamless freight transfer between all transport modes.	*This is an existing policy.*
Strategies	
1. Revise the ~~Sherwood~~ ~~D~~development ~~C~~code as necessary to include clear and objective standards for the provision of freight loading and handling facilities, such as restricted on-street parking, loading docks, truck access ways, and rail spurs, in all industrial and commercial development districts.	*Note that proposed development code revisions include provisions for on-street loading. [Proposed new Subsection C in Section 16.94.030 (Off-Street Loading Standards).]*
2. Participate in regional economic development planning efforts related to inter-modal transportation facilities.	*This is an existing strategy.*
3. Adopt appropriate standards to ensure the preservation of rail access corridors to ~~Sherwood~~ the City's industrial land base.	*This is an existing strategy.*

Existing and Proposed Text	***Commentary***
Goal 8: The ~~Sherwood~~ City's transportation network will be managed in a manner that ensures the plan is implemented in a timely fashion and is kept up to date with respect to local and regional priorities.	*This is an existing goal.*
Policy 1 – The City ~~of Sherwood~~ shall develop and pursue a systematic approach to implementing the transportation network.	*This is an existing policy with amendments proposed to reflect existing city practices.*
Policy 2 – The City ~~of Sherwood~~ shall pursue a diversified funding strategy to implement the transportation system plan including private, public and regional sources.	*This is an existing policy.*
Policy 3 – The City ~~of Sherwood~~ shall use its adopted capital improvement plan to prioritize and schedule transportation projects based upon need as shown in the Transportation System Plan. Incorporate the transportation system priorities from the TSP into the cCity's capital improvement planning process.	*This is an existing policy.*
Policy 4 – Project scheduling shall be performed in a systematic manner based on the priority rating process outlined in the Transportation System Plan and available financial resources.	*This is an existing policy.*
Policy 5 – The Transportation System Plan shall be periodically updated, preferably on a five-year cycle, to assure consistency with changing ideas, philosophies, and related policies.	*This is an existing policy.*
Strategies	
1. Participate in MPAC, JPACT and other Metro advisory bodies to promote ~~Sherwood~~ the City's transportation system improvements.	*This is an existing strategy.*
2. Local private financing resources will include right of way dedication and developer contributions to street improvements, and local improvement districts. Public resources will include local system development	*This is an existing strategy.*

Existing and Proposed Text	***Commentary***
charges and bonding authority. Regional sources will include Washington County Traffic Impact Fees (TIF) and projects bonded through the County MSTIP program. Regional sources will also include Metro Transportation Improvement Plan (MTIP) resources and other state and federal grant assistance programs.	
~~3. Adopt a comprehensive local system development charge (SDC) ordinance to either augment or replace CAPand collector street SDC.~~	*A SDC ordinance has been adopted, so this strategy is no longer needed.*
3~~4~~. Develop a method for scheduling improvement projects based on priority and funding sources.	*This is an existing strategy.*
4~~5~~. Assign ~~c~~City staff and elected officials to participate in regional transportation planning processes.	*This is an existing strategy.*
5~~6~~. Secure intergovernmental agreements between ~~Sherwood~~ the City and adjoining communities and regional service providers that outline cooperative measures for coordinating transportation investment and regulation per ORS 195.065.	*This is an existing strategy.*
6. Continue to collaborate with Washington County and other regional partners on refinement planning related to Brookman Road, and update the Sherwood Transportation Plan to incorporate the agreed upon classification and design of this roadway.	*This is a new Strategy acknowledging the outstanding issues surrounding Brookman Road and articulating the need for a future amendment to the TSP.*

Table 3: Draft Proposed Amendments to SECTION C – The Transportation System Plan

Existing and Proposed Text	***Commentary***
The Transportation System Plan stresses the improvement of the existing system of transportation facilities through transportation system management before new facilities are built. Existing conditions have been analyzed in the Study Area (lands within UGB) and are contained in ~~Chapter 3 of~~ the TSP Appendix (Existing Conditions Report). Transportation analysis zones were created for each part of the city based on types of land use in the Comprehensive Plan Map. Future traffic volumes were projected based on expected ~~build out~~ development of those zones and surrounding areas consistent with Metro's land use projections. ~~Future traffic volumes with trip origins or destinations in the Study Area were then calculated for selected subareas or zones in this case. Future locally generated traffic volumes were then distributed onto the street system based on assumption as to major directional movements. From this process future locally generated traffic volumes were calculated for major roads. Future traffic volumes within the Study Area represent only locally generated traffic. Reduction in traffic volumes over time on certain major streets assumes the progressive improvement of alternative major street routes, which have the effect of shifting traffic from existing to improved routes in satisfying major directional movements. To determine total volumes on major streets with significant through traffic (i.e. Highway 99W) locally generated volumes should be added to through traffic volumes determined by Washington County, Metro or ODOT.~~ ~~The above a~~Analysis of projected future traffic conditions taken together with the application of the goals, objectives and policies described in Section B were used in the development of Transportation System Plan. A map for each existing and planned transportation system is included in the TSP. ~~Each m~~Maps, ~~several~~ street classifications, and the above policies are~~were~~ updated as part of TSP updates~~as well~~. The TSP ~~(2005)~~ is a technical reference to the Transportation element of the Comprehensive Plan. ~~The following information is included in the TSP and is included below for reference. Table 1 is a list of functional classifications and definitions for each street followed by Figure 1 Transportation Plan Map that illustrates the location and functional classification of each street. Table 2 is a list of major transportation improvements planned for the next twenty years based on the transportation system analysis of expected traffic levels, a performance standard Level of Service "D", and projected costs. Generally, most of the improvements are upgrades and connections to existing streets while some improvements are proposed new streets.~~	*Specific references to the TSP are replaced with general references. It is recommended to remove functional classification maps and project lists from this section and generally simplify this section.*

Angelo planning group LAND USE PLANNING • TRANSPORTATION PLANNING • PROJECT MANAGEMENT

Memorandum

Date: May 6, 2014 ***Last revised June 23, 2014 to reflect text adopted June 17, 2014***

To: Brad Kilby, AICP, City of Sherwood

From: Darci Rudzinski and Shayna Rehberg, Angelo Planning Group

cc: Bob Galati, PE, City of Sherwood; Garth Appanaitis, DKS Associates

Re: Draft Proposed Implementation Language (Task 5.2)

This memorandum presents draft proposed amendments to the City of Sherwood Zoning and Community Development Code ("development code"), pursuant to Task 5.2.

Proposed policy and code amendments will be reviewed and considered for adoption in conjunction with the updated TSP, as they include amendments that implement recommendations from the updated City of Sherwood Transportation System Plan (TSP), create consistency between the TSP and other adopted local documents, and comply with state and regional transportation planning regulations. Proposed policy amendments are presented in a separate memorandum and proposed code amendments are presented below.

Proposed Development Code Amendments

Draft code amendments presented in this memorandum were developed according to findings of compliance with the Transportation Planning Rule (TPR) and Regional Transportation Functional Plan (RTFP).[1] Recommendations for potential code amendments to better address compliance with TPR and RTFP requirements were summarized in Table 6 of the Needs, Opportunities, Constraints and Tools Technical Report (Task 3.2). These recommendations were discussed with City staff in order to determine which issues would be pursued and developed into draft code amendments.

For reference, that summary table is included in this memorandum as Table A-1 in Attachment A, and includes commentary indicating which recommendations have been developed into proposed code amendments.

[1] Detailed and updated findings of compliance will be included in the City's staff report (Task 5.6).

Proposed code amendment text is presented in adoption-ready format in this memorandum. New language that is proposed to be added is underlined and proposed deletions are ~~struck through~~. The draft amendments are numbered consistent with the structure of the City development code, and are presented in the order of issues included in Table A-1.

Note: In addition to the amendments proposed in this memorandum, the entire development code should be checked to amend all references to the updated TSP, as needed.

Consistency of transportation facility standards (Recommendation DC-2 in Table A-1)

CHAPTER 16.106 TRANSPORTATION FACILITIES

16.106.010 Generally

A. Creation

Public streets shall be created in accordance with provisions of this Chapter. Except as otherwise provided, all street improvements and rights-of-way shall conform to standards for the City's functional street classification, as shown on the Transportation System Plan (TSP) Map (Figure 15) ~~and in Figure 1, of Chapter 6 of the Community Development Plan,~~ and other applicable City standards. The following table depicts the guidelines for the street characteristics.

[…]

16.106.040 Design

Standard cross sections showing street design and pavement dimensions are located in the ~~City of Sherwood Transportation System Plan, and~~ City of Sherwood's Engineering Design Manual.

Definitions of access way and shared-use path (Recommendation DC-3 in Table A-1)

CHAPTER 16.10 DEFINITIONS

16.10.020 SPECIFICALLY

[…]

Access: The way or means by which pedestrians and vehicles enter and leave property.

Access way: A pathway providing a connection for pedestrians and bicyclists between two streets, between two lots, or between a development and a public right-of-way. An access way is intended to provide access between a development and adjacent residential uses, commercial uses, public use such as schools, parks, and adjacent collector and arterial streets where transit stops or bike lanes are provided or designated. An access way may be a pathway for pedestrians and bicyclists (with no vehicle access), a pathway on public or private property (i.e., with a public access easement), and/or a facility designed to accommodate emergency vehicles.

Accessory Building/Use: A subordinate building or use which is customarily incidental to that of the principal use or building located on the same property.

[…]

Setback: The minimum horizontal distance between a public street right-of-way line, or side and rear property lines, to the front, side and rear lines of a building or structure located on a lot.

Shared-use path: A facility for non-motorized access conforming to City standards and separated from the roadway, either in the roadway right-of-way, independent public right-of-way, or a public access easement. It is designed and constructed to allow for safe walking, biking, and other human-powered travel modes.

Sidewalk: A pedestrian walkway with hard surfacing.

[…]

Traffic Impact Analysis (TIA) and rough proportionality requirements (Recommendation DC-4 in Table A-1)

CHAPTER 16.90 SITE PLANNING

16.90.030 Site Plan Modifications and Revocation

[…]

D. Required Findings

No site plan approval shall be granted unless each of the following is found:

[…]

6. ~~For developments that are likely to generate more than 400 average daily trips (ADTs)~~Pursuant to Section 16.106.080, or at the discretion of the City Engineer, the applicant shall provide adequate information, such as a traffic impact analysis (TIA) or traffic counts, to demonstrate the level of impact to the surrounding ~~street~~ transportation system. The developer shall be required to mitigate for impacts attributable to the project, pursuant to TIA requirements in Section 16.106.080 and rough proportionality requirements in Section 16.106.090. The determination of impact or effect and the scope of the impact study shall be coordinated with the provider of the affected transportation facility.

[…]

CHAPTER 16.106 TRANSPORTATION FACILITIES

16.106.020 Required Improvements

[…]

D. Extent of Improvements

1. Streets required pursuant to this Chapter shall be dedicated and improved consistent with Chapter 6 of the Community Development Plan, the TSP and applicable City specifications included in the City of Sherwood Construction Standards. Streets shall include curbs, sidewalks, catch basins, street lights, and street trees. Improvements shall also include any bikeways designated on the Transportation System Plan map. Applicant may be required to dedicate land for required public improvements only when the exaction is directly related to and roughly proportional to the impact of the development, pursuant to Section 16.106.090.

[…]

16.106.040 Design

[…]

K. Traffic Controls

1. ~~An application for a proposed residential development that will generate more than an estimated 200 average daily vehicle trips (ADT) must include a traffic impact analysis to determine the number and types of traffic controls necessary to accommodate anticipated traffic flow.~~

2. ~~For all other proposed developments including commercial, industrial or institutional uses with over an estimated 400 ADT~~Pursuant to Section 16.106.080, or as otherwise required by the City Engineer, ~~the~~ an application must include a traffic impact analysis to determine the number and types of traffic controls necessary to accommodate anticipated traffic flow.

[…]

16.106.080 Traffic Impact Analysis (TIA)

A. Purpose. The purpose of this section is to implement Sections 660-012-0045(2)(b) and -0045(2)(e) of the State Transportation Planning Rule (TPR), which require the City to adopt performance standards and a process to apply conditions to land use proposals in order to minimize impacts on

and protect transportation facilities. This section establishes requirements for when a traffic impact analysis (TIA) must be prepared and submitted; the analysis methods and content involved in a TIA; criteria used to review the TIA; and authority to attach conditions of approval to minimize the impacts of the proposal on transportation facilities.

This section refers to the TSP for performance standards for transportation facilities as well as for projects that may need to be constructed as mitigation measures for a proposal's projected impacts. This section also relies on the City of Sherwood's Engineering Design Manual to provide street design standards and construction specifications for improvements and projects that may be constructed as part of the proposal and mitigation measures approved for the proposal.

B. Applicability. A traffic impact analysis (TIA) shall be required to be submitted to the City with a land use application at the request of the City Engineer or if the proposal is expected to involve one or more of the following:

1. An amendment to the Sherwood Comprehensive Plan or zoning map.

2. A new direct property approach road to Highway 99W is proposed.

3. The proposed development generates 50 or more PM peak-hour trips on Highway 99W, or 100 PM peak-hour trips on the local transportation system.

4. An increase in use of any adjacent street or direct property approach road to Highway 99W by 10 vehicles or more per day that exceed the 20,000 pound gross vehicle weight.

5. The location of an existing or proposed access driveway does not meet minimum spacing or sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard.

6. A change in internal traffic patterns that may cause safety problems, such as back up onto the highway or traffic crashes in the approach area.

C. Requirements. The following are typical requirements that may be modified in coordination with Engineering Staff based on the specific application.

1. Pre-application Conference. The applicant shall meet with the City Engineer prior to submitting an application that requires a TIA. This meeting will be coordinated with Washington County and ODOT when an approach road to a County road or Highway 99W serves the property, so that the TIA will meet the requirements of all relevant agencies.

2. Preparation. The TIA shall be prepared by an Oregon Registered Professional Engineer qualified to perform traffic engineering analysis and will be paid for by the applicant.

3. Typical Average Daily Trips and Peak Hour Trips. The latest edition of the Trip Generation Manual, published by the Institute of Transportation Engineers (ITE), shall be used to gauge PM peak hour vehicle trips, unless a specific trip generation study that is approved by the City Engineer indicates an alternative trip generation rate is appropriate.

4. Intersection-level Analysis. Intersection-level analysis shall occur at every intersection where the analysis shows that 50 or more peak hour vehicle trips can be expected to result from the development.

5. Transportation Planning Rule Compliance. The requirements of OAR 660-012-0060 shall apply to those land use actions that significantly affect the transportation system, as defined by the Transportation Planning Rule.

D. Study Area. The following facilities shall be included in the study area for all TIAs:

1. All site-access points and intersections (signalized and unsignalized) adjacent to the proposed development site. If the site fronts an arterial or collector street, the analysis shall address all intersections and driveways along the site frontage and within the access spacing distances extending out from the boundary of the site frontage.

2. Roads and streets through and adjacent to the site.

3. All intersections needed for signal progression analysis.

4. In addition to these requirements, the City Engineer may require analysis of any additional intersections or roadway links that may be adversely affected as a result of the proposed development.

E. Analysis Periods. To adequately assess the impacts of a proposed land use action, the following study periods, or horizon years, should be addressed in the transportation impact analysis where applicable:

1. Existing Year.

2. Background Conditions in Project Completion Year. The conditions in the year in which the proposed land use action will be completed and occupied, but without the expected traffic from the proposed land use action. This analysis should account for all City-approved developments that are expected to be fully built out in the proposed land use action horizon year, as well as all planned transportation system improvements.

3. Full Buildout Conditions in Project Completion Year. The background condition plus traffic from the proposed land use action assuming full build-out and occupancy.

4. Phased Years of Completion. If the project involves construction or occupancy in phases, the applicant shall assess the expected roadway and intersection conditions resulting from major development phases. Phased years of analysis will be determined in coordination with City staff.

5. 20-Year or TSP Horizon Year. For planned unit developments, comprehensive plan amendments or zoning map amendments, the applicant shall assess the expected future roadway, intersection, and land use conditions as compared to approved comprehensive planning documents.

F. Approval Criteria. When a TIA is required, a proposal is subject to the following criteria, in addition to all criteria otherwise applicable to the underlying land use proposal:

1. The analysis complies with the requirements of 16.106.080.C;

2. The analysis demonstrates that adequate transportation facilities exist to serve the proposed development or identifies mitigation measures that resolve identified traffic safety problems in a manner that is satisfactory to the City Engineer and, when County or State highway facilities are affected, to Washington County and ODOT;

3. For affected non-highway facilities, the TIA demonstrates that mobility and other applicable performance standards established in the adopted City TSP have been met; and

4. Proposed public improvements are designed and will be constructed to the street standards specified in Section 16.106.010 and the Engineering Design Manual, and to the access standards in Section 16.106.040.

5. Proposed public improvements and mitigation measures will provide safe connections across adjacent right-of-way (e.g., protected crossings) when pedestrian or bicycle facilities are present or planned on the far side of the right-of-way.

G. Conditions of Approval. The City may deny, approve, or approve a development proposal with conditions needed to meet operations and safety standards and provide the necessary right-of-way and improvements to ensure consistency with the future planned transportation system. Improvements required as a condition of development approval, when not voluntarily provided by the applicant, shall be roughly proportional to the impact of the development on transportation facilities, pursuant to Section 16.106.090. Findings in the development approval shall indicate how the required improvements are directly related to and are roughly proportional to the impact of development.

16.106.090 Rough Proportionality

A. Purpose. The purpose of this section is to ensure that required transportation facility improvements are roughly proportional to the potential impacts of the proposed development. The rough proportionality requirements of this section apply to both frontage and non-frontage improvements. A proportionality analysis will be conducted by the City Engineer for any proposed development that triggers transportation facility improvements pursuant to this chapter. The City Engineer will take into consideration any benefits that are estimated to accrue to the development property as a result of any required transportation facility improvements. A proportionality determination can be appealed pursuant to Section 16.76. The following general provisions apply whenever a proportionality analysis is conducted.

B. Mitigation of impacts due to increased demand for transportation facilities associated with the proposed development shall be provided in rough proportion to the transportation impacts of the proposed development. When applicable, anticipated impacts will be determined by the TIA in accordance with Section 16.106.080. When no TIA is required, anticipated impacts will be determined by the City Engineer.

C. The following shall be considered when determining proportional improvements:

1. Condition and capacity of existing facilities within the impact area in relation to City standards. The impact area is generally defined as the area within a one-half (1/2) mile radius of the proposed development. If a TIA is required, the impact area is the TIA study area.

2. Existing vehicle, bicycle, pedestrian, and transit use within the impact area.

3. The effect of increased demand on transportation facilities and other approved, but not yet constructed, development projects within the impact area that is associated with the proposed development.

4. Applicable TSP goals, policies, and plans.

5. Whether any route affected by increased transportation demand within the impact area is listed in any City program including school trip safety; neighborhood traffic management; capital improvement; system development improvement, or others.

6. Crash history within the impact area.

7. Potential increased safety risks to transportation facility users, including pedestrians and cyclists.

8. Potential benefit the development property will receive as a result of the construction of any required transportation facility improvements.

9. Other considerations as may be identified in the review process pursuant to Chapter 16.72.

Preferential carpool and vanpool parking (Recommendation DC-6 in Table A-1)

CHAPTER 16.94 OFF-STREET PARKING AND LOADING

16.94.010 General Requirements

[…]

E. Location

3. Vehicle parking is allowed only on improved parking shoulders that meet City standards for public streets, within garages, carports and other structures, or on driveways or parking lots that have been developed in conformance with this code. Specific locations and types of spaces (car pool, compact, etc.) for parking shall be indicated on submitted plans and located to the side or rear of buildings where feasible.

a. All new development with forty (~~20~~40) employees or more shall include preferential spaces for ~~either~~ car-pool ~~and~~/vanpool designation. Carpool and vanpool parking spaces shall be located closer to the main employee entrance than all other parking spaces with the exception of ADA parking spaces. Carpool/vanpool spaces shall be clearly marked as reserved for carpool/vanpool only.

Exemptions for structured parking and on-street parking (Recommendation DC-8 in Table A-1)

16.94.010 General Requirements

[…]

K. Structured parking and on-street parking are exempt from the parking space maximums in Section 16.94.020.A.

"Housekeeping" amendments, parking standards table footnotes (Recommendation DC-9 in Table A-1)

Section 16.94.020, Parking Standards Table

[1] Parking Zone A reflects the maximum number of permitted vehicle parking spaces allowed for each listed land use. Parking Zone A areas include those parcels that are located within one-quarter (¼) mile walking distance of bus transit stops, one-half (½) mile walking distance of light rail station platforms, or both, or that have a greater than 20 minute peak hour transit service.

[2] ~~Parking Zone B.~~ Parking Zone B reflects the maximum number of permitted vehicle parking spaces allowed for each listed land use. ~~Parking Zone B areas include those parcels that are located within one-quarter ¼ mile walking distance of bus transit stops, one-half ½ mile walking distance of light rail station platforms, or both, or that have a greater than 20 minute peak hour transit service.~~ Parking Zone B areas ~~also~~ include those parcels that are located at a distance greater than one-quarter (¼) mile walking distance of bus transit stops, one-half (½) mile walking distance of light rail station platforms, or both.

Transportation Planning Rule consistency requirements (Recommendation DC-11 in Table A-1)

CHAPTER 16.80 PLAN AMENDMENTS

16.80.030 Review Criteria

[…]

C. Transportation Planning Rule Consistency

1. The applicant shall demonstrate consistency with the Transportation Planning Rule, specifically by addressing whether the proposed amendment creates a significant effect on the transportation system pursuant to OAR 660-012-0060. If required, a Traffic Impact Analysis (TIA) shall be prepared pursuant to Section 16.106.080.

   ~~Review of plan and text amendment applications for effect on transportation facilities. Proposals shall be reviewed to determine whether it significantly affects a transportation facility, in accordance with OAR 660-12-0060 (the TPR). Review is required when a development application includes a proposed amendment to the Comprehensive Plan or changes to land use regulations.~~

2. ~~"Significant" means that the transportation facility would change the functional classification of an existing or planned transportation facility, change the standards implementing a functional classification, allow types of land use, allow types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation~~

~~facility, or would reduce the level of service of the facility below the minimum level identified on the Transportation System Plan.~~

~~3. Per OAR 660-12-0060, Amendments to the Comprehensive Plan or changes to land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:~~

~~a. Limiting allowed uses to be consistent with the planned function of the transportation facility.~~

~~b. Amending the Transportation System Plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses.~~

~~c. Altering land use designations, densities or design requirements to reduce demand for automobile travel and meet travel needs through other modes.~~

Major driveway connectivity requirements (Recommendation DC-13 in Table A-1)

CHAPTER 16.90 SITE PLANNING

16.90.030 Site Plan Modifications and Revocation

[…]

D. Required Findings

No site plan approval shall be granted unless each of the following is found:

[…]

9. Driveways that are more than 24 feet in width shall align with existing streets or planned streets as shown in the Local Street Connectivity Map in the adopted Transportation System Plan (Figure 17), except where prevented by topography, rail lines, freeways, pre-existing development, or leases, easements, or covenants.

CHAPTER 16.106 TRANSPORTATION FACILTIIES

16.106.030 Location

[…]

B. Street Connectivity and Future Street Systems

[…]

2. Connectivity Map Required. New residential, commercial, and mixed use development involving the construction of new streets shall be submitted with a site plan that implements, responds to and expands on the Local Street Connectivity map contained in the TSP.

[…]

d. Driveways that are more than 24 feet in width shall align with existing streets or planned streets as shown in the Local Street Connectivity Map in the adopted Transportation System Plan (Figure 17), except where prevented by topography, rail lines, freeways, pre-existing development, or leases, easements, or covenants.

On-street loading (Recommendation DC-14 in Table A-1)

CHAPTER 16.94 OFF-STREET PARKING AND LOADING

16.94.030 Off-Street Loading Standards

[…]

C. Exceptions and Adjustments. The review authority, through Site Plan Review, may approve loading areas within a street right-of-way in the Old Town Overlay District when all of the following conditions are met:

1. Short in duration (i.e., less than one hour);

2. Infrequent (less than three operations occur daily between 5:00 a.m. and 12:00 a.m. or all operations occur between 12:00 a.m. and 5:00 a.m. at a location that is not adjacent to a residential zone);

3. Does not unreasonably obstruct traffic; [or] Does not obstruct traffic during peak traffic hours;

4. Does not obstruct a primary emergency response route; and

5. Is acceptable to the applicable roadway authority.

Bicycle parking (Recommendation DC-15 in Table A-1)

CHAPTER 16.94 OFF-STREET PARKING AND LOADING

16.94.020 Off-Street Parking Standards

[…]

C. Bicycle Parking Facilities

~~1. Location and Design~~

~~a. Bicycle parking shall be conveniently located with respect to both the street right-of-way and at least one (1) building entrance (e.g., no farther away than the closest parking space). Bike parking may be located inside the main building or near the main entrance.~~

~~b. Bicycle parking in the Old Town Overlay District can be located on the sidewalk within the right-of-way. A standard inverted "U shaped" design is appropriate. Alternative, creative designs are strongly encouraged.~~

~~2. Visibility and Security. Bicycle parking shall be visible to cyclists from street sidewalks or building entrances, so that it provides sufficient security from theft and damage.~~

~~3. Options for Storage. Bicycle parking requirements for long-term and employee parking can be met by providing a bicycle storage room, bicycle lockers, racks, or other secure storage space inside or outside of the building.~~

~~4. Lighting. Bicycle parking shall be at least as well lit as vehicle parking for security.~~

~~5. Reserved Areas. Areas set aside for bicycle parking shall be clearly marked and reserved for bicycle parking only.~~

~~6. Hazards. Bicycle parking shall not impede or create a hazard to pedestrians. Parking areas shall be located so as to not conflict with vision clearance standards.~~

1. General Provisions

a. Applicability. Bicycle parking spaces shall be provided for new development, changes of use, and major renovations, defined as construction valued at 25% or more of the assessed value of the existing structure.

b. Types of Spaces. Bicycle parking facilities shall be provided in terms of short-term bicycle parking and long-term bicycle parking. Short-term bicycle parking is intended to encourage customers and other visitors to use bicycles by providing a convenient and readily accessible place to park bicycles. Long-term bicycle parking provides employees, students, residents, commuters, and others who generally stay at a site for at least several hours a weather-protected place to park bicycles.

c. Minimum Number of Spaces. The required total minimum number of bicycle parking spaces for each use category is shown in Table 4, Minimum Required Bicycle Parking Spaces. *[Note: Tables in Chapter 16.94 are not currently numbered, so it is recommended that the previous tables in the chapter be numbered Tables 1, 2, and 3.]*

d. Minimum Number of Long-term Spaces. If a development is required to provide eight (8) or more required bicycle parking spaces in Table 4, at least 25% shall be provided as long-term bicycle with a minimum of one long-term bicycle parking space.

e. Multiple Uses. When there are two or more primary uses on a site, the required bicycle parking for the site is the sum of the required bicycle parking for the individual primary uses.

2. Location and Design.

a. General Provisions

(1) Each space must be at least 2 feet by 6 feet in area, be accessible without moving another bicycle, and provide enough space between the rack and any obstructions to use the space properly.

(2) There must be an aisle at least 5 feet wide behind all required bicycle parking to allow room for bicycle maneuvering. Where the bicycle parking is adjacent to a sidewalk, the maneuvering area may extend into the right-of-way.

(3) Lighting. Bicycle parking shall be at least as well lit as vehicle parking for security.

(4) Reserved Areas. Areas set aside for bicycle parking shall be clearly marked and reserved for bicycle parking only.

(5) Bicycle parking in the Old Town Overlay District can be located on the sidewalk within the right- of-way. A standard inverted "U shaped" or staple design is appropriate. Alternative, creative designs are strongly encouraged.

(6) Hazards. Bicycle parking shall not impede or create a hazard to pedestrians. Parking areas shall be located so as to not conflict with vision clearance standards.

b. Short-term Bicycle Parking

(1) Provide lockers or racks that meet the standards of this section.

(2) Locate inside or outside the building within 30 feet of the main entrance to the building or at least as close as the nearest vehicle parking space, whichever is closer.

c. Long-term Bicycle Parking

(1) Provide racks, storage rooms, or lockers in areas that are secure or monitored (e.g., visible to employees or customers or monitored by security guards).

(2) Locate the outside bicycle parking spaces within 100 feet of the entrance that will be accessed by the intended users.

(3) All of the spaces shall be covered.

d. Covered Parking (Weather Protection)

(1) When required, covered bicycle parking shall be provided in one of the following ways: inside buildings, under roof overhangs or awnings, in bicycle lockers, or within or under other structures.

(2) Where required covered bicycle parking is not within a building or locker, the cover must be permanent and designed to protect the bicycle from rainfall and provide seven (7) foot minimum overhead clearance.

(3) Where required bicycle parking is provided in lockers, the lockers shall be securely anchored.

Table 4: Minimum Required Bicycle Parking Spaces

Use Categories	Minimum Required Spaces
Residential Categories	
Household living	Multi-dwelling — 2 or 1 per 10 auto spaces. All other residential structure types — None
Group living	1 per 20 auto spaces
Commercial Categories	

Retail sales/service office	2 or 1 per 20 auto spaces, whichever is greater
Drive-up vehicle servicing	None
Vehicle repair	None
Commercial parking facilities, commercial, outdoor recreation, major event entertainment	4 or 1 per 20 auto spaces, whichever is greater
Self-service storage	None
Industrial Categories~~/Service Categories~~	
~~Basic utilities~~ <u>Industrial</u>	2 or 1 per 40 spaces, whichever is greater
<u>Public and Institutional Categories</u>	
Park and ride facilities	2 or 1 per 20 auto spaces
Community service essential service providers parks and open areas	2 or 1 per 20 auto spaces, whichever is greater
Schools	High schools — 4 per classroom
	Middle schools — 2 per classroom
	Grade schools — 2 per 4th & 5th grade classroom
Colleges, medical centers, religious institutions, daycare uses	2 or 1 per 20 auto spaces whichever is greater

Map references (Recommendation DC-17 in Table A-1)

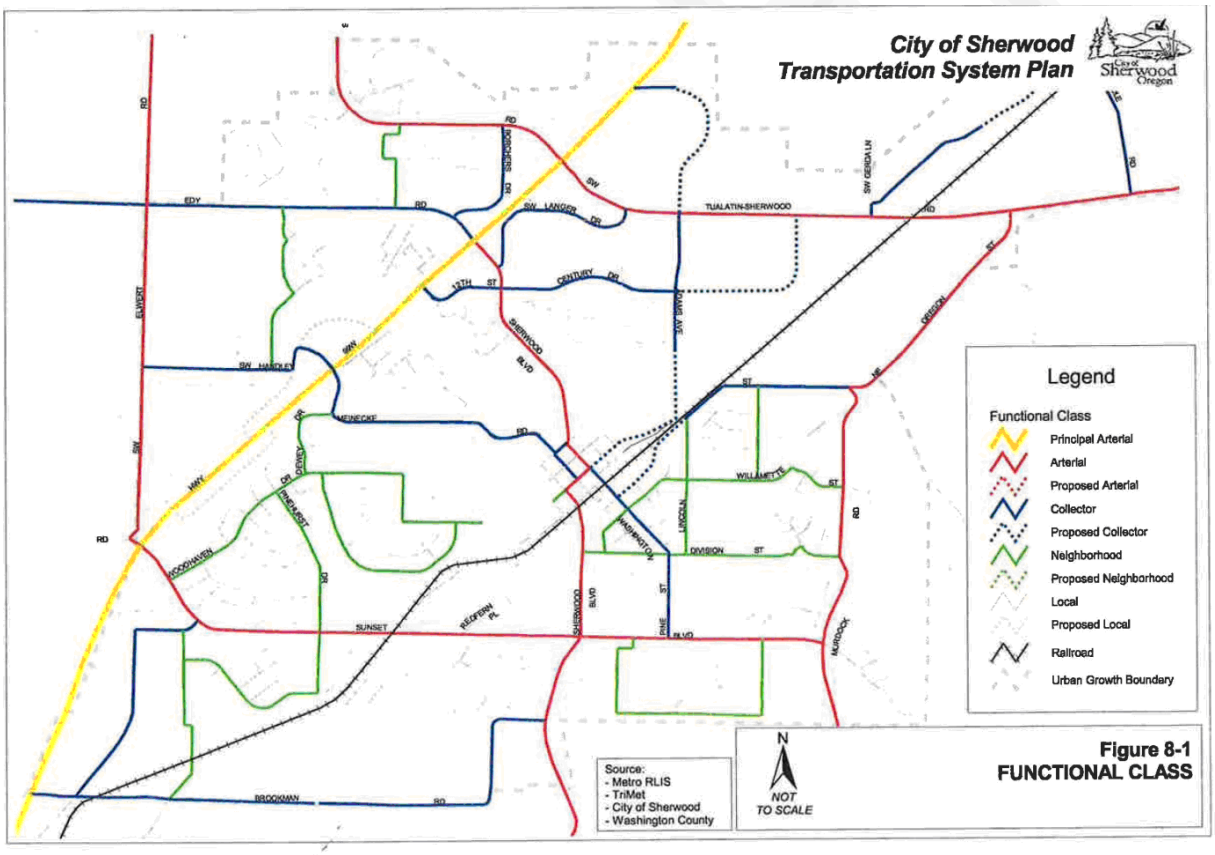
CHAPTER 16.106 TRANSPORTATION FACILITIES

16.106.020 Required Improvements

A. Generally

Except as otherwise provided, all developments containing or abutting an existing or proposed street, that is either unimproved or substandard in right-of-way width or improvement, shall dedicate the necessary right-of-way prior to the issuance of building permits and/or complete acceptable improvements prior to issuance of occupancy permits. ~~The following figure provides the depiction of the~~ Right-of-way requirements are based on functional classification of the street network as ~~found~~ established in the Transportation System Plan, Figure ~~8-1~~15.

[Delete following figure]



[…]

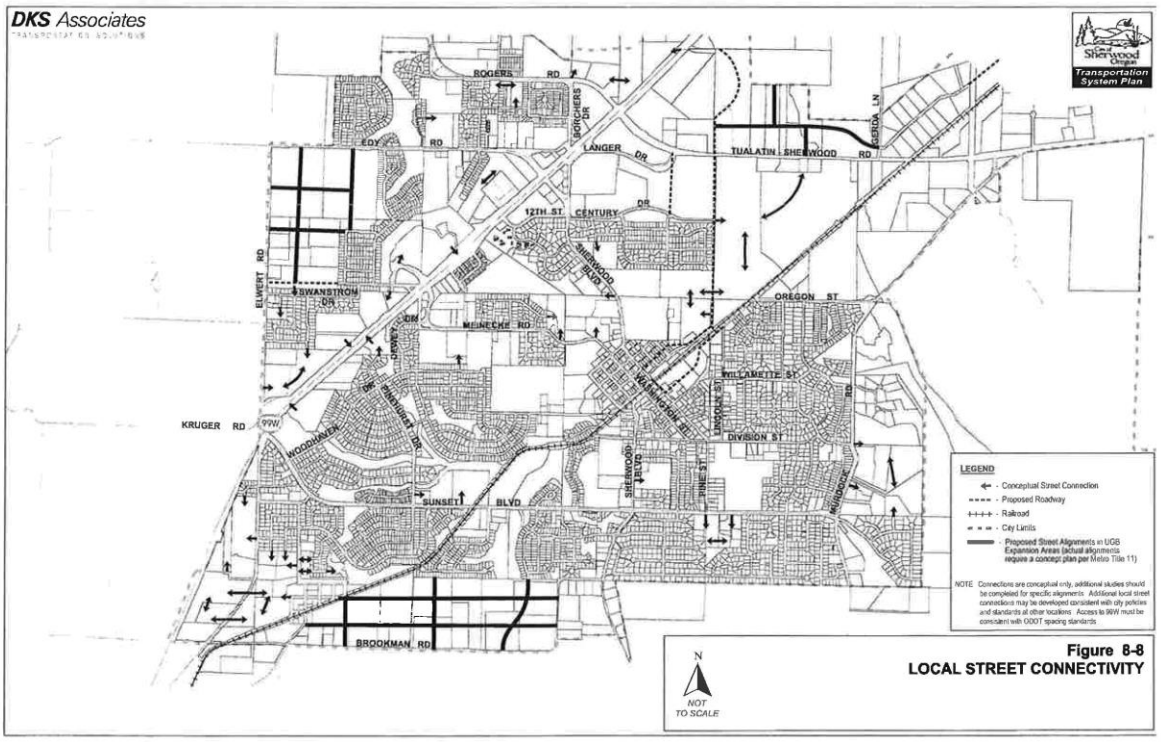
16.106.030 Location

[…]

B. Street Connectivity and Future Street Systems

1. Future Street Systems. The arrangement of public streets shall provide for the continuation and establishment of future street systems as shown on the Local Street Connectivity Map contained in the adopted Transportation System Plan (Figure ~~8-8~~16).

[Delete following figure]



CAP program discontinuation (Recommendation DC-18 in Table A-1)

CHAPTER 16.106 TRANSPORTATION FACILITIES

~~16.106.070 Hwy. 99W Capacity Allocation Program (CAP)~~

~~A. Purpose - The purpose of the Highway 99W Capacity Allocation Program is to:~~

~~1. Prevent failure of Highway 99W through Sherwood.~~

~~2. Preserve capacity on Highway 99W over the next 20 years for new development within Sherwood.~~

~~3. Preserve land values in Sherwood by preventing failure of one of the City's key transportation links.~~

~~4. Insure improvements to Highway 99W and adjacent primary roadways are constructed at the time development occurs.~~

~~5. Minimize the regulatory burden on developments that have minimal impact on Highway 99W.~~

~~B. Exclusions~~

~~The following types of projects and activities are specifically excluded from the provisions of this program:~~

~~1. Churches.~~

~~2. Elementary, middle, and high schools.~~

~~3. Changes in use that do not increase the number of trips generated by the current use.~~

~~C. Definitions~~

~~1. "Base Application" means the site plan or conditional use application which invokes the provisions of this chapter.~~

~~2. "Capacity" means the maximum number of peak hour vehicle trips that Highway 99W through Sherwood may accommodate at the Level of Service Standard assuming full build-out of all land zoned for residential and industrial development in Sherwood.~~

~~3. "Full Access Intersections" means the following intersections on Highway 99W in Sherwood:~~

~~Sunset, Meinecke, Edy/N. Sherwood, Tualatin-Sherwood/Scholls-Sherwood (Roy Rogers Road, and Home Depot (Adams Street).~~

~~4. "ITE Manual" means the latest edition of the public titled "Trip Generation" by the Institute of Transportation Engineers.~~

~~5. "Level of Service (LOS) Standard" means the lowest acceptable level of service on a transportation corridor within Sherwood as stated in the Standard Requirements Section.~~

~~6. "Mitigation" means improvements to the transportation system that increase or enhance capacity.~~

~~7. "Net Trips" means the number of trips generated by a regulated activity during the PM Peak Hours. Net trips equal new trips, diverted trips, and trips from existing activities on a site that will remain. Net trips do not include: Pass-by trips, Internal trips, trips from existing facilities that will be removed, and Trips Reduced due to implementation of transportation demand strategies.~~

~~8. "Peak Hour" means a consecutive sixty (60) minute period during the twelve (12) PM hours of an average day, which experience the highest sum of traffic volumes on a roadway.~~

9. "Regulated Activity" means project(s) or activities proposed in the base application.

10. "Site Trip Limit" means the trip limit multiplied by the acreage of the site containing the regulated activity.

11. "Trip Allocation Certificate" means a certificate or letter from the City Engineer specifying that a regulated activity meets the trip limit and specifying any required mitigation.

12. "Trip Analysis" means a study or report that specifies the net trips from a regulated activity and analyzes the trip distribution and assignment from the activity.

13. "Trip Limit" means the maximum number of trips per acre from regulated activities that can be accommodated without violating the LOS Standard.

D. Standard Requirements

1. All regulated activities shall acquire a Trip Allocation Certificate prior to approval of their base application. Lack of a Trip Allocation Certificate shall be the basis for denial of a base application.

2. A Trip Analysis is required for all regulated activities prior to being considered for a Trip Allocation Certificate.

3. The Level of Service Standard for Highway 99W through Sherwood through the year 2020 is "E".

4. The trip limit for a regulated activity shall be forty-three (43) net trips per acre.

5. Mitigation to comply with the CAP shall not be required for regulated activities occurring on land zoned General Industrial (GI) or Light Industrial (LI) when the activity produces less than eight (8) net trips per acre.

E. Trip Analysis

1. Purpose

The first step in the process of seeking a Trip Allocation Certificate is preparation of a Trip Analysis by the applicant for the regulated activity. The purpose of the Trip Analysis is to evaluate whether the net trips from a regulated activity exceed the site trip limit.

2. Timing

The Trip Analysis shall be submitted with the relevant base application. Base applications without a Trip Analysis shall be deemed incomplete.

3. Format

At a minimum, the Trip Analysis shall contain all the following information:

a. The type and location of the regulated activity.

b. A tax map clearly identifying the parcel(s) involved in the Trip Analysis.

c. Square footage used to estimate trips, in accordance with methods outlined in the ITE Manual.

d. Description of the type of activity, especially as it corresponds to activities described in the ITE Manual.

e. Copy of the ITE Manual page used to estimate trips.

f. Acreage of the site containing the regulated activity calculated to two (2) decimal points.

g. Trip distributions and assignments from the regulated activity to all full access intersections impacted by ten (10) or more trips from the regulated activity with identification of the method used to distribute trips from the site.

h. Copies of any other studies utilized in the Trip Analysis.

i. Summary of the net trips generated by the regulated activity in comparison to the site trip limit.

j. Signature and stamp of a professional engineer, registered in the State of Oregon, with expertise in traffic or transportation engineering, who prepared the analysis.

4. Methods

a. The Trip Analysis and trip generation for an activity shall be based on the ITE Manual.

b. If a trip generation for the proposed use is not available in the ITE Manual or the applicant wishes to dispute the findings in the ITE Manual, the trip generation calculation may be based on an analysis of trips from five (5) sites with the same type of activity as that proposed.

5. Modification of Trip Analysis Requirements

The City Engineer may waive, in writing, some of the requirements of the Trip Analysis if:

a. The proposed regulated activity is part of a previously approved Trip Allocation Certificate that meets the requirements of this chapter and the applicant demonstrates, to the satisfaction of the City Engineer, that the applicable provisions of the previously approved Trip Allocation Certificate shall be met; or

b. The City Engineer determines, upon receipt of a letter of request from the applicant, that less information is required to accomplish the purposes of this chapter.

F. Trip Allocation Certificate

~~1. General~~

~~a. Trip Allocation Certificates shall be issued by the City Engineer.~~

~~b. Trip Allocation Certificates shall be valid for the same period as the land use or other city approval for the regulated activity.~~

~~c. The City Engineer may invalidate a Trip Allocation Certificate when, in the City Engineer's judgment, the Trip Analysis that formed the basis for award of the Trip Allocation Certificate no longer accurately reflects the activity proposed under the base application.~~

~~2. Approval Criteria~~

~~a. Upon receipt of a Trip Analysis, the City Engineer shall review the analysis. The Trip Analysis shall meet both of the following criteria to justify issuance of a Trip Allocation Certificate for the regulated activity:~~

~~(1) Adequacy of analysis; and~~

~~(2) Projected net trips less than the site trip limit.~~

~~b. Adequacy of Analysis~~

~~The City Engineer shall judge this criterion based on the following factors:~~

~~(1) Adherence to the Trip Analysis format and methods described in this chapter.~~

~~(2) Appropriate use of data and assumptions; and~~

~~(3) Completeness of the Trip Analysis.~~

~~3. Mitigation~~

~~a. The Trip Allocation Certificate shall specify required mitigation measures for the regulated activity.~~

~~b. Mitigation measures shall include improvements to Highway 99W and nearby transportation corridors that, in the judgment of the City Engineer, are needed to meet the LOS Standard and provide capacity for the regulated activity.~~

~~c. Engineering construction plans for required mitigation measures shall be submitted and approved in conjunction with other required construction plans for the regulated activity.~~

~~d. Mitigation measures shall be implemented in tandem with work associated with the regulated activity.~~

~~e. Failure to implement required mitigation measures shall be grounds for revoking the regulated activity's base application approval.~~

~~G. Other Provisions~~

~~1. Acreage Calculation for a Regulated Activity~~

~~a. Acreage calculations used to calculate net trips per acre in the Trip Analysis must use the entire area of the tax lot(s) containing the regulated activity, less 100-year floodplain area, in accordance with FIRM map for Sherwood.~~

~~b. If the site contains existing uses, the net trips generated by these uses shall be included in the calculation of net trips generated from the site.~~

~~2. Partial Development of a Site~~

~~a. If a regulated activity utilizes a portion of a vacant tax lot, such that the site could be further developed in the future, the applicant shall identify the potential uses for the vacant portion and reserve trips for that portion of the site in accordance with the uses identified. These reserve trips shall be included in the calculation of the net trips generated from the site.~~

~~b. The Trip Allocation Certificate shall not be issued if the proposed future uses of the vacant area and the reserve trips are unrealistic in the opinion of the City Engineer.~~

Bike path section update (Recommendation DC-19 in Table A-1)

16.106.07~~8~~0 Bike ~~Paths~~Lanes

If shown in ~~on the~~ Figure ~~6-1~~13 of the Transportation System Plan, bicycle ~~paths~~lanes shall be installed in public rights-of-way, in accordance with City specifications. Bike lanes shall be installed on both sides of designated roads, should be separated from the road by a twelve (12) inch stripe or other means approved by Engineering Staff~~, not a curb~~, and should be a minimum of five (5) feet wide. ~~Bike paths should not be combined with a sidewalk.~~

Attachment A

Table A-1: Summary of Recommended Potential Development Code Amendments and Corresponding Transportation Planning Rule (TPR) and Regional Transportation Functional Plan (RTFP) Requirements

	Recommended Potential Development Code Amendments	TPR and/or RTFP Requirements	Commentary
DC-1	Identify and update all references to the TSP in the code.		This has been made into a note in the introductory text of this memorandum.
DC-2	Ensure that code requirements in Chapter 16.96 (On-site Circulation) and Chapter 16.106 (Transportation Facilities) related to access spacing/management and design of streets, bikeways, sidewalks, and accessways/paths are consistent with the standards established in the updated TSP.	• TPR Section -0045(2)(a) Access Control • TPR Section -0045(3)(b) On-site Pedestrian and Bicycle Circulation and Connections • TPR Section -0045(7) Minimizing Roadway Width • RTFP Section 3.08.110B Street System Design for Pedestrian and Bicycle Access	No amendments are needed to Chapter 16.96 and Chapter 16.106 related to access management and spacing standards; existing development code and the Draft TSP are consistent. The updated TSP does not include or otherwise modify existing street design standards in this chapter. Minor amendments are needed to Chapter 16.106 related to street design. Amendments proposed to Section .010 reflect deletions proposed for Chapter 6 of the Comprehensive Plan. Amendments proposed to Section .040 remove a reference to cross-sections in the TSP, which the updated TSP does not include. **Proposed code amendments to:** **Chapter 16.106**

	Recommended Potential Development Code Amendments	TPR and/or RTFP Requirements	Commentary
			Transportation Facilities, Section.010 Generally **Chapter 16.106 Transportation Facilities, Section.040 Design**
DC-3	Define the following terms and ensure consistency between the TSP, Development Code, and Engineering Design Manual: access way and shared-use path. *Note: The City Engineering Design Manual includes a reference to pedestrian and bicycle access ways that can be provided at a maximum spacing of 330 feet in lieu of a street in some cases.*	• TPR Section -0045(3)(b) On-site Pedestrian and Bicycle Circulation and Connections • RTFP Sections 3.08.110 B & E Street System Design	**Proposed code amendments to:** **Chapter 16.10 Definitions, Section .020 Specifically**
DC-4	Provide additional guidance regarding the applicability and preparation of traffic impact analyses (TIAs), including rough proportionality provisions.	TPR Section -0045(2)(b) Standards to Protect Roadways	**Proposed code amendments to:** • **Chapter 16.90 Site Planning, Section .030.D Required Findings** • **Chapter 16.106 Transportation Facilities, Section .020.D Extent of Improvements** • **Chapter 16.106 Transportation Facilities, Section .040.K Traffic Controls** • **Chapter 16.106 Transportation Facilities, Section .080**

	Recommended Potential Development Code Amendments	TPR and/or RTFP Requirements	Commentary
			Traffic Impact Analysis [new section] • **Chapter 16.106 Transportation Facilities, Section .090 Rough Proportionality** [new section]
DC-5	Given TPR requirements for coordinated review, consider whether inviting transportation facility and service providers to pre-application conferences would be helpful to the review process and thus would be language to include in the code (Section 16.70.010).	TPR Section -0045(2)(d) Coordinated Review of Land Use Decisions	The City already allows for this level of coordinated review, so code amendments are not necessary.
DC-6	Provide more direction about "preferential" carpool and vanpool parking spaces.	TPR Section -0045(4)(d) Employee Parking	**Proposed code amendments to:** **Chapter 16.94 Off-Street Parking and Loading, Section .010.E Location**
DC-7	Consider code changes if there are TDM program elements developed for the updated TSP that lend themselves to implementation in code.	TPR Section -0045(5)(b) Transportation Demand Management (TDM) Programs	TDM program elements in the Draft TSP will be reviewed. However, it is not anticipated that these will result in proposed code amendments.
DC-8	Allow exemptions from maximum parking space standards for structured parking and on-street parking.	TPR Section -0045(5)(d) Parking Management	**Proposed code amendments to:** **Chapter 16.94 Off-Street Parking and Loading, Section .010.K General Requirements** [new

	Recommended Potential Development Code Amendments	TPR and/or RTFP Requirements	Commentary
			subsection]
DC-9	Administrative/housekeeping amendments: Address typos and inconsistencies in the footnotes for the parking standards table.	TPR Section -0045(5)(d) Parking Management	**Proposed code amendments to:** **Chapter 16.94 Off-Street Parking and Loading, Section .020 Off-Street Parking Standards**
DC-10	Consider the feasibility of allowing a local street cross-section of 20-28 feet and under what conditions.	TPR Section -0045(7) Minimizing Roadway Width	This recommendation will be developed into proposed policy language.
DC-11	Modify the code provisions for plan and land use regulation amendments to make simpler reference to TPR Section -0060.	TPR Section -0060 Plan and Land Use Regulations Amendments	**Proposed code amendments to:** **Chapter 16.80 Plan Amendments, Section .030.C Transportation Planning Rule Consistency**
DC-12	Provide a variance process in Chapter 16.84 (Variances and Adjustments) and/or Chapter 16.94 (Off-Street Parking and Loading) that allows maximum parking standards to be exceeded.	RTFP Section 3.08.410 Parking Management	Section 16.94.010.A (Off-Street Parking Required) already refers to procedures in Chapter 16.84 for varying from minimum or maximum parking standards. No amendments are proposed.
DC-13	Require that major driveways that are proposed for mixed-use and residential developments align with existing and/or planned streets.	RTFP Section 3.08.410 Parking Management	**Proposed code amendments to:** • **Chapter 16.90 Site Planning, Section .030.D Required Findings** • **Chapter 16.106**

	Recommended Potential Development Code Amendments	TPR and/or RTFP Requirements	Commentary
			Transportation Facilities, Section .030.B.2.d Connectivity Map Required [new subsection]
DC-14	Add on-street loading provisions in an appropriate location such as Old Town, including specific conditions for when on-street loading would be permitted.	RTFP Section 3.08.410 Parking Management	**Proposed code amendments to:** **Chapter 16.94 Off-Street Parking and Loading, Section .030.C Off-Street Loading Standards** [new subsection]
DC-15	Provide more requirements and guidance regarding short-term and long-term bicycle parking.	RTFP Section 3.08.410 Parking Management	**Proposed code amendments to:** **Chapter 16.94 Off-Street Parking and Loading, Section 16.94.020.C Bicycle Parking Facilities**
DC-16	Consider whether having a hierarchy of management to capacity strategies (RTFP Section 3.08.220A) would be effective as part of traffic impact analysis and legislative decision conditions of approval.	RTFP Sections 3.08.510 A & B Comprehensive Plan and TSP Amendments	This was determined to not be an effective or necessary set of potential code amendments.
DC-17	Replace maps in the development code with references to the maps in the updated TSP.		Replacing maps with references can help avoid inconsistencies between the development code and TSP and make updates easier in the future. **Proposed code**

	Recommended Potential Development Code Amendments	TPR and/or RTFP Requirements	Commentary
			amendments to: • **Chapter 16.106 Transportation Facilities, Section .020 Required Improvements** • **Chapter 16.106 Transportation Facilities, Section .030 Location**
DC-18	Remove CAP program.		The CAP program is being discontinued given TIA requirements and mobility standards proposed for adoption as part of this TSP update. **Proposed code amendments to:** • **Chapter 16.106 Transportation Facilities, Section .070 Highway 99W Capacity Allocation Program (CAP)**
DC-19	Re-number the following section (Bike Paths) and update a reference to the TSP. Update the bike path section to address bike lanes.		The section on bike paths is updated to address bike lanes because bike path is are not a term that is used in the updated TSP or elsewhere in the code. **Proposed code amendments to:** • **Chapter 16.106**

	Recommended Potential Development Code Amendments	TPR and/or RTFP Requirements	Commentary
			Transportation Facilities, Section .080 Bike Paths

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Section H

Compliance Checklists

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Oregon Transportation Planning Rule (TPR) and Metro Regional Transportation Functional Plan (RTFP) Compliance

This document presents findings related to compliance of the City of Sherwood's Zoning and Community Development Code ("development code"), Comprehensive Plan, and 2014 Transportation System Plan (TSP) with the Oregon Transportation Planning Rule (TPR) and Metro Regional Transportation Functional Plan (RTFP). The findings are presented in table format in the following tables:

- Table 1: TPR Compliance of Sherwood Development Code
- Table 2: RTFP Compliance of Sherwood Development Code
- Table 3: RTFP Compliance of Sherwood Comprehensive Plan
- Table 4: RTFP Compliance of Sherwood TSP Update

The TPR requirements included in Table 1 are those from Sections -0045 and -0060, which address how the TSP is implemented in the development code and how amendments to zoning, plan amendments, or other land use regulations are reviewed regarding potential impacts on transportation facilities.

Tables 2, 3, and 4 are based on a regulatory checklist prepared by Metro designed to help local jurisdictions demonstrate compliance with the RTFP.

The left column of the tables cites the TPR and RTFP requirements and the right column describes how the development code, comprehensive plan policies, and/or TSP are consistent with these requirements. There are several areas of overlap within and between the TPR and RTFP, and in those cases, other findings are referred to rather than duplicated.

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
OAR 660-012-0045 **Implementation of the TSP**	
(1) Each local government shall amend its land use regulations to implement the TSP.	
(a) The following transportation facilities, services and improvements need not be subject to land use regulations except as necessary to implement the TSP and, under ordinary circumstances do not have a significant impact on land use: (A) Operation, maintenance, and repair of existing transportation facilities identified in the TSP, such as road, bicycle, pedestrian, port, airport and rail facilities, and major regional pipelines and terminals; (B) Dedication of right-of-way, authorization of construction and the construction of facilities and improvements, where the improvements are consistent with clear and objective dimensional standards; (C) Uses permitted outright under ORS 215.213(1)(m) through (p) and 215.283(1)(k) through (n), consistent with the provisions of 660-012-0065; and (D) Changes in the frequency of transit, rail and airport services.	**Existing code addresses this TPR provision.** Chapter 16.66 (Transportation Facilities and Improvements) permits transportation facilities and improvements identified in the TSP and defined in Section 16.10.020 in all City zoning districts.
(b) To the extent, if any, that a transportation facility, service, or improvement concerns the application of a comprehensive plan provision or land use regulation, it may be allowed without further land use review if it is permitted outright or if it is subject to standards that do not require interpretation or the exercise of factual, policy or legal judgment.	**Existing code addresses this TPR provision.** ***See findings for TPR Section -0045(1)(a).***
(c) In the event that a transportation facility, service or improvement is determined to have a significant impact on land use or requires interpretation or the exercise of factual, policy or legal judgment, the local government shall provide a review and approval process that is consistent with 660-012-0050. To facilitate implementation of the TSP, each local government shall amend regulations to provide for consolidated review of land use decisions required to permit a transportation project.	**Existing code addresses this TPR provision.** Section 16.66.010.B specifies that construction of transportation facilities and improvements that are either not designated in the adopted TSP or not designed and constructed as part of an approved subdivision or partition shall be subject to conditional use review. Conditional use approval criteria include those that apply specifically to transportation facilities and improvements (Section 16.82.020.C.9).

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
(2) Local governments shall adopt land use or subdivision ordinance regulations, consistent with applicable federal and state requirements, to protect transportation facilities, corridors, and sites for their identified functions.	
(a) Access control measures such as driveway, road, and signal spacing;	**Existing code addresses this TPR provision.** Subsection .040.M of Chapter 16.106 (Transportation Facilities) addresses access management, and establishes required minimum spacing between driveways and intersections for local roads, neighborhood routes, and collectors (25 feet, 50 feet, and 100 feet respectively). The same spacing standards are included in Section 8 (The Standards) of the 2014 TSP. Subsection .040.M also refers to the Engineering Design and Standard Details Manual for street standards. Section 120.2.A of the Engineering Design and Standard Details Manual refers to the City TSP and code for access regulations, and to the City Engineer, Washington County, and ODOT for authority to control access. Section 210.6.E of the manual establishes spacing between intersections and Section 210.8.A establishes spacing between driveways and intersections, based on roadway functional classifications. Code amendments are not needed to coordinate access standards in the development code with those in the engineering manual (Section 210.6 – Intersections) and the updated TSP because no change to access standards were developed or proposed as part of the TSP update.
(b) Standards to protect the future operations of roads and major transit corridors	**Existing and proposed code language is consistent with this TPR provision.** The 2014 TSP establishes mobility targets and the Roadway Element of the Washington County TSP establish level-of-service standards for both signalized and unsignalized intersections for roadways in the city. Sections 16.90.030.D and 16.106.040 include

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
	general TIA requirements for development proposals based on the type of proposed development, whether they are subject to site plan review, and their projected average daily vehicle trips (ADT). Proposed traffic impact analysis (TIA) requirements in a new section, Section 16.106.080, provide additional guidance regarding the applicability requirements for TIAs and preparation and review of TIAs (TSP Volume 2, Section G). Proposed approval criteria include the provision that applicable performance measures be met.
(d) A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites	**Existing code is consistent with this TPR provision.** Written notice of Type II, III, IV, and V quasi-judicial and legislative actions is sent to ODOT, Metro, applicable transit service providers, and other affected or potentially affected agencies pursuant to Section 16.72.020.C). The City does not have a codified process for inviting agencies to a pre-application meeting, prior to a proposed project or amendment being submitted. Pre-application conferences addressed in existing code (Section 16.70.010) are an opportunity to coordinate with other transportation facility and service providers.
(e) Process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites	**Existing code addresses this TPR provision.** Criteria applicable to development applications grant authority to the Hearing Authority and Appeal Authority to approve the application with conditions, pursuant to Section 16.72.010.C.1. Conditional use provisions specify that conditions may be imposed by the Hearings Authority "if necessary to fulfill the requirements of the adopted Comprehensive Plan, Transportation System Plan, or the Code" (Section 16.82.020.A.1). Conditional use approval criteria in Section 16.82.020.C.9 include those that apply specifically to transportation facilities and improvements.
(f) Regulations to provide notice to public agencies providing transportation facilities and services, MPOs, and ODOT of: land use applications that require public	**Existing code addresses this TPR provision.** ***See findings for TPR Section -0045(2)(d).***

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
hearings, subdivision and partition applications, applications which affect private access to roads, applications within airport noise corridor and imaginary surfaces which affect airport operations.	
g) Regulations assuring amendments to land use designations, densities, design standards are consistent with the function, capacities, and levels of service of facilities designated in the TSP.	**Existing and proposed code language is consistent with this TPR provision.** ***See findings regarding traffic impact analyses in TPR Section -0045(2)(b) and plan and land use regulation amendments in TPR Section -0060.***
(3) Local governments shall adopt land use or subdivision regulations for urban areas and rural communities as set forth below.	
(a) Bicycle parking as part of new multifamily residential developments of 4 units or more, new retail, office and institutional developments, and all transit transfer stations and park-and-ride lots	**Existing code addresses this TPR provision.** Section 16.94.020.C requires bicycle parking for uses including multi-family housing, office and most other commercial uses, institutional uses, and park-and-ride facilities. The provisions also address location and design of bicycle parking.
(b) On-site facilities shall be provided which accommodate safe and convenient pedestrian and bicycle access from within new subdivisions, multi-family developments, planned developments, shopping centers, and commercial districts to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. Single-family residential developments shall generally include streets and accessways. Pedestrian circulation through parking lots should generally be provided in the form of accessways. (A) "Neighborhood activity centers" includes, but is not limited to, existing or planned schools, parks, shopping areas, transit stops or employment centers; (B) Bikeways shall be required along arterials and major collectors. sidewalks shall be required along arterials, collectors and most local streets in urban areas except that sidewalks are not required along controlled access roadways, such as freeways; (C) Cul-de-sacs and other dead-end streets may be used as part of a development plan, consistent with the purposes set forth in this section;	**Existing and proposed code addresses this TPR provision.** • On-site circulation and connections – Chapter 16.96 (On-Site Circulation) establishes requirements for on-site pedestrian, bicycle, and vehicular circulation. Standards for residential and non-residential development require that a private pathway/sidewalk system extend throughout the site that connects existing development, building entrances, adjacent development, future phases of development, public rights-of-way, open space, and parking and storage areas. On-site pathway/sidewalk systems addressed in Chapter 16.96 require the system to connect to transit facilities within 500 feet of the site. This is reinforced by language in the transportation facilities section that requires site connections to transit streets, as designated in the TSP, pursuant to Section 16.106.040.J. • Parking lots – Section 16.96.020.B and Section

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
(D) Local governments shall establish their own standards or criteria for providing streets and accessways consistent with the purposes of this section. Such measures may include but are not limited to: standards for spacing of streets or accessways; and standards for excessive out-of-direction travel; (E) Streets and accessways need not be required where one or more of the following conditions exist: (i) Physical or topographic conditions make a street or accessway connection impracticable. Such conditions include but are not limited to freeways, railroads, steep slopes, wetlands or other bodies of water where a connection could not reasonably be provided; (ii) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or (iii) Where streets or accessways would violate provisions of leases, easements, covenants, restrictions or other agreements existing as of May 1, 1995, which preclude a required street or accessway connection.	16.96.030.B require separation of pathways and sidewalks from vehicle traffic in parking lots. • Bikeways and sidewalks – Section 16.106.010 provides street design guidelines, including dimensions for sidewalks on all streets and bike lanes on all streets except downtown streets, commercial/industrial streets under 3,000 ADT, neighborhood routes, and local streets. Proposed amendments to Section 16.10.020 include providing a definition for shared-use paths (TSP Volume 2, Section G). • Street and access way layout – Street spacing is addressed in the Engineering Design and Standard Details manual and access spacing standards in Section 16.106.40.M and the 2014 TSP. Section 16.106.30 establishes maximum block lengths of 530 feet for new streets, except for arterials, which have a maximum block length requirement of 1,800 feet. Where full street crossings occur at distances of more 1,200 feet, bicycle and pedestrian crossings must be provided at an average of 530 feet. Section 16.106.30 also requires consistency with a local connectivity plan established in the TSP. Proposed amendments to Section 16.10.020 include providing a definition for access ways, a term already used in the City's development code (TSP Volume 2, Section G).
(c) Off-site road improvements are otherwise required as a condition of development approval, they shall include facilities accommodating convenient pedestrian and bicycle and pedestrian travel, including bicycle ways on arterials and major collectors.	**Existing code addresses this TPR provision.** ***See findings regarding authority to condition approval in TPR Section -0045(2)(e).***
(e) Internal pedestrian circulation within new office parks and commercial developments shall be provided through clustering of buildings, construction of accessways, walkways and similar techniques.	**Existing code addresses this TPR provision.** ***See findings regarding on-site circulation in TPR Section -0045(3)(b).***
(4) To support transit in urban areas containing a population greater than 25,000, where the area is already served by a public transit system or where a determination has been made that a public transit system is feasible, local	

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
governments shall adopt land use and subdivision regulations as provided in (a)-(g) below:	
(a) Transit routes and transit facilities shall be designed to support transit use through provision of bus stops, pullouts and shelters, optimum road geometrics, on-road parking restrictions and similar facilities, as appropriate;	**Existing code addresses the elements of this TPR requirement that apply to the development code.** On-site pathway/sidewalk system provisions established in Chapter 16.96 require the system to connect to transit facilities within 500 feet of the site. Section 16.106.040.J (Transit Facilities) reinforces this requirement by also requiring site connections to transit streets, as designated in the TSP, and either proving or allowing for transit amenities and/or easements. Further, front/primary entrances of commercial, multi-family, institutional, and mixed-use development must be oriented to existing and planned transit facilities and be built with no or minimal setbacks according to underlying zoning and site plan provisions, pursuant to Section 16.90.030.D.7.
(b) New retail, office and institutional buildings at or near major transit stops shall provide for convenient pedestrian access to transit through the measures listed in (A) and (B) below. (A) Walkways shall be provided connecting building entrances and streets adjoining the site; (B) Pedestrian connections to adjoining properties shall be provided except where such a connection is impracticable as provided for in OAR 660-012-0045(3)(b)(E). Pedestrian connections shall connect the on site circulation system to existing or proposed streets, walkways, and driveways that abut the property. Where adjacent properties are undeveloped or have potential for redevelopment, streets, accessways and walkways on site shall be laid out or stubbed to allow for extension to the adjoining property;	**Existing code language is consistent with this TPR provision.** ***See the findings regarding on-site circulation in TPR Section -0045(3)(b).***
(C) In addition to (A) and (B) above, on sites at major transit stops provide the following: (i) Either locate buildings within 20 feet of the transit stop, a transit street or an intersecting street or provide a pedestrian plaza at the transit stop or a street intersection; (ii) A reasonably direct pedestrian connection between the transit stop and building entrances on the site;	**Existing code language is consistent with this TPR provision.** ***See the findings regarding site circulation and connections in TPR Sections -0045(3)(b) and -0045(4)(a).***

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
(iii) A transit passenger landing pad accessible to disabled persons; (iv) An easement or dedication for a passenger shelter if requested by the transit provider; and (v) Lighting at the transit stop.	
(c) Local governments may implement (4)(b)(A) and (B) above through the designation of pedestrian districts and adoption of appropriate implementing measures regulating development within pedestrian districts. Pedestrian districts must comply with the requirement of (4)(b)(C) above;	**The City is not proposing to designate a pedestrian district at this time, so this TPR provision does not apply.**
(d) Designated employee parking areas in new developments shall provide preferential parking for carpools and vanpools;	**Existing and proposed code addresses this TPR provision.** Section 16.94.010.E.3.a requires all new development with at least 20 employees to provide preferential parking spaces for carpools and vanpools. Proposed amendments to Section 16.94.010.E define the term "preferential" (TSP Volume 2, Section G).
(e) Existing development shall be allowed to redevelop a portion of existing parking areas for transit-oriented uses, including bus stops and pullouts, bus shelters, park and ride stations, transit-oriented developments, and similar facilities, where appropriate;	**Existing code is consistent with this TPR provision.** Section 16.94.010.E.3.b allows redevelopment of portions of designated parking areas for multi-modal facilities (transit shelters, park and ride, and bicycle parking), subject to meeting all other applicable standards, including minimum space standards.
(f) Road systems for new development shall be provided that can be adequately served by transit, including provision of pedestrian access to existing and identified future transit routes. This shall include, where appropriate, separate accessways to minimize travel distances;	**Existing code addresses this TPR provision.** ***See the findings regarding transit access in TPR Sections -0045(3)(b) and -0045(4)(a).***
(g) Along existing or planned transit routes, designation of types and densities of land uses adequate to support transit.	**Adopted planning documents and current planning processes address this TPR provision.** The City has engaged in two significant planning processes – the Sherwood Town Center Plan and the Southwest Corridor Study – to examine future land use and transit service and routes. These

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
	planning processes are summarized in the Plans and Policies Report prepared for this TSP update (TSP Volume 2, Section A, pp. 14-15 and 23-25). The Existing Conditions Report (TSP Volume 2, Section B, Figure 1 and Figure 7) shows existing zoning and existing transit routes in the city.
(5) In MPO areas, local governments shall adopt land use and subdivision regulations to reduce reliance on the automobile which:	
(a) Allow transit-oriented developments (TODs) on lands along transit routes;	**Existing code, adopted planning documents, and current planning processes address this TPR provision.** ***See the findings for TPR Sections -0045(4)(a) and (g).***
(b) Implements a demand management program to meet the measurable standards set in the TSP;	**Existing code and the updated TSP are consistent with this TPR provision.** ***See findings regarding pedestrian and bicycle facilities on streets, pedestrian and bicycle circulation on-site, shared-use access ways, transit access and amenities, and carpool/vanpool and bicycle parking in TPR Sections -0045(3)(a) and (b) and Sections -0045(4)(a), (d), (e), and (f).*** Transportation Demand Management (TDM) programs are addressed in Section 8 (The Standards) of the updated TSP.
(c) Implements a parking plan which: (A) Achieves a 10% reduction in the number of parking spaces per capita in the MPO area over the planning period. This may be accomplished through a combination of restrictions on development of new parking spaces and requirements that existing parking spaces be redeveloped to other uses; (B) Aids in achieving the measurable standards set in the TSP in response to OAR 660-012-0035(4) [reducing reliance on the automobile]; (C) Includes land use and subdivision regulations setting minimum and maximum parking requirements in appropriate locations, such as downtowns, designated regional or community centers, and transit oriented-	**A citywide parking plan is not being considered at this time, so this TPR provision does not apply.** ***Also see findings regarding alternative parking regulations in TPR Section -0045(5)(d).***

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
developments; and (D) Is consistent with demand management programs, transit-oriented development requirements and planned transit service. ***OR***	
(d) As an alternative to (c) above, local governments in an MPO may instead revise ordinance requirements for parking as follows: (A) Reduce minimum off-street parking requirements for all non-residential uses from 1990 levels; (B) Allow provision of on-street parking, long-term lease parking, and shared parking to meet minimum off-street parking requirements; (C) Establish off-street parking maximums in appropriate locations, such as downtowns, designated regional or community centers, and transit-oriented developments; (D) Exempt structured parking and on-street parking from parking maximums; (E) Require that parking lots over 3 acres in size provide street-like features along major driveways (including curbs, sidewalks, and street trees or planting strips); and (F) Provide for designation of residential parking districts.	**Existing and proposed code addresses this TPR provision.** Existing off-street parking regulations allow for shared parking, blended parking rates, on-street parking credits, preferential carpool/vanpool parking, residential parking districts, and reduced parking requirements in environmentally sensitive areas (Section 16.94.010). • Minimum and maximum parking requirements – Section16.94.020.A establishes both minimum and maximum. Minimum parking standards comply with Metro standards, which were originally developed to reduce requirements from historic levels. • Parking credits and parking districts – Section 16.94.010 allows for shared parking, blended parking rates, on-street parking credits, preferential carpool/vanpool parking, residential parking districts, and reduced parking requirements in environmentally sensitive areas. • Structured parking and on-street parking maximums – Proposed amendments to parking standards specify that structured parking and on-street parking are exempt from parking space maximums (Section 16.94.010.K) (TSP Volume 2, Section G). On-street parking is not subject to minimum requirements and can be used to count toward meeting off-street requirements, pursuant to Section 16.94.010.B.5. • Large parking lots – Section 16.94.010.I (Parking and Loading Plan) requires parking lots

Table 1: TPR Compliance of Sherwood Development Code

Transportation Planning Rule Requirement	Findings of Development Code Compliance
	larger than one acre to provide street-like features.
(e) Require all major industrial, institutional, retail and office developments to provide either a transit stop on site or connection to a transit stop along a transit trunk route when the transit operator requires such an improvement.	**Existing code is consistent with this TPR provision.** ***See findings regarding transit provisions in TPR Section -0045(4)(a).***
(6) In developing a bicycle and pedestrian circulation plan as required by 660-012-0020(2)(d), local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas. Appropriate improvements should provide for more direct, convenient and safer bicycle or pedestrian travel within and between residential areas and neighborhood activity centers (i.e., schools, shopping, transit stops). Specific measures include, for example, constructing walkways between cul-de-sacs and adjacent roads, providing walkways between buildings, and providing direct access between adjacent uses.	**The 2014 TSP includes pedestrian and bicycle plans and is consistent with this TPR provision.** ***Also see findings regarding pedestrian and bicycle facilities in TPR Section -0045(3)(b) and regarding pedestrian and bicycle connections in RTFP Section 3.08.110E.***
(7) Local governments shall establish standards for local streets and accessways that minimize pavement width and total ROW consistent with the operational needs of the facility. The intent of this requirement is that local governments consider and reduce excessive standards for local streets and accessways in order to reduce the cost of construction, provide for more efficient use of urban land, provide for emergency vehicle access while discouraging inappropriate traffic volumes and speeds, and which accommodate convenient pedestrian and bicycle circulation. Notwithstanding section (1) or (3) of this rule, local street standards adopted to meet this requirement need not be adopted as land use regulations.	**Existing code is consistent with this TPR provision.** Section 16.106.010 provides street design standards by street functional classification and traffic volume. The standards include those for a 28-foot-wide local street, with parking on one side and a shared travel lane.
OAR 660-012-0060 **Plan and Land Use Regulation Amendments**	
Amendments to functional plans, acknowledged comprehensive plans, and land use regulations that significantly affect an existing or planned transportation facility shall assure that allowed land uses are consistent with the identified function, capacity, and performance standards of the facility.	**Existing and proposed code is consistent with this TPR provision.** Section 16.80.030.C addresses TPR compliance. Proposed amendments to the section make simpler reference to Section -0060 in order to capture all of its requirements and allowances related to reviewing plan and land use regulation amendments (TSP Volume 2, Section G).

Table 2: RTFP Compliance of Sherwood Development Code

Regional Transportation Functional Plan Requirement	Findings of Development Code Compliance
Allow complete street designs consistent with regional street design policies **(Title 1, Street System Design Sec 3.08.110A(1))**	**Existing code is consistent with these RTFP provisions.** ***See findings regarding street design and transit facilities in TPR Sections -0045(3)(b), (4)(a), and (7).***
Allow green street designs consistent with federal regulations for stream protection **(Title 1, Street System Design Sec 3.08.110A(2))**	
Allow transit-supportive street designs that facilitate existing and planned transit service pursuant 3.08.120B **(Title 1, Street System Design Sec 3.08.110A(3))**	
Allow implementation of: • narrow streets (<28 ft curb to curb); • wide sidewalks (at least five feet of through zone); • landscaped pedestrian buffer strips or paved furnishing zones of at least five feet, that include street trees; • Traffic calming to discourage traffic infiltration and excessive speeds; • short and direct right-of-way routes and shared-use paths to connect residences with commercial services, parks, schools, hospitals, institutions, transit corridors, regional trails and other neighborhood activity centers; • opportunities to extend streets in an incremental fashion, including posted notification on streets to be extended. **(Title 1, Street System Design Sec 3.08.110B)**	**Existing and proposed code and proposed policy are consistent with this RTFP provision.** ***Also see findings regarding street design in TPR Section -0045(7).*** • Narrow streets – Existing street standards include a cross-section for a local residential street that is 28 feet curb to curb (Section 16.106.010). Proposed Strategy 19 under Goal 3 of the Transportation policies commits the City to reevaluate street design standards and to establish conditions under which narrower street standards would be permitted (TSP Volume 2, Section G). • Sidewalks, buffer strips, and traffic calming – Street design guidelines in Section 16.106.010 call for sidewalks of 6-12 feet on all streets but alleys. Buffer strips of at least five feet are called for also on all streets but alleys. Traffic calming is authorized for use on new and existing streets in Section 16.106.040. • Path and access way connections – Connections to adjacent sites and activity centers are addressed by the findings and recommendations for TPR Section -0045(3)(b). • Streets to be extended – Section 16.106.040.C requires notice be posted on dead-end streets that are planned for extension.

Table 2: RTFP Compliance of Sherwood Development Code

Regional Transportation Functional Plan Requirement	Findings of Development Code Compliance
Require new residential or mixed-use development (of five or more acres) that proposes or is required to construct or extend street(s) to provide a site plan (consistent with the conceptual new streets map required by Title 1, Sec 3.08.110D) that: • provides full street connections with spacing of no more than 530 feet between connections except where prevented by barriers • Provides a crossing every 800 to 1,200 feet if streets must cross water features protected pursuant to Title 3 UGMFP (unless habitat quality or the length of the crossing prevents a full street connection) • provides bike and pedestrian accessways in lieu of streets with spacing of no more than 330 feet except where prevented by barriers • limits use of cul-de-sacs and other closed-end street systems to situations where barriers prevent full street connections • includes no closed-end street longer than 220 feet or having no more than 25 dwelling units **(Title 1, Street System Design Sec 3.08.110E)**	**Existing code is consistent with these RTFP provisions**. • Connections and crossings – Provisions in transportation facility standards (Section 16.106.030.B) and land division standards (Section 16.128.010.A) establish maximum block lengths of 530 feet for new streets, except for arterials, which have a maximum block length requirement of 1,800 feet. Section 16.106.30 also requires consistency with a local connectivity plan established in the TSP. The standards also specify that where full street crossings occur at distances of more 1,200 feet, bicycle and pedestrian crossings must be provided at an average of 530 feet. • Bike and pedestrian access ways – Connectivity provisions in Section 16.128.010.A.2 (Block Length) require that paved bike and pedestrian access ways be provided in easements or right-of-way consistent with Figure 7.401. Given maximum block length standards of 530 feet (except for arterials), these mid-block access ways can be assumed to be spaced at a maximum of 330 feet. • Cul-de-sacs and closed-end streets – Section 16.106.040.E.1 limits cul-de-sacs to 200 feet and 25 dwelling units, except when constrained by topography and existing development. Section 16.106.040.E.3 requires access ways to be provided in public easements, tracts, or right-of-way on cul-de-sacs or dead-end streets in order to connect streets.
Establish city/county standards for local street connectivity, consistent with Title 1, Sec 3.08.110E, that applies to new residential or mixed-use development (of less than five acres) that proposes or is required to construct or extend street(s). **(Title 1, Street System Design Sec 3.08.110F)**	**Existing code is consistent with this RTFP provision.** ***See findings for RTFP Section 3.08.110E; the standards apply regardless of site size.***
<u>Applicable to both Development Code and TSP</u> To the extent feasible, restrict driveway and street access in the vicinity of interchange ramp terminals, consistent with	**Proposed policy amendments address this RTFP provision.**

Table 2: RTFP Compliance of Sherwood Development Code

Regional Transportation Functional Plan Requirement	Findings of Development Code Compliance
Oregon Highway Plan Access Management Standards, and accommodate local circulation on the local system. Public street connections, consistent with regional street design and spacing standards, shall be encouraged and shall supersede this access restriction. Multimodal street design features including pedestrian crossings and on-street parking shall be allowed where appropriate. **(Title 1,Street System Design Sec 3.08.110G)**	***Also see findings regarding access management in TPR Section -0045(2)(a) and regarding street spacing in TPR Section -0045(3)(b) and RTFP Section 3.08.110E.*** Proposed amendments to Strategy 2 under Goal 2 in Transportation Policies commits the City to work with ODOT, Washington County, and Metro to improve regional mobility through such efforts as the Westside Solution Study and the I-5 to 99W Connector project (TSP Volume 2, Section G).
Include Site design standards for new retail, office, multi-family and institutional buildings located near or at major transit stops shown in Figure 2.15 in the RTP: • Provide reasonably direct pedestrian connections between transit stops and building entrances and between building entrances and streets adjoining transit stops; • Provide safe, direct and logical pedestrian crossings at all transit stops where practicable. At major transit stops, require the following: • Locate buildings within 20 feet of the transit stop, a transit street or an intersection street, or a pedestrian plaza at the stop or a street intersections; • Transit passenger landing pads accessible to disabled persons to transit agency standards; • An easement or dedication for a passenger shelter and an underground utility connection to a major transit stop if requested by the public transit provider; • Lighting to transit agency standards at the major transit stop; • Intersection and mid-block traffic management improvements as needed and practicable to enable marked crossings at major transit stops. **(Title 1, Transit System Design Sec 3.08.120B(2))**	**Existing code is consistent with this RTFP provision.** ***See findings regarding transit access and amenities in TPR Sections -0045(3)(b) and -0045(4)(a), and regarding crossings in RTFP Section 3.08.110E.***
(Could be in Comprehensive plan or TSP as well) As an alternative to implementing site design standards at major transit stops (section 3.08.120B(2), a city or county may establish pedestrian districts with the following elements: • A connected street and pedestrian network for the district; • An inventory of existing facilities, gaps and deficiencies in the network of pedestrian routes;	**An alternative to the site design standards is not needed and the City is not proposing to designate a pedestrian district at this time, so this RTFP provision does not apply.**

Table 2: RTFP Compliance of Sherwood Development Code

Regional Transportation Functional Plan Requirement	Findings of Development Code Compliance
• Interconnection of pedestrian, transit and bicycle systems; • Parking management strategies; • Access management strategies; • Sidewalk and accessway location and width; • Landscaped or paved pedestrian buffer strip location and width; • Street tree location and spacing; • Pedestrian street crossing and intersection design; • Street lighting and furniture for pedestrians; • A mix of types and densities of land uses that will support a high level of pedestrian activity. **(Title 1, Pedestrian System Design Sec 3.08.130B)**	
Require new development to provide on-site streets and accessways that offer reasonably direct routes for pedestrian travel. **(Title 1, Pedestrian System Design Sec 3.08.130C)**	**Existing code is consistent with this RTFP provision.** ***See findings for TPR Section -0045(3)(b).***
Establish parking ratios, consistent with the following: • No minimum ratios higher than those shown on Table 3.08-3. • Mo maximum ratios higher than those shown on Table 3.08-3 and illustrated in the Parking Maximum Map. If 20-minute peak hour transit service has become available to an area within a one-quarter mile walking distance from bus transit one-half mile walking distance from a high capacity transit station, that area shall be removed from Zone A. Cities and counties should designate Zone A parking ratios in areas with good pedestrian access to commercial or employment areas (within one-third mile walk) from adjacent residential areas. Establish a process for variances from minimum and maximum parking ratios that include criteria for a variance. Require that free surface parking be consistent with the regional parking maximums for Zones A and B in Table 3.08-3. Following an adopted exemption process and criteria, cities and counties may exempt parking structures; fleet parking; vehicle parking for sale, lease, or rent; employee car pool parking; dedicated valet parking; user-paid parking;	**Existing and proposed code is consistent with these RTFP provisions.** ***Also see findings regarding minimum/maximum parking standards, on-street parking credits, parking districts, and street-like features in large parking lots in TPR Section -0045(5)(d).*** • Variances process – Existing off-street parking regulations in Section 16.94.010 allow for reductions in parking requirements in environmentally sensitive areas. Section 16.84.030 (Types of Variances) establishes adjustments and Class B variances that allow for reductions in standards. • Blended parking rates – Existing off-street parking regulations in Section 16.94.010 allow for blended parking rates. • Major driveways – Driveways for residential and non-residential uses are addressed in

Table 2: RTFP Compliance of Sherwood Development Code

Regional Transportation Functional Plan Requirement	Findings of Development Code Compliance
market rate parking; and other high-efficiency parking management alternatives from maximum parking standards. Reductions associated with redevelopment may be done in phases. Where mixed-use development is proposed, cities and counties shall provide for blended parking rates. Cities and counties may count adjacent on-street parking spaces, nearby public parking and shared parking toward required parking minimum standards. Use categories or standards other than those in Table 3.08-3 upon demonstration that the effect will be substantially the same as the application of the ratios in the table. Provide for the designation of residential parking districts in local comprehensive plans or implementing ordinances. Require that parking lots more than three acres in size provide street-like features along major driveways, including curbs, sidewalks and street trees or planting strips. Major driveways in new residential and mixed-use areas shall meet the connectivity standards for full street connections in section 3.08.110, and should line up with surrounding streets except where prevented by topography, rail lines, freeways, pre-existing development or leases, easements or covenants that existed prior to May 1, 1995, or the requirements of Titles 3 and 13 of the UGMFP. Require on-street freight loading and unloading areas at appropriate locations in centers. Establish short-term and long-term bicycle parking minimums for: • New multi-family residential developments of four units or more; • New retail, office and institutional developments; • Transit centers, high capacity transit stations, inter-city bus and rail passenger terminals; and • Bicycle facilities at transit stops and park-and-ride lots. **(Title 4, Parking Management Sec 3.08.410)**	Sections 16.96.030 and 16.96.030. Section 16.106.30 also requires consistency with a local connectivity plan established in the TSP. Proposed amendments to site planning requirements in Section 16.90.030.D and connectivity requirements in Section 16.106.030.B.2.d define major driveways and set connectivity requirements for major driveways (TSP Volume 2, Section G). • On-street parking and loading – Proposed amendments to Section 16.94.030.C establish standards for on-street loading in the Old Town Overlay District (TSP Volume 2, Section G). • Bicycle parking – Section 16.94.020.C requires bicycle parking for uses including multi-family housing, office and most other commercial uses, institutional uses, and park-and-ride facilities. The provisions address location and design of bicycle parking. Proposed amendments to this section set long-term bicycle parking requirements as well as provide additional guidance about parking location and design (TSP Volume 2, Section G).

Table 3: RTFP Compliance of Sherwood Comprehensive Plan

Regional Transportation Functional Plan Requirement	Findings of Comprehensive Plan Compliance
(Could be located in Development code or Comprehensive Plan) As an alternative to implementing site design standards at major transit stops (section 3.08.120B(2), a city or county may establish pedestrian districts with the following elements: • A connected street and pedestrian network for the district; • An inventory of existing facilities, gaps and deficiencies in the network of pedestrian routes; • Interconnection of pedestrian, transit and bicycle systems; • Parking management strategies; • Access management strategies; • Sidewalk and accessway location and width; • Landscaped or paved pedestrian buffer strip location and width; • Street tree location and spacing; • Pedestrian street crossing and intersection design; • Street lighting and furniture for pedestrians; • A mix of types and densities of land uses that will support a high level of pedestrian activity. **(Title 1, Pedestrian System Design Sec 3.08.130B)**	**An alternative to the site design standards is not needed and the City is not proposing to designate a pedestrian district at this time, so this RTFP provision does not apply.**
When proposing an amendment to the comprehensive plan or to a zoning designation, consider the strategies in subsection 3.08.220A as part of the analysis required by OAR 660-012-0060. If a city or county adopts the actions set forth in 3.08.230E (parking ratios, designs for street, transit, bicycle, pedestrian, freight systems, TSMO projects and strategies, and land use actions) and section 3.07.630.B of Title 6 of the UGMFP, it shall be eligible for an automatic reduction of 30 percent below the vehicular trip generation rates recommended by the Institute of Transportation Engineers when analyzing the traffic impacts, pursuant to OAR 660-012-0060, of a plan amendment in a Center, Main Street, Corridor or Station Community. **(Title 5, Amendments of City and County Comprehensive and Transportation System Plans Sec 3.08.510A,B)**	**Existing and proposed code addresses this RTPF provision.** ***See the findings in TPR Section -0060.*** As established in Section 2 (The Vision) of the 2014 TSP, the City considered transportation solutions in 3.08.220A as part of the TSP update process.
(Could be located in TSP or other adopted policy document) Adopt parking policies, management plans and regulations for Centers and Station Communities. Plans may be adopted	**Proposed policy language addresses this RTFP provision.**

Table 3: RTFP Compliance of Sherwood Comprehensive Plan

Regional Transportation Functional Plan Requirement	Findings of Comprehensive Plan Compliance
in TSPs or other adopted policy documents and may focus on sub-areas of Centers. Plans shall include an inventory of parking supply and usage, an evaluation of bicycle parking needs with consideration of *TriMet Bicycle Parking Guidelines*. Policies shall be adopted in the TSP. Policies, plans and regulations must consider and may include the following range of strategies: • By-right exemptions from minimum parking requirements; • Parking districts; • Shared parking; • Structured parking; • Bicycle parking; • Timed parking; • Differentiation between employee parking and parking for customers, visitors and patients; • Real-time parking information; • Priced parking; • Parking enforcement. **(Title 4, Parking Management Sec 3.08.410I)**	***Also refer to findings from the Town Center Plan.*** Proposed Strategy 11 under Goal 3 of the Transportation Policies commits the City to implement parking strategies from the Town Center Plan, including: evaluating and monitoring parking supply and demand in Old Town; evaluate the parking needs for townhome developments in the Town Center; and evaluating the needs of commercial uses in the Langer Drive Commercial District (TSP Volume 2, Section G).

Table 4: RTFP Compliance of Sherwood TSP Update

Regional Transportation Functional Plan Requirement	Findings of TSP Compliance
Include, to the extent practicable, a network of major arterial streets at one-mile spacing and minor arterials or collectors at half-mile spacing, considering: • existing topography; • rail lines; freeways; pre-existing development, leases, easements or covenants; • requirements of Metro's Urban Growth Management Functional Plan Title 3 (Water Quality and Flood plains) and Title 13 (Nature in Neighborhoods), such as streams, rivers, flood plains, wetlands, riparian and upland fish and wildlife habitat areas. • arterial design concepts in chapter 2 of RTP • best practices and designs as set forth in regional state or local plans and best practices for protecting natural resources and natural areas **(Title 1, Street System Design Sec 3.08.110C)**	Yes – Included The TSP update reviewed the system's connectivity and spacing of arterials and collectors. Volume 2, Section C, pages 31-32.
Include a conceptual map of new streets for all contiguous areas of vacant and re-developable lots and parcels of five or more acres that are zoned to allow residential or mixed-use development. The map shall identify street connections to adjacent areas and should demonstrate opportunities to extend and connect new streets to existing streets, provide direct public right-of-way routes and limit closed-end street designs consistent with Title 1, Sec 3.08.110E **(Title 1, Street System Design Sec 3.08.110D)**	Yes – Included The TSP update includes a "functional class" and a "local street connectivity" map showing conceptual locations for future street connections, as shown in TSP. Volume 1, Section 8, page 54 (Figure 17).
To the extent feasible, restrict driveway and street access in the vicinity of interchange ramp terminals, consistent with Oregon Highway Plan Access Management Standards, and accommodate local circulation on the local system. Public street connections, consistent with regional street design and spacing standards, shall be encouraged and shall supersede this access restriction. Multimodal street design features including pedestrian crossings and on-street parking shall be allowed where appropriate. **(Title 1,Street System Design Sec 3.08.110G)**	Yes - Not applicable There are no interchanges within the City of Sherwood.
Include investments, policies, standards and criteria to provide pedestrian and bicycle connections to all existing transit stops and major transit stops designated in Figure 2.15 of the RTP. **(Title 1, Transit System Design Sec 3.08.120A)**	Yes – Included Gaps in pedestrian and bicycle connections to transit stops are identified in Volume 2, Section C, pages 6 to 11. Solutions are displayed in Volume 1, Section 7, pages 42 and 43, and listed in Volume 2, Section E.
Include a transit plan consistent with transit functional classifications shown in Figure 2.15 of the RTP that shows the locations of major transit stops, transit centers, high capacity transit stations, regional bike-transit facilities, inter-city bus and rail passenger terminals designated in the RTP, transit-priority treatments such as signals, park-and-ride facilities, and bicycle and pedestrian	Yes – Included The TSP update inventoried and evaluated the City's transit network, including identifying gaps for pedestrian and bicycle

Table 4: RTFP Compliance of Sherwood TSP Update

Regional Transportation Functional Plan Requirement	Findings of TSP Compliance
routes, consistent with sections 3.08.130 and 3.08.140, between essential destinations and transit stops. **(Title 1, Transit System Design Sec 3.08.120B(1))**	connections to transit. Volume 2, Section B, pages 15 to 16 present the existing transit system. Transit projects in the TSP are listed in Volume 2, Section E.
Include a pedestrian plan, for an interconnected network of pedestrian routes within and through the city or county. The plan shall include: • An inventory of existing facilities that identifies gaps and deficiencies in the pedestrian system; • An evaluation of needs for pedestrian access to transit and essential destinations for all mobility levels, including direct, comfortable and safe pedestrian routes; • A list of improvements to the pedestrian system that will help the city or county achieve the regional Non-SOV modal targets in Table 3.08-1 of the RTFP, and other targets established pursuant to section 3.08.230; • Provisions for sidewalks along arterials, collectors and most local streets, except that sidewalks are not required along controlled roadways, such as freeways; • Provision for safe crossings of streets and controlled pedestrian crossings on major arterials **(Title 1, Pedestrian System Design Sec 3.08.130A)**	Yes – Included Existing pedestrian facilities and gaps are presented in Volume 2, Section C, pages 6 to 8. Pedestrian improvements are displayed in Volume 1, Section 7, page 42, and listed in Volume 2, Section E.
Include a bicycle plan for an interconnected network of bicycle routes within and through the city or county. The plan shall include: • An inventory of existing facilities that identifies gaps and deficiencies in the bicycle system; • An evaluation of needs for bicycle access to transit and essential destinations, including direct, comfortable and safe bicycle routes and secure bicycle parking, considering *TriMet Bicycle Parking Guidelines*; • A list of improvements to the bicycle system that will help the city or county achieve the regional Non-SOV modal targets in Table 3.08-1 of the RTFP and other targets established pursuant to section 3.08.230; • Provision for bikeways along arterials, collectors and local streets, and bicycling parking in centers, at major transit stops shown in Figure 2.15 in the RTP, park-and-ride lots and associated with institutional uses; • Provision for safe crossing of streets and controlled bicycle crossings on major arterials **(Title 1, Bicycle System Design Sec 3.08.140)**	Yes – Included Existing bicycle facilities and gaps are presented in Volume 2, Section C, pages 9 to 10. Biking improvements are displayed in Volume 1, Section 7, page 43, and listed in Volume 2, Section E.
Include a freight plan for an interconnected system of freight networks within and through the city or county. The plan shall include: • An inventory of existing facilities that identifies gaps and deficiencies in the	Yes – Included Existing freight facilities are presented in Volume 2, Section C, pages 17 to 18. The TSP

Table 4: RTFP Compliance of Sherwood TSP Update

Regional Transportation Functional Plan Requirement	Findings of TSP Compliance
freight system; • An evaluation of freight access to freight intermodal facilities, employment and industrial areas and commercial districts; • A list of improvements to the freight system that will help the city or county increase reliability of freight movement, reduce freight delay and achieve targets established pursuant to section 3.08.230. **(Title 1, Freight System Design Sec 3.08.150)**	identifies existing and future truck routes, along with their classifications, in Volume 1, Section 8, pages 56 to 57. Capacity improvements needed along the freight system are discussed in Volume 2, Section C, pages 14 to 16. Improvements to the freight system are displayed in Volume 1, Section 7, page 41 and are listed in Volume 2, Section E.
Include a transportation system management and operations (TSMO) plan to improve the performance of existing transportation infrastructure within or through the city or county. A TSMO plan shall include: • An inventory and evaluation of existing local and regional TSMO infrastructure, strategies and programs that identifies gaps and opportunities to expand infrastructure, strategies and programs • A list of projects and strategies, consistent with the Regional TSMO Plan, based upon consideration of the following functional areas: ○ Multimodal traffic management investments ○ Traveler Information investments ○ Traffic incident management investments ○ Transportation demand management investments **(Title 1, Transportation System Management and Operations Sec 3.08.160)**	Yes – Included TSMO solutions were prioritized to address transportation system needs (see requirements to address **(Title 2, Sec 3.08.220 Transportation Solutions)).** In addition to these specific projects, general TSMO strategies are contained in Volume 1, Section 8, page 58.
Incorporate regional and state transportation needs identified in the 2035 RTP as well as local transportation needs. The determination of local transportation needs based upon: • System gaps and deficiencies identified in the inventories and analysis of transportation system pursuant to Title 1; • Identification of facilities that exceed the Deficiency Thresholds and Operating Standards in Table 3.08-2 or the alternative thresholds and standards established pursuant to section 3.08.230; • Consideration and documentation of the needs of youth, seniors, people with disabilities and environmental justice populations within the city or county, including minorities and low-income families. A local determination of transportation needs must be consistent with the following elements of the RTP: • The population and employment forecast and planning period of the RTP, except that a city or county may use an alternative forecast for the city or county, coordinated with Metro, to account for changes to comprehensive	Yes – Included System needs and gaps are identified in Volume 2, Section B and Section C.

Table 4: RTFP Compliance of Sherwood TSP Update

Regional Transportation Functional Plan Requirement	Findings of TSP Compliance
plan or land use regulations adopted after adoption of the RTP; • System maps and functional classifications for street design, motor vehicles, transit, bicycles, pedestrians and freight in Chapter 2 of the RTP; • Regional non-SOV modal targets in Table 3.08-1 and the Deficiency Thresholds and Operating Standards in Table 3.08-2. When determining its transportation needs, a city or county shall consider the regional needs identified in the mobility corridor strategies in Chapter 4 of the RTP. **(Title 2, Transportation Needs Sec 3.08.210)**	
Consider the following strategies in the order listed, to meet the transportation needs determined pursuant to section 3.08.210 and performance targets and standards pursuant to section 3.08.230. The city or county shall explain its choice of one or more of the strategies and why other strategies were not chosen: • TSMO, including localized TDM, safety, operational and access management improvements; • Transit, bicycle and pedestrian system improvements; • Traffic-calming designs and devices; • Land use strategies in OAR 660-012-0035(2) • Connectivity improvements to provide parallel arterials, collectors or local streets that include pedestrian and bicycle facilities, consistent with the connectivity standards in section 3.01.110 and design classifications in Table 2.6 of the RTP, • Motor vehicle capacity improvements, consistent with the RTP Arterial and Throughway Design and Network Concepts in Table 2.6 and Section 2.5.2 of the RTP, only upon a demonstration that other strategies in this subsection are not appropriate or cannot adequately address identified transportation needs A city or county shall coordinate its consideration of the above strategies with the owner of the transportation facility affected by the strategy. Facility design is subject to the approval of the facility owner. If analysis under subsection 3.08.210A (Local Needs determination) indicates a new regional or state need that has not been identified in the RTP, the city or county may propose one of the following actions: • Propose a project at the time of Metro review of the TSP to be incorporated into the RTP during the next RTP update; or • Propose an amendment to the RTP for needs and projects if the amendment is necessary prior to the next RTP update. **(Title 2, Sec 3.08.220 Transportation Solutions)**	Yes – Included Transportation system needs were addressed with project solutions following the hierarchy of strategies Volume 2, Section D, pages 19 to 20.

Table 4: RTFP Compliance of Sherwood TSP Update

Regional Transportation Functional Plan Requirement	Findings of TSP Compliance
Demonstrate that solutions adopted pursuant to section 3.08.220 (Transportation Solutions) will achieve progress toward the targets and standards in Tables 3.08-1, and 3.08-2 and measures in subsection D (local performance measures), or toward alternative targets and standards adopted by the city or county. The city or county shall include the regional targets and standards or its alternatives in its TSP. A city or county may adopt alternative targets or standards in place of the regional targets and standards upon a demonstration that the alternative targets or standards: • Are no lower than the modal targets in Table 3.08-1 and no lower than the ratios in Table 3.08-2; • Will not result in a need for motor vehicle capacity improvements that go beyond the planned arterial and throughway network defined in Figure 2.12 of the RTP and that are not recommended in, or are inconsistent with, the RTP; and • Will not increase SOV travel to a degree inconsistent with the non-SOV modal targets in Table 3.08-1. If the city or county adopts mobility standards for state highways different from those in Table 3.08-2, it shall demonstrate that the standards have been approved by the Oregon Transportation Commission. Each city and county shall also include performance measures for safety, vehicle miles traveled per capita, freight reliability, congestion, and walking, bicycling and transit mode shares to evaluate and monitor performance of the TSP. To demonstrate progress toward achievement of performance targets in Tables 3.08-1 and 3.08-2 and to improve performance of state highways within its jurisdiction as much as feasible and avoid their further degradation, the city or county shall adopt the following: • Parking minimum and maximum ratios in Centers and Station Communities consistent with subsection 3.08.410A; • Designs for street, transit, bicycle, freight and pedestrian systems consistent with Title 1: and • TSMO projects and strategies consistent with section 3.08.160; and • Land use actions pursuant to OAR 660-012-0035(2). **(Title 2, Performance Targets and Standards Sec 3.08.230)**	Yes – Included Progress towards the targets and standards in the RTFP are discussed in Volume 1, Section 9, pages 61 to 64. Mobility targets for facilities in Sherwood are discussed in Volume 1, Section 8, pages 55 to 56.
Specify the general locations and facility parameters, such as minimum and maximum ROW dimensions and the number and width of traffic lanes, of planned regional transportation facilities and improvements identified on general location depicted in the appropriate RTP map. Except as otherwise provided in the TSP, the general location is as follows: • For new facilities, a corridor within 200 feet of the location depicted on the	Yes – Included Planned regional facilities are shown in Volume 1, Section 7, page 41 (Figure 12). A description of the planned facilities can be found in Volume

Table 4: RTFP Compliance of Sherwood TSP Update

Regional Transportation Functional Plan Requirement	Findings of TSP Compliance
appropriate RTP map; • For interchanges, the general location of the crossing roadways, without specifying the general location of connecting ramps; • For existing facilities planned for improvements, a corridor within 50 feet of the existing right-of-way and • For realignments of existing facilities, a corridor within 200 feet of the segment to be realigned as measured from the existing right-of-way depicted on the appropriate RTP map. A City or county may refine or revise the general location of a planned regional facility as it prepares or revises impacts of the facility or to comply with comprehensive plan or statewide planning goals. If, in developing or amending its TSP, a city or county determines the general location of a planned regional facility or improvement is inconsistent with its comprehensive plan or a statewide goal requirement, it shall: • Propose a revision to the general location of the planned facility or improvement to achieve consistency and, if the revised location lies outside the general location depicted in the appropriate RTP map, seek an amendment to the RTP; or • Propose a revision to its comprehensive plan to authorize the planned facility or improvement at the revised location. **(Title 3, Defining Projects in Transportation System Plan Sec 3.08.310)**	2, Section E.
<u>(Could be adopted in TSP or other adopted policy document)</u> Adopt parking policies, management plans and regulations for Centers and Station Communities. Plans may be adopted in TSPs or other adopted policy documents and may focus on sub-areas of Centers. Plans shall include an inventory of parking supply and usage, an evaluation of bicycle parking needs with consideration of *TriMet Bicycle Parking Guidelines*. Policies shall be adopted in the TSP. Policies, plans and regulations must consider and may include the following range of strategies: • By-right exemptions from minimum parking requirements; • Parking districts; • Shared parking; • Structured parking; • Bicycle parking; • Timed parking; • Differentiation between employee parking and parking for customers, visitors and patients; • Real-time parking information; • Priced parking; • Parking enforcement.	Yes – Other Policy Document Existing parking policy is included in Development Code Chapter 16.94. In addition, the TSP update identifies that a future study will prepare a parking management plan for the Town Center, as discussed in Volume 1, Section 9, page 66.

Table 4: RTFP Compliance of Sherwood TSP Update

Regional Transportation Functional Plan Requirement	Findings of TSP Compliance
(Title 4, Parking Management Sec 3.08.410I)	
If a city or county proposes a transportation project that is not included in the RTP and will result in a significant increase in SOV capacity or exceeds the planned function or capacity of a facility designated in the RTP, it shall demonstrate consistency with the following in its project analysis: • The strategies set forth in subsection 3.08.220A(1-5) (TSMO, Transit/bike/ped system improvements, traffic calming, land use strategies, connectivity improvements) • Complete street designs consistent with regional street design policies • Green street designs consistent with federal regulations for stream protection. If the city or county decides not to build a project identified in the RTP, it shall identify alternative projects or strategies to address the identified transportation need and inform Metro so that Metro can amend the RTP. This section does not apply to city or county transportation projects that are financed locally and would be undertaken on local facilities. **(Title 5, Amendments of City and County Comprehensive and Transportation System Plans Sec 3.08.510C)**	Yes – Included The TSP includes strategies and projects that focus on improving multimodal travel opportunities and improved efficiency of the existing system. The projects included in the TSP would not result in a significant disproportionate increase in SOV capacity. Projects identified in the plan are shown in Volume 1, Figures 12, 13, and 14. Capacity projects on regional facilities are consistent with prior plans.

Section I

Title VI Requirements

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TITLE VI REQUIREMENTS

The City's plan for meeting Title VI requirements was to provide an on-going outreach notification program to identified minority groups within the City populace. To accomplish this task, the City identified the largest minority group within the City (Hispanic) and provided dual language notifications of City processes and meetings.

The City's project webpage included a translated version of current public notices of events and project information. In addition the City placed notification ads within the local Spanish language newspaper. Both of these actions are supported by the following section, which established the notifications and translation.

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☑ scanned: T/8070
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198 – 19-57-0-8070
(misc. purchased services)

PO 34257

Approved: [signature] 3.3.14

Dinora C. Zamora
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Newberg, Oregon 97132
503 380-3448
Stephaniez2@netzero.net

INVOICE

Invoice Number: 001

Invoice Date: 03-03-14

Customer Information:

Billing Address:	
Company:	**City of Sherwood**
Name:	**Bob Galati**
Address:	**22560 SW Pine Street**
City/State/Zip	**Sherwood, Oregon 97140**

Services Information: $40.00 per hour – Two hours minimum

Date	Service Description	Total hours	Total
03-03-2014	Translation of Transportation System Plan Update Project document	3 hrs	$ 120.00
		Grand total:	$120.00

Esta información también se proporciona en español a continuación.

Sherwood está actualizando el plan de sistema de transporte de la ciudad (TSP) Para atender las necesidades de la comunidad y necesidades regionales. El TSP proporciona un marco de vista a largo plazo del sistema de transporte de Sherwood e incluye estrategias y proyectos de mejora previstos para una variedad de modalidades (peatón, bicicleta, auto, tránsito). Además de abordar las necesidades locales, el plan también debe ser consistente con las políticas estatales y regionales, como el Plan de Transporte de Oregon (OTP), Plan Regional de Transporte del Metro (RTP), Plan Regional de Transporte Funcional del Metro (RTFP), y complementar otros planes locales, tales como el Condado de Washington PTS.

Sherwood ha experimentado muchos cambios (crecimiento, desarrollo de concepto de planes, ha completado proyectos de transporte, y varias enmiendas en el texto original TSP) desde que el actual TSP de Sherwood fue adoptado en 2005. El actualizado TSP incluirá estos cambios, así como un plan actualizado de las condiciones y necesidades para el año 2035. Al mismo tiempo, la actualización del TSP cumplirá con los requisitos del Plan Regional de Transporte Funcional del Metro (RTFP) (como prioridad a las mejoras relacionadas a la administración del sistema). A medida que los planes estatales y regionales sean actualizados, se podrán tener en cuenta y reflejar cambios en el TSP de Sherwood (tales como listas de planes de proyectos y cumplimiento de objetivos).

La actualización del TSP está siendo financiada a través de un subsidio de la Administración de Transporte y Crecimiento estatal (TGM) que fue otorgado a Sherwood. Con aportes del público, empleados de la Ciudad y consejeros actualizarán el plan en los próximos meses. Preguntas elementales que se abordaran durante el proceso incluyen:

- Cómo es el sistema de transporte hoy en día? (Condiciones existentes)
- Qué necesidades hay presentes hoy y en el futuro? (Evaluación de necesidades)
- Cómo podemos atender las necesidades? (Opciones de proyecto)
- Estamos abordando las necesidades locales y regionales? (Actualización de TSP y proceso de adopción)

Habrá varios lugares disponibles al público para ayudar a darle forma al plan mediante el proceso de planificación.

- Comité Asesor Ciudadano (CAC) - un grupo de ciudadanos designados por el Consejero de la Ciudad para revisar productos de trabajo cuando acontezcan cambios mayores a través del proceso.
- Sitio Web - esto incluirá avisos, documentos de proyecto, y un correo electrónico para enviar sus comentarios y preguntas.
- Casas Abiertas - eventos comunitarios se llevarán a cabo para mostrar productos de trabajo para revisión y discusión pública.
- Proceso de Adopción - un proceso de audiencia, con la Comisión de Planificación y el Consejero de la ciudad, se llevara a cabo para revisar el contenido del TSP y finalizar el plan actualizado para su adopción.

Se insta a las partes interesadas a participar en las primeras fases del proceso para ayudar a guiar y crear el resultado del plan y hacerlo un éxito. Por favor contacte a Bob Galati, Ingeniero de la Cuidad, al numero (503) 925-2303 o galatib@sherwoodoregon.gov si usted tiene preguntas o comentarios. Además, si desea recibir un mensaje de correo electrónico cuando se publique nueva información acerca de este proyecto en este sitio, por favor envíenos un correo electrónico a engineering@sherwoodoregon.gov para que se le añada a la lista.

Stephanie Guediri

From:	Stephanie Guediri
Sent:	Thursday, February 27, 2014 9:16 AM
To:	Lisa Layne
Cc:	Bob Galati; Julie Blums
Subject:	Spanish Translation Needed on TSP Web Page Info (Doc Attached)
Attachments:	TSP Web Page.docx

Hi Lisa,

I was advised by Bob, via Julie, to send you an email with an attached document of text that we need to have Dinorah translate in to Spanish by March 4th is possible. We prefer it as an e-doc as the translation will be copied and pasted directly to our project web page.

I'm not sure if Dinorah invoices the city for her services. If so, she can direct her bill to Bob and we'll make sure to get her promptly paid. Please let me know if you have any questions – thank you!

Sincerely,

Stephanie

Stephanie Guediri
Engineering Permit Specialist
City of Sherwood Engineering Department
22560 SW Pine Street
Sherwood, OR 97140
☎ 503.925.2309 | Fax 503.625.0629
✉ guediris@sherwoodoregon.gov
www.sherwoodoregon.gov

This information is also provided in Spanish below.

Sherwood is currently updating the City's Transportation System Plan (TSP) to address community needs and regional requirements. The TSP provides a framework for the long-term vision of Sherwood's transportation system and includes strategies and planned improvement projects for a variety of travel modes (pedestrian, bike, auto, and transit). In addition to addressing local needs, the plan must also be consistent with state and regional policies, such as the Oregon Transportation Plan (OTP), Metro's Regional Transportation Plan (RTP) , Metro's Regional Transportation Functional Plan (RTFP), and complement other local plans, such as the Washington County TSP.

Sherwood has experienced numerous changes (growth, development of concept plans, completion of transportation projects, and several amendments to the original TSP) since the current Sherwood TSP was adopted in 2005. The updated TSP will include these changes as well as an updated plan for conditions and needs for year 2035. In addition, the update will bring the TSP into compliance with the latest requirements of Metro's Regional Transportation Functional Plan (RTFP) (such as prioritizing improvements related to system management). As statewide and regional plans are updated, they may take into account and reflect changes in the Sherwood TSP (such as planned project lists and performance targets).

The TSP update is being funded through a state Transportation and Growth Management (TGM) grant that was awarded to Sherwood. With public input, City staff and consultants will update the plan over the next several months. Key questions to be addressed during the process include:

- How is the transportation system today? (Existing conditions)
- What needs are present today and in the future? (Needs assessment)
- How do we address the needs? (Project options)
- Are we addressing local needs and regional requirements? (TSP update and adoption process)

There will be several venues available to the public to help shape the plan throughout the planning process.

- Citizen Advisory Committee (CAC) – a group of citizens appointed by the City Council to review work products at major milestones through the process.
- Website – this will include notices, draft documents, and a contact email to submit comments and questions.
- Open Houses – community events will be held to display work products for public review and discussion.
- Adoption Process – a hearing process with the Planning Commission and City Council will be held to review the content of the TSP and finalize the updated plan for adoption.

Interested parties are encouraged to participate early in the process to help guide and shape the outcome of the plan and to make it a success. Please contact Bob Galati, City Engineer, at (503) 925-2303 or galatib@sherwoodoregon.gov if you have any questions or comments. In addition, if you would like to receive an email when new information about this project is posted to this site, please email engineering@sherwoodoregon.gov to be added to the list.

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El Plan de Sistema de Transporte de La Ciudad de Sherwood

Contact Information
Contact Stephanie Guediri
Location : Sherwood, Oregon
More Information
La Ciudad de Sherwood está actualizando el plan de sistema de transporte de la ciudad (TSP) para atender las necesidades de la comunidad y necesidades regionales. El TSP proporciona un marco de vista a largo plazo del sistema de transporte de Sherwood e incluye estrategias y proyectos de mejora previstos para una variedad de modalidades (peatón, bicicleta, auto, tránsito). Además de abordar las necesidades locales, el plan también debe ser consistente con las políticas estatales y regionales, como el Plan de Transporte de Oregon (OTP), Plan Regional de Transporte del Metro (RTP), Plan Regional de Transporte Funcional del Metro (RTFP), y complementar otros planes locales, tales como el Condado de Washington TSP.

Se insta a las partes interesadas a participar en las primeras fases del proceso para ayudar a guiar y crear el resultado del plan y hacerlo un éxito. Por favor visita el sitio web a www.sherwoodoregon.gov/engineering/project/transportation-system-plan-tsp-update-project, o contacte a Bob Galati, Ingeniero de la Cuidad, al numero (503) 925-2303 o galatib@sherwoodoregon.gov si usted tiene preguntas o comentarios. Además, si desea recibir un mensaje de correo electrónico cuando se publique nueva información acerca de este proyecto, por favor envíenos un correo electrónico a engineering@sherwoodoregon.gov para que se le añada a la lista.

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La Ciudad de Sherwood está actualizando el plan de sistema de transporte de la ciudad (TSP) para atender las necesidades de la comunidad y necesidades regionales. El TSP proporciona un marco de vista a largo plazo del sistema de transporte de Sherwood e incluye estrategias y proyectos de mejora previstos para una variedad de modalidades (peatón, bicicleta, auto, tránsito). Además de abordar las necesidades locales, el plan también debe ser consistente con las políticas estatales y regionales, como el Plan de Transporte de Oregon (OTP), Plan Regional de Transporte del Metro (RTP), Plan Regional de Transporte Funcional del Metro (RTFP), y complementar otros planes locales, tales como el Condado de Washington TSP.

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TRANSLATION TO ENGLISH

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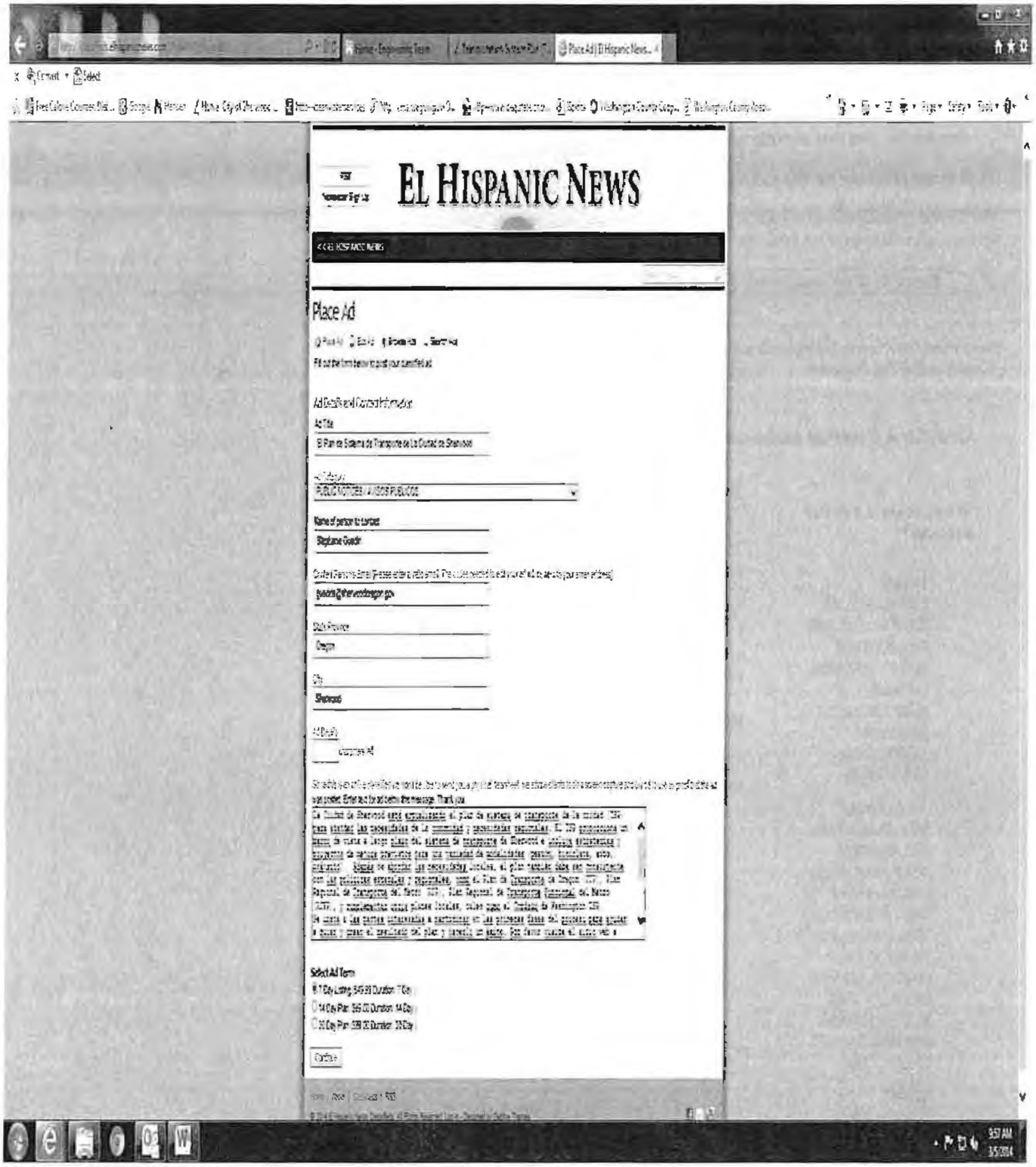
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Traffic Counts

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Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

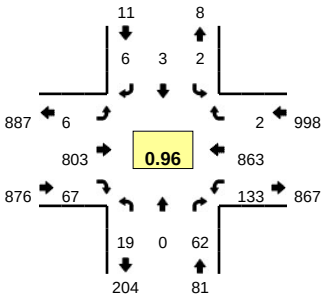
LOCATION: SW Langer Farms Pkwy -- SW Tualatin Sherwood Rd

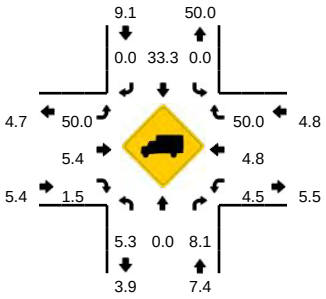
QC JOB #: 11224713

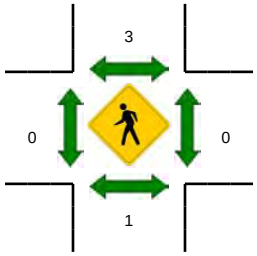
CITY/STATE: Sherwood, OR

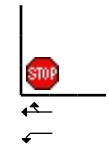
DATE: Thu, Sep 05 2013

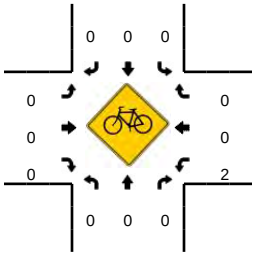
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

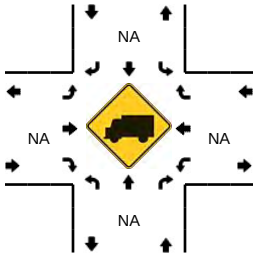


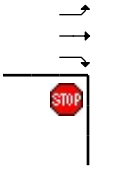


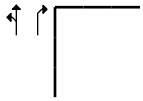


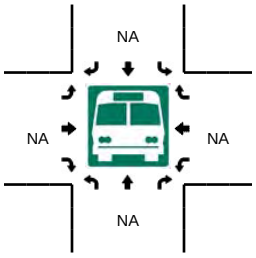












5-Min Count Period Beginning At	SW Langer Farms Pkwy (Northbound)				SW Langer Farms Pkwy (Southbound)				SW Tualatin Sherwood Rd (Eastbound)				SW Tualatin Sherwood Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	10	0	0	1	2	0	0	53	5	0	9	62	1	0	144	
4:05 PM	2	0	5	0	0	0	0	0	0	57	10	0	13	71	0	0	158	
4:10 PM	0	0	7	0	0	0	0	0	0	66	4	0	6	61	0	0	144	
4:15 PM	2	0	9	0	0	0	0	0	0	66	5	0	10	63	1	0	156	
4:20 PM	2	0	5	0	0	0	1	0	2	39	5	0	7	69	0	0	130	
4:25 PM	1	0	5	0	0	0	0	0	0	53	1	0	6	77	1	0	144	
4:30 PM	0	0	7	0	0	1	0	0	0	64	7	0	13	64	0	0	156	
4:35 PM	0	0	4	1	0	1	0	0	2	69	5	0	8	83	0	0	173	
4:40 PM	2	0	5	0	0	0	0	0	0	70	7	0	12	72	0	0	168	
4:45 PM	2	0	2	0	0	1	1	0	0	61	2	0	5	84	0	0	158	
4:50 PM	1	0	1	0	0	0	0	0	2	76	5	0	10	67	0	0	162	
4:55 PM	3	0	4	0	0	0	0	0	0	74	13	0	9	74	0	0	177	1870
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5:15 PM	2	0	3	0	0	0	1	0	0	71	2	0	17	68	0	0	164	1942
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5:25 PM	0	0	4	0	2	0	1	0	1	60	5	0	8	72	0	0	153	1966
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5:45 PM	1	0	2	0	0	0	0	0	0	63	11	0	10	62	0	0	149	1884
5:50 PM	2	0	4	0	0	0	0	0	0	63	7	0	18	62	0	0	156	1878
5:55 PM	0	0	1	0	0	0	0	0	0	62	3	0	14	71	0	0	151	1852

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	0	80	0	0	0	4	0	4	844	40	0	212	840	8	0	2056
Heavy Trucks	0	0	8		0	0	0		4	28	0		4	56	4		104
Pedestrians		4				4				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

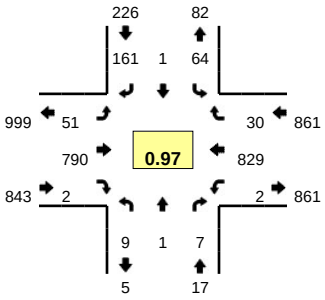
LOCATION: SW Gerda Ln -- SW Tualatin Sherwood Rd

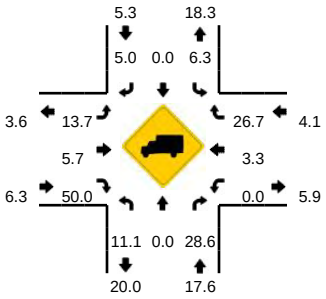
QC JOB #: 11224712

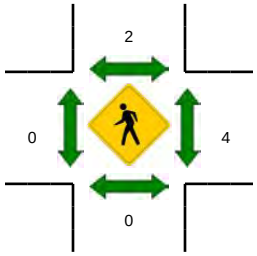
CITY/STATE: Sherwood, OR

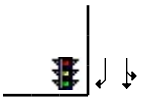
DATE: Thu, Sep 05 2013

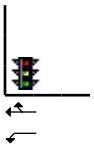
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

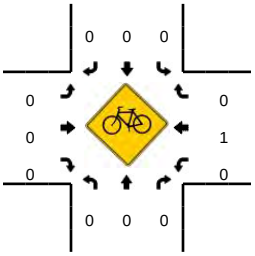


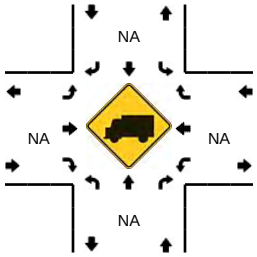


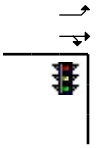


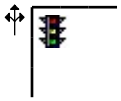


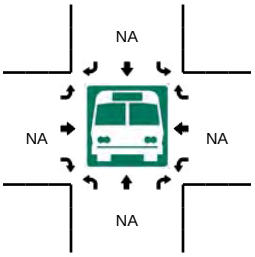












5-Min Count Period Beginning At	SW Gerda Ln (Northbound)				SW Gerda Ln (Southbound)				SW Tualatin Sherwood Rd (Eastbound)				SW Tualatin Sherwood Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	7	0	8	0	6	52	1	0	0	55	5	0	134	
4:05 PM	1	0	0	0	5	0	11	0	5	61	0	0	0	76	4	0	163	
4:10 PM	0	0	0	0	3	0	10	0	3	52	0	0	1	58	7	0	134	
4:15 PM	0	0	0	0	5	0	16	0	8	73	0	0	0	58	0	0	160	
4:20 PM	1	1	1	0	4	1	13	0	3	56	0	0	0	77	2	0	159	
4:25 PM	0	0	0	0	4	0	12	0	5	60	0	0	0	76	6	0	163	
4:30 PM	1	0	1	0	8	0	17	0	8	62	1	0	0	70	2	0	170	
4:35 PM	1	0	0	0	12	0	15	0	2	56	1	0	0	59	4	0	150	
4:40 PM	0	0	1	0	3	0	16	0	3	66	0	0	0	75	6	0	170	
4:45 PM	3	0	0	0	8	0	16	0	8	67	0	0	0	65	2	0	169	
4:50 PM	0	0	0	0	2	0	6	0	4	72	0	0	0	73	3	0	160	
4:55 PM	0	0	2	0	2	0	9	0	3	60	0	0	0	67	1	0	144	1876
5:00 PM	2	0	0	0	7	0	10	0	2	84	0	0	1	60	3	0	169	1911
5:05 PM	0	0	1	0	6	0	16	0	2	71	0	0	1	70	1	0	168	1916
5:10 PM	1	0	1	0	3	0	15	0	3	63	0	0	0	79	0	0	165	1947
5:15 PM	0	1	0	0	3	0	9	0	6	63	1	0	0	60	2	0	145	1932
5:20 PM	0	0	0	0	1	0	7	0	2	56	0	0	0	68	1	0	135	1908
5:25 PM	0	0	0	0	1	0	8	0	3	67	1	0	0	62	3	0	145	1890
5:30 PM	0	0	1	0	10	0	5	0	6	56	1	0	0	73	1	0	153	1873
5:35 PM	0	0	0	0	2	0	8	0	2	72	0	0	0	58	1	0	143	1866
5:40 PM	0	0	0	0	2	0	4	0	0	60	0	0	1	68	2	0	137	1833
5:45 PM	0	0	0	0	0	0	4	0	4	73	0	0	0	71	1	0	153	1817
5:50 PM	0	0	0	0	3	0	7	0	0	72	0	0	0	72	0	0	154	1811
5:55 PM	1	0	0	0	0	0	5	0	1	63	0	0	0	66	0	0	136	1803

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	0	8	0	64	0	164	0	28	872	0	0	8	836	16	0	2008
Heavy Trucks	0	0	0		4	0	12		8	24	0		0	36	8		92
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

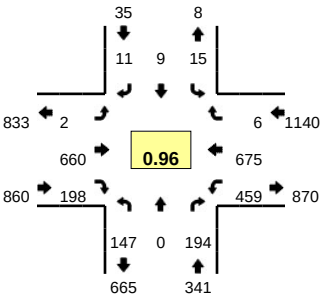
LOCATION: SW Oregon St -- SW Tualatin Sherwood Rd

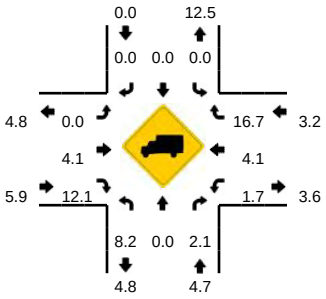
QC JOB #: 11224711

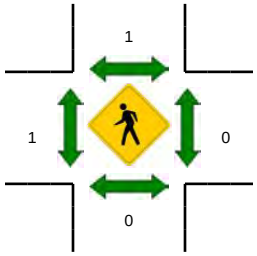
CITY/STATE: Sherwood, OR

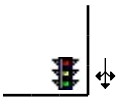
DATE: Wed, Sep 11 2013

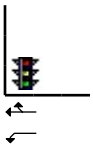
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

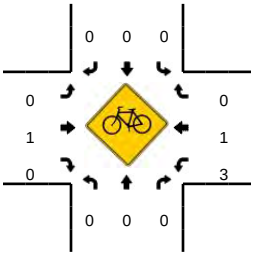


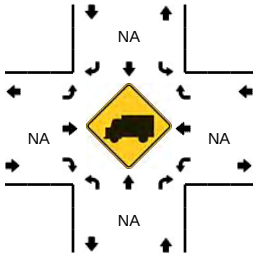


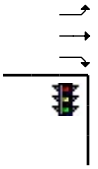


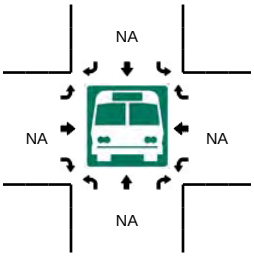












5-Min Count Period Beginning At	SW Oregon St (Northbound)				SW Oregon St (Southbound)				SW Tualatin Sherwood Rd (Eastbound)				SW Tualatin Sherwood Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	0	20	0	2	0	0	0	1	37	14	0	34	52	0	0	168	
4:05 PM	13	0	27	0	0	1	0	0	1	54	17	0	24	68	0	0	205	
4:10 PM	14	0	25	0	0	1	1	0	0	39	13	0	26	66	1	0	186	
4:15 PM	16	0	10	0	1	0	0	0	0	45	10	0	31	57	1	0	171	
4:20 PM	9	1	10	0	0	1	0	0	0	50	11	0	28	63	0	0	173	
4:25 PM	16	0	11	0	1	0	0	0	2	52	13	0	20	54	0	0	169	
4:30 PM	9	0	8	0	0	1	0	0	1	54	19	0	32	69	0	0	193	
4:35 PM	10	0	16	0	1	0	0	0	1	48	22	0	26	58	2	0	184	
4:40 PM	8	0	27	0	1	0	0	0	1	56	12	0	38	56	0	0	199	
4:45 PM	20	0	13	0	4	0	0	0	0	50	15	0	33	42	3	0	180	
4:50 PM	14	0	12	0	0	0	1	0	0	44	10	0	30	56	0	0	167	
4:55 PM	9	0	18	0	1	1	1	0	0	46	21	0	41	63	2	0	203	2198
5:00 PM	9	0	13	0	3	1	3	0	0	49	18	0	40	55	0	0	191	2221
5:05 PM	20	0	26	0	3	2	2	0	0	43	13	0	38	44	0	0	191	2207
5:10 PM	11	0	15	0	2	3	0	0	0	65	13	0	38	51	0	0	198	2219
5:15 PM	18	0	17	0	2	1	1	0	1	68	14	0	36	41	1	0	200	2248
5:20 PM	10	0	19	0	3	0	1	0	0	55	18	0	42	68	1	0	217	2292
5:25 PM	15	0	14	0	0	0	1	0	1	54	16	0	40	62	0	0	203	2326
5:30 PM	14	0	9	0	0	1	0	0	0	52	16	0	35	68	1	0	196	2329
5:35 PM	9	0	20	0	0	0	1	0	0	64	17	0	42	57	0	1	211	2356
5:40 PM	9	0	16	0	1	0	1	0	0	59	18	0	34	56	1	0	195	2352
5:45 PM	11	0	13	0	0	0	0	0	0	57	22	0	38	49	0	0	190	2362
5:50 PM	12	0	14	0	0	0	0	0	0	48	12	0	34	61	0	0	181	2376
5:55 PM	12	0	7	0	0	0	1	0	0	41	12	0	33	65	0	0	171	2344

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	172	0	200	0	20	4	12	0	8	708	192	0	472	684	8	0	2480
Heavy Trucks	4	0	0		0	0	0		0	28	16		0	32	0		80
Pedestrians		0				4				4				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW Langer Farms Pkwy -- SW Oregon St

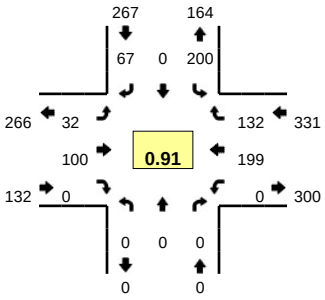
CITY/STATE: Sherwood, OR

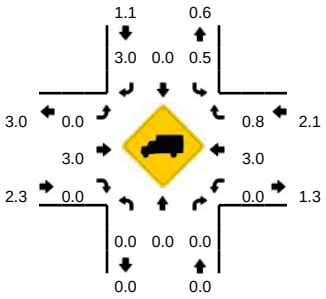
QC JOB #: 11224709

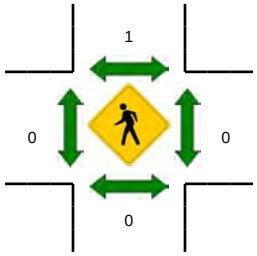
DATE: Thu, Sep 05 2013

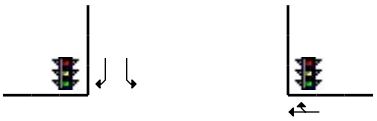
Peak-Hour: 5:00 PM -- 6:00 PM

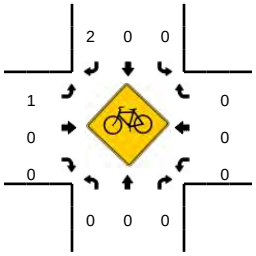
Peak 15-Min: 5:45 PM -- 6:00 PM

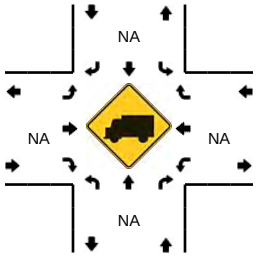


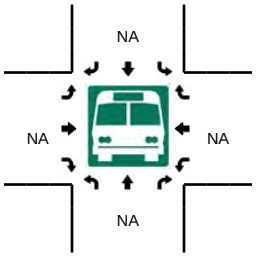












5-Min Count Period Beginning At	SW Langer Farms Pkwy (Northbound)				SW Langer Farms Pkwy (Southbound)				SW Oregon St (Eastbound)				SW Oregon St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	11	0	5	0	2	10	0	0	0	23	17	0	68	
4:05 PM	0	0	0	0	19	0	3	0	0	4	0	0	0	12	11	0	49	
4:10 PM	0	0	0	0	4	0	5	0	4	8	0	0	0	16	11	0	48	
4:15 PM	0	0	0	0	8	0	3	0	2	5	0	0	0	10	7	0	35	
4:20 PM	0	0	0	0	10	0	4	0	4	7	0	0	0	16	9	0	50	
4:25 PM	0	0	0	0	12	0	3	0	4	0	0	0	0	17	11	0	47	
4:30 PM	0	0	0	0	17	0	6	0	4	6	0	0	0	12	9	0	54	
4:35 PM	0	0	0	0	21	0	3	0	3	11	0	0	0	12	9	0	59	
4:40 PM	0	0	0	0	13	0	5	0	2	11	0	0	0	14	6	0	51	
4:45 PM	0	0	0	0	19	0	3	0	3	8	0	0	0	10	14	0	57	
4:50 PM	0	0	0	0	9	0	3	0	6	11	0	0	0	18	15	0	62	
4:55 PM	0	0	0	0	14	0	2	0	6	10	0	0	0	17	7	0	56	636
5:00 PM	0	0	0	0	20	0	3	0	2	11	0	0	0	13	7	0	56	624
5:05 PM	0	0	0	0	17	0	5	0	3	7	0	0	0	15	11	0	58	633
5:10 PM	0	0	0	0	15	0	7	0	2	8	0	0	0	31	18	0	81	666
5:15 PM	0	0	0	0	14	0	9	0	1	5	0	0	0	13	7	0	49	680
5:20 PM	0	0	0	0	13	0	4	0	4	6	0	0	0	13	12	0	52	682
5:25 PM	0	0	0	0	22	0	3	0	1	7	0	0	0	16	11	0	60	695
5:30 PM	0	0	0	0	13	0	4	0	2	13	0	0	0	15	11	0	58	699
5:35 PM	0	0	0	0	17	0	10	0	2	5	0	0	0	9	12	0	55	695
5:40 PM	0	0	0	0	12	0	6	0	1	8	0	0	0	19	15	0	61	705
5:45 PM	0	0	0	0	19	0	6	0	4	7	0	0	0	25	12	0	73	721
5:50 PM	0	0	0	0	19	0	7	0	6	12	0	0	0	12	6	0	62	721
5:55 PM	0	0	0	0	19	0	3	0	4	11	0	0	0	18	10	0	65	730

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	228	0	64	0	56	120	0	0	0	220	112	0	800
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	8	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	2		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW 3rd St -- SW Washington St

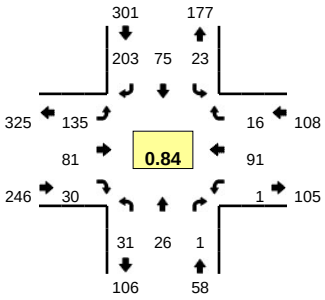
QC JOB #: 11224708

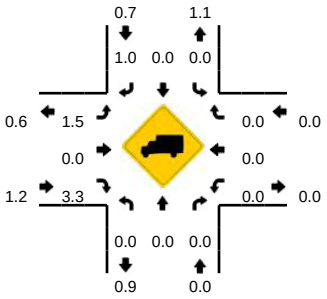
CITY/STATE: Sherwood, OR

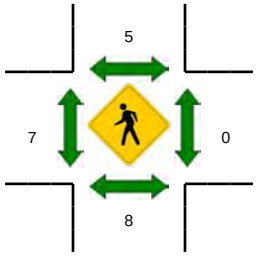
DATE: Thu, Sep 05 2013

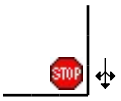
Peak-Hour: 5:00 PM -- 6:00 PM

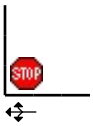
Peak 15-Min: 5:45 PM -- 6:00 PM

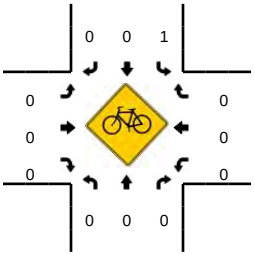


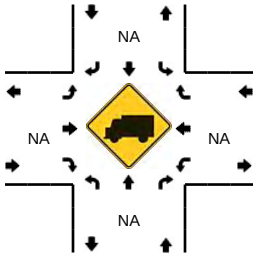


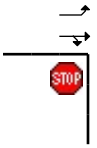


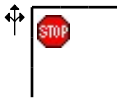


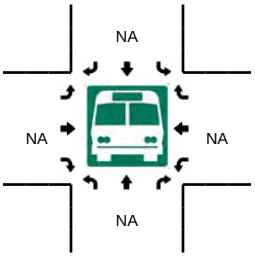












5-Min Count Period Beginning At	SW 3rd St (Northbound)				SW 3rd St (Southbound)				SW Washington St (Eastbound)				SW Washington St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	2	0	0	1	4	14	0	5	4	1	0	0	9	0	0	41	
4:05 PM	2	3	0	0	2	6	8	0	2	4	0	0	0	4	1	0	32	
4:10 PM	1	1	1	0	0	4	12	0	3	2	0	0	0	6	0	0	30	
4:15 PM	1	3	0	0	3	6	8	0	5	2	3	0	0	5	1	0	37	
4:20 PM	4	0	0	0	2	7	8	0	6	4	0	0	0	3	1	0	35	
4:25 PM	1	3	0	0	0	8	7	0	9	6	1	0	0	11	1	0	47	
4:30 PM	2	4	0	0	1	3	11	0	11	10	0	0	0	6	0	0	48	
4:35 PM	0	3	0	0	4	5	12	0	7	6	0	0	1	5	2	0	45	
4:40 PM	0	1	0	0	4	7	12	0	11	5	4	0	0	5	0	0	49	
4:45 PM	1	2	0	0	2	5	12	0	6	5	3	0	0	1	0	0	37	
4:50 PM	4	1	0	0	1	8	18	0	8	5	1	0	0	4	2	0	52	
4:55 PM	0	5	0	0	1	8	14	0	15	5	4	0	0	7	1	0	60	513
5:00 PM	7	0	0	0	2	4	15	0	10	4	3	0	0	9	1	0	55	527
5:05 PM	3	1	0	0	4	7	12	0	13	7	2	0	0	6	1	0	56	551
5:10 PM	1	2	0	0	2	7	19	0	11	7	4	0	0	13	1	0	67	588
5:15 PM	1	4	1	0	2	5	15	0	7	4	0	0	0	9	2	0	50	601
5:20 PM	1	3	0	0	1	5	19	0	8	2	1	0	0	7	0	0	47	613
5:25 PM	1	2	0	0	2	6	22	0	8	4	1	0	1	5	1	0	53	619
5:30 PM	2	3	0	0	1	5	24	0	13	9	2	0	0	3	2	0	64	635
5:35 PM	0	1	0	0	1	7	13	0	7	3	1	0	0	13	2	0	48	638
5:40 PM	1	0	0	0	1	7	21	0	10	5	6	0	0	9	0	0	60	649
5:45 PM	4	1	0	0	2	6	17	0	18	11	1	0	0	5	1	0	66	678
5:50 PM	5	3	0	0	3	11	15	0	23	14	3	0	0	3	3	0	83	709
5:55 PM	5	6	0	0	2	5	11	0	7	11	6	0	0	9	2	0	64	713

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	40	0	0	28	88	172	0	192	144	40	0	0	68	24	0	852
Heavy Trucks	0	0	0		0	0	0		0	0	4		0	0	0		4
Pedestrians		8				0				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW Main St -- SW Railroad St

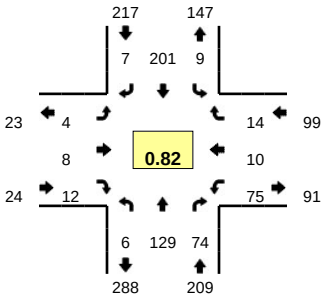
QC JOB #: 11224707

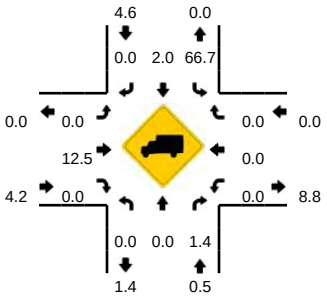
CITY/STATE: Sherwood, OR

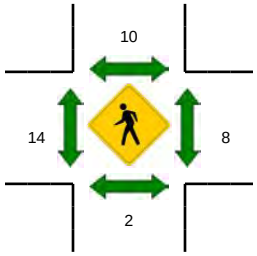
DATE: Thu, Sep 05 2013

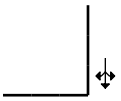
Peak-Hour: 5:00 PM -- 6:00 PM

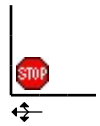
Peak 15-Min: 5:45 PM -- 6:00 PM

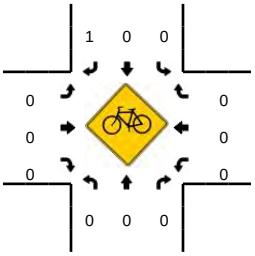


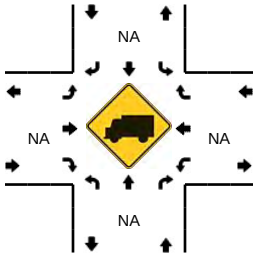


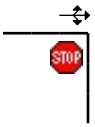


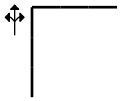


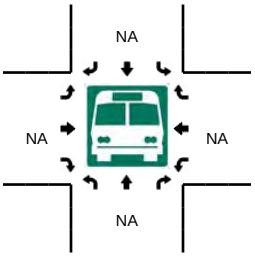












5-Min Count Period Beginning At	SW Main St (Northbound)				SW Main St (Southbound)				SW Railroad St (Eastbound)				SW Railroad St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	11	6	0	0	14	0	0	1	0	1	0	3	1	1	0	38	
4:05 PM	1	7	2	0	1	11	0	0	0	0	0	0	5	0	1	0	28	
4:10 PM	1	4	8	0	1	6	0	0	1	1	1	0	5	1	1	0	30	
4:15 PM	2	5	4	0	1	10	1	0	1	1	2	0	7	0	0	0	34	
4:20 PM	0	10	5	0	0	14	2	0	0	2	1	0	4	3	0	0	41	
4:25 PM	3	14	4	0	1	11	1	0	1	0	1	0	2	0	1	0	39	
4:30 PM	1	12	1	0	0	7	0	0	2	1	1	0	11	0	1	0	37	
4:35 PM	1	4	5	0	1	12	1	0	0	0	1	0	5	0	0	0	30	
4:40 PM	0	5	5	0	1	18	0	0	0	3	0	0	6	0	2	0	40	
4:45 PM	0	7	3	0	0	21	0	0	0	1	0	0	3	0	0	0	35	
4:50 PM	0	18	4	0	2	10	0	0	0	0	1	0	3	0	0	0	38	
4:55 PM	1	6	7	0	2	20	1	0	0	1	1	0	3	1	0	0	43	433
5:00 PM	0	12	4	0	0	13	0	0	1	2	1	0	9	0	2	0	44	439
5:05 PM	0	8	4	0	0	18	2	0	0	0	1	0	8	0	0	0	41	452
5:10 PM	0	12	8	0	0	18	0	0	0	0	1	0	3	0	2	0	44	466
5:15 PM	0	12	5	0	0	13	0	0	0	2	0	0	5	0	0	0	37	469
5:20 PM	3	11	3	0	2	8	1	0	0	2	1	0	7	0	1	0	39	467
5:25 PM	2	12	6	0	2	11	2	0	1	0	0	0	5	1	1	0	43	471
5:30 PM	0	9	11	0	0	18	0	0	0	0	1	0	8	1	0	0	48	482
5:35 PM	0	8	7	0	0	22	0	0	0	1	0	0	4	0	0	0	42	494
5:40 PM	1	5	7	0	2	22	0	0	0	0	1	0	1	3	2	0	44	498
5:45 PM	0	13	3	0	2	13	2	0	1	0	3	0	8	2	0	0	47	510
5:50 PM	0	15	10	0	1	25	0	0	0	0	1	0	7	0	4	0	63	535
5:55 PM	0	12	6	0	0	20	0	0	1	1	2	0	10	3	2	0	57	549

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	160	76	0	12	232	8	0	8	4	24	0	100	20	24	0	668
Heavy Trucks	0	0	0		8	4	0		0	0	0		0	0	0		12
Pedestrians		4				0				4				12			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW Timbrel Ln -- SW Sunset Blvd

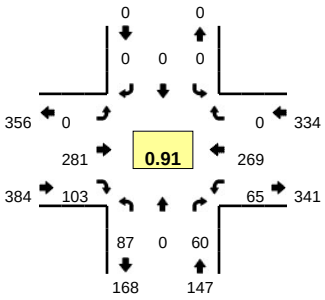
CITY/STATE: Sherwood, OR

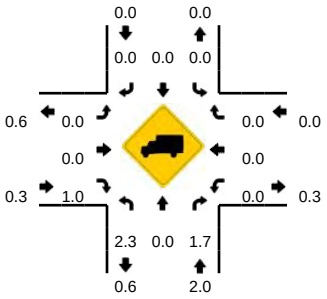
QC JOB #: 11224705

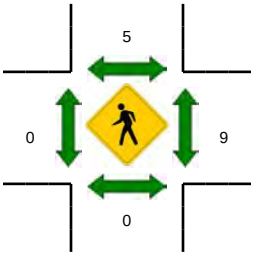
DATE: Thu, Sep 05 2013

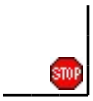
Peak-Hour: 5:00 PM -- 6:00 PM

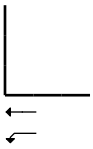
Peak 15-Min: 5:40 PM -- 5:55 PM

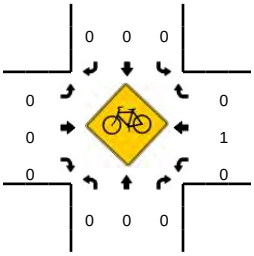


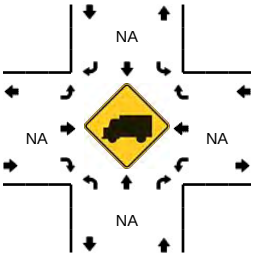


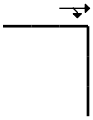


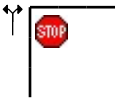


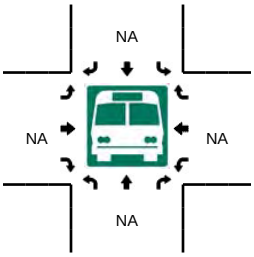












5-Min Count Period Beginning At	SW Timbrel Ln (Northbound)				SW Timbrel Ln (Southbound)				SW Sunset Blvd (Eastbound)				SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	0	2	0	0	0	0	0	0	12	6	0	1	16	0	0	42	
4:05 PM	8	0	2	0	0	0	0	0	0	26	3	0	1	14	0	0	54	
4:10 PM	3	0	2	0	0	0	0	0	0	15	3	0	5	18	0	0	46	
4:15 PM	3	0	0	0	0	0	0	0	0	15	6	0	2	19	0	0	45	
4:20 PM	1	0	1	0	0	0	0	0	0	20	8	0	1	20	0	0	51	
4:25 PM	1	0	2	0	0	0	0	0	0	16	2	0	1	19	0	0	41	
4:30 PM	0	0	3	0	0	0	0	0	0	20	2	0	6	18	0	0	49	
4:35 PM	8	0	3	0	0	0	0	0	0	16	8	0	3	17	0	0	55	
4:40 PM	4	0	3	0	0	0	0	0	0	26	7	0	2	12	0	0	54	
4:45 PM	3	0	2	0	0	0	0	0	0	27	10	0	5	22	0	0	69	
4:50 PM	12	0	3	0	0	0	0	0	0	20	7	0	6	19	0	0	67	
4:55 PM	7	0	1	0	0	0	0	0	0	19	8	0	7	19	0	0	61	634
5:00 PM	6	0	3	0	0	0	0	0	0	29	5	0	6	23	0	0	72	664
5:05 PM	5	0	3	0	0	0	0	0	0	19	11	0	5	18	0	0	61	671
5:10 PM	7	0	4	0	0	0	0	0	0	25	6	0	5	24	0	0	71	696
5:15 PM	6	0	9	0	0	0	0	0	0	20	11	0	4	26	0	0	76	727
5:20 PM	3	0	2	0	0	0	0	0	0	22	6	0	4	22	0	0	59	735
5:25 PM	5	0	5	0	0	0	0	0	0	26	11	0	4	22	0	0	73	767
5:30 PM	7	0	3	0	0	0	0	0	0	28	6	0	7	18	0	0	69	787
5:35 PM	9	0	9	0	0	0	0	0	0	15	9	0	2	30	0	0	74	806
5:40 PM	8	0	1	0	0	0	0	0	0	33	11	0	7	18	0	0	78	830
5:45 PM	12	0	9	0	0	0	0	0	0	18	6	0	8	24	0	0	77	838
5:50 PM	9	0	5	0	0	0	0	0	0	22	13	0	6	28	0	0	83	854
5:55 PM	10	0	7	0	0	0	0	0	0	24	8	0	7	16	0	0	72	865

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	116	0	60	0	0	0	0	0	0	292	120	0	84	280	0	0	952
Heavy Trucks	4	0	4		0	0	0		0	0	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW Main St -- SW Sunset Blvd

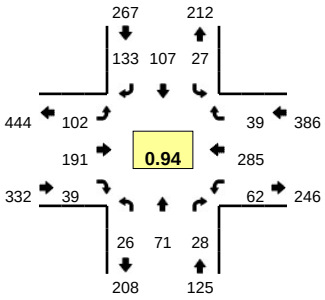
CITY/STATE: Sherwood, OR

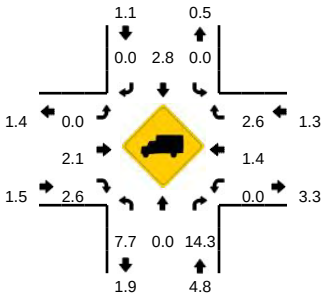
QC JOB #: 11224704

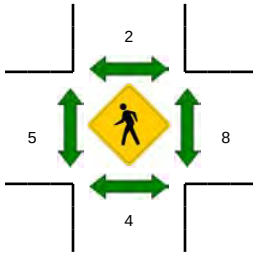
DATE: Thu, Sep 05 2013

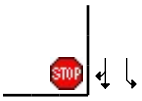
Peak-Hour: 5:00 PM -- 6:00 PM

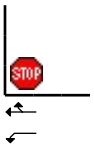
Peak 15-Min: 5:45 PM -- 6:00 PM

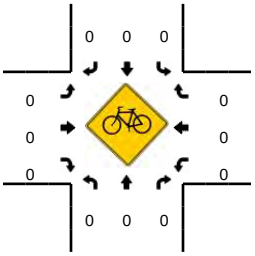


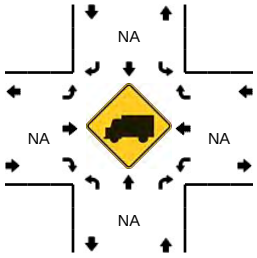


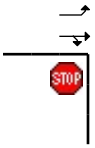


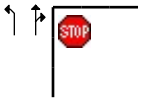


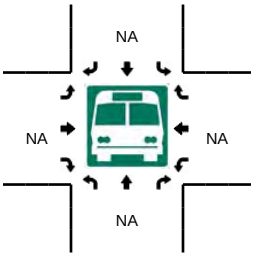












5-Min Count Period Beginning At	SW Main St (Northbound)				SW Main St (Southbound)				SW Sunset Blvd (Eastbound)				SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	6	1	0	0	8	5	0	10	11	3	0	4	22	1	0	71	
4:05 PM	1	4	4	0	3	6	3	0	3	6	1	0	3	14	1	0	49	
4:10 PM	2	5	1	0	1	5	8	0	6	10	2	0	4	15	0	0	59	
4:15 PM	1	2	3	0	1	8	6	0	4	11	1	0	5	22	5	0	69	
4:20 PM	6	4	2	0	0	9	6	0	7	6	2	0	4	16	1	0	63	
4:25 PM	2	3	2	0	1	4	10	0	7	15	0	0	4	25	4	0	77	
4:30 PM	4	6	1	0	3	9	10	0	8	14	2	0	2	23	2	0	84	
4:35 PM	1	3	2	0	1	8	9	0	8	11	2	0	10	17	3	0	75	
4:40 PM	4	5	3	0	5	6	7	0	4	16	4	0	4	22	0	0	80	
4:45 PM	4	8	1	0	4	10	8	0	7	22	1	0	4	27	1	0	97	
4:50 PM	2	8	2	0	2	8	7	0	8	17	3	0	6	28	2	0	93	
4:55 PM	2	5	2	0	2	6	10	0	6	6	3	0	1	28	3	0	74	891
5:00 PM	1	2	3	0	1	14	14	0	7	18	1	0	6	22	6	0	95	915
5:05 PM	2	9	3	0	0	15	10	0	5	14	4	0	4	32	1	0	99	965
5:10 PM	4	4	5	0	4	7	10	0	10	13	2	0	3	26	4	0	92	998
5:15 PM	2	6	1	0	5	10	7	0	6	12	6	0	8	19	3	0	85	1014
5:20 PM	3	4	5	0	2	5	10	0	10	17	0	0	4	25	3	0	88	1039
5:25 PM	2	9	0	0	0	6	9	0	6	16	2	0	4	26	2	0	82	1044
5:30 PM	3	7	2	0	2	7	9	0	9	21	2	0	10	20	4	0	96	1056
5:35 PM	0	5	2	0	3	10	16	0	4	13	6	0	7	23	8	0	97	1078
5:40 PM	0	5	0	0	3	5	15	0	7	16	2	0	2	23	2	0	80	1078
5:45 PM	4	9	4	0	1	3	11	0	7	21	2	0	5	26	1	0	94	1075
5:50 PM	5	6	3	0	3	9	11	0	17	13	8	0	3	20	4	0	102	1084
5:55 PM	0	5	0	0	3	16	11	0	14	17	4	0	6	23	1	0	100	1110

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	80	28	0	28	112	132	0	152	204	56	0	56	276	24	0	1184
Heavy Trucks	0	0	8		0	4	0		0	0	0		0	0	0		12
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

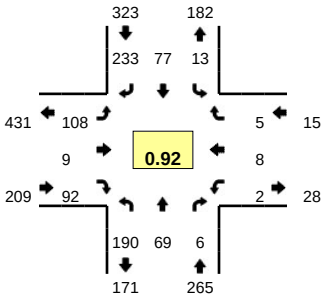
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

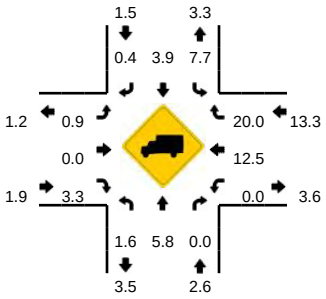
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

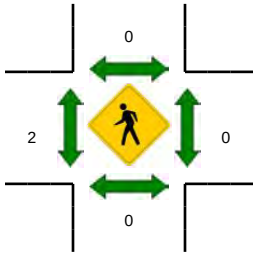
LOCATION: SW Murdock Rd/SW Baker Rd -- SW Sunset Blvd/ SW McKinley Dr | **QC JOB #:** 11224703

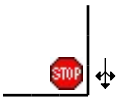
CITY/STATE: Sherwood, OR | **DATE:** Thu, Sep 05 2013

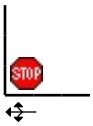
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

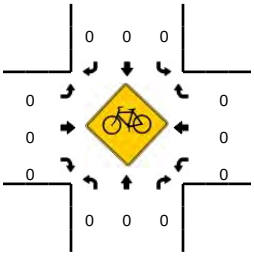


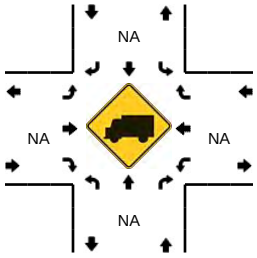


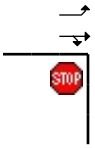


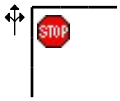


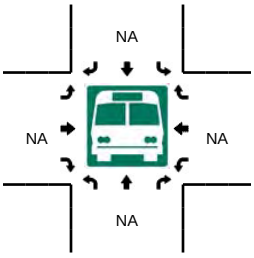












5-Min Count Period Beginning At	SW Murdock Rd/SW Baker Rd (Northbound)				SW Murdock Rd/SW Baker Rd (Southbound)				SW Sunset Blvd/ SW McKinley Dr (Eastbound)				SW Sunset Blvd/ SW McKinley Dr (Westbound)				DrTotal	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	3	0	0	1	3	10	0	6	1	7	0	0	3	1	0	45	
4:05 PM	11	3	0	0	0	8	8	0	6	0	5	0	0	1	0	0	42	
4:10 PM	14	5	1	0	0	6	23	0	6	2	3	0	1	1	2	0	64	
4:15 PM	11	2	0	0	0	1	20	0	8	0	4	0	0	1	0	0	47	
4:20 PM	14	6	0	0	1	4	22	0	2	0	5	0	0	0	0	0	54	
4:25 PM	18	6	0	0	1	7	26	0	8	2	5	0	1	0	1	0	75	
4:30 PM	5	6	0	0	1	5	21	0	7	0	4	0	0	1	1	0	51	
4:35 PM	13	7	0	0	1	7	16	0	5	0	4	0	0	1	0	0	54	
4:40 PM	13	8	1	0	1	9	19	0	8	0	9	0	1	0	1	0	70	
4:45 PM	11	7	1	0	2	6	30	0	9	1	7	0	0	1	1	0	76	
4:50 PM	19	6	0	0	1	6	17	0	8	0	11	0	1	2	1	0	72	
4:55 PM	16	3	0	0	2	8	18	0	3	1	4	0	0	1	0	0	56	706
5:00 PM	20	4	0	0	0	8	22	0	13	1	6	0	0	0	0	0	74	735
5:05 PM	21	6	0	0	0	5	20	0	10	1	5	0	0	1	0	0	69	762
5:10 PM	18	4	1	0	2	4	17	0	8	2	7	0	0	1	0	0	64	762
5:15 PM	15	2	1	0	1	5	13	0	9	0	6	0	0	0	0	0	52	767
5:20 PM	17	6	0	0	0	5	14	0	9	1	7	0	0	0	0	0	59	772
5:25 PM	16	10	0	0	2	5	21	0	9	0	10	0	0	1	2	0	76	773
5:30 PM	11	5	1	0	1	7	21	0	10	1	10	0	0	1	0	0	68	790
5:35 PM	13	8	1	0	1	9	21	0	12	1	10	0	0	0	0	0	76	812
5:40 PM	18	3	1	0	3	5	16	0	8	1	6	0	0	2	0	0	63	805
5:45 PM	10	8	0	0	1	5	17	0	5	3	10	0	0	0	1	0	60	789
5:50 PM	13	7	0	0	1	3	16	0	8	1	7	0	1	0	2	0	59	776
5:55 PM	11	4	0	0	5	13	19	0	8	1	13	0	0	0	2	0	76	796

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	160	92	8	0	16	84	252	0	124	8	120	0	0	8	8	0	880
Heavy Trucks	4	4	0		0	0	0		0	0	8		0	0	4		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

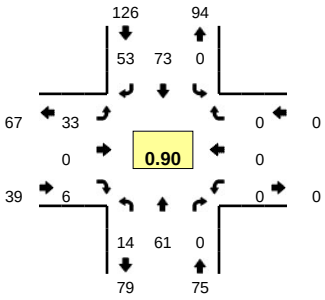
LOCATION: SW Ladd Hill Rd -- SW Brookman Rd

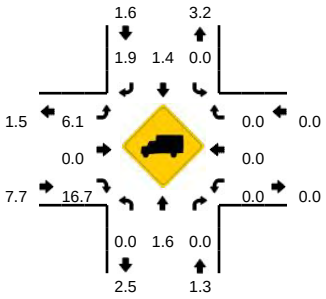
QC JOB #: 11224702

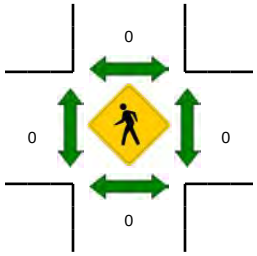
CITY/STATE: Sherwood, OR

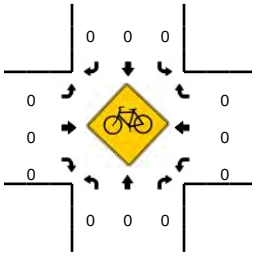
DATE: Thu, Sep 05 2013

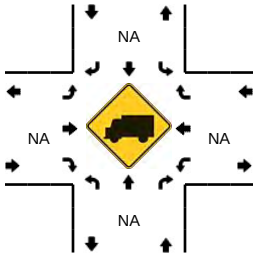
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

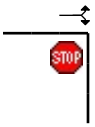


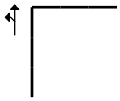


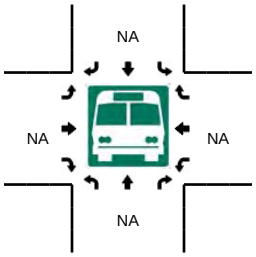












5-Min Count Period Beginning At	SW Ladd Hill Rd (Northbound)				SW Ladd Hill Rd (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	2	0	0	0	5	5	0	2	0	2	0	0	0	0	0	16	
4:05 PM	0	3	0	0	0	2	3	0	3	0	1	0	0	0	0	0	12	
4:10 PM	0	1	0	0	0	5	3	0	3	0	0	0	0	0	0	0	12	
4:15 PM	1	5	0	0	0	6	3	0	1	0	0	0	0	0	0	0	16	
4:20 PM	2	5	0	0	0	3	3	0	2	0	3	0	0	0	0	0	18	
4:25 PM	1	1	0	0	0	3	4	0	1	0	0	0	0	0	0	0	10	
4:30 PM	0	5	0	0	0	8	1	0	1	0	0	0	0	0	0	0	15	
4:35 PM	2	3	0	0	0	3	1	0	3	0	1	0	0	0	0	0	13	
4:40 PM	0	8	0	0	0	5	4	0	3	0	1	0	0	0	0	0	21	
4:45 PM	0	6	0	0	0	3	5	0	6	0	0	0	0	0	0	0	20	
4:50 PM	2	6	0	0	0	4	5	0	2	0	0	0	0	0	0	0	19	
4:55 PM	1	6	0	0	0	3	4	0	0	0	0	0	0	0	0	0	14	186
5:00 PM	2	3	0	0	0	12	4	0	1	0	1	0	0	0	0	0	23	193
5:05 PM	2	4	0	0	0	6	7	0	6	0	0	0	0	0	0	0	25	206
5:10 PM	0	7	0	0	0	4	1	0	2	0	0	0	0	0	0	0	14	208
5:15 PM	1	2	0	0	0	9	9	0	2	0	0	0	0	0	0	0	23	215
5:20 PM	2	3	0	0	0	4	2	0	3	0	0	0	0	0	0	0	14	211
5:25 PM	2	6	0	0	0	4	4	0	2	0	0	0	0	0	0	0	18	219
5:30 PM	2	7	0	0	0	6	7	0	3	0	2	0	0	0	0	0	27	231
5:35 PM	0	3	0	0	0	13	1	0	3	0	2	0	0	0	0	0	22	240
5:40 PM	2	2	0	0	0	5	2	0	2	0	1	0	0	0	0	0	14	233
5:45 PM	0	5	0	0	0	4	2	0	4	0	0	0	0	0	0	0	15	228
5:50 PM	1	3	0	0	0	5	4	0	0	0	0	0	0	0	0	0	13	222
5:55 PM	0	4	0	0	0	9	5	0	1	0	0	0	0	0	0	0	19	227

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	64	0	0	0	92	48	0	32	0	16	0	0	0	0	0	268
Heavy Trucks	0	0	0		0	0	4		4	0	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

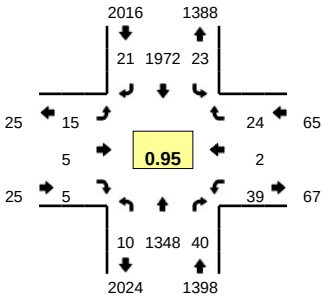
Type of peak hour being reported: Intersection Peak

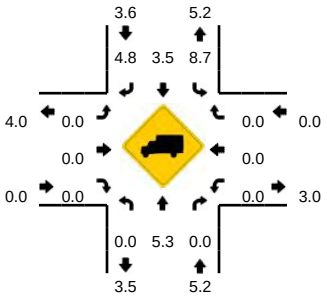
Method for determining peak hour: Total Entering Volume

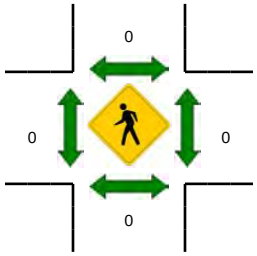
LOCATION: 99W -- SW Brookman Rd
CITY/STATE: Sherwood, OR

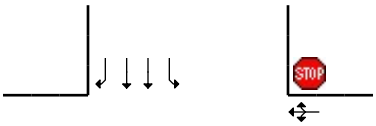
QC JOB #: 11224701
DATE: Thu, Sep 05 2013

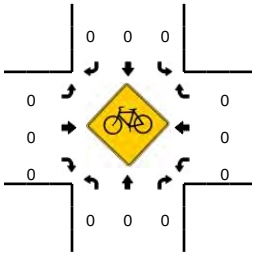
Peak-Hour: 4:20 PM -- 5:20 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

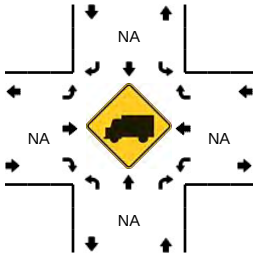


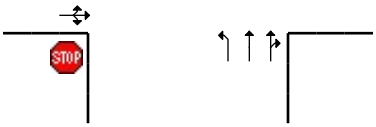


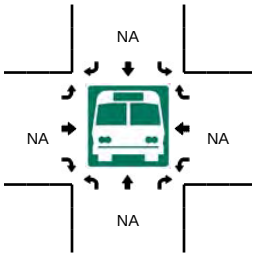












5-Min Count Period Beginning At	99W (Northbound)				99W (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	90	1	2	0	116	2	1	0	1	1	0	3	1	0	0	218	
4:05 PM	1	81	0	1	2	180	0	0	2	0	1	0	1	0	1	0	270	
4:10 PM	0	121	4	0	2	158	2	0	2	0	1	0	3	0	2	0	295	
4:15 PM	1	101	6	0	0	147	2	1	0	0	0	0	3	0	2	0	263	
4:20 PM	0	110	4	0	1	186	1	0	0	0	0	0	0	0	3	0	305	
4:25 PM	0	100	2	0	1	138	3	0	2	0	0	0	4	0	1	0	251	
4:30 PM	0	106	5	3	3	146	0	0	0	0	0	0	0	0	1	0	264	
4:35 PM	0	117	5	1	3	140	1	0	0	0	0	0	0	1	2	0	270	
4:40 PM	0	125	5	1	2	180	2	1	5	1	1	0	2	1	2	0	328	
4:45 PM	0	107	6	1	3	162	1	0	0	1	0	0	6	0	2	0	289	
4:50 PM	0	120	2	1	1	172	2	0	2	0	0	0	3	0	1	0	304	
4:55 PM	0	134	1	0	1	171	2	0	1	0	0	0	4	0	2	0	316	3373
5:00 PM	0	96	3	0	3	186	3	0	0	0	1	0	5	0	2	0	299	3454
5:05 PM	2	104	2	1	0	176	4	0	1	1	0	0	7	0	3	0	301	3485
5:10 PM	0	118	2	0	1	137	0	0	4	2	3	0	5	0	3	0	275	3465
5:15 PM	0	111	3	0	3	178	2	0	0	0	0	0	3	0	2	0	302	3504
5:20 PM	0	104	3	1	4	129	4	0	2	0	0	0	3	1	2	0	253	3452
5:25 PM	1	96	6	0	2	149	1	0	2	0	0	0	4	0	2	0	263	3464
5:30 PM	0	127	6	1	3	129	0	0	1	0	1	0	4	2	2	0	276	3476
5:35 PM	0	103	2	2	4	150	3	0	0	1	0	0	5	0	0	0	270	3476
5:40 PM	0	120	3	0	3	158	1	1	2	0	1	0	3	0	0	0	292	3440
5:45 PM	1	117	0	0	5	135	2	0	2	2	0	0	2	1	1	0	268	3419
5:50 PM	0	109	1	0	4	141	0	1	0	0	0	0	4	0	1	0	261	3376
5:55 PM	0	84	3	0	4	143	2	0	6	1	0	0	4	0	2	0	249	3309

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1408	52	12	24	2056	20	4	28	8	4	0	44	4	20	0	3684
Heavy Trucks	0	72	0		0	48	0		0	0	0		0	0	0		120
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/17/2013 1:32 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW Copper Terr -- SW Edy Rd

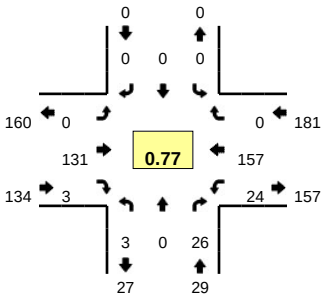
CITY/STATE: Sherwood, OR

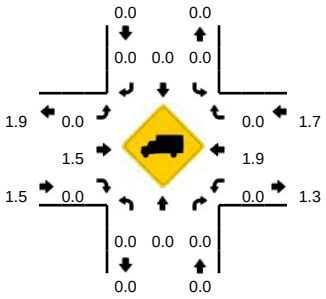
QC JOB #: 10871808

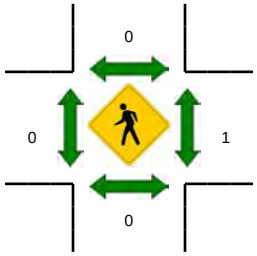
DATE: Wed, Dec 19 2012

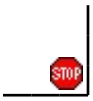
Peak-Hour: 4:35 PM -- 5:35 PM

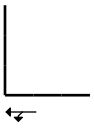
Peak 15-Min: 5:20 PM -- 5:35 PM

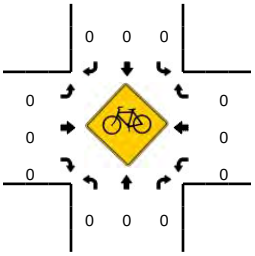


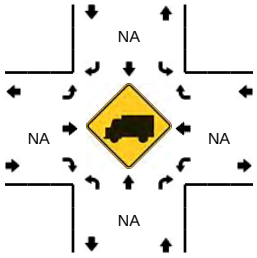


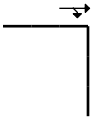


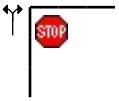


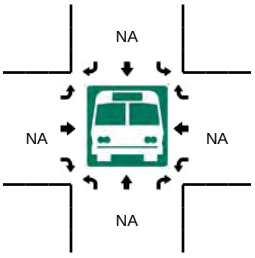












5-Min Count Period Beginning At	SW Copper Terr (Northbound)				SW Copper Terr (Southbound)				SW Edy Rd (Eastbound)				SW Edy Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	3	0	0	0	0	0	0	11	0	0	0	12	0	0	26	
4:05 PM	0	0	4	0	0	0	0	0	0	9	0	0	2	6	0	0	21	
4:10 PM	0	0	3	0	0	0	0	0	0	3	0	0	1	2	0	0	9	
4:15 PM	0	0	1	0	0	0	0	0	0	5	0	0	1	8	0	0	15	
4:20 PM	1	0	0	0	0	0	0	0	0	10	1	0	4	11	0	0	27	
4:25 PM	1	0	3	0	0	0	0	0	0	14	0	0	3	18	0	0	39	
4:30 PM	1	0	6	0	0	0	0	0	0	9	0	0	1	16	0	0	33	
4:35 PM	1	0	4	0	0	0	0	0	0	11	0	0	1	16	0	0	33	
4:40 PM	0	0	1	0	0	0	0	0	0	4	1	0	0	12	0	0	18	
4:45 PM	1	0	6	0	0	0	0	0	0	9	0	0	2	6	0	0	24	
4:50 PM	0	0	1	0	0	0	0	0	0	15	0	0	2	9	0	0	27	
4:55 PM	0	0	0	0	0	0	0	0	0	15	0	0	4	8	0	0	27	299
5:00 PM	0	0	5	0	0	0	0	0	0	10	0	0	2	17	0	0	34	307
5:05 PM	1	0	0	0	0	0	0	0	0	10	1	0	3	8	0	0	23	309
5:10 PM	0	0	2	0	0	0	0	0	0	6	0	0	4	14	0	0	26	326
5:15 PM	0	0	0	0	0	0	0	0	0	9	1	0	1	9	0	0	20	331
5:20 PM	0	0	0	0	0	0	0	0	0	16	0	0	2	16	0	0	34	338
5:25 PM	0	0	4	0	0	0	0	0	0	8	0	0	1	20	0	0	33	332
5:30 PM	0	0	3	0	0	0	0	0	0	18	0	0	2	22	0	0	45	344
5:35 PM	0	0	2	0	0	0	0	0	0	14	3	0	1	7	0	0	27	338
5:40 PM	1	0	2	0	0	0	0	0	0	4	0	0	1	12	0	0	20	340
5:45 PM	0	0	1	0	0	0	0	0	0	8	0	0	2	11	0	0	22	338
5:50 PM	0	0	1	0	0	0	0	0	0	14	0	0	1	10	0	0	26	337
5:55 PM	0	0	0	0	0	0	0	0	0	12	1	0	2	12	0	0	27	337

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	28	0	0	0	0	0	0	168	0	0	20	232	0	0	448
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/27/2013 5:17 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

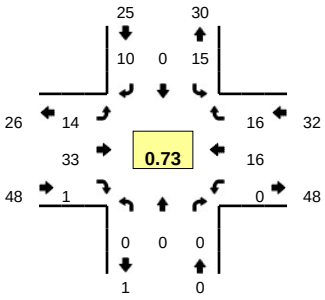
LOCATION: SW Copper Terr -- SW Handley St

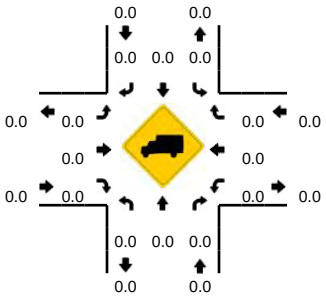
QC JOB #: 10871802

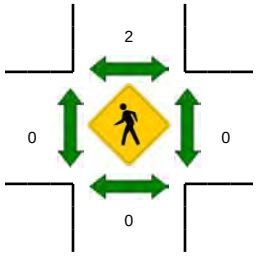
CITY/STATE: Sherwood, OR

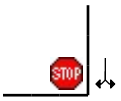
DATE: Wed, Dec 19 2012

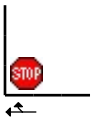
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:20 PM -- 5:35 PM

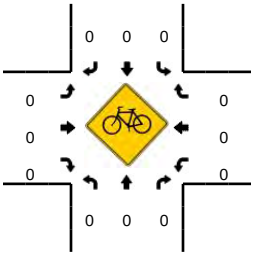


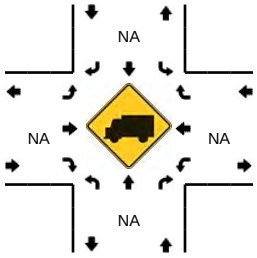


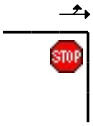


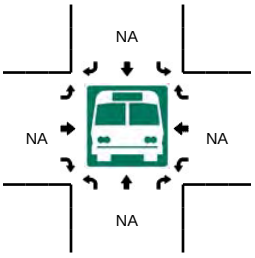












5-Min Count Period Beginning At	SW Copper Terr (Northbound)				SW Copper Terr (Southbound)				SW Handley St (Eastbound)				SW Handley St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	1	0	0	0	1	1	0	0	0	0	1	0	4	
4:05 PM	0	0	0	0	2	1	0	0	1	1	0	0	0	0	1	0	6	
4:10 PM	0	0	0	0	0	0	1	0	1	2	0	0	0	0	1	0	5	
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	
4:20 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2	
4:25 PM	0	0	0	0	0	0	1	0	1	3	0	0	0	0	0	0	5	
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2	
4:35 PM	0	0	0	0	2	0	0	0	0	2	0	0	0	1	2	0	7	
4:40 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	3	0	6	
4:45 PM	0	0	0	0	1	0	0	0	1	2	0	0	0	3	0	0	7	
4:50 PM	0	0	0	0	1	0	1	0	0	4	0	0	0	4	0	0	10	
4:55 PM	0	0	0	0	0	0	2	0	0	1	0	0	0	0	1	0	4	60
5:00 PM	0	0	0	0	1	0	1	0	0	2	0	0	0	0	1	0	5	61
5:05 PM	0	0	0	0	1	0	1	0	1	2	0	0	0	2	1	0	8	63
5:10 PM	0	0	0	0	2	0	0	0	2	0	0	0	0	0	1	0	5	63
5:15 PM	0	0	0	0	1	0	1	0	0	2	0	0	0	0	0	0	4	65
5:20 PM	0	0	0	0	1	0	2	0	3	1	0	0	0	3	3	0	13	76
5:25 PM	0	0	0	0	0	0	0	0	4	3	0	0	0	1	3	0	11	82
5:30 PM	0	0	0	0	2	0	1	0	3	3	0	0	0	0	3	0	12	92
5:35 PM	0	0	0	0	3	0	3	0	0	2	0	0	0	2	3	0	13	98
5:40 PM	0	0	0	0	1	0	0	0	0	7	0	0	0	3	0	0	11	103
5:45 PM	0	0	0	0	2	0	0	0	0	4	0	0	0	1	1	0	8	104
5:50 PM	0	0	0	0	1	0	1	0	1	3	0	0	0	2	0	0	8	102
5:55 PM	0	0	0	0	0	0	0	0	0	4	1	0	0	2	0	0	7	105

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	12	0	12	0	40	28	0	0	0	16	36	0	144
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/27/2013 5:17 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

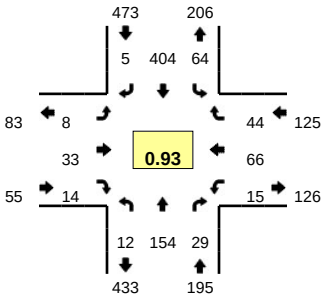
Type of peak hour being reported: Intersection Peak

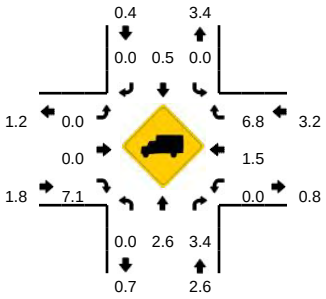
Method for determining peak hour: Total Entering Volume

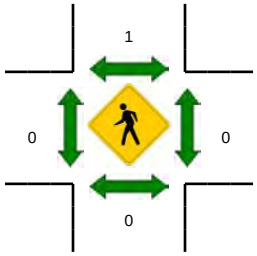
LOCATION: Elwert Rd -- Edy Rd
CITY/STATE: Sherwood, OR

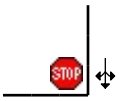
QC JOB #: 10781226
DATE: Tue, Jun 26 2012

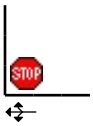
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

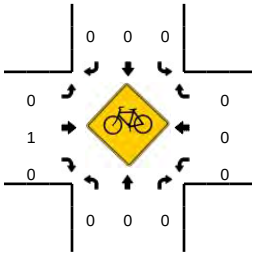


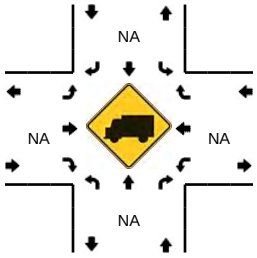


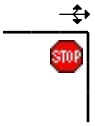


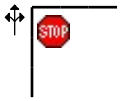


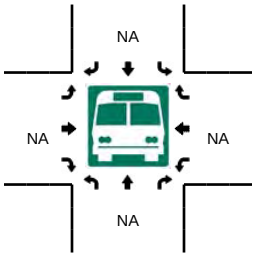












5-Min Count Period Beginning At	Elwert Rd (Northbound)				Elwert Rd (Southbound)				Edy Rd (Eastbound)				Edy Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	6	1	0	4	24	0	0	3	3	0	0	2	1	4	0	48	
4:05 PM	1	12	0	0	7	14	0	0	1	6	1	0	3	5	4	0	54	
4:10 PM	2	12	0	0	2	20	0	0	0	2	2	0	2	5	1	0	48	
4:15 PM	0	8	2	0	0	21	0	0	0	2	0	0	0	4	1	0	38	
4:20 PM	0	10	1	0	3	26	0	0	0	2	0	0	0	2	4	0	48	
4:25 PM	0	14	2	0	1	31	1	0	0	1	0	0	1	7	4	0	62	
4:30 PM	0	5	2	0	4	29	0	0	0	4	1	0	1	5	2	0	53	
4:35 PM	1	14	2	0	4	17	3	0	0	0	1	0	1	4	2	0	49	
4:40 PM	0	11	1	0	5	39	1	0	1	3	0	0	2	9	3	0	75	
4:45 PM	0	6	4	0	6	29	0	0	0	4	1	0	1	7	2	0	60	
4:50 PM	1	17	1	0	6	34	0	0	1	3	1	0	2	8	1	0	75	
4:55 PM	1	9	3	0	2	32	1	0	0	1	2	0	2	10	3	0	66	676
5:00 PM	0	11	2	0	8	35	1	0	0	1	1	0	0	6	4	0	69	697
5:05 PM	1	11	3	0	3	46	0	0	0	5	0	0	0	6	3	0	78	721
5:10 PM	2	16	2	0	4	33	0	0	3	3	2	0	1	5	4	0	75	748
5:15 PM	0	12	0	0	9	35	0	0	0	5	0	0	1	7	5	0	74	784
5:20 PM	0	12	2	0	4	31	1	0	2	5	0	0	1	4	5	0	67	803
5:25 PM	1	12	1	0	8	40	1	0	0	2	5	0	2	4	2	0	78	819
5:30 PM	2	12	4	0	5	25	0	0	0	0	0	0	0	4	5	0	57	823
5:35 PM	1	7	6	0	8	39	0	0	0	2	0	0	1	6	2	0	72	846
5:40 PM	1	16	2	0	3	25	1	0	0	1	0	0	4	4	5	0	62	833
5:45 PM	2	14	2	0	4	18	0	0	0	2	2	0	1	6	4	0	55	828
5:50 PM	1	13	4	0	3	41	1	0	2	4	2	0	1	10	3	0	85	838
5:55 PM	1	18	1	0	5	36	0	0	1	3	2	0	3	4	2	0	76	848

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	156	20	0	64	456	0	0	12	52	8	0	8	72	48	0	908
Heavy Trucks	0	8	0		0	4	0		0	0	0		0	4	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/27/2013 5:17 PM

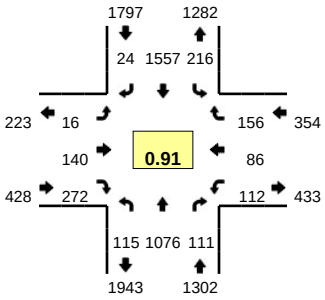
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

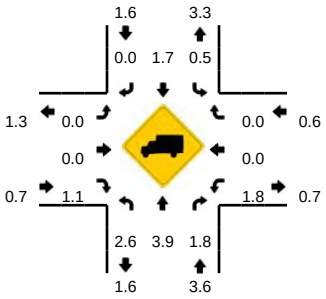
Method for determining peak hour: Total Entering Volume

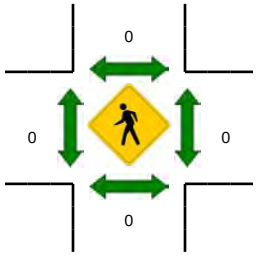
LOCATION: Hwy 99W -- Sunset Blvd
CITY/STATE: Sherwood, OR

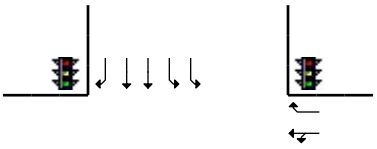
QC JOB #: 10781224
DATE: Tue, Jun 26 2012

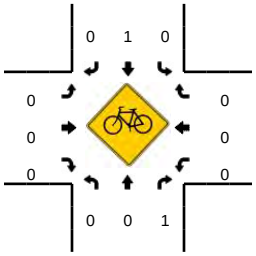


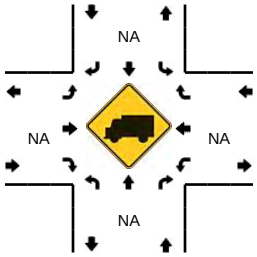
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

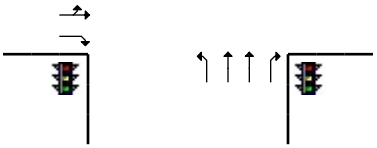


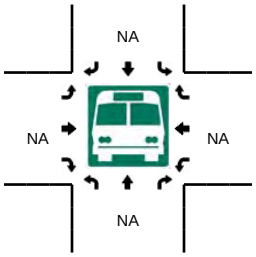












5-Min Count Period Beginning At	Hwy 99W (Northbound)				Hwy 99W (Southbound)				Sunset Blvd (Eastbound)				Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	87	5	0	12	118	1	3	0	2	9	0	10	5	10	0	267	
4:05 PM	8	94	5	0	7	112	1	0	0	5	19	0	14	9	7	0	281	
4:10 PM	7	106	11	0	9	158	2	2	1	8	13	0	5	5	15	0	342	
4:15 PM	6	66	10	0	11	110	2	3	0	4	16	0	18	2	22	0	270	
4:20 PM	9	107	13	0	14	108	3	1	1	7	15	0	18	10	9	0	315	
4:25 PM	8	120	9	0	9	148	1	1	1	6	21	0	7	1	11	0	343	
4:30 PM	10	84	10	0	19	120	2	3	1	6	29	0	13	5	9	0	311	
4:35 PM	10	84	5	0	14	156	1	4	1	6	17	0	8	3	9	0	318	
4:40 PM	8	75	8	0	15	136	2	2	0	5	17	0	13	3	9	0	293	
4:45 PM	8	65	15	0	11	106	1	0	2	15	30	0	14	6	14	0	287	
4:50 PM	11	105	7	0	15	90	1	2	1	15	25	0	10	8	11	0	301	
4:55 PM	7	76	10	0	12	125	0	1	1	11	26	0	9	11	10	0	299	3627
5:00 PM	3	73	11	0	17	115	3	2	0	13	30	0	13	9	7	0	296	3656
5:05 PM	20	100	6	1	15	127	4	3	3	9	22	0	10	7	8	0	335	3710
5:10 PM	7	101	12	0	19	179	4	3	0	6	21	0	7	2	17	0	378	3746
5:15 PM	9	94	14	0	15	146	1	3	1	12	24	0	12	6	17	0	354	3830
5:20 PM	14	101	8	0	12	110	0	4	1	13	27	0	6	7	12	0	315	3830
5:25 PM	7	86	5	0	10	142	1	2	1	7	18	0	5	14	8	0	306	3793
5:30 PM	10	92	14	0	19	129	5	5	0	16	24	0	5	4	14	0	337	3819
5:35 PM	2	65	9	1	18	119	1	3	1	14	18	0	18	8	18	0	295	3796
5:40 PM	15	115	11	0	14	107	3	1	6	14	22	0	10	6	15	0	339	3842
5:45 PM	9	94	4	0	8	137	1	2	1	14	14	0	10	7	17	0	318	3873
5:50 PM	10	79	7	0	23	121	1	5	1	11	26	0	7	5	13	0	309	3881
5:55 PM	12	93	6	0	16	94	2	5	3	10	29	0	7	8	12	0	297	3879

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	144	1180	128	4	196	1808	36	36	16	108	268	0	116	60	168	0	4268
Heavy Trucks	8	48	8		0	24	0		0	0	4		0	0	0		92
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/27/2013 5:17 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

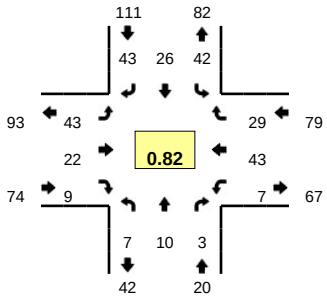
LOCATION: SW Baler Way -- SW Century Dr

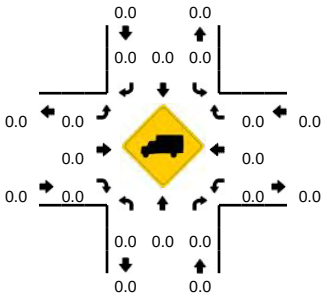
QC JOB #: 10702329

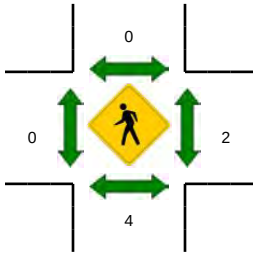
CITY/STATE: Sherwood, OR

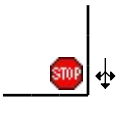
DATE: Tue, Jan 24 2012

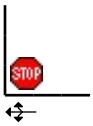
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

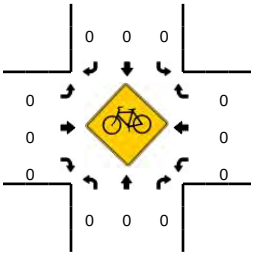


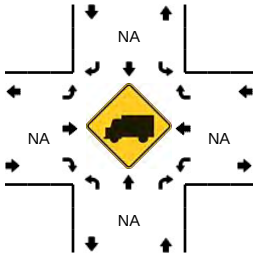


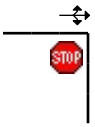


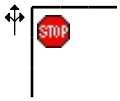


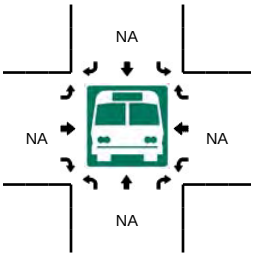












5-Min Count Period Beginning At	SW Baler Way (Northbound)				SW Baler Way (Southbound)				SW Century Dr (Eastbound)				SW Century Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	0	0	3	1	2	0	0	1	0	0	1	4	2	0	15	
4:05 PM	1	0	0	0	3	7	2	0	1	1	1	0	0	3	0	0	19	
4:10 PM	0	1	0	0	0	1	3	0	2	2	0	0	0	2	2	0	13	
4:15 PM	1	1	1	0	2	3	4	0	2	1	0	0	0	3	5	0	23	
4:20 PM	0	0	0	0	3	3	2	0	4	1	0	0	1	4	1	0	19	
4:25 PM	1	1	0	0	2	3	2	0	3	1	0	0	0	2	2	0	17	
4:30 PM	1	0	0	0	1	2	1	0	4	2	1	0	0	1	3	0	16	
4:35 PM	1	2	0	0	5	0	1	0	4	1	0	0	0	6	2	0	22	
4:40 PM	1	0	0	0	7	1	5	0	6	5	1	0	1	4	1	0	32	
4:45 PM	3	4	1	0	0	1	6	0	4	2	2	0	2	3	5	0	33	
4:50 PM	0	2	0	0	3	0	4	0	4	0	1	0	0	0	1	0	15	
4:55 PM	0	0	1	0	7	5	5	0	3	2	0	0	0	1	4	0	28	252
5:00 PM	0	2	0	0	3	1	3	0	4	2	1	0	2	7	6	0	31	268
5:05 PM	0	0	0	0	3	1	2	0	1	2	0	0	1	6	0	0	16	265
5:10 PM	1	0	1	0	3	4	5	0	6	4	0	0	1	4	2	0	31	283
5:15 PM	0	0	0	0	1	3	2	0	3	0	1	0	0	2	3	0	15	275
5:20 PM	0	0	0	0	2	4	7	0	4	1	0	0	0	3	1	0	22	278
5:25 PM	0	0	0	0	4	3	1	0	2	0	1	0	0	2	3	0	16	277
5:30 PM	1	0	0	0	4	3	2	0	2	3	2	0	0	5	1	0	23	284
5:35 PM	1	1	0	0	1	1	4	0	5	5	0	0	0	2	0	0	20	282
5:40 PM	1	2	0	0	4	2	3	0	3	2	1	0	0	0	1	0	19	269
5:45 PM	0	0	0	0	2	1	1	0	2	1	0	0	0	1	1	0	9	245
5:50 PM	0	0	0	0	2	1	3	0	2	4	2	0	1	2	2	0	19	249
5:55 PM	1	2	0	0	3	1	1	0	7	4	0	0	1	3	1	0	24	245

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	24	4	0	48	8	48	0	56	32	12	0	12	52	32	0	348
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/27/2013 5:17 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SW Oregon St -- SW Tonquin Rd

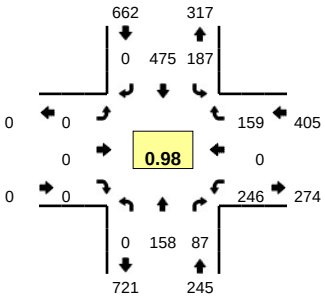
CITY/STATE: Sherwood, OR

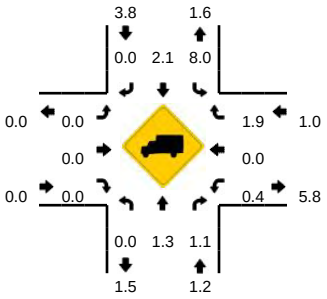
QC JOB #: 10562836

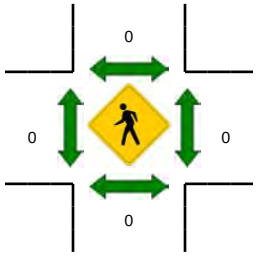
DATE: Tue, Dec 07 2010

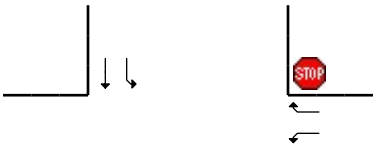
Peak-Hour: 4:40 PM -- 5:40 PM

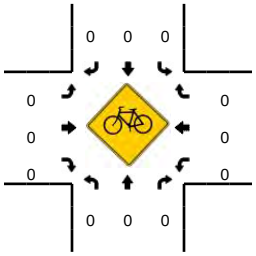
Peak 15-Min: 4:45 PM -- 5:00 PM

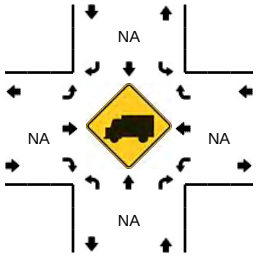


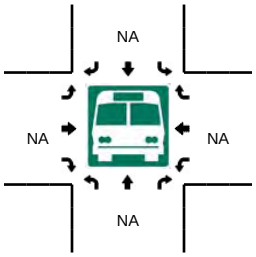












5-Min Count Period Beginning At	SW Oregon St (Northbound)				SW Oregon St (Southbound)				SW Tonquin Rd (Eastbound)				SW Tonquin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:10 PM	0	17	6	0	15	37	0	0	0	0	0	0	11	0	15	0	101	
4:15 PM	0	13	8	0	13	23	0	0	0	0	0	0	25	0	9	0	91	
4:20 PM	0	5	5	0	14	34	0	0	0	0	0	0	19	0	10	0	87	
4:25 PM	0	10	5	0	9	32	0	0	0	0	0	0	20	0	6	0	82	
4:30 PM	0	22	6	0	17	29	0	0	0	0	0	0	15	0	7	0	96	
4:35 PM	0	15	2	0	14	24	0	0	0	0	0	0	22	0	14	0	91	
4:40 PM	0	17	7	0	16	40	0	0	0	0	0	0	18	0	16	0	114	
4:45 PM	0	13	7	0	17	53	0	0	0	0	0	0	21	0	11	0	122	
4:50 PM	0	6	7	0	19	31	0	0	0	0	0	0	19	0	10	0	92	
4:55 PM	0	12	8	0	16	42	0	0	0	0	0	0	24	0	18	0	120	1168
5:00 PM	0	14	12	0	11	29	0	0	0	0	0	0	23	0	13	0	102	1199
5:05 PM	0	13	8	0	20	44	0	0	0	0	0	0	15	0	10	0	110	1208
5:10 PM	0	15	5	0	13	38	0	0	0	0	0	0	17	0	17	0	105	1212
5:15 PM	0	12	7	0	13	33	0	0	0	0	0	0	23	0	19	0	107	1228
5:20 PM	0	18	7	0	21	31	0	0	0	0	0	0	18	0	11	0	106	1247
5:25 PM	0	14	5	0	10	52	0	0	0	0	0	0	15	0	12	0	108	1273
5:30 PM	0	14	9	0	15	38	0	0	0	0	0	0	26	0	12	0	114	1291
5:35 PM	0	10	5	0	16	44	0	0	0	0	0	0	27	0	10	0	112	1312
5:40 PM	0	19	5	0	13	32	0	0	0	0	0	0	21	0	13	0	103	1301
5:45 PM	0	14	3	0	10	41	0	0	0	0	0	0	18	0	14	0	100	1279
5:50 PM	0	19	8	0	9	35	0	0	0	0	0	0	18	0	14	0	103	1290
5:55 PM	0	7	4	0	17	38	0	0	0	0	0	0	11	0	9	0	86	1256
6:00 PM	0	13	8	0	13	46	0	0	0	0	0	0	17	0	9	0	106	1260
6:05 PM	0	17	6	0	5	34	0	0	0	0	0	0	17	0	7	0	86	1236

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	124	88	0	208	504	0	0	0	0	0	0	256	0	156	0	1336
Heavy Trucks	0	0	4		20	12	0		0	0	0		0	0	8		44
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/27/2013 5:17 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LOCATION: #445 Cipole Rd 0.1 N of Tualatin-Sherwood Rd
QC JOB #: 10719736
SPECIFIC LOCATION: 0 ft from
DIRECTION: SB
CITY/STATE: Washington County, OR
DATE: Mar 08 2012 - Mar 08 2012

Start Time	Mon	Tue	Wed	Thu 08-Mar-12	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				2		2			2	
1:00 AM				1		1			1	
2:00 AM				3		3			3	
3:00 AM				2		2			2	
4:00 AM				7		7			7	
5:00 AM				22		22			22	
6:00 AM				50		50			50	
7:00 AM				110		110			110	
8:00 AM				88		88			88	
9:00 AM				82		82			82	
10:00 AM				97		97			97	
11:00 AM				**119**		**119**			**119**	
12:00 PM				128		128			128	
1:00 PM				124		124			124	
2:00 PM				135		135			135	
3:00 PM				181		181			181	
4:00 PM				180		180			180	
5:00 PM				**182**		**182**			**182**	
6:00 PM				109		109			109	
7:00 PM				53		53			53	
8:00 PM				34		34			34	
9:00 PM				20		20			20	
10:00 PM				10		10			10	
11:00 PM				14		14			14	
Day Total				1753		1753			1753	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				11:00 AM		11:00 AM			11:00 AM	
Volume				119		119			119	
PM Peak				5:00 PM		5:00 PM			5:00 PM	
Volume				182		182			182	

Comments: NA

LOCATION: #445 Cipole Rd 0.1 N of Tualatin-Sherwood Rd
QC JOB #: 10719736
SPECIFIC LOCATION: 0 ft from
DIRECTION: NB
CITY/STATE: Washington County, OR
DATE: Mar 08 2012 - Mar 08 2012

Start Time	Mon	Tue	Wed	Thu 08-Mar-12	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				2		2			2	
1:00 AM				2		2			2	
2:00 AM				3		3			3	
3:00 AM				6		6			6	
4:00 AM				30		30			30	
5:00 AM				33		33			33	
6:00 AM				128		128			128	
7:00 AM				**143**		**143**			**143**	
8:00 AM				114		114			114	
9:00 AM				94		94			94	
10:00 AM				70		70			70	
11:00 AM				94		94			94	
12:00 PM				130		130			130	
1:00 PM				97		97			97	
2:00 PM				104		104			104	
3:00 PM				**155**		**155**			**155**	
4:00 PM				119		119			119	
5:00 PM				93		93			93	
6:00 PM				48		48			48	
7:00 PM				24		24			24	
8:00 PM				9		9			9	
9:00 PM				14		14			14	
10:00 PM				10		10			10	
11:00 PM				7		7			7	
Day Total				1529		1529			1529	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:00 AM		7:00 AM			7:00 AM	
Volume				143		143			143	
PM Peak				3:00 PM		3:00 PM			3:00 PM	
Volume				155		155			155	

Comments: NA

LOCATION: #421 Tualatin-Sherwood Rd 0.1 E of Cipole Rd
QC JOB #: 10719719
SPECIFIC LOCATION: 0 ft from
DIRECTION: WB
CITY/STATE: Washington County, OR
DATE: Mar 08 2012 - Mar 08 2012

Start Time	Mon	Tue	Wed	Thu 08-Mar-12	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				74		74			74	
1:00 AM				55		55			55	
2:00 AM				50		50			50	
3:00 AM				55		55			55	
4:00 AM				131		131			131	
5:00 AM				236		236			236	
6:00 AM				454		454			454	
7:00 AM				677		677			677	
8:00 AM				671		671			671	
9:00 AM				683		683			683	
10:00 AM				681		681			681	
11:00 AM				**774**		**774**			**774**	
12:00 PM				811		811			811	
1:00 PM				832		832			832	
2:00 PM				836		836			836	
3:00 PM				969		969			969	
4:00 PM				**1022**		**1022**			**1022**	
5:00 PM				916		916			916	
6:00 PM				984		984			984	
7:00 PM				649		649			649	
8:00 PM				550		550			550	
9:00 PM				441		441			441	
10:00 PM				314		314			314	
11:00 PM				172		172			172	
Day Total				13037		13037			13037	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				11:00 AM		11:00 AM			11:00 AM	
Volume				774		774			774	
PM Peak				4:00 PM		4:00 PM			4:00 PM	
Volume				1022		1022			1022	

Comments: NA

LOCATION: #421 Tualatin-Sherwood Rd 0.1 E of Cipole Rd
QC JOB #: 10719719
SPECIFIC LOCATION: 0 ft from
DIRECTION: EB
CITY/STATE: Washington County, OR
DATE: Mar 08 2012 - Mar 08 2012

Start Time	Mon	Tue	Wed	Thu 08-Mar-12	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				72		72			72	
1:00 AM				43		43			43	
2:00 AM				86		86			86	
3:00 AM				72		72			72	
4:00 AM				237		237			237	
5:00 AM				437		437			437	
6:00 AM				951		951			951	
7:00 AM				**1088**		**1088**			**1088**	
8:00 AM				695		695			695	
9:00 AM				693		693			693	
10:00 AM				780		780			780	
11:00 AM				799		799			799	
12:00 PM				851		851			851	
1:00 PM				810		810			810	
2:00 PM				838		838			838	
3:00 PM				**886**		**886**			**886**	
4:00 PM				882		882			882	
5:00 PM				836		836			836	
6:00 PM				712		712			712	
7:00 PM				550		550			550	
8:00 PM				349		349			349	
9:00 PM				289		289			289	
10:00 PM				170		170			170	
11:00 PM				127		127			127	
Day Total				13253		13253			13253	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:00 AM		7:00 AM			7:00 AM	
Volume				1088		1088			1088	
PM Peak				3:00 PM		3:00 PM			3:00 PM	
Volume				886		886			886	

Comments: NA

LOCATION: Roy Rogers Rd South of Scholls-Sherwood Rd
QC JOB #: 10936805
SPECIFIC LOCATION: 750 ft from
DIRECTION: SB
CITY/STATE: Sherwood, OR
DATE: Apr 11 2013 - Apr 11 2013

Start Time	Mon	Tue	Wed	Thu 11-Apr-13	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				28		28			28	
1:00 AM				14		14			14	
2:00 AM				20		20			20	
3:00 AM				33		33			33	
4:00 AM				128		128			128	
5:00 AM				222		222			222	
6:00 AM				504		504			504	
7:00 AM				**767**		**767**			**767**	
8:00 AM				565		565			565	
9:00 AM				382		382			382	
10:00 AM				375		375			375	
11:00 AM				410		410			410	
12:00 PM				365		365			365	
1:00 PM				424		424			424	
2:00 PM				470		470			470	
3:00 PM				515		515			515	
4:00 PM				716		716			716	
5:00 PM				**788**		**788**			**788**	
6:00 PM				523		523			523	
7:00 PM				277		277			277	
8:00 PM				188		188			188	
9:00 PM				162		162			162	
10:00 PM				74		74			74	
11:00 PM				48		48			48	
Day Total				7998		7998			7998	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak Volume				7:00 AM 767		7:00 AM 767			7:00 AM 767	
PM Peak Volume				5:00 PM 788		5:00 PM 788			5:00 PM 788	

Comments:

LOCATION: Roy Rogers Rd South of Scholls-Sherwood Rd
QC JOB #: 10936805
SPECIFIC LOCATION: 750 ft from
DIRECTION: NB
CITY/STATE: Sherwood, OR
DATE: Apr 11 2013 - Apr 11 2013

Start Time	Mon	Tue	Wed	Thu 11-Apr-13	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				34		34			34	
1:00 AM				14		14			14	
2:00 AM				28		28			28	
3:00 AM				20		20			20	
4:00 AM				48		48			48	
5:00 AM				122		122			122	
6:00 AM				452		452			452	
7:00 AM				**759**		**759**			**759**	
8:00 AM				701		701			701	
9:00 AM				438		438			438	
10:00 AM				349		349			349	
11:00 AM				397		397			397	
12:00 PM				407		407			407	
1:00 PM				391		391			391	
2:00 PM				514		514			514	
3:00 PM				716		716			716	
4:00 PM				822		822			822	
5:00 PM				**830**		**830**			**830**	
6:00 PM				562		562			562	
7:00 PM				315		315			315	
8:00 PM				321		321			321	
9:00 PM				180		180			180	
10:00 PM				129		129			129	
11:00 PM				86		86			86	
Day Total				8635		8635			8635	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak Volume				7:00 AM 759		7:00 AM 759			7:00 AM 759	
PM Peak Volume				5:00 PM 830		5:00 PM 830			5:00 PM 830	

Comments:

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Section K

Glossary

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Access Management: Refers to measures regulating access to streets, roads and highways from public roads and private driveways. Measures may include but are not limited to restrictions on the type and amount of access to roadways, and use of physical controls such as signals and channelization including raised medians, to reduce impacts of approach road traffic on the main facility.

Alternative Modes: Transportation alternatives other than single-occupant automobiles such as rail, transit, bicycles and walking.

Arterial (Street): A street designated in the functional class system as providing the highest amount of connectivity and mostly uninterrupted traffic flow through an urban area.

Aspirational Plan: The entire set of investments in the TSP if funding were not a constraint.

Bicycle Facility: Any facility provided for the benefit of bicycle travel, including bikeways and parking facilities.

Bicycle Network: A system of connected bikeways that provide access to and from local and regional destinations.

Bike Lane: Area within street right-of-way designated specifically for bicycle use

Capacity: The maximum number of vehicles or individuals that can traverse a given segment of a transportation facility with prevailing roadway and traffic conditions.

Capacity Allocation Program (CAP): A trip density limit set by Sherwood for new development to preserve the mobility of Highway 99W.

Collector (Street): A street designated in the functional class system that provides connectivity between local and neighborhood streets with the arterial streets serving the urban area. Usually shorter in distance than arterials, designed with lower traffic speeds and has more traffic control devises than the arterial classification.

Community Advisory Committee (CAC): A committee of stakeholders in Sherwood who met regularly with the project team to give input for the production of the TSP.

Conservatively Fundable Plan: The set of investments in the TSP that could be funded assuming a funding level of $11.3 million through 2035. The $11.3 million funding level is based on historic growth in the Sherwood area.

Crosswalk: Portion of a roadway designated for pedestrian crossing and can be either marked or unmarked. Unmarked crosswalks are the national extension of the shoulder, curb line or sidewalk.

Grade: A measure of the steepness of a roadway, bikeway or walkway, usually expressed in a percentage form of the ratio between vertical rise to horizontal distance. (e.g., a 5% grade means that the facility rises 5 feet in height over a length of 100 feet.)

Grade Separation: The vertical separation of conflicting travelways.

Level of Service (LOS): A qualitative measure describing the perception of operation conditions within a traffic steam by motorists and or passengers. An LOS rating of "A" to "F" describes the traffic flow on streets and at intersections, ranging from LOS A, representing virtually free flow conditions and no impedance to LOS F representing forced flow conditions and congestion.

Local (Street): A street designated in the functional class system that's primary purpose is to provide access to land use as opposed to enhancing mobility. These streets typically have low volumes and are very short in relation to collectors and arterials.

Major Streets Transportation Improvement Program (MSTIP): MSTIP is a local property tax in Washington County that funds transportation improvements.

Metropolitan Transportation Improvement Program (MTIP): The list of projects selected by Metro to receive regional funding assistance.

Mobility Targets: The level of congestion the corresponding jurisdiction has defined as acceptable. Mobility targets are in the form of LOS or v/c ratios.

Multi-Modal: Involving several modes of transportation including bus, rail, bicycle, motor vehicle etc.

National Highway System (NHS): The National Highway System is interconnected urban and rural principal arterial and highways that serve major population centers, ports, airports and other major travel destinations, meet national defense requirements and serve interstate and interregional travel.

Neighborhood Greenway: improvements to local roads to provide sidewalks and/or shared lane bicycle markings. These improvements are also known as "bicycle boulevards" and "family-friendly bikeways."

Neighborhood (Street): A street designated in the functional class system that's primary purpose is to provide access to land use, but provides more mobility than a local street. These streets typically have moderate volumes and are shorter in relation to collectors and arterials.

Oregon Highway Plan (OHP): The document that establishes long range policies and investment strategies for the state highway system in Oregon

Peak Period or Peak Hour: The period of the day with the highest number of travelers. This is normally between 4-6 PM on weekdays.

Pedestrian Connection: A continuous, unobstructed, reasonability direct route between two points that is intended and suitable for pedestrian use. These connections could include sidewalks, walkways, stairways, and pedestrian bridges.

Pedestrian Facility: A facility provided for the benefit of pedestrian travel, including walkways, crosswalks, signs, signals and benches.

Projected Fundable Plan: The set of investments in the TSP that could be funded assuming a funding level of $60 million through 2035. The $60 million funding level is based on levels of growth seen in the areas surrounding Sherwood.

Reduction of Vehicle-Carrying Capacity: A permanent reduction in the horizontal or vertical clearance of a highway section.

Reduction Review Routes: State highways where all proposed actions along the facility require review prior to determination of a potential reduction of vehicle-carrying capacity is determined.

Regional Transportation Functional Plan (RTFP): Part of Metro's code, the RTFP establishes the criteria cities and counties in the Metro area need to follow to comply with the Metro RTP.

Regional Transportation Plan (RTP): The transportation plan for the Portland Metro region

Right-Of-Way (ROW): A general term denoting publicly-owned land or property upon which public facilities and infrastructure is placed.

Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU): A funding and authorization bill that governed U.S. federal surface transportation spending.

Safety Priority Index System (SPIS): An indexing system used by Oregon Department of Transportation to prioritize safety improvements based on crash frequency and severity on state facilities.

Shared Street: Roadways where bicyclists and autos share the same travel lane. Shared streets may include a wider outside lane and/or bicycle boulevard treatment (e.g., sharrows, wayfinding).

Shared-Use Path: Off-street route (typically recreationally focused) that can be used by several transportation modes, including bicycles, pedestrians and other non-motorized modes (i.e. skateboards, roller blades, etc.)

Single Occupancy Vehicle (SOV): A vehicle containing only a single occupant, the driver.

Technical Advisory Committee (TAC): A group of transportation professionals in the public sector who represent an agency with transportation system elements in Sherwood (e.g., city, county, state, and TriMet staff). This group met regularly with the project team to give input for the production of the TSP.

Traffic Calming: Traffic control devices typically used in residential neighborhoods to slow traffic or possibly reduce the volume of traffic.

Traffic Impact Analysis (TIA): A study that evaluates the potential impacts a project may have on the transportation system, and determines mitigations required to meet transportation standards. These are necessary for projects to be approved (e.g., proposed developments, roadway extensions, zone changes).

Transportation Analysis Zone (TAZ): A geographic sub-area used to assess travel demands using a travel demand forecasting model, and is often defined by the transportation network and US Census blocks.

Transportation Demand Management (TDM): A policy tool as well as any action that removes single occupant vehicle trips from the roadway network during peak travel demand periods.

Transportation Growth and Management (TGM): Grants that fund projects that address both land use and transportation planning, provided through a partnership between the Department of Land Conservation and Development and the Oregon Department of Transportation.

Transportation Planning Rule (TPR): Section 660-012 of the Oregon Administrative Rules. This section implements Statewide Planning Goal 12 (Transportation).

Transportation System Management (TSM): Management strategies such as signal improvements, traffic signal coordination, traffic calming, access management, local street connectivity, and intelligent transportation systems

Transportation System Management and Operations (TSMO): Strategies and policies that work towards improving mobility through cost-effective methods, and can be categorized as transportation system management or transportation demand management.

Transportation System Plan (TSP): Is a comprehensive plan that is developed to provide a coordinated, seamless integration of continuity between modes at the local level as well as integration with the regional transportation system.

Urban Area: The area immediately surrounding an incorporated city or rural community that is urban in character, regardless of size.

Urban Growth Boundary (UGB): The regional boundary that encompasses zoning designations in an urban area.

Vehicle Hours of Delay (VHD): The cumulative amount of time vehicles are delayed in a system.

Vehicle Miles Traveled (VMT): The cumulative distance a vehicle travels, regardless of number of occupants

Volume-to-Capacity (v/c) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given turn movement, approach leg, or intersection. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. At 1.00, demand is greater than capacity and the turn movement, approach leg, or intersection is oversaturated—this results in excessive queues and long delays.