



Transportation System Plan

Lake Oswego, Oregon | 2015-2035



Transportation System Plan

City of Lake Oswego Transportation System Plan

Lake Oswego, Oregon

Adopted September 2, 2014
Ordinance 2645
Effective October 2, 2014

Prepared For:
City of Lake Oswego
380 A Avenue
Lake Oswego, Oregon 97034
(503) 635-0290

Prepared By:
Kittelson & Associates, Inc.
610 SW Alder, Suite 700
Portland, OR 97205
(503) 228-5230

Prepared in Collaboration with:
Cogan Owens Cogan, LLC
FCS Group
Otak, Inc.
Angelo Planning Group

Project Manager: Erin Ferguson, P.E.
Project Principal: Phill Worth

Project No. 11187



ACKNOWLEDGEMENTS

Lake Oswego Transportation Advisory Board

Thomas Fahey, Former Chair

Heather Peck, Former Vice-Chair

Frank Groznik, Former Board Member

David Jorling, Board Member

Peter Goodkin, Board Member

Donald McHarness, Board Member

Detlef Curtis, Board Member

Matthew Keenen, Board Member

Michael Peebles, Board Member

Richard Nys, Board Member

Sophia Intraversato, Youth Member

Andrew Provost, Former Youth Member

Agency Partners

ODOT

Clackamas County

TriMet

Metro

Lake Oswego City Council

Kent Studebaker, Mayor

Jeff Gudman, Council President

Karen Bowerman, Councilor

Lauren Hughes, Councilor

Donna Jordan, Councilor

Jon Gustafson, Councilor

Skip O'Neill, Councilor

Lake Oswego City Staff

Erica Rooney, P.E., City Engineer

Scot Siegel, AICP, Director of Planning and Building Services

Laura Weigel, AICP, Associate Planner

Amanda Owings, P.E., Associate Engineer

Debra Andreades, AICP, Senior Planner

Nancy Flye, Engineering Technician III

Russ Chevrette, Engineering Technician III

Todd Knepper, P.E., Engineering Program Supervisor

Johanna Hastay, AICP, Associate Planner

Sarah Selden, Senior Planner

Denny Egner, Assistant Planning Manager

Anthony Hooper, Support Services Supervisor

Roger Shepherd, Technical Support Coordinator

Sidaro Sin, Development Project Manager

Douglas Treat, Traffic Lieutenant

Gert Zoutendijk, Fire Marshal

Lake Oswego Planning Commission

Comprehensive Plan Citizens Advisory Committee

Lake Oswego neighborhood groups

Lake Oswego residents

TABLE OF CONTENTS

Acknowledgements.....	iii
Table of Contents.....	iv
List of Figures	vi
List of Tables	vii
Technical Appendices.....	viii
Glossary of Terms.....	ix
Section 1 Introduction	3
Purpose and Use of the TSP Document.....	4
TSP Process.....	5
TSP Organization and Methodology.....	5
Public Involvement.....	6
Plan Area	6
Section 2 Goals, Policies and Performance Measures.....	13
Vision.....	13
Goals and Policies.....	13
Project development and Evaluation Criteria.....	18
Performance Measures	22
Section 3 Roadway System Plan	27
Jurisdictional Responsibility	27
Functional Classification	27
Roadway Design Features and Typical Street Cross-Sections.....	32
Access Management	42
Roadway Mobility Standards.....	44
Needs Analysis.....	45
Roadway Projects	52
Section 4 Transportation System Management & Operations.....	71
Transportation Demand Management Plan (OAR 660-012-0045(5)).....	71
Transportation System Management Plan (OAR 660-012-0020(2)(f))	73
Parking.....	74
Section 5 Bicycle and Pedestrian System Plan.....	77
Pedestrian Facilities.....	77



Bicycle Facilities	81
Updated Pedestrian and Bicycle Facility Designations	83
Needs Analysis.....	84
Pedestrian and Bicycle Projects.....	86
Section 6 Transit System Plan	113
Fixed-Route Service	113
Park-and-Rides	117
School Bus Service	117
Paratransit Service.....	117
Local Demand-Responsive Circulator Service.....	118
Willamette Shoreline Trolley	119
Regional High Capacity Transit	120
Needs Analysis.....	120
Transit Projects.....	121
Section 7 Rail Plan, Air, Water, & Pipeline Plans	127
Rail System	127
Air Service.....	127
Waterways	127
Pipelines	128
Section 8 Policies and Development Code Amendments.....	131
Overview of Evaluation	131
Summary of Recommendations Related to City Policies and Codes	132
Section 9 Funding Element	137
Section 10 References.....	147
Section 11 Technical Appendices.....	151

LIST OF FIGURES

Figure 1: Study Area 9

Figure 2: Jurisdictional Responsibilities 29

Figure 3: Functional Classifications 33

Figure 4: Crash Analysis Results and SPIS Sites 47

Figures 5A-5D: Roadway Projects 61

Figure 6: Existing Bicycle and Pedestrian Facilities 79

Figures 7A-7D: Bicycle and Pedestrian Projects 103

Figure 8: Existing Fixed Route Transit Service 115



LIST OF TABLES

Table 1: Performance Measures	23
Table 2: Existing Functional Classification Characteristics.....	31
Table 3: Potential Functional Classification Changes.....	32
Table 4: Functional Classification Design Characteristics	40
Table 5: Existing ODOT Design Standards for STAs.....	41
Table 6: Existing Lake Oswego Access Spacing Guidelines	43
Table 7: Existing ODOT Access Spacing Standards.....	43
Table 8: ODOT Mobility Standards	44
Table 9: Roadway Projects.....	54
Table 10: Roadway Projects proposed on private property	59
Table 11: Existing City of Lake Oswego TDM Program Elements	72
Table 12: Existing Regional TDM Projects in the Lake Oswego Area.....	73
Table 13: Existing Regional TSM Projects in the Lake Oswego Area (exclusive of TDM, see Table 10).....	74
Table 14: Pedestrian and Bicycle Projects	88
Table 15: Pedestrian and Bicycle Projects proposed on private property	102
Table 16: Existing TriMet Fixed-Route Transit Service Characteristics.....	113
Table 17: Ridership Trends by Route	113
Table 18: Transit Improvement Projects	123
Table 19: City of Lake Oswego Transportation Revenues	138
Table 20: Lake Oswego Transportation Funds.....	138
Table 21: Lake Oswego Street Fund, Bicycle Path Fund, and TSDC Budget History	139
Table 22: Lake Oswego Baseline Transportation Funding Revenue Forecast	140
Table 23: Lake Oswego Baseline Transportation Funding Expenditures Forecast	141

TECHNICAL APPENDICES

Appendix 1: Public Involvement Plan (Technical Memorandum 2.1)

Appendix 2: Plan, Policy and Program Review (Technical Memorandum 3.1)

Appendix 3: Update to Modal Plans (Technical Memorandum 4.1)

Appendix 4: Data Collection (Technical Memorandum 5.1)

Appendix 5: Existing Conditions Analysis (Technical Memorandum 7.1)

Appendix 6: Future Conditions and Potential Solutions

Appendix 7: Highway 43 Memorandum

Appendix 8: Funding Analysis Memorandum

Appendix 9: Transportation Planning Rule and Regional Transportation Functional Plan (RTFP)
Compliance Evaluation Memorandum

Appendix 10: Response to Oregon Department of Transportation Comment Dated March 6, 2014



GLOSSARY OF TERMS

AADT – Average Annual Daily Traffic
AASHTO – American Association of State Highway Transportation Officials
ACC – Adult Community Center
ACM – Arterial Corridor Management
ADA – Americans with Disabilities Act
ADT – Average Daily Traffic
CAC – Citizen Advisory Committee
CAFR – Comprehensive Annual Financial Report
CBD – Commercial/Central Business District
CCTSP – Clackamas County Transportation System Plan
CIP – Capital Improvement Plan
Comp Plan – Comprehensive Plan
DEQ – Department of Environmental Quality
dwy – driveway
EB – Eastbound
ECO – Employee Commute Options
EERP – East End Redevelopment Plan
FY – Fiscal Year
GIS – Geographic Information Systems
HCT – High-Capacity Transit
HDM – Highway Design Manual
HOA – Homeowner’s Association
LGVCP – Lake Grove Village Center Plan
LIDA – Low Impact Development approaches/alternatives
LOC – Lake Oswego Code (municipal code)
LORA – Lake Oswego Redevelopment Agency
LOS – Level of Service
LRT – Light Rail Transit
MUTCD – Manual on Uniform Traffic Control Devices
NA – Neighborhood Association
NHS – National Highway System
NB - Northbound
OAR – Oregon Administrative Rules
ODOT – Oregon Department of Transportation
OHP – Oregon Highway Plan
O&M – Operations and Maintenance
ORS – Oregon Revised Statutes
PCC – Portland Community College
P&W – Portland and Western railroad
RC – Region Center
RPMs – Raised Pavement Markers
RRFB – Rectangular Rapid Flashing Beacon
RTFP – Regional Transportation Functional Plan

RTP – Regional Transportation Plan
R/W – Right-of-Way
SB – Southbound
SDC – System Development Charge
SOV – Single Occupancy Vehicle
SPIS – Safety Priority Index System
SRTS – Safe Routes to School
STA – Special Transportation Area (designation by ODOT)
s/w – Sidewalk
TAB – Transportation Advisory Board
TDM – Transportation Demand Management
TM – Technical Memorandum
TMA – Transportation Management Association
TMP – Trails Master Plan, 2003
TPR – Transportation Planning Rule
TSDC – Transportation System Development Charge
TSM – Transportation System Management
TSMO – Transportation System Management and Operations
TSP – Transportation System Plan
TSPAC – Transportation System Plan Advisory Committee
TWSC – Two-Way Stop Control (intersection control)
UGB – Urban Growth Boundary
UPRR – Union Pacific Railroad
v/c – Volume to Capacity Ratio
VHD – Vehicle Hours of Delay
VMT – Vehicle Miles Traveled
WB – Westbound



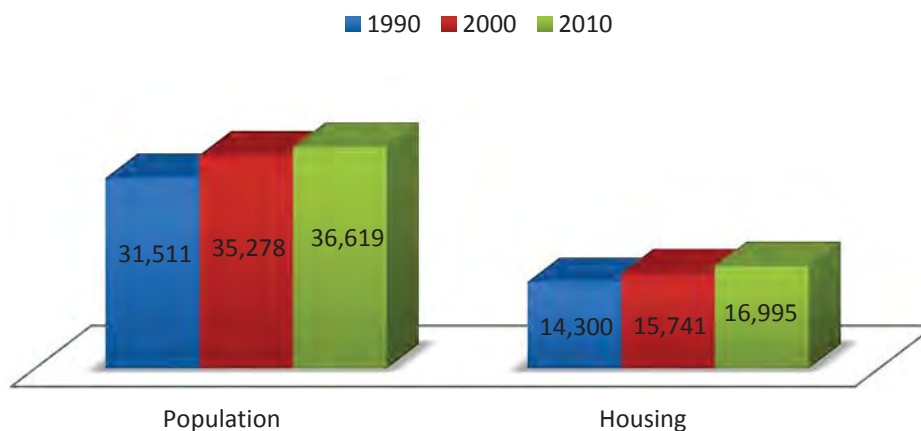
Section 1 Introduction

SECTION 1 INTRODUCTION

The purpose of the Lake Oswego Transportation System Plan (TSP) is to identify and facilitate implementation of an integrated multi-modal transportation system that will meet the needs of City residents, businesses, and visitors for the next 20 years. The TSP considers regional and statewide transportation goals and policies and their impact on Lake Oswego. Due to the size and complexity of Lake Oswego’s transportation system and its proximity to adjacent jurisdictions, the TSP is a document required by Oregon to fulfill the requirements for public facilities under ORS 197.712(2)(e) and OAR Division 12, Section 660. In addition to functionally planning for the City’s future transportation needs, this TSP supports the *Connected Community* chapter within the City of Lake Oswego’s Comprehensive Plan. The goals, policies and performance measures presented in Section 2 of this TSP are consistent with the vision articulated within the Comprehensive Plan.

TSPs are typically updated every 10 years to account for changing economic, population, and travel trends. Lake Oswego has experienced many unique changes that have impacted transportation system needs since the previous TSP was adopted in 1997, such as low population growth rates and high rates of aging as compared to the State average. As shown in Exhibit 1, the population of Lake Oswego increased 3.8 percent and the number of housing units in the City increased 8.0 percent between 2000 and 2010. Over the same time period, Oregon experienced statewide population growth of 12 percent and housing growth of 15.3 percent. Median 2010 household income in Lake Oswego remains significantly higher than the statewide median (\$81,097 and \$49,260, respectively), but increased at a slower pace since 2000 than the state as a whole (13.3 percent and 20.4 percent, respectively).

Exhibit 1: Lake Oswego Population and Housing Growth



Source: US Census Board

The aging population of Lake Oswego is an important consideration for this TSP. In 2000, 11.4 percent of Lake Oswego residents and 12.8 percent of Oregon residents were over the age of 65. In 2010, these figures increased to 16.2 and 13.9 percent, respectively. As a result, transportation options that serve

seniors and allow residents to “age in place” were important considerations for the TSP Update. A more detailed discussion of this issue is included in *Technical Appendix 5 Existing Conditions*.

The most recent population and employment projections for Lake Oswego indicate that the average annual growth rates for population and households from 2010 to 2035 are approximately 0.89% annually – equal to 9,074 additional residents and 3,224 additional households – while the average annual growth rates for employment are approximately 0.89% annually—equal to 4,539 additional jobs. This TSP is intended to address the needs associated with the expected increase in population and employment within the Lake Oswego Urban Service Boundary over the next 20 years.

The Lake Oswego TSP contains a list of programs and projects that the community has agreed should be pursued over the 20-year life of the plan. Lake Oswego completed several projects contained in the 1997 TSP, particularly those anticipated for implementation in the first 10 years of the plan. This TSP Update is based on an assessment of the safety, completeness, and effectiveness of the existing multimodal transportation system and how well it is expected to serve future transportation system needs to the year 2035. Several projects from the 1997 TSP are logical to carry forward. Many “new” projects have been added that come from such sources as the current Lake Oswego Capital Improvement Program, Trails Master Plan, neighborhood plans, and new needs have been identified for the long-term future.

Preliminary cost estimates for the list of TSP programs and projects exceed what the City can fund with existing or forecast revenue. Construction, operational, and maintenance costs for transportation facilities also have increased in recent years, while public budgets have decreased, further limiting the City’s capacity to complete the full list of transportation improvements. Therefore, the TSP includes a “fiscally constrained” plan, which identifies the top six projects that must be completed within the 20 year planning horizon. These projects are intended to address existing and projected deficiencies in the transportation system per local, regional and state mobility standards. Additional information related to the fiscally constrained plan is included throughout the TSP.

PURPOSE AND USE OF THE TSP DOCUMENT

The Transportation System Plan is used for a variety of purposes. The City uses the TSP to determine the future plans of a given street. This includes what types of facilities should be provided, such as travel lanes, two-way left-turn lanes, medians, parking lanes, bike lanes, landscape strips, and sidewalks. The typical street cross-sections provided in Section 3 can guide staff in determining the placement of these types of facilities in coordination with existing conditions and help the City to determine requirements for new development. Additionally, the Engineering department refers to the project lists in Sections 3 through 7 for the roadway, pedestrian, bike, and transit systems that might be needed to serve new development. The project lists are used in recommending projects for the Capital Improvement Plan, which the City Council reviews annually. The project descriptions included in this



TSP are a starting point for determining what will be designed, should the project be placed on the CIP and funding becomes available.

TSP PROCESS

The TSP update process focused on documenting the existing transportation system; identifying gaps and deficiencies based on its current and future forecasted performance; identifying projects, policies, and programs to address the gaps and deficiencies; prioritizing the projects and programs; developing a revenue forecast for future years; and, establishing a fiscally constrained set of projects and programs the City anticipates implementing within the horizon year. Public involvement was integral to the TSP update process and is discussed in greater detail below. The culmination of the TSP update process is this document, which presents the projects, policies, and programs identified to address the existing and anticipated gaps and deficiencies in the City's transportation system. The TSP also serves as a guide for future development and improvements to the transportation system.

TSP ORGANIZATION AND METHODOLOGY

Development of the TSP began with a review of the local and statewide plans and policies that guide land use and transportation planning in the City. A project vision and set of goals and policies were determined and endorsed by the Planning Commission and City Council. These are presented in **Section 2**. An inventory of the existing transportation system was performed, documenting all major transportation-related facilities and services within the study area. **Sections 3 through 7** summarize the system inventory and documentation of existing conditions by mode of travel. These sections also document the types of alternative strategies and multi-modal improvements that were evaluated and considered to mitigate deficiencies and enhance the multi-modal aspects of the City's transportation system. The needs analysis included in each section describes the steps taken in the selection of improvement projects included in the TSP. **Section 8** provides a summary of the policy and development code amendments that will accompany the TSP and **Section 9** provides a summary of the existing and potential future funding sources to finance the identified transportation system improvements. Sections 1 through 10 of the TSP provide the description and explanation of the plan. These are supplemented by the **Technical Appendices** which include the background information contained in technical memoranda documenting: the plans and policies review; existing conditions analysis; forecast needs; and alternatives analysis conducted through the development of the plan.

The modal plan maps and text presented in this TSP Update reflect projects completed since adoption of the 1997 TSP. In addition, the document has been updated to address changes to state and regional policies and planning requirements and new priorities identified by the City. Input from the community, staff, Transportation Advisory Board, Planning Commission, and City Council was instrumental in shaping the purpose and content of this document.

PUBLIC INVOLVEMENT

Public input on the TSP update began with the Comprehensive Plan community vision process during 2010-2012. The vision engaged a broad spectrum of Lake Oswego residents in discussing the future of the community and resulted in the Connected Community goals and policies contained in the Comprehensive Plan. A 15-member Citizen Advisory Committee (CAC) guided the vision process. The CAC included representatives from all City boards and commissions, two neighborhood association representatives, a young adult representative, a City Councilor, and representatives from the business community and Lake Oswego School Board. The City also received community comments through surveys, questionnaires, on-line and in-person open houses, meetings with neighborhood associations and community groups, community events, such as the Lake Oswego Centennial Celebration, Summer Concerts, and Farmer's Market, and CAC meetings. The City also provided list-serve updates.

The City's standing Transportation Advisory Board (TAB) served as the Public Advisory Committee (PAC) for the TSP Update. This group was supported by a Technical Advisory Committee (TAC) comprised of transportation professionals from partnering agencies. The City combined the roles of the TAC and the TAB to create the Transportation System Plan Advisory Committee (TSPAC) to guide the TSP Update. Early in the update process, a Citizens Advisory Committee (CAC) formed to develop the goals and policies of the Connected Community chapter of the Comprehensive Plan. The efforts of this group directly influenced the TSP, as those same goals and policies guide the TSP.

Public Involvement in the TSP update process consisted of periodic TSPAC meetings, continuous web-based communications, and two large community-wide public open houses to gather input on community concerns related to transportation. Staff presented the TSP Update at outreach meetings with various community groups. Comments received at these meetings as well as through e-mail discussions was gathered and used to enhance this document. The public was also invited to attend Planning Commission and City Council work sessions at key milestones throughout the project. *Technical Appendix 1* contains the initial public involvement plan for TSP update.

As the proposed TSP was presented to the Planning Commission in public hearings, the City provided additional, targeted outreach to neighborhood associations. Neighborhood associations were asked to review and comment the project lists developed for their area. This input was used in refining the project lists and updating the project descriptions with information that will assist decision makers in prioritizing projects and making decisions about funding during the annual review of the Capital Improvement Program.

PLAN AREA

Lake Oswego is located within the northwest corner of Clackamas County and at the center of the Metro Service District. The City's current boundaries are generally defined by several local and state parks to the north, the Tualatin River to the south, the Willamette River to the east, and Interstate 5 (I-

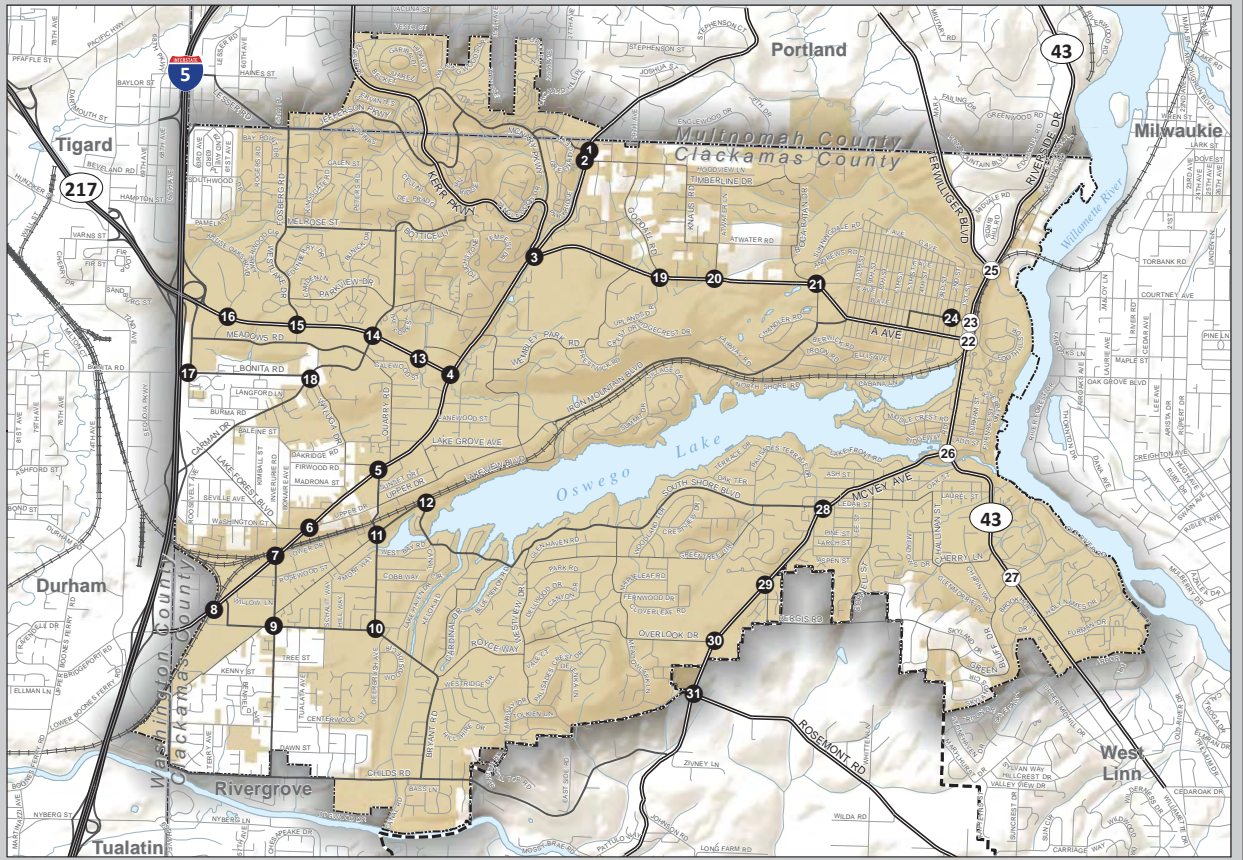


5) to the west. Figure 1 illustrates the study area included in the TSP Update, which includes the area located within the City's Urban Growth Boundary (UGB), Urban Services Boundary (USB), and City limits, as well as sections of unincorporated Clackamas County that are part of the Lake Oswego Urban Planning Area. These unincorporated areas are required to be included in the TSP by Oregon's Transportation Planning Rule (TPR). Figure 1 also illustrates the location of the study intersections evaluated as part of the TSP Update. These intersections were selected based on direction provided by City staff and affirmed by the TSPAC.

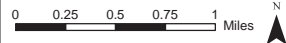


Study Area

Figure 1



- ODOT Study Intersections
- Study Intersections
- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)



H:\proj\6011187_1\0_TSP\CSSE\Final_Draft\01_Study_Area.mxd

Section 2 Goals, Policies and Performance Measures

SECTION 2 GOALS, POLICIES AND PERFORMANCE MEASURES

Transportation goals and policies were developed by the community to support the transportation vision articulated in the City of Lake Oswego's Comprehensive Plan chapter titled *Connected Community*. The vision from the Comprehensive Plan and the supporting goals and policies are presented below. These goals and policies were used in identifying and evaluating transportation system needs, potential develop solutions, and priorities (e.g., projects, programs) to enable the City to plan for and consistently work towards achieving the vision of a connected community.

VISION

We have safe, efficient and convenient transportation choices for all users. There are frequent and reliable public transportation options that make it easy to move around our City and the region. Safe pathways, sidewalks, roadways and bike routes enable residents of all neighborhoods to walk and bike and drive.

GOALS AND POLICIES

The Connected Community goals and policies are organized as follows:

- A. Safety
- B. Transportation Choices
- C. Efficiency
- D. Accessibility
- E. Connectivity
- F. Livability
- G. Sustainability

Goal A. Safety

Provide a safe, multimodal transportation system for all users.

Policies

- A-1. Designate, implement, and maintain routes for walking and biking that support safe movements from residential areas to, through and along schools, parks, transit, employment centers, town centers, neighborhood villages, and commercial corners and neighborhood commons.
-

- A-2. Incorporate safety considerations in the planning, design and re-design of public streets for the benefit of all intended users.
- A-3. Preserve user safety, system integrity, and facility aesthetics by providing regular maintenance of the transportation system.
- A-4. Improve and promote transportation safety through a comprehensive program of education, enforcement and engineering.
- A-5. Identify and prioritize locations with high crash rates to implement improvements.
- A-6. Identify safety concerns for pedestrians, and bicyclists at high traffic volume streets and/or locations with high levels of pedestrian/bicycle demand and implement improvements.
- A-7. Identify safety concerns for motor vehicles at high traffic volume streets and/or locations with high levels of demand among all modes of travel, and implement improvements.
- A-8. Identify, implement, and maintain a network of Emergency Response Streets to facilitate prompt emergency response.
- A-9. Provide pedestrian and bicycle facilities with new bridges when retrofitting existing bridges to support the safe movement of all users.

Goal B. Transportation Choices

Subject to fiscal constraints, improve opportunities to comfortably and conveniently drive, walk, bike and take transit.

Policies

- B-1. Provide land use patterns and promote public and private development that supports efficient transit service.
- B-2. Provide street and frontage improvements such as dedicated facilities, landscaping, and street lighting and permit amenities such as benches and shelters to encourage walking and biking as viable travel modes, particularly along corridors that serve the primary transit network and employment centers, town centers and neighborhood villages.
- B-3. Require development, redevelopment, and public transportation improvement projects to provide facilities that accommodate pedestrian, bicycle, and transit use, particularly in areas with identified gaps in the transportation system and in all employment centers, town centers, neighborhood villages, commercial corners, and neighborhood commons.



- B-4. Public street standards shall recognize the multi-modal nature of the street right-of-way.
- B-5. Locate off-street parking in commercial, industrial, and high-density residential areas to be at the sides or rear of buildings where practical, with buildings oriented to the street in a manner which is convenient to pedestrians, bicyclists and transit riders.

Goal C. Efficiency

Optimize the performance of the transportation system for the efficient movement of people and goods.

Policies

- C-1. Maintain arterial and major collector streets to planned level of service standards, whenever practical.
 - C-2. Balance roadway size and scale with the need to provide safe and efficient transportation for all modes.
 - C-3. Control and consolidate driveway access to major collectors and arterials through the development review process and the implementation of major street projects.
 - C-4. Coordinate with ODOT to provide and manage Highway 43 in a manner consistent with the City's transportation system goals and policies, and coordinate with other regional partners responsible for traffic signal operations to regularly confirm the efficient timing and progression of traffic signals.
 - C-5. Reduce traffic congestion to enhance traffic flow through such system management measures as intersection improvements, incident management, signal priority, signal optimization, signal synchronization, and a range of measures provided through technological advancements.
 - C-6. Require applicants for zone change requests and conditional use permits to determine the resulting extent of impacts to the transportation system and provide mitigation deemed appropriate by the City to maintain transportation system efficiency.
 - C-7. Require development applicants to provide facilities for the movement of people to and from the site by walking, bicycling, automobiles and transit.
 - C-8. Plan 20 minute neighborhoods to accommodate uses that efficiently meet many daily residential needs via short trips by any mode of travel.
-

Goal D. Accessibility

Provide a multimodal transportation system that is suitable for community members of all ages, income levels and physical abilities to access daily needs and services.

Policies

- D-1. Plan street standards that accommodate transit service into areas that connect people to employment centers, town centers and neighborhood villages.
- D-2. Locate appropriate transit stops in employment and town centers that are conveniently located and well-connected to the transportation system.
- D-3. Locate transit amenities such as transit shelters, benches, lighting, park and ride lots, etc. that meet the access needs of residents and employees, including the youth, elderly, and people with disabilities.
- D-4. Provide accessibility for walking and biking, transit and vehicle connections within and among the employment centers, town centers, neighborhood villages, schools, parks, commercial corners and neighborhood commons so residents can access their daily needs.
- D-5. Develop a coordinated transportation system that is barrier-free (accessible) and serves the needs of people and businesses.

Goal E. Connectivity

Develop connections to and between different modes of transportation.

Policies

- E-1. Acquire right of way, where appropriate, through development for planned and required transportation facilities during the development review process.
- E-2. Expand neighborhood and local connections to provide convenient circulation between neighborhoods.
- E-3. Preserve existing rights-of-way, including railroad ROW and other easements, to maintain opportunities for future mass transit, bike and pedestrian paths.
- E-4. Require development applicants, where appropriate, to connect local trail and bicycle facilities directly to regional trails and bicycle networks, and transit routes.
- E-5. Emphasize connectivity when prioritizing projects for funding.



Goal F. Livability

Design and maintain a transportation system that enhances the quality of Lake Oswego's natural and built environment.

Policies

- F-1. Develop and maintain flexible design criteria and construction methods to local and neighborhood collector streets that are responsive to neighborhood character and planned land uses.
 - F-2. Mitigate the impacts of traffic on neighborhood collectors and higher classifications that bisect residential neighborhoods.
 - F-3. Minimize the impacts of traffic generated through new commercial development on adjoining neighborhoods.
 - F-4. Develop design standards that assure that pedestrian, bicycle, and stormwater design elements are compatible with the neighborhood character and the street functionality.
 - F-5. Develop design standards that reinforce neighborhood livability by:
 - a. Protecting local streets from being misused by non-local traffic by applying traffic calming and diversion techniques when and where feasible.
 - b. Applying design standards that reinforce neighborhood character, social interaction and community building.
 - c. Addressing parking impacts, including screening and buffering.
 - d. Maintaining truck circulation restrictions.
 - e. Preserving the visual attractiveness of the community by limiting adverse visual impacts to the City's public spaces and streetscape.
 - F-6. Maintain parking regulations that require off-street employee and customer parking and loading facilities to be provided on-site and commensurate with the size and relative needs of each new development.
 - F-7. Commercial and industrial parking should not intrude into adjacent residential neighborhoods.
-

Goal G. Sustainability

Provide a transportation system that maintains and improves economic vitality, environment health, social equity and well-being for citizens today and in the future.

Policies

- G-1. Develop and maintain trip reduction strategies developed regionally, including employment, tourist, and recreational trip reduction programs to reduce pollution and improve the health of the citizens.
- G-2. Utilize the financial resources needed to achieve the goals for adequately providing and maintaining the transportation system.
- G-3. Support mixed-use development by designating locations for such uses and providing land use opportunities that encourage local job creation in order to reduce the number of locally generated regional commuting and shopping trips.
- G-4. Provide and maintain the transportation system in a manner that is consistent with the Storm water Management Manual, minimizing storm water pollution and hydrologic impacts.
- G-5. Ensure that an adequate supply of parking is provided to support economic activity while balancing the need to drive, take transit, and bike and walk to and within employment centers, town centers and neighborhood villages.
- G-6. Provide off-street parking that is designed to incorporate multiple functions such as storm water management, reducing the urban heat island effect, decreasing impervious surfaces and providing temporary space for public functions.

PROJECT DEVELOPMENT AND EVALUATION CRITERIA

This section describes how projects were selected for the TSP and provides evaluation criteria for future ranking of projects for prioritization in the Capital Improvement Program (CIP). Projects within the TSP should be prioritized annually based on their potential for addressing the City's transportation needs, consistent with the above goals and policies. Key elements to the prioritization process rely on a measurable set of evaluation criteria that are reflective the City's transportation goals and policies and capable of revealing progress toward those goals.

The projects identified in the TSP that address the TSP goals to the highest degree can be used to populate the City's Capital Improvement Program (CIP). The TSP is the primary source for transportation improvement projects included in the CIP. The CIP is updated annually and forecasts the City's capital improvement needs over a five-year period. The projects identified in the TSP should be reviewed and prioritized annually, with the highest priority projects populating the CIP. This annual review is important because community priorities and funding opportunities change over time, and the



CIP serves as the City's official list of prioritized projects. It is used when applying for state and local grants or other funding sources as they become available. The timing of when specific projects are included in the CIP depends upon community needs and the City's ability to secure funding.

The following outlines the steps used to identify projects included in the TSP and assess the degree to which they meet the vision and goals.

1. Projects were identified based on the needs analyses discussed in the previous sections. Projects were also collected from other planning resources listed below.
 - 1997 Lake Oswego TSP
 - 2013 Clackamas County TSP
 - Connecting Clackamas Plan (Clackamas County bike plan)
 - East End Redevelopment Plan
 - Evergreen Neighborhood Plan
 - First Addition Neighbors and Forest Hills Neighborhood Plan
 - Foothills Framework Plan
 - Glenmorrie Neighborhood Plan
 - Lake Forest Neighborhood Plan
 - Lake Grove Neighborhood Plan
 - Lake Grove Village Center Plan
 - Lake Oswego Capital Improvements Plan
 - Lake Oswego Trails Master Plan
 - Metro Connectivity Analysis
 - Metro Regional High Capacity Transit System Plan
 - Metro Regional Transportation Plan
 - Mountain Park Homeowner's Association
 - Old Town Neighborhood Plan
 - Palisades Neighborhood Plan
 - Transportation Advisory Board Top Ten List (2002)
 - Waluga Neighborhood Plan
 2. Project descriptions were modified for consistency with the applicable street cross-sections and to better respond to surrounding conditions. The descriptions also highlight features that might improve potential funding opportunities, such as proximity to existing transit. Neighborhood input was also added to the descriptions to record issues or concerns for future consideration.
 3. Planning-level cost estimates are provided for each project. The estimates are based on recent construction pricing with contingencies in 2013 dollars. In estimating costs for recommended feasibility studies, a typical consultant fee was assumed.
 4. The TSP contains a scoring system to assist in prioritizing projects. Each project can be scored using a point system and criteria that measure how well it achieves the goals and policies of the TSP (See below).
-

Evaluation Criteria

The following evaluation criteria can be used in prioritizing transportation project needs. The criteria are to be used in estimating the degree to which a project is consistent with the Connected Community goals and policies of the Comprehensive Plan. The evaluation criteria were developed collaboratively by City staff and the Transportation System Plan Advisory Committee (TSPAC), and were tested during the TSP update. The criteria can be weighted and/or other criteria may be added to address cost-benefit considerations and pertinent City Council goals and policies. To determine project scores, information from a variety of sources and TSP analyses is used, including crash history, GIS maps, land use and demographic data, transit maps, local knowledge of the area, and engineering judgment.

Prioritization for each project is not provided in this TSP document, but may be useful when considering a group of projects for funding.

Goal A. Safety:

Provide a safe, multimodal transportation system for all users.

Points	Goal A - Evaluation Criteria
3	Project provides enhancement in area identified for safety improvements <u>based on crash history</u> .
2	Project provides a safety enhancement <u>in an area known by staff and community</u> as an area with safety concerns or an area with significant pedestrian and/or bicycle traffic.
1	Project provides a safety enhancement to <u>one or more</u> modes of travel.
0	Project does not provide a safety improvement.
-1	Project <u>increases risk</u> of crashes for <u>one</u> travel mode.
-2	Project <u>increases the risk</u> of crashes for <u>more than one</u> travel mode.

Goal B. Transportation Choices:

Subject to fiscal constraints, improve opportunities to comfortably and conveniently drive, walk, bike and take transit.

Points	Goal B - Evaluation Criteria
3	Project provides options for 2 or more modes where currently none exist.
2	Project provides options for 1 mode where currently none exist.
1	Project improves existing options.
0	Project does not improve options.
-1	Project precludes or prevents the addition of facilities.
-2	Project removes facilities for transit riders, bicyclists or pedestrians.



Goal C. Efficiency:

Optimize the performance of the transportation system for the efficient movement of people and goods.

Points	Goal C - Evaluation Criteria
3	Project/Program reduces at least two of the following efficiency measures: <ul style="list-style-type: none"> • single occupancy vehicle (SOV) trip rate; • number/length of auto trips; and/or • reduces delay without widening roads or intersections.
2	Project/Program reduces one of the efficiency measures.
1	Project reduces delay by widening a road and/or expanding an intersection.
0	Project does not reduce delay.
-1	Project increases delay.
-2	Project increases delay and increases trips or trip length.

Goal D. Accessibility:

Provide a multimodal transportation system that is suitable for community members of all ages, income levels and physical abilities to access daily needs and services.

Points	Goal D - Evaluation Criteria
3	Project provides access for 2 or more modes to 2 or more land uses.
2	Project provides access for 2 or more modes to 1 land use.
1	Project provides access for 1 mode to 1 or more land uses.
0	Project does not change mode access.
-1	Project precludes or prevents transit, bicyclist, or pedestrian access.
-2	Project eliminates transit, bicyclist, or pedestrian access.

Goal E Connectivity:

Develop connections to and between different modes of transportation.

Points	Goal E - Evaluation Criteria
3	Project creates a link/closes a gap in connectivity.
2	Project extends a connection.
1	Project initiates a connection (even if it does not touch other improvements).
0	Project does not change connectivity.
-1	Project precludes or prevents connectivity.
-2	Project eliminates one or more existing connections.

Goal F. Livability:

Design and maintain a transportation system that enhances the quality of Lake Oswego's natural and built environment.

Points	Goal F - Evaluation Criteria
3	Project reduces traffic impacts without requiring removal of parking and without requiring purchase of right-of-way.
2	Project reduces traffic impacts without requiring removal of parking or without requiring purchase of right-of-way.
1	Reduces traffic impacts; however, project requires removal of parking and purchase of right-of-way.
0	Project does not change traffic impacts.
-1	Project increases traffic impacts.
-2	Project increases traffic impacts and results impacts such as loss of parking or right-of-way purchase.

Goal G. Sustainability:

Provide a transportation system that maintains and improves economic vitality, environment health, social equity and well-being for citizens today and in the future.

Points	Goal G - Evaluation Criteria
3	Project improves the economy and environment for today and in the future.
2	Project improves the economy and environment for today or in the future.
1	Project improves the economy or the environment for today or in the future.
0	Project does not impact the economy and environment.
-1	Project negatively impacts the economy or environment.
-2	Project negatively impacts the economy and environment.

PERFORMANCE MEASURES

The Regional Transportation Plan (RTP), prepared by Metro, includes performance targets and measures that track the region's progress in developing an integrated, multi-modal, transportation system. Based on the RTP, the targets provide policy direction for developing the investment strategy recommended in the RTP and for updating local TSPs. Table 1 summarizes the four RTP performance targets and associated measures considered as part of the Lake Oswego TSP Update along with related system deficiencies and associated types of TSP projects that will help address the deficiencies. The four RTP performance targets in Table 1 were selected based on their relative applicability to the TSP Update. Although other targets such as climate change and clean air can be achieved through improved access to alternative travel modes, they are not readily addressed through the TSP Update.



Table 1: Performance Measures

RTP Performance Target	TSP Performance Measure	System Deficiency	TSP Project
Safety - By 2035, reduce the number of pedestrian, bicyclist, and motor vehicle occupant fatalities plus serious injuries each by 50% compared to 2005.	<ul style="list-style-type: none"> Reduce the frequency and severity of crashes for all travel modes. Address known deficiencies and high accident areas as high priority projects. 	<p>The traffic safety section identifies five intersections that exceed the critical crash rate developed for Lake Oswego.</p> <p>Several additional intersections and roadway segments were identified with pedestrian and bicycle related crashes.</p>	<p>Several projects are identified that will reduce the potential for future crashes at the critical crash rate intersections as well as improve pedestrian and bicycle safety throughout the City. These projects are included in Table 7 and Table 11.</p>
Congestion - By 2035, reduce vehicle hours of delay (VHD) per person by 10% compared to 2005.	<ul style="list-style-type: none"> Ensure that all City, County, and State facilities meet their respective mobility standards. 	<p>The traffic operations section identifies three intersections that currently exceed their respective mobility standards.</p> <p>Metro’s 2035 travel demand model identifies multiple segments along OR 43 (State Street) that are expected to exceed their respective mobility standards in the future.</p>	<p>The roadway, intersection, and operations projects are intended to improve traffic flow and minimize congestion along major roadways, such as Hwy 43.</p> <p>Similarly, the pedestrian bicycle, and transit improvement projects are intended to help reduce vehicle demand on congested roadways.</p>
Freight Reliability - By 2035, reduce vehicle hours of delay truck trip by 10% compared to 2005.	<ul style="list-style-type: none"> Reduce vehicle delay and improve reliability on identified truck routes. 	<p>A number of freight routes within the City currently experience delay during peak time periods.</p> <p>Travel times are not predictable, and delay can vary from day to day, increasing transportation costs for businesses that rely on shipping.</p>	<p>Several of the roadway, intersection and operations projects are located along major freight routes. These projects are intended to improve traffic flow and help reduce delay for heavy vehicles.</p>
Active Transportation - By 2035, triple walking, biking and transit mode share compared to 2005.	<ul style="list-style-type: none"> Implement policies and strategies that work towards achieving non SOV mode share targets as identified in the 2035 RTP. Identify projects that support active transportation throughout the City. 	<p>There are currently a number of gaps in the pedestrian and bicycle systems located throughout Lake Oswego as well as a number of transit stop locations with needed pedestrian and bicycle connections.</p>	<p>The pedestrian and bicycle projects are intended to address the gaps in the pedestrian and bicycle systems while the TDM/TSM programs and strategies identified in the TSP are intended to provide incentives and increase opportunities for Lake Oswego residents to choose active transportation.</p>

Metro is responsible for tracking the region’s performance under the RTP. The projects and policies included in the Lake Oswego TSP Update will help Metro make progress toward achieving their performance targets for the region by addressing safety concerns, reducing congestion, improving freight reliability, and providing active transportation options that help affect mode split and vehicle miles traveled (VMT) per capita. Combined with other TSPs in the Metro area, the Lake Oswego TSP will also help Metro reach its performance targets for 2035.

Section 3 Roadway Facilities Plan

SECTION 3 ROADWAY SYSTEM PLAN

This section describes the City's roadway system characteristics with respect to jurisdictional responsibility, functional classification, roadway design features, local street connections, and access management. It also presents a summary of key findings from the needs analysis conducted to identify roadway improvements. Finally, it provides a summary of the roadway projects identified to address the existing and forecasted needs related to the roadway system in Lake Oswego.

JURISDICTIONAL RESPONSIBILITY

Roadways in Lake Oswego are under the jurisdiction of the following five agencies, and private land owners:

- Clackamas County (22.43 miles);
- Multnomah County (1 mile);
- Washington County (less than 1 mile);
- ODOT (5.87 miles); or
- City of Lake Oswego (194.44 miles).

In incorporated areas, coordination among the agencies ensures that the roadway system is planned, operated, maintained, and improved to safely meet public needs. Figure 2 illustrates the jurisdictional responsibility of the roadways. As indicated above, approximately 30 miles of roadway in the Lake Oswego Urban Services Area are under the jurisdiction of Clackamas County, Multnomah County, Washington County, or ODOT. The remaining miles of roadway are under the jurisdiction of the City of Lake Oswego. Lake Oswego must also regularly coordinate with adjacent jurisdictions when considering improvements: Cities of Portland, Rivergrove, Tigard, Tualatin, and West Linn.

FUNCTIONAL CLASSIFICATION

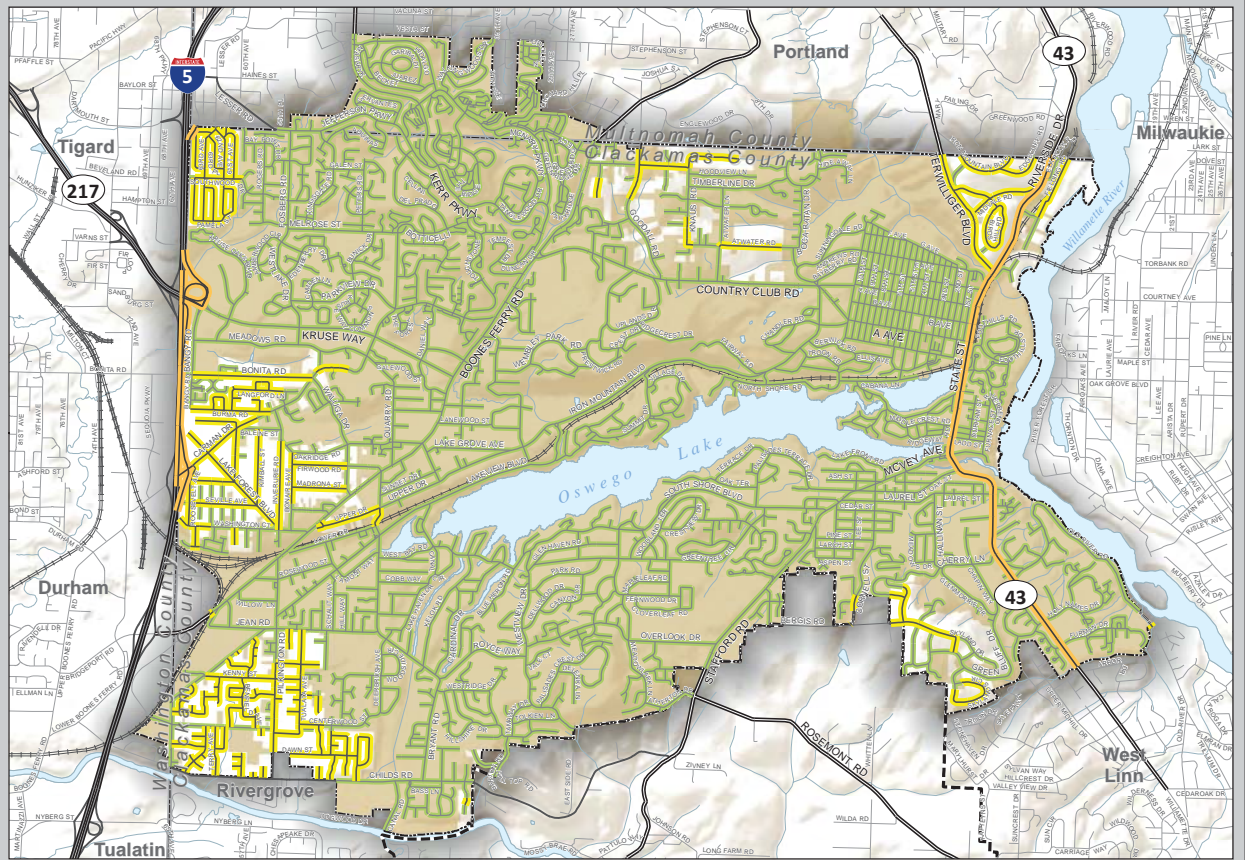
Public roadways in Lake Oswego are divided into six functional classifications, which indicate the road's intended purpose within the transportation system. The classifications provide the basis for determining road design features, including number of travel lanes, pedestrian and bicycle facilities, on-street parking, acceptable traffic volume, and access spacing. The functional classifications are defined as:

- **Freeways** – Freeways serve high traffic volumes between regional or state destinations. Freeways are divided highways with full control of access. Complete separation of conflicting traffic movements is provided. These roadways are not intended to provide access to abutting land. Traffic volumes are generally higher than 30,000 vehicles per weekday. Interstate 5 is the freeway serving Lake Oswego, providing north-south access toward Portland and Salem.
-



Jurisdictional Responsibilities

Figure 2



- Jurisdiction and Summary**
- Lake Oswego - 194.44 Miles
 - Clackamas County - 22.43 Miles
 - ODOT - 5.87 Miles
 - Lake Oswego Boundary
 - Urban Services Boundary
 - UGB (Metro)



- **Major Arterials** – These roadways primarily serve through traffic connecting city/county street systems with freeways. Major arterials generally have four or more travel lanes with traffic that can exceed 20,000 vehicles per day. Kruse Way, Boones Ferry Road (south of Country Club Road), Country Club Road, and “A” Avenue are all major arterials in Lake Oswego. Highway 43 (State Street) is classified as a major arterial by the City, but has a separate ODOT classification. North of “A” Street, Highway 43 is classified as a District Highway (Urban Minor Arterial); south of “A” Street it is classified as a Statewide Highway (Urban Principal Arterial – Other).
- **Minor Arterials** – Minor arterials have two to four travel lanes and connect with the major arterial system. These roads often have traffic volumes of 10,000 to 20,000 vehicles per day and serve moderate trip lengths. McVey Avenue (from State Street to South Shore Boulevard), Stafford Road, Rosemont Road, Terwilliger Boulevard, Boones Ferry Road (north of Country Club Road), and Kerr Parkway are minor arterials in Lake Oswego.
- **Major Collectors** – These roadways have traffic volumes generally ranging up to 10,000 vehicles per day and connect local streets with arterials. Minor collectors provide some degree of access to abutting properties. Among the major collectors in Lake Oswego are Carman Drive, Bonita Road, Iron Mountain Boulevard, South Shore Boulevard, Childs Road, Bryant Road, Jean Road, and Pilkington Road.
- **Neighborhood Collectors** – Neighborhood collectors serve a neighborhood area, with abutting land uses generally residential in character, and with substantial local access provided. Greentree Road, Upper Drive, and Lakeview Boulevard are all examples of neighborhood collectors in Lake Oswego.
- **Local Streets** – Local streets have the primary function of providing access to abutting land uses.

Table 2 summarizes the characteristics of each functional classification, including average daily traffic volume ranges.

Table 2: Existing Functional Classification Characteristics

Classification	# of Travel Lanes	Speed Limit ^a	Land Access	Parking	Bike Facility	Sidewalks/ Pathways	General Traffic Volume
Freeway	4-8	55	None	Prohibited	No	No	30,000+
Major Arterial	5	25-45	Restricted	Generally prohibited	Yes	Yes	20,000+
Minor Arterial	2-3	30-45	Restricted	Generally prohibited	Yes	Yes	7,500-25,000
Major Collector	2 ^b	25-40	Discouraged	Limited	Yes ^c	Yes	1,500-10,000
Neighborhood Collector	2	25-30	Permitted	Permitted	No	Yes	1,000-5,000
Local Streets	2	25	Permitted	Permitted	No	Yes	<1,000

^aSpeed limits are 20 mph in designated areas and school zones.

^bTurn refuge lanes may be allowed subject to review and approval.

^cWhere topographic conditions permit.

The functional classifications of roadways within Lake Oswego are shown in Figure 3. The functional classification of Kruse Way Place was updated (relative to the 1997 TSP) to better reflect its function within the transportation network and corresponding traffic volumes. Kruse Way Place was reclassified from a Local to Neighborhood Collector because at the time of the TSP update its volumes exceeded that of local classification. This roadway also serves as the direct connection between Daniel Way and Boones Ferry Road, providing access primarily to commercial developments. An increase classification will elevate in priority the need for bicycle and pedestrian facilities on both sides of the street. Future development of vacant lands will increase ADT. Posted speed will remain at 25 mph.

Table 3 identifies several streets that may change functional classification in the future, but are not included in this TSP update due to concerns from neighborhood associations. Upon analysis for future land use applications and/or steady growth patterns within the transportation network, these streets may be re-considered for up-classification.

Table 3: Potential Functional Classification Changes

Street	Existing Classification	Potential Classification	Comments
Daniel Way	Local	Neighborhood Collector	Serves as only direct connection between Kruse Way and Carman Drive. No residential access. Posted speed will remain at 25 mph.
Foothills Road	Local	Neighborhood Collector	Only access road to this large area. Increased classification elevates priority to install bike/ped facilities.
Lakeview Blvd	Mix of Neighborhood Collector and Major Collector	Major Collector	Completes logical east-west connection. Increased classification elevates priority to install bike/ped facilities.
South Shore Blvd	Major Collector	Minor Arterial	Volumes are approaching arterial range. Limited access to residences (59 over 2.5 miles). Increased classification elevates priority to install bike/ped facilities.
Bryant Road	Major Collector	Minor Arterial	Serves as a major north-south connection. Volumes are approaching arterial range. Limited access to residences. Increased classification elevates priority to install bike/ped facilities.
Waluga Drive	Neighborhood Collector	Major Collector	Serves as secondary north-south route. Limited access to residences. Increased classification elevates priority to install bike/ped facilities.
Firwood Road	Neighborhood Collector	Major Collector	Serves as secondary north-south route. Increased classification elevates priority to install bike/ped facilities.

ROADWAY DESIGN FEATURES AND TYPICAL STREET CROSS-SECTIONS

This section provides a general summary of roadway design features for the City of Lake Oswego. The City’s typical street cross sections and design features for the different roadway functional classifications are shown in Exhibit 2. The cross sections show a range of pavement and right-of-way widths based on the number of travel lanes provided, whether or not parking and bike lanes (or other bicycle facility type) are allowed, and whether sidewalks or pathways are buffered from the travel lane(s). Utility easements are also shown for each cross section with varying widths to ensure adequate access for public utilities.





Functional Classifications

Figure 3



Roadway Classification

- Freeway
- Major Arterial
- Minor Arterial
- Major Collector
- Neighborhood Collector
- Local
- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)

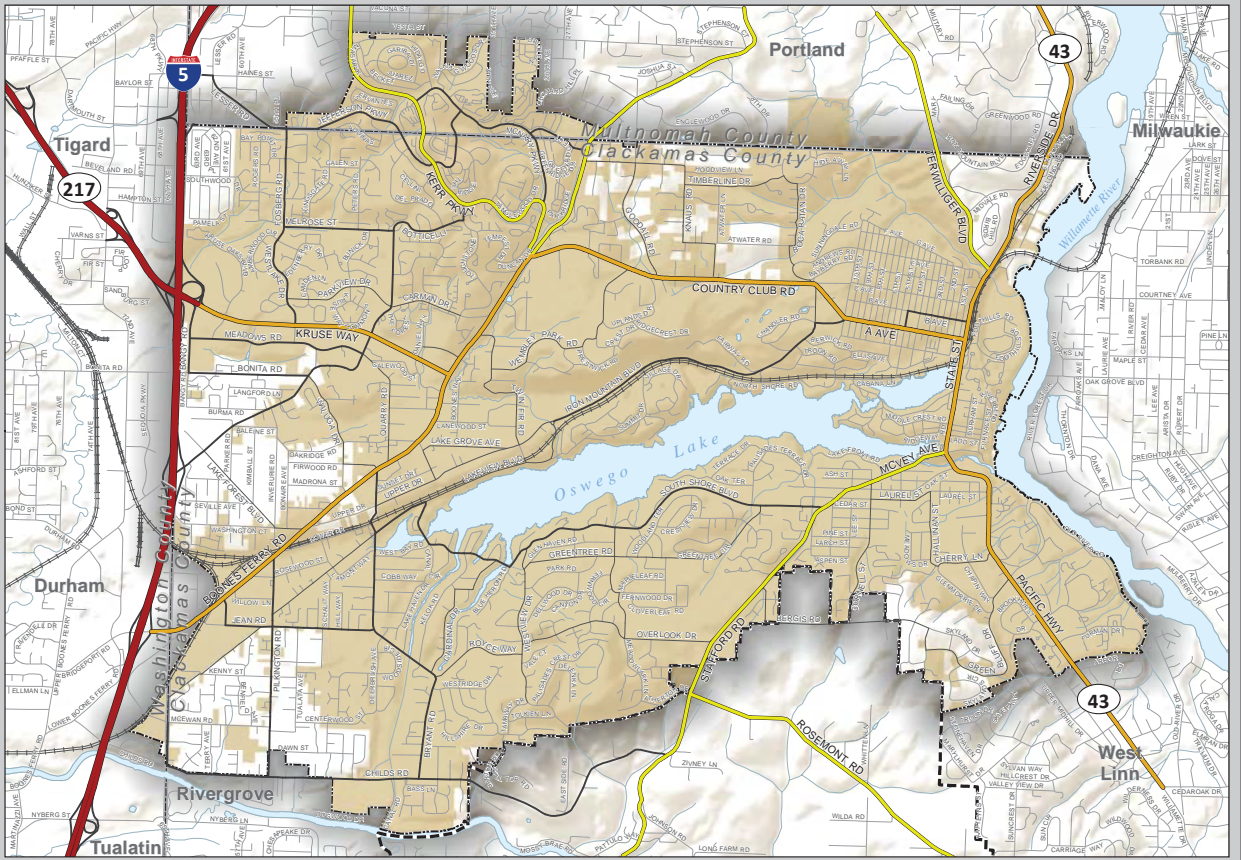
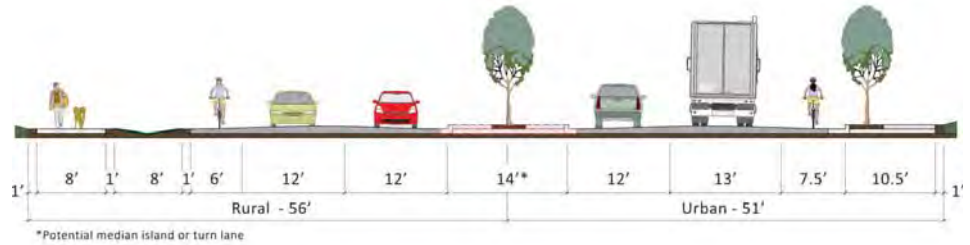


Exhibit 2A: Typical Street Cross Sections

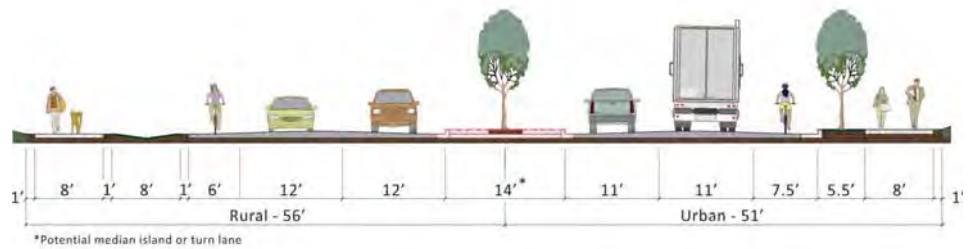
Major Arterial

- OR 43



Major Arterial

- Boones Ferry Rd
- Country Club Rd
- Kruse Way



NOTE: All typical sections subject to prevailing conditions, applicable neighborhood plans, and determination of the City Engineer.



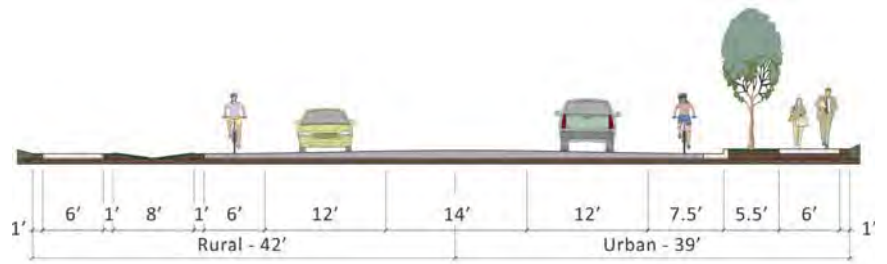
Exhibit 2B: Typical Street Cross Sections

Major Arterial

- A Avenue



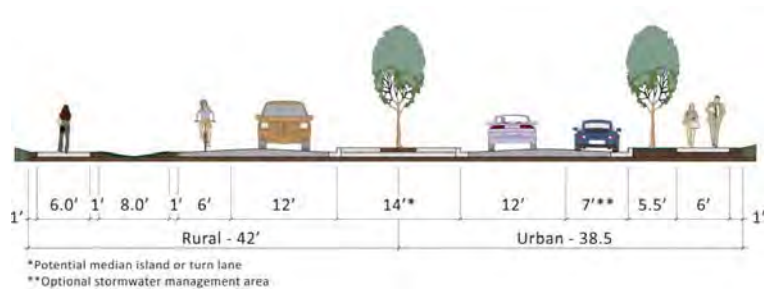
Minor Arterial



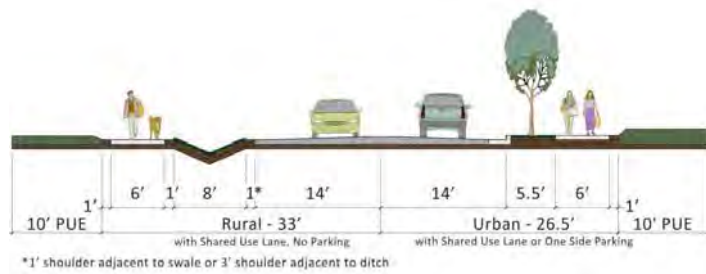
NOTE: All typical sections subject to prevailing conditions, applicable neighborhood plans, and determination of the City Engineer.

Exhibit 2C: Typical Street Cross Sections

Major Collector



Neighborhood Collector

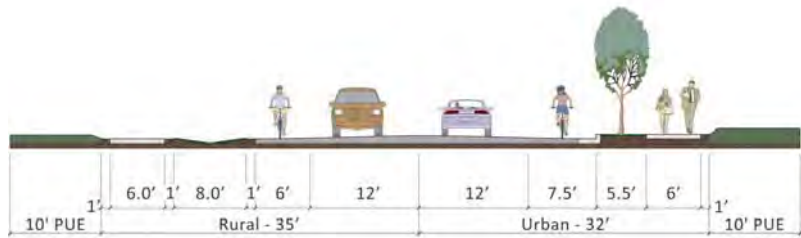


NOTE: All typical sections subject to prevailing conditions, applicable neighborhood plans, and determination of the City Engineer.

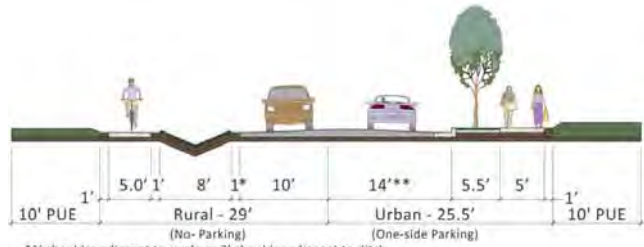


Exhibit 2D: Typical Street Cross Sections

**Neighborhood Collector
with Bike Lanes, No Parking**



Local Street



*1' shoulder adjacent to swale or 3' shoulder adjacent to ditch
**option to include one side parking or stormwater management area

NOTE: All typical sections subject to prevailing conditions, applicable neighborhood plans, and determination of the City Engineer.

Typical street cross-sections are considered guidelines. Actual roadway widths, provision of on-street parking, sidewalk/pathway type, etc., may vary based on prevailing local conditions and applicable neighborhood plans. Final design for any project is subject to prevailing conditions, applicable neighborhood plans, and determination of the City Engineer.

The following summarizes several key features of the City's roadway design standards:

- "Traditional" and "queuing" street width standards are to be provided. The "traditional" local street design provides a 32-foot paved width with parking on both sides. The "queuing" local street design provides a 28-foot paved width (if parking is provided on both sides) or 22 feet (if parking is provided on one side). The queuing street should only be applied where there is a maximum block length of 400 feet, there are mountable curbs along the street, and/or building sprinklers are provided. Alleys are optional though desirable to provide alternative property access.
- Bike lanes are to be incorporated into all arterials and major collectors, if possible. The desired bike lane width is five feet on rural sections and between six and seven and a half feet on urban sections. The City will consider innovative bicycle facility alternatives through the design review process.
- Sidewalks should be developed on both sides of the street when new roadways are developed. The minimum sidewalk width is five feet on local streets and six feet on collectors and arterials. If sufficient right-of-way is available, sidewalks should be separated from the curb by a minimum five foot planter strip or other pedestrian buffers, such as furnishing zones with tree wells, planter boxes, benches, etc.
- To facilitate pedestrian crossings at intersections, the smallest feasible curb radii should be provided. The minimum curb radii may vary from 15 feet for local/local intersections, to 30 feet for arterial/arterial intersections. Where public transit operates or there is a high amount of truck traffic, larger curb radii should be provided, based on application of vehicle turning templates. Raised median or channelized pedestrian islands shall be provided to reduce pedestrian crossing distance at intersections with curb radii over 50 feet.
- Using the street right-of-way for storm water collection and treatment can often be accommodated using low impact development approaches (LIDA). The Lake Oswego Clean Streams Plan, 2009 and Storm water Master Plan, 1992, provide the analysis and options for LIDA measures that can be installed alongside roadway elements. The storm water management areas shown in the typical sections may accommodate storm water planters, and rain gardens within curb extension, provided those facilities comply with roadway safety guidelines.

Table 4 summarizes the characteristics of the City's roadway design standards (e.g., right-of-way, pavement width) shown in Exhibit 2.

Table 4: Functional Classification Design Characteristics

Functional Classification	Right-of-Way	Paved Width	Travel Lanes	Raised Median/ Left Turn Lane	Parking	Bike Lanes	Swale/ Ditch	Buffer/ Landscape Strip	Sidewalks	Utility Easement
Major Arterial	100-105'	74-78'	4 x 12' ^{**}	14'	2 x 8' ^{***}	2 x 6'	8' Ditch	2 x 5.5'	2 x 8'	2 x 20'
						2 x 7.5'	-			
Minor Arterial	75-80'	50-54'	2 x 12'	14' Optional	2 x 8' ^{***}	2 x 6'	8' Swale	2 x 5.5'	2 x 6'	2 x 10'
						2 x 7.5'	-			
Major Collector	75-80'	48-52'	2 x 12'	12' Optional	2 x 8' (Optional)	2 x 6'	-	2 x 5.5'	2 x 6'	2 x 10'
Neighborhood Collector										
<i>w/parking one side</i>	70'	38'	2 x 12'	-	2 x 7'	-	-	2 x 5.5'	2 x 6'	2 x 5'
<i>w/ bike lanes</i>	60'	34'	2 x 12'	-	-	2 x 6'	8' Swale	2 x 5.5'	2 x 6'	2 x 5'
						2 x 7.5'	-			
Local Residential Street										
<i>w/parking both sides</i>	50'	28-32'	14-18'	-	2 x 7'	-	-	2 x 5.5'	2 x 5'	2 x 5'
<i>w/parking one side</i>	50'	22'	15'	-	7'	-	-	2 x 5.5'	2 x 5'	2 x 4'
<i>w/no parking</i>	50'	22'	15'	-	-	-	-	2 x 5.5'	2 x 5'	2 x 4'
<i>narrow w/no parking</i>	50'	20'	10'	-	(Optional)	-	-	-	-	2 x 4'
Local Commercial/ Industrial Street	60'	44'	24'	-	2 x 10'	-	-	2 x 5.5'	2 x 5'	2 x 4'

*Optional 3rd travel lane
 **Optional in downtown only
 ***Optional in community hub

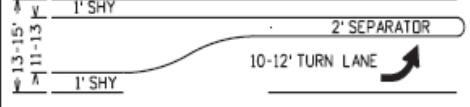
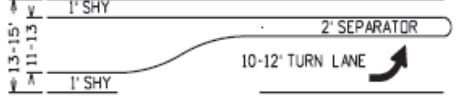
Highway 43/State Street

The Oregon Highway Plan (OHP – Reference 1) classifies Highway 43 as a District Highway (Urban Minor Arterial) north of “A” Street and as a Statewide Highway (Urban Principal Arterial – Other) south of “A” Street. Per the OHP, District Highways are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers and urban commercial centers, and also serve local access and traffic. Statewide Highways typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips.

State Street is also designated as a Special Transportation Area (STA). STAs are, in part, how the State recognizes the importance of Oregon’s downtowns. STAs are those areas within urban growth boundaries that by their nature are more densely developed and populated. Table 5 summarizes Oregon Department of Transportation (ODOT) Highway Design Manual (HDM – Reference 2) design standards for STAs.



Table 5: Existing ODOT Design Standards for STAs

Design Elements	Design Speed	
	25 mph ¹	30 mph
Travel Lane	10'-12' ²	10'-12' ²
Right Turn Lane	10'-12' plus 1' shoulder	10'-12' plus 1' shoulder
Left Turn Lane		
Right Side Shoulder/Bike Lane	5' ³	5' ³
Left Side Shy Distance ⁴	1'	1'
Median		
Striped Median (Turn Lane)	12'-14'	12'-14'
Raised Curb Median	13'-15' Travel lane to travel lane	13'-15' Travel lane to travel lane
Maximum Superelevation	4%	4%
Maximum Degree of Curve	28°	19°
Maximum Grade	8%	8%
Curbside Sidewalk	10'	10'
Separated Sidewalk ⁵	8'	8'
On-street Parking	7'-12' ⁶	7'-12' ⁶
Vertical Clearance	17'	17'

¹ 25 mph design speed is only appropriate for local road classification.

² 10 foot lanes may be used in highly restricted areas where there is little or no truck traffic. Little or no truck traffic is described as less than 100 (ADT) four axle or larger trucks in the design year.

11 foot lanes are preferred for STAs and are the **minimum lane width for STAs on a NHS route.**

12 foot lanes can be used where higher speeds and high truck volumes exists.

³ 5 foot minimum if next to curb, parking, or roadside barriers. 5 foot striped bike lane.

⁴ Left side shy distance is applicable in one-way couplet situations and sections with raised median

⁵ Separated sidewalks are generally not used in these areas. Where they are used a buffer strip of 4 feet to 6 feet should be used.

⁶ 7 feet with striped bike lane. 12 feet for combined bicycle travel and parking width.

The HDM also notes the following characteristics and attributes of STAs:

- Buildings spaced close together and located adjacent to the street with little or no setback.
- Sidewalks with ample width located adjacent to the highway and the buildings.
- A well-developed parallel and interconnected local roadway network.
- Streets designed for ease of crossing by pedestrians.
- Public road connections that correspond to the existing city block spacing (private driveways are discouraged).
- Adjacent land uses that provide for compact, mixed-use development.
- On-street parking and/or shared general purpose parking lots which are located behind or to the side of buildings.
- Well-developed transit, bicycle, and pedestrian facilities, including street amenities that support these modes.
- Posted speeds of 25 mph or less.

Generally, in a STA, the accessibility and mobility needs of pedestrians, bicyclists, and transit users are given preference over vehicular through-traffic for local safety and livability reasons. This is represented by the design standards summarized in Table 4 and ODOT's lower operating standards for STAs compared to state highways elsewhere.

Local Street Connections

This TSP maintains the Local Street Connections performance criteria adopted as part of the 1997 Lake Oswego TSP. The criteria are based on the Metro performance criteria for local street connectivity, as identified in Title 6 of the Regional Framework Plan (Reference 3). The criteria state that approval of new development shall include local street designs "with street intersection spacing to occur at intervals of no less than eight street intersections per mile except where topography, barriers such as railroads or freeways, or environmental constraints such as major streams and rivers prevent street extension. The number of street intersections should be greatest in the highest density 2040 Growth Concept design types. Local street designs for new development shall satisfy the following additional criteria:

1. Minimize local traffic on the regional motor vehicle system by demonstrating that local vehicle trips on a given regional facility do not exceed the 1995 arithmetic median of regional trips for facilities of the same motor vehicle system classification by more than 25 percent.
2. Everyday local travel needs are served by direct connected local street systems where: (1) the shortest motor vehicle trip over public streets for a local origin to a collector or greater facility is no more than twice the straight-line distance; and (2) the shortest pedestrian trip on public right-of-way is no more than one and one-half the straight-line distance."

The above criteria are not applicable to portions of Lake Oswego that are built-out or have topographic and natural resource constraints that make street connections impractical. However, there is a need to improve emergency access, improve pedestrian access and safety, and increase connectivity to distribute neighborhood traffic. The TSP supports connections for bicycles and pedestrians to shorten trip lengths and encourage alternative modes of travel, as an alternative to extending new streets through established (built-out) residential neighborhood. The TSP recommends such non-motorized street connections be planned through the local neighborhood transportation planning process. New roadway connections are appropriate where necessary to serve new development and where they will significantly improve safety or improve the function of the transportation system.

ACCESS MANAGEMENT

Lake Oswego's functional classification system is based on creating and maintaining an appropriate balance of mobility and access throughout the street network. Lower classifications, such as neighborhood collectors, emphasize property access and limit mobility with lower speed and more



frequent interruptions to through traffic. Higher classifications, such as major arterials, emphasize mobility by limiting local access. Coordinated traffic signal systems, roadway designs for higher speeds and volumes, and low frequencies of driveways and street intersections promote mobility and help to improve arterial function. Table 6 presents the City’s access spacing guidelines for traffic signals, public intersections, private driveways, and raised median openings. The minimum access spacing standards are to apply to new street construction and new or redeveloped land uses. Access standards for the various roadway functional classifications shall be enforced through the development permit process.

Table 6: Existing Lake Oswego Access Spacing Guidelines

Functional Classification	Area ¹	Minimum Spacing			
		Traffic Signals (miles)	Public Intersections (feet)	Private Driveways (feet)	Median Opening (feet)
Major Arterial	Urban	0.5	600	300	600
	CBD/RC	0.25	N/A	N/A	N/A
Minor Arterial	Urban	0.5	300	200	300
	CBD/RC	0.25	N/A	N/A	N/A
Major Collector	All	0.25	200	150	N/A
Neighborhood Collector	All	0.25	150	100	N/A
Local Residential Street	All	N/A	100	50	N/A
Local Commercial/ Industrial Street	All	N/A	100	50	N/A

¹“Urban” refers to intersections inside the Lake Oswego urban growth boundary outside the central business district or designated regional centers. “CBD/RC” refers to intersections within the Lake Oswego central business district, within designated regional centers, and along designated regional “Main Streets”. “All” refers to all intersections inside the Lake Oswego urban growth boundary.

Table 7 presents ODOT’s access spacing standards for Statewide and Regional highways. On Highway 43 (State Street) and other ODOT facilities within STAs, the HDM recommends using access management to improve the capacity and safety of vehicular traffic and to improve pedestrian safety and mobility. Private land access should be coordinated or consolidated in favor of optimizing traffic flow. Generally, the purchase of access rights from adjacent properties is not appropriate for STAs; in these areas access is best managed through the planning and permits process.

Table 7: Existing ODOT Access Spacing Standards

Functional Classification	Posted Speed (mph)	Annual Average Daily Traffic (AADT)	Access Spacing Standard (ft)
Statewide Highway – Applicable to Highway 43 South of A Street	25 & lower	< 5,000	150
	25 & lower	> 5,000	350
	30 & 35	< 5,000	250
	30 & 35	> 5,000	500
Regional Highway – Applicable to Highway 43 North of A Street	25 & lower	< 5,000	150
	25 & lower	> 5,000	250
	30 & 35	< 5,000	250
	30 & 35	> 5,000	350

Many of the major streets in Lake Oswego were developed before they were needed to function as modern arterials and, as a result, have much closer access spacing than the standards shown in Table 5 and Table 6. Bringing these areas into compliance with current access standards is a gradual process of consolidation and closure of driveways in conjunction with development and street improvement projects. The City plans to improve the predictability of this process by establishing guidelines for the development review and approval process.

ROADWAY MOBILITY STANDARDS

Agencies often establish mobility standards for intersections on their roadway network based on governing jurisdiction, functional classification and surrounding land use context. The mobility standards establish an agreed upon acceptable degree of average delay for motor vehicles and/or acceptable volume-to-capacity ratio. Mobility standards are typically defined for the weekday peak hour or peak period. The applicable mobility standards used for the TSP Update are summarized below.

- The City of Lake Oswego mobility standards are established in the current Comprehensive Plan under Goal 12: Transportation, Goal 1: Major Streets System. The policy states arterial and major collector streets shall be designed and maintained at Level of Service “E” during peak hours.
- ODOT requires different performance standards for their roadway facilities. ODOT uses volume-to-capacity (v/c) ratios to assess intersection operations and performance. Table 7 of the Oregon Highway Plan, Policy 1F (OHP - Reference 4) provides maximum operational volume-to-capacity ratios for Highway 43 under existing and future no-build conditions. Table 10-2 of the Highway Design Manual (HDM – Reference 2) provides maximum v/c ratios for intersections within the Metro area; the HDM ratios are used in the creation of future TSP projects. Table 8 summarizes the ODOT mobility standards for the TSP study intersections located along Hwy 43, based on the OHP and HDM.

Table 8: ODOT Mobility Standards

Intersection	Traffic Control	OHP		HDM
		1 st Hour	2 nd Hour	
Hwy 43/Terwilliger Blvd	TWSC	.99	.99	.95
Hwy 43/B Avenue	Signal	1.1	.99	.95
Hwy 43/A Avenue	Signal	1.1	.99	.90
Hwy 43/McVey Avenue	Signal	1.1	.99	.90
Hwy 43/Glenmorrie Drive	TWSC	.99	.99	.90

Note: Mobility standards for 1st and 2nd hours are consistent with Regional Transportation Functional Plan Table 3.08-2.



NEEDS ANALYSIS

This section highlights key findings from the needs analysis conducted for the roadway system. The needs analysis focused on traffic safety, traffic operations, and connectivity for the existing network and forecasted performance of the network based on Metro's 2035 fiscally constrained modeling scenario. The technical memorandums included in *Technical Appendix 4* and *Technical Appendix 5* contain more detailed information about the needs analysis.

Traffic Safety

The traffic safety analysis addresses the number of crashes on a transportation facility, conflicts between different roadway users, and the level of comfort streets provide for pedestrians, cyclists, transit users, and drivers. Strategies for improving safety can include engineering, education, and enforcement approaches.

To identify potential focus areas for safety improvements in the TSP, crash patterns were evaluated city-wide and at specific study intersections using GIS applications and methods from AASHTO's Highway Safety Manual (HSM – Reference 5). The evaluations were based on the four most recent years of crash data available at the time of analysis, 2007 through 2010 (note: crash data is updated annually and reviewed along with new development projects). Crashes were evaluated based on their frequency, severity (i.e., property damage only, injury, and fatality), type (e.g., rear-end, angle, fixed object), and whether a bicycle and/or pedestrian was involved. Critical crash rates also were calculated for the study intersections and used to identify intersections with higher than anticipated crash rates for further review. A summary of the analysis results is presented below. Additional details of the analysis are included in *Technical Appendix 5*.

Critical Crash Rate Analysis

The Critical Crash Rate analysis compares the crash rate – the number of crashes per year or per million entering vehicles - at each intersection to a weighted average crash rate based on intersections with similar geometry and traffic control (e.g., stop controlled vs. signal controlled). If an intersection has a crash rate greater than its critical crash rate, it is flagged for further review. The results of the analysis indicated the intersections listed below exceeded their critical crash rate. Also noted below are the roadway project numbers for the improvements identified to reduce crashes at each intersection. Table 8 within the Roadway Projects sub-section below provides more information regarding the projects.

- Boones Ferry Road/Kerr Parkway/Country Club Road (Roadway Project #109)
 - Boones Ferry Road/Bryant Road (Roadway Project #60)
 - A Avenue/State Street (Roadway Project #110)
 - B Avenue/1st Street (Roadway Project #108)
 - State Street/McVey Avenue (Roadway Project #61)
-

Figure 4 illustrates the location of the critical crash rate intersections. These intersections were further reviewed by considering the type, severity, direction, and contributing factors of the crashes. Details of the intersection reviews are included in the *Technical Appendix 5 Existing Conditions*. *Technical Appendix 6 Future Conditions and Potential Solutions* includes a discussion of the roadway projects identified at each of the intersections. *Technical Appendix 10* contains traffic operations analysis for the Roadway Projects 60, 61 and 109 which influence traffic operations performance at the intersections.

Statewide Safety Priority Index

ODOT identifies top safety priority locations annually using a Statewide Priority Index System (SPIS). The locations in the top five percent, which have experienced a high number and/or high severity of crashes, are investigated by ODOT. These locations are referred to as SPIS locations or SPIS sites. Based on a review of the SPIS information provided by ODOT, there are no locations in Lake Oswego that fall within the top five percent of statewide locations. There is one location within Lake Oswego that falls within the top ten percent; it is a 0.10 mile segment of Highway 43 between McVey Avenue and Ladd Street. Figure 4 also shows the locations of SPIS sites within the top fifteen percent some of which coincide with locations identified as part of the critical crash rate analysis discussed above. Several projects included in the Roadway Projects sub-section below, such as Roadway Projects #61 and #111, were identified to help improve safety at these locations.

Traffic Operations

Traffic operations were evaluated to determine the performance of the roadway network and the ability to move people and goods reliably and with limited delay. Traffic operations were evaluated by measuring volume-to-capacity ratios, level of service (LOS) and average delay for vehicles and other modes. Methods considered for improving traffic operations include a variety of operational approaches, such as signal timing and progression, incident management, and signal priority. Other methods include capital projects such as intersection enhancements, route improvements, multimodal connections, and capacity expansions such as adding turn lanes, through lanes to roadways.

Information related to the study intersections selected, the analysis methodology applied, and the operational standards used in the analysis are provided in the Technical Appendices. A summary of the traffic operations results are discussed below. These results were used to inform the operational and capital projects included in the Roadway Projects sub-section below to improve operations and efficiency of the roadway network.





Crash Analysis Results and SPIS Sites

Figure 4



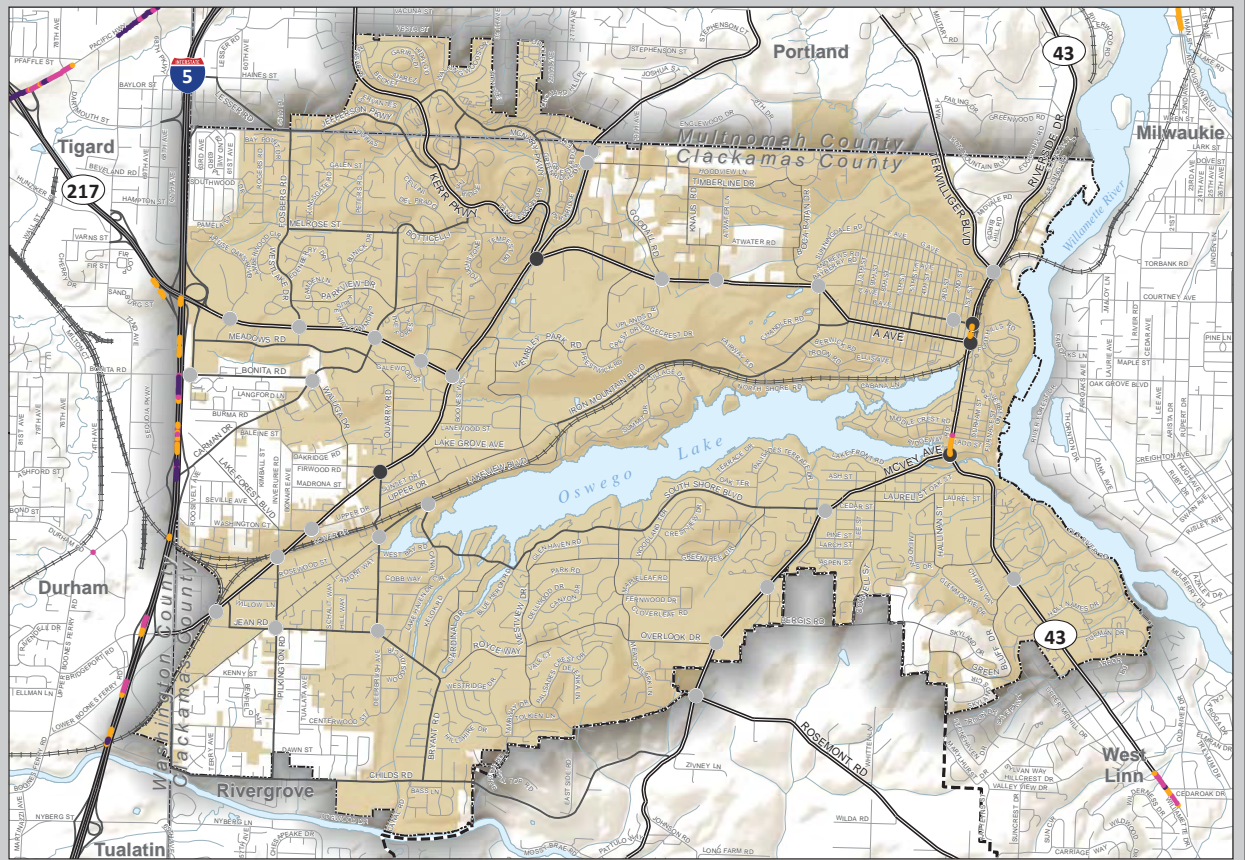
Critical Crash Rate for Study Intersections

- Above Critical Crash Rate
- Below Critical Crash Rate

SPIS Sites Percentiles

- 85% - 89.99%
- 90% - 94.99%
- 95% - 100%

- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)



H:\proj\11187_10_TSP\GIS\Final_Draft\04_Crash_Analysis_Results_and_SPIS_Sites.mxd

Intersection Level of Service and Delay Analysis

The results of the analysis indicate that there are currently three intersections that do not meet the applicable operational standard during the evening peak period. The three intersections include:

- **Jean Road/Pilkington Road** – This is an all way stop controlled intersection in the southwest area of Lake Oswego. This intersection currently operates at LOS F during the weekday p.m. peak hour. Roadway Project #62 is intended to address this issue by restriping the intersection to realign turn lanes for efficiency. This project also involves rebuilding four ADA ramps (75' EA), 300' long, 6' sidewalk along NE quadrant to complete a gap in the current sidewalk available for pedestrians.
- **Country Club Road/Iron Mountain Boulevard** (also known as “Six Corners”) – This is a six-legged all way stop controlled intersection. Current analysis tools are not capable of analyzing six-legged intersections. Therefore, the two northern legs of the intersection were grouped together to make a four legged intersection for analysis purposes. This intersection currently operates at LOS F during the weekday p.m. peak hour. Roadway Project #54 identifies improvements for this intersection.
- **South Shore Boulevard/McVey Avenue** – This is a four-legged signalized intersection. One of the intersection legs is a driveway accessing neighborhood commercial center. This intersection operates at LOS F during the weekday p.m. peak hours. Roadway Project #113 is intended to address this issue by installing loop detection for the left-turn movement from McVey Avenue and adjusting the signal timing to provide more green time for through movements when left-turning vehicles are not present. These adjustments will provide efficient signal operations and reduce delay without increasing the intersection footprint.

Traffic operations performance of study intersections on Highway 43 were compared against the standards outlined in Table 7 of ODOT’s Oregon Highway Plan Policy 1F revisions adopted in 2011 (Reference 4). Study intersections on Highway 43 met the applicable volume-to-capacity ratios given current conditions in 2012.

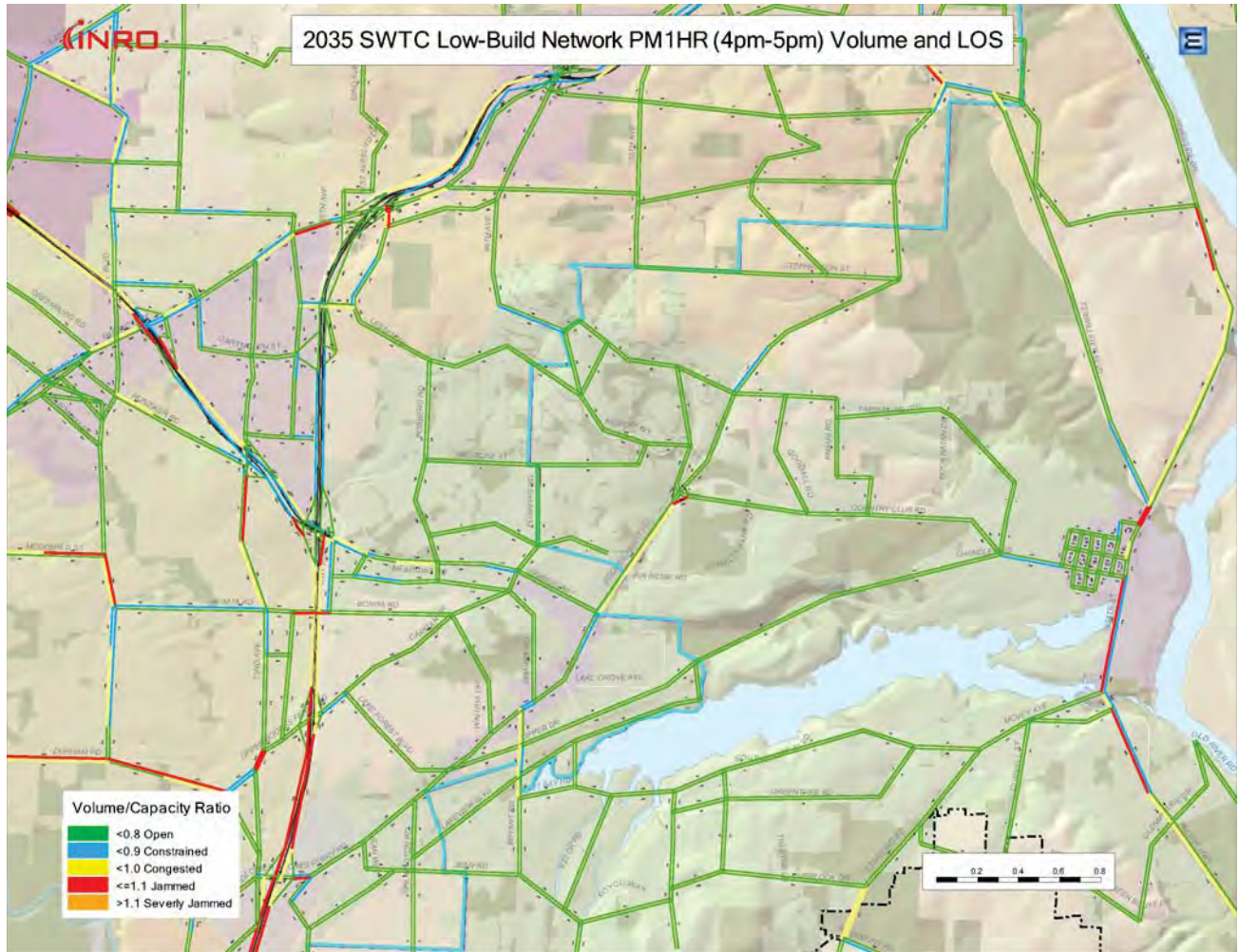
Forecasted Traffic Conditions

Metro’s 2035 fiscally constrained travel demand model was reviewed in an effort to assess forecast traffic conditions in Lake Oswego. The model shows that a majority of major roadways are expected to meet operational standards in 2035 with the exception of two segments along Highway 43 (State Street). All other roadways exceeding operational standards are outside of Lake Oswego’s jurisdiction; however, Lake Oswego may be a stakeholder in developing solutions in the future.

The model shows that the Highway 43 segments located north of D Avenue and between A Avenue and McVey Avenue are expected to operate above capacity with v/c ratios greater than or equal to 1.1 during the 1st and 2nd peak hours. All other segments of Highway 43 within Lake Oswego are expected

to operate below capacity ($v/c < 1.0$) during all other time periods. Exhibit 3 illustrates Metro’s 2035 fiscally constrained travel demand model forecast for the 1st peak hour.

Exhibit 3: Metro 2035 Travel Demand Model Forecast – 1st peak Hour



Highway 43 (State Street) presents several challenges that reach beyond the scope of this TSP Update. Challenges include the constraints of topography, narrow right-of-way, immediately adjacent land use and development patterns, and the need to preserve the ability of Highway 43 to safely and effectively support all modes of travel. Increasing motor vehicle capacity through lane additions or roadway widening would have negative impacts on the surrounding land uses and would further marginalize bicyclists and pedestrians. As result, the City plans to pursue alternative improvement strategies to address the forecast demand for travel. The Transportation System Management and Operations section below presents the transportation solutions the City is considering as part of the TSP Update. The City identified a Highway 43 Refinement Plan as part of the roadway projects within this TSP. The Highway 43 Refinement Plan will be conducted either prior to or at the time of the next update to the City’s TSP. The Regional Transportation Functional Plan (RTFP) Table 3.08-2 Deficiency Thresholds and Operation Standards mobility targets apply to Highway 43 until alternative standards are approved



through the Highway 43 Refinement Plan project. The applicable mobility standards are shown in Table 8.

As indicated below, the Highway 43 Refinement Plan (Roadway Project #232) is included in the fiscally constrained plan of the TSP, and therefore is one of the six projects that are expected to be completed within the 20 year planning horizon. Although the plan by itself will not address the existing and projected mobility issues identified along Highway 43, it will identify a variety of plans, program, and specific improvement projects that will address the issues. These subsequent plans, programs, and projects; however, are beyond the scope of this TSP.

Truck Routes

A majority of freight traffic within Lake Oswego occurs by truck along designated truck routes. The designated truck routes within Lake Oswego consist of ODOT, County, and City facilities and include interstate highways, statewide highways, and district highways, as well as other arterial and collector roadways that support and augment the highway system. These routes provide interstate and intrastate connections to ports, intermodal facilities, and urban areas. The OHP identifies ODOT's designated freight truck routes, while the Clackamas County TSP identifies the County's. ODOT and the County identify I-5 and Highway 43 as the truck routes through or adjacent to Lake Oswego. The City also identifies the following as primary truck routes, other routes exist on lower classification streets adjacent to commercial or industrial zones:

- Boones Ferry Road;
- Kerr Parkway;
- Monroe Parkway;
- Kruse Way;
- Country Club Road;
- A Avenue;
- McVey Road; and
- Stafford Road

A preliminary review of these roadways and the intersections between these roadways indicates that they are sufficient to accommodate large trucks as well as wide turning movements. The Metro 2035 Regional Freight Plan also identifies designated truck routes within Lake Oswego. Based on a review of Metro's Regional Freight Network map, Metro accounts for a majority of both ODOT and County routes, with the notable exception of Highway 43 (State Street). Highway 43 is identified by ODOT, the County, and the City as a designed truck route, but not Metro.

Related to truck freight movement, projects that will potentially reduce vertical or horizontal dimensions on Highway 43 between mile point 6.13 and the southern City of Lake Oswego limits are subject to review process and approval per ORS 366.215. See the following website for guidelines: <http://www.oregon.gov/ODOT/TD/TP/pages/ors366.215.aspx>. The City of Lake Oswego also addresses truck routes in its municipal code, Article 32.16.

Connectivity

A well-connected transportation network is integrated with surrounding land uses and provides safe, multimodal facilities between local and regional destinations. Strategies to improve connectivity can include developing new connections for pedestrian and bicycles, filling gaps in the existing pedestrian and bicycle network, providing comfortable and convenient connections to transit stops, avoiding the creation of cul-de-sacs, which reduces out-of-direction travel, and other changes that improve circulation within and between neighborhoods.

To identify potential priority areas for future connectivity improvements, the existing motorized vehicle network was evaluated. Future arterial network connectivity improvements were identified per Metro's Regional Transportation Plan (RTP – Reference 6) guidance. To address street connectivity goals, the RTP requires each city to evaluate the roadway network and determine where:

- A network of major arterial streets at one-mile spacing and minor arterials/collectors at half-mile spacing can be provided, to the extent practicable and
- A conceptual map of new streets is appropriate to connect all contiguous areas of vacant and redevelopable lots and parcels of five acres or more that are zoned to allow residential or mixed-use development.

Results from the connectivity analysis discussed above were used to inform changes in the functional classifications discussed and shown in the Functional Classification section above. Details of the analysis are included in *Technical Appendix 5 Existing Conditions*.

ROADWAY PROJECTS

The roadway projects list reflects previous planning efforts, public input, and the needs analysis discussed above. Figures 5A through 5D illustrates the location and provides an ID number for each of the projects. Table 9 summarizes the various characteristics of the projects and identifies the source of each project as well as noting public comments received through TSP adoption process. The “type” of project describes the basis of the project development; the “description” provides a starting point for the project scope; the “estimated cost” is given in 2013 dollars; the “source document” lists the origin(s) of the project; and the “comments” offers insights from neighborhood association (NA) reviews during the public comment period. Projects may involve coordination and/or funding assistance from multiple jurisdictions; those details, as well as a complete project refinement, will be determined when a project becomes eligible for funding. Projects in the TSP are conceptual and specific details are unknown at this point and may change significantly through the project funding process. Should a project become eligible for funding or construction by association with another project, the selected project will go through a vigorous public process, particularly, where a Neighborhood has opposed a project.



Some future roadway projects have been identified that could be dependent or “contingent” on obtaining private property. Those projects identified as Contingent Private-property Projects in Table 10 and Figures 5A through 5D are subject to Council policy and direction, individual property owner notice and consent, due-diligence, public review and comment and, where applicable, neighborhood planning prior to implementation of the projects. This may result in future amendments of the TSP.

In compliance with the TPR, the Lake Oswego TSP includes a list of projects identified to address a safety and/or operations-related standard which, therefore, must be prioritized for completion within the 20-year planning horizon. This list is referred to as the “financially constrained” list, a term that is commonly used in transportation planning throughout the United States, as well as among agencies in the Portland metropolitan region. As a subset of the larger list of transportation projects contained in the TSP, these projects identify future funding commitments.

The City Council should examine these projects on an annual basis for placement into the Capital Improvements Program (CIP). Staff will monitor the operations and safety at each location as well as look for opportunities to coordinate with other projects. The financially-constrained projects below (in no particular order) are necessary to address state and local benchmarks; no bicycle or pedestrian projects have been identified as financially-constrained projects:

- Six Corners Enhancement, Access Improvements (Roadway Project #54)
- State Street/McVey Avenue (Roadway Project #61)
- Jean Road/Pilkington Road Intersection Improvements (Roadway Project #62)
- South Shore/McVey Signal Improvements (Roadway Project #113)
- Boones Ferry Road/Bryant Road Signal Improvements (Roadway Project #116)
- Highway 43 Refinement Plan (Roadway Project #232)

Table 9: Roadway Projects

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Source Document	Comments
1.1 (5A & 5B)	Roadways	Boones Ferry Improvements	Phase I – Widening and paving from Madrona to Oakridge/Reese; incl. bike lanes, upgrade sidewalks, new center median, green street features, and signal improvements. NHS/AASHTO standards apply. Some R/W required. Transit connection on Boones Ferry.	\$29,000,000 ^{1,3}	CIP, Lake Grove Village Center Plan	Project funded, beginning 2014. Supported, high priority for neighborhood. Council goal/action for 2014.
1.2 (5A & 5B)	Roadways	Boones Ferry Improvements	Phase II – New pavement only within existing curbs from Oakridge/Reese to Kruse Way. NHS/AASHTO standards apply, may need design exception.	\$900,000	CIP, Lake Grove Village Center Plan	Supported by NA.
13 (5B)	Roadways	Firwood Road Upgrade: Boones Ferry to Bonaire	2,100' long, 11-12' travel lanes, 6' bike lanes, and 5-6' wide separated sidewalk. Install storm drain system, connect to existing system in Boones or Bryant. R/W required; removal of large trees and on-street parking. Subject to road transfer from Clackamas County. Extends a connection. Transit connection at Boones Ferry Road.	\$2,215,000	CIP, Lake Forest Neighborhood Request	NA does not support any bike/ped infrastructure; concern for trees.
51 (5B)	Roadways	Seville Ave Sidewalk: Lake Forest to Roosevelt	1,900' long, 12' lanes, 6' wide curb-tight concrete sidewalk on one side of roadway. Add sanitary sewer and stormwater infrastructure along entire length. Subject to road transfer from Clackamas County. Initiates a connection, may connect to Roosevelt Pathway.	\$1,621,000	NP, Lake Forest Neighborhood Request	
52 (5B)	Roadways	Lake Forest Blvd Upgrade: Boones Ferry Rd (via Washington Ct.) to Carman Dr	3,400' long, 15' wide travel lane widening, 6' wide curb-tight sidewalk on one side of roadway. Add sanitary sewer and stormwater infrastructure along entire length. Subject to road transfer from Clackamas County. Initiates a connection, may connect to Washington Ct. and Seville Pathways. Multiple driveway crossings. On-street parking, utility pole issues and tree removals required. Transit connection on Boones Ferry. Coordinate with TSP-related project at LF/Carman intersection.	\$3,475,000	NP, Lake Forest Neighborhood Request	
54 (5C)	Roadways	6 Corners Enhancement: Access Improvements	Curbs, AC removal, landscaping, striping and RPMs. Realign the two northerly legs of this intersection. Combine the north leg of Iron Mountain and Bayberry into one approach and remove the landscaped area. Provide for stormwater collection and treatment. May include feasibility study. NHS/AASHTO standards apply along Country Club.	\$580,000	CIP, First Addition / Forest Hills Neighborhood Plan	NA concerned and would like further consultation.
55 (5A)	Roadways	Baleine St Upgrade: Allison to Inverurie	(Baleine currently unimproved.) 1,200' long, 12' lanes, 6' wide curb-tight concrete sidewalk, 2' landscape strip. Extends a connection at Baleine/Carman. May connect to Inverurie Pathway (currently unimproved R/W.)	\$1,497,000	NP, Lake Forest Neighborhood Plan	



Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Source Document	Comments
56 (5B)	Roadways	Inverurie Rd Upgrade: Carman Dr to Washington Ct./Lake Forest	(Reconstruct full roadway) 3,200' long, 12' lanes, 6' wide curb-tight sidewalk, 2' landscape strip. Majority subject to road transfer from Clackamas County. Initiates a connection, may connect to Washington Ct. and Lake Forest Pathways. Multiple driveway crossings. On-street parking, utility pole issues and tree removals required. Northern portion in City is unimproved (~600').	\$4,874,000	NP, Lake Forest Neighborhood Plan	
57 (5B)	Roadways	Astor Ave Upgrade: Washington Ct to Harrington	(Astor Ave mostly unimproved.) 1,200' long, 12' lanes, 6' wide curb-tight concrete sidewalk, 2' landscape strip. Subject to road transfer from Clackamas County. Initiates a connection, may connect to Washington Ct., Seville, and Harrington Sidewalks. Multiple driveway crossings. On-street parking, utility pole issues and tree removals required. Portions of roadway are unimproved.	\$1,449,000	NP, Lake Forest Neighborhood Plan	
60 (5B)	Operations	Boones Ferry/Bryant: Split Signal Timing	Add split signal timing for Bryant movements to improve safety and queuing; replace all loop detectors. Add ADA ramps, realign striping. Coordinate with related TSP projects. (See #116)	\$250,000	1997 TSP	
61 (5D)	Operations	Highway 43/McVey Road: Intersection Geometry Improvement	Restripe #1 NB lane on Hwy 43 for a dedicated left turn lane. Coordinate with ODOT to modify signal timing. NHS/AASHTO standards apply.	\$250,000 ²	1997 TSP	
62 (5B)	Operations	Jean Rd/Pilkington: Intersection Geometry Improvement	Restripe intersection to realign turn lanes for efficiency and safety. Rebuild 4 ADA ramps (75' EA), 300' long, 6' sidewalk along NE quadrant to complete connection. SRTS route. (See #118)	\$298,000	1997 TSP	Citizen suggests traffic signal and completion of sidewalk/pathway along Jean Rd east and west of intersection.
63 (5D)	Intersection	McVey/Cornell: Signal Installation	200' long, 14' wide roadway widening to the south to add WB left turn lane on McVey; install traffic signal.	\$425,000	1997 TSP	Supported by citizens.
66 (5C)	Operations	A Ave/8th: Signal Interconnect	Complete "A" Avenue signal interconnect by installing communications. Install detection at 8th Street.	\$37,000	1997 TSP	Neighborhood notes important signal for school access.
67 (5B)	Intersection	Bryant Rd/Jean Rd: Signal Installation	Install traffic signal, all turn lanes exist. Underground or relocate aerial wires running diagonally across intersection.	\$407,000	1997 TSP	
68 (5B)	Intersection	Bryant Rd/Childs Rd: Signal Installation	250' long widening to the east on Bryant for LT lane; 300' widening to the south on Childs for LT lane, including curb and sidewalk and storm drain revisions. Install traffic signal with pedestrian signals.	\$558,000	1997 TSP	
69 (5C)	Roadways	Highway 43/B Ave: Intersection Improvement Geometry	200' long road widening to add 12' wide SB Right Turn Lane with 2' shy; rebuild 8' sidewalk and ADA ramp. R/W required, structure demo/modification. Coordinate with ODOT. NHS/AASHTO/ODOT standards apply.	\$1,964,000 ²	1997 TSP	
70 (5B)	Roadways	Carman/Lake Forest: Intersection Geometry Improvement	200' long, 12' wide roadway widening to NW, adding WB left turn lane. Use existing sidewalk, add curb. Subject to road transfer from Clackamas County.	\$102,000	1997 TSP	

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Source Document	Comments
71 (5B)	Operations	Boones Ferry Rd Signal Interconnect: I-5 to Bryant	Complete signal interconnect, 7 signals; coordinate with ODOT and Tualatin/Washington County signals.	\$250,000	1997 TSP	
72 (5A)	Operations	Bangy/Bonita: Signal Interconnect	Install signal interconnect; detection needed. Coordinate with Washington County (Tigard) signal west of I-5.	\$52,000	1997 TSP	
102 (5C)	Roadways	Lake Oswego Transit Center Improvements	Streetscape improvements along 4th and 5th Streets between A and B Avenues. Includes ADA upgrades, storm water improvements, and rebuilding streets/add concrete bus pads. (See #227).	\$447,000	CIP	Project could be completed with redevelopment. Neighborhood request to shift stops further north to flatter area.
103 (5D)	Operations	McVey Ave Bike Lanes: Highway 43 to South Shore	Intermittent striping with legends on both sides (3,600' total length). Minor widening required, Cornell to east of Percy. On-street parking removals, including signage. Coordinate with related TSP projects. Majority could be completed by city forces.	\$78,000	TMP	Supported by citizens.
108 (5C)	Operations	B Avenue/1st Street Intersection Improvements	275' long striping. Remove parking on the south side of B Avenue near the B Avenue/1st Street intersection to improve intersection sight distance.	\$3,000	TSP Update 2012-2013	
109 (5A)	Roadways	Kerr Parkway/Boones Ferry Road/Country Club Drive: Intersection Improvements	400' long, 5' wide concrete curb and sidewalk, 13' turn lane. Remove the eastbound right-turn slip lane. Replace with an eastbound right-turn lane adjacent to the shared through/left-turn lane. Possible signal pole relocation. Modify traffic island. Adjustment forces right-turn vehicles to slow and obey the traffic signal. Incl. advanced warning signs on Kerr Parkway.	\$167,000	TSP Update 2012-2013	
110 (5C)	Operations	Highway 43 (State Street)/Terwilliger: Intersection Improvements	Install speed radar feedback signs immediately after the Terwilliger/Highway 43 (State Street) intersection to help slow vehicles entering part of downtown Lake Oswego.	\$18,000 ²	TSP Update 2012-2013	
111 (5D)	Operations	Highway 43 (State Street)/McVey Avenue: Intersection Improvements	Install speed feedback signs for motorists entering the area so they are more aware of their speeds and slow down.	\$18,000 ²	TSP Update 2012-2013	
113 (5D)	Operations	South Shore Boulevard/McVey Avenue: Signal Improvements	Install loop detection for the left-turn movement off of McVey Avenue and adjust signal timing to provide more green time for through movements when left-turning vehicles are not present. Adjustments will provide efficient signal operations and reduce delay w/o increasing the intersection footprint.	\$30,000	TSP Update 2012-2013	
116 (5B)	Operations	Bryant Road Signal Improvements	Improve signal timing (3 signals) and coordination between the traffic signals and improve detection along the mainline and at the side street approaches. See project #60.	\$50,000	TSP Update 2012-2013	
121 (5A)	Operations	Monroe Parkway: Greenridge Drive to Boones Ferry Road	1,600' long. Install legends, shared roadway signs consistent with the MUTCD.	\$16,000	TSP Update 2012-2013	



Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Source Document	Comments
138 (5A)	Operations	Mercantile Dr/Boones Ferry Rd: Intersection Improvements	Add CBs and ADA ramps	\$18,000	LGVCP	Supported by NA.
139 (5B)	Operations	Boones/Reese/Oakridge: Intersection Improvements	Add ADA ramps	\$15,000	TSP Update 2012-2013	Supported by NA.
140 (5A)	Intersection	Knaus/Monroe Signal	Feasibility study for new traffic signal	\$50,000	TSP Update 2012-2013	
141 (5D)	Intersection	Bergis/Sunnyhill Signal	Feasibility study for new traffic signal	\$50,000 ¹	TSP Update 2012-2013	NA confirmed project in compliance with Palisades Neighborhood Plan.
147 (5A)	Intersection	Boones Ferry Road/ Lanewood Signal	Install new traffic signal in conjunction with driveway consolidation, share access and parking lot connections.	\$250,000	LGVCP	Supported by NA.
152 (5A)	Roadways	Hallmark Dr Festival Street	580' long, 40' wide. Reconstruct as curbless street with sidewalks, bollards, special paving and landscaping. Condition of approval for "village commons."	\$904,800	LGVCP	Supported by NA.
155 (5A)	Operations	Quarry Road-Galewood: Intersection Improvements	Install curb and gutter to better define channelization at intersection. Install heavy landscaping. Consider on street parking impacts.	\$20,000	LGVCP	Supported by NA. High priority for NA.
156 (5A)	Operations	Mercantile Dr Upgrades: Boones Ferry Rd to Kruse Way	Install ADA ramps at each corner. Install missing sidewalks.	\$15,000	LGVCP	Supported by NA.
160 (5B)	Roadways	Oakridge Road Improvements: Quarry Road to Boones Ferry Road	770' long curb and gutter, both sides.	\$138,600	LGVCP	Supported by NA.
161 (5B)	Roadways	Reese Road Improvements: Boones Ferry Road to end of commercial zone	320' long curb and gutter, both sides.	\$57,600	LGVCP	Supported by NA.
172 (5B)	Roadways	Lake Grove Public Parking Areas	Public Parking Lots. 3 EA - various locations and size of each lot to be determined.	\$250,000	LGVCP	
225 (5C)	Roadways	B Avenue Improvements: State to 2nd Street	640' long, 60' wide roadway reconstruction as "Village Anchor Street." 11' lanes, 6' bike lane (north side only), 8' parking lanes, 8' sidewalks. R/W adequate.	\$1,000,000	EERP	
226 (5A)	Roadways	B Avenue Improvements: 2nd Street to 5th Street	960' long, 60' wide roadway reconstruction as "Village Anchor Street." 11' lanes, 6' bike lane (north side only), 8' parking lanes, 8' sidewalks. R/W adequate. (See #102.1)	\$2,600,000	EERP	
227 (5A)	Roadways	3rd Street Reconstruction: A Ave to B Ave	450' long, 60' wide roadway reconstruction. 12' travel lanes, 8' parking lanes, 10' sidewalks.	\$1,100,000	EERP	Project may be covered by redevelopment.

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Source Document	Comments
228 (5C)	Roadways	4th Street Reconstruction: A Ave to B Ave	450' long, 60' wide roadway reconstruction. 12' travel lanes, 8' parking lanes, 10' sidewalks. (See #102.1)	\$1,300,000	EERP	Project may be covered by redevelopment.
229 (5C)	Roadways	A Avenue Enhancements: 4th St to 6th St	640' long, 7' parking lanes, 12' sidewalks. R/W adequate. Include street trees & landscaping to be consistent with adjacent street section. Consider crosswalk striping.	\$1,100,000	EERP	Project may be covered by redevelopment. Neighborhood may not support traffic signals. Neighborhood may support replacement of pedestrian signal with RRFB.
231 (5C)	Roadways	Tryon Creek Bridge Replacement: OR43 south of Terwilliger	Replace existing 90-year old concrete box culvert with steel truss bridge. Bridge will contain 4-5 travel lanes, bike lanes, and sidewalks; a multi-use trail is planned along the creek. Traffic signal at Terwilliger NOT included in this project. Included in this project is a second steel truss bridge for the Portland & Western railroad crossing of Tryon Creek and a concrete span bridge for the Stampher Road crossing. Local cost likely to be 10% of total, estimated at \$18M.	\$1,800,000 ¹	RTP/ODOT	
232 (5C & 5D)	Roadways	Highway 43 Refinement Plan	Develop a refinement plan to identify long-term strategies and/or projects to address anticipated future vehicle demand along Highway 43 through City of Lake Oswego.	\$100,000 ¹	TSP Update 2012-2013	
233 (NS)	Roadways	Development Review and Approval Guidelines	Develop guidelines for City staff to use in the review and approval of development applications within the City of Lake Oswego.	\$30,000	TSP Update 2012-2013	

1. Project requires coordinated funding and/or design collaboration with jurisdictional partners.
 2. Project expected to be fully funded through outside sources.
 3. Project is funded (2014).
- NS = Not Shown on Figure.

Source Information

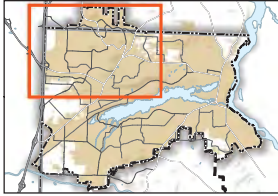
- EERP = East End Redevelopment Plan
- CC TSP = Clackamas County TSP
- CIP = Capital Improvement Plan
- LGVCP = Lake Grove Village Center Plan
- RTP = Regional Transportation Plan
- TMP = Trails Master Plan



Table 10: Roadway Projects proposed on private property

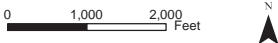
Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Source Document	Comments
133 (5C)	Roadways	Foothills Road Upgrade - Phase I: A to B Avenues	500' long reconstruction of Foothills Road between A and B Avenues with two 12' travel lanes, two 5' bike lanes, 8' parking/stormwater strip, 12' sidewalks, street lighting, furnishings and landscaping. Project would include tying in the existing Kincaid Curlique on both east side of the street.	\$2,790,000	Foothills Framework Plan	
134 (5C)	Roadways	Foothills Road - Phase II - North of B Avenue	700' long new construction of Foothills Road between B and D Avenues with two 12' travel lanes, two 5' bike lanes, 8' parking/stormwater strip, 12' sidewalks, street lighting, furnishings and landscaping.	\$1,586,000	Foothills Framework Plan	
135 (5C)	Roadways	Foothills Rd Upgrade - Phase II: D and E Avenues	500' long new construction of Foothills Road intersection at State Street (Hwy 43) between D and E avenues. Project will include ~300' long median modifications within State Street (State Hwy 43, NHS/AASHTO/ODOT standards apply) to provide for safe turning movements. New at grade RR crossing of the two rail lines just east of State Street. R/W required.	\$1,629,000	Foothills Framework Plan	NA concerned and would like further consultation.
136 (5C)	Roadways	B Avenue Improvements: Foothills Rd to Foothills Park	1,000' long new construction of three blocks of B Avenue, including two 12' travel lanes, 8' on-street parking/stormwater, 15' sidewalks, street lighting, furnishings and landscaping.	\$4,517,000	Foothills Framework Plan	
223 (5D)	Roadways	Bergis Road Realignment	1325' long, 30' wide roadway (12' lanes, 6' bike lanes, 6' sidewalks). 60' x 1175' R/W acquisition.	\$1,855,000	Metro Connectivity Analysis	NA confirmed project in compliance with Palisades Neighborhood Plan.
230 (5B)	Roadways	West Sunset Extension: Boones Ferry Road to Upper Dr.	350' long, 50' wide new roadway (2-12' lanes, 13' center turn lane pocket, 7' parking lanes, 6' curb-tight concrete sidewalks, landscaping and street furniture on both sides. R/W required. Close off/cul-de-sac the existing end of Upper Dr. at Boones Ferry Road. Transit on Boones Ferry Rd. Add signal loops, R/W required.	\$984,000	CIP	

Source Information
 CIP = Capital Improvement Plan



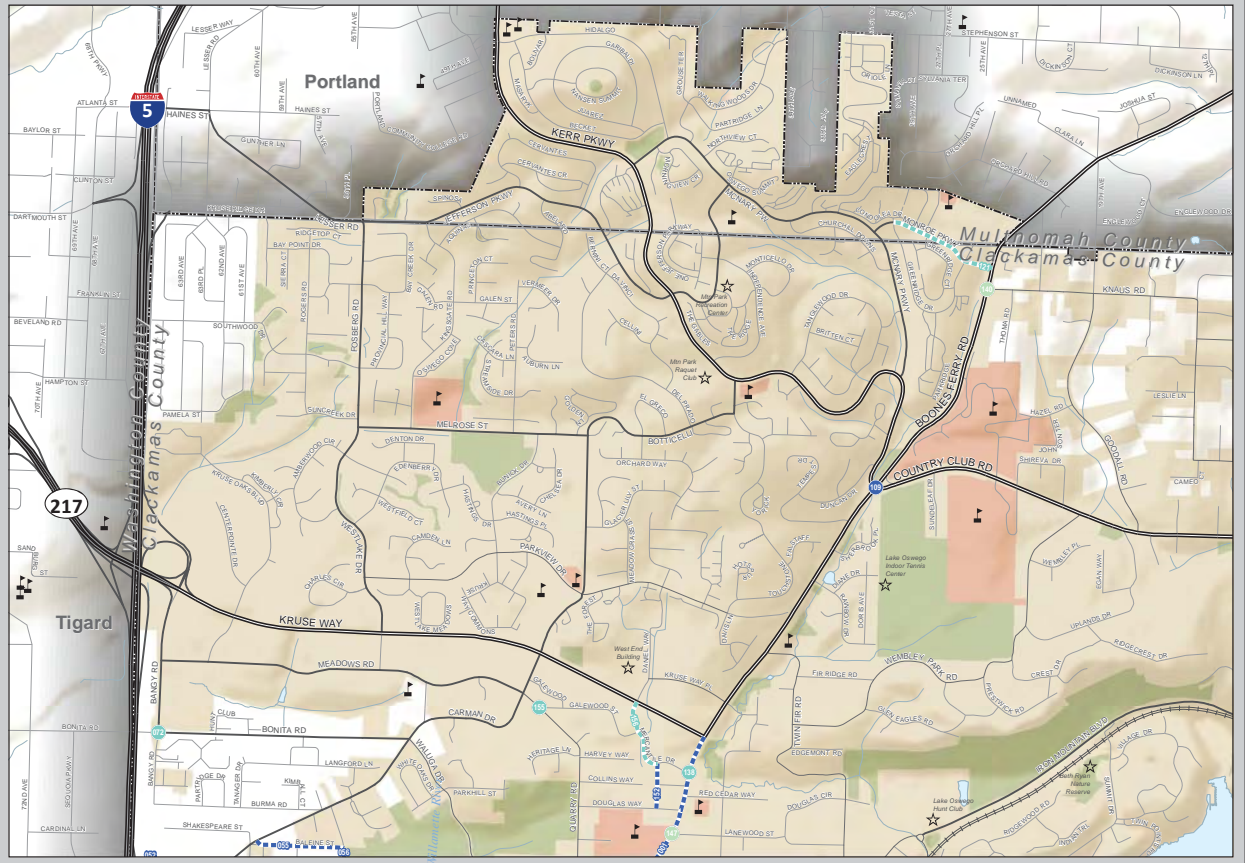
Planned Improvements

- Intersections
- Operations
- Roadways
- Operations
- Roadways
- Contingent Private Property Projects
- Schools
- Points of Interest
- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)



Roadway Projects

Figure 5A

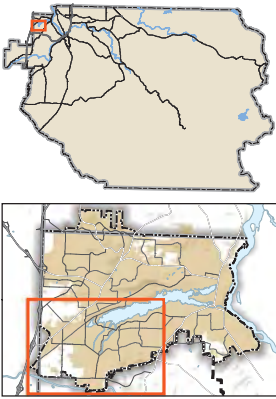


\\kittelson.com\share\portland\fig5a11182 - LO TSP\GIS\Map_Draft\05_Roadway Projects.mxd



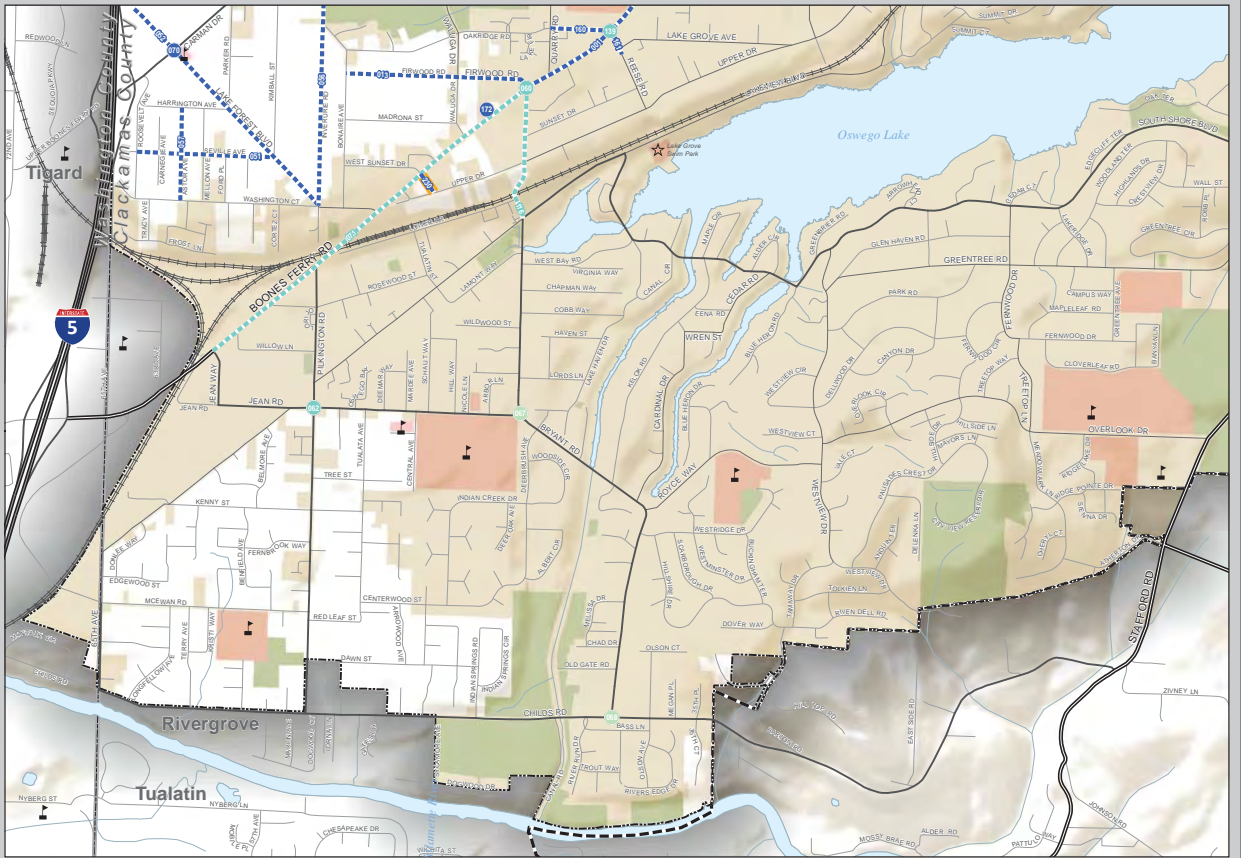
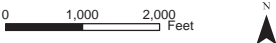
Roadway Projects

Figure 5B

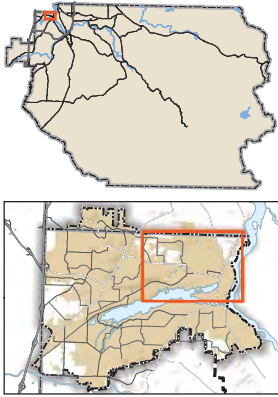


Planned Improvements

- Intersections
- Operations
- Roadways
- Operations
- Roadways
- Contingent Private Property Projects
- Schools
- Points of Interest
- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)



\\lakosrv\com\st\h\portland\proj\11182 - LO TSP\GIS\Map_Draft\05_Roadway_Projects.mxd

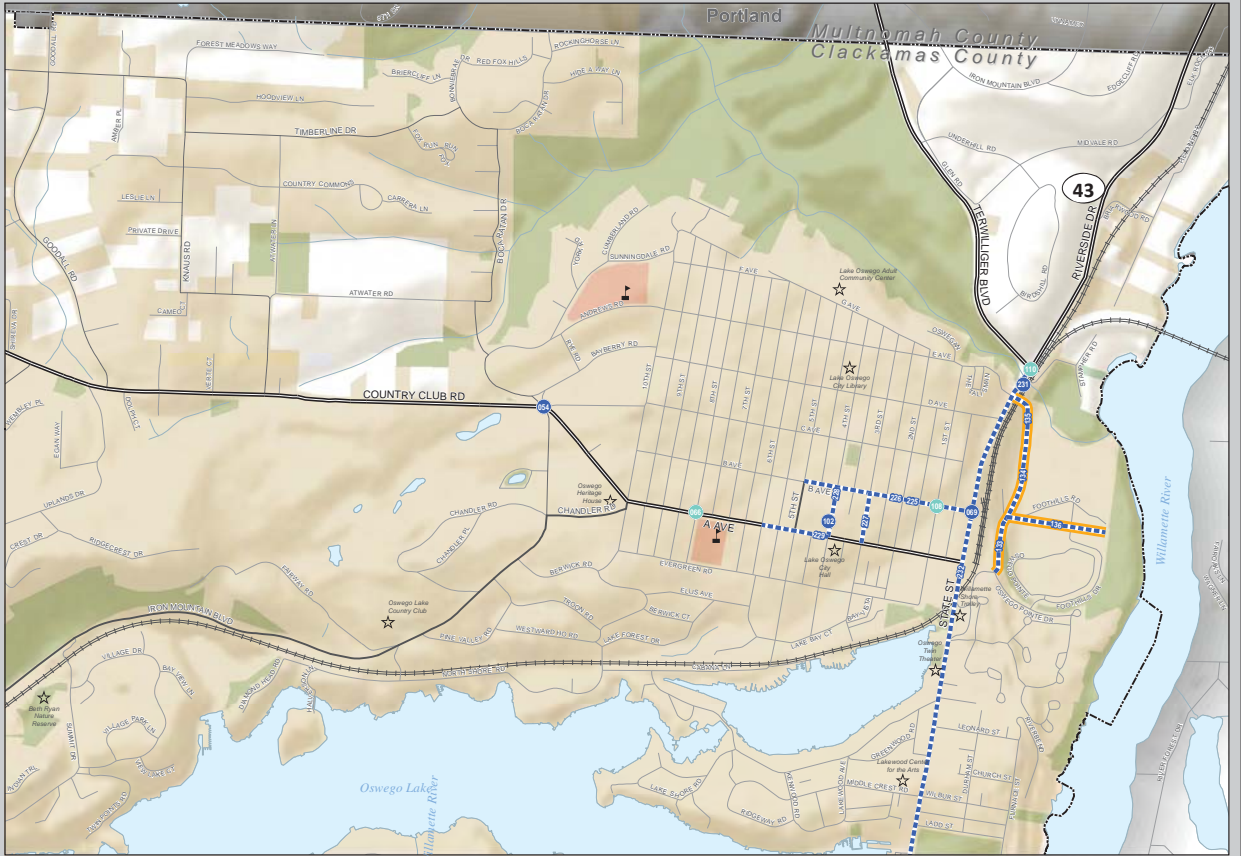
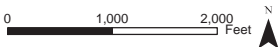


Roadway Projects

Figure 5C

Planned Improvements

- Intersections
- Operations
- Roadways
- Operations
- Roadways
- Contingent Private Property Projects
- Schools
- Points of Interest
- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)

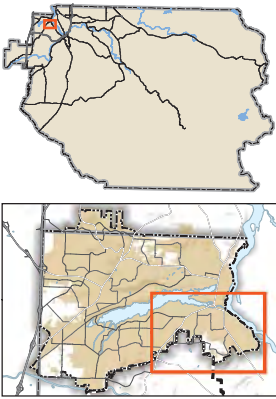


\\laborkom\mnt\sh_portland\proj\11182 - LO_TSP\GIS\Final_Draft\05_Roadway_Projects.mxd



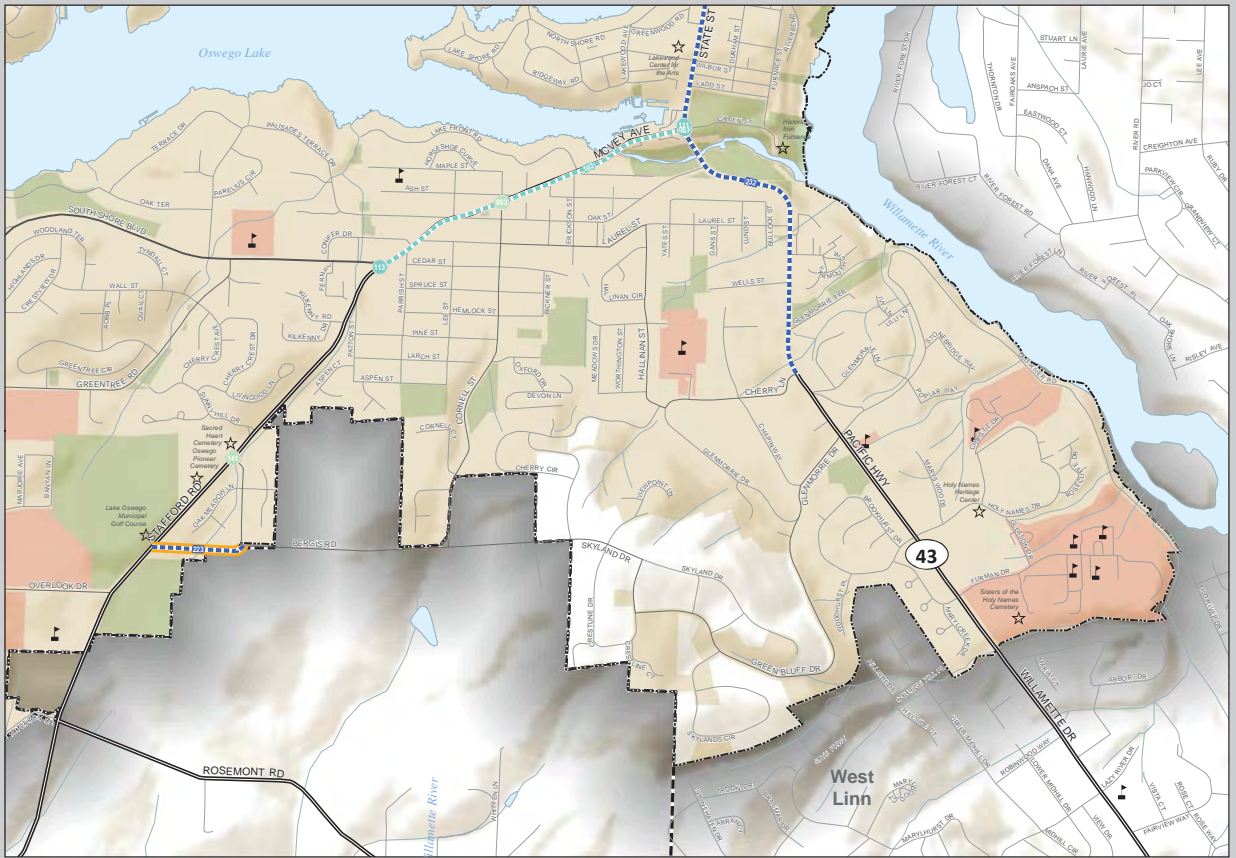
Roadway Projects

Figure 5D



Planned Improvements

- Intersections
- Operations
- Roadways
- Operations
- Roadways
- Contingent Private Property Projects
- Schools
- Points of Interest
- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)



\\lakos.com\sh_bortland\proj\11182 - LO_TSP\GIS\Final_Draft\05_Roadway_Projects.mxd

Section 4 Transportation System Management & Operations

SECTION 4 TRANSPORTATION SYSTEM MANAGEMENT & OPERATIONS

This section presents information on the City's plans for using Transportation System Management and Operations (TSMO) strategies to improve the performance of the existing transportation infrastructure in Lake Oswego. The key topics discussed below are Transportation Demand Management (TDM), Transportation System Management (TSM) and Parking.

TRANSPORTATION DEMAND MANAGEMENT PLAN (OAR 660-012-0045(5))

The City of Lake Oswego calls for a moderate level of TDM activities within the City, consistent with the provisions of the Oregon Department of Environmental Quality (DEQ) Employee Commute Options (ECO) rules. The ECO rules apply to employers with over 100 employees at a single work site. The rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-200-0040. See OAR 340-242-0180 and special requirements in OAR 340-242-0110.

The link to the DEQ site is: <http://www.deq.state.or.us/nwr/eco/eco.htm>. The link to the OAR 340 for the ECO rules is: http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/340_242.html.

The City's TDM plan for purposes of compliance with OAR 660-012-0035 Transportation Planning Rule, is contained in the TSP document and focuses on providing an effective active transportation system and encouraging workplace-based measures. Table 11 summarizes the City's TDM plan, which consists of three groups of strategies:

- **Low-cost mandatory employer programs** – Employers with more than ten employees participate in TriMet's Transportation Coordinator program (to provide on-site transit and carpool information and promotion) and provide on-site carpool matching for interested employees. Employers with more than 25 employees participate in TriMet's Emergency Ride Home program and provide preferential carpool parking if they provide on-site parking. Employers with more than 50 employees prepare TDM plans per the ECO rules. These programs are not administered by the City and do not require City code changes.
- **Voluntary higher-cost employer programs** – These include the programs larger employers can choose from to fulfill their ECO requirements. These programs include transit and carpool subsidies, company cars available for work use during the day, secure bicycle parking, flexible schedules, and telecommuting. The City is a larger employer under this category but does not administer TDM programs for other employers, and these programs do not require City code changes.

- **Maintenance, upgrading, expansion, and promotion** – City investment in pedestrian and bicycle facilities and promotion of their use during the 20-year period is an essential support to the TDM plan.

The City’s intent is to promote high-value TDM programs among employers that are cost-effective to implement and maintain. Leadership in this effort is demonstrated by the City’s own TDM program for its employees as well as the code requirements for specific locations (see LOC 50.02.002.d). Employer-based TDM programs provide opportunities to tailor strategies to best meet the needs of employees and reduce their commute choice impacts and their actual commute costs.

Table 11: Existing City of Lake Oswego TDM Program Elements

TDM Program Elements	Potential Trip Reduction ^a	Number of Employees		
		< 25	> 25	> 50
Transportation Coordinator	-		x	X
On-Site Carpool Matching	1-8%		x	X
Emergency Ride Home (i.e., guaranteed ride home)	1-3%		x	X
Preferential Carpool Parking	1-3%		x	X
TDM Plan (ECO Rule)	-			X
Voluntary Higher-Cost Employer Programs	1-10%	X	x	X

^a Source: State of Oregon Department of Environmental Quality Employee Commute Options Sample Trip Reduction Plan.
 “-” Information not available to estimate potential trip reduction.

The Metro TSMO Plan, a component of the adopted 2035 RTP, identifies regional TDM projects within select “mobility corridors” in the Portland metropolitan area. Mobility Corridor #3 (Tigard to Wilsonville) encompasses the western boundary of the City and comprises I-5 along with Boones Ferry Road, Stafford Road-Elligsen Road, and Kruse Way. Mobility Corridor #21 (Portland Central City to Oregon City/West Linn) encompasses the eastern boundary of the city and comprises Highway 43 along with Taylors Ferry Road, Boones Ferry Road, Terwilliger Boulevard, and Stafford Road. Table 12 summarizes the TDM projects identified in the RTP for the corridors along with timeframe and estimated costs.



Table 12: Existing Regional TDM Projects in the Lake Oswego Area

Project Name	Description	Facility	Timeframe	Capital Cost*	Annual O&M Cost*
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of local travel options through delivery of local travel options information and services to interested residents. (in support of Portland/Multnomah County Climate Change Action Plan)	Supports new transit & trail facility from Central City Portland to Lake Oswego Transit Center	1-5 years	\$0	\$500,000
Rideshare Incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	I-5	1-10 years	\$0	\$100,000
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	I-5	1-10 years	\$0	\$9,600
Employee Incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	To be determined	1-10 years	\$0	\$100,000
Car-share Operations	Support 3 or more car sharing vehicles in developing centers.	Lake Oswego Town Center	1-5 years	\$0	\$200,000

* Operations and Maintenance costs are shown in 2010 dollars and reflect Metros overall costs for the region.

Along with these TDM strategies, the 1997 TSP proposed creating a Transportation Management Association (TMA) for the Kruse Way office park area. In 1999, the City applied for Metro funding to consider the feasibility of a TMA. The study engaged City staff, property owners, and other stakeholders to identify transportation-related economic issues. Although participants believed there could be traffic issues and congestion in the Kruse Way area, they did not feel a TMA would be feasible at that time because the business community survey indicated a lack of financial support. The need for a TMA to coordinate and promote TDM strategies in the Kruse Way area may be reconsidered again in the future.

TRANSPORTATION SYSTEM MANAGEMENT PLAN (OAR 660-012-0020(2)(F))

The TSP Roadway System Plan (presented in Section 3) identifies multiple intersection improvements and signal system coordination projects to optimize capacity from existing roadways at minimum cost. Transportation system management (TSM) improvements include adding turn lanes, new or upgraded signals, and signal system coordination to promote smoother arterial flow and greater capacity.

The Metro TSMO Plan also identifies regional TSM projects within “Mobility Corridors” in the Lake Oswego area. Table 13 summarizes TSM projects to be completed by a combination of Metro, ODOT and the City of Lake Oswego, their recommended timeframe, and estimated costs.

Table 13: Existing Regional TSM Projects in the Lake Oswego Area (exclusive of TDM, see Table 10)

Project Name	Description	Facility	Timeframe	Capital Cost*	Annual O&M Cost*
Regional Multimodal Traffic Management					
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement	Upper Boones Ferry Rd	1-5 years	\$1,300,000	\$25,000
		Kruse Way	1-5 years	\$60,000	\$12,000
		Boones Ferry Rd/Capital Hwy	6-10 years	\$4,600,000	\$90,000
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility	Highway 43 (Macadam Ave)	6-10 years	\$3,700,000	\$70,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-5	6-10 years	\$900,000	\$18,000
Traveler Information					
Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	Country Club Rd	6-10 years	\$700,000	\$14,000

* Operations and Maintenance costs are shown in 2010 dollars and reflect Metros overall costs for the region.

In addition, progress toward meeting the access standards for the various functional classifications will translate into greater system capacity. The degree to which this occurs will depend on the rate of redevelopment along any given roadway and success in receiving state funding or other grants.

PARKING

As part of the TSP update, the city and its Community Development Code is in compliance with the Parking Management provisions of the Regional Transportation Functional Plan (RTFP).



Section 5 Bicycle and Pedestrian Facilities Plan

SECTION 5 BICYCLE AND PEDESTRIAN SYSTEM PLAN

The type and quality of pedestrian and bicycle facilities vary greatly from one area of Lake Oswego to another and from one roadway to another. Many of the roadways in Lake Oswego were built with a rural cross-section, with two lanes and roadside drainage ditches, no shoulders or sidewalks, and often with limited sight distance. Hilly terrain and particular neighborhood character create additional challenges to implementing pedestrian and bicycle improvements in some areas. Figure 6 illustrates the existing pedestrian and bicycle facilities within Lake Oswego. The following sections summarize the characteristics of the existing facilities and present the pedestrian and bicycle projects for the TSP.

PEDESTRIAN FACILITIES

The existing conditions analysis included in *Technical Appendix 4 Update to Modal Plans* and *Technical Appendix 5 Existing Conditions* identifies the location of the existing pedestrian facilities within Lake Oswego, including the locations of known deficiencies. An overview of the information provided in the existing conditions analysis is presented in this section.

Downtown Lake Oswego and newer residential developments have sidewalks on one or both sides of the street. Elsewhere, short, discontinuous sidewalk segments may be present. Several arterials and major collector streets have wide, paved shoulders that are marked off from the main road with pavement striping and buttons. These wide, paved shoulders are shared by pedestrians and bicyclists; when pedestrians are present, adult cyclists are expected to ride as part of the regular traffic, sharing the roadway with motor vehicles. Kruse Way and Terwilliger Boulevard have separated multi-use paths that connect to the Metro regional trail network. Near downtown, there is the Willamette Greenway multi-use path located between the Willamette River and Highway 43 (State Street).

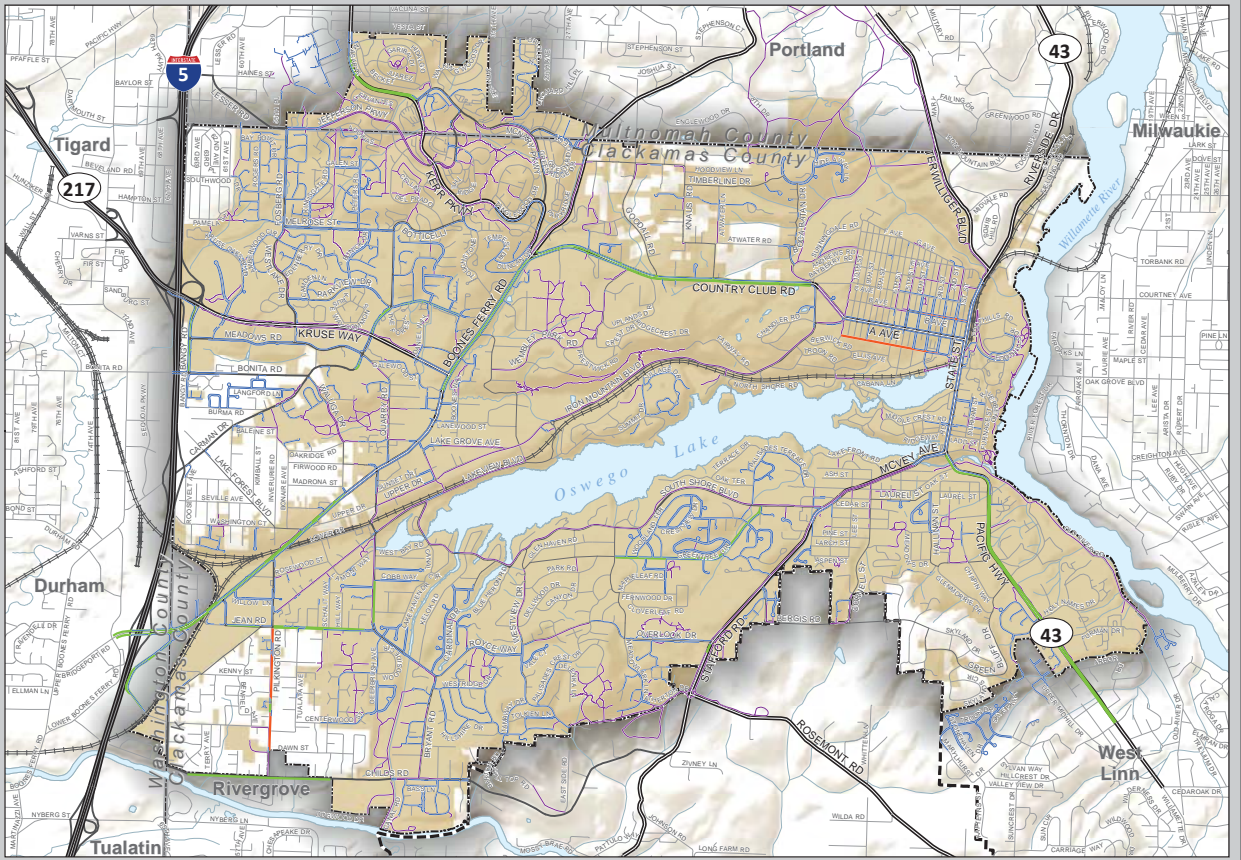
The majority of pedestrian system deficiencies in Lake Oswego are related to connectivity rather than capacity. The pedestrian improvement projects included in the TSP were identified and prioritized to: (1) develop a system in which all arterial and collector streets have a sidewalk or pathway on at least one side of the street, with sidewalks or pathways on both sides of the street where possible; and (2) connect all major activity centers in Lake Oswego, including:

- Schools (all public schools, Marylhurst College, Our Lady of the Lake School, PCC-Sylvania);
 - Downtown Lake Oswego;
 - Lake Oswego Transit Center;
 - Boones Ferry Road (Lake Grove Village Center and Monroe Parkway area);
 - Kruse Way corridor; and,
 - Major parks (e.g. Waluga Park, Westlake Park, George Rogers and Foothills Parks).
-



Existing Bicycle and Pedestrian Facilities

Figure 6



- Existing Facilities**
- Bike Lane
 - Bike Shared Roadway
 - Sidewalk
 - Multi-Use Path
 - Lake Oswego Boundary
 - Urban Service Boundary
 - UGB (Metro)



H:\proj\6011187_1\0_TSR\GIS\Final_Draft\06_Existing_Bicycle_and_Pedestrian_Facilities.mxd

The base pedestrian system improvements evaluated for the TSP include unconstructed pedestrian facilities identified in the 1997 TSP, the City's Capital Improvement Program, Public Facilities Plan, Trails Master Plan, and neighborhood plans. They close gaps and expand and better connect the system.

On arterial and major collector streets in Lake Oswego, marked pedestrian crossings are desirable to facilitate pedestrian access and safety. All signalized intersections should have pedestrian signal heads (WALK/DON'T WALK indicators). In addition, some unsignalized intersections and midblock locations – particularly designated school crossing locations and in the Lake Grove Village Center – may warrant marked crosswalks, pedestrian signals, rectangular rapid flashing beacons (RRFBs), or other pedestrian treatments.

In addition to pedestrian facilities along streets, new multi-use (bicycle and pedestrian use) paths between streets in neighborhoods (particularly connecting dead-end streets) are encouraged where possible, particularly with new subdivision development. These paths should be located to meet the Connected Community goals and policies, and the performance criteria for pedestrian connections reflected in Title 6 of the Metro Functional Plan, even if local street connections at these locations are not possible due to neighborhood opposition, cost, and/or environmental constraints. These paths could be shared with bicyclists.

BICYCLE FACILITIES

The existing conditions analysis included in *Technical Appendix 4 Update to Modal Plans* and *Technical Appendix 5 Existing Conditions* identifies the location of the existing bicycle facilities within Lake Oswego, including the locations of known deficiencies. **Bicycle lanes**, travel lanes designated for exclusive bicycle use, are currently present on Country Club Road, Bangy Road, Highway 43 south of McVey Avenue, and portions of Boones Ferry Road, Kerr Parkway, and Jean Road. On-street parking may or may not be present on streets with bike lanes. Bike lanes are a conventional type of facility, generally 4'-6' wide in areas with no curbs present and range from 6' to 7.5' wide in urban areas. The added width allows bicyclists more useable space within the bike lane, without needing to swerve to avoid drainage structures or the "seam" between asphalt and curb and gutter structure. Buffered bike lanes are a newer design that further separates vehicular traffic and bicycle traffic using additional striping width. Innovative designs for bicycle facilities are gaining momentum in the Portland-metropolitan region; Lake Oswego will consider potential design alternatives given existing conditions and primary user needs.

Shoulder bikeways, which consist of wide, paved shoulders, marked off from the main road with pavement striping and/or buttons, are provided on Iron Mountain Boulevard, South Shore Boulevard, and portions of McVey Avenue, Lakeview Boulevard, Lesser Road, Carman Drive, Bryant Road, and other roadways in Lake Oswego. In some areas, where sidewalks are not present, shoulder facilities are shared by pedestrians and bicyclists. When pedestrians are present on these facilities, adult cyclists are expected to ride as part of the regular traffic sharing the roadway with automobiles, trucks, and buses.

As noted in the pedestrian facilities section, Kruse Way and Terwilliger Boulevard have **separated multi-use paths** that connect to the regional trail network. The Willamette Greenway is a local multi-use path located near downtown between the Willamette River and Highway 43 (State Street). These facilities provide comfort and safety for cyclists and pedestrians. These facilities range in width from 8' to 12'.

On several neighborhood collectors and local streets, “**shared roadway**” facilities provide continuity in the bicycle system. Shared roadways are designated bike routes on low volume (generally less than 3,000 vehicles/day), low speed (25 mph or less) roadways where bikes operate in the same travel lane as motor vehicles. These facilities may incorporate signing (e.g., bicycle route sign), pavement markings (e.g., bicycle “sharrows”), or other wayfinding (e.g., Iron Mountain Trail) signs. Shared roadways must have adequate travel lane width to accommodate dual modes, typically 13' minimum.

The base bicycle system improvements evaluated for the TSP include unconstructed bicycle facilities identified in the 1997 TSP, the City’s Capital Improvement Program, Public Facilities Plan, Trails Master Plan, and neighborhood plans.

Similar to the pedestrian system, the majority of bicycle system deficiencies in Lake Oswego are related to connectivity rather than capacity. Many bicycle facilities in Lake Oswego are internally discontinuous and do not connect to the larger bicycle transportation network or surrounding destinations. In addition, many roadways in Lake Oswego were built with roadside drainage ditches, no bike lanes or shoulders, and limited sight distances. Significant improvements will be needed to create a connected network that makes bicycling a convenient, safe transportation option for a broad range of users. The bicycle improvement projects included in the TSP were identified and prioritized to:

- Provide exclusive bicycle facilities (e.g. bike lanes), multi-use paths, or on-street bicycle accommodations (e.g. shoulder bikeways, wide shared travel lanes) for bicycles on all arterials and major collectors¹; and
- Connect all major activity centers in Lake Oswego.

In addition to bicycle facilities along streets, new multi-use paths (bicycle and pedestrian use) between streets in neighborhoods (particularly connecting dead-end streets) are encouraged where possible, particularly with new subdivision development. These paths should be located to meet the Connected Community goals and policies, and the performance criteria for bicycle connections reflected in Title 6 of the Metro Functional Plan (see “Access Management” section). Multi-use paths may be used to

¹ Exceptions include:

- Highway 43 where right-of-way constraints prevent creating full bike lanes, but wide outer travel lanes accommodate shared use by automobiles and bicycles (currently outer lanes are only 13-foot wide); and
- Neighborhood collectors where right-of-way is available to accommodate bike lanes and/or higher traffic volumes ($\geq 3,000$ vehicles/day) warrant bike lanes.



provide non-motorized transportation connections in areas where local street connections are not possible due to neighborhood opposition, cost, and/or environmental constraints. These paths could be shared with pedestrians.

At travel destinations, particularly large employers and major activity centers (see list in “Pedestrian Facilities” section), secure bicycle parking facilities should be provided per Lake Oswego code. In the Kruse Way corridor, where Transportation Demand Management (TDM) strategies are required, other bicycle-related amenities are encouraged and can be examined through the development review process.

UPDATED PEDESTRIAN AND BICYCLE FACILITY DESIGNATIONS

As part of the TSP Update, the City is updating the designations used to describe the different types of pedestrian and bicycle facilities. The following presents the updated designations.

Pedestrian Facilities

- **Sidewalk:** A hard surfaced walkway, vertically separated from the roadway by a curb and gutter. Minimum recommended clear width is 5’ per Americans with Disabilities Act.
- **Separated Sidewalk or Pathway:** A hard surfaced walkway less than 8’ wide that is separated from the roadway, preferably by a vegetated buffer. This includes public and private separate sidewalks and pathways.

Bicycle Facilities

- **Shared Roadway:** A street, preferably with low traffic volumes and speeds, which has been designated by pavement markings and/or signage as a preferred route for bicycle travel.
 - **Bike Lane:** A travel lane designated for exclusive bicycle use by a longitudinal 8” white stripe and markings. Recommended width ranges between 6’ and 7.5’ in urban areas and 4’ minimum in rural areas. Lake Oswego will consider potential design alternatives given existing conditions and primary user needs.
 - **Potential Facility Types to Include in Future Network Recommendations:**
 - **Bicycle Boulevard/Neighborhood Greenway:** Streets with low motorized traffic volumes and speeds where bicycle travel is given priority and signs, markings, traffic calming, etc. are used to discourage through auto trips and create safe, convenient bicycle crossings of busy streets.
 - **Buffered Bike Lane:** A bike lane separated from adjacent vehicle travel lanes by a 2-3’ striped buffer.
-

- **Cycle Track:** A bike lane with a physical barrier between the bike and motor vehicle travel lanes (e.g. mountable curb, parking)

Shared-Use Facilities

- **Multi-Use Shoulder:** A paved shoulder, demarcated from the roadway with a longitudinal 8" white stripe), for use by both pedestrians and bikes.
- **Multi-Use Pathway:** A paved surface, minimum 8' wide, separated from the roadway and shared by bikes and pedestrians.
- **Off Street Path:** Used in areas not served by the street system or to create shortcuts that link destinations. Typically shared by pedestrians, joggers and cyclists. May be paved or unpaved.

NEEDS ANALYSIS

In order to identify potential priority areas for future connectivity improvements, the existing pedestrian and bicycle networks in Lake Oswego were evaluated. Gaps in the networks and underserved areas were identified, with priority placed on locations within one half mile of schools, recreation centers, and other key destinations. The following provides a summary of the pedestrian and bicycle connectivity analysis and the walkability analysis conducted as part of the TSP update process.

Connectivity Analysis

Lake Oswego staff and citizens identified points of interest within the City such as schools, recreation facilities, and public meeting areas that are common destinations for pedestrian and bicycle trips. The analysis used the points of interest to identify gaps in the existing pedestrian and bicycle networks and identify priority projects that will improve connectivity between these destinations and residential areas.

The analysis included an evaluation of existing pedestrian and bicycle facilities, priority network gaps that are currently funded, priority network gaps that are currently unfunded, and potential connectivity improvements identified in the Lake Oswego Trails Master Plan. The results of the analysis indicate that the largest unfunded areas are in the downtown area. Highway 43/State Street is a major arterial that connects Lake Oswego to other cities, such as Portland to the north and West Linn to the south. This arterial also connects with the mixed-use path that runs parallel to Terwilliger Boulevard. The results of the analysis also indicate that there is no north-south bicycle connection in Lake Oswego's downtown. Fourth Street was identified as a potential route because it connects the City's transit center, library, City Hall, Rossman Park, and a supermarket.

Some bicycle routes have a single gap that prevents them from approximately doubling in length. Iron Mountain Boulevard between Twin Fir Road and Lakeview Boulevard, for example, is a gap that would



connect western Lake Oswego to eastern Lake Oswego. McVey Avenue between Highway 43 (State Street) and Lakefront Road is another gap that would connect Highway 43 (State Street) to the rest of southern Lake Oswego.

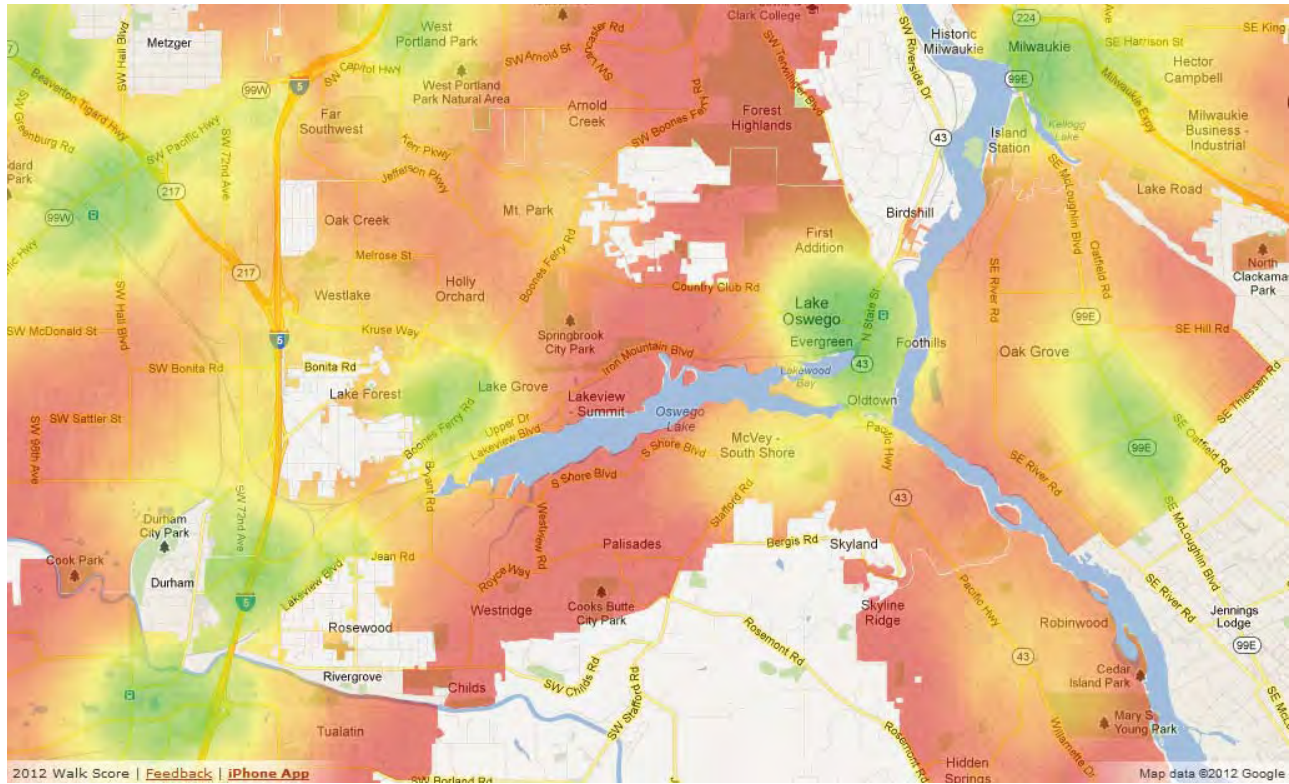
Walkability Analysis

“Walkability”, or the comfort and convenience of walking, is frequently used as a measure of the livability of an area and is used by the real estate industry in marketing residential properties. Walk Score is a ranking of 0 to 100 that is used to measure the walkability of an area. A Walk Score of zero means that virtually all trips and errands require a car, while a score of 100 means that all trips and errands can be accomplished on foot.

The Walk Score algorithm is based on walking distances from an address to a diverse set of nearby amenities. Certain categories are weighted more heavily than others to reflect destinations associated with more walking trips. In addition, road connectivity metrics such as intersection density and average block length are factored into the score. Walk Score uses a variety of data sources such as Open Street Map, local business listings, and public data sources such as parks and schools.

Exhibit 4 shows the Walk Score for various locations within Lake Oswego. Areas shown in green have the highest Walk Score (are the most walkable); areas shown in red have the lowest Walk Score (are the least walkable). Walk Score considers walking routes to destinations such as grocery stores, schools, parks, restaurants, and retail. They also consider pedestrian friendliness measures such as population density, average block length, intersection density, link/node ratio, and route directness.

Exhibit 4: Walkability Analysis



Source: WalkScore.com, a product of Walk Score, Inc.

Based on this analysis, the most walkable areas in Lake Oswego are located in or near the downtown area and along Boones Ferry Road where sidewalks and a variety of destinations are available. The Walk Score does not consider the condition of sidewalks, only that they are present. Lake Oswego’s overall walk score is 51 out of 100.

A key policy consideration is whether the City should focus future pedestrian facility investments in areas that are already ranked high for walkability, or concentrate on filling in gaps, which would connect activity centers and improve overall community walkability. This TSP contains a wide range of projects that can be packaged to accomplish either or both objectives, depending on available funding options.

The results of the connectivity and walkability analysis were used to develop a list of potential pedestrian and bicycle projects for the TSP Update. Each project was evaluated based on its ability to provide a needed connection within Lake Oswego. A majority of the projects are included below.

PEDESTRIAN AND BICYCLE PROJECTS

The pedestrian and bicycle projects build on previous planning efforts and the needs analysis discussed above. Figures 7A through 7D illustrate the location and provide an ID number for each of the projects.



Table 14 summarizes the various characteristics of the projects and identifies the source of each project as well as noting public comments received through TSP adoption process. The “type” of project describes the basis of the project development; the “description” provides a starting point for the project scope; the “estimated cost” is given in 2013 dollars; the “source document” lists the origin(s) of the project; and the “comments” offers insights from neighborhood association (NA) reviews during the public comment period. Projects may involve coordination and/or funding assistance from multiple jurisdictions; those details, as well as a complete project refinement, will be determined when a project becomes eligible for funding. In addition, owner consent for facilities proposed outside the existing street network, such as trails/pathways will be addressed at the time the Council considers a project for funding.

Projects in the TSP are conceptual and specific details are unknown at this point and may change significantly through the project funding process. These projects should be packaged to leverage available funding options and to implement the Connected Community goals and policies. Should a project become eligible for funding or construction by association with another project, the selected project will go through a vigorous public process, particularly, where a Neighborhood has opposed a project. There are no pedestrian and bicycle projects identified on the fiscally-constrained list.

Some future roadway projects have been identified that could be dependent or “contingent” on obtaining private property. Those projects identified as Contingent Private-property Projects and shown in Table 15 and Figures 7A through 7D are subject to Council policy and direction, individual property owner notice and consent, due-diligence, public review and comment and, where applicable, neighborhood planning prior to implementation of the projects. This may result in future amendments of the TSP.

Table 14: Pedestrian and Bicycle Projects

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
3 (7C)	Sidewalks	Boca Ratan Sidewalk: Atwater to Bonniebrae	1,600' long, 5.5' wide curb-tight sidewalk along the east side. Existing curbs and storm drains. R/W required, parking will be removed. Completes a connection.	\$342,000	CIP, Citizen Request, 2002 TAB "top ten" List	
4 (7B)	Pathways	Canyon Drive Neighborhood Pathway: Dellwood to South Shore	1,150' long, 5' wide separated asphalt pathway on east side of road. Section between Park Rd and Greentree Rd is in an unconstructed R/W and will need heavy rock section to manage soft soils/natural springs. Adequate R/W. Transit connection on South Shore Blvd.	\$548,000	CIP, Palisades Neighborhood Plan, TMP	NA confirmed project in compliance with Palisades Neighborhood Plan.
5 (7A & 7B)	Bike & Pedestrian	Carman Drive Sidewalks and Bike Lanes: Kruse Way to I-5	6,600' long, 6' wide bike lanes, 6' wide separated concrete sidewalks along 70% of length, both sides. Widen roadway from Kruse Way to I-5 (1.2 miles). Subject to road transfer from Clackamas County. Transit connection on Kruse Way and at I-5/Carman Dr. interchange.	\$3,710,000 ¹	CIP, Neighborhood Request, CC TSP	NA concern that sidewalks and bike lanes are too wide.
6 (7D)	Pathways	Cherry Lane Pathway: Chapin Way to Hwy. 43	750' long, 5' wide separated asphalt pathway on south side of road. Include 3'-5' gravel shoulder. Adequate R/W, vegetation removals. Completes connections to Hallinan Elementary School and TriMet bus stop. SRTS route.	\$89,000	CIP , Glenmorrie Neighborhood Plan, TAB Top 10 list	NA concern of stormwater impacts from additional impervious surfaces.
7 (7B)	Pathways	Childs Rd (west) Pathway: Canal Rd to Sycamore Ave	1,550' long, 6' wide separated asphalt pathway on one side of the road. Include storm drain system to accommodate roadside ditch. Larger project listed on Clackamas County TSP. Traverses identified wetlands and tree groves.	\$385,000 ¹	CIP, Neighborhood Request, CC TSP	NA noted this as high priority. Possible funding from parks.
9 (7A)	Sidewalks	Daniel Way Sidewalk: Kruse Woods Place to Carman Drive	Replace gravel pathway with 800' long, 6' wide separated sidewalk on west side of road. Remove parking and rebuild landscape islands within West End Building campus. Completes a connection.	\$200,000	CIP, Holly Orchards Neighborhood Request, TMP	NA concern that sidewalks are too wide and would like further consultation.
10 (7C)	Pathways	E Avenue Pathway: 4th to 10th Street	2,000' long, 5' wide separated asphalt pathway that includes storm water drainage improvements. SRTS route. Extends a connection. Part of Metro's Hillsdale to LO Regional Trail.	\$530,000	CIP, First Addition Neighborhood Plan, Metro Regional, TAB Top 10 list, TMP	Mixed support by NA. Concern for stormwater issues. Not shown on neighborhood plan.
11 (7B & 7D)	Pathways	Fernwood Drive Pathway: South Shore to Marjorie	3,300' long, 6' wide asphalt shoulder pathway on west/south side of road. Pathway could impact on-street parking and need extensive storm water system to pipe the ditch lines in the right-of-way. Extends a connection. Transit connection on South Shore.	\$888,000	CIP, Palisades Neighborhood Plan, TMP	NA confirmed project in compliance with Palisades Neighborhood Plan.



Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
12 (7A)	Sidewalks	Fir Ridge Road Sidewalk: Twin Fir to Wembley Park Road	900' long, 5' wide separated concrete sidewalk, 5' wide landscape strip on the north side of street. Existing curbs. Extends a connection.	\$111,000	CIP, TMP	NA confirmed project consistent with goals of Uplands Neighborhood Association Board.
15 (7A & 7C)	Pathways	Goodall Road Pathway: Knaus to Country Club	3,000' long, 6' wide asphalt shoulder pathway on the east side of road. R/W needed to accommodate swale. Completes a connection. Subject to road transfer from Clackamas County. Transit connection on Country Club.	\$860,000	CIP, TMP	
16 (7B)	Sidewalks	Greentree Road Sidewalk: Fernwood to Westview	2,400' long, 5.5' wide curb-tight concrete sidewalk. Use of shoulder areas would eliminate parking. Requires widening, retaining walls and storm drainage modifications.	\$682,000	CIP, Palisades Neighborhood Plan, TMP	NA confirmed project in compliance with Palisades Neighborhood Plan.
17 (7B)	Pathways	Kelok Pathway: South Shore to Bryant	1,000' long, 5' wide separated asphalt pathway, 5' landscape strip on one side of the road. Loss of on-street parking.	\$1,586,000	CIP, TMP	Mixed support. Concern for loss of on-street parking. Option for pedestrian connection at Fir Rd to Cardinal.
18 (7A)	Pathways	Kerr Pkwy (south) Pathway: McNary to Boones Ferry Rd	1,400' long, 6' wide separated pathway along the east side. Would occur in cooperation with the Mountain park HOA; extends pathway built along common property. Crash history on Kerr. Transit connection at Kerr and Boones Ferry.	\$212,000	CIP, Mountain Park Homeowner Association Request	
19 (7A & 7C)	Bike & Pedestrian	Knaus Rd Pathway: Boones Ferry to Country Club	4,000' long, 6' wide separated asphalt pathway, 5' wide bike lanes. Some sections subject to road transfer with Clackamas County. Closes many gaps created through annexation and redevelopment. Transit connection on Country Club. (See #209)	\$4,500,000	CIP, TMP	
20 (7A & 7B)	Pathways	Lakeview Blvd Pathway: Summit Drive to Iron Mtn. Blvd	1,000' long, 5' wide attached asphalt pathway on east side of roadway. Includes crosswalk at Iron Mtn. roundabout and crossing over RR tracks. R/W required and an extensive (450' long, 20' high) retaining wall necessary; possible road reconstruction.	\$1,556,000	CIP, Citizen Request	
21 (7A)	Pathways	Lanewood/Douglas Circle Sidewalk & Pathway: Twin Fir to Boones Ferry Road	600' long, 5' wide curb-tight sidewalk along Lanewood St to Boones Way, both sides. 1,600' long, 5' wide attached asphalt pathway from Boones Way to Twin Fir, one side; widening required. Extends a connection. Transit connection on Boones Ferry Road.	\$358,000	CIP, Lake Grove Neighborhood Association, TMP	
22 (7D)	Sidewalks	Laurel Street Sidewalk: Cornell to Hallinan	1,600' long, 6' wide curb-tight sidewalk. Closes gaps with existing sidewalks. 450' long retaining wall with guardrail, storm piping on both sides, and 4' roadway (shy) widening required. SRTS route.	\$1,305,000 ³	CIP, Hallinan Neighborhood Association Request	Supported by NA.

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
23 (7C)	Pathways	Library to Adult Community Center Pathway	530' long, 6' wide attached asphalt pathways on 4th St between E and F Ave (230') and on G Ave between 4th and 5th (200'). Project could be combined with the E Avenue Pathway project to provide connectivity if both facilities remain in the current location. Half-street (10' wide) roadway widening required.	\$312,000	CIP, First addition Neighborhood Plan, TAB Top 10 list	
24 (7B)	Sidewalks	Meadowlark Ln Sidewalk: Overlook Dr to Ridge Pointe Dr.	700' long, 5.5' wide curb-tight sidewalk on east side of road. Extends a connection. Existing curb and gutter available. Remove some existing landscaping and trees. Rebuild driveway aprons. SRTS route.	\$240,000	CIP, Palisades Neighborhood Plan	NA confirmed project in compliance with Palisades Neighborhood Plan.
25 (7A)	Sidewalks	Mercantile Dr. Sidewalk: Hallmark to Boones Ferry Rd	400' long, 5.5' wide curb-tight concrete sidewalks on both sides. Short retaining wall at back of walk with handrail, north side only. Remove all street trees, replace behind walk where space. Existing curbs. Completes a connection. Transit on Boones Ferry.	\$267,000	CIP, Waluga Neighborhood Plan	NA does not support sidewalks on both sides or removal of any trees.
26 (7D)	Pathways	Oak St Pathway: McVey to Palisades Terrace Drive	1,000' long, 5' wide attached asphalt pathway on south side of street; completes connection. Area is fairly flat, R/W ok; Lost Dog Creek culvert may have to be extended and roadway widened. Transit connection on McVey.	\$132,000	CIP, TMP	
27 (7B)	Sidewalks	Palisades Crest Dr Neighborhood Sidewalk: Hillside Dr to Cooks Butte Park	1,100' long, 5.5' wide curb-tight concrete sidewalk along the northeast side (where streetlights already exist). Existing curb and gutter. Several utilities would need to be moved and some trees would be removed.	\$146,000	CIP, Palisades Neighborhood Plan	NA confirmed project in compliance with Palisades Neighborhood Plan.
28 (7C & 7D)	Pathways	Willamette River Greenway Trail: Roehr Park Pathway Repair/Upgrade	1,200' long, 10' wide separated asphalt pathway. Reconstruct and relocate existing 6' path to regional standard of 10' to avoid high water and resolve root heave issues. Part of Metro Regional Trail System (aka William Stafford Pathway). (See #86.)	\$243,000	CIP, Parks Department	
29 (7A & 7C)	Sidewalks	Timberline Dr. Sidewalk: Knaus to Bonniebrae Drive	2,700' long, 6.5' wide curb-tight sidewalk on Neighborhood Collector with existing curbs on 2/3 of length, one side only. Multiple driveway apron reconstructs; landscaping removal; mailbox relocations.	\$454,000	CIP, TMP	
30 (7A & 7B)	Pathways	Twin Fir Pathway: Upper to Boones Ferry Road	3,500' long, 5' wide asphalt shoulder pathway; include wide stripe with RPMs. Geotechnical studies, retaining walls, and storm drainage system required. Transit connection on Boones Ferry.	\$1,846,000	CIP, TMP	
31 (7B)	Pathways	Waluga Dr Pathway: Oakridge to Madrona	1,200' long, 5' wide separated asphalt pathway on east side of road. Driveway and fence rebuilds, numerous large tree removals. Completes a connection.	\$280,000	CIP, Lake Forest Neighborhood Request, TMP	NA does not support project if tree removal necessary.



Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
32 (7B)	Pathways	Washington Court Pathway: Roosevelt Avenue to Boones Ferry Road	3,200' long, 5' wide separated asphalt pathway, one side of road. R/W consistent on north side. R/W required, Lake Forest to Bonaire; some areas subject to road transfer from Clackamas County. Encroachment issues and tree removals required. No stormwater piping, structure adjustments only. Transit connection on Boones Ferry.	\$488,000	CIP, TMP	
33 (7B)	Sidewalks	Westview Dr. Sidewalk: Greentree Rd to South Shore	350' long, 5.5' wide curb-tight sidewalk along a very narrow section of roadway that would have to be brought up to City standards. Target west side of road. Due to steep banks on both sides, a large retaining wall would be needed. Cantilever driveways will need redesign; several trees need to be removed. Road needs complete geotechnical study and engineering design. Transit on South Shore.	\$881,000	CIP, Palisades Neighborhood Plan, TMP	NA confirmed project in compliance with Palisades Neighborhood Plan.
34 (7C)	Pathways	Bridgeport to Milwaukie Regional Trail Bridge	Feasibility study for new bicycle and pedestrian trail and bridge connecting Lake Oswego via Tryon Cove Park to Milwaukie via Oakgrove. Option to utilize existing railroad bridge across the Willamette River. May study alternative alignments. Listed on Clackamas County TSP. (See #40, 87, 95)	\$200,000 ¹	CIP, Metro's Regional Transportation Plan, CC TSP	
35 (7A, 7B, 7C)	Pathways	Bridgeport to Milwaukie Regional Trail	Feasibility study for bicycle and pedestrian trail that follows the existing Pacific and Western railroad alignment from downtown Lake Oswego to I-5 using northern spur toward Tigard.	\$200,000 ¹	CIP, Metro's Regional Transportation Plan, TMP	
36 (7A)	Bike	Boones Ferry Road Bike Lanes: Country Club to northern city limit	3,500' long bike lanes on both sides. Includes extensive widening and retaining walls above and below the roadway grade. NHS/AASHTO standards apply.	\$5,713,000	CIP, Metro's Regional Transportation Plan	
37 (7B)	Bike & Pedestrian	Bryant Road Bike Lanes and Pathway: Childs Rd to Boones Ferry Rd	7,500' long, combo of bike lanes (widening), pathways, and striping on both sides of roadway. RR crossing reconstruction; retaining wall needed at X-ing. Coordinate with related TSP project: trail connection along canal to Tualatin River.	\$10,200,000	CIP, Metro's Regional Transportation Plan	
38 (7C & 7D)	Bike	Highway 43 Bike Lanes: Terwilliger Blvd to Oak Street	5,500' long bike lanes, both sides. NHS/AASHTO/ODOT standards apply.	\$7,587,000 ¹	CIP, Metro's Regional Transportation Plan	
39 (7A, 7B, 7C)	Bike & Pedestrian	Iron Mountain/Upper Drive Bike Lanes: 10th Street to Bryant Road	14,000' (2.65 mi) long bike lanes, both sides. Widening needed to accommodate bike lanes and pathways. Transit connection at 10th/A Ave. Alternate route for pedestrians along future Iron Mountain Park Trail.	\$6,682,000	CIP, Metro's Regional Transportation Plan	NA would like to dovetail this project with Iron Mountain Park improvements, address safety issues with guardrail, and enhance intersection with Summit.

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
40 (7C)	Pathways	Willamette River Greenway Trail: Lake Oswego to Portland (via OR 43)	Conduct a refinement study for a 16,600' long (3.15 mi) trail that follows along Highway 43 and connects downtown Lake Oswego to Portland. Alternate route along Willamette Shore Line (Trolley) Trail alignment (See #95). Continuation of Highway 43 Pathway (See #142). (City cost is 10% if grants available).	\$100,000 ¹	CIP, Metro's Regional Transportation Plan, Connecting Clackamas Plan	Project does not yet have consensus with agency partners regarding location/alignment.
41 (7A)	Sidewalks	Douglas Way Sidewalk: Quarry to Hallmark	900' long, 6' wide separated sidewalk with curb, 5' landscape strip on south side of road. Completes a connection. Several driveway rebuilds. SRTS route. (See #157)	\$360,000	CIP, Waluga Neighborhood Plan, LGVCP	NA no longer supports this project, despite Waluga NA Plan document. A pathway is preferred.
42 (7C & 7D)	Sidewalks	Durham Street Sidewalk: Alley to Ladd	100' long, 5' wide separated sidewalk to connect existing sidewalk to George Rogers Park. Suggest pavers to flex and protect adjacent large trees (roots).	\$25,000	NP, Old Town Neighborhood Plan	NA agrees with option to utilize pavers to protect trees. Request to utilize trench drains for stormwater that are pedestrian-friendly.
43 (7C)	Pathways	Lake Forest Dr Pathway: Ellis Ave to Berwick Rd	1,300' long, 5' wide separated asphalt pathway along the south side of the roadway to connect with proposed Berwick Road Pathway. Flat terrain, space already being used as pathway/parking. Removal of parking.	\$170,000	NP, Evergreen Neighborhood Plan	Neighborhood notes high priority for neighborhood due to heavy pedestrian use and speeding concerns. Consider realignment of Ellis/Lake Forest, and STOP sign on Ellis, eastbound. Citizen concerns over loss of parking
44 (7C)	Pathways	Berwick Road Pathway: Berwick Ct. to Ellis Ave	200' long, 5' wide separated asphalt pathway on east side of roadway to connect with proposed Lake Forest Dr Pathway. Flat terrain, space already being used as pathway/parking. Removal of parking.	\$36,000	NP, Evergreen Neighborhood Plan, TMP	Neighborhood notes high priority for neighborhood due to heavy pedestrian use.
45 (7C)	Pathways	Evergreen Road Pathway: 4th to 10th	1,400' long, 5' wide separated asphalt pathway on north side of roadway. Completes a connection. Requires widening; removal of on-street parking.	\$173,000	NP, Evergreen Neighborhood Plan, TMP	Neighborhood notes high priority due to heavy pedestrian use. Connects to completed section along Our Lady of the Lake. Citizen concerns regarding loss of landscaping.
46 (7B)	Sidewalks	Treetop Ln Sidewalk: Overlook to Fernwood Dr	1,300' long, 5.5' curb-tight concrete sidewalk on east side of roadway. Extends pedestrian route north. Existing curbs on both sides.	\$176,000	NP, Palisades Neighborhood Plan, TMP	NA confirmed project in compliance with Palisades Neighborhood Plan.



Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
47 (7B)	Sidewalks	Hillside Dr Sidewalk: Palisades Crest Dr to Fernwood Circle	1,600' long, 5.5' wide curb-tight concrete sidewalk on one side of roadway. Initiates a route. Existing curbs on both sides.	\$180,000	NP, Palisades Neighborhood Plan	NA confirmed project in compliance with Palisades Neighborhood Plan.
48 (7B)	Pathways	Fernwood Circle Pathway: Fernwood Drive to Fernwood Drive	1,400' long, 5' wide separated asphalt pathway on one side of street (north and west side) to connect with proposed Hillside Dr Sidewalk and Fernwood Dr Pathway. (no curbs on Fernwood Cir.)	\$389,000	NP, Palisades Neighborhood Plan	NA confirmed project in compliance with Palisades Neighborhood Plan.
50 (7B)	Sidewalks	Roosevelt Ave Sidewalk: Washington Ct to Harrington	1,600' long, 6' wide curb-tight concrete sidewalk on one side of roadway, reconstruct portion of roadway. Add sanitary sewer and stormwater infrastructure along entire length. Subject to road transfer from Clackamas County. Initiates a connection, may connect to Washington Court Pathway.	\$1,374,000	NP, Lake Forest Neighborhood Request	
53 (7B & 7D)	Sidewalks	Cloverleaf Dr Sidewalk: Banyan to Fernwood Dr	1,800' long, 5.5' wide curb-tight concrete sidewalk along school property. Existing curbs on both sides. Minor tree and embankment issues, meander sidewalk around trees. Initiates a connection, may connect to Fernwood Dr. Pathway.	\$319,000	NP, Palisades Neighborhood Plan	NA confirmed project in compliance with Palisades Neighborhood Plan.
58 (7C)	Sidewalks	E Ave Sidewalk: State Street to 1 st Street	600' long, 5.5' wide curb-tight concrete sidewalk, preferably on north side. Coordinate ex. curb shift to accommodate sidewalk, on-street parking mitigation. Completes a connection. Connects to Metro's Hillsdale to LO Regional Trail.	\$132,000	NP, First Addition Neighborhood Plan	
73 (7A)	Pathways	Kerr Pkwy (north) Pathway: PCC to Multnomah. Co line	2,700' long, 8' wide separated asphalt pathway, 3' landscape strip on west/south side of roadway; create ADA accessible route at Jefferson Pkwy.	\$1,023,000	1997 TSP	
74 (7C)	Pathways	Hwy 43 Buffered Pathway: Public Storage to Briarwood	2,000' striping to create pathway (buffer), east side only. Coordinate with ODOT and Clackamas County. Major widening/retaining wall/guardrail needed between Public Storage and Stampfer Road (~300' long); otherwise, plenty of existing shoulder pavement. NHS/AASHTO/ODOT standards apply.	\$2,225,000 ²	1997 TSP	
75 (7B)	Pathways	Lakeview Blvd Pathway: Jean Rd to 65th Ave	2,300' long and 5' wide separated asphalt pathway or sidewalk, likely on north/west side of roadway. Install storm drain system. May involve loss of parking and minor vegetation removal. Completes a connection.	\$563,000	1997 TSP	Neighborhood notes the undesirable skew, especially for trucks; request realignment of Lakeview at Jean Road. Citizens noted concern of truck traffic diverting off, using Kenny. Citizen desire to retain trees by adjusting designs.

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
76 (7B)	Sidewalks	Pilkington Rd Sidewalk: Willow to Boones Ferry	1,050' long, 5.5' wide separated concrete sidewalk on both sides of roadway where none exist. Completes a connection.	\$413,000	1997 TSP	
78 (7A)	Pathways	McNary Pkwy Pathway: Jefferson to McNary Highlands	500' long, 6' wide separated asphalt pathway, 8' landscape strip. Follows along frontage of Mountain Park Church (south side of roadway). Coordinate with Mountain Park HOA, since R/W ends at curb. Transit connection on McNary.	\$62,000	1997 TSP	
79 (7A)	Sidewalks	Meadows Rd Sidewalks: Carman Drive to Bangy Rd	1,400' long, 6.5' wide curb-tight sidewalk to fill-in gaps on south side.	\$164,000	1997 TSP	
80 (7A)	Bike & Pedestrian	Bonita Rd Sidewalks/ Bike Lanes: Bangy Road to Carman Drive	2,300' long, 5.5' sidewalks and 6' bike lanes on both sides. Widening of roadway involves tree removals and loss of on-street parking. Several steep areas for catch point. Listed on Clackamas County TSP.	\$3,465,000	1997 TSP, CC TSP	
81 (7A)	Pathways	Fosberg Rd Pathway: Melrose to Carman	2,000' long, 5' wide separated asphalt pathway along west side of roadway. Minor on-street parking reductions. Completes a connection.	\$230,000	1997 TSP	
82 (7B)	Sidewalks	Red Leaf St Sidewalk: Pilkington to Tualata	650' long, 5.5' wide separated concrete sidewalk. Subject to road transfer from Clackamas County. Extends a connection to proposed Tualata sidewalk. Existing curbs on both sides.	\$96,000	1997 TSP	Neighborhood support neutral; concern for loss of on-street parking and/or landscaping.
83 (7B)	Sidewalks	Tualata Sidewalk: Red Leaf to Jean Rd	2,700' long, 5.5' wide separated concrete sidewalk. Extends a connection to proposed Red Leaf sidewalk. Partial curbs on both sides. Subject to road transfer from Clackamas County.	\$462,000	1997 TSP	Neighborhood support neutral; concern for loss of on-street parking and/or landscaping.
84 (7B)	Sidewalks	Centerwood St Sidewalk: Red Leaf to city limit	650' long, 5.5' wide separated concrete sidewalk on north side of roadway. Extends connection to proposed Tualata sidewalk. Existing curbs. Subject to road transfer from Clackamas County.	\$105,000	1997 TSP	Neighborhood support neutral; concern for loss of on-street parking and/or landscaping.
85 (7A)	Sidewalks	Westlake Dr Sidewalk: Kruse Way to Amberwood Circle	1,700' long, 6' wide curb-tight sidewalk on west side of roadway (already pathway, sidewalk on east side). Existing mountable curb. Some R/W acquisition necessary, construction may impact private fences and existing trees.	\$250,000	1997 TSP	NA feels project is unjustified: tree/ROW impacts are too great. NA suggested alternative: stripe crosswalk at Amberwood Circle to access pathway on east side of Westlake Dr. Access to commercial area at Westlake/Parkview is of high importance.



Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
87 (7C)	Pathways	Willamette River Greenway Trail: Foothills Park to Tryon Cove Park	500' long, 10' wide asphalt pathway completes a connection at the existing north end Foothills pathway to Tryon Cove Park with a pedestrian bridge (per Foothills District Plan). (See #28, 34,86, 95)	\$390,000	1997 TSP, Metro's Regional Transportation Plan	
88 (7B & 7D)	Pathways	South Shore Blvd. Pathway: Lakeview to McVey	12,800' long, 6' wide separated asphalt pathway on south side of roadway. Retaining walls and surface water improvements required. Minor R/W needed.	\$6,430,000	1997 TSP	NA confirmed project in compliance with Palisades Neighborhood Plan.
89 (7D)	Sidewalks	Hallinan Sidewalk: Hemlock to Cherry	1,000' long, 5.5' wide curb-tight concrete sidewalk on both sides. Extends connections. Existing curbs on both sides. Rebuild all driveways.	\$199,000	1997 TSP	Supported by citizens.
90 (7B)	Pathways	Pilkington Rd Pathway: Pilkington Park to Childs Rd	700' long, 5' wide separated asphalt pathway extends a connection to proposed Childs Rd pathway. Transit connection on Pilkington. R/W is Rivergrove.	\$88,000	1997 TSP	Neighborhood noted on-street parking concerns; would like speed reduction to 25 mph.
91 (7B & 7D)	Bike	Stafford Rd Bike Lane: South Shore to Overlook	4,600' long, 6' bike lane legends and striping on both sides. RPMs on curves. Widening and ditch reconstruction required. Retaining wall and guardrail construction on portion of east side.	\$2,778,000	1997 TSP	NA confirmed project in compliance with Palisades Neighborhood Plan.
92 (7A)	Bike	Melrose Bike Lanes: Westlake to Botticelli	2,900' long, 6' wide bike lane striping and legends on both sides. NO widening required. Initiates a connection; may connect to proposed Botticelli bike lanes. Could be completed by city forces.	\$22,000	1997 TSP	
93.2 (7A)	Bike	Botticelli Bike Lane: Melrose to Touchstone	2,000' long, 6' wide bike lane striping on south/east side. NO widening required. Removal of on-street parking.	\$17,000	1997 TSP	
93.1 (7A)	Bike	Botticelli Bike Lanes: Melrose to Touchstone	2,000' long, 6' wide bike lane striping on both sides. Widening, tree removals, and retaining walls required; removal of on-street parking.	\$1,430,000	1997 TSP	
95 (7C)	Pathways	Willamette Greenway Trail: Willamette Shore Line (Trolley) Trail	5 mile pedestrian trail from down town Lake Oswego to Portland. The total cost of this regional project is estimated at \$46,300,000. If grants and regional funding is provided the cost to Lake Oswego is estimated at 10% of total cost. Alt route along Highway 43 (See #34, 40, 87).	\$4,640,000 ¹	TMP	
96 (7B & 7D)	Pathways	Stafford Rd Pathway: Rosemont to Childs	1,700' long, 6' wide asphalt shoulder/pathway on west side of roadway within Clackamas County R/W. Include wide stripe with RPMs. Culvert extension at Pecan Creek. Extends a connection to proposed Childs Rd pathway. Listed on Clackamas County TSP. Connects to Metro's River-to-River	\$2,320,000	TMP, CC TSP	

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
			regional trail on Stafford/McVey (Hwy 43 to Rosemont).			
97 (7B)	Pathways	Childs Rd (east) Pathway: Stafford to 35th	6,400' long, 6' wide asphalt/shoulder pathway on one (north) side of roadway within Clackamas County R/W. Retaining walls and tree removals required. Extends connection to proposed Stafford Rd Pathway from sidewalks at 35th and Childs Rd (west) Pathway. Listed on Clackamas County TSP.	\$3,366,000	TMP	
98 (7C & 7D)	Pathways	Green Bluff Pathway: Wayside to Glenmorrie Dr	3,700' long, 6' wide asphalt shoulder/pathway on one side of roadway. Install wide stripe and RPMs for full length. Extends a connection from Wayside, may connect to proposed Glenmorrie pathway. Stormwater improvements required. Located in landslide area.	\$1,435,000	TMP	
99 (7D)	Pathways	Glenmorrie Dr (west) Pathway: Green Bluff to Hwy 43	650' long, 5' wide asphalt shoulder/pathway. Install wide stripe and RPMs. Extends a bike connection from Hwy 43. Transit connection on Hwy 43. Connects to related TSP project east of Hwy 43.	\$226,000	TMP	NA concern of stormwater impacts from additional impervious surfaces.
100 (7D)	Pathways	Bergis Rd/Cornell Pathway: Bergis Farm Dr/Cornell St to existing path	2,400' long, 6' wide separated asphalt pathway on north/west side of roadway. Extends a connection. Subject to road transfer from Clackamas County.	\$250,000	TMP	NA confirmed project in compliance with Palisades Neighborhood Plan.
104 (7C)	Bike	Terwilliger Bike Lanes: Highway 43 to city limits/Castleridge Ln.	3,800' long, 6' wide bike lanes on both sides of roadway. Widening and stormwater system required. Subject to road transfer from Clackamas County.	\$1,685,000	TMP	
106 (7A)	Sidewalks	Kerr Pkwy Sidewalk: Boones Ferry to The Grotto	600' long, 5.5' wide curb-tight concrete sidewalk on one side of roadway; completes a connection. Improves safety for pedestrians by keeping vehicles within lanes. Eliminates existing shoulder, remove stripe.	\$119,000	John Woods Request	
118 (7B)	Bike & Pedestrian	Jean Road Bike Lanes and Sidewalks: Jean Way to Pilkington Road	1,250' long, 2-6' bike lanes, 5' landscape strip, and 6' separated concrete sidewalks on the south side of the roadway. Widening required. (See #62)	\$975,000	TSP Update 2012-2013	Neighborhood notes Jean Rd/Jean Way intersection difficult for egress from west side.
119 (7A)	Bike & Pedestrian	Fosberg Rd Bike Lanes and Sidewalks: Southwood Drive to Melrose	700' long of 2-6' wide bike lane striping; 300' of travel lane widening for bike lane; and 700' long, 5.5' wide curb-tight concrete sidewalk on west side of the roadway. Extends connection from Melrose.	\$440,400	TSP Update 2012-2013	A portion of the sidewalk may be accommodated through development.
120 (7A)	Pathways	McNary Parkway Pathway: Kerr Parkway to Churchill Downs	1,400' long, 6' wide separated asphalt pathway along the east or west side of the roadway. Coordinate with Mountain Park HOA.	\$448,000	TSP Update 2012-2013	
122 (7B)	Bike & Pedestrian	Pilkington Bike Lanes and Sidewalks: Willow Road to Jean Road	700' long, 6' wide bike lanes and 5.5' wide curb-tight concrete sidewalks on both sides of the road. Widening and R/W required. Extends connections from related TSP projects.	\$546,000	TSP Update 2012-2013	



Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
123 (7A)	Bike & Pedestrian	Jefferson Parkway Bike Lanes and Pathways: Mt. Jefferson Terrace to McNary Parkway	650' long, 6' wide bike lanes and pathways (where they do not exist). Project will require removal of on-street parking from one side of the roadway. Long retaining walls and numerous tree removals required. Coordinate with Mountain Park HOA.	\$247,000	TSP Update 2012-2013	
124 (7B)	Pathways	Lakeview Boulevard Pathway: Bryant Road to South Shore Boulevard	1,500' long multi-use shoulder on the south side of the roadway. Install wide stripe and RPMs. Extends a connection. Widening and retaining walls required.	\$570,000	TSP Update 2012-2013	
125 (7A)	Bike	McNary Parkway Bike Lanes: Jefferson Pkwy to Kerr Pkwy	1,500' long, 6' bike lanes. Remove and replace striping. Coordinate with Mountain Park Homeowner Association.	\$15,000	TSP Update 2012-2013	
126 (7B & 7D)	Bike	Overlook Drive Bike Lanes: Meadowlark Lane to Stafford Road	2,300' long, 6' wide bike lanes. Widening on north side required, possible loss of on-street parking on south side. Potential for ramps up and through curb extensions along north and south sides of the roadway.	\$874,000	TSP Update 2012-2013	NA confirmed project in compliance with Palisades Neighborhood Plan.
127 (7B)	Bike	Royce Way Bike Lane: Bryant Road to Westview Road	2,500' long, 6' wide bike lane in uphill direction. Existing curbs on both sides.	\$25,000	TSP Update 2012-2013	NA suggests striping bike lane in uphill direction only. Striped lane in downhill direction is generally unnecessary and would eliminate on street parking for which there is no alternative.
128 (7A)	Bike	Parkview Drive Bike Lanes: Westlake Drive to Fosberg Road	3,040' long, 6' wide bike lanes. Widening required. Existing curbs on both sides with separated sidewalk.	\$1,155,200	TSP Update 2012-2013	
130 (7A)	Pathways	Touchstone Road Pathway: Kerr Parkway to Carman Drive	4,000' long wide stripe and RPMs for multi-use shoulder along one side of the roadway. Project will require removal or restriction of on-street parking from one side of the roadway.	\$40,000	TSP Update 2012-2013	
131 (7B)	Bike & Pedestrian	65th Ave Bike Lanes and Sidewalks: Lakeview Boulevard to Childs Road	1,800' long, 6' bike lanes and 5.5' separated sidewalks along both sides of the roadway. Widening required.	\$2,016,000	TSP Update 2012-2013	Neighborhood noted concerns regarding truck turning widths needed at McEwan/65 th ; suggests sidewalk on one side only.
132 (7B)	Pathways	Boones Ferry Road Pathway: Washington Ct to Pilkington Rd	1000' long, 6' wide separated asphalt pathway. Completes a connection between existing sidewalk at Boones/Pilkington and incomplete pathway above retaining wall. NHS/AASHTO standards apply, design exception needed.	\$125,000	TSP Update 2012-2013	

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
142 (7D)	Roadways	Highway 43 Pathway: Lake Oswego to West Linn/Oregon City	Conduct a refinement study for an active transportation corridor along Highway 43, consistent with the Connecting Clackamas Plan. Completes a connection. Project listed on Clackamas County's TSP. Continuation of Willamette Greenway Trail (See #40).	\$100,000 ¹	CC TSP, Connecting Clackamas Plan	Project does not yet have consensus with agency partners regarding location/alignment.
144 (7B)	Pathways	Lake Oswego to Tualatin Trail	5,000' long trail that follows the canal from Bryant Road to River Run Park. New 400' long, 15' wide bridge across the Tualatin River. Some portions of soft-surface trail exist. Connects to related TSP project, Oswego Canal Trail.	\$2,500,000 ¹	TMP, Metro's Regional Transportation Plan	
145 (7A)	Pathways	LO-Tigard/Bridgeport-to-Milwaukie Trail Connection	3,620' long, 6' wide asphalt shoulder pathway. Connects two trails: LO-Tigard Trail (Country Club/Boones Ferry Rd/Kruse Way) and Bridgeport-to-Milwaukie Trail (P&W rail corridor). Begins at Kruse Way/Boones Ferry Road, extends north to Twin Fir, south to Edgemont, ending at Iron Mountain Park. Completes a connection.	\$1,375,600	TMP, Metro Regional Trails Plan	
153 (7A)	Sidewalks	Kruse Way Enhanced Sidewalk: Mercantile Dr to Boones Ferry Road	870' long, 9' wide separated concrete sidewalk, 10' landscape strip, both sides. Retaining walls required. Install decorative street lights, heavy landscaping, flower baskets. Remove existing curb-tight sidewalk.	\$391,500	LGVCP	Supported by NA.
154 (7A)	Sidewalks	Boones Ferry Road Enhanced Sidewalk: Kruse Way Place to Kruse Way	440' long, 9' wide separated concrete sidewalk, 10' landscape strip. Retaining walls required. Install decorative street lights, heavy landscaping, flower baskets. Remove existing curb-tight sidewalk. R/W required.	\$198,000	LGVCP	Supported by NA.
157 (7A)	Sidewalks	Douglas Way Sidewalk: west of Hallmark	260' long, 6' wide sidewalk with curb and gutter, 5' landscape strip on both sides of road. Completes a connection. Several driveway rebuilds. SRTS route. (See #41)	\$117,000	LGVCP	Not supported by NA.
158 (7B)	Sidewalks	Quarry Road Sidewalk: Oakridge to Boones Ferry Road	600' long curb and gutter (total), 50' long x 6' wide curb-tight concrete sidewalk (gap), several driveway rebuilds.	\$108,000	LGVCP	NA concerned over ROW impacts and would like further consultation.
159 (7B)	Sidewalks	Oakridge Road Sidewalk: Bonaire to Waluga Rd	2700' long, 6' wide meandering concrete sidewalk, both sides.	\$1,215,000	LGVCP	NA may prefer pathway.
164 (7A)	Pathways	Kruse Way Pathway: Galewood Pathway Connection	190' long, 6' wide asphalt pathway.	\$60,800	LGVCP	Not supported by NA.
165 (7A)	Pathways	Harvey Way-Mercantile Dr Pathway Connection	120' long, 6' wide asphalt pathway. Pedestrian bridge over wet area may be required.	\$338,400	LGVCP	Not supported by NA.



Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
174 (7D)	Pathway	Glenmorrie Dr (west) Sidewalk: Cherry Ln to Green Bluff Dr.	2000' long, 5' wide asphalt shoulder/pathway. Install wide stripe and RPMs. Connects to related TSP projects on Glenmorrie Drive (See #99).	\$760,000	TMP	NA concern of stormwater impacts from additional impervious surfaces. Widening may result in speeding issues.
175 (7D)	Sidewalks	O'Brien St Sidewalk & Pathway: Ash St. to Hallinan Open Space	250' long pathway, 340' long sidewalk: 5' wide asphalt pathway. Section between Ash St and Laurel St is in an unconstructed R/W. Adequate R/W.	\$236,000	TMP	Moderately supported by citizens.
176 (7D)	Sidewalks	Ash St Sidewalk & Pathway: Erickson to O'Brien St	250' long pathway, 1,000' long sidewalk, 5' wide. Section between Oak and Yates is in an unconstructed R/W. Adequate R/W.	\$500,000	TMP	Not supported by NA.
177 (7D)	Sidewalks	Maple St Sidewalks: Erickson to George Rogers Park Trail	800' long, 6' curb-tight sidewalk on north side of roadway. Add curb and gutter and 3' travel lane width. 200' long, 3' high retaining wall needed. Multiple driveway rebuilds.	\$362,000	TMP	Mixed support from neighborhood.
178 (7D)	Sidewalks	Erickson St Sidewalk: Maple St to Laurel St.	740' long, 6' wide curb-tight sidewalk along east side of road. Add curb and gutter and 8.5' parking lane pavement. 2 driveway rebuilds.	\$518,000	TMP	Supported by citizens.
179 (7D)	Sidewalks	Hemlock St Sidewalk: Parrish to Cornell	Parrish to Lee: 460' long, 6' wide curb-tight sidewalk along north side of road. Remove existing curb and 4' of road surfacing (street is 36' wide currently). Multiple driveway rebuilds. Lee to Cornell: 490' long, 6' wide curb-tight sidewalk along north side of road. Add curb and gutter and 15' travel lane width. Multiple driveway rebuilds.	\$513,200	TMP	Supported by citizens.
180 (7D)	Pathways	Lee St Sidewalk: Hemlock St to Aspen Park/Palisades 2 Reservoir	775' long, 6' wide asphalt shoulder pathway. Challenging design at driveways. Existing stair connection between Larch and Aspen streets.	\$294,500	TMP	Moderately supported by citizens.
182 (7B & 7D)	Pathways	Marjorie Ave Pathway: Fernwood Dr to Cloverleaf Drive	300' long, 6' wide asphalt shoulder pathway. 2 driveway rebuilds. Connects to related TSP project	\$114,000	TMP	NA confirmed project in compliance with Palisades Neighborhood Plan.
183 (7B)	Pathways	Dellwood Dr Pathway: Canyon Dr to Fernwood Cir	370' long, 6' wide separated asphalt pathway, 5' landscape strip. 2 driveway rebuilds. R/W adequate.	\$118,400	TMP	NA confirmed project in compliance with Palisades Neighborhood Plan.
184 (7B)	Pathways	Barton Rd Pathway: Riven Dell Rd to Childs Rd	3,050' long, 6' wide separated asphalt pathway. All property under County jurisdiction and outside of Lake Oswego's urban services boundary.	\$976,000	TMP	

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
186 (7B)	Bike & Pedestrian	Oswego Canal Trail: Bryant Road to Childs Road	1,125' long, 8' wide multi-use trail on unconstructed R/W. Need pedestrian bridge to cross canal. Enter through Canal Rd to avoid purchase of R/W from Lake Corp; construct pathway/sidewalk on Canal Rd. Completes a connection between Canal Rd and soft-surface path within Bryant Woods Nature Park. Aligns with LO-Tualatin trail.	\$660,000	TMP	
188 (7B)	Pathways	Depot Street Pathway: Lakeview Blvd to Bridgeport to Milwaukie Regional Trail	500' long, 6' wide separated asphalt pathway. Partially unconstructed R/W at Lower St, existing soft-surface trail. May need stairs/switchback trail to get up to RR R/W.	\$160,000	TMP	
194 (7B)	Bike & Pedestrian	Bridgeport to Milwaukie Regional Trail Connection: Upper Dr. to Bridgeport to Milwaukie Regional Trail	450' long, 8' wide separated asphalt pathway within unimproved R/W. May need switchbacks to get down to RR R/W.	\$144,000	TMP	
199 (7A)	Sidewalks	Burma Road Sidewalks: Bangy Road to Carman Drive	2,000' long, 6' wide curb tight sidewalk. Complete gaps in curb & gutter, curb-tight sidewalks on both sides. Subject to road transfer from Clackamas County.	\$740,000	TMP	
201 (7A)	Bike & Pedestrian	Meadow Ave Pathway: Meadows Dr to Carman Dr.	300' long, 8' wide multi-use asphalt pathway. Pathway to outlet into existing parking lot. Subject to road transfer from Clackamas County. Connects to related TSP projects.	\$96,000	TMP	
204 (7A)	Pathways	Glen Eagles Road Pathway: Wembley Park Road to Prestwick	1,920' long, 6' wide asphalt shoulder pathway.	\$614,400	TMP	NA confirmed project consistent with goals of Uplands Neighborhood Association Board. Consider stormwater runoff in design.
205 (7A)	Pathways	Glen Eagles Place Pathway: Wembley Park Road to Glen Eagles Road	525' long, 6' wide asphalt shoulder pathway.	\$168,000	TMP	NA confirmed project consistent with goals of Uplands Neighborhood Association Board. Consider stormwater runoff in design.
206 (7A)	Pathways	Prestwick Rd Pathway: Glen Eagles Rd to Crest Dr	880' long, 6' wide asphalt shoulder pathway.	\$281,600	TMP	NA confirmed project consistent with goals of Uplands Neighborhood Association Board. Consider stormwater runoff in design.



Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
207 (7A & 7C)	Pathways	Crest Dr Pathway: Prestwick Rd to Ridgecrest	1,500' long, 6' wide asphalt shoulder pathway.	\$480,000	TMP	NA confirmed project consistent with goals of Uplands Neighborhood Association Board. Consider stormwater runoff in design.
208 (7A & 7C)	Pathways	Uplands Dr Pathway: Ridgecrest Rd to Wembley Park Rd.	900' long, 6' wide asphalt shoulder pathway.	\$288,000	TMP	NA confirmed project consistent with goals of Uplands Neighborhood Association Board. Consider stormwater runoff in design.
209 (7A)	Sidewalks	Thoma Rd Sidewalk & Pathway: Knaus Rd to LO High School	820' long of curb and gutter and 6' sidewalk to the end of the cul-de-sac. 430' long, 6' wide asphalt pathway. R/W adequate. (See #19)	\$303,400	TMP	NA prefers pathways to sidewalks.
213 (7C)	Sidewalks	Atwater Road Pathway: Knaus Rd to Boca Ratan Dr	1,700' long, 6' wide asphalt pathway. Atwater needs to be fully reconstructed. Extends a connection and will connect to adjacent TSP projects. Subject to road transfer from Clackamas County.	\$629,000	TMP	NA prefers pathways to sidewalks. Concern for loss of rural nature of neighborhood.
214 (7C)	Sidewalks	Sunningdale Rd Sidewalks: Andrews Rd to 10th St	575' long, 7.5' wide curb tight sidewalks. 275' long, 8' wide asphalt shoulder pathway. Extends a connection along school property. SRTS route.	\$317,250	TMP	Not supported by NA. Not shown on neighborhood plan.
215 (7C)	Sidewalks	10th Street Sidewalk: E Ave to G Ave	750' long, 6' wide separated sidewalk (meandering, 6' average landscape strip) on east side of road. Extends a connection.	\$337,500	TMP	Not supported by NA. Not shown on neighborhood plan.
216 (7C)	Pathways	F Avenue Pathway: 10th St to ACC	1150' long, 6' wide separated asphalt pathway, 5' landscape strip. Initiates a connection and will connect to adjacent TSP projects.	\$368,000	TMP	Not supported by NA. Not shown on neighborhood plan.
217 (7C)	Pathways	G Avenue Pathway: 4th to 2nd St	750' long, 6' wide separated sidewalk (meandering, 6' average landscape strip) on east side of road. Extends a connection.	\$270,000	TMP	Not supported by NA. Not shown on neighborhood plan.
218 (7C)	Sidewalks	B Avenue Sidewalk: 9th St to 8th St	320' long, 6' wide separated sidewalk (6' landscape strip) on south side of road. Completes a connection.	\$144,000	TMP	Not shown on neighborhood plan.
219 (7C)	Sidewalks	C Ave Sidewalk: 10th St to Country Club	950' long, 6' wide separated sidewalk (6' landscape strip). Extends a connection. Transit on Country Club.	\$427,500	TMP	Not supported by NA. Not shown on neighborhood plan.
220 (7C & 7D)	Pathways	North Shore Pathway: Cabana Ln to Highway 43	3400' long, 6' wide asphalt shoulder pathway. Extends a connection. Transit on Hwy 43. Significant private property impacts requiring retaining walls.	\$1,088,000	TMP	NA would prefer additional connection along Cabana Ln.

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
221 (7C & 7D)	Sidewalks	Lakewood Rd Sidewalk: North Shore to Lake Oswego Swim Park	700' long, 6' wide separated sidewalk (no curb, 6' landscape strip). Completes a connection.	\$315,000	TMP	

1. Project requires coordinated funding and/or design collaboration with jurisdictional partners.
2. Project expected to be fully funded through outside sources.
3. Project is funded (2014).

Source Information
 CC TSP = Clackamas County TSP
 CIP = Capital Improvement Plan
 LGVCP = Lake Grove Village Center Plan
 TMP = Trails Master Plan

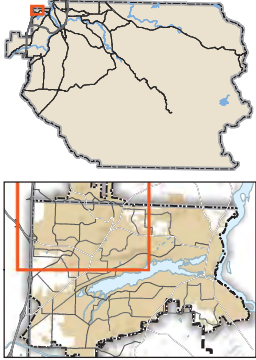
Table 15: Pedestrian and Bicycle Projects proposed on private property

Map ID (Fig#)	Type	Project Name	Description	Estimated Cost	Project Source	Comments
86 (7B)	Pathways	Willamette River Greenway Trail: George Rogers Park to Riverbend Condos	500' long, 10' wide asphalt pathway across the last 3 private properties (per Foothills District Plan). R/W required, awaiting willing seller. (See #28, 87)	\$162,000	1997 TSP, Metro's Regional Transportation Plan	
94 (7D)	Pathways	River-to-River Trail	8,330' long, 10' wide trail from George Rogers park to the Tualatin River. Coordinate with related TSP projects: Stafford Road and McVey bike lanes. (See #91, 103)	\$2,665,600 ¹	TMP, Metro Regional Trails Master Plan	
137 (7C)	Pathways	Willamette Steps	Construct a pedestrian connection between State Street and Foothills Road. Project will include new steps within a new 80-foot right-of-way, an at-grade crossing at the rail lines, street lighting, street furnishings and landscaping. ADA access will be provided either by a ramp system to the south of the steps or a public elevator incorporated into adjacent development.	\$2,132,000	Foothills Framework Plan	
163 (7A & 7B)	Pathways	Lanewood-Lake Grove Ave Pathway Connection	620' long, 6' wide asphalt pathway. Access easement for pathway required.	\$198,400	LGVCP	NA not supportive of tree removal.
185 (7B)	Pathways	Mossy Brae Road Pathway: River Run Park to Stafford Road	1.0 mile long, 6' wide separated asphalt pathway. 2,200' long is unimproved, requires R/W or easement agreement. May require culvert crossing or pedestrian bridge. All property under County jurisdiction and outside Lake Oswego's urban services boundary.	\$2,534,400	TMP, ATP	

Source Information
 LGVCP = Lake Grove Village Center Plan
 TMP = Trails Master Plan

Source Information
 LGVCP = Lake Grove Village Center Plan
 TMP = Trails Master Plan
 ATP = Active Transportation Plan





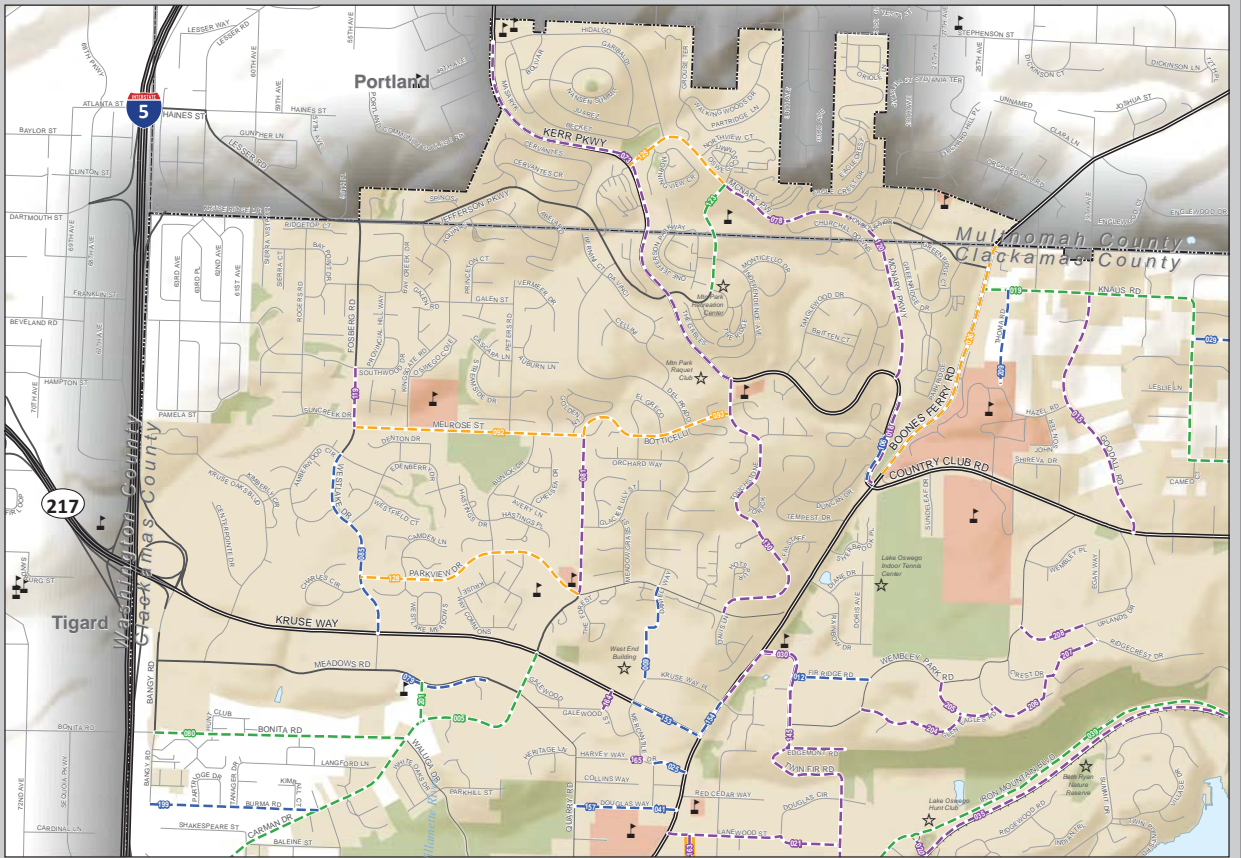
Bicycle and Pedestrian Projects

Figure 7A

- Planned Improvements**
- Pathways
 - Bike
 - Sidewalks
 - Bike and Ped
 - Contingent Private Property Projects
 - Schools
 - Points of Interest
 - Lake Oswego Boundary
 - Urban Services Boundary
 - UGB (Metro)

0 1,000 2,000 Feet

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERS/PLANNERS

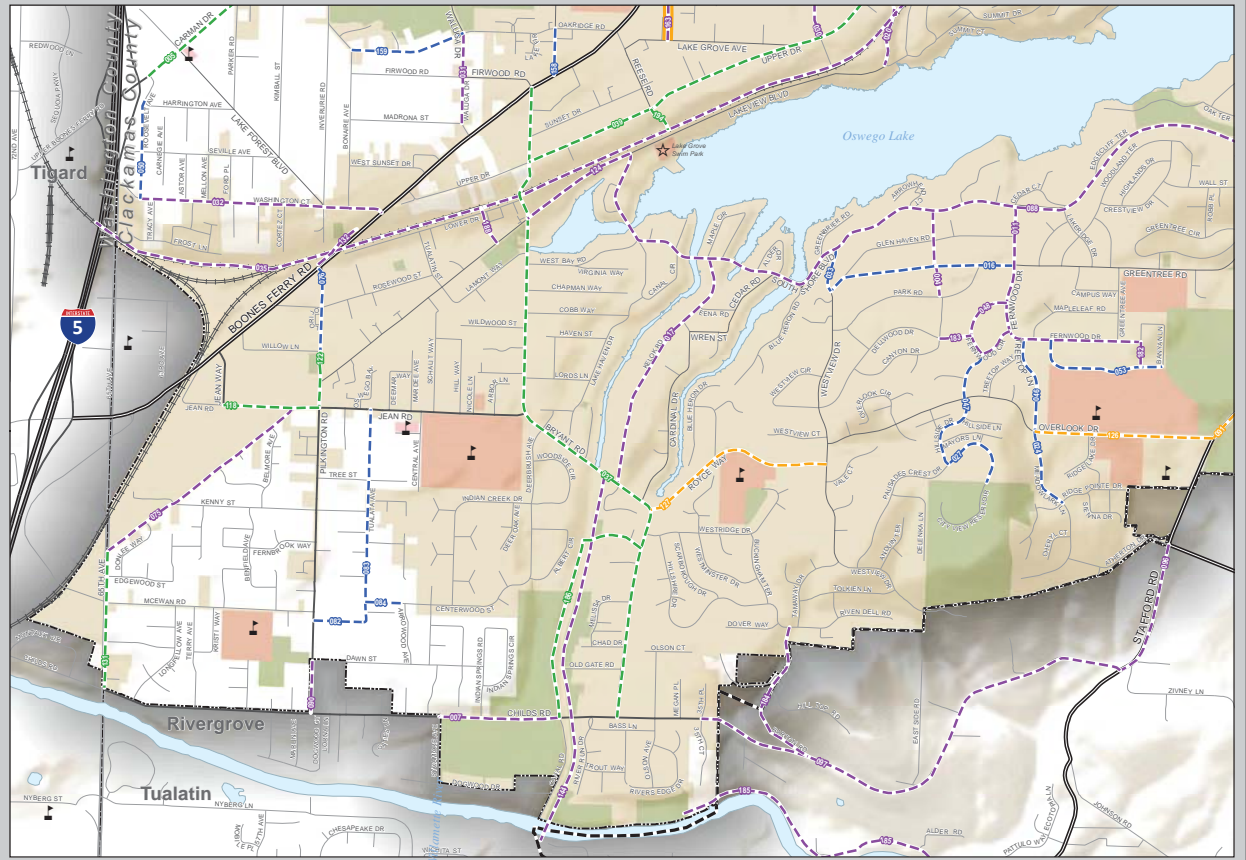
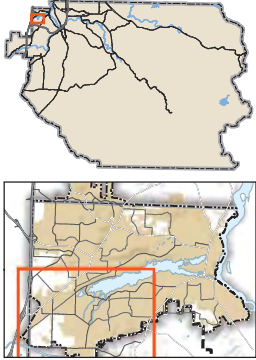


H:\proj\6611187_Lake Oswego Transportation System Plan\DOT\707_Bicycle and Pedestrian Projects_Draft_Version.mxd



Bicycle and Pedestrian Projects

Figure 7B



Planned Improvements

- Pathways
- Bike
- Sidewalks
- Bike and Ped
- Contingent Private Property Projects
- Schools
- Points of Interest
- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)

0 1,000 2,000 Feet

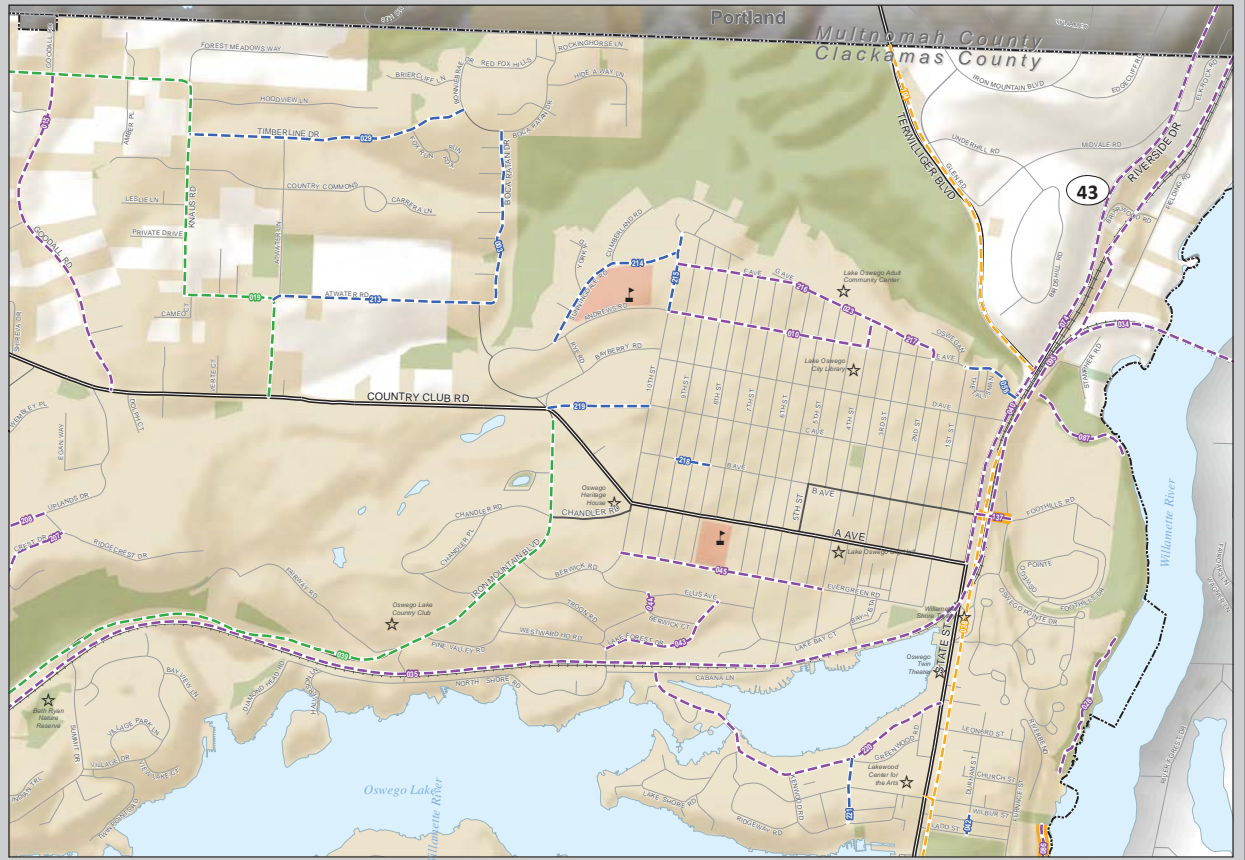
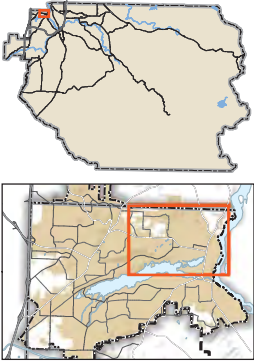


H:\proj\6811187 - LOT\SRCS\Final_Draft\07_Bicycle and Pedestrian Projects_Draft_Version.mxd



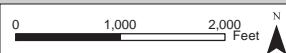
Bicycle and Pedestrian Projects

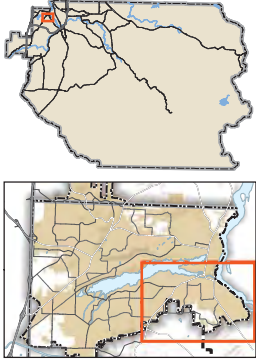
Figure 7C



H:\proj\6811187 - LOT 150\GIS\Final_Draft\07_Bicycle and Pedestrian Projects_Draft_Version.mxd

- Planned Improvements**
- Pathways
 - Bike
 - Sidewalks
 - Bike and Ped
 - Contingent Private Property Projects
 - Schools
 - Points of Interest
 - Lake Oswego Boundary
 - Urban Services Boundary
 - UGB (Metro)



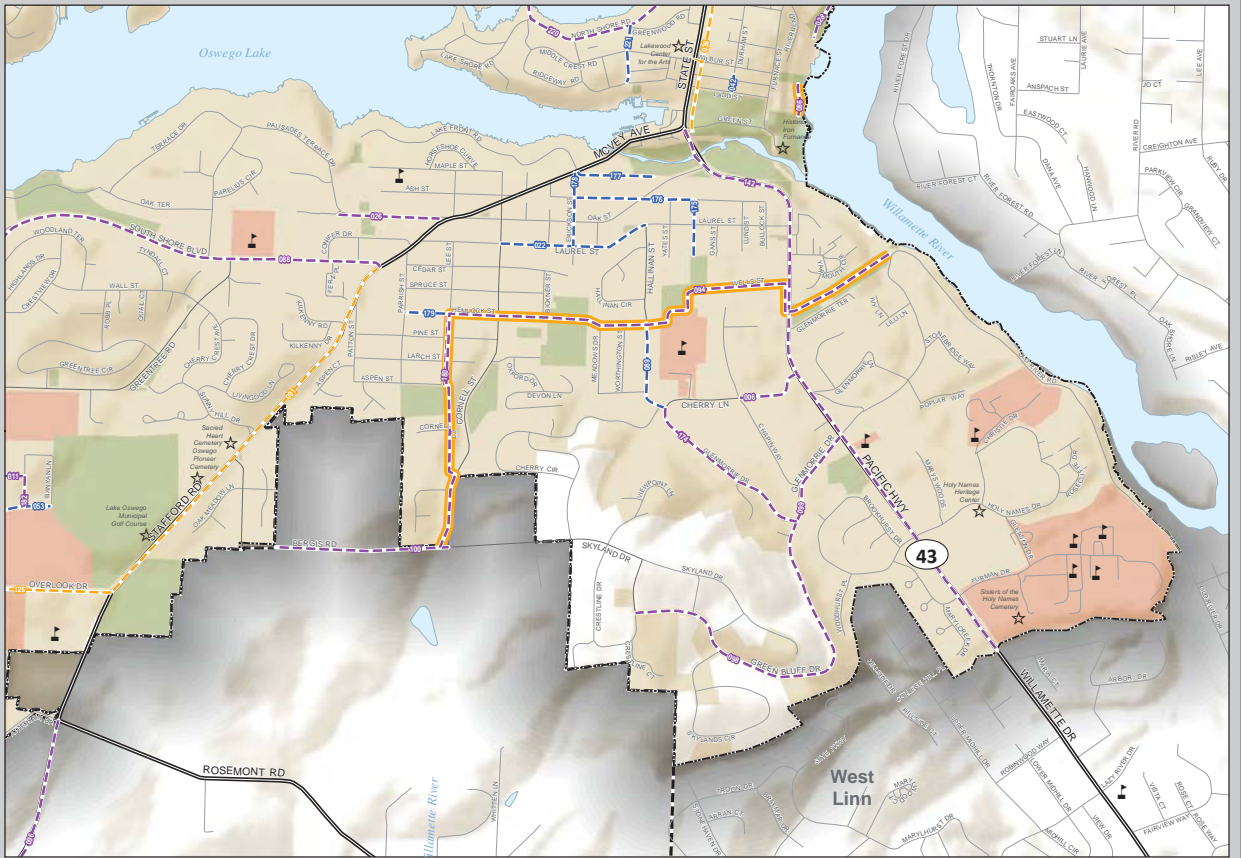
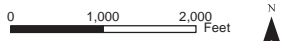


Bicycle and Pedestrian Projects

Figure 7D

Planned Improvements

- Pathways
- Bike
- Sidewalks
- Bike and Ped
- Contingent Private Property Projects
- Schools
- Points of Interest
- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)



H:\proj\6811187_LOI_SDCS\Final_Draft\07_Bicycle and Pedestrian Projects_Draft_Version.mxd

Section 6 Transit System Plan

SECTION 6 TRANSIT SYSTEM PLAN

The existing transit system within Lake Oswego consists of fixed-route service, school bus service, paratransit service, and local demand-responsive service. Regionally, there also are plans for High Capacity Transit service, which could connect to Lake Oswego in the future. The following sub-sections summarize the characteristics of the existing transit system and present the transit projects for the TSP.

FIXED-ROUTE SERVICE

Public transit service within Lake Oswego is currently provided by TriMet. TriMet operates seven fixed-route bus lines within the City. Table 16 summarizes the characteristics of the existing fixed-route transit service. Ridership on each route is summarized in Table 17. Figure 8 illustrates the existing fixed-route transit service within Lake Oswego including the location of transit stops, major transit stops, and transit centers as designated in the RTP. All TriMet buses serving Lake Oswego are equipped with bicycle racks and wheelchair lifts.

Table 16: Existing TriMet Fixed-Route Transit Service Characteristics

Route #	Route Name	Service Frequency (minutes)				
		Weekday Peak	Weekday Midday	Weekday Evening	Saturday	Sunday
35	Macadam/Greeley	20-35	30	60	30-60	45-60
36	South Shore	30-120	120	-	-	-
37	North Shore	30-120	90-120	-	-	-
38	Boones Ferry Road	30-60	-	-	-	-
44	Capitol Hwy/Mocks Crest	20	30	30	30-45	30-60
78	Beaverton-Lake Oswego	30	30	60	30-60	60
96	Tualatin I-5	10-30	-	60-120	-	-

Table 17: Ridership Trends by Route

Route #	Route Name	Weekday Ridership (Spring Quarter)			Change in Ridership	
		2010	2009	1995/96	2009-2010	1995-2010
35	Macadam/Greeley	3,750	3,720	2,105	1%	78%
36	South Shore	360	240	354	50%	2%
37	North Shore	60	140	163	-57%	-63%
38	Boones Ferry Road	340	330	471	3%	-28%
44	Capitol Hwy/Mocks Crest	5,150	5,510	n/a	-7%	n/a
78	Beaverton-Lake Oswego	2,700	2,600	2,900	4%	-7%
96	Tualatin I-5	1,260	1,270	1,031*	-1%	22%

* Ridership figure shown is from 1990. No 1995 ridership data is available for Route 96.



Existing Fixed Route Transit Service

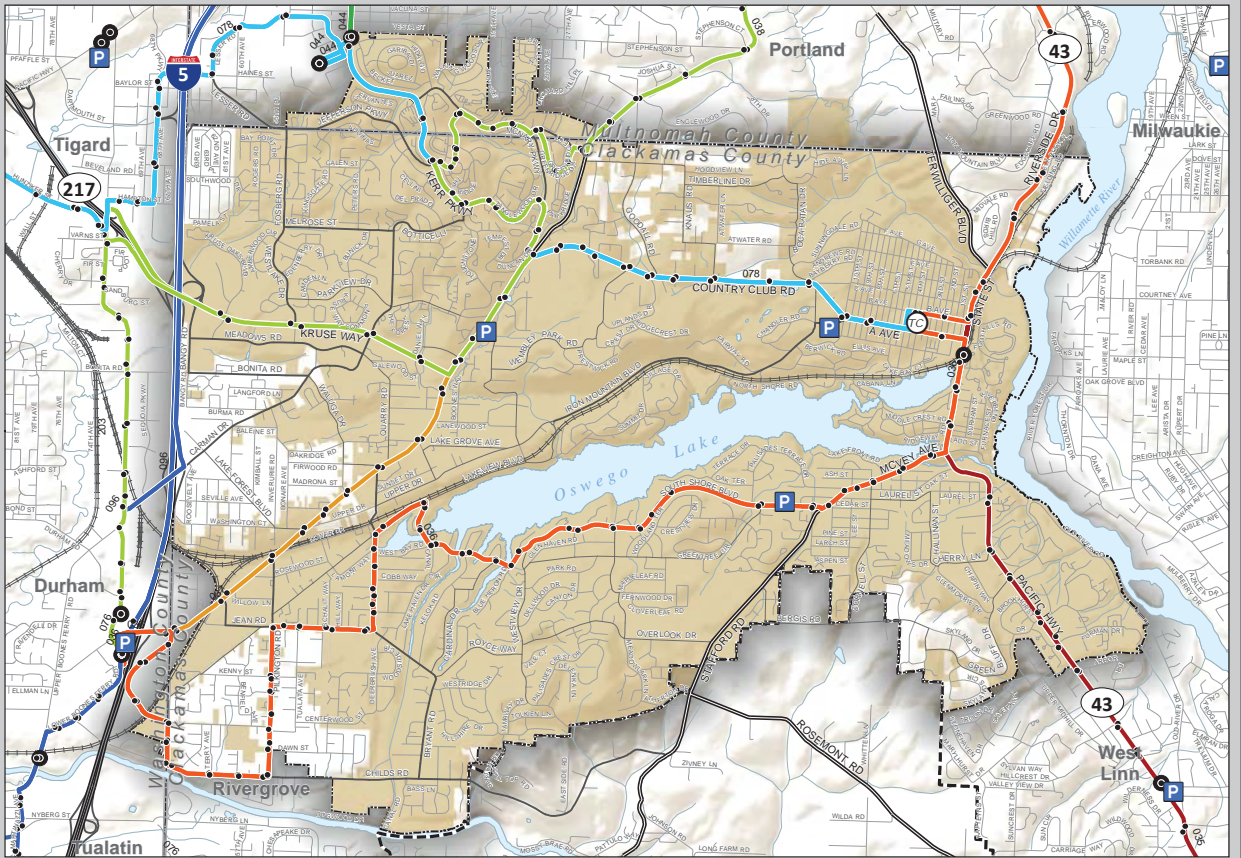
Figure 8



Tri-Met Routes

- Route 35
- Route 36
- Route 37
- Route 38
- Route 44
- Route 78
- Route 96

- Transit Centers
- Major Transit Stops
- Bus Stops
- Park and Ride Lots
- Lake Oswego Boundary
- Urban Services Boundary
- UGB (Metro)



H:\proj\6011187_1.LO_TSR\GIS\Final_Draft\08_Existing_Fixed_Route_Transit_Services.mxd

As shown in Figure 8, there are several major bus stops located in or near the City, including one along State Street (Highway 43), two adjacent to the Lake Oswego Transit Center on 4th Street between “A” and “B” Avenues, two adjacent to the Tualatin Park-and-Ride on the west side of the I-5/Boones Ferry Road interchange, and two near the Portland Community College (PCC) Sylvania Campus. *Technical Appendix 3 Update to Modal Plans* and *Technical Appendix 5 Existing Conditions* provide additional information related to the transit routes noted above, including a brief description of the routes and ridership trends.

PARK-AND-RIDES

There are currently three park-and-ride lots located within Lake Oswego:

- Lake Oswego United Methodist Church at 1855 South Shore Boulevard (34 spaces),
- Christ Church Episcopal Parish at 1060 SW Chandler Road (30 spaces), and
- Hope Community Church at 14790 SW Boones Ferry Road (12 spaces).

The Tualatin Park-and-Ride, located west of the City at the I-5/Boones Ferry Road interchange has 466 spaces.

SCHOOL BUS SERVICE

School bus service is provided within the Lake Oswego area by the Lake Oswego School District. Elementary school students living greater than one mile from school have bus service, as do middle and high school students living greater than 1.5 miles from their schools. School buses operate on all arterial and collector streets and many local streets. Safe bus stop approaches and waiting areas are a concern, as are walkways to schools within the radii not served by buses.

PARATRANSIT SERVICE

TriMet’s LIFT program serves persons with disabilities who are unable to use the fixed-route bus system with door-to-door service. The LIFT service area boundary consists of areas within a three-quarter mile buffer from an active TriMet route; this includes most of Lake Oswego. Availability of service is subject to change but is generally provided seven days a week between 4:30 a.m. and 2:30 a.m. Current service times are as follows:

- Weekdays, 4:30 am – 7:30 pm, all of Lake Oswego
- Weekdays, extended evening service, limited locations
- Saturday & Sunday, 4:30 am – 2:30 am, limited locations

See <http://trimet.org/lift/> for detailed information and trip planning.

Clackamas County Community Action's "Transportation Reaching People" (TRP) program provides rides to elderly and disabled residents of Clackamas County. Transportation is provided for medical appointments, personal business, social service appointments, and shopping. Drivers provide door-to-door service using their own vehicles. Trips are destined outside of the local area, often taking clients into Portland. Countywide, 90-100 volunteers provide 2,000 trips per month totaling 300,000 miles of service per year. In the West Linn-Lake Oswego area, four or five volunteers provide rides. The TRP program also has a van for riders needing wheelchair accessibility.

The Lake Oswego Adult Community Center (ACC) provides transportation services to seniors and younger disabled persons who reside in the Lake Oswego area. The ACC bus provides transportation to and from the Center on Mondays, Wednesdays, and Fridays. Shopping trips are scheduled on Fridays. Rides tend to be within the local area; the Center bus's service area includes downtown Lake Oswego, Lake Grove, and Mountain Park. Volunteer drivers using their own vehicles provide medical escort transportation.

Using a grant from TriMet Ride Connection in 2013, Mary's Woods at Marylhurst began "Shuttle in the Woods," a local circulator service throughout Lake Oswego with connections to West Linn and Oregon City. The service operates on weekdays only and provides regular stops within Lake Oswego, four times per day, using the cut-away buses owned by Mary's Woods. Shuttles run twice daily to West Linn and Oregon City. The service is free and available to the public.

In the winter of 2012, NeighborLink, a non-profit in Lake Oswego started providing very limited shuttle service to those who can no longer drive to shop, visit friends, and attend the doctor among other trips. There were two shopping runs and one church run, in addition to some individual shuttle services. The service was free and operated by volunteers. The organization, though temporarily shuttered, is another example of intracity transit potential.

LOCAL DEMAND-RESPONSIVE CIRCULATOR SERVICE

In order to extend transit access to all areas of the City, the 1997 TSP recommended implementing four new local circulator bus routes, adapted for low-density area service. These routes would operate as demand-responsive service off of a limited fixed-route structure with defined end points to each route (so-called "deviated fixed-route service"). Hourly service would generally be provided with one bus all day. Two buses could be used during peak hours for 30 minute headways. This project remains on the current TSP to be implemented as funding and need more fully develop.

- Route "A", *South Shore/Waluga*, from the Lake Oswego Transit Center via State Street, McVey Avenue, South Shore Boulevard, Lakeview Drive, Bryant Road, Boones Ferry Road, Waluga Drive, Bonita Road, and Bangy Road to the Kruse Woods Transit Center. Deviates only along the South Shore.



- Route “B”, *Fosberg/Lesser*, from the Kruse Woods Transit Center via Bonita Road, Bangy Road, Carman Drive, Fosberg Road, Lesser Road, and Capitol Highway to the Barbur Transit Center. Deviation area extends from Touchstone/Kerr/PCC Boundary on the east to I-5 on the west, as well as the Waluga Triangle. Replaces the low ridership Lesser Road portion of TriMet Route 78.
- Route “C”, *North Shore/Jean*, from the Tualatin Park-and-Ride via Boones Ferry Road, Jean Road, Bryant Road, Boones Ferry Road, Reese Road, Upper Drive, Iron Mountain Boulevard, and “A” Avenue to the Lake Oswego Transit Center. Route deviation zone includes area south of Lakeview Boulevard and along Iron Mountain Boulevard, including the Wembley Park area.
- Route “D”, *Overlook/Childs*, from the Lake Oswego Transit Center via Highway 43, McVey Avenue, Stafford Road, Overlook Drive, Royce Road, Bryant Road, Childs Road, McEwan Road, and Boones Ferry Road to the Tualatin Park-and-Ride. This route would handle most transit deviations south and east of McVey Road.

WILLAMETTE SHORELINE TROLLEY

The Willamette Shoreline Trolley is a short haul passenger recreational service. The northern terminus of the line is at River Place on the southern edge of downtown Portland. The southern terminus in Lake Oswego is just opposite “A” Avenue east of State Street. In 1988 the City of Lake Oswego joined a consortium of governments (City of Portland, Metro, TriMet, Multnomah, and Clackamas Counties) to purchase the Jefferson Street Rail Line from the Southern Pacific Railroad in order to preserve right-of-way for potential future rail transit along the west bank of the Willamette River. The City of Lake Oswego leases the line from the consortium and contracts to provide trolley operation to Portland.

When operating, trolleys provide excursion service on select Saturdays and Sundays during the summer months. Volunteers operate the system and operating expenses are met by fare box receipts. More than 2,000 tourists and residents ride the trolley annually. At present, the trolley has not operated in over a year for a variety of reasons, including reconstruction of the Sellwood Bridge. As discussed in the “Regional High Capacity Transit” section, this line has been identified as a future corridor for bus rapid transit, streetcar, light rail, or other high capacity transit.

The Willamette Shoreline Trolley will continue to operate on a recreational excursion basis, protecting the right-of-way for future uses. The Connected Community Chapter of the Lake Oswego Comprehensive Plan includes Policy E.3 and Action Measures B, D and I.

Metro’s 2040 Concept Plan identifies the Portland & Western rail line as a potential commuter rail line from Portland to McMinnville. However, there are no current plans to upgrade the tracks. Subsequent feasibility studies have found that projected ridership is currently not adequate to make feasible the significant cost of upgrading the tracks to meet passenger rail safety standards.

The existing rail corridor for the Willamette Shoreline Trolley is also being considered for conversion to a regional multi-use trail. Though only a concept, there are legal requirements regarding the use of the right-of-way that must be analyzed before moving forward with this plan. The project, however, is identified in this TSP.

REGIONAL HIGH CAPACITY TRANSIT

High capacity transit is characterized by exclusive right-of-way and routes with fewer stops. In July 2009, Metro adopted the Regional High Capacity Transit (HCT) System Plan. The HCT Plan identifies corridors where new HCT is desired over the next 30 years and prioritizes corridors for implementation, based on a set of evaluation criteria consistent with the goals of the RTP and 2040 Concept. The 2040 Concept and RTP identified two high capacity transit corridors in Lake Oswego. The location of any final HCT alignment is to be decided through a corridor refinement plan and/or alternatives analysis, and through a series of local and regional actions described in the plan.² Although outside the city limits, Oregon Passenger Rail and the SW Corridor Plan are two projects addressing transit needs near Lake Oswego.

Highway 43 from Portland to downtown Lake Oswego is identified as a future commuter rail corridor and “High Capacity Transit Corridor under advancement”. This route has undergone many years of planning, but plans to construct a streetcar line on this corridor are currently on hold indefinitely. In January 2012, the Lake Oswego City Council voted to repeal Resolution 11-19, a conditional vote of support for a Portland streetcar line extension to Lake Oswego. The City plans to work with Metro and others to retain ownership of the railway for future use and to direct funds earmarked for the streetcar project to assist with other local transportation needs.

NEEDS ANALYSIS

A key element of transit service is accessibility. Accessibility refers to the number of destinations that can be reached within a certain travel distance and the ease with which residents and visitors can travel to destinations. A high level of accessibility can be achieved by promoting high-density and mixed land uses and multimodal transportation options. An accessible transportation network should also provide facilities that serve the daily transportation needs of all community members, regardless of age, income level, or physical abilities. Strategies to achieve this goal include designing all transportation improvements to accommodate disabled and vision impaired residents, implementing high-quality pedestrian and bicycle facilities between schools and residential areas, and improving transit connections between disadvantaged communities and community/employment centers.

²Regional HCT Plan, see pages 22-30.



To identify areas where accessibility improvements may be most needed or effective, existing demographic patterns in Lake Oswego were evaluated along with the quality and coverage of transit service. This analysis was used to inform the TSP development tasks that recommend transit and accessibility improvements. This information helped inform the transit policies identified in Section 3 and the projects presented below.

Population and Employment Density

According to the Transit Capacity and Quality of Service Manual (TCQSM – Reference 8), generally, 10 residents per acre is considered sufficient population density to support local bus service and 30 residents per acre is sufficient to support light rail transit (LRT). However, employment density also should be considered. Existing TriMet bus lines connect the majority of areas within Lake Oswego with population densities of more than 10 residents per acre, with the exception of several census blocks north of Kruse Way and Melrose Street. Multiple census blocks have adequate population density to support higher capacity bus or LRT service. *Additional information related to population and employment density within Lake Oswego is provided in Technical Appendix 5 Existing Conditions.*

Senior and Youth Populations

Seniors, residents over 65-years old, and youth, residents under 18-years old, are less likely to be able to drive and are more dependent on walking, bicycling, or taking transit for transportation. As a result, it is important to identify areas with high percentages of seniors and youth so that transit, pedestrian, and cycling improvements that preserve and enhance accessibility for these residents can be prioritized in these areas. Downtown Lake Oswego, Mountain Park, and the Marylhurst campus area have the highest proportion of aged 65 and older residents. Mountain Park and the area north of Kruse Way have the highest proportion of residents under age 18. *Additional information related to senior and youth population density within Lake Oswego is provided in Technical Appendix 5 Existing Conditions.*

TRANSIT PROJECTS

The following transit projects reflect both previous planning efforts and the needs analysis discussed above. Table 15 summarizes the various characteristics of the projects in order of priority – highest to lowest. The evaluation criteria presented in Section 2 were used to guide the selection and prioritization of the transit projects in order to focus community investment on projects that are most effective at meeting needs, while deferring other projects of lesser value. Projects noted as contained in the fiscally constrained plan are those for which the City has forecasted funding between now and 2035 to implement. Projects that are not included in the fiscally constrained plan are in the unconstrained plan. These are projects for which the City does not anticipate funds to implement but has identified as projects of interest if additional funding becomes available. Section 9 contains additional information regarding how projects were identified for the fiscally constrained and unconstrained plans. Section 9

also includes additional information about the funding forecasts that inform the fiscally constrained plan.

In addition to the projects identified in Table 18, the City of Lake Oswego will continue to work with TriMet and SMART to explore and, as feasible, implement the following improvements:

- Improve existing and construct new bus stops according to the *TriMet Bus Stop and Passenger Amenities Guidelines* to include passenger waiting areas, curb ramps, bus shelters, and benches. Develop bus pullouts at certain stops when warranted.
- Construct a Kruse Woods Transit Center with major park-and-ride facilities;
- Develop park-and-ride facilities on Highway 43 near downtown Lake Oswego;
- Increase service frequencies on routes 35, 78, and 96 (generally to 15 minute headways all day); and,
- Provide peak hour non-stop express service between Lake Oswego, Portland, and Wilsonville.



Table 18: Transit Improvement Projects

ID	Type	Project Name	Description	Estimated Cost	Source Document	Comments
101	Transit	Kruse Way Transit Center	Feasibility study for a new transit center and park-and-ride (location unidentified). NHS/AASHTO standards apply for construction on Kruse Way.	\$100,000	1997 TSP	
102.2	Transit	Lake Oswego Transit Center (new)	Feasibility study to relocate transit center and construct park-and-ride.	\$100,000	1997 TSP	Neighborhood request to study Foothills location, utilizing parking areas hidden by mixed use development.
171	Transit	Boones Ferry Road bus shelters	5 EA - various locations to be determined. (See #1.1)	\$200,000	LGVCP	Possible reduction in number of shelters due to fewer stop locations.

Section 7 Rail, Air, Water, & Pipeline Plans

SECTION 7 RAIL PLAN, AIR, WATER, & PIPELINE PLANS

This section describes the characteristics of the City's existing rail, air, water, and & pipeline systems. Planning for improvements to many of these systems is outside the City's direct jurisdictional responsibility. Therefore, the City will work with other regional and state agencies as appropriate to identify long-term strategies for maintaining and improving these systems.

RAIL SYSTEM

Two rail lines currently operate in Lake Oswego, the Portland & Western (P&W) short-line and the Willamette Shoreline Trolley. On all rail lines in Lake Oswego, automatic-gate crossing control or full grade-separation is provided on street crossings with arterial and collector roadway classifications. Local street crossings are stop-controlled.

Portland and Western Railroad

The P&W operates through Lake Oswego on lines leased from the Union Pacific Railroad. The line from Portland crosses the Willamette River north of downtown and parallels State Street before crossing it, at grade, just north of the Foothills Road/State Street intersection. Just before crossing State Street, a spur line branches off to serve a chip loading facility on the river. The mainline skirts the northern edge of Oswego Lake and then continues west southwest parallel to Lower Drive until it crosses Boones Ferry Road at grade. There the line divides, with branches continuing out of the City to the Tualatin and to the west side of the Willamette Valley. The P&W typically runs two trains a day, meaning the at-grade crossings are blocked to traffic twice daily. At the State Street crossing, these blockages exacerbate existing operational issues at the nearby "A" Avenue intersection. This line is considered for conversion to regional trail use.

AIR SERVICE

Lake Oswego has no local air service. Passenger, freight, and private use services are provided at Portland International Airport and its reliever airports: Hillsboro, Troutdale, Canby, McMinnville and Mulino.

WATERWAYS

Waterways constrain and define Lake Oswego in significant ways, but are, at present, used little to support transportation. Oswego Lake divides the City into north and south areas. It is used for boat recreation, but with only private access available to those property owners with lake easements. The Tualatin River bounds the southern edge of the western part of the City; its uses are also primarily

recreational. On the east, the Willamette River bounds the City. The transportation uses of the Willamette remain important, though sharply reduced upstream of Portland due to the closure of the locks. Until just recently, a chip loading facility in Lake Oswego's Foothills district provided transfer of wood chips from rail and truck to barges. The Willamette Falls Locks (between Oregon City and West Linn) are currently closed indefinitely by the U.S. Army Corps of Engineers due to needed gudgeon anchor repairs. All freight and recreational water travel between Canby and Lake Oswego is eliminated during this closure.

Lake Oswego has been considered as a possible stop on a river transit passenger system. This approach was rejected as a high capacity south-north transit option prior to the 1997 TSP, but may be an option for re-evaluation under a different set of transit goals and objectives.

PIPELINES

Large, high-pressure, natural gas pipelines serving Lake Oswego and neighboring communities run in the State Street and McVey Avenue rights-of-way and in the Palisades area. Lake Oswego also has a major water transmission line serving Tigard. Water from the Clackamas River is brought across the Willamette River for treatment in West Linn before large transmission lines carry water to Lake Oswego's Waluga reservoirs and west to Tigard.



Section 8 Policies and Development Code Amendments

SECTION 8 POLICIES AND DEVELOPMENT CODE AMENDMENTS

This section presents an overview of the Transportation Planning Rule and Regional Transportation Functional Plan (RTFP) Compliance Evaluation conducted for the TSP Update. The subsections below present a summary of how the evaluation was conducted and the recommended changes to the City's policies and codes to support the TSP Update. The City will revise and adopt the updated versions of the codes and policies noted below separate from this TSP document. The purpose of this section is to present a summary of the changes the City is making. *Technical Appendix 9* contains a memorandum with a more detailed summary of the findings from the evaluation.

OVERVIEW OF EVALUATION

Transportation System Planning in Oregon is required by state law as one of the 19 statewide planning goals (Goal 12 - Transportation). The Transportation Planning Rule (TPR), OAR Division 12, defines how to implement Goal 12. The TPR applies at the state, regional, and local level. The TPR requires counties and cities to prepare local TSPs that are consistent with the Oregon Transportation Plan and Regional Transportation Plan (RTP). The overall purpose of the TPR is to provide and encourage a safe, convenient, and economic transportation system. The rule also implements provisions of other statewide planning goals related to transportation planning in order to plan and develop transportation facilities and services in close coordination with urban and rural development. The TPR directs TSPs to integrate comprehensive land use planning with transportation needs and to promote multi-modal systems that make it more convenient for people to walk, bicycle, use transit and drive less. Lake Oswego's TSP must be consistent with the current TPR, which was amended most recently in December, 2011.

The City's TSP must also be consistent and coordinated with regional requirements that implement the TPR, including the RTP. The RTP provides the long-range blueprint for transportation in the Portland region, and presents the overarching policies and goals, system concepts for all modes of travel, and strategies for funding and local implementation. Metro's Regional Transportation Functional Plan (RTFP) directs how cities 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.

To conduct the evaluation TPR and RTFP evaluation the following were reviewed:

- Comprehensive Plan Policies: existing Chapter 12, and the draft Connected Community chapter (8-29-13);
- Community Development Code: LOC Chapter 50 and 42; and

- TSP Update Technical Memoranda: Existing Conditions (TM 7.1), Future Conditions, Modal Plans (TM 4.1), Goals-Objectives-Evaluation Criteria (TM 5.2), Plan and Policy Review (TM 3, 3 parts and Appendix), Draft TSP Outline (8-15-2013).

The findings related to the TSP documentation were incorporated into this TSP. The findings related to the other City codes and policies are highlighted in the following section.

SUMMARY OF RECOMMENDATIONS RELATED TO CITY POLICIES AND CODES

The following subsections present the findings of the TPR and RTFP compliance evaluation as it relates to the City's existing codes and policies. Separate from this TSP adoption, the City will update and adopt changes the codes and policies noted below to be consistent with the necessary TPR and RTFP requirements.

Findings of Compliance of the Lake Oswego Community Development Code (LOC) with the TPR (OAR 660-012-0045)

- Update City code to address when traffic studies are required and the degree and type of analysis to be conducted. Revising traffic study code provisions is not a TPR compliance issue. This recommendation is based on City staff's indication that additional clarity is needed with regards to traffic study requirements.
- For significant development applications, pursuant to LOC 50.07.003.15.d.ii, consider extending notice requirements to all affected providers of transportation services and facilities (e.g., Clackamas County, TriMet).
- Bikeways and sidewalks/street standards – Ensure that street standards are referenced in the code consistent with street standards established in the TSP and/or any other documents during the update process.
- Ensure that standards in LOC Chapter 42 are consistent with updated street design standards and, if necessary, update the reference to the adopted standards.
- Review LOC 50.06.003 for consistency with TSP Goals and Policies C-3.
- Review and update LOC Chapter 50 to ensure that the TSP, rather than the Trails and Pathways Master Plan, is the source document for locating pathways that are needed to mitigate the impacts of development.

Findings of Compliance of the Lake Oswego Community Development Code (LOC) with the TPR (OAR 660-012-0060)

- Existing code is generally consistent with this TPR requirement, so no changes are recommended.



- City may decide to reflect the provisions of 660-012-0060(2)(e) to allow transportation improvements that benefit the transportation system but may not be at or adjacent to the development site, or that may improve other modes or safety while not resulting in meeting the mobility standard.

Findings of Compliance of the Lake Oswego Community Development Code (LOC) with the RTFP

- Add requirements in LOC 50.06.003.4 for posting notice on closed-ended streets that are planned for extension.
- Include a consolidated set of references in the code to access spacing standards and update LOC Chapter 42 references to street design standards.
- Major driveways – Define major driveways in the code (e.g., driveways as wide as the narrowest local street standards) for mixed-use and residential developments. Add requirements in LOC 50.06.003.4 (Street Connectivity) to align major driveways with existing and/or planned streets (where feasible).
- On-street loading – Add on-street loading provisions at “appropriate locations” for downtown (e.g., in the Downtown Redevelopment Design District). This new provision would include specific conditions for when on-street loading would be permitted.
- Bicycle parking – Add secured (locked or monitored spaces) parking requirements to covered parking requirements to provide for long-term parking. Establish percentages for the ratio of total parking that is to be long-term and short-term.

Findings of Compliance of the Lake Oswego Comprehensive Plan/Other Plans with the RTFP

- Existing plans and policies are consistent with these RTFP requirements, so no changes are recommended.
-

Section 9 Funding Element

SECTION 9 FUNDING ELEMENT

Funding is crucial to address the transportation needs and priorities presented in the previous sections. The City has a finite amount of revenue anticipated within the planning horizon year and, therefore, must prioritize improvements. Estimating the likely forecasted revenue for the City and developing a fiscally constrained plan enables the City to focus limited resources on improvements most likely to meet the community's transportation needs and achieve the broader transportation vision. The fiscally constrained plan is the portion of the City's TSP that the City must commit to addressing within the planning horizon.

The following subsections present the current funding sources the City of Lake Oswego uses to fund transportation projects and summarizes the baseline funding forecast. See the Funding Analysis Memorandum in *Technical Appendix 8* for additional information about current revenue and expenditures, the baseline funding forecast, and additional funding sources the City could consider exploring.

Current Revenues and Expenditures

Total transportation revenues in the City of Lake Oswego are budgeted at \$6,144,000 in FY 2013-14, as indicated in Table 19. The primary sources of transportation revenue for the City include: the State Highway Fund, street maintenance fees, franchise fees, and transportation system development charges (TSDCs). These existing funding sources, in aggregate, comprise over 99% of the total annual transportation revenues for the City of Lake Oswego. From time to time, transfers from the City's general fund are awarded to transportation projects.

Table 19: City of Lake Oswego Transportation Revenues

Transportation Revenues	FY 2006-07 ^a	FY 2007-08 ^a	FY 2008-09 ^a	FY 2009-10	FY 2010-11	FY 2011-12	Budget FY 2012-13	Budget FY 2013-14 ^e
State Highway Fund (motor vehicle)	\$1,698,097	\$1,474,504	\$1,474,504	\$1,508,354	\$1,779,304	\$1,977,492	\$2,010,000	\$2,044,000
Fees (street maintenance fee) ^b	\$1,129,135	\$1,137,025	\$1,137,025	\$1,254,307	\$1,543,381	\$1,802,653	\$2,288,000	\$2,383,000
Franchise Fees (PGE)	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$300,000	\$700,000	\$500,000
SDCs, street	\$668,190	\$221,829	\$221,829	\$170,232	\$203,794	\$220,111	\$199,000	\$384,000
State Highway Fund (bicycle)	\$17,151	\$14,896	\$14,896	\$15,236	\$17,973	\$19,975	\$21,000	\$20,000
Investment Income	\$37,151	\$2,927	\$2,927	\$3,121	\$8,299	\$11,553	\$10,000	\$10,000
Other Revenues	\$16,015	\$30,074	\$30,074	\$17,500	\$8,727	\$873	\$1,000	\$1,000
Transfers from General Fund ^c	-	\$150,000	\$150,000	\$249,000	\$334,000	-	-	\$784,000
Reimbursements (insurance)	\$2,646	\$8,570	\$8,750	\$9,825	\$6,000	\$15,751	\$15,000	\$18,000
Special Assessments	\$6,535	-	-	\$2,229	-	-	-	-
Total	\$4,074,917	\$3,540,003	\$3,540,003	\$3,729,804	\$4,401,478	\$4,348,408	\$5,244,000	\$6,144,000

Notes: Source: City budget documents, compiled by FCS Group. ^aRepresents average annual estimate during the 2-year biennium. ^bStreet Maintenance Fee typically is not a funding source for capital projects, such as those in the TSP projects. ^cGeneral Fund transfers are made on a year-by-year basis and considered to be a one-time funding source.

Lake Oswego accounts for its transportation budget through three separate funds: including a Street Fund, Bicycle Path Fund, and TSDC fund. These are summarized in Table 20. All revenues from the State Highway Fund, Street Maintenance Fee, Franchise Fees, Investment Income, other revenues, transfers from the general fund, Reimbursements and Special Assessments are incorporated into the Street Fund. The Bicycle Path Fund and TSDC Funds remain isolated revenue and funding streams.

Table 20: Lake Oswego Transportation Funds

Funding Source	Actual					Budget FY 2012-13 ^e	Budget FY 2013-14 ^e
	2005-07 Biennium ^a	2007-09 Biennium ^a	FY 2009-10 ^b	FY 2010-11 ^{b,c}	FY 2011-12 ^{d,e}		
Street Fund							
Resources	\$9,526,527	\$7,011,307	\$3,585,616	\$4,900,654	\$5,781,718	\$7,007,520	\$7,370,520
Requirements	\$9,526,527	\$7,011,307	\$3,585,616	\$4,900,654	\$5,781,718	\$7,007,520	\$7,370,520
Bicycle Path Fund							
Resources	\$39,698	\$71,776	\$87,665	\$106,154	\$50,674	\$41,674	\$61,674
Requirements	\$39,698	\$71,776	\$87,665	\$106,154	\$50,674	\$41,674	\$61,674
SDC Fund							
Resources	\$1,627,848	\$790,287	\$475,105	\$682,682	\$907,199	\$1,110,199	\$1,498,199
Requirements	\$1,627,848	\$790,287	\$475,105	\$682,682	\$907,199	\$1,110,199	\$1,498,199



Notes: ^a Information from 2010-11 Adopted Budget; ^b Information from 2011-12 Adopted Budget; ^c Information from 2010-11 CAFR; ^d Information from 2011-12 CAFR; ^e Information from 2013-14 Adopted Budget.

The “Resources” rows summarize the amount of revenue allocated to the funding category from the sources in Table 19. The “Requirements” rows present the amount of revenue spent or budgeted to be spent on different needs and activities. The needs and activities within the funds consist of personnel services, materials and services, transfers to other funds, capital outlay (e.g., projects), and contingencies. Specific details regarding the amount spent on each of those activities within each fund is presented in the Funding Analysis Memorandum in *Technical Appendix 8*.

Lake Oswego’s combined expenditures from its Street Fund, Bicycle Pathway Fund, and TSDC Fund are shown in Table 18. The total level of transportation expenditures is currently budgeted at \$7,579,000 in FY 2013-14. The current expected expenditure levels for FY 2013-14 include: \$4,686,000 for capital outlays, \$2,399,000 for materials and services, and \$494,000 for personnel service costs.

Table 21: Lake Oswego Street Fund, Bicycle Path Fund, and TSDC Budget History

Expenditure Analysis	FY 2006-07 ^{a,b}	FY 2007-08 ^{a,c}	FY 2008-09 ^{a,c}	FY 2009-10 ^d	FY 2010-11 ^{d,e}	FY 2011-12 ^{f,g}	Budget FY 2012-13 ^h	Budget FY 2013-14 ^e
Personnel Services	\$415,567	\$491,226	\$491,226	\$463,545	\$412,010	\$438,892	\$458,000	\$494,000
Materials and services	\$871,509	\$963,782	\$963,782	\$1,006,640	\$1,039,211	\$992,069	\$1,408,000	\$2,399,000
Transfers	\$894,924	\$942,268	\$942,268	\$737,520	\$1,013,223	\$1,011,831	\$1,035,000	-
Capital Outlay	\$3,018,355	\$1,330,119	\$1,330,119	\$652,669	\$833,863	\$1,381,406	\$2,472,00	\$4,686,000
Total Expenditures	\$5,200,354	\$3,727,394	\$3,727,394	\$2,860,374	\$3,298,307	\$3,824,198	\$5,373,000	\$7,579,000

Notes: ^a Represents average annual estimate during the 2-year biennium; ^b information is average annual 2005-07 biennium budget; ^c information is average annual for 2007-09 biennium budget; ^d information is from 2011-12 adopted budget; ^e information is from 2010-11 CAFR; ^f information is from 2011-12 CAFR; ^g information is from 2013-14 adopted budget; ^h 2012-2013 adopted budget.

As indicated in Table 18, the amount of per capita funding from revenues (excluding TSDCs which are dependent upon new development rather than population) is estimated at \$137 in FY 2012-13 and is estimated at \$154 in FY 2013-14 (\$133 if general fund transfers are excluded). As Lake Oswego’s population and housing growth moderates, we would expect to see very slight (less than 1% annual average) increases in State Highway Trust Fund revenues and Street Maintenance Fee revenues through year 2035, unless state or local policy changes resulted in additional funding. This limited increase has a direct impact on the baseline funding forecast presented in the following subsection.

Baseline Funding Forecast

The baseline funding forecast uses the recent past and current funding information to estimate future revenue available for transportation and forecasted needs (e.g., personnel services, maintenance). The baseline forecast assumes that the City does not add or expand their transportation funding sources and makes assumptions regarding the anticipated expenditures related to non-capital projects such as personnel services and maintenance.

Baseline Transportation Revenue Forecast

Baseline transportation funding resources (i.e., revenues) for Lake Oswego primarily consist of State Highway Trust Fund revenues, Street Maintenance Fee revenues and TSDC revenues. Future growth in these transportation funding revenues are dependent upon changes in State Highway Trust Fund allocations to jurisdictions and local changes in population and development. Lake Oswego is a community that is relatively built-out with moderate growth expected over the foreseeable future in population, households and employment; as a result, limited growth in revenue is anticipated from the current funding sources.

The baseline transportation funding revenue forecast for Lake Oswego is summarized in Table 22. The analysis assumes an average annual growth rate of approximately 0.74% (equal to the PM-peak-hour vehicle trip forecast) for most revenue sources, with exception of TSDCs, which are forecast to increase at the average amount realized in Lake Oswego during the past five years. Street maintenance fees were assumed to increase at a 2% annual rate, which is the bottom of the collared annual rate adjustment allowed by local ordinance. The rate of street maintenance fee adjustment is tied to the Engineering News Record Construction Cost Index and could be more than 2%, but cannot be less, unless the City Council decides to eliminate the automatic adjustment.

The baseline transportation funding forecast results in a total amount of \$129,734,000 available for transportation operations, maintenance and capital projects between FY 2013/14 and FY 2035/36. It should be noted that the baseline forecast does not reflect additional levels of transportation funding that could be derived from potential new local funding sources, voter-approved bonds, grants and transfers from other city funds, including urban renewal funds.

Table 22: Lake Oswego Baseline Transportation Funding Revenue Forecast

Category	Historical Avg. Annual Revenue Amount ^a	Current FY 2013/14 Budget Amount	Baseline Forecast: Annual Avg. Revenue Amount	Baseline Forecast: Total Revenues (FY 2013/14 to FY 2035/36)
State Highway Fund (streets)	\$ 1,740,483	\$ 2,044,000	\$ 2,148,000	\$ 47,256,000
State Highway Fund (bicycles)	\$ 17,586	\$ 20,000	\$ 21,000	\$ 462,000
Fees (street maintenance fee)	\$ 1,533,740	\$ 2,383,000	\$ 2,963,000	\$ 65,186,000
Franchise fees (PGE, etc.)	\$ 500,000	500,000	\$ 500,000	\$ 11,000,000
SDCs (streets)	\$ 328,575	\$ 384,000	\$ 235,000	\$ 5,170,000
Other revenues ^b	\$ 30,795	\$ 29,000	\$ 30,000	\$ 660,000
Transfers from General Fund	\$ 185,222	\$ 784,000	\$ -	\$ -
Total	\$ 4,336,402	\$ 6,144,000	\$ 5,897,000	\$ 129,734,000

Notes: ^a derived from historical budgets from FY 2005-06 to FY 2013-14. ^b Other revenues include investment income, reimbursements and other misc. Source: compiled by FCS Group.



Baseline Transportation Needs Forecast

The baseline transportation funding need forecast for Lake Oswego assumes a 3.25% projected annual increase in the requirements for personnel services; and a 2.0% annual increase in expenditures for materials and services.³ In comparison, the actual historical cost increases for personnel services have averaged 2.0% (between 2005 and 2012) and expenditures for materials and services have increased just less than 2.0% annually. In addition, beginning in 2013, general fund transfers (targeted for pavement preservation) are forecasted at a constant \$800,000 annually.

For long-range planning purposes, it is assumed that spending within the capital outlay fund (primarily used for street preservation and traffic signal operations) equates to \$2,100,000 per year, which is slightly above the past seven-year average, but well below the current FY 2013/14 budget amount (Table 23). The baseline forecast assumes no increase in the pavement conditions index or level of service used by the City to maintain the street and pedestrian/bicycle facility network. The baseline forecast results in a future transportation expenditure amount of \$6,626,000 per year through FY 2035/36, which is approximately 12.4% more than the baseline revenue forecast amount of \$5,897,000. If Lake Oswego’s population levels remain flat or decline, it is likely that the gap between baseline transportation expenditures and projected revenues will widen, unless new dedicated sources of funding are identified.

Table 23: Lake Oswego Baseline Transportation Funding Expenditures Forecast

Category	Historical Avg. Annual Expenditure ^a	Current FY 2013/14 Budget Amount	Baseline Forecast: Annual Avg. Expenditure Amount	Baseline Forecast: Total Revenues (FY 2013/14 to FY 2035/36)
Personnel services	\$ 453,337	\$ 494,000	\$ 743,000	\$ 16,346,000
Materials and services (includes street/median maintenance)	\$ 1,998,606	\$ 2,399,000	\$ 2,983,000	\$ 65,626,000
Capital outlay (primarily includes street preservation and traffic signal operations)	\$ 2,080,321	\$ 5,486,000	\$ 2,900,000	\$ 63,800,000
Total	\$ 4,532,264	\$ 8,379,000	\$ 6,626,000	\$ 145,772,000

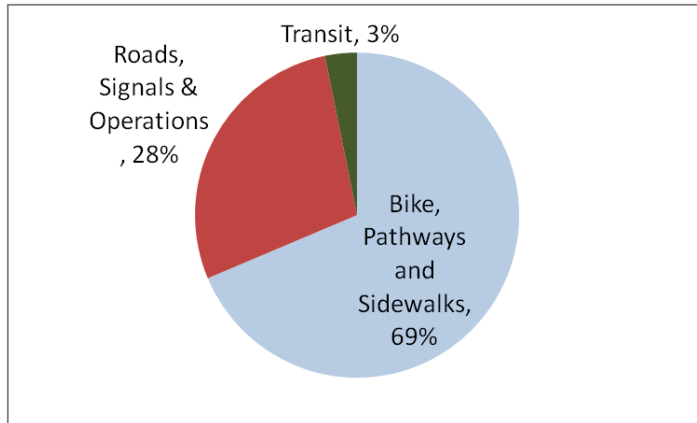
Notes: ^a derived from historical budgets from FY 2005-06 to FY 2013-14. Source: compiled by FCS Group.

The transportation projects listed in this TSP for Lake Oswego include capital facilities with total costs ranging from \$180 to \$250 million in 2013 dollars. The composition of potential project costs is 69% for bike and pathway projects, 28% for roadway, and 3% for transit (Exhibit 5). These projects will have to

³ These projected annual growth rates in expenditures are consistent with the City of Lake Oswego’s 5-Year Budget Forecast, as of April 14, 2014.

be prioritized against other Street Fund needs such as operations and maintenance of existing street system facilities.

Exhibit 5: Approximate Proportion of Transportation Project Improvement Funds for Lake Oswego (\$180 – \$250 million)



Additional details about the funding forecast can be found in the Funding Analysis Memorandum in *Technical Appendix 8*.

Funding Strategies

Due to the fact that Lake Oswego’s population base has remained relatively unchanged over the past few years, the City may consider updating its Transportation System Development Charge (TSDC) methodology and Street Utility Fee Methodology as a way to enhance transportation revenues. Potential updates to these two sources are highlighted below. Additional information can be found in *Technical Appendix 8 Funding Analysis Memorandum*. *Technical Appendix 8 Funding Analysis Memorandum* also contains information about other additional funding sources the City may consider.

Transportation System Development Charge

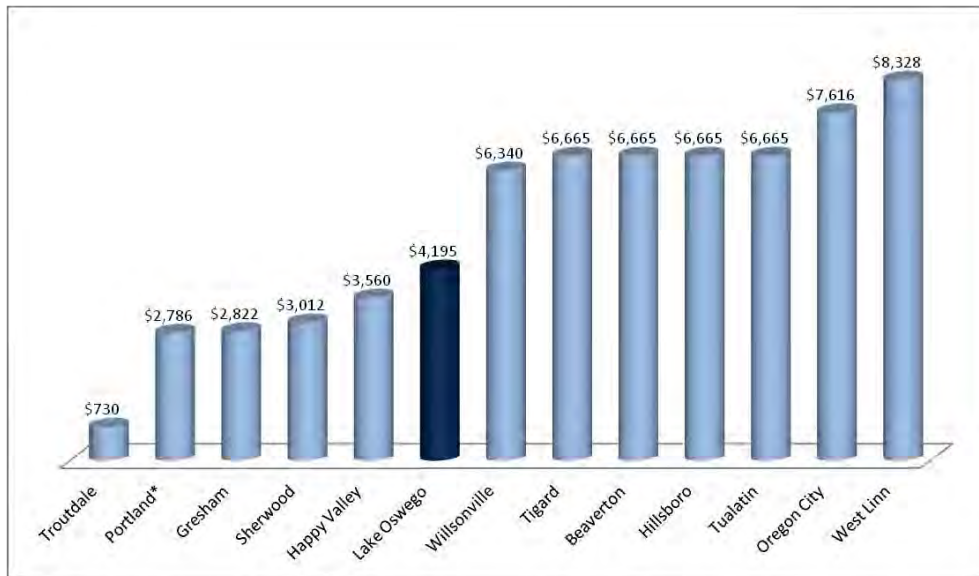
Lake Oswego’s most recently adopted TSDC methodology was prepared by Kittelson & Associates in 1998, and it has been indexed upwards over time. The prior TSDC methodology has served the city well over the past 15 years, and is still considered to be innovative since it is based on a “person-trip miles” methodology that applies to all modes of transportation improvements (including roadway, bicycle, pedestrian and transit facilities). The adopted TSDC methodology also includes a reimbursement fee and an improvement fee component, and makes adjustments for “pass-by or linked trips” and for average trip length.

A comparison of transportation SDCs in the greater Portland Region is illustrated in Exhibit 6. Lake Oswego’s fee currently equates to \$4,195 per single-family dwelling, which is among the middle-range of the SDCs charged in the region.



An update to the TSDC should occur after the adoption of the TSP. It is recommended that the new methodology continue to be based on person-trips and include a reimbursement fee, improvement fee, and a compliance/administration fee component. However, given the fact that most of the planned capital facilities will be retrofits to existing roadways or reconstructed intersections and pathways, the expected capital funding share derived from TSDCs will likely be similar to the growth share calculations shown earlier—and would likely recover only 17% to 19% of project capital costs for retrofit projects; but nearly 100% of the project cost for new project improvements that are needed to accommodate growth.

Exhibit 6: Comparison of Transportation SDCs per New Single-Family Dwelling



Source: FCS Group, based on data provided by cities.

Street Utility Fee Methodology

Lake Oswego’s Street Maintenance Fee can be used to pay not only for the cost of operations, maintenance, and repair, but also for design engineering, improvement, renewal, replacement and reconstruction of the City street system. A growing backlog of deferred maintenance requirements usually limits the use of these funds to ongoing street maintenance and repairs. The City may desire to review its street maintenance needs in concert with its surface water management SDC to ensure that both are adequate for addressing near-term requirements, especially after construction of “green street” improvements that include stormwater collection and treatment facilities.

Baseline Funding Forecast Outcome Used to Develop Fiscally Constrained Plan

The City used the baseline funding forecast to identify the amount of funds available over the planning period (to horizon year 2035) for capital projects, studies and programs identified in the TSP. Under the baseline funding forecast (with no new capital funding sources/increases), Lake Oswego could fund up

to \$40 million in new facilities by year 2035, including the SW Boones Ferry Road improvement project and about \$10 million in other “SDC eligible” capital improvements. The City used this forecasted number to identify which projects of those presented, studies, and programs of those presented above in Sections 3 through 7 would be planned for implementation from now through 2035. Projects were identified using a prioritization process that considered their effectiveness at addressing the City transportation needs and goals. See Section 2 for a description of the process used to prioritize projects.

Funded Projects

Due to the current and forecasted funding situation for the City of Lake Oswego, competitive grant funding programs will be critical for the City to be able to implement transportation improvements. The City will likely need to use grant funding in combination with other funding sources to enable projects to move from planning to construction. The SW Boones Ferry Road improvement, discussed below, is a recent example of how multiple funding sources will need to be pooled to make improvements possible.

SW Boones Ferry Road Improvement Case Study

The Boones Ferry Road improvement project now being designed is an example of a major enhancement that will benefit all modes of travel. Phase 1 of the project is estimated to cost between \$26.9 million and \$29.2 million. Funding for this project is assembled by \$5.0 million in general obligation bonds (approved by Lake Oswego voters in November 2012), along with a number of other funding options and grants subject to City Council approval. Current Economic Development Department funding recommendations for Phase 1 improvements include:⁴

- \$5.0 million in General Obligation bonds
- \$17.4 million in Full Faith & Credit bonds (backed in part by estimated Lake Grove Urban Renewal District funds and in part by the Street Fund)
- \$0.5 million in Transportation System Development Charges
- \$4.0 +/- million in funds from grants (such as the Statewide Transportation Improvement Program)

Laurel-Hallinan Pathway

This project is being coordinated with the Lake Oswego-Tigard Water Partnership project and will be largely funded through System Development Charges (SDCs).

⁴ Funding estimates are derived from the Boones Ferry Road Improvements informational brochure, June 24, 2013; and the Oregon Department of Transportation, Statewide Transportation Improvement Program, July 2013.



Section 10 References

SECTION 10 REFERENCES

1. The Oregon Department of Transportation. Oregon Highway Plan. 1999.
 2. The Oregon Department of Transportation. Highway Design Manual. 2012.
 3. Metro. Urban Growth Management Functional Plan. 2012. Available at:
<http://www.oregonmetro.gov/index.cfm/go/by.web/id=274>
 4. The Oregon Department of Transportation. Oregon Highway Plan, Policy 1F Revisions. 2011.
 5. American Association of State Highway Transportation Officials. Highway Safety Manual, 1st Edition. 2010.
 6. Metro. Regional Transportation Plan. 2010.
 7. City of Lake Oswego. Downtown Parking Study. 2011.
 8. Transportation Research Board. *Transit Capacity and Quality of Service Manual*. 2003.
-