



Oregon

John A. Kitzhaber, M.D., Governor

Department of Land Conservation and Development

635 Capitol Street NE, Suite 150

Salem, Oregon 97301-2540

Phone: (503) 373-0050

Fax: (503) 378-5518

www.oregon.gov/LCD



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

Date: 10/10/2014
Jurisdiction: Washington County
Local file no.: Ordinance 783
DLCD file no.: 004-14

The Department of Land Conservation and Development (DLCD) received the attached notice of adopted amendment to a comprehensive plan or land use regulation on 10/08/2014. A copy of the adopted amendment is available for review at the DLCD office in Salem and the local government office.

Notice of the proposed amendment was submitted to DLCD 48 days prior to the first evidentiary hearing.

Appeal Procedures

Eligibility to appeal this amendment is governed by ORS 197.612, ORS 197.620, and ORS 197.830. Under ORS 197.830(9), a notice of intent to appeal a land use decision to LUBA must be filed no later than 21 days after the date the decision sought to be reviewed became final. If you have questions about the date the decision became final, please contact the jurisdiction that adopted the amendment.

A notice of intent to appeal must be served upon the local government and others who received written notice of the final decision from the local government. The notice of intent to appeal must be served and filed in the form and manner prescribed by LUBA, (OAR chapter 661, division 10).

If the amendment is not appealed, it will be deemed acknowledged as set forth in ORS 197.625(1)(a). Please call LUBA at 503-373-1265, if you have questions about appeal procedures.

DLCD Contact

If you have questions about this notice, please contact DLCD's Plan Amendment Specialist at 503-934-0017 or plan.amendments@state.or.us



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

FOR DLCD USE

File No.: 004-14 {22283}

Received: 10/8/2014

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

Jurisdiction: Washington County

Local file no.: **A-Engrossed Ordinance 783**

Date of adoption: 10/7/2014

Date sent: 10/8/2014

Was Notice of a Proposed Change (Form 1) submitted to DLCD?

Yes: Date (use the date of last revision if a revised Form 1 was submitted): 5/15/14

No

Is the adopted change different from what was described in the Notice of Proposed Change? Yes

If yes, describe how the adoption differs from the proposal:

- The engrossed ordinance amends and clarifies Transportation System Plan (TSP) language to better reflect community aspirations.
- The engrossed ordinance makes several TSP map amendments including:
 - Add as Proposed Collector: Kinsman Road in Wilsonville from Day Road to Ridder Road (The alignment is already shown on Lane Numbers map).
 - Change lane number designation on Grabhorn Road from Farmington Road to UGB to 2/3 lanes.
 - Change the lane number designation on Tile Flat Road from UGB to Scholls Ferry Road to 2/3 lanes.

Local contact (name and title): Steve Kelley, Senior Planner

Phone: 503-846-3764

E-mail: stevel_kelley@co.washington.or.us

Street address: 155 N First Ave

City: Hillsboro

Zip: 97124-

PLEASE COMPLETE ALL OF THE FOLLOWING SECTIONS THAT APPLY

For a change to comprehensive plan text:

Identify the sections of the plan that were added or amended and which statewide planning goals those sections implement, if any:

- | | |
|--|--|
| Transportation System Plan Elements and Goals Amended | <ul style="list-style-type: none"> ➤ All System Elements ➤ Goal 1 Safety ➤ Goal 2 Economic Vitality ➤ Goal 5 Mobility ➤ Goal 7 Connectivity ➤ Goal 8 Active Transportation ➤ Glossary |
|--|--|

Community Development Code Standards Amended

- 300 Introduction - Land Use Districts
- 385 Private Use Airport Overlay District
- 390 North Bethany Subarea Overlay District
- 401 Introduction - Development Standards
- 430 Special Use Standards
- 431 Transit Oriented Design Principles, Standards and Guidelines
- 501 Public Facility and Service Requirements
- 601 Land Division and Property Line Adjustments
- 712 Pedestrian, Bicycle and Transit Facilities
- 714 Additional Standards for Category A, B and C Projects

Urban Community Plans Amended

- Aloha-Reedville-Cooper Mountain
- Bethany
- Bull Mountain
- Cedar Hills-Cedar Mill
- East Hillsboro
- Metzger-Progress
- Raleigh Hills-Garden Home
- Sherwood
- Sunset West
- West Union

Applicable statewide planning goals: Goals 1, 2, 3, 4, 5, 6, 8, 9, 10, 11 and 12.

For a change to a comprehensive plan map:

Identify the former and new map designations and the area affected:

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

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

The subject property is entirely within an urban growth boundary

The subject property is partially within an urban growth boundary

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

Exclusive Farm Use – Acres:

Non-resource – Acres:

Forest – Acres:

Marginal Lands – Acres:

Rural Residential – Acres:

Natural Resource/Coastal/Open Space – Acres:

Rural Commercial or Industrial – Acres:

Other: – Acres:

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

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

For a change to the text of an ordinance or code:

Identify the sections of the ordinance or code that were added or amended by title and number:

For a change to a zoning map:

Identify the former and new base zone designations and the area affected:

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

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

Overlay zone designation:	Acres added:	Acres removed:
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Location of affected property (T, R, Sec., TL and address):

List affected state or federal agencies, local governments and special districts:

USDOT, ODOT, Metro, TriMet, cities and special districts in Washington County

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

AGENDA

WASHINGTON COUNTY BOARD OF COMMISSIONERS

Agenda Category: Public Hearing – Third Reading and Third Public Hearing
Land Use & Transportation; County Counsel (CPO All)

Agenda Title: **CONSIDER PROPOSED A-ENGROSSED ORDINANCE NO. 783 – AN ORDINANCE AMENDING THE TRANSPORTATION SYSTEM PLAN, THE COMMUNITY DEVELOPMENT CODE AND THE COMMUNITY PLANS RELATING TO TRANSPORTATION PLANNING**

Presented by: Andrew Singelakis, Director of Land Use & Transportation
Alan Rappleyea, County Counsel

SUMMARY:

A-Engrossed Ordinance No. 783 proposes to amend the Washington County Transportation System Plan (TSP), the Community Development Code and all Community Plans. The ordinance makes significant changes to the TSP including an update to all Transportation System Elements based on the policy framework adopted in 2013 by Ordinance No. 768. A-Engrossed Ordinance No. 783 is posted on the county's land use ordinance web page at the following link:

<http://www.co.washington.or.us/LUT/Divisions/LongRangePlanning/2014-land-use-ordinances.cfm>

The Board conducted the initial public hearing for Ordinance No. 783 on August 5, 2014, and directed engrossment of the ordinance to include changes recommended by the Planning Commission. A description of those changes was included in the staff report for the August 5 hearing. The Board held its first hearing for A-Engrossed Ordinance No. 783 on September 23, 2014 and continued the hearing to October 7, 2014.

A staff report will be provided to the Board prior to the October 7, 2014 hearing and posted on the above land use ordinance web page. Copies of the report will also be available electronically and at the Clerk's desk prior to the meeting. Consistent with Board policy, testimony about the ordinance is limited to two minutes for individuals and five minutes for a representative of a group.

Clerk's Desk Item: Staff Report *(click to access electronic copy)*

DEPARTMENT'S REQUESTED ACTION:

Read A-Engrossed Ordinance No. 783 by title only and conduct the second public hearing on the engrossed ordinance. At the conclusion of the hearing, adopt A-Engrossed Ordinance 783 and associated findings.

COUNTY ADMINISTRATOR'S RECOMMENDATION:

I concur with the requested action.

ADOPTED

Agenda Item No.	<u>4.a.</u>
Date:	<u>10/07/14</u>

BEFORE THE BOARD OF COUNTY COMMISSIONERS

FOR WASHINGTON COUNTY, OREGON

A-ENGROSSED ORDINANCE 783

An Ordinance Amending the Transportation Plan Element of the Comprehensive Plan, the Community Development Code, the Aloha-Reedville-Cooper Mountain Community Plan, Bethany Community Plan, Bull Mountain Community Plan, Cedar Hills-Cedar Mill Community Plan, East Hillsboro Community Plan, Metzger-Progress Community Plan, Raleigh Hills-Garden Home Community Plan, Sherwood Community Plan, Sunset West Community Plan, and the West Union Community Plan

The Board of County Commissioners of Washington County, Oregon ("Board") ordains as follows:

SECTION 1

A. The Board recognizes that the Transportation Plan Element of the Comprehensive Plan (Volume XV) was adopted on October 25, 1988, by way of Ordinance Nos. 332 and 333, and subsequently amended by Ordinance Nos. 343, 382, 409, 419, 426, 432, 450, 463, 470, 471, 473, 474, 480, 483-485, 493, 494, 503, 515, 526, 537, 542, 546, 552, 556, 588, 601, 609, 611, 626, 627, 631, 642, 649, 663, 674, 683, 712, 713, 717, 718, 730, 739, 744, 749, 750, 760, and 768.

B. The Board of County Commissioners of Washington County, Oregon, recognizes that the Community Development Code Element of the Comprehensive Plan (Volume IV) was readopted with amendments on September 9, 1986, by way of Ordinance No. 308, and subsequently amended by Ordinance Nos. 321, 326, 336-341, 356-363, 372-378, 380, 381, 384-

1 386, 392, 393, 397, 399-403, 407, 412, 413, 415, 417, 421-423, 428-434, 436, 437, 439, 441-443,
2 449, 451-454, 456, 457, 462-464, 467-469, 471, 478-481, 486-489, 504, 506-512, 517-523, 525,
3 526, 528, 529, 538, 540, 545, 551-555, 558-561, 573, 575-577, 581, 583, 588, 589, 591-595, 603-
4 605, 607-610, 612, 615, 617, 618, 623, 624, 628, 631, 634, 635, 638, 642, 644, 645, 648, 649, 654,
5 659-662, 667, 669, 670, 674, 676, 677, 682-686, 692, 694-698, 703, 704, 708, 709, 711, 712, 718-
6 720, 722, 725, 730, 732, 735, 739, 742-745, 754-758, 760, 762, 763, 765, 766, and 769 – 776.

7 C. The Board of County Commissioners of Washington County, Oregon, recognizes
8 that the Aloha-Reedville-Cooper Mountain Community Plan was adopted by Ordinance Nos. 263
9 and 265 and subsequently amended by Ordinance Nos. 292, 294, 344, 367, 418, 420, 471, 480, 551,
10 588, 610, 615, 620, 649, 653, 674, 683, and 776.

11 D. The Board of County Commissioners of Washington County, Oregon, recognizes
12 that the Bethany Community Plan was adopted by Ordinance Nos. 263 and 265 and subsequently
13 amended by Ordinance Nos. 345, 420, 471, 480, 551, 588, 610, 615, 620, 649, 702, 712, 730, 739,
14 744, 745, 758, and 771.

15 E. The Board of County Commissioners of Washington County, Oregon, recognizes
16 that the Bull Mountain Community Plan was adopted by Ordinance Nos. 263 and 265 and
17 subsequently amended by Ordinance Nos. 368, 420, 480, 487, 547, 551, 552, 588, 610, 615, 659,
18 and 666.

19 F. The Board of County Commissioners of Washington County, Oregon, recognizes
20 that the Cedar Hills-Cedar Mill Community Plan was adopted by Ordinance Nos. 263 and 265 and
21 subsequently amended by Ordinance Nos. 346, 369, 396, 418, 420, 450, 471, 480, 484, 526, 551,
22 553, 588, 609, 610, 620, 631, and 732.

1 G. The Board of County Commissioners of Washington County, Oregon, recognizes
2 that the East Hillsboro Community Plan was adopted by Ordinances Nos. 278 and 280 and
3 subsequently amended by Ordinances Nos. 349, 420, 480, 532, 551, 588, 610, 615, and 686.

4 H. The Board of County Commissioners of Washington County, Oregon, recognizes
5 that the Metzger-Progress Community Plan was adopted by Ordinance No. 236 and subsequently
6 amended by Ordinance Nos. 278, 280, 350, 364, 420, 471, 480, 551, 588, 608, and 610.

7 I. The Board of County Commissioners of Washington County, Oregon, recognizes
8 that the Raleigh Hills-Garden Home Community Plan was adopted by Ordinance No. 215 and
9 subsequently amended by Ordinance Nos. 278, 280, 292, 347, 365, 408, 420, 471, 480, 551, 588,
10 608, 610, 683, and 758.

11 J. The Board of County Commissioners of Washington County, Oregon, recognizes
12 that the Sherwood Community Plan was adopted by Ordinances Nos. 263 and 265 and subsequently
13 amended by Ordinances Nos. 370, 420, 480, 551, 588, 610, 615, and 649.

14 K. The Board of County Commissioners of Washington County, Oregon, recognizes
15 that the Sunset West Community Plan was adopted by Ordinance No. 242 and subsequently
16 amended by Ordinance Nos. 278, 280, 292, 294, 348, 366, 418, 420, 485, 503, 526, 531, 532, 551-
17 553, 588, 610, 620, 717, 760, and 780.

18 L. The Board of County Commissioners of Washington County, Oregon, recognizes
19 that the West Union Community Plan was adopted by Ordinance Nos. 263 and 265 and
20 subsequently amended by Ordinance Nos. 420, 480, 551, 588, 610, 671, and 694.

21 M. As part of its ongoing planning efforts including review of current policy and plan,
22 existing conditions, and possible future expansions, Washington County has determined there is a

1 need to update the Transportation Plan to provide direction, identify needs, and address
2 transportation-related issues. The Board takes note that such changes are for the health, welfare,
3 and benefit of the residents of Washington County, Oregon.

4 N. Under the provisions of Washington County Charter Chapter X, the Department of
5 Land Use and Transportation has carried out its responsibilities, including preparation of notices,
6 and the County Planning Commission has conducted one or more public hearings on the proposed
7 amendments and has submitted its recommendations to the Board. The Board finds that this
8 Ordinance is based on those recommendations and any modifications made by the Board are a
9 result of the public hearings process;

10 O. The Board finds and takes public notice that it is in receipt of all matters and
11 information necessary to consider this Ordinance in an adequate manner, and finds that this
12 Ordinance complies with the Statewide Planning Goals, the standards for legislative plan adoption
13 as set forth in Chapters 197 and 215 of the Oregon Revised Statutes, the Washington County
14 Charter, the Washington County Community Development Code, and the Washington County
15 Comprehensive Plan.

16 **SECTION 2**

17 The following Exhibits, attached and incorporated herein by reference, are hereby adopted
18 as amendments to the following documents:

19 Exhibit 1 (2 pages) – Adding Introduction “About the Modal Elements” to the
20 Transportation System Plan;

21 Exhibit 2 (39 pages) – Amending Roadway Element of the Transportation System Plan and
22 maps:

- a. The Functional Classification map, Transportation System Plan, is amended;
- b. The Lane Numbers map, Transportation System Plan, is amended;
- c. The Special Area Street Overlay Sunset Station Area Plan, is amended;
- d. The Special Area Street Overlay Cedar Mill Town Area, is amended;
- e. The Long Term Roadway Jurisdiction map is incorporated into the Transportation System Plan;
- f. The Rural Enhancement Study Corridors map is incorporated into the Transportation System Plan;
- g. The SW 124th Avenue Extension Refinement Area map is incorporated into the Transportation System Plan;
- h. The NW 185th Avenue and OR Highway 26 Interchange Refinement Area map is incorporated into the Transportation System Plan;
- i. The North Bethany Neighborhood Route Refinement Area map is incorporated into the Transportation System Plan;
- j. The SW Day Road Overcrossing Refinement Area map is incorporated into the Transportation System Plan;
- k. The I-5 to Highway 99W Refinement Area map is incorporated into the Transportation System Plan;
- l. The NW Schaff Road Extension Refinement Area map is incorporated into the Transportation System Plan;
- m. The NW Springville Road Extension Refinement Area map is incorporated into the Transportation System Plan;

1 n. The Tualatin Valley Highway Refinement Area map is incorporated into the
2 Transportation System Plan; and

3 o. The NW Wilkins Road Extension Refinement Area map is incorporated into the
4 Transportation System Plan.

5 Exhibit 3 (7 pages) – Amending Freight Element of the Transportation System Plan and
6 maps:

7 a. Deleting Countywide Through-Truck Routes map;

8 b. The Roadway Freight System map is incorporated into the Transportation
9 System Plan; and

10 c. Title of the “Air, Rail, Pipeline & Water Elements” map is amended

11 Exhibit 4 (40 pages) – Amending Active Transportation Elements of the Transportation
12 System Plan and maps:

13 a. The Pedestrian System map is incorporated into the Transportation System
14 Plan;

15 b. The Bicycle System map is deleted;

16 c. The Bicycle System map is incorporated into the Transportation System
17 Plan;

18 d. The Transit System map is deleted; and

19 e. The Transit System map is incorporated into the Transportation System Plan

20 Exhibit 5 (5 pages) – Amending Transportation System Management & Operations Element
21 of the Transportation System Plan;

22 Exhibit 6 (5 pages) – Amending Funding Element of the Transportation System Plan;

1 Exhibit 7 (18 pages) – Amending Ordinance 768 and maps:

- 2 a. The 2040 Growth Concept Design Types map is deleted;
- 3 b. The Deficiency Areas map is deleted;
- 4 c. The Regional Street Design Overly map is deleted;
- 5 d. The Washington County Study Areas map is deleted; and
- 6 e. The Countywide Road System map is deleted

7 Exhibit 8 (5 pages) – Amending Community Development Code; and

8 Exhibit 9 (10 pages) – Amending Community Plan maps:

- 9 a. The Transportation Functional Classification map, Aloha, Reedville, Cooper
10 Mountain Community Plan, is deleted;
- 11 b. The Transportation Functional Classification map, Chapters 1 and 2, Bethany
12 Community Plan, are deleted;
- 13 c. The Transportation Functional Classification map, Bull Mountain Community
14 Plan, is deleted;
- 15 d. The Transportation Functional Classification map, Cedar Hills-Cedar Mill
16 Community Plan, is deleted;
- 17 e. The Transportation Functional Classification map, East Hillsboro Community
18 Plan, is deleted;
- 19 f. The Transportation Functional Classification map, Metzger-Progress Community
20 Plan, is deleted;
- 21 g. The Transportation Functional Classification map, Raleigh Hills-Garden Home
22 Community Plan, is deleted;

- 1 h. The Transportation Functional Classification map, Sherwood Community Plan,
2 is deleted;
- 3 i. The Transportation Functional Classification map, Sunset West Community
4 Plan, is deleted; and
- 5 j. The Transportation Functional Classification map, West Union Community Plan,
6 is deleted

7

8 SECTION 3

9 All other Comprehensive Plan provisions that have been adopted by prior ordinance, which
10 are not expressly amended or repealed herein, shall remain in full force and effect.

11 SECTION 4

12 All applications received prior to the effective date shall be processed in accordance with
13 ORS 215.427.

14 SECTION 5

15 If any portion of this Ordinance, including the exhibits, shall for any reason be held invalid or
16 unconstitutional by a body of competent jurisdiction, the remainder shall not be affected thereby and
17 shall remain in full force and effect.

18 SECTION 6

19 The Office of County Counsel and Department of Land Use and Transportation are
20 authorized to prepare planning documents to reflect the changes adopted under Section 2 of this
21 Ordinance, including deleting and adding textual material and maps, renumbering pages or sections,
22

1 and making any technical changes not affecting the substance of these amendments as necessary to
2 conform to the Washington County Comprehensive Plan format.


3 SECTION 7

4 This Ordinance shall take effect on December 1, 2014.

5 ENACTED this 7th day of October, 2014, being the 3rd reading and
6 3rd public hearing before the Board of County Commissioners of Washington County, Oregon.

7 BOARD OF COUNTY COMMISSIONERS
8 FOR WASHINGTON COUNTY, OREGON

9 **ADOPTED**

10 
CHAIRMAN

11 
RECORDING SECRETARY

12 READING

13 First August 5, 2014
14 Second September 23, 2014
15 Third October 7, 2014
16 Fourth _____
17 Fifth _____

12 PUBLIC HEARING

13 First August 5, 2014 (Engrossment ordered)
14 Second September 23, 2014
15 Third October 7, 2014
16 Fourth _____
17 Fifth _____

18 VOTE: Aye: Malinowski,
Duyck, Terry, Rogers
19 Recording Secretary: Barbara Hejtmanek

20 Nay: _____
21 Date: October 7, 2014

About the Modal Elements

The Washington County Transportation System Plan (TSP) describes an integrated multi-modal transportation network to meet the needs of Washington County residents, workers, businesses and visitors over the next 20 years. The Modal Elements each illustrate and describe a component of the whole transportation system envisioned for Washington County. Each Modal Element includes a system map or maps and accompanying text. The word “modal” refers to the different modes of travel that are intended to be accommodated by the transportation system. These modes include automobile, freight, pedestrian, bicycle and transit. Also included in the Modal Elements are the system management and funding components necessary to illustrate and describe the complete system.

The Modal Elements implement the TSP Goals, Objectives and Strategies that were initially adopted by Ordinance 768 in October 2013. Each Modal Element describes transportation system components in terms of three characteristics:

- **Classification:** The intended character and function each component of the system is intended to serve.
- **General location:** The property or land that will be required to accommodate each component of the system.
- **General size and scope:** The amount and configuration of land necessary to accommodate each component of the system in the long term.

Together, the Modal Elements establish the framework of an integrated multi-modal transportation network. The backbone of this network is a system of arterial and collector complete streets, high capacity transit lines, freeways, freight railroads, multi-use trails, airports and pipelines that collectively provide for travel needs within Washington County.



While the Modal Elements identify specific attributes related to the individual modes, readers and users of this plan are encouraged to consider that each mode serves as a component of a system that combines and interacts with the other modes to create a complete, integrated transportation network.

Per state and regional policy, the TSP Modal Elements address all modes of travel for people and goods. The Modal Elements and maps are organized as follows:

Roadway Element

- Functional Classification Map
- Lane Numbers Map
- Special Area Streets Overlay Maps
- Long-Term Roadway Jurisdiction Map
- Rural Enhancement Study Corridors Map
- Refinement Areas Maps

Freight Element

- Roadway Freight System Map
- Aviation, Railroad and Pipeline System Map

Active Transportation Elements

1. **Pedestrian Element**
 - Pedestrian System Map
2. **Bicycle Element**
 - Bicycle System Map
3. **Transit Element**
 - Transit System Map

- **Transportation System Management & Operations Element**
- **Funding Element**

Roadway Element

Washington County's transportation system includes over 1,300 miles of county roads, as well as nearly 1,000 miles of state or city roads, shared by motor vehicles, bicycles, pedestrians, trucks and public transit. The County's roadway system includes a wide variety of roadways – from major urban boulevards to gravel rural roads. The Roadway Element identifies an integrated multi-modal network of complete streets that provide an interconnected transportation system for all modes and users.

Functional Classification

The Functional Classification map identifies the classification for all County roadways. Each roadway's role in providing access to individual properties and mobility for travel on the network is defined by the Functional Classification designation. The Functional Classification system describes a hierarchy of road designations, which includes Principal Arterials, Arterials, Collectors, Commercial/Industrial Streets, Neighborhood Routes and Local Streets.

Interim functional classification designations:

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

- Joss Avenue - NW Joss Avenue is designated as an Interim Collector on the Functional Classification Map. It is anticipated that NW Joss Avenue ultimately will be reclassified to its expected function as a Neighborhood Route after the construction of Shackelford Road to NW 185th Avenue. See the Bethany Community Plan (Chapter 2: North Bethany Subarea Plan) for additional details.
- Saltzman Road – The segment of NW Saltzman Road between NW Laidlaw Road and NW Bayonne Lane is anticipated to be realigned west of the current alignment, to the intersection of NW Laidlaw Road at NW 130th Avenue. The realigned segment of Saltzman Road is designated on the Functional Classification Map as a Proposed Collector. Interim improvements to the existing alignment may be implemented to enhance the operation of the facility until the realignment has been completed. After the realignment of Saltzman Road is in place, it is anticipated that the current alignment of Saltzman will be reclassified consistent with its new function as either a Neighborhood Route or a Local Street. The appropriate classification will be determined based upon observed traffic operations and needs after the realignment is complete.

Lane Numbers & Right-of-Way Protection

The maximum number of lanes that can be built on individual roads without a plan amendment is identified on the Lane Numbers map. Intersections along Arterial and Collector roads shall be planned to include right-of-way for turn lanes within 1,000 feet of the intersections. Specific needs for turn lanes are determined through traffic analysis conducted at the time of development and/or during the transportation project development process (as described in Table 3: Functional Classification Design Parameters Goal 5: Mobility).

Special right-of-way needs:

Several roadways in Washington County have special designations, where performance monitoring over time is necessary or where additional right-of-way may be needed.

- Kaiser Road – Springville Road to Bethany Boulevard: The intersections of Kaiser Road at Bethany Blvd and Springville Road control the operations of this segment of Kaiser Road. As development occurs in North Bethany and throughout the region, this section of Kaiser Road may require additional turn lanes and/or travel lanes beyond the three lane configuration identified on the TSP map.
- Saltzman Road / 130th Avenue – Laidlaw to County line: This segment of Saltzman Road / 130th Avenue represents a future opportunity for a north/south connection between Laidlaw Road and Springville Road. This connection is classified as a two-lane neighborhood route until such time that a reclassification is warranted. Additional travel lanes, turn lanes, bicycle facilities and right-of-way may be required to complete the transportation grid necessary to meet the future system needs of the traveling public.
- Tualatin Valley Highway – Maple Street to Cedar Hills Boulevard: As discussed in the refinement area section later in this document, a long-term transit solution for Tualatin Valley Highway has yet to be identified. In advance of this transit study involved jurisdictions should consider the preservation of land for Business Access Transit (BAT) / High Capacity Transit (HCT) uses. This land area is not intended to be used for general purpose through lanes.

Major Intersections

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

Major Intersections are identified at the following locations:

- 170th Avenue @ Tualatin Valley Highway**
- 185th Avenue @ Baseline Road
- 185th Avenue @ Cornell Road
- 185th Avenue @ Evergreen Boulevard
- 185th Avenue @ Tualatin Valley Highway*
- 185th Avenue @ Walker Road

- Brookwood Parkway @ Evergreen Parkway
- Cornelius Pass Road @ Cornell Road
- Cornelius Pass Road @ Tualatin Valley Highway*
- Murray Boulevard @ Tualatin Valley Highway*

* Included in the TVCP

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

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

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

Roadway System Adequacy

The roadway system identified in this plan is a component of an integrated multi-modal network of complete streets. The Arterial and Collector roadway system identified by the lane numbers map constitutes an adequate system for meeting anticipated travel needs. In general, the planned roadway component of the network is anticipated to meet Oregon Highway Plan mobility targets and standards, as well as the Regional Transportation Functional Plan interim mobility deficiency thresholds and operating standards, except for the segments identified in the technical appendix. These standards are further identified by interim Washington County Motor Vehicle Performance Standards within Goal 5 (Mobility) of this TSP.

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

Special Area Streets

Special Area Streets are identified on the Special Area Street Overlay Maps as well as in the Community Plans. Special Area Street design standards are included in the Washington County Uniform Road Improvement Design and Construction Standards.

Long Term Roadway Jurisdiction

The Long Term Roadway Jurisdiction map identifies roadways that are considered to be appropriately under County jurisdiction in the long term, with remaining roadways either staying under state jurisdiction or becoming city roadways as currently unincorporated areas are annexed.

Rural Road Enhancement Study Corridors

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

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

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

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

- Sight distance improvements
- Pavement markings
- Advance curve warning signs
- Larger signs and/or reflective sign posts
- Intersection illumination
- Flashing beacon in advance of intersections
- Vegetation control
- Shoulder widening
- Other intersection improvements

Refinement Areas

abcdef Proposed additions

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

SW 124th Avenue Refinement Area:

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

NW 185th Avenue and OR Highway 26 Interchange Refinement Area:

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

North Bethany Neighborhood Route Refinement Area Map:

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

Day Road Overcrossing Refinement Area:

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

I-5 to Highway 99W Refinement Area:

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

- Evaluate alignment options and their environmental impact;
- Integrate the proposal with the concept plan and transportation system plan for the UGB area and any Urban Reserves designated in the area;
- Address any requirements that may result from adoption of an exception to Goal 14 (if needed) for an urban facility outside the UGB;

- Integrate the proposal with the regional mobility corridor between Tigard to Wilsonville to ensure these east-west arterials and I-5 itself could effectively function together; and
- Determine the most appropriate approach to connecting the Southern Arterial to I-5, including options for improvements to the I-5/North Wilsonville interchange, or consideration of extending the Southern Arterial east across I-5 to Stafford Road, thereby providing better access to I-205.

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

Since the completion of the I-5/99W Connector Study, Washington County led the Basalt Creek Transportation Refinement Plan along with Metro, ODOT and the Cities of Tualatin and Wilsonville. The purpose of this refinement plan was to determine the major transportation system to serve the Basalt Creek Planning Area. The plan sets the stage for land use concept planning and comprehensive plan development for the Basalt Creek area. The need to plan for the future transportation system was driven by future growth in the Basalt Creek area itself as well as almost 1,000 acres of future industrial development targeted for surrounding areas. This plan refined the recommendations from the I-5/99W Connector Study and the Regional Transportation Plan, generally for the area between 124th Avenue on the west, and I-5 on the east. As a result of this planning effort, agreement was reached regarding a set of roadway improvements including the extension of SW 124th Avenue, a new east-west roadway between that extension and Boones Ferry Road, a new overcrossing of I-5 to Stafford, a new overcrossing of I-5 at Day Road and several upgrades to the existing roadway network between Tualatin and Wilsonville. The results of the Basalt Creek Transportation Refinement Plan have been incorporated into the multi-modal network of complete streets depicted on the various transportation maps in this TSP.

West of 124th Avenue and through the Brookman Addition Concept Plan area additional refinement effort is still needed. There continue to be concerns related to potential urban development, and the intersection of the Southern Arterial with Highway 99W. During the development of the Brookman Addition Concept Plan the ultimate location of the Southern Arterial was not known. The coordination of the two processes resulted in the recommendation of the Brookman Addition Concept Plan that the existing intersection of Brookman Road and Highway 99W be realigned to the north to avoid conflicts with a potential Southern Arterial alignment further south. The Brookman Addition Concept Plan indicated that Brookman Road would serve as a Collector roadway, to provide access to future development within the area. No identified location for the Southern Arterial has been established since the adoption of the Brookman Addition Concept Plan, the I-5 to 99W Connector Study and designation of Urban Reserves south of Brookman Road. Therefore, this area remains as a refinement area.

In the interim, consistent with conditions for strategic protection of right-of-way for the Southern Arterial in the I-5 to 99W connector study, Brookman Road has been designated as an Arterial with 5-lanes of right-of-way. It is recognized that changing the role and function of Brookman Road would require modifications to the Brookman

Addition Concept Plan to determine how future development would occur. During the interim, while refinement planning has not yet been completed, access spacing and other requirements will need to be evaluated on a case by case basis at the time of any development application. The long-term intent is to reevaluate the Brookman Addition Concept Plan in the context of the Urban Reserve designation to the south. The evaluation would consider the refinement of both the location Southern Arterial, and a local Collector level roadway(s) to serve to the area. As the issues for the Southern Arterial are resolved (including the long-term alignment) appropriate changes to these interim designations should be considered.

Short-term regional strategy

- Identify transit improvements, specifically east-west connections between Tualatin and Sherwood through TriMet's Service Enhancement Plan.
- Upgrade existing streets to two lanes with turn lanes, traffic signal timing, bicycle lanes and sidewalks, including Herman Road, Tualatin-Sherwood Road and 95th Avenue.
- Add a lane to the southbound I-205 to southbound I-5 interchange ramp, extend the acceleration lane and add an auxiliary lane on southbound I-5 to Elligsen Road.
- Conduct more detailed project planning and begin construction of a two-lane extension of SW 124th Avenue from Tualatin-Sherwood Road to Grahams Ferry Road.
- Improve the intersection of Tonquin Road and Grahams Ferry Road.
- Continue Intelligent Transportation System improvements along Tualatin-Sherwood Road.
- Conduct more detailed planning to meet all the conditions placed in the proposed Southern Arterial, including:
 1. Conduct the I-5 to South Corridor Refinement Plan (includes I-5 from Portland to Tigard, I-5 from Tigard to Wilsonville and OR99W from I-5 through Tigard and Sherwood). Local jurisdictions will develop land use plans for areas added to the urban growth boundary. These planning efforts will include opportunities for further public participation and input.
 2. Conduct a more detailed planning study on a potential Southern Arterial. This study will include impacts on existing development and the natural environment to refine the design and alignment location. These detailed planning studies will consider impact mitigation and coordinate with land use and transportation plans for the area. The studies will also include integration with land use plans for UGB expansion areas and Urban Reserves. The studies will consider access between I-5 and a Southern Arterial and the potential for the preferred alignment to address any conditions associated with land use goal exception appropriately for the Southern Arterial. These planning efforts will include opportunities for further public participation and input.

In the recommended alternative, Tualatin-Sherwood Road is sized based upon the expectation there will be the Southern Arterial. Due to insufficient capacity, it is expected that Tualatin-Sherwood Road cannot meet regional mobility goals without the Southern Arterial. Further expansion of Tualatin-Sherwood Road is incompatible with the plans for

both the Tualatin and Sherwood Town Centers. If the Southern Arterial is removed through future studies, there will be a significant unresolved mobility issue addressing east-west travel through this area – with resulting impacts on employment and economic vitality.

Medium-term regional strategy

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

Long-term regional strategy

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

NW Schaaf Road Extension Refinement Area:

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

NW Springville Road Extension Refinement Area:

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

Tualatin Valley Highway Refinement Area:

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

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

The TVCP recommendations fall into 3 categories: 1) Near Term Actions, 2) Opportunistic Actions and 3) Longer Term Refinement Planning Needs.

1. Near Term Actions

The proposed improvements described below will address existing needs, including multimodal system completeness and safety, and can reasonably be expected to be completed within the next 15 years with a strong commitment from one or more of the partner agencies that have jurisdiction over subject transportation facilities.

- Complete detailed multi-agency study to determine future potential for high-capacity transit solutions within the Tualatin Valley Highway corridor
- Improve bus stops along Tualatin Valley Highway
- More frequent bus service
- Add street lighting on Tualatin Valley Highway
- Improve Tualatin Valley Highway pedestrian crossings
- Complete Planning and Conceptual design for a multi-use path
- Fill gaps in sidewalks and add landscape buffers along Tualatin Valley Highway
- Add directional wayfinding signs
- Complete the (currently discontinuous and narrow) bike lanes on Tualatin Valley Highway
- Improve bike crossings of Tualatin Valley Highway
- Develop continuous east-west parallel bike routes north and south of Tualatin Valley Highway

- Public community rail safety education
- Support and promote employer incentive programs to reduce driving
- Improve signal timing, transit prioritization and traffic operations monitoring
- Signal prioritization for transit
- Adaptive signal control (“smart signals” that adjust timing to congestion levels)
- Improve operations at signalized intersections along Tualatin Valley Highway
- Intersection modification to address safety and mobility
- Left-turn signal improvements

2. Opportunistic Actions

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

- Encourage private contributions by developers to implement the near term improvements, including reserving right-of-way for future transportation improvements (*City of Hillsboro, City of Beaverton, Washington County*).
- Consider the acquisition of land for the development of a westbound business access transit (BAT) lane as redevelopment opportunities arise on Tualatin Valley Highway. The City of Hillsboro may also require all half-street improvements be constructed to include the set-back curb, planter strip and sidewalk improvement to create an amenable environment for future transit solutions on Tualatin Valley Highway. This redevelopment should be consistent with ODOT standards.
- As projects arise from appropriate categories examine whether opportunities are available to use other funds to leverage this funding (e.g., safety) (*ODOT, consulting with partners*).
- As land use and transportation system conditions change and near term improvements are completed, consider the opportunity to update this adaptive corridor management strategy (*all partners*).
- Improve existing north-south routes for all modes to reduce travel demand on Tualatin Valley Highway and congestion at intersections. Improvements to roadways such as Brookwood Avenue, Century Boulevard, Cornelius Pass Road, 209th Avenue, 198th Avenue, 185th Avenue and 170th Avenue would provide the greatest benefit to the overall transportation system. Improvements on 198th Avenue south of Tualatin Valley Highway are scheduled in the next five years through Washington County’s Major Streets Transportation Improvement Program. The other three corridors will require a more opportunistic approach, including working with developers of South Hillsboro to help improve 209th Avenue (*City of Hillsboro, City of Beaverton, Washington County*).

3. Long Term Refinement Planning Needs

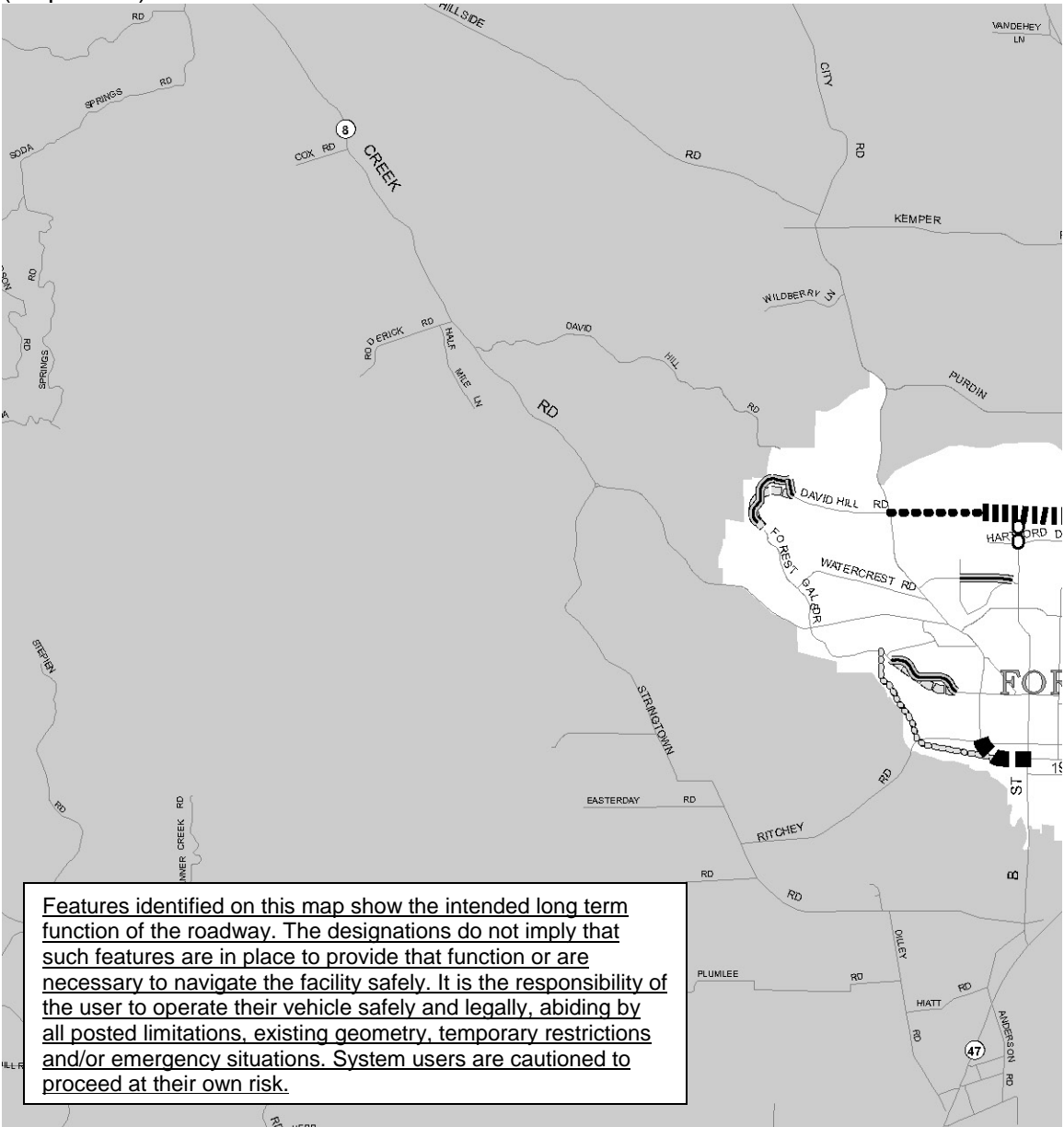
The refinement plan was unable to adequately address some longer term planning aspirations for the corridor. The following should be addressed as part of a future corridor refinement plan:

- If HCT is determined to be the preferred option, the location (e.g. on or adjacent to Tualatin Valley Highway) transit mode (e.g., bus rapid transit, express bus service, light rail, streetcar or commuter rail) and amount of right-of-way needed should be identified. This transit alternative analysis study may explore enhanced signal operations for transit and/or the viability of a Business Access Transit (BAT) lane in appropriate locations.
- The location of a multi-use pathway parallel to Tualatin Valley Highway.
- The location of new local street connections, in concert with access management along Tualatin Valley Highway.
- While grade separated intersections are not included in the plan, it is recognized that in the long term, all tools should be considered to maintain acceptable intersection performance to serve future transportation and community needs.

NW Wilkins Road Extension Refinement Area:

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

The Functional Classification map of the Transportation System Plan is amended as follows (map 1 of 8):



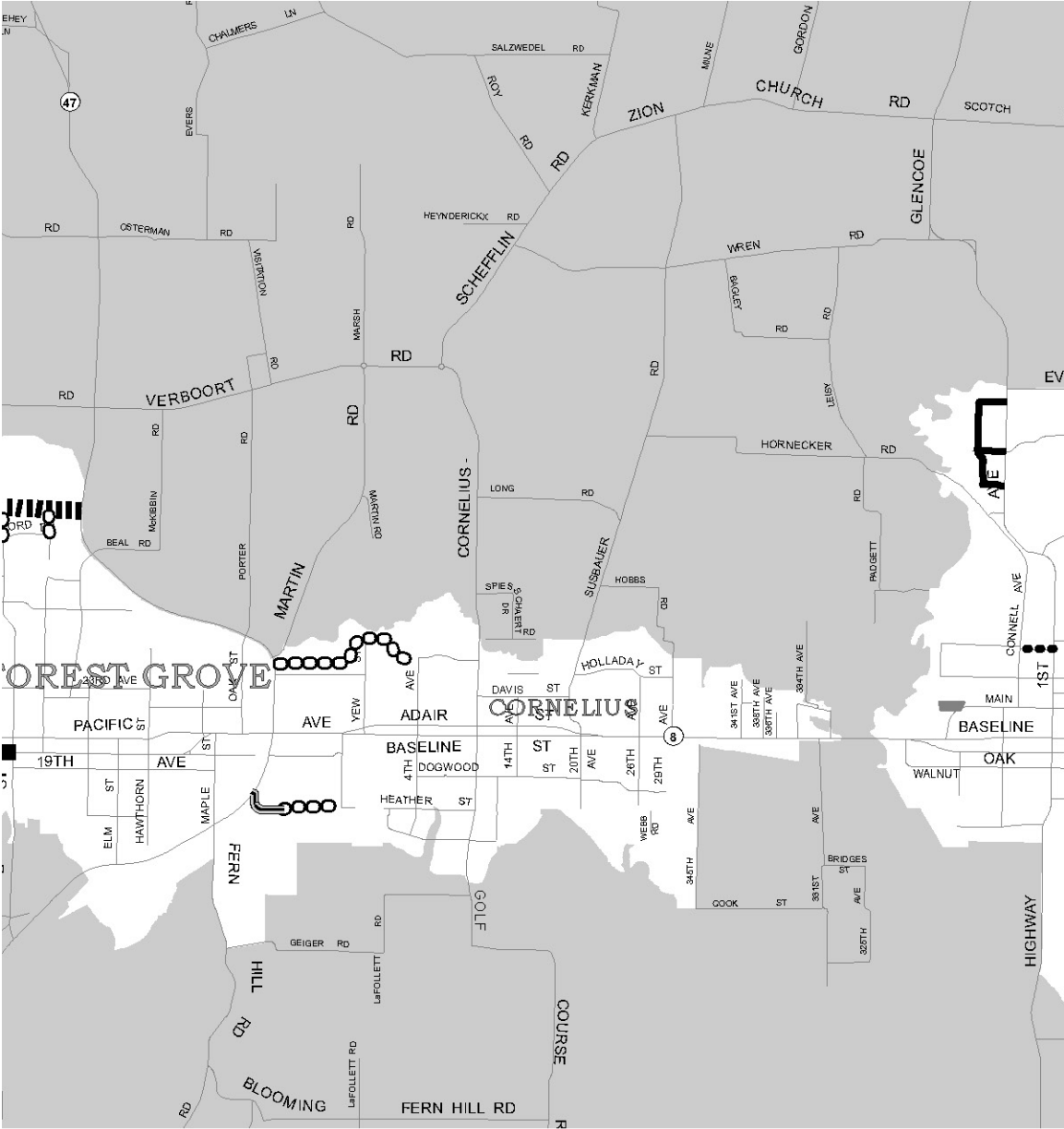
Features identified on this map show the intended long term function of the roadway. The designations do not imply that such features are in place to provide that function or are necessary to navigate the facility safely. It is the responsibility of the user to operate their vehicle safely and legally, abiding by all posted limitations, existing geometry, temporary restrictions and/or emergency situations. System users are cautioned to proceed at their own risk.

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- ○ ○ ○ Add as Proposed Collector
- ○ ○ ○ Add as Proposed Neighborhood Route
- □ □ □ Remove Proposed Collector

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

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The Functional Classification map of the Transportation System Plan is amended as follows (map 2 of 8):

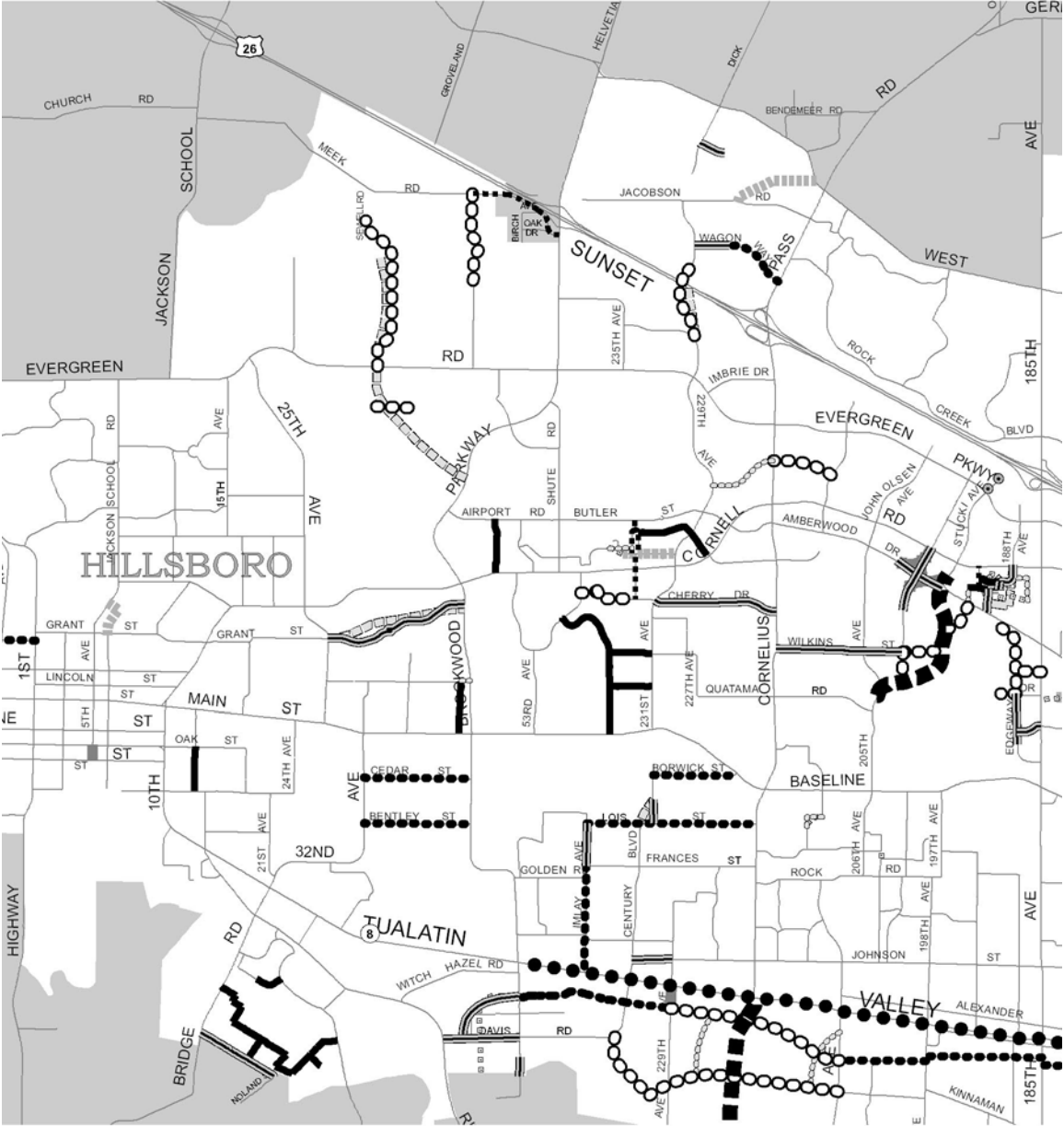


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- Change Neighborhood Route to Collector
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abcdef Proposed additions
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The Functional Classification map of the Transportation System Plan is amended as follows (map 3 of 8):

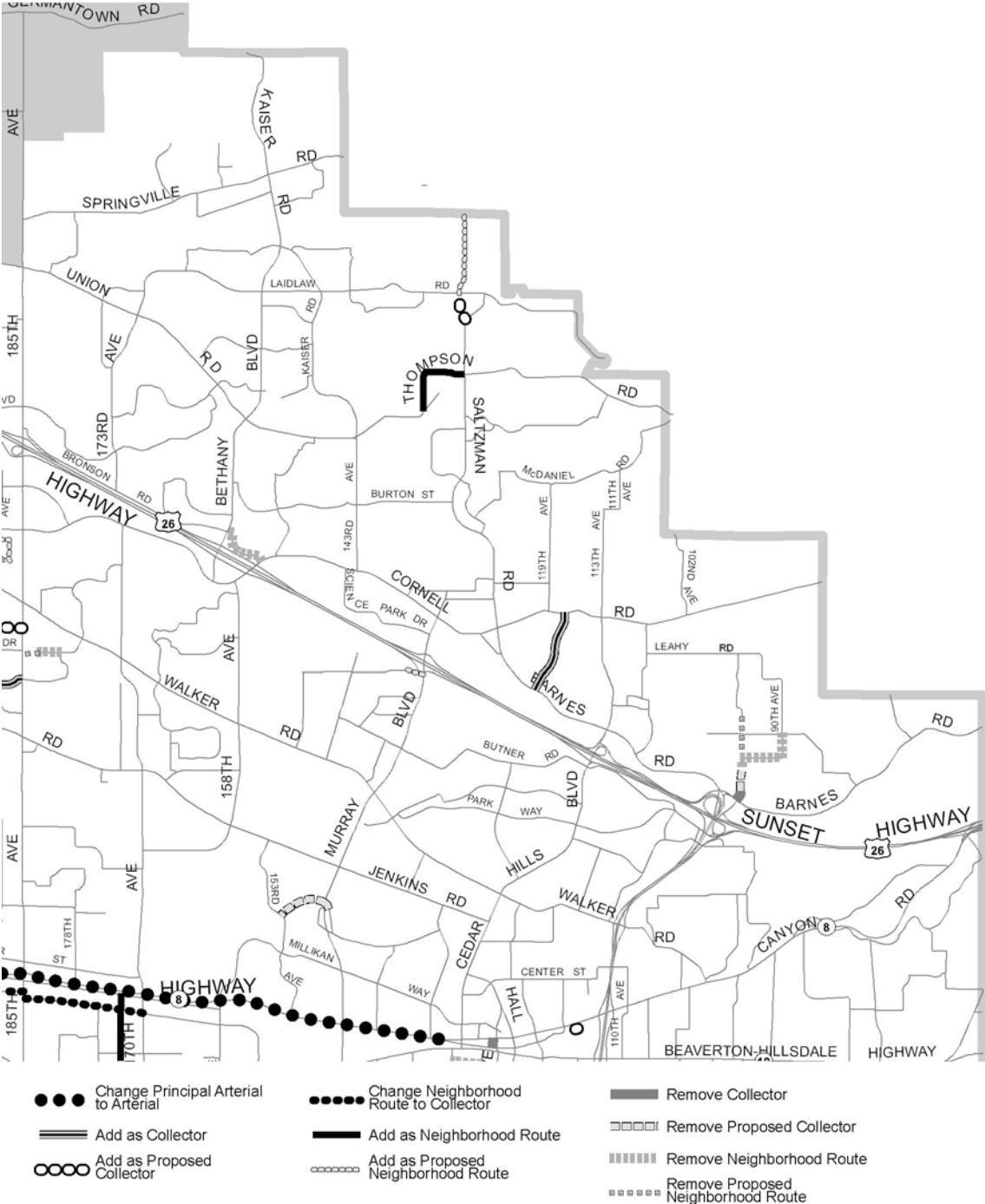


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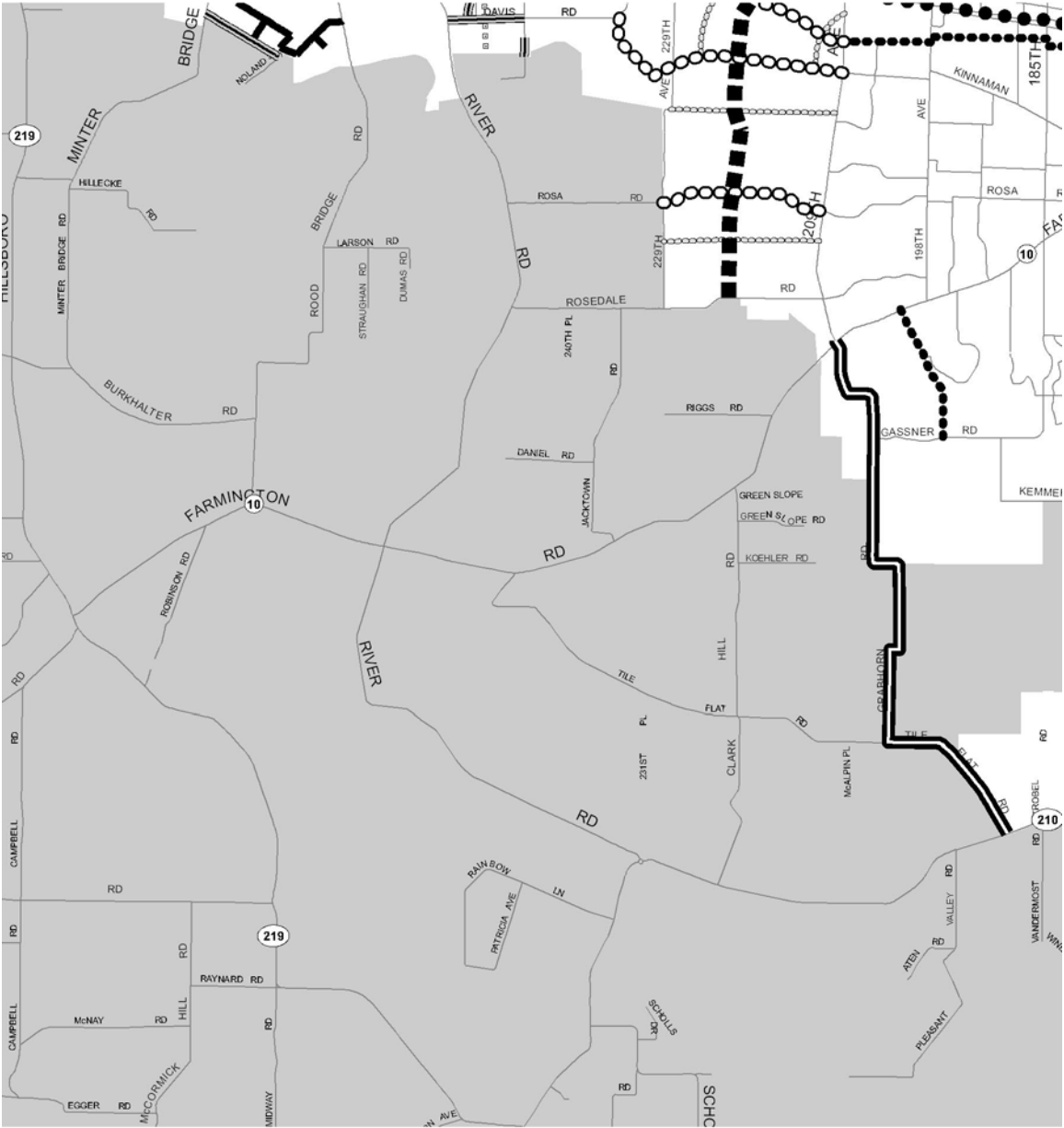
The Functional Classification map of the Transportation System Plan is amended as follows (map 4 of 8):



Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

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The Functional Classification map of the Transportation System Plan is amended as follows (map 5 of 8):

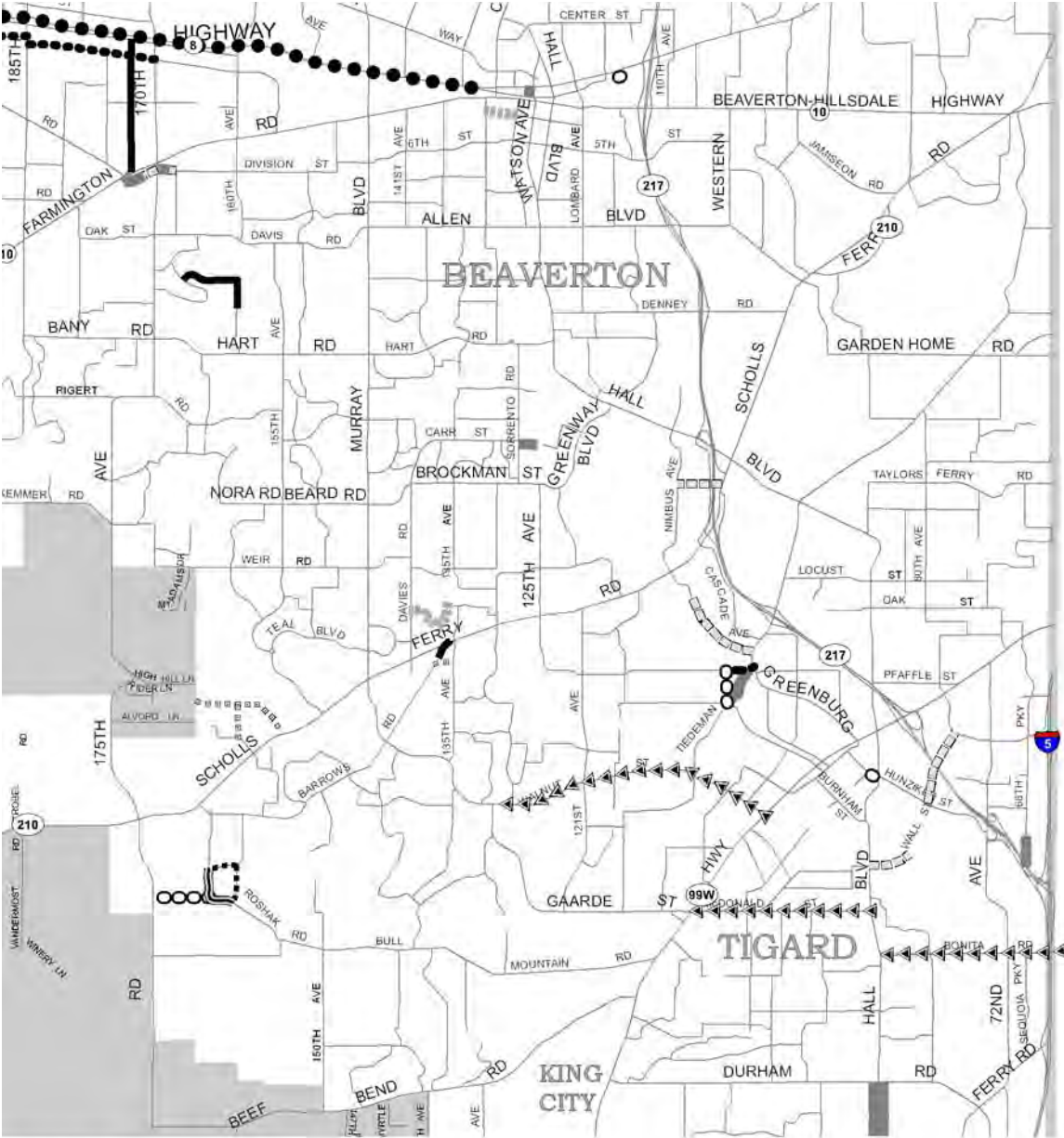


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- Change Neighborhood Route to Collector
- Add as Neighborhood Route
- Add as Proposed Neighborhood Route
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Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

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The Functional Classification map of the Transportation System Plan is amended as follows (map 6 of 8):

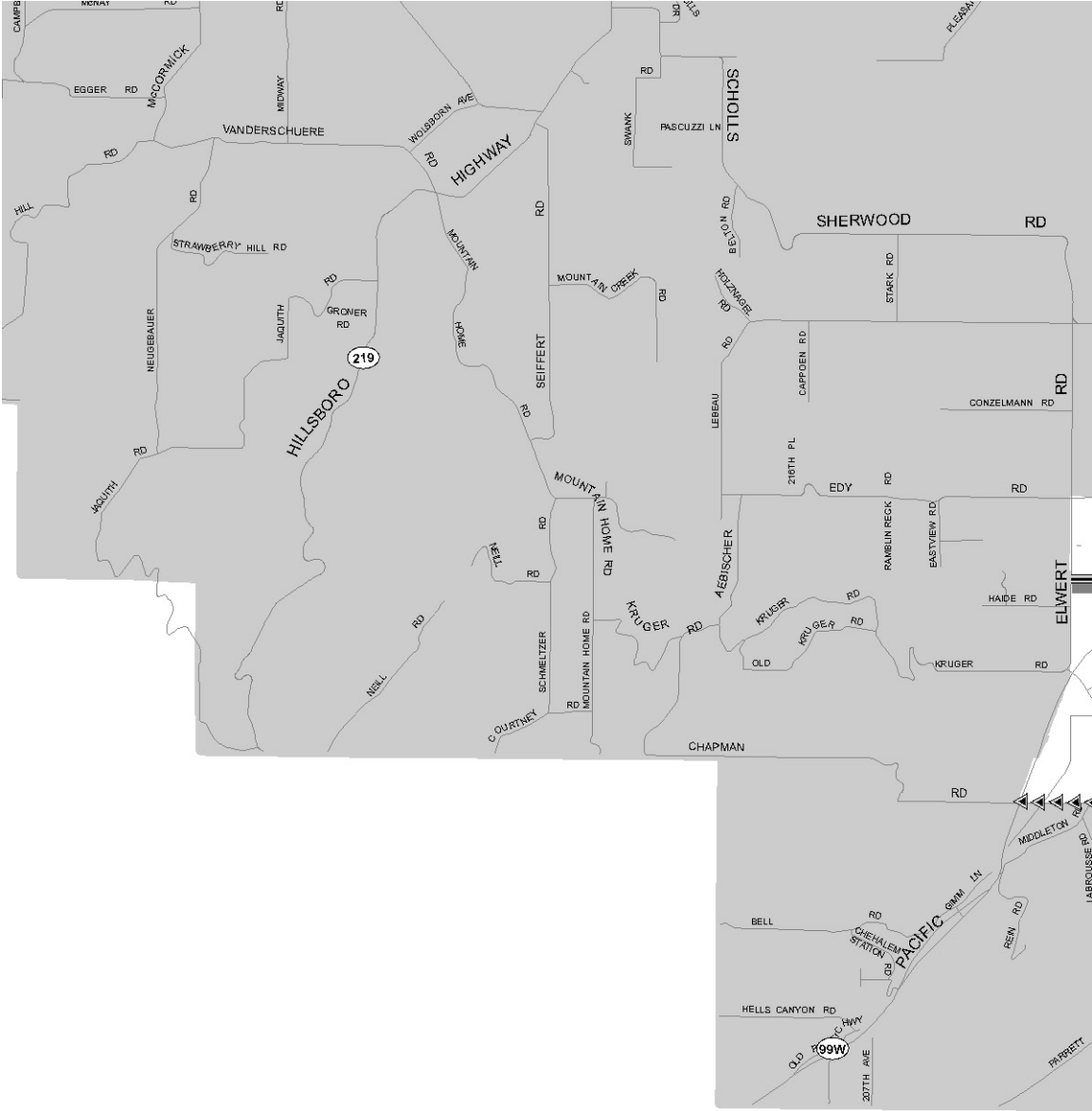


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The Functional Classification map of the Transportation System Plan is amended as follows (map 7 of 8):

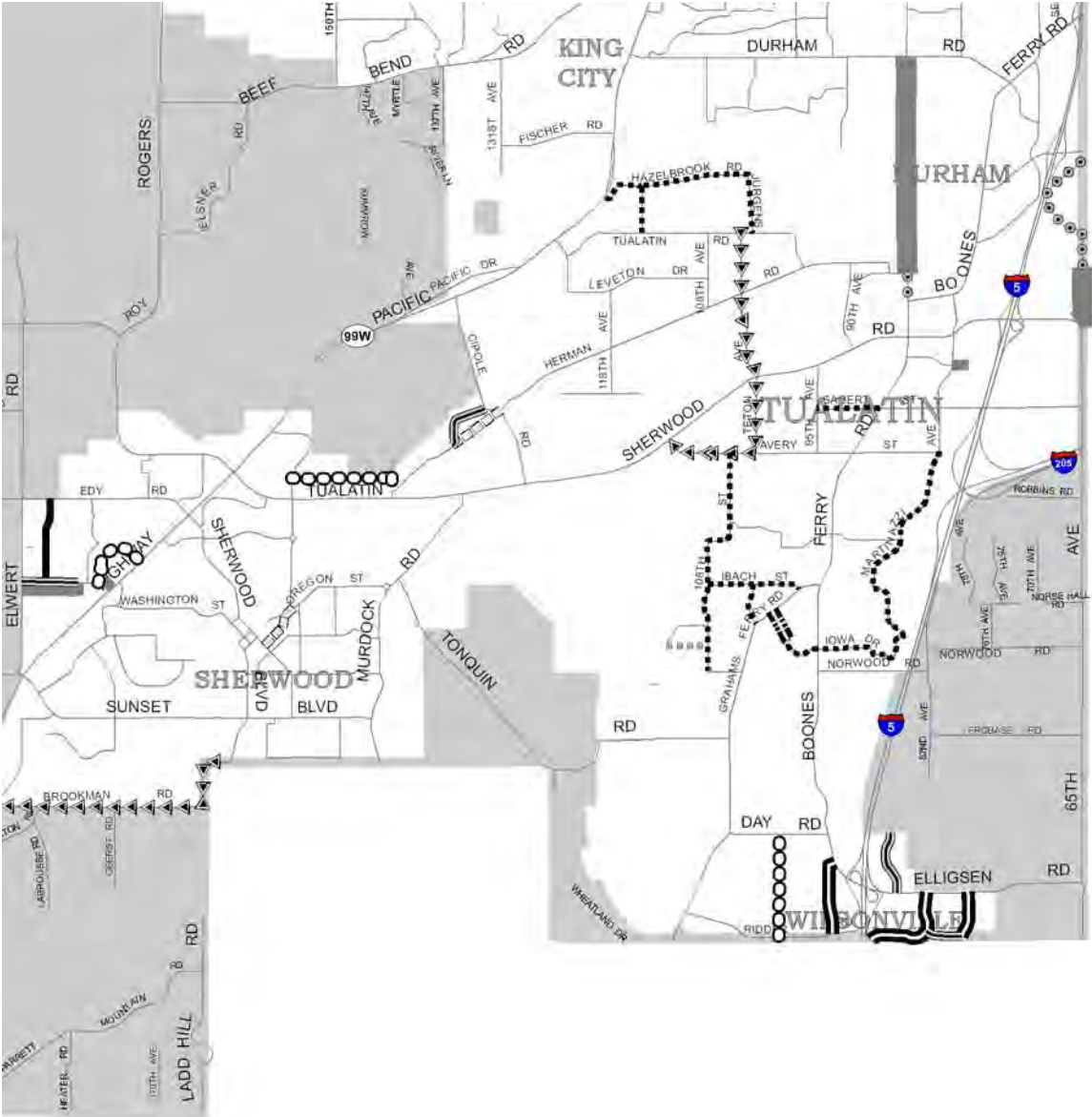


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Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

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The Functional Classification map of the Transportation System Plan is amended as follows (map 8 of 8):

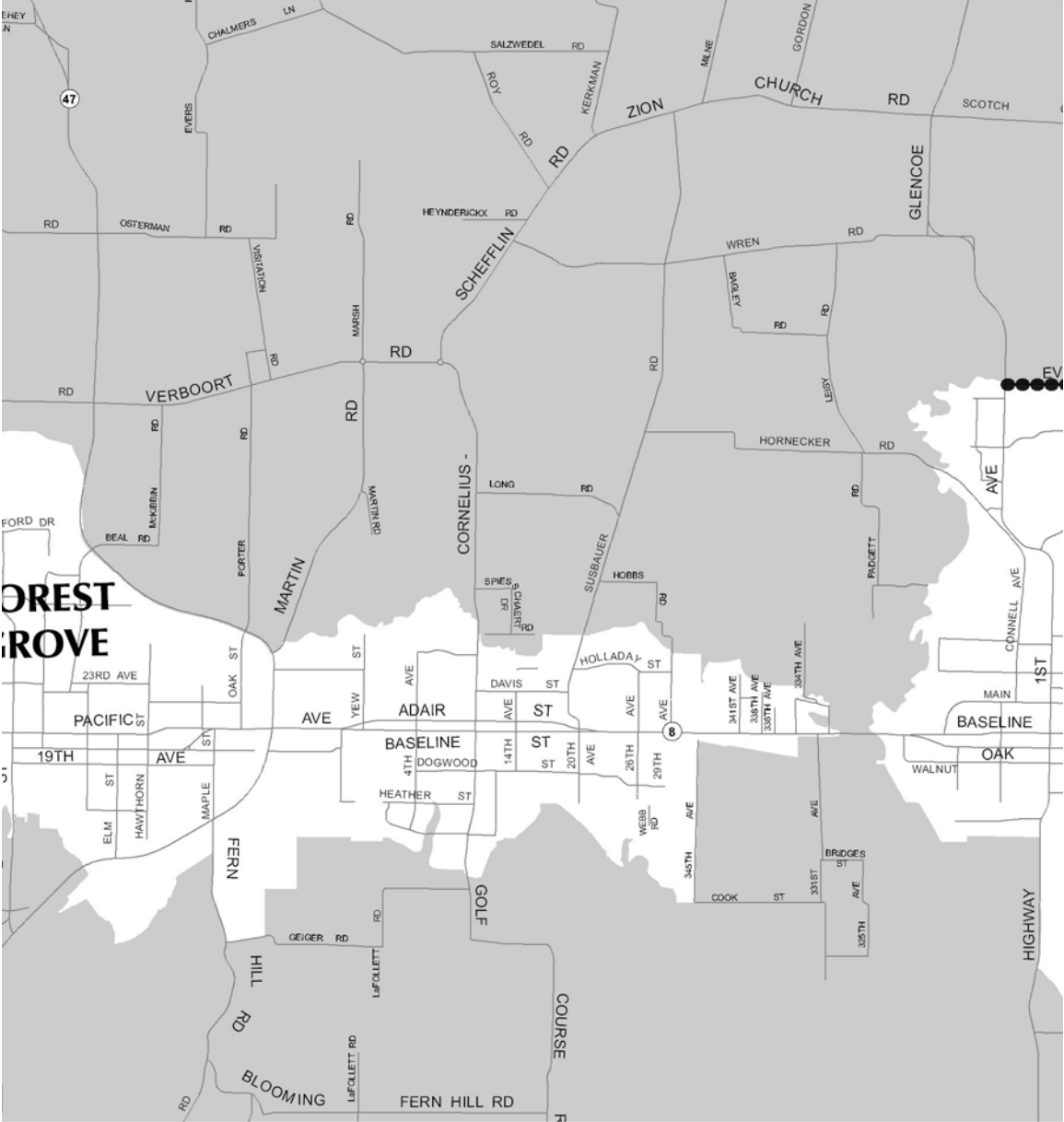


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Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

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The Lane Numbers map of the Transportation System Plan is amended as follows (map 1 of 7):

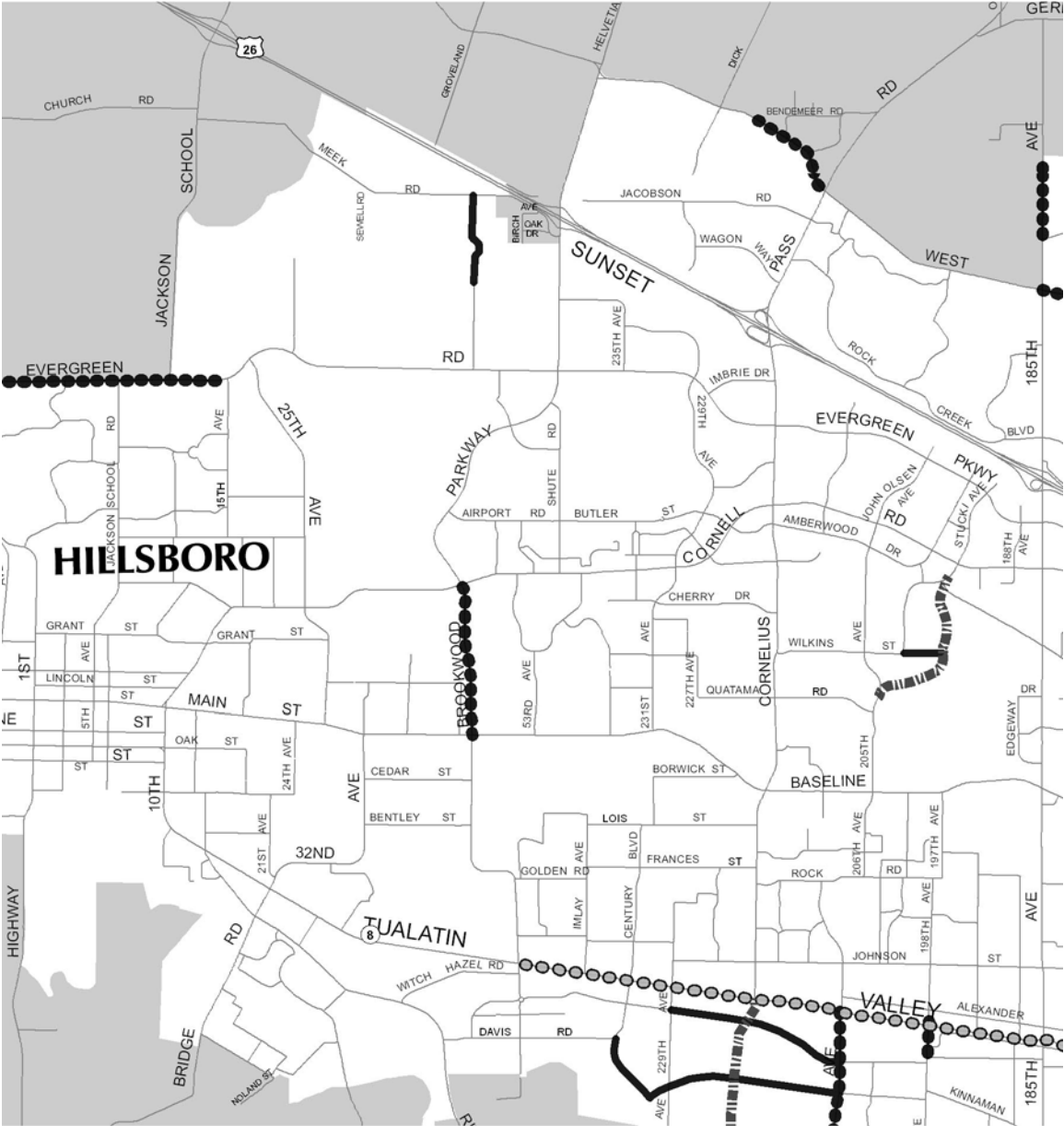


●●●●● Change from 2/3 to 4/5

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

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The Lane Numbers map of the Transportation System Plan is amended as follows (map 2 of 7):

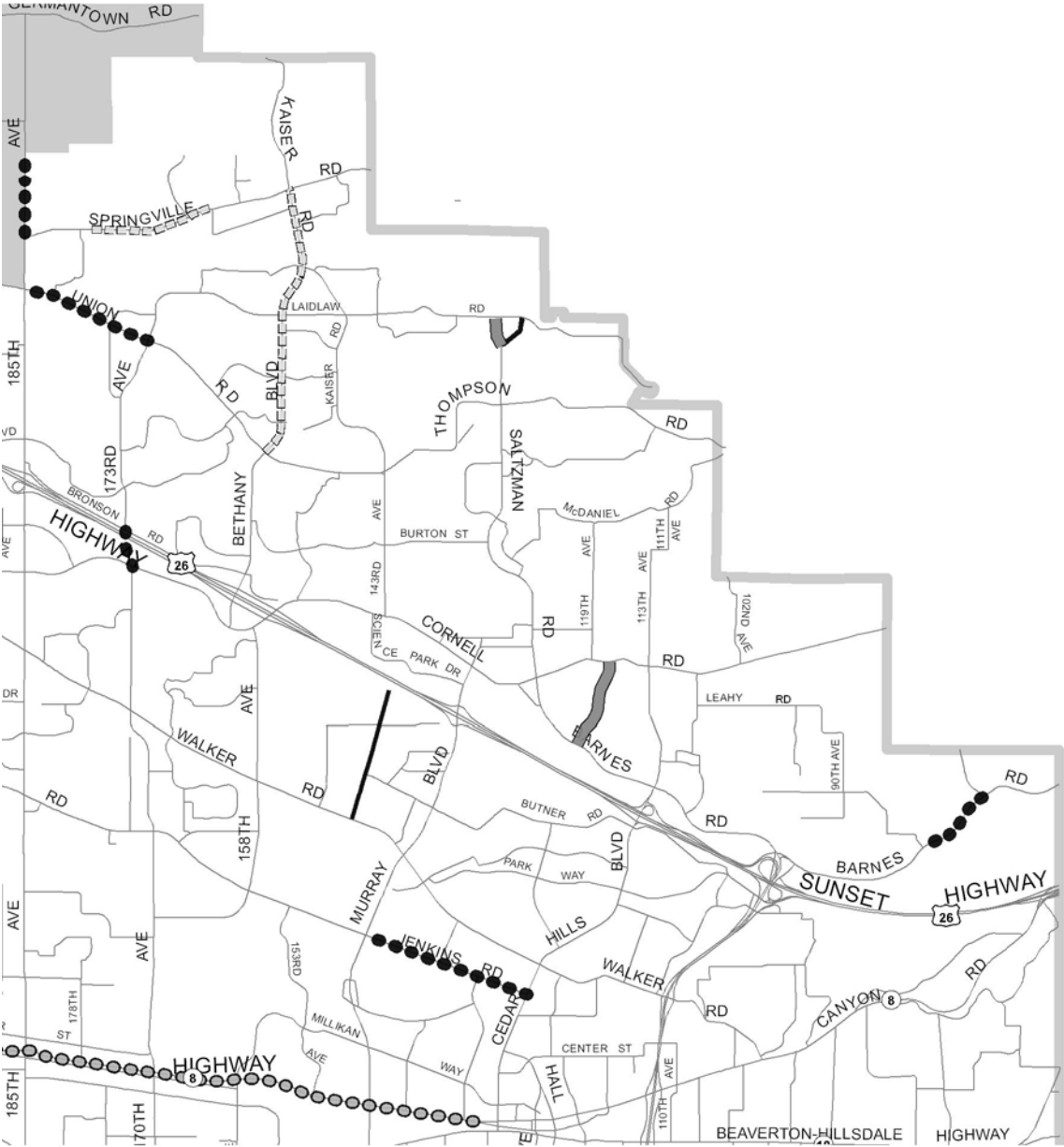


- Change from 2/3 to 4/5
- Change from 6/7 to 4/5
- Add as 2/3 lanes
- ||||| Add as 4/5 lanes

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

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The Lane Numbers map of the Transportation System Plan is amended as follows (map 3 of 7):

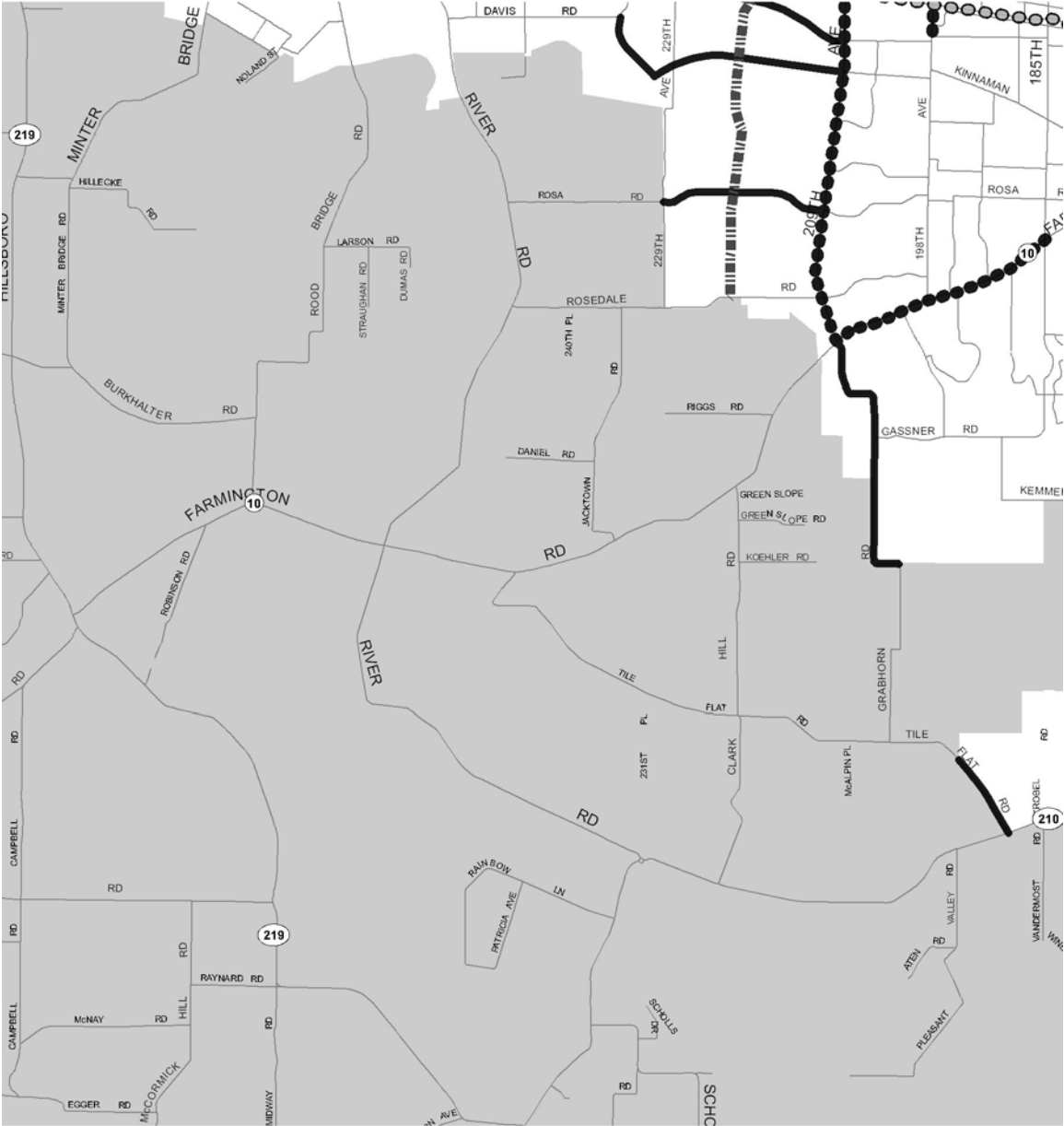


- Change from 2/3 to 2
- Change from 2/3 to 4/5
- Change from 4/5 to 2/3
- Change from 6/7 to 4/5
- Add as 2/3 lanes

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

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The Lane Numbers map of the Transportation System Plan is amended as follows (map 4 of 7):

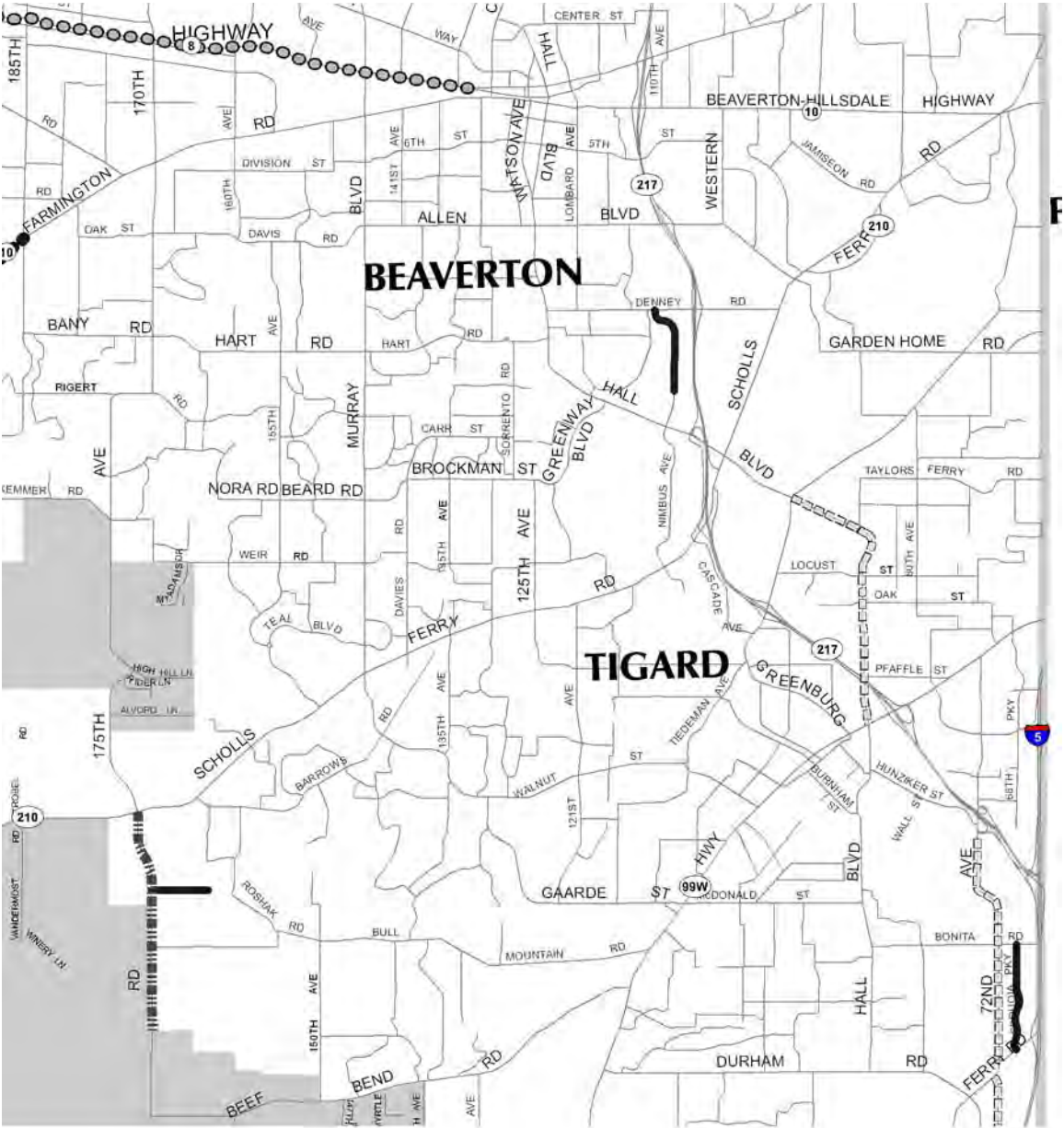


- Change from 2/3 to 4/5 ——— Add as 2/3 lanes
- Change from 6/7 to 4/5 ■■■■■ Add as 4/5 lanes

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

~~abc~~ef Proposed additions
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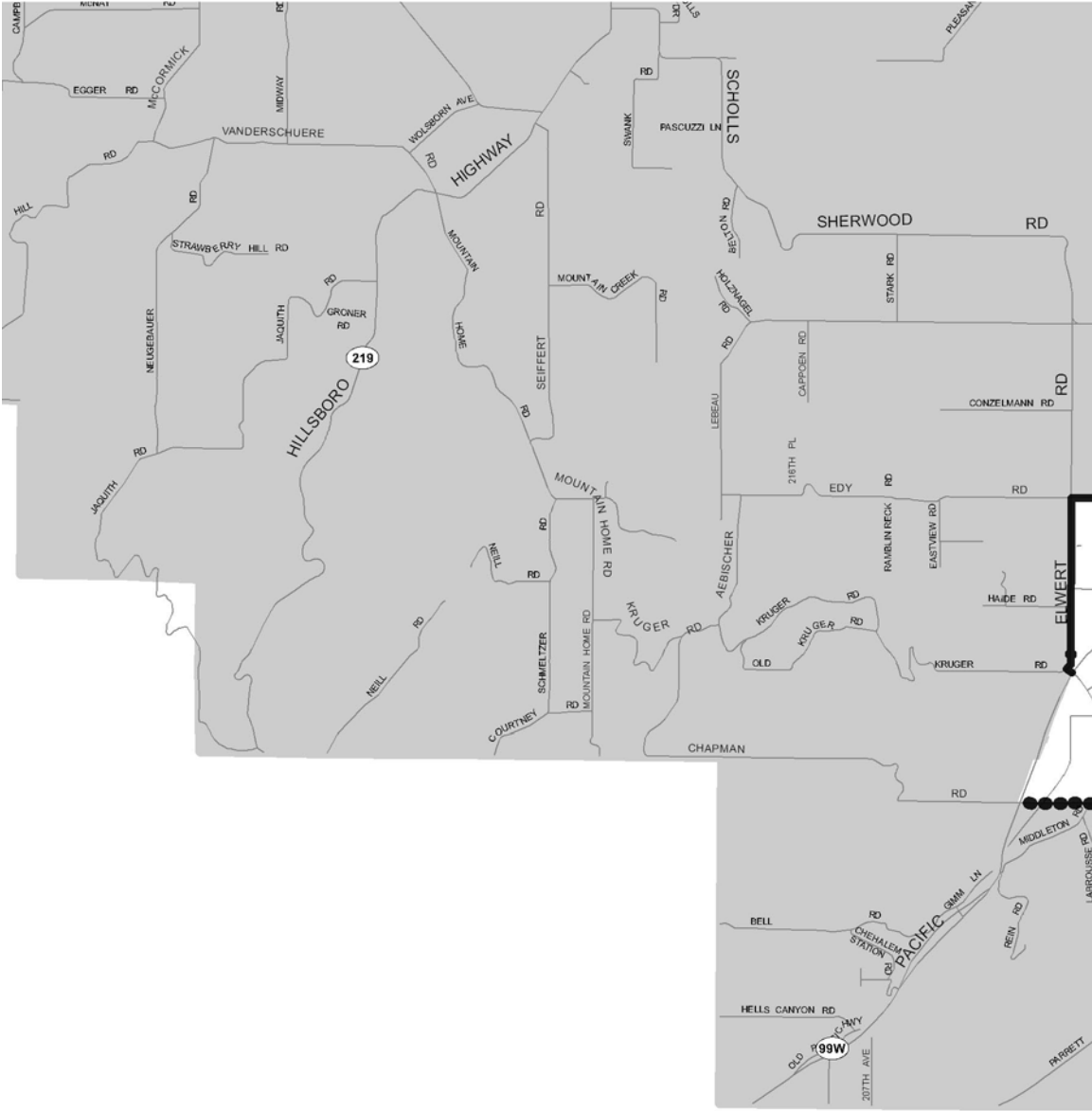
The Lane Numbers map of the Transportation System Plan is amended as follows (map 5 of 7):



- Change from 2/3 to 4/5
- Change from 4/5 to 2/3
- Change from 6/7 to 4/5
- Add as 2/3 lanes
- - - - Add as 4/5 lanes

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

The Lane Numbers map of the Transportation System Plan is amended as follows (map 6 of 7):

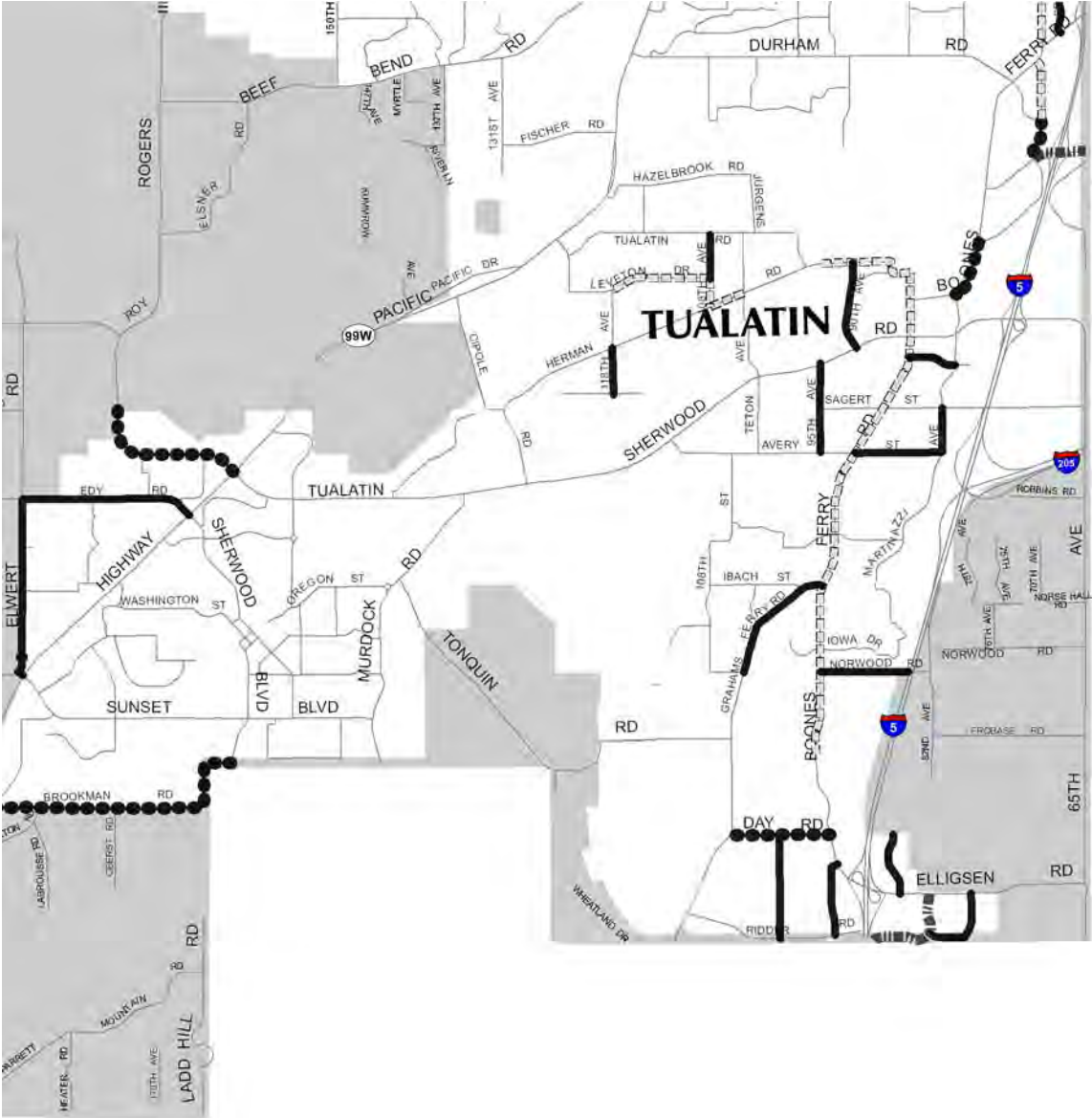


●●●● Change from 2/3 to 4/5 **—** Add as 2/3 lanes

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

~~abcdef~~ Proposed additions
~~abcdef~~ Proposed deletions

The Lane Numbers map of the Transportation System Plan is amended as follows (map 7 of 7):

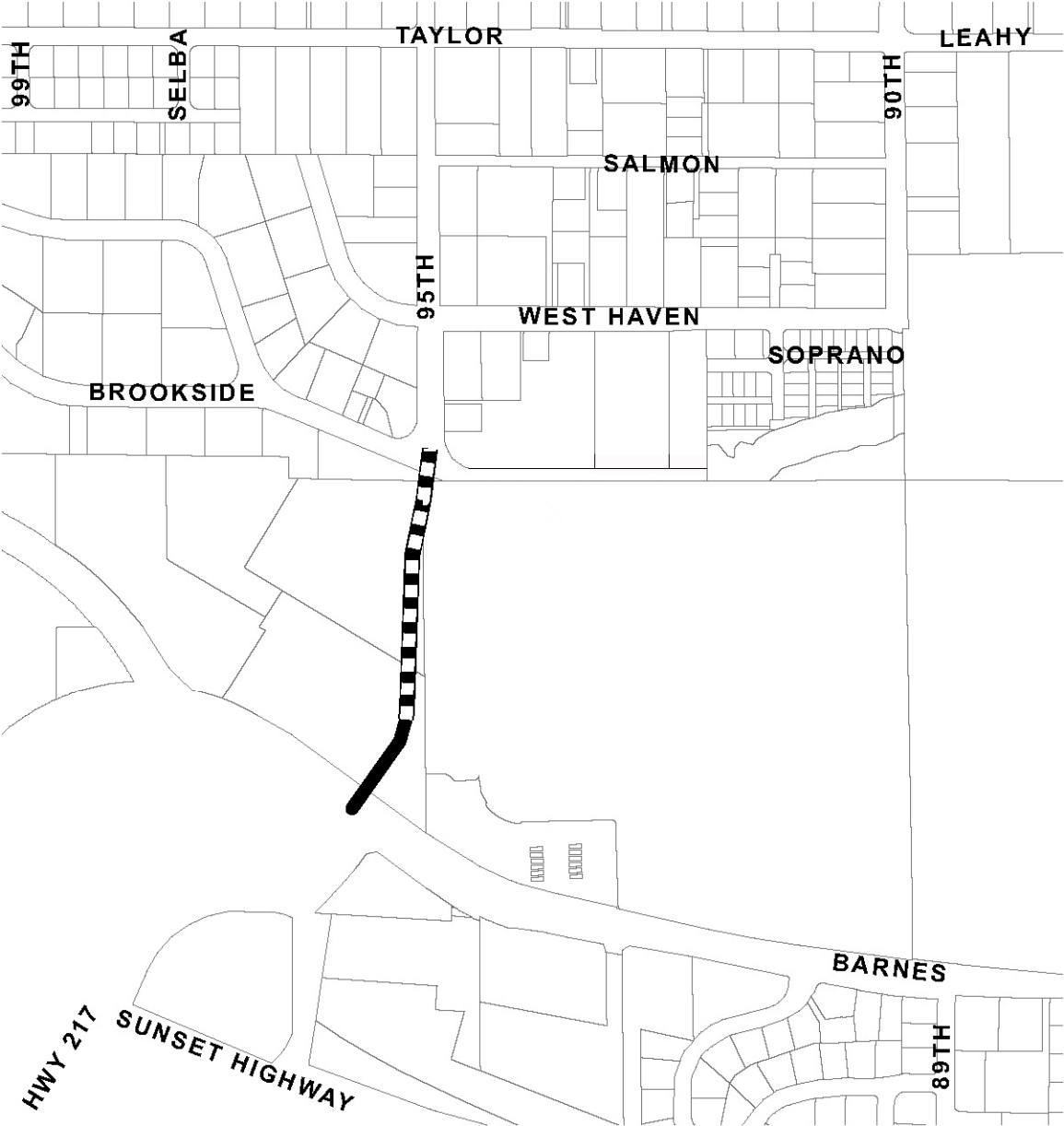




- Change from 2/3 to 4/5
- ▣▣▣▣ Change from 4/5 to 2/3
- ▬ Add as 2/3 lanes
- ▬▬▬▬ Add as 4/5 lanes

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

~~abc~~ Proposed additions
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The Special Area Street Overlay Sunset Station Area Plan is amended as follows:

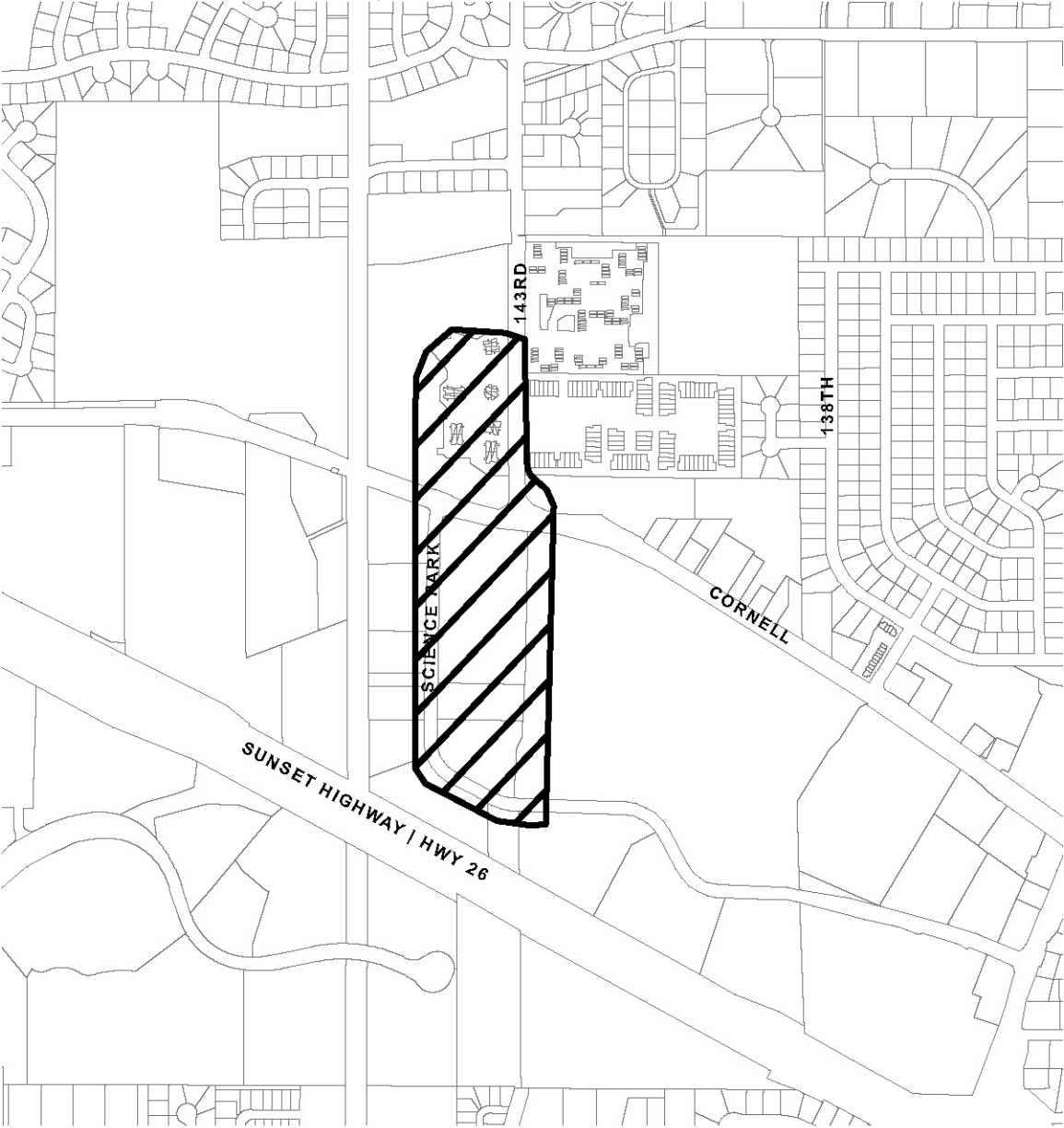


-  Delete Special Area Neighborhood Route
-  Delete Proposed Special Area Neighborhood Route

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

abcdef Proposed additions
~~abcdef~~ Proposed deletions

The Special Area Street Overlay Cedar Mill Town Area is amended as follows:

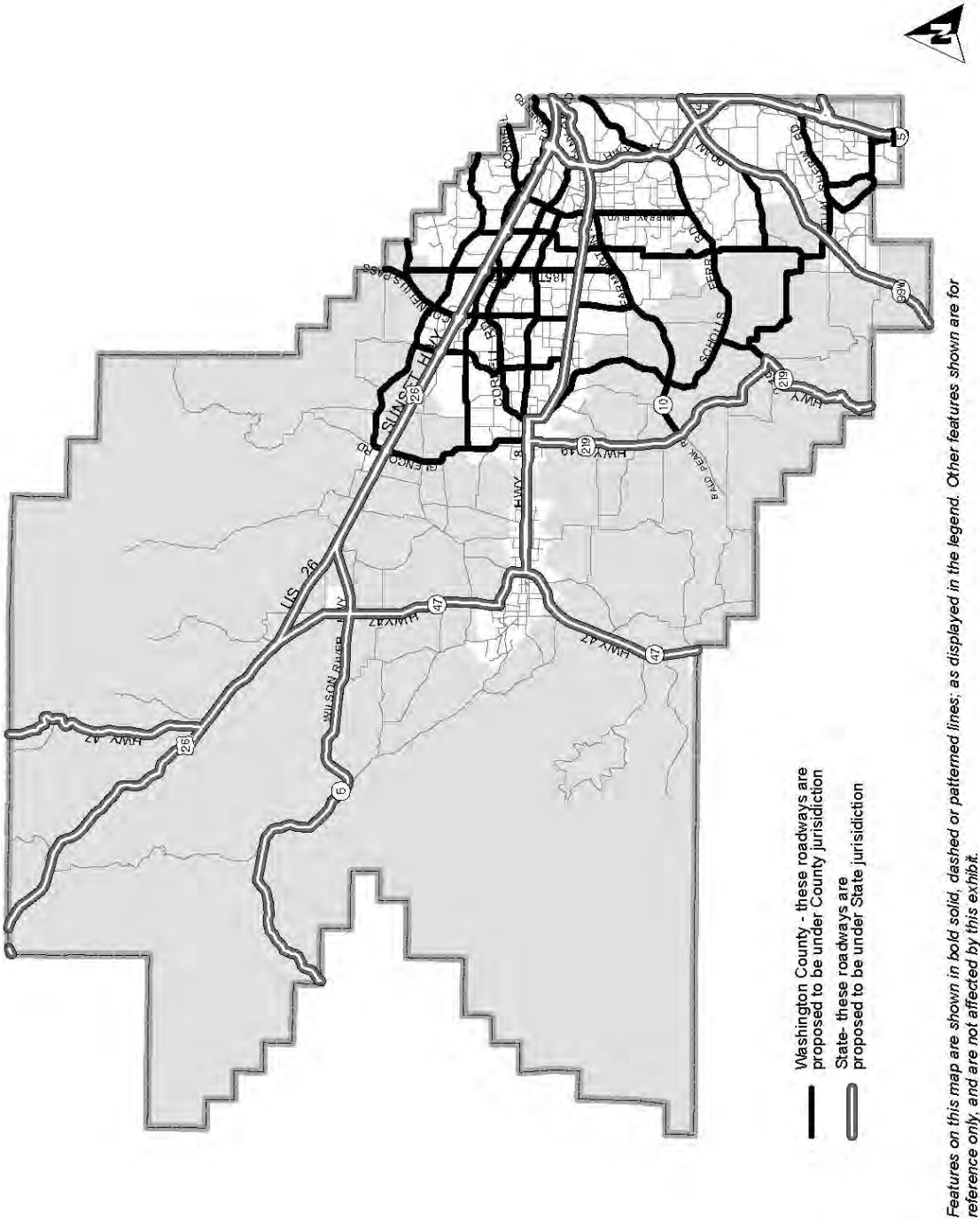


 Delete Special Area Collector Corridor

Amendments to the map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

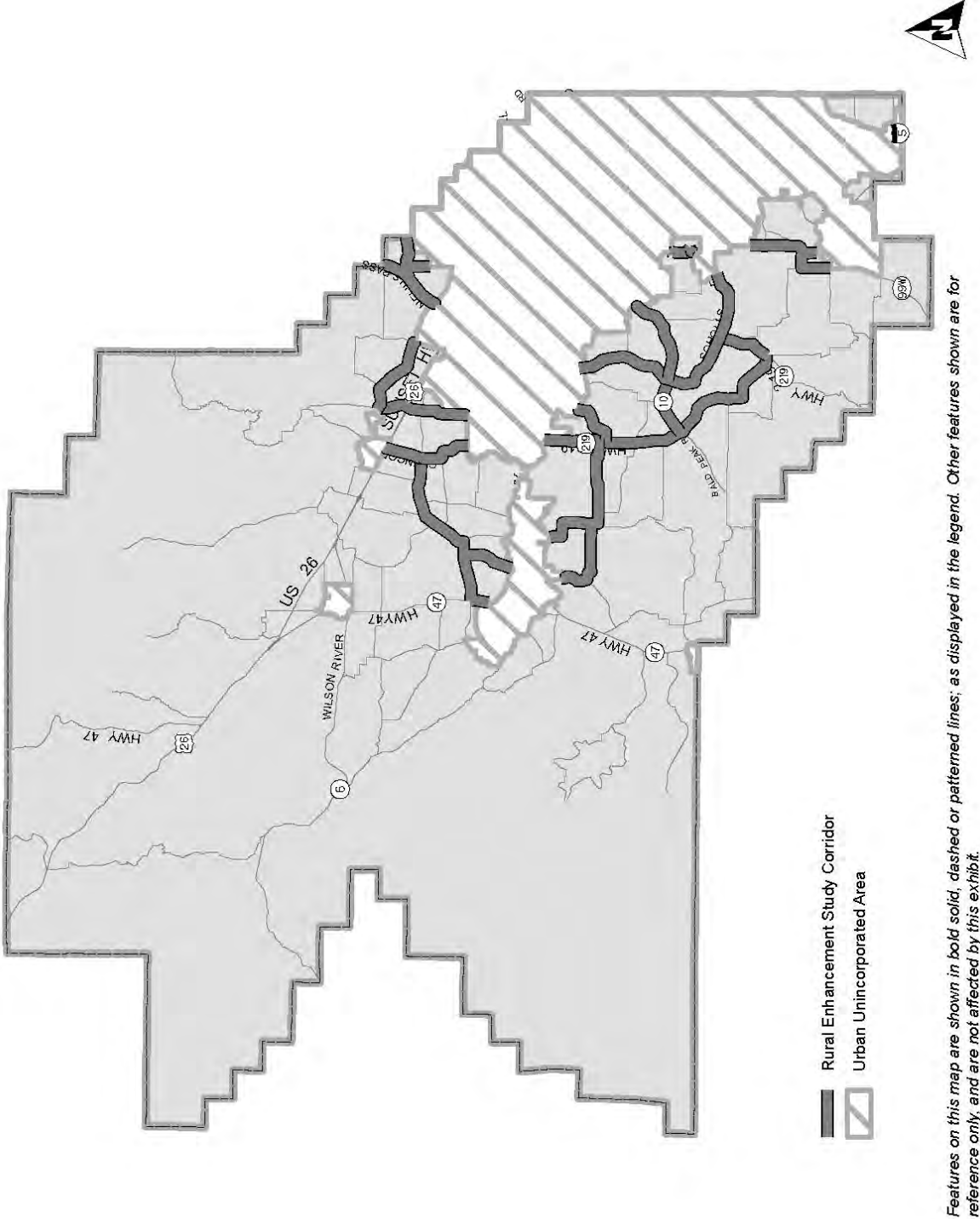
abcdef Proposed additions
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The Long Term Roadway Jurisdiction map is incorporated into the Washington County Transportation System Plan:



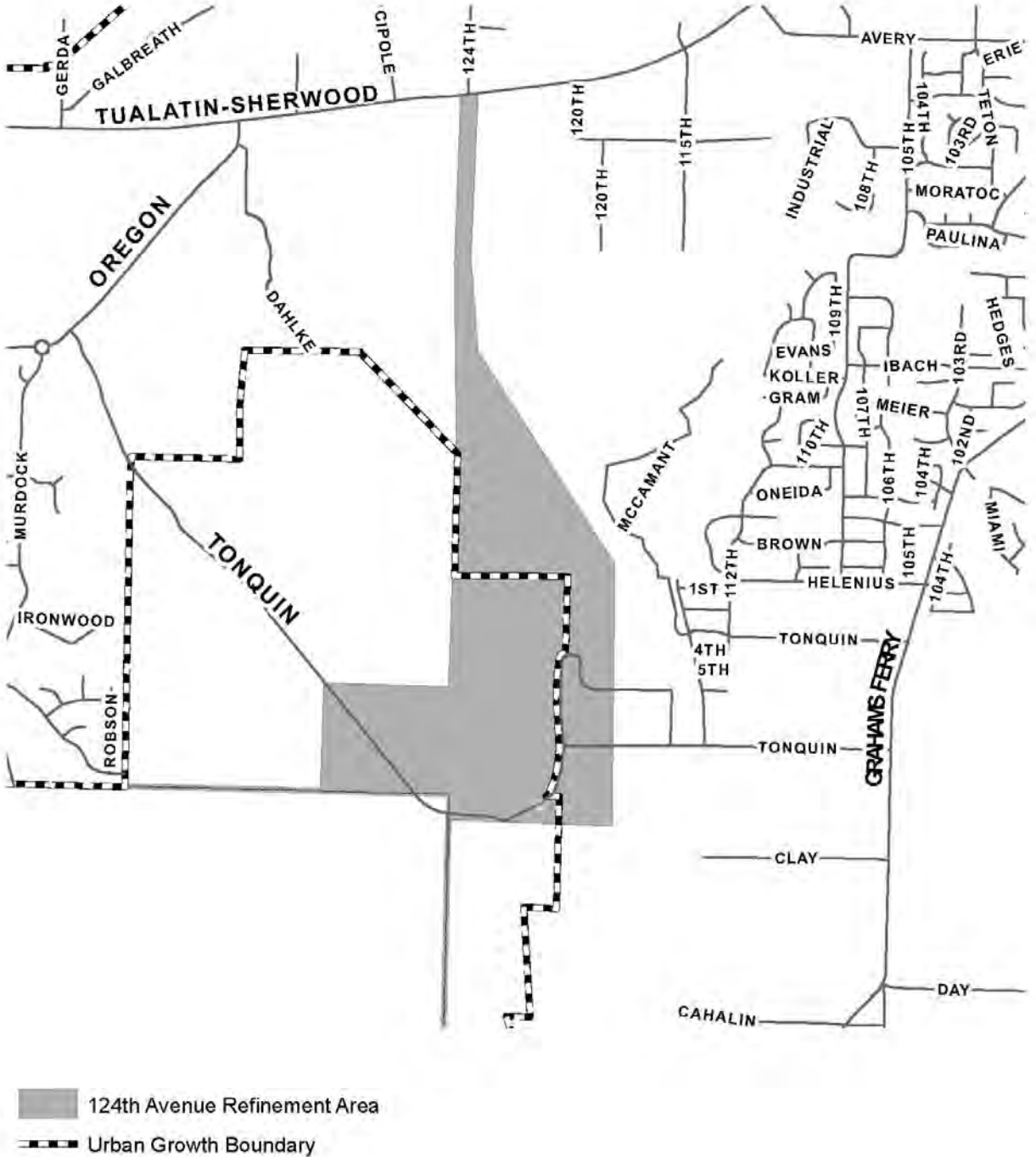
abcdef Proposed additions
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The Rural Enhancement Study Corridors map is incorporated into the Washington County Transportation System Plan:



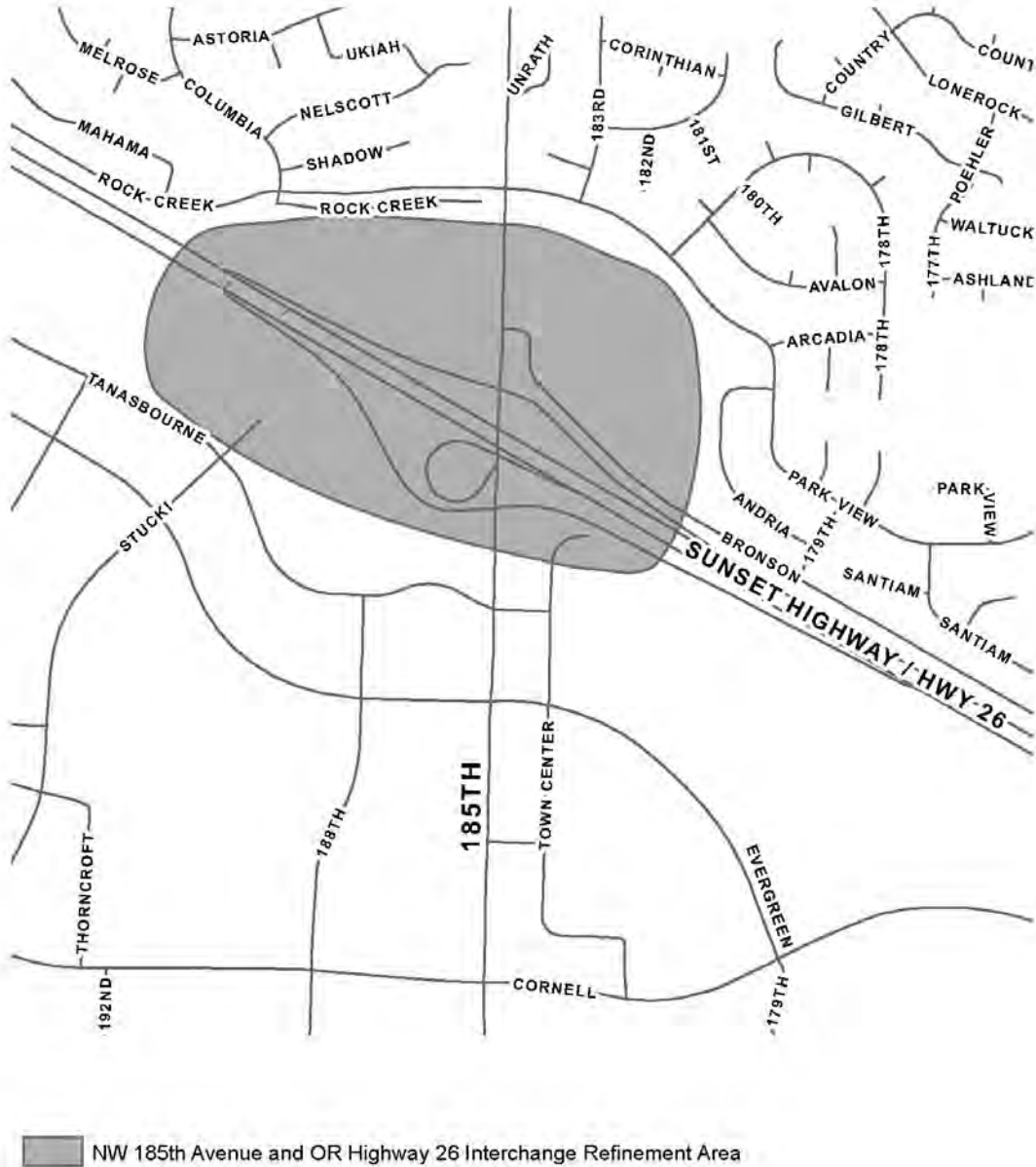
~~abcdef~~ Proposed additions
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The SW 124th Avenue Extension Refinement Area map is incorporated into the Washington County Transportation System Plan:



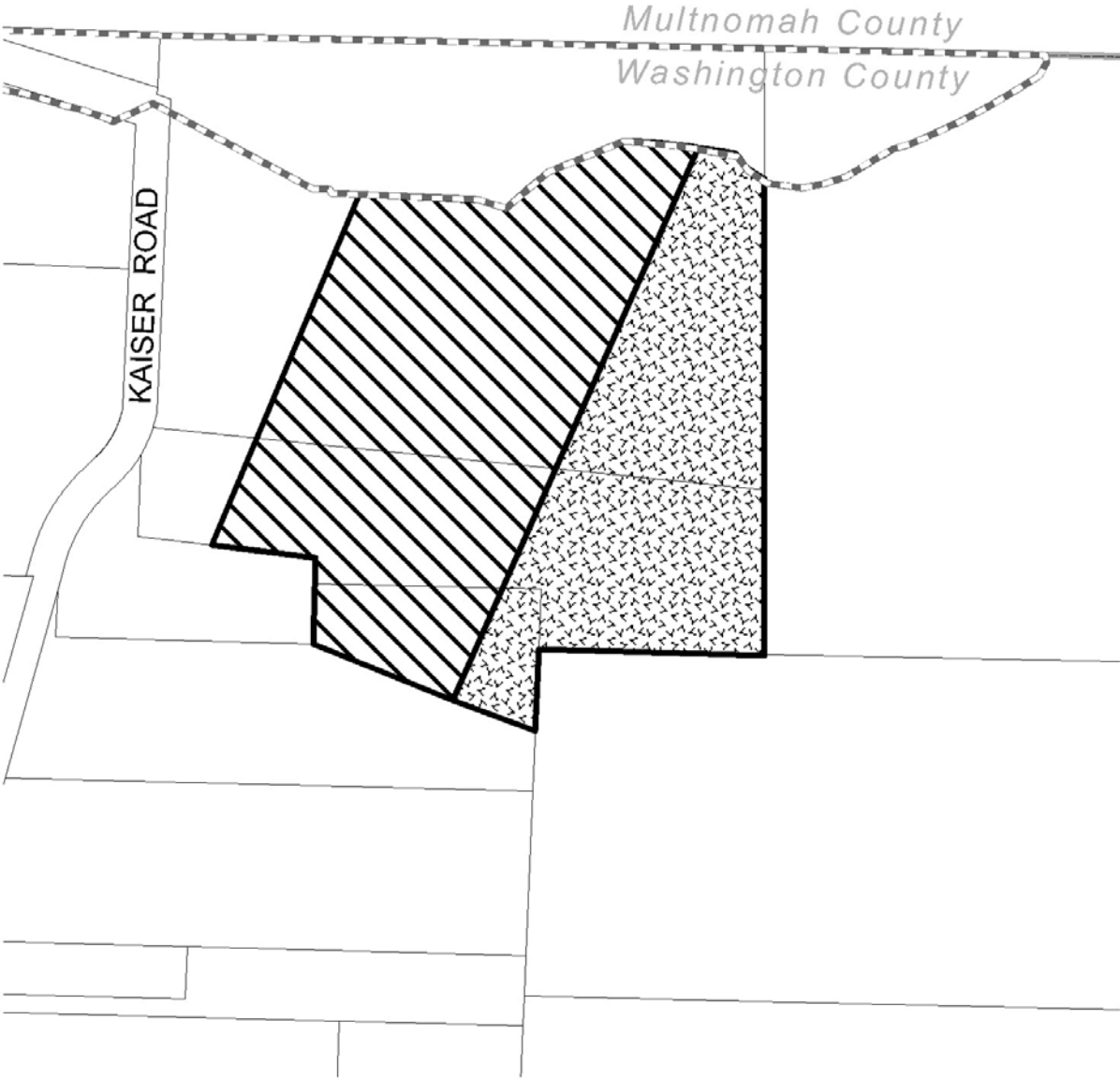
abcdef Proposed additions
abcdef Proposed deletions

The NW 185th Avenue and OR Highway 26 Interchange Refinement Area map is incorporated into the Washington County Transportation System Plan:



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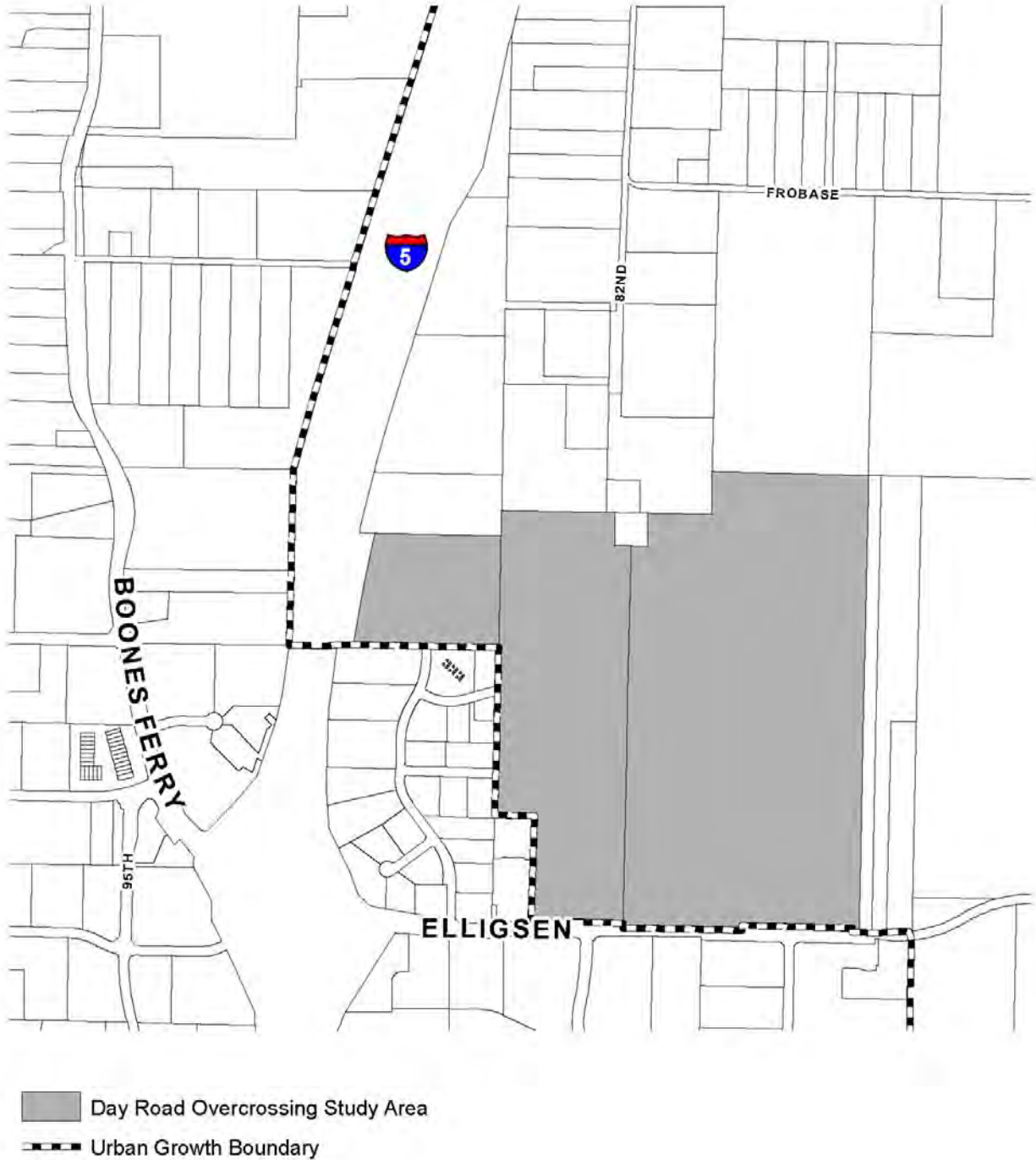
North Bethany Neighborhood Route* Refinement Area map is incorporated into the Washington County Transportation System Plan



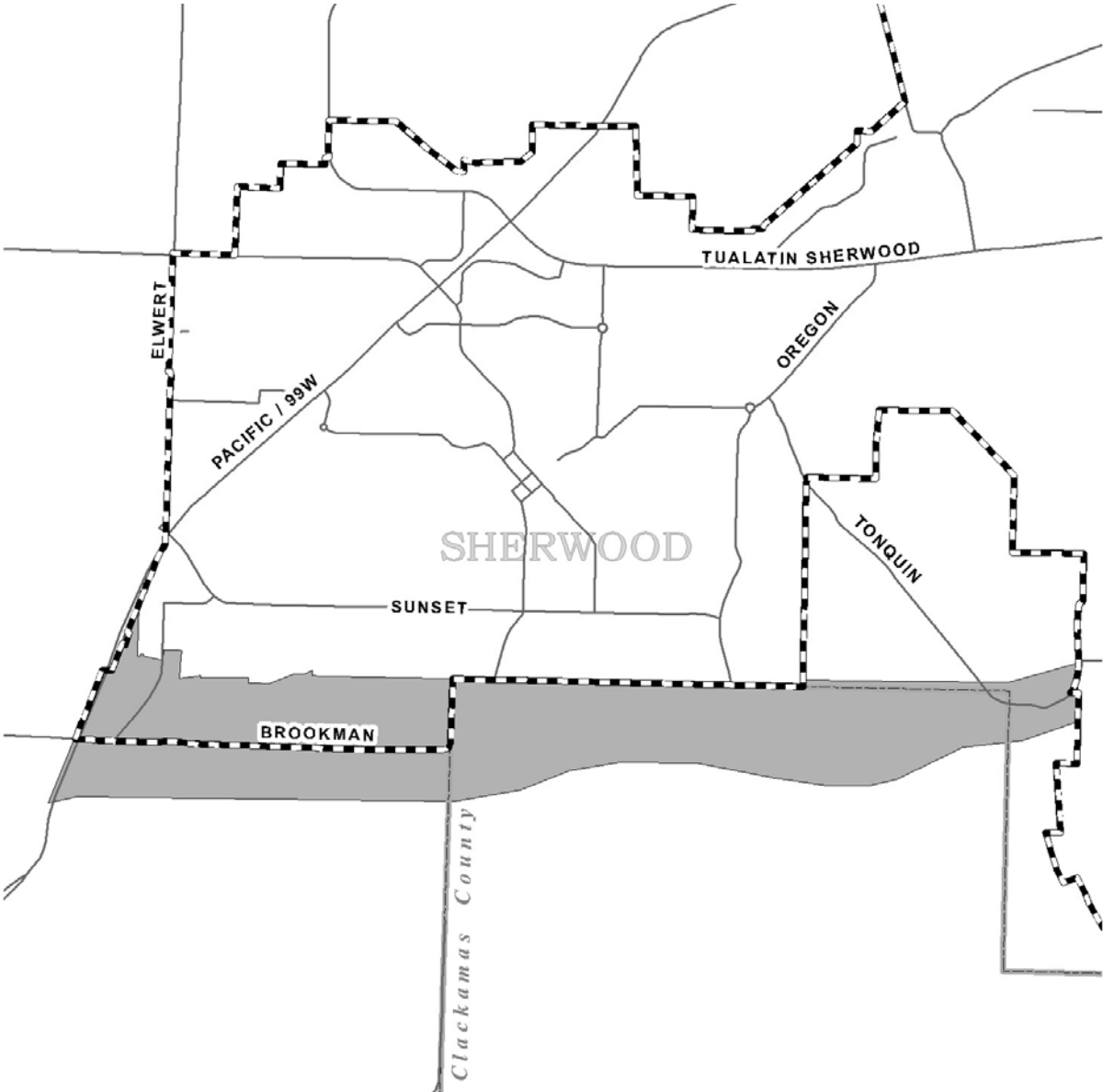
-  Corridor A
-  Corridor B
-  Natural Features Buffer with Fencing
(Shown for reference only)



**Refer to Area of Special Concern (ASC) 6B in the Bethany Community Plan, Chapter 2, North Bethany Subarea Plan.*

The SW Day Road Overcrossing Refinement Area map is incorporated into the Washington County Transportation System Plan:



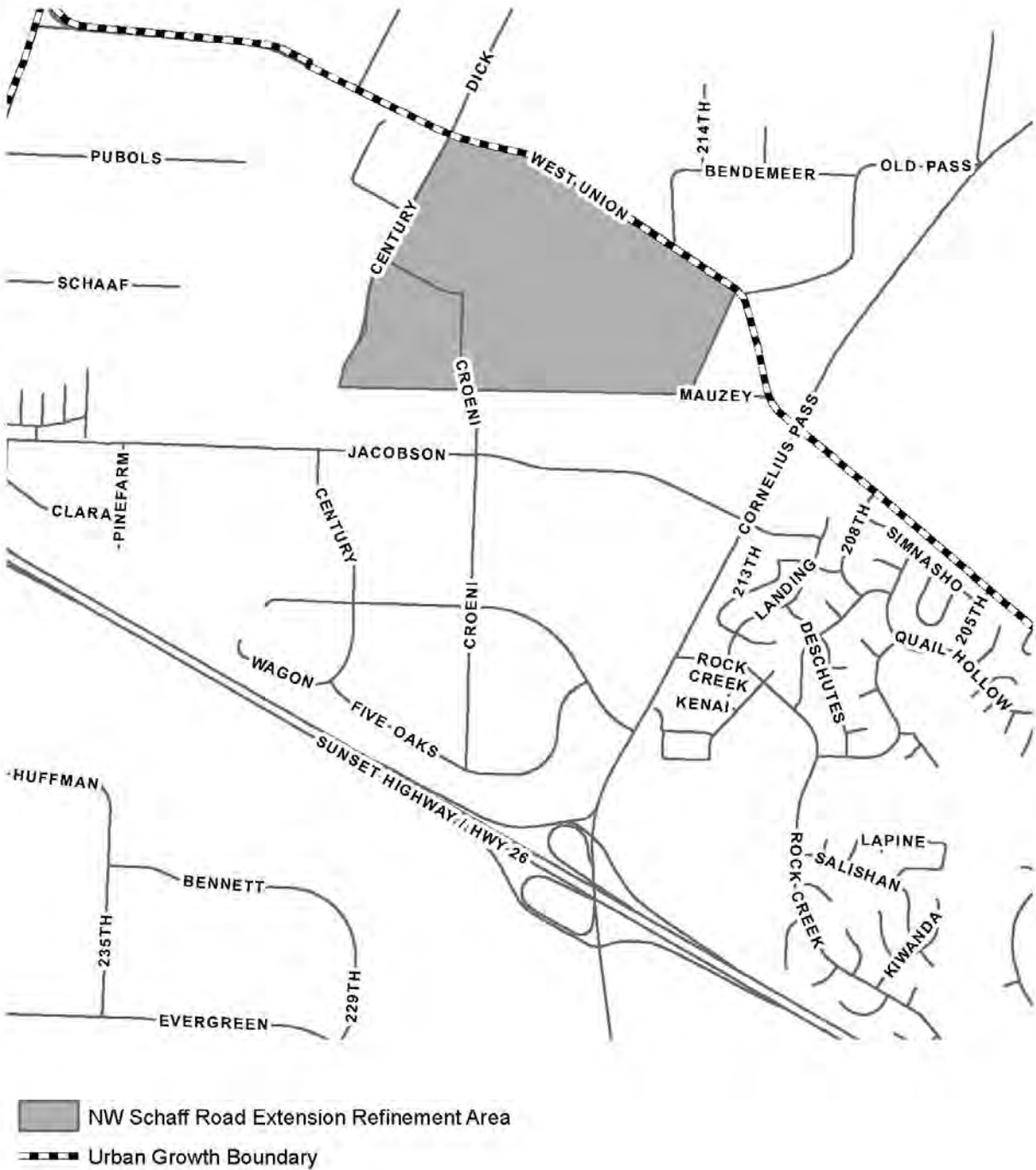
The I-5 to Highway 99W Refinement Area map is incorporated into the Washington County Transportation System Plan:



-  I-5 to Highway 99W Refinement Area
-  Urban Growth Boundary

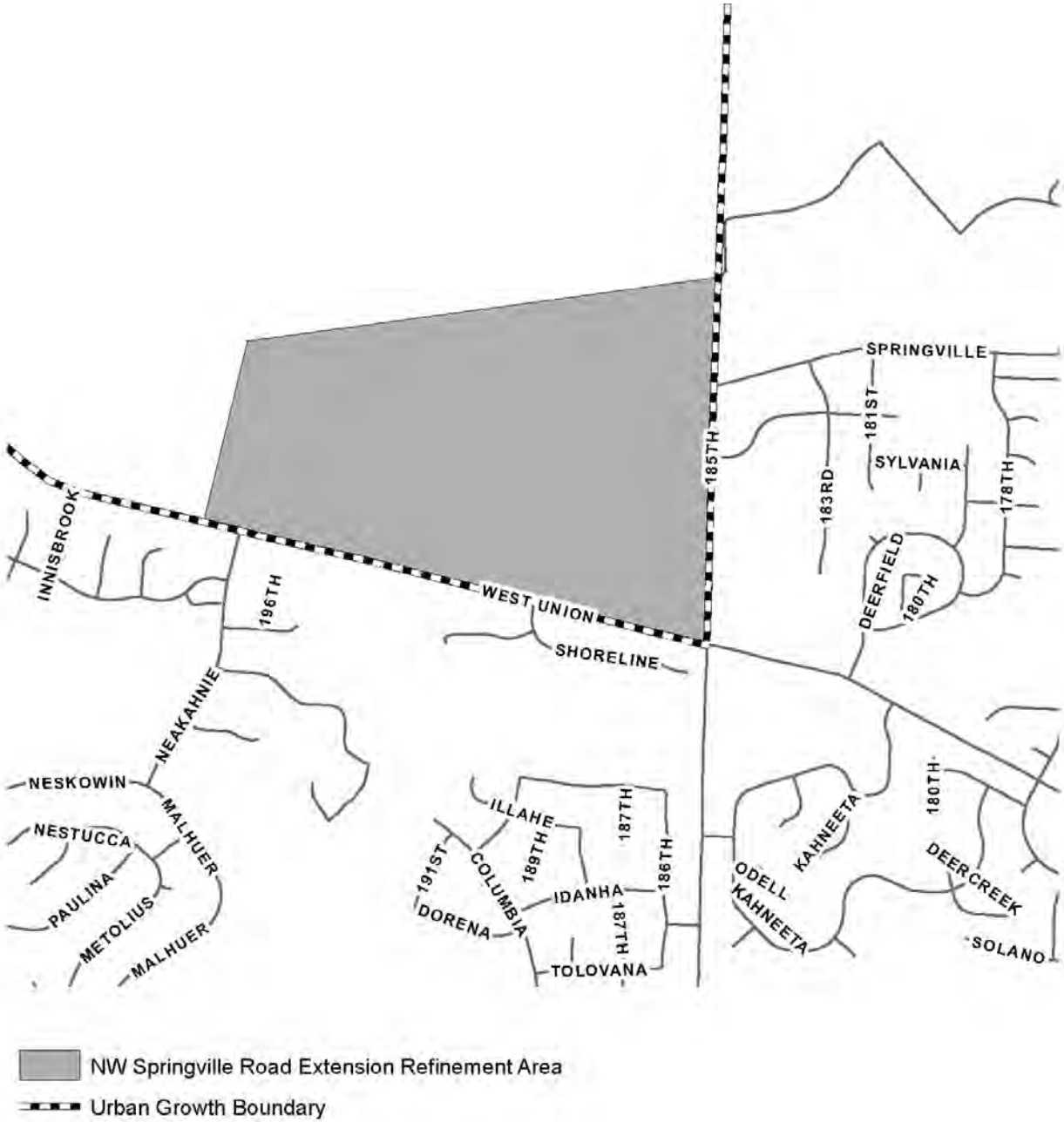
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The NW Schaff Road Extension Refinement Area map is incorporated into the Washington County Transportation System Plan:



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~~abcdef~~ Proposed deletions

The NW Springville Road Extension Refinement Area map is incorporated into the Washington County Transportation System Plan:



The NW Wilkins Road Extension Refinement Area map is incorporated into the Washington County Transportation System Plan:



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Freight Element

Given the close connection between freight movement and economic vitality, it is critically important for Washington County's transportation network to provide an efficient and reliable system for the transport of goods. The Freight Element describes the transportation facilities needed for the safe, efficient movement of goods and services throughout Washington County. The freight element is divided into two sections:

1. Roadway Freight System
2. Aviation, Railroad and Pipeline Systems

1. Roadway Freight System

The Roadway Freight System includes all roadways within Washington County and is necessary to provide both mobility and access for commerce throughout Washington County. The Roadway Freight System is intended to provide for efficient truck travel, while minimizing truck travel through residential neighborhoods. The primary purpose of designating truck routes in this TSP is to ensure that any future improvements on these roads provide for the safe and efficient movement of trucks. Truck route designations encourage the use of these routes for truck travel, but do not restrict trucks to these routes.

Roadway Freight System Map

The Roadway Freight System Map identifies truck routes and over-dimensional truck routes. These routes are on roadways where high volumes of freight traffic are anticipated, and where roadway system improvements should consider the needs of these vehicles as well as other modes using the facility.

Truck Routes

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

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

Over-Dimensional Truck Routes

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

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

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

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

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

2. Aviation, Railroad and Pipeline Systems

The Aviation, Railroad and Pipeline systems provide for the conveyance of good and services by air, rail and pipeline. These systems work in conjunction with the roadways system and deal with the movement of people, goods or services by these modes.

Aviation

The State Transportation Planning Rule (OAR 660-0012-020(2)(e)) requires the identification of existing and planned public use airports. There are currently three public use airports within Washington County:

1. Hillsboro Airport (HIO) is located northeast of downtown Hillsboro and operated by the Port of Portland. HIO is defined by the Federal Aviation Administration as a reliever airport for Portland International Airport (PDX). In this role, HIO's function is to preserve capacity at PDX by offering an alternative facility for general aviation aircraft, separate from commercial airline and air cargo activities. At the state level, the Oregon Aviation Plan defines HIO as a Category 2 airport that accommodates "corporate aviation activities, including business jets, helicopters, and other general aviation activities." HIO receives corporate air traffic associated with Intel and other large Washington County companies, while also accommodating personal aircraft. HIO features two runways, one 6,600 feet in length, the other 4,050 feet. In 2012, HIO had 277 "based aircraft" – meaning aircraft that are typically stored and flown from the airport – down from the upper 300s ten years prior. In 2008, HIO averaged 695 operations (takeoffs and landings) daily.
2. Twin Oaks Airpark is located approximately six miles south of Hillsboro, between the Tualatin River and River Road, and is privately owned and operated. Aircraft at this general aviation facility are limited to helicopters and small engine airplanes. The Twin Oaks Airpark has one runway, approximately 2,500 feet in length.
3. Skyport is the smallest public use airport in Washington County. This privately owned and operated facility is located approximately three miles north of Cornelius. Aircraft at this general aviation facility are limited to small engine airplanes. Skyport has one runway, approximately 2,000 feet in length.

In addition to these facilities, Washington County has 23 other private air facilities. These include small airstrips as well as helipad facilities at hospitals. No change to the operation of these airports is planned, and no additional public use airports are currently planned within Washington County.

Railroad Freight

Washington County hosts over 90 miles of active "short line" freight railroads and does not contain any Class I railroads, intermodal facilities or major rail yards. Commodities transported include aggregates, brick and cement, chemicals, construction and demolition debris, food and feed products, forest products, metallic ores and minerals, and steel and scrap. WES commuter rail service, as described in transit modal element, also operates on Railroad Freight facilities between Beaverton and Wilsonville.

Railroad Crossing Considerations

The majority of roadway rail crossings in Washington County are at grade, posing potential conflicts and hazards. The Oregon Department of Transportation Rail Division authorizes any new rail crossing, or any modification to an existing rail crossing. All authorized crossings are required to be marked with a passive stop sign and railroad crossing sign. Alternatively, an activated crossing guard arm may be implemented if the expected traffic at the crossing warrants this treatment.

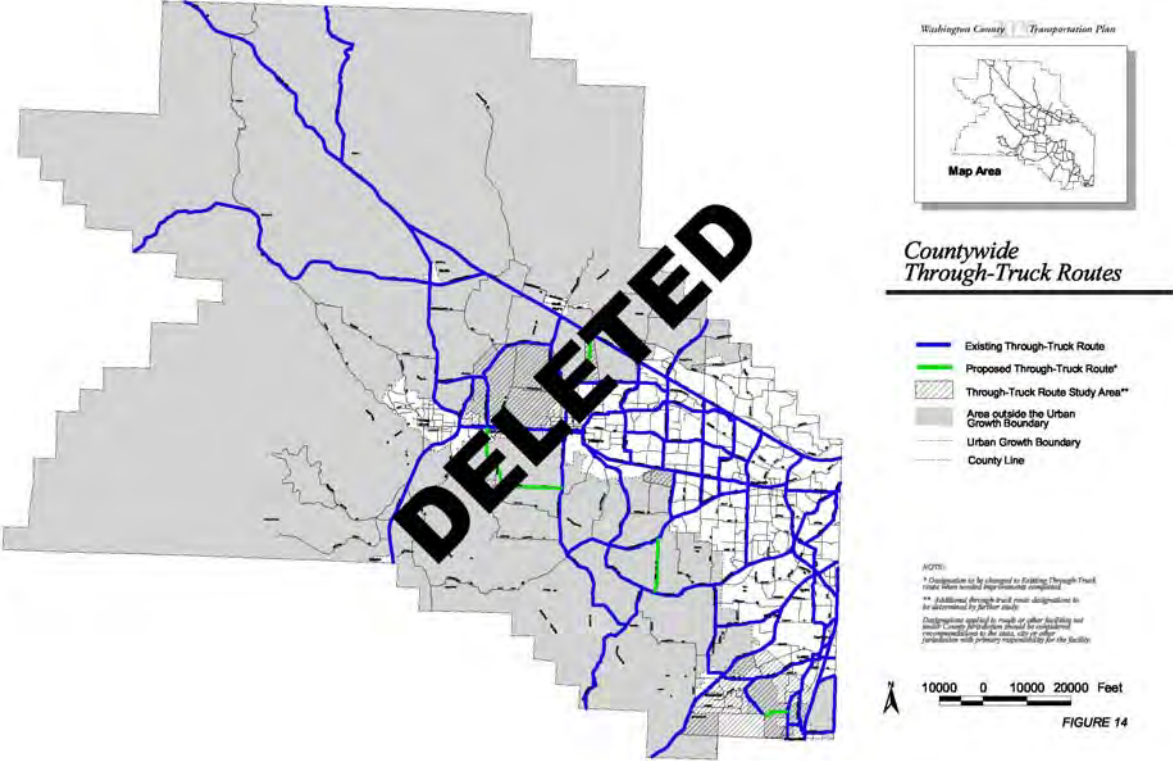
Pipeline

Major pipelines that traverse Washington County are identified on the Non-Roadway Freight Map. The most significant pipeline within Washington County is the Kinder-Morgan gas pipeline that transports pressurized, refined petroleum products from a facility on the Willamette River in Northwest Portland to Eugene and points between. The pipeline generally follows a north-south BPA electric transmission line corridor through Bethany, Beaverton, Bull Mountain and Sherwood, portions of which also accommodate the Westside Regional Trail. Several natural gas pipelines also cross the county, including a north-south corridor from the Dairy Creek Valley to Sherwood, and several east-west routes.

For Washington County Department of Land Use and Transportation, the primary concerns with major pipelines are:

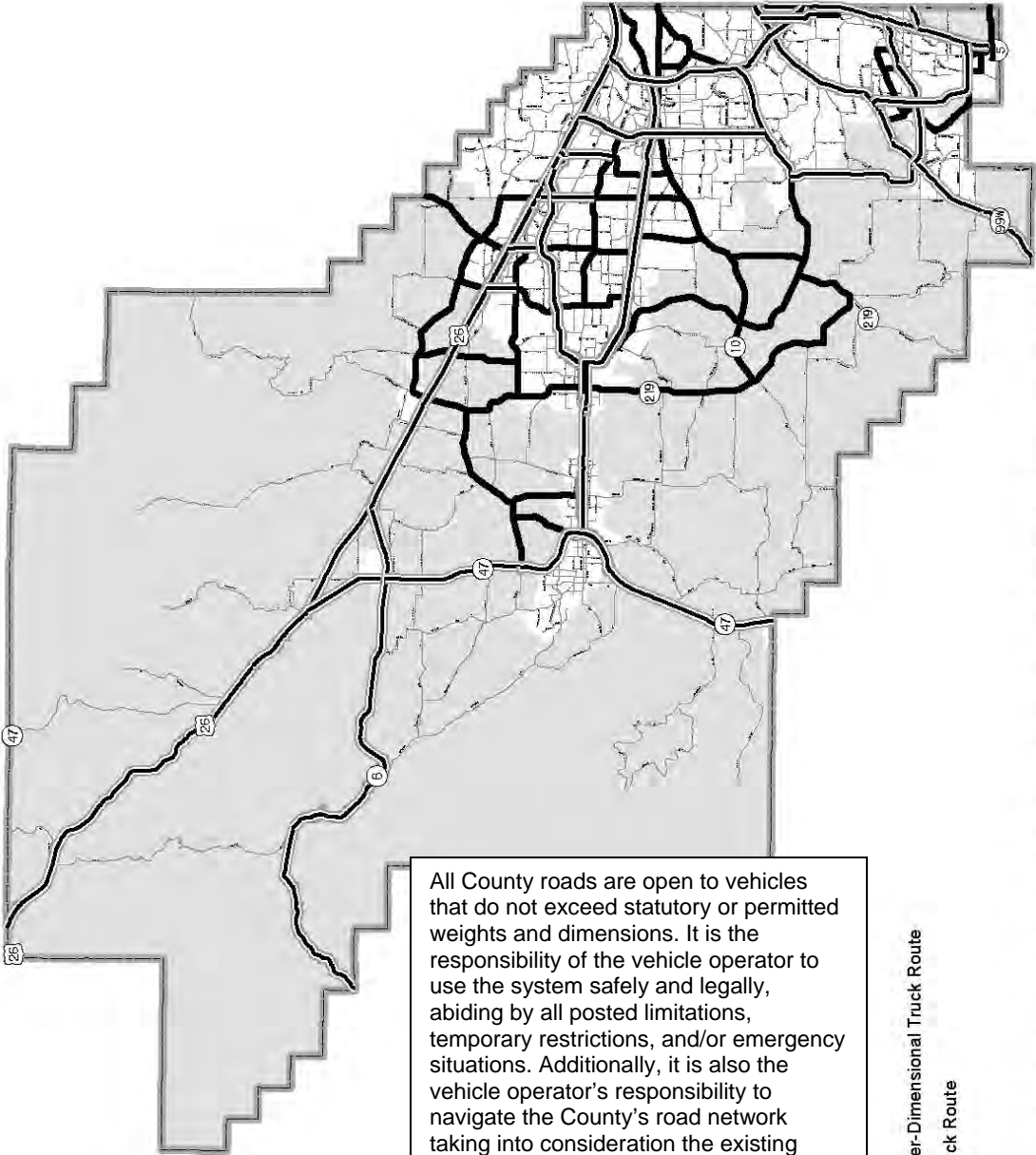
- Protecting the functionality of these pipelines as a mode of transporting products;
- Accounting for pipeline buffer corridors within planned development;
- Avoiding the high cost of relocating pipelines for transportation projects;
- Minimizing the community impacts of any future proposed pipelines,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

The following map is deleted from the Washington County Transportation Plan:



~~abcdef~~ Proposed additions
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The Roadway Freight System Map is incorporated into the Washington County Transportation System Plan:



All County roads are open to vehicles that do not exceed statutory or permitted weights and dimensions. It is the responsibility of the vehicle operator to use the system safely and legally, abiding by all posted limitations, temporary restrictions, and/or emergency situations. Additionally, it is also the vehicle operator's responsibility to navigate the County's road network taking into consideration the existing geometry of the roadway. Vehicle operators are cautioned to proceed at their own risk.

Over-Dimensional Truck Route
Truck Route

Amendments to Map shown in bold solid, dashed or patterned line; other features not amended by this exhibit remain in effect as shown on the Plan Map.

The title of the “Air, Rail, Pipeline & Water Elements” map is amended to now be known as the “Aviation, Railroad and Pipeline System” map.

Active Transportation Elements

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

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

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

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

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

Pedestrian Element

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

Pedestrian System Map

The Pedestrian System Map identifies the future off-street trail network intended for utilitarian and recreational walking trips, indicates areas of above-average pedestrian activity in the urban unincorporated and rural areas and delineates particular roadways and roadway segments where enhanced pedestrian features are desired because of land use context and/or transit service.

Pedestrian System Classifications

Pedestrian/Bicycle District

Within the urban unincorporated area, a Pedestrian/Bicycle District identifies an area where high use by pedestrians and cyclists is either observed or intended. This activity may be due to a combination of existing and/or proposed land uses, density, land use mix, community design, availability of transit service and/or provision of pedestrian and bicycle facilities. Pedestrian-oriented design of streets, public spaces and land uses are generally required in these areas to provide a safe, direct, efficient, comfortable and attractive walking environment. Secure short-term and long-term bicycle parking is generally required and supporting facilities such as lockers and showers are recommended at places of employment. Appropriate features and dimensions will vary by context and shall be determined through the project development and/or land development review process with consideration of other classifications and in reference to the Community Plans and Community Development Code. Pedestrian/Bicycle Districts cover the same geographic areas as Metro 2040 Growth Concept Regional Centers, Town Centers and Station Communities as adopted in the Washington County Comprehensive Framework Plan for the Urban Area.¹

Rural Pedestrian Activity Area

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

¹ Metro's Regional Active Transportation Plan (RATP) and Regional Transportation Plan (RTP) show Pedestrian Districts and Bicycle Districts on separate maps, though they cover the same geography. The TSP does not show Pedestrian/Bicycle Districts within cities.

Pedestrian Parkway

A Pedestrian Parkway is a major urban thoroughfare (typically an arterial) that has the potential for significant pedestrian activity. This activity may be due to the provision of transit service, a relatively high intensity and mix of land uses and/or the continuous nature of the route as it passes through one or more communities. Enhanced pedestrian facilities are encouraged to facilitate a safe, direct, efficient, comfortable walking environment along and across these roadways. Enhanced pedestrian crossings are recommended to help people reach transit stops and other destinations from the opposite side of the street. Site-specific study is needed to determine the locations and design features for such crossings. Consideration of sidewalk widths greater than those shown in adopted road standards is recommended on a context-sensitive basis, particularly on Pedestrian Parkway segments that overlap with Streetscape Overlays. In all cases, appropriate features and dimensions will vary by context and shall be determined through the project development and/or land development review process with consideration of other classifications in this TSP and in reference to the Community Plans, Community Development Code as well as adopted city plans and codes. Pedestrian Parkways in the Washington County TSP are equivalent to on-street Pedestrian Parkways shown in the Metro Regional Transportation Plan.²

Streetscape Overlay

A Streetscape Overlay is a segment of urban roadway in which enhanced pedestrian features, expanded pedestrian facility dimensions and place-making amenities are encouraged to facilitate a comfortable and attractive walking environment and to leverage community and economic development. Streetscape Overlays include all Regional Boulevards and Community Boulevards shown on the Regional Design Classifications map in Metro's 2014 Regional Transportation Plan (RTP) within Washington County.³ These segments are typically located within Metro 2040 Growth Concept Regional Centers, Town Centers, Station Communities and Main Streets. Several additional Streetscape Overlay segments are shown in the urban unincorporated area based on Washington County community planning projects such as the Aloha-Reedville Study and Livable Community Plan and the North Bethany Subarea Plan.

On roadways with Streetscape Overlays, appropriate features and dimensions will vary by context and shall be determined through the project development and/or land development review process. These determinations shall consider the other modal classifications within this plan – particularly freight and transit – and refer to the Community Plans, Community Development Code and adopted city plans and codes. Features may include (but are not limited

² Unlike Metro's RATP/RTP Pedestrian Parkways, Washington County TSP Pedestrian Parkways do not include off-street trails. Trails and roadways are classified separately in the TSP due to the distinct differences in design, operation, maintenance and jurisdiction management between the two facility types. Off-street Pedestrian Parkways in Metro's RATP/RTP are included as Regional Trails in the TSP. On-street Regional Pedestrian Corridors – the second tier of pedestrian routes in Metro's RATP/RTP – are not included in the Washington County TSP because the county's Road Design & Construction Standards are mostly consistent with Metro's RATP design guidance for these routes, including provisions for planter strips.

³ Other street design classifications in Metro's 2014 RTP Regional Design Classifications map include Throughways, Regional Streets and Community Streets. Washington County design standards for Principal Arterials, Arterials and Collectors are consistent with the intent of these regional design classifications and are included in the Mobility section of the Washington County TSP Goals, Objectives and Strategies (Ordinance 768).

to): sidewalks with widths greater than those shown in the Washington County Road Design and Construction Standards, medians, narrower travel lanes and/or narrower pavement widths, curb extensions, on-street parking, pedestrian-scale lighting, enhanced pedestrian crossings, traffic calming, street trees, landscaping, street furniture and public art.

Regional Trail

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

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

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

Regional Trail Refinement Area

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

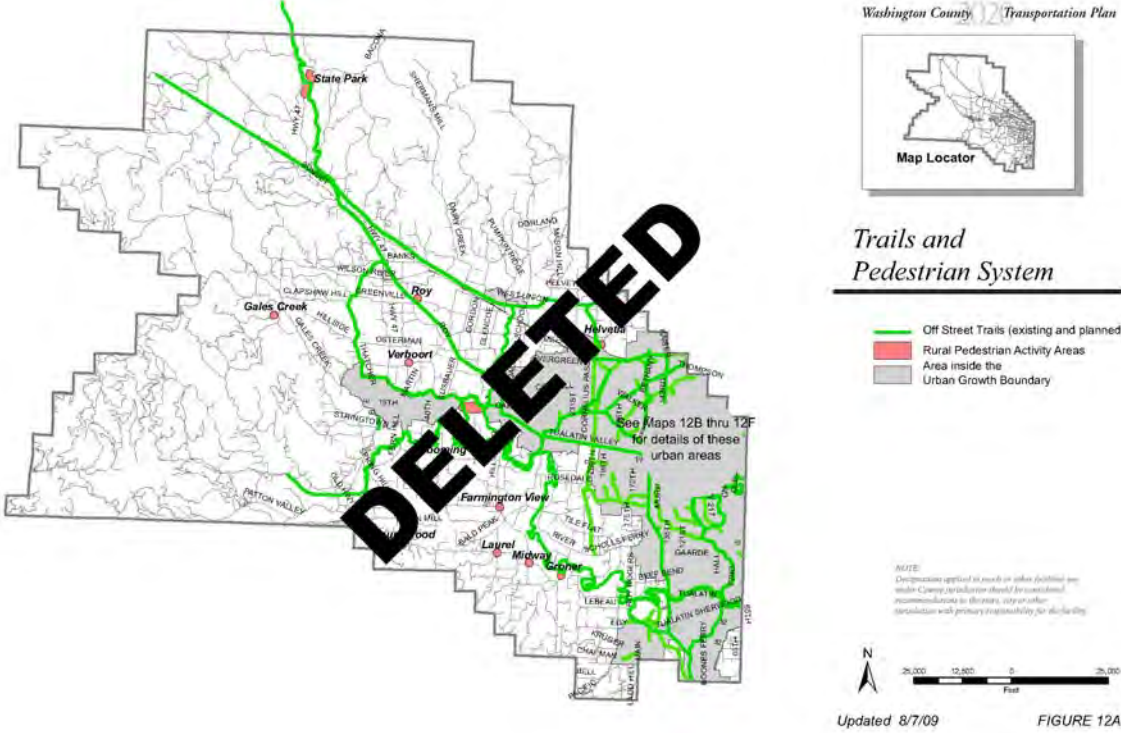
- Turf-to-Surf Trail between Banks and Beaverton
- Council Creek Trail between Banks and Forest Grove and between Forest Grove and Hillsboro
- Cooper Mountain Trail

- River Terrace Trail
- Fanno Creek Greenway Trail between Bonita Road and the Tualatin River

Community Trail

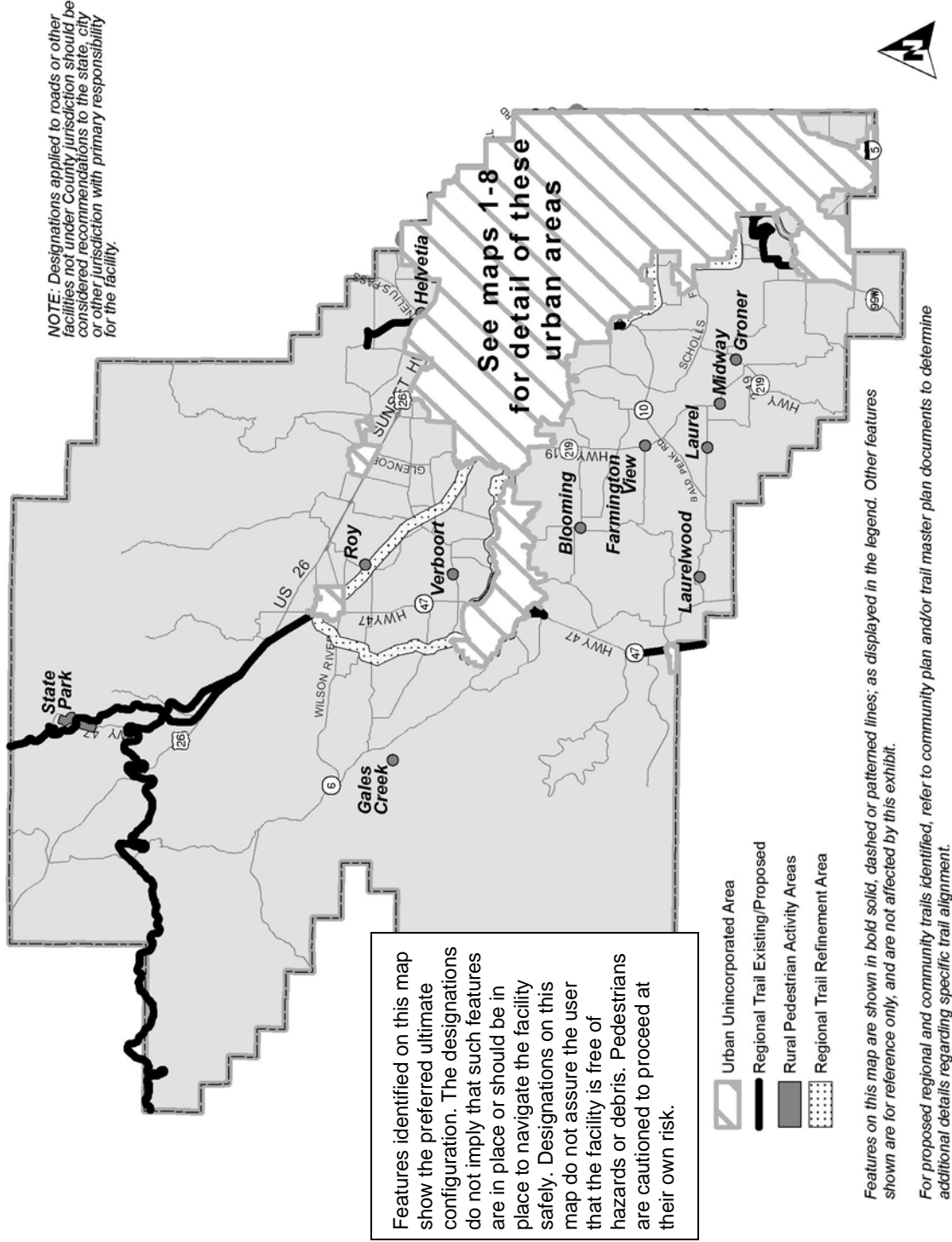
A Community Trail is a pathway that accommodates shorter-distance utilitarian walking trips and may or may not accommodate bicycle trips. Community Trails serve as convenient walking connections between local destinations or as accesses to Regional Trails. Community Trails are not necessarily designed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

The following map is deleted from the Washington County Transportation System Plan:



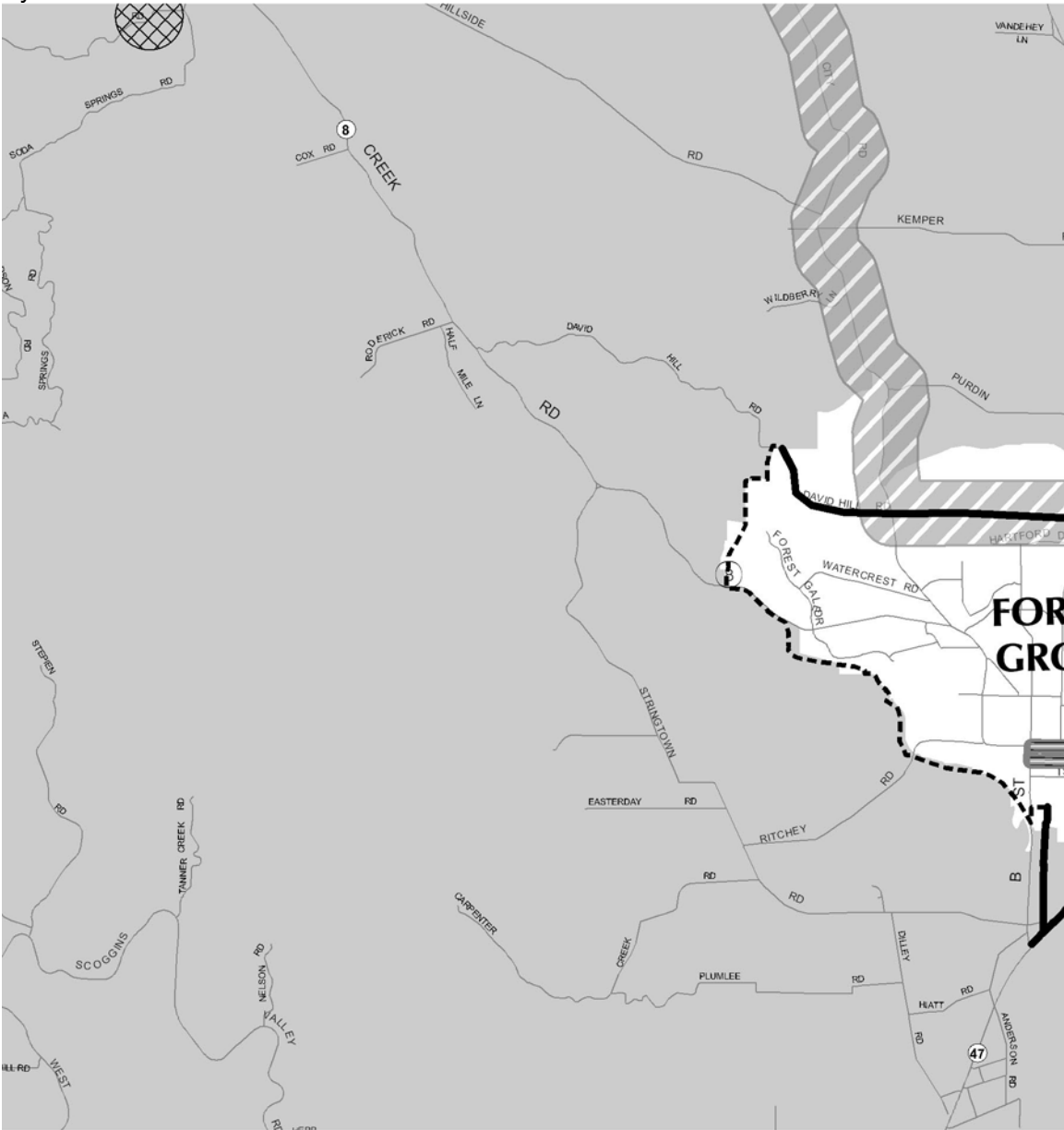
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The Pedestrian System Map is incorporated into the Washington County Transportation System Plan:



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The Pedestrian System Map 1 of 8 is incorporated into the Washington County Transportation System Plan:



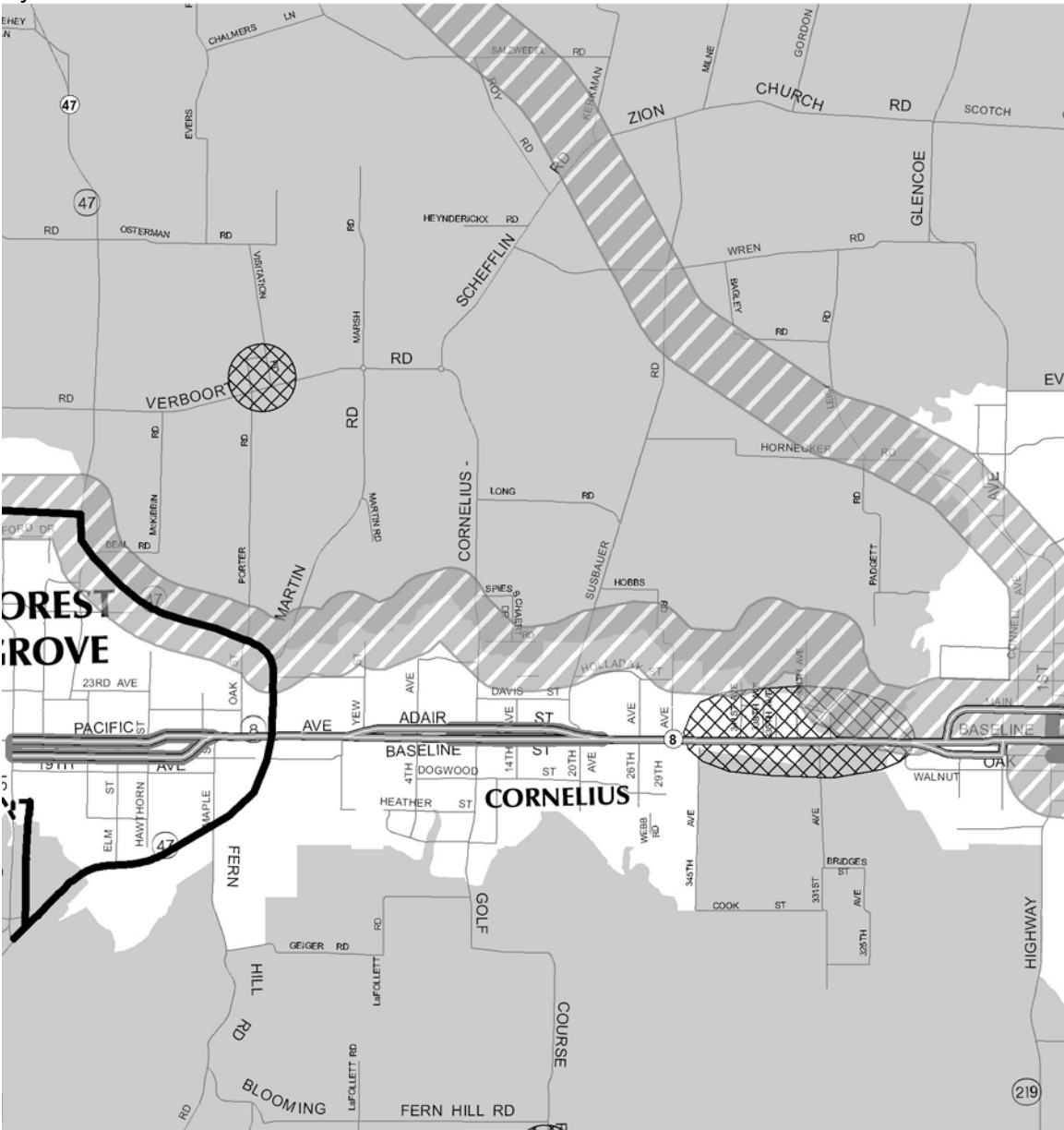
- | | |
|---|---|
|  Regional Trail Existing/Proposed |  Streetscape Overlay |
|  Community Trail Existing/Proposed |  Regional Trail Refinement Area |
|  Pedestrian Parkway |  Rural Pedestrian Activity Areas |

Features on this map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

For proposed regional and community trails identified, refer to community plan and/or trail master plan documents to determine additional details regarding specific trail alignment.

abcdef Proposed additions
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The Pedestrian System Map 2 of 8 is incorporated into the Washington County Transportation System Plan:



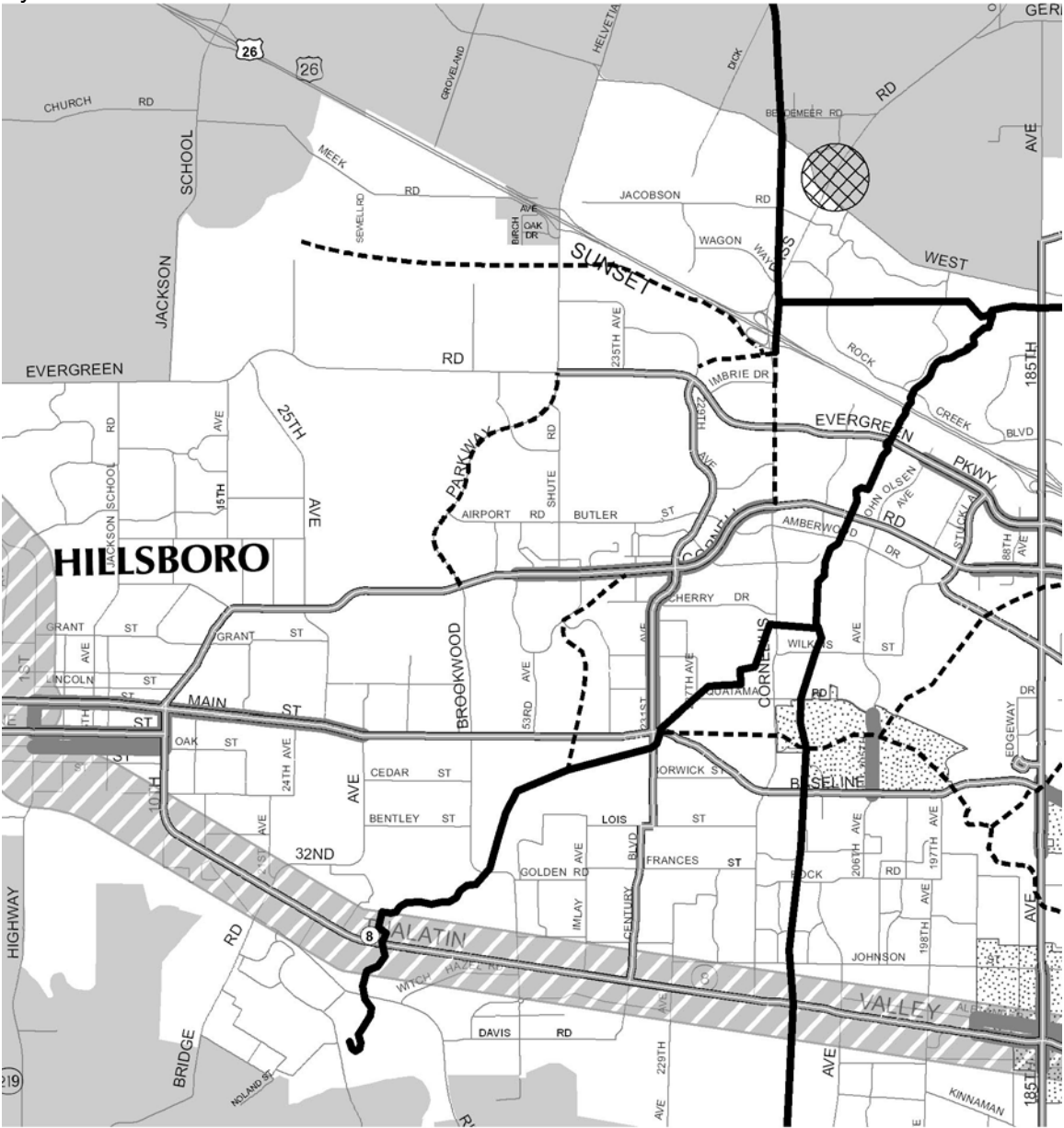
- Regional Trail Existing/Proposed
- - -** Community Trail Existing/Proposed
- Pedestrian Parkway
- Streetscape Overlay
- ▨** Regional Trail Refinement Area
- ⊠** Rural Pedestrian Activity Areas

Features on this map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

For proposed regional and community trails identified, refer to community plan and/or trail master plan documents to determine additional details regarding specific trail alignment.

~~abc~~def Proposed additions
~~abc~~def Proposed deletions

The Pedestrian System Map 3 of 8 is incorporated into the Washington County Transportation System Plan:



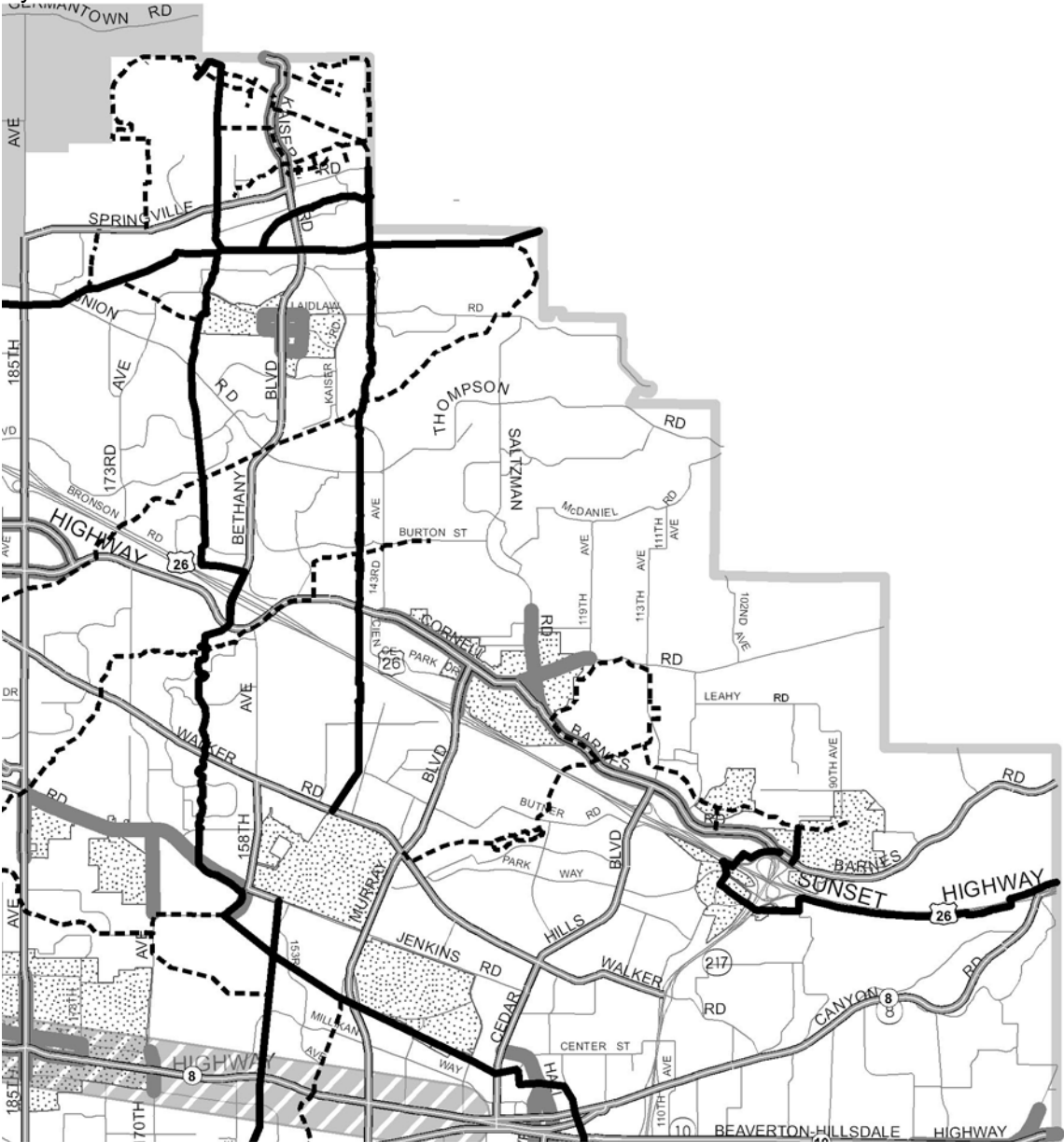
- | | |
|-----------------------------------|---------------------------------|
| Regional Trail Existing/Proposed | Streetscape Overlay |
| Community Trail Existing/Proposed | Pedestrian/Bicycle District |
| Pedestrian Parkway | Regional Trail Refinement Area |
| | Rural Pedestrian Activity Areas |







Features on this map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

For proposed regional and community trails identified, refer to community plan and/or trail master plan documents to determine additional details regarding specific trail alignment.

~~abc~~def Proposed additions
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The Pedestrian System Map 4 of 8 is incorporated into the Washington County Transportation System Plan:



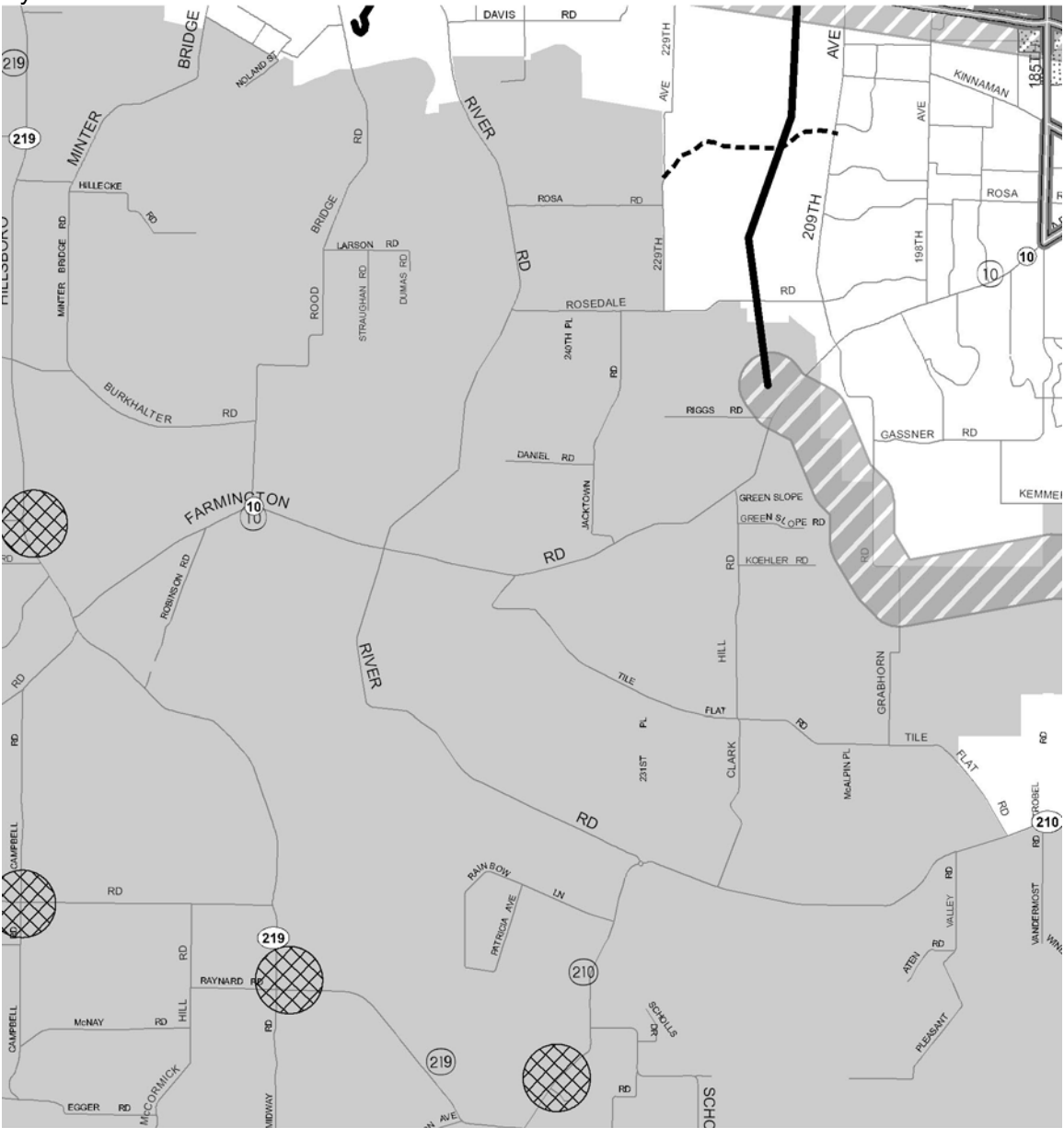
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|---|--|
|  Regional Trail Existing/Proposed |  Streetscape Overlay |
|  Community Trail Existing/Proposed |  Pedestrian/Bicycle District |
|  Pedestrian Parkway |  Regional Trail Refinement Area |








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For proposed regional and community trails identified, refer to community plan and/or trail master plan documents to determine additional details regarding specific trail alignment.

~~abcdef~~ Proposed additions
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The Pedestrian System Map 5 of 8 is incorporated into the Washington County Transportation System Plan:



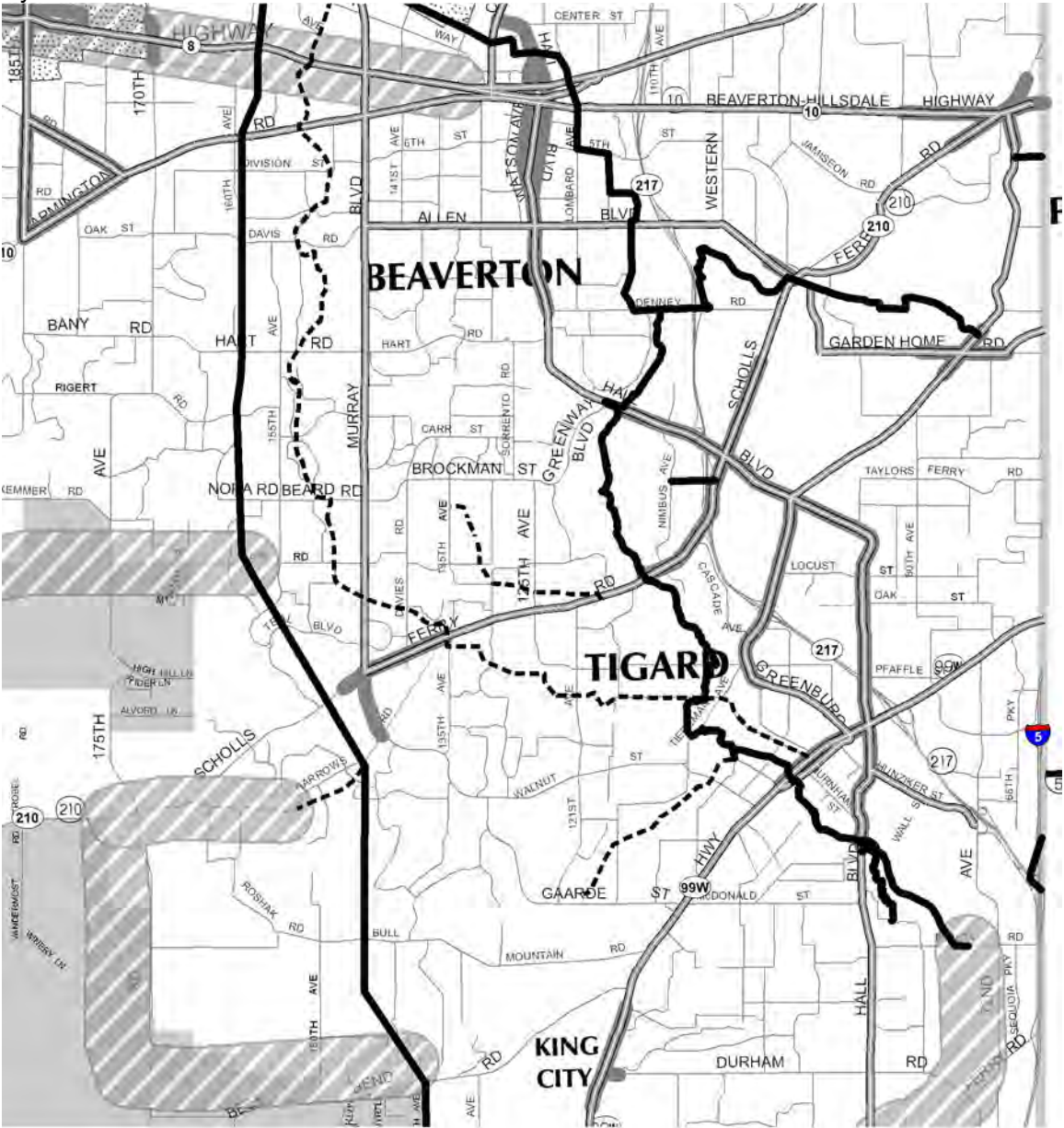
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|---|---|
|  Regional Trail Existing/Proposed |  Streetscape Overlay |
|  Community Trail Existing/Proposed |  Pedestrian/Bicycle District |
|  Pedestrian Parkway |  Regional Trail Refinement Area |
| |  Rural Pedestrian Activity Areas |

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abcdef Proposed additions
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The Pedestrian System Map 6 of 8 is incorporated into the Washington County Transportation System Plan:



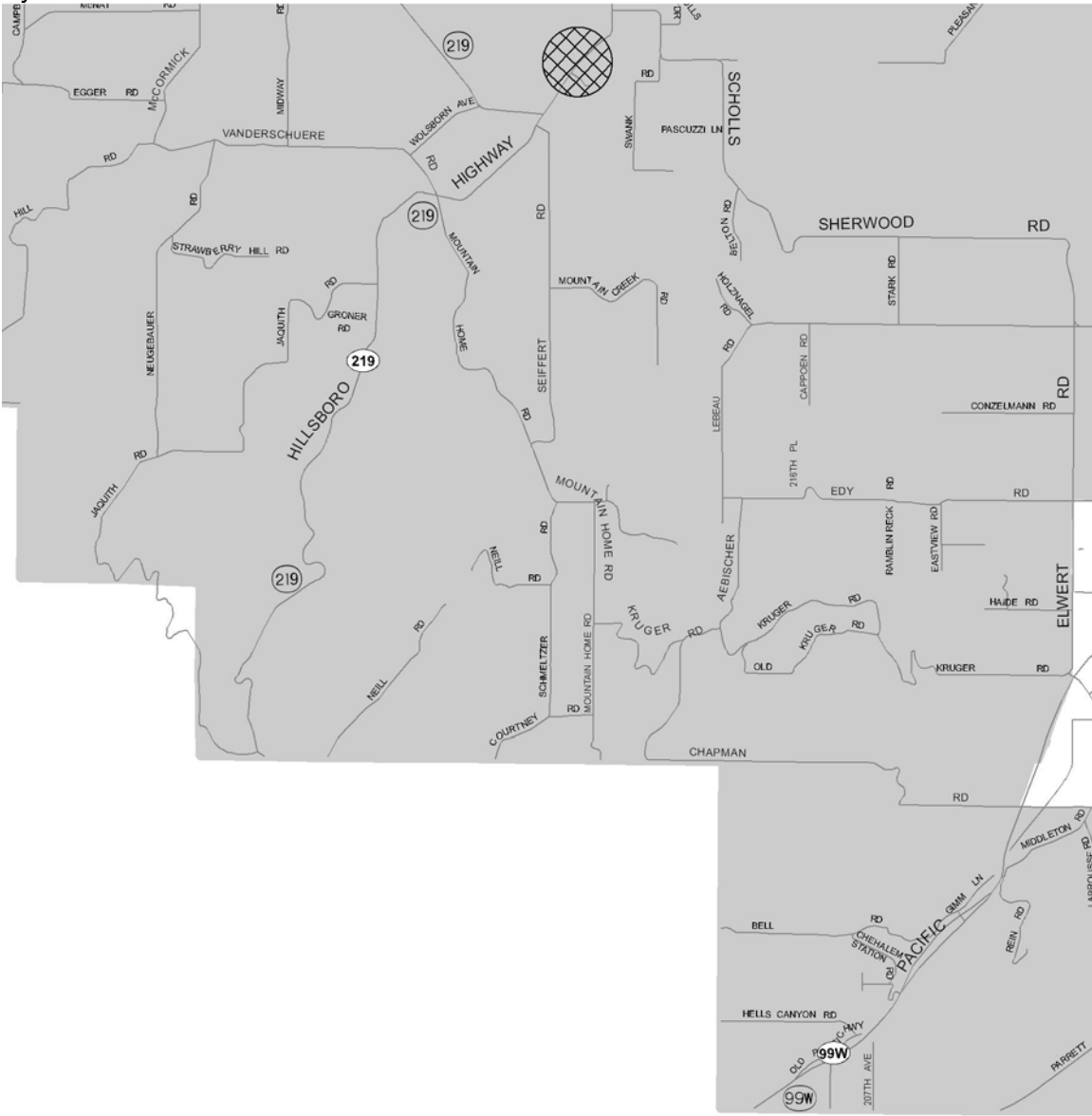
- | | |
|-----------------------------------|--------------------------------|
| Regional Trail Existing/Proposed | Streetscape Overlay |
| Community Trail Existing/Proposed | Pedestrian/Bicycle District |
| Pedestrian Parkway | Regional Trail Refinement Area |

Features on this map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

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~~abc~~def Proposed additions
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The Pedestrian System Map 7 of 8 is incorporated into the Washington County Transportation System Plan:



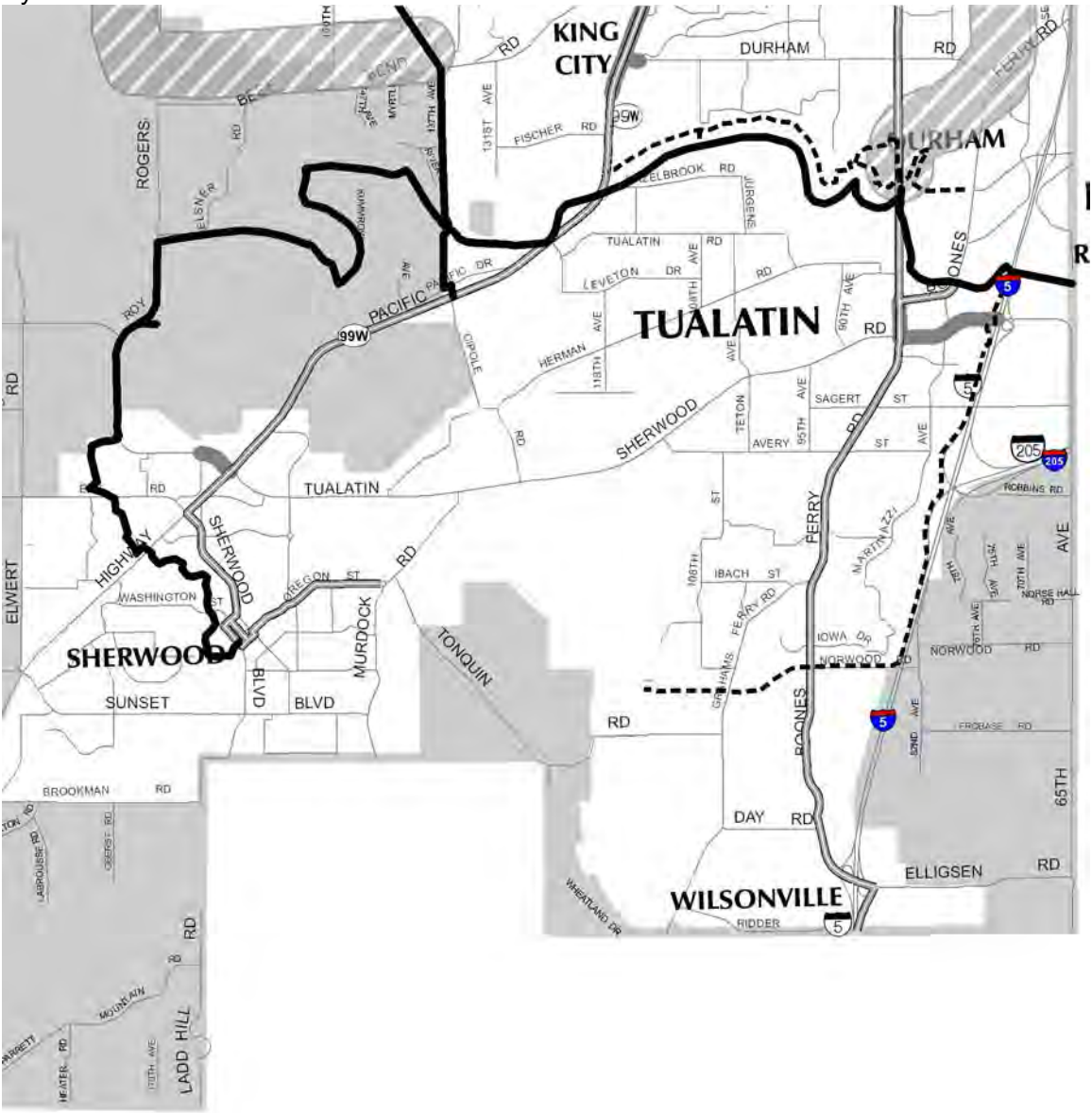
 Rural Pedestrian Activity Areas

Features on this map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

For proposed regional and community trails identified, refer to community plan and/or trail master plan documents to determine additional details regarding specific trail alignment.

~~abc~~def Proposed additions
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The Pedestrian System Map 8 of 8 is incorporated into the Washington County Transportation System Plan:



- Regional Trail Existing/Proposed
- - -** Community Trail Existing/Proposed
- Pedestrian Parkway
- Streetscape Overlay
- ▨** Regional Trail Refinement Area

Features on this map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

For proposed regional and community trails identified, refer to community plan and/or trail master plan documents to determine additional details regarding specific trail alignment.

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Bicycle Element

The Bicycle Element is intended to guide continued development of a system of on-street and off-street bikeways for everyday travel, and seeks to ensure that direct, comfortable and safe bicycle routes are planned.

Bicycle System Map

The Bicycle System Map identifies the planned bicycle network. All roadways in Washington County, with the exception of freeways, are on-street bikeways. State policy requires “bikeways” along urban Arterials and Collectors.⁴ The Bicycle System Classifications provides guidance on the function of the future bicycle network. Inside the UGB on-street bikeways may consist of bike lanes, buffered bike lanes, cycle tracks and interim shared roadways along Arterials and Collectors, and shared roadways along Neighborhood Routes and Local Streets. Regional Trails are considered off-street bikeways as they are intended to serve a transportation function and are encouraged to be designed and constructed in ways that facilitate comfortable, convenient and utilitarian bicycle travel.

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

Bicycle System Classifications

Major Street Bikeway

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

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

Enhanced Major Street Bikeway

An Enhanced Major Street Bikeway is an urban Arterial or Collector roadway that has, or is planned to have, buffered bike lanes or cycle tracks on one or both sides of the road as illustrated in the Washington County Bicycle Facility Design Toolkit. Enhanced Major Street Bikeways include particular roadways and roadway segments where enhanced bicycle features are desired based on land use context, access to transit service and roadway characteristics. Enhanced Major Street Bikeways may have higher traffic volumes, higher speeds and/or are designated for three or more lanes. In these circumstances users with diverse skill levels may

⁴ Oregon Administrative Rule 660-112-0045 (Transportation Planning Rule)

desire additional separation between the bikeway and vehicular traffic. However, when separated facilities such as cycle tracks are pursued, particular attention to conflict points and sight distance is needed. Enhanced Major Street Bikeways are shown on County, state and city facilities. Designations applied to roads or other facilities not under county jurisdiction should be considered recommendations to the state, city or other jurisdiction with primary responsibility for the facility.

Regional Trail

Regional Trails are defined in the Pedestrian Element.

Regional Trail Refinement Area

Regional Trail Refinement Areas are defined in the Pedestrian Element.

Rural Bikeway

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

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

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

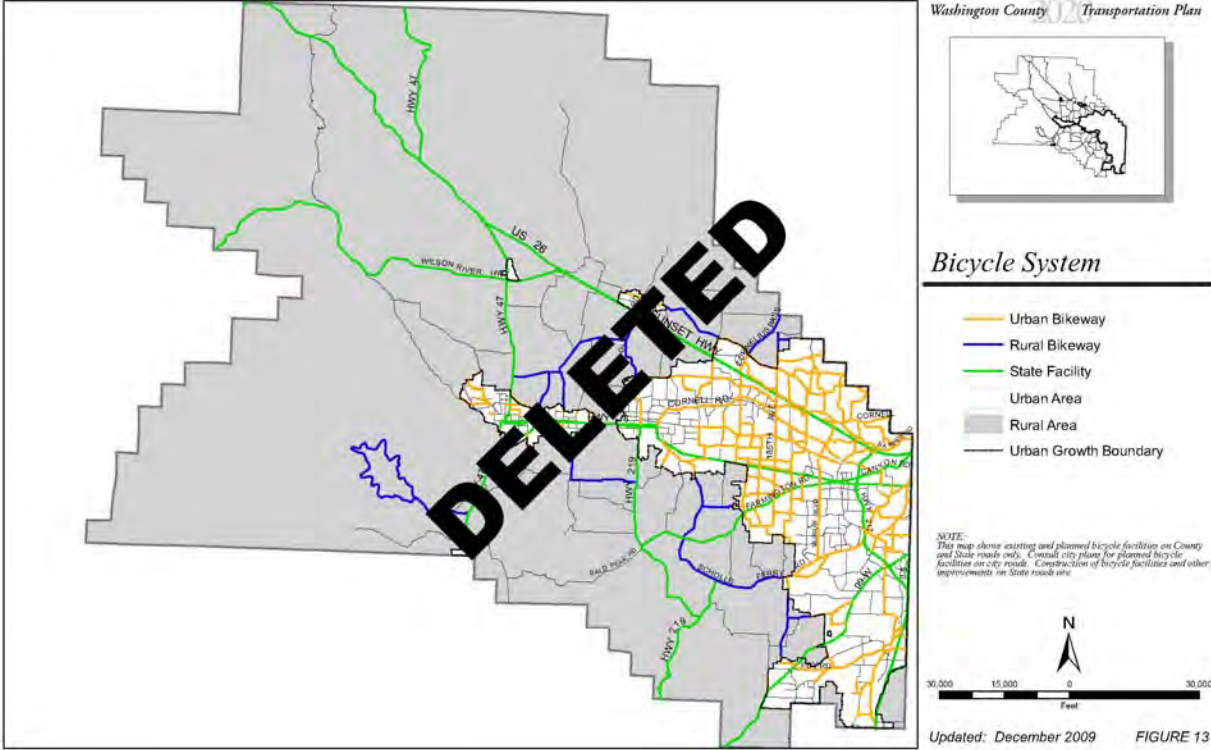
Rural Road Enhancement Study Corridor

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

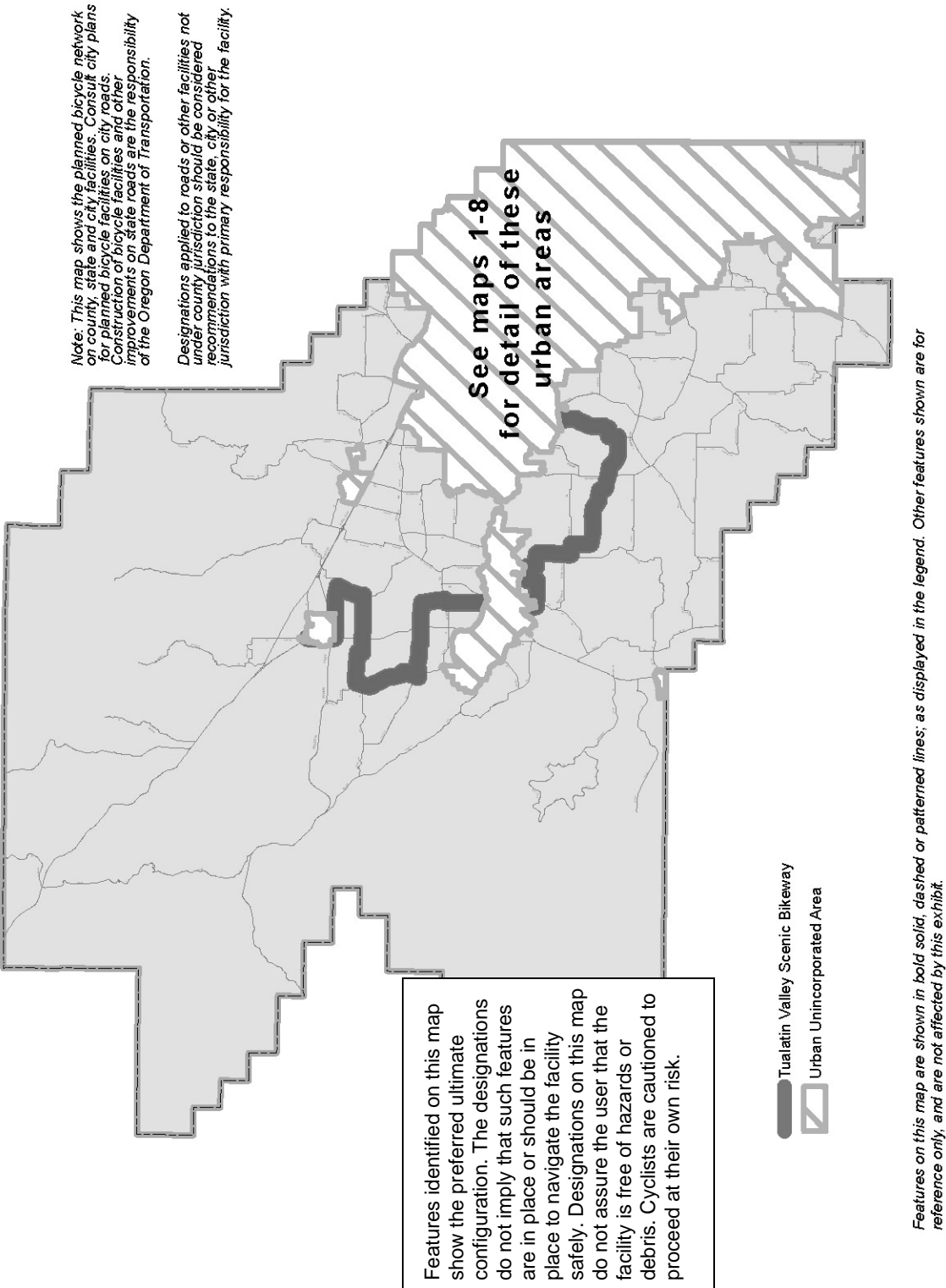
Tualatin Valley Scenic Bikeway

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

The following map is deleted from the Washington County Transportation System Plan:

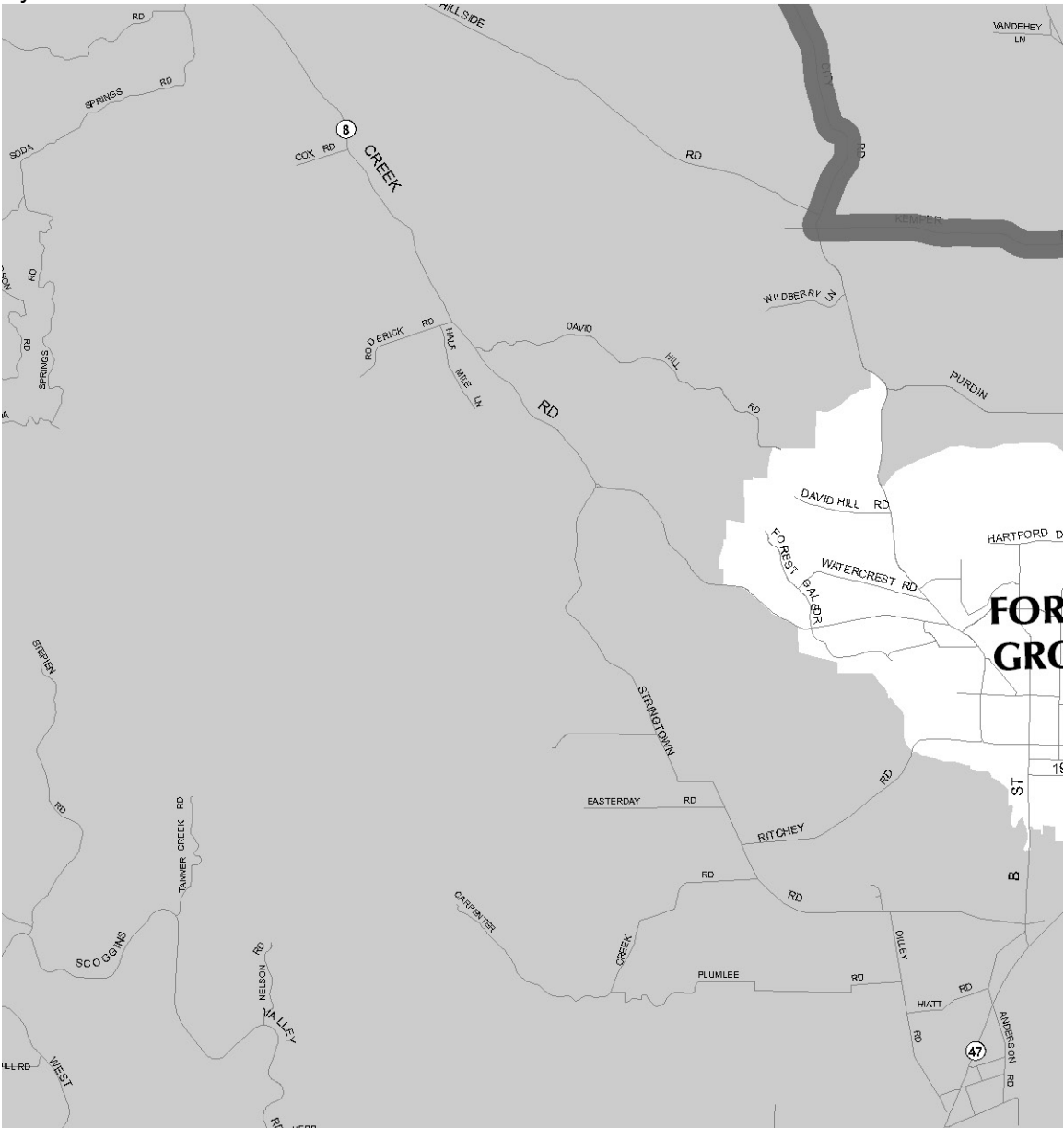


The Bicycle System Map is incorporated into the Washington County Transportation System Plan:



abcdef Proposed additions
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The Bicycle System Map 1 of 8 is incorporated into the Washington County Transportation System Plan:

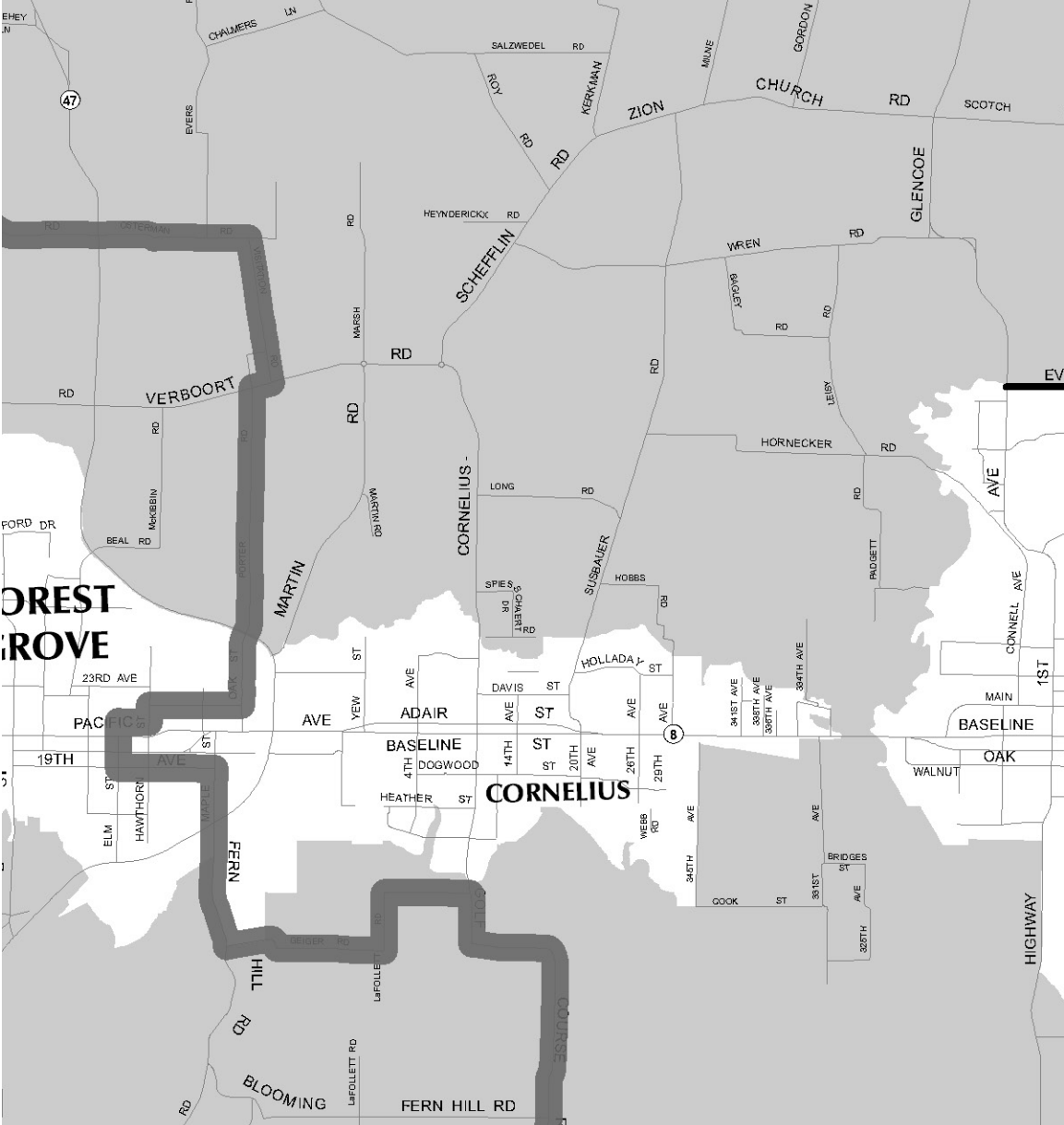




 Tualatin Valley Scenic Bikeway

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The Bicycle System Map 2 of 8 is incorporated into the Washington County Transportation System Plan:

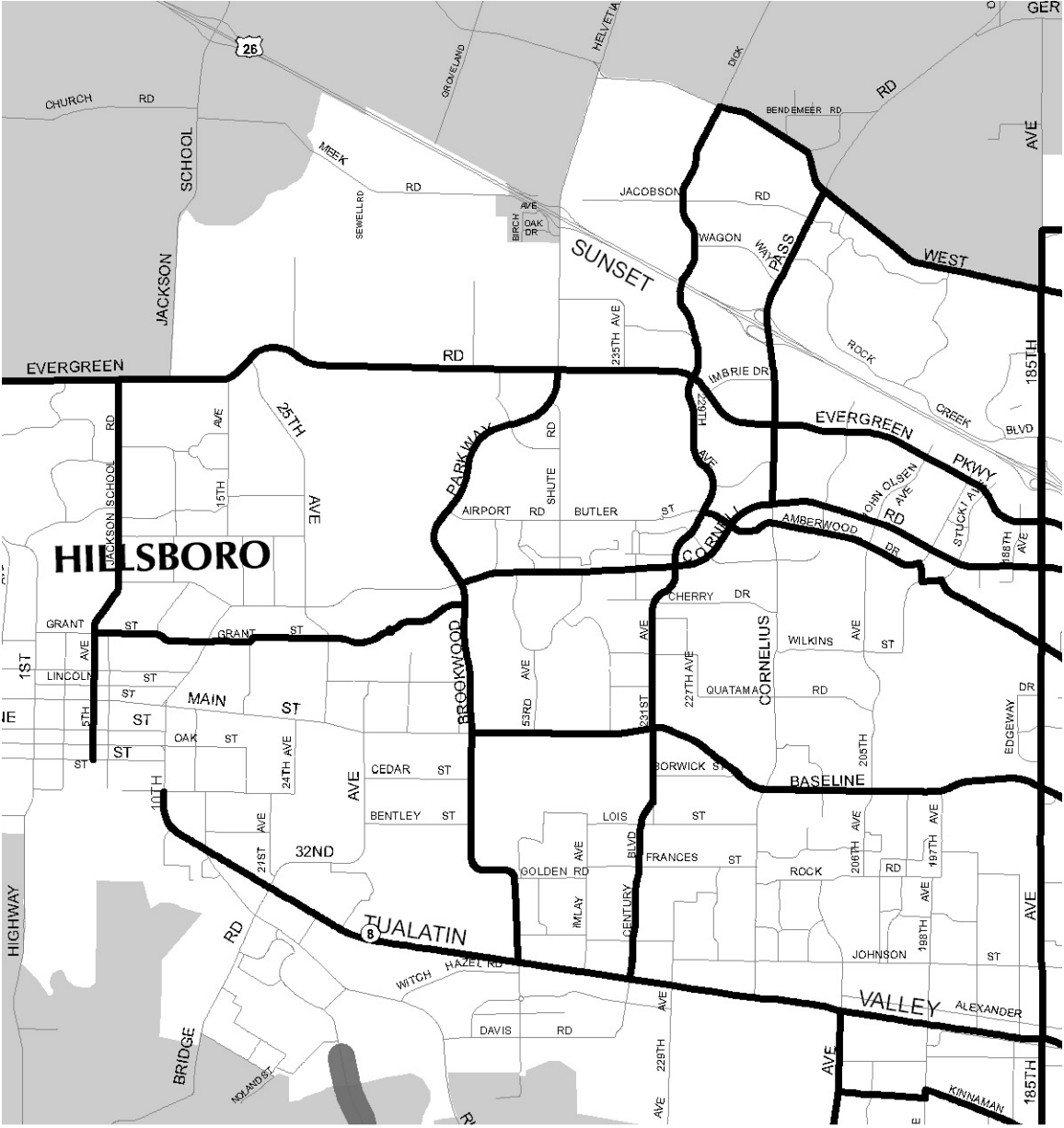




-  Enhanced Major Street Bikeway
-  Tualatin Valley Scenic Bikeway

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abcdef Proposed additions
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The Bicycle System Map 3 of 8 is incorporated into the Washington County Transportation System Plan:

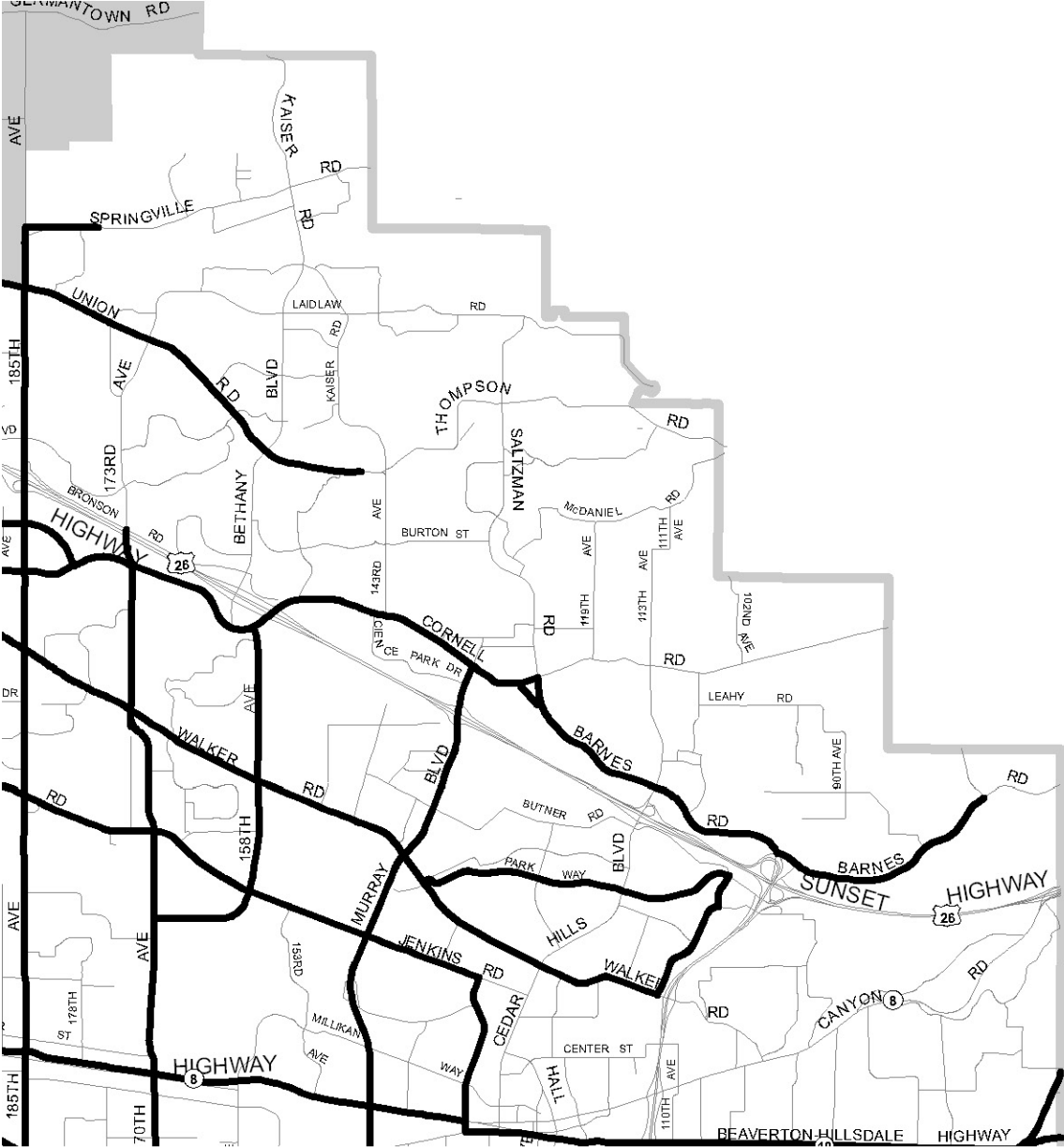


-  Enhanced Major Street Bikeway
-  Tualatin Valley Scenic Bikeway

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The Bicycle System Map 4 of 8 is incorporated into the Washington County Transportation System Plan:

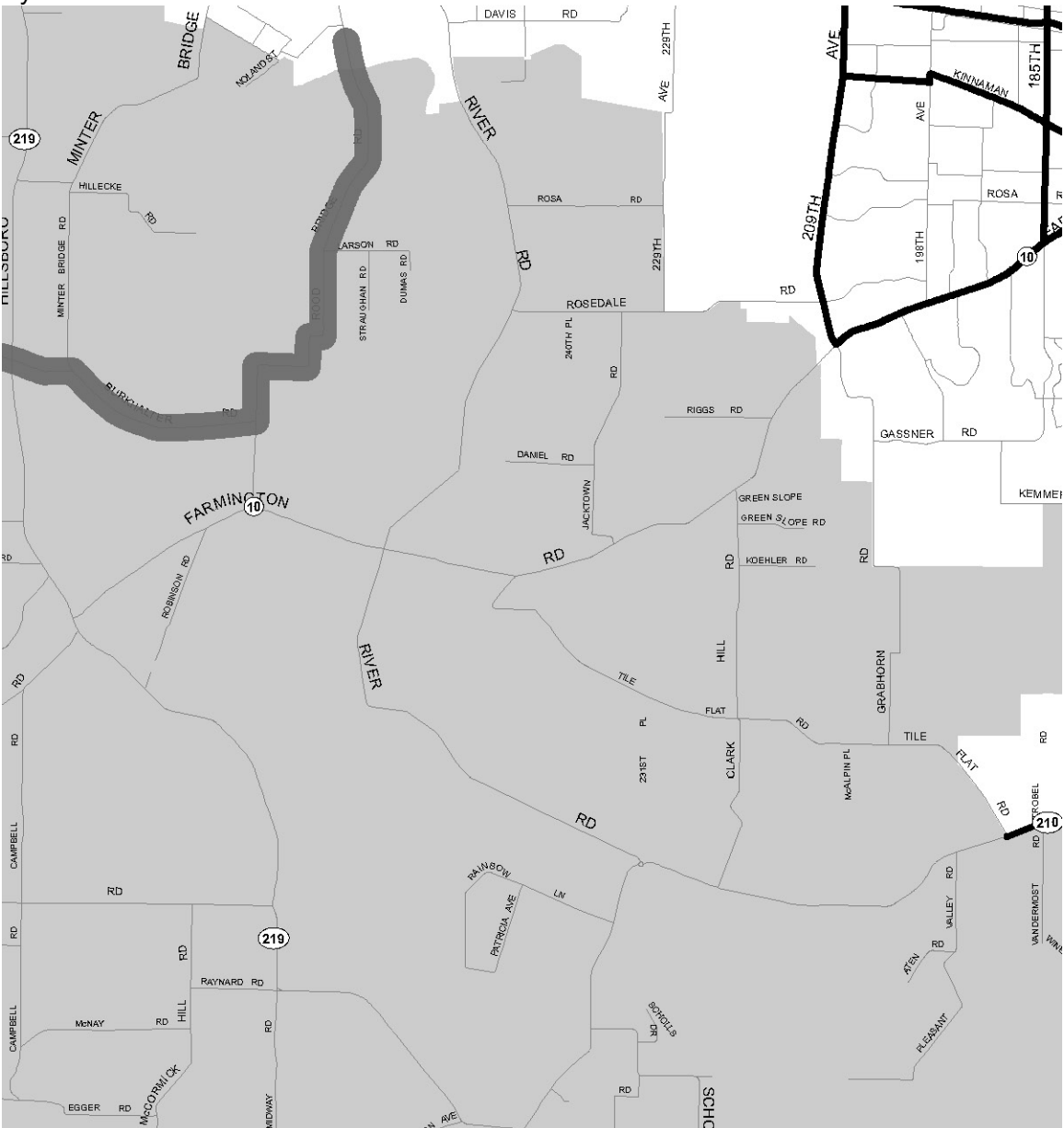




— Enhanced Major Street Bikeway

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The Bicycle System Map 5 of 8 is incorporated into the Washington County Transportation System Plan:

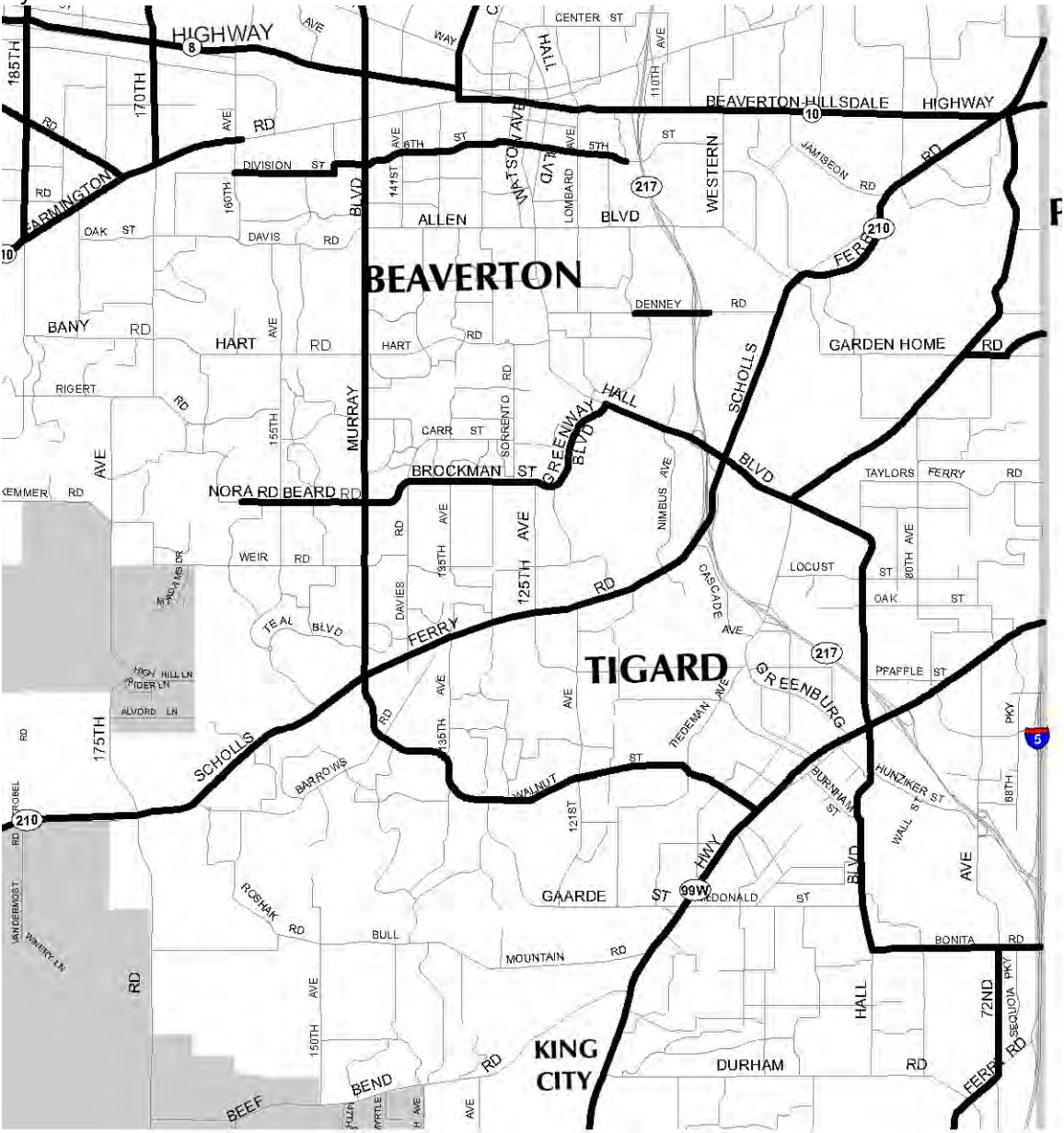


-  Enhanced Major Street Bikeway
-  Tualatin Valley Scenic Bikeway

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The Bicycle System Map 6 of 8 is incorporated into the Washington County Transportation System Plan:

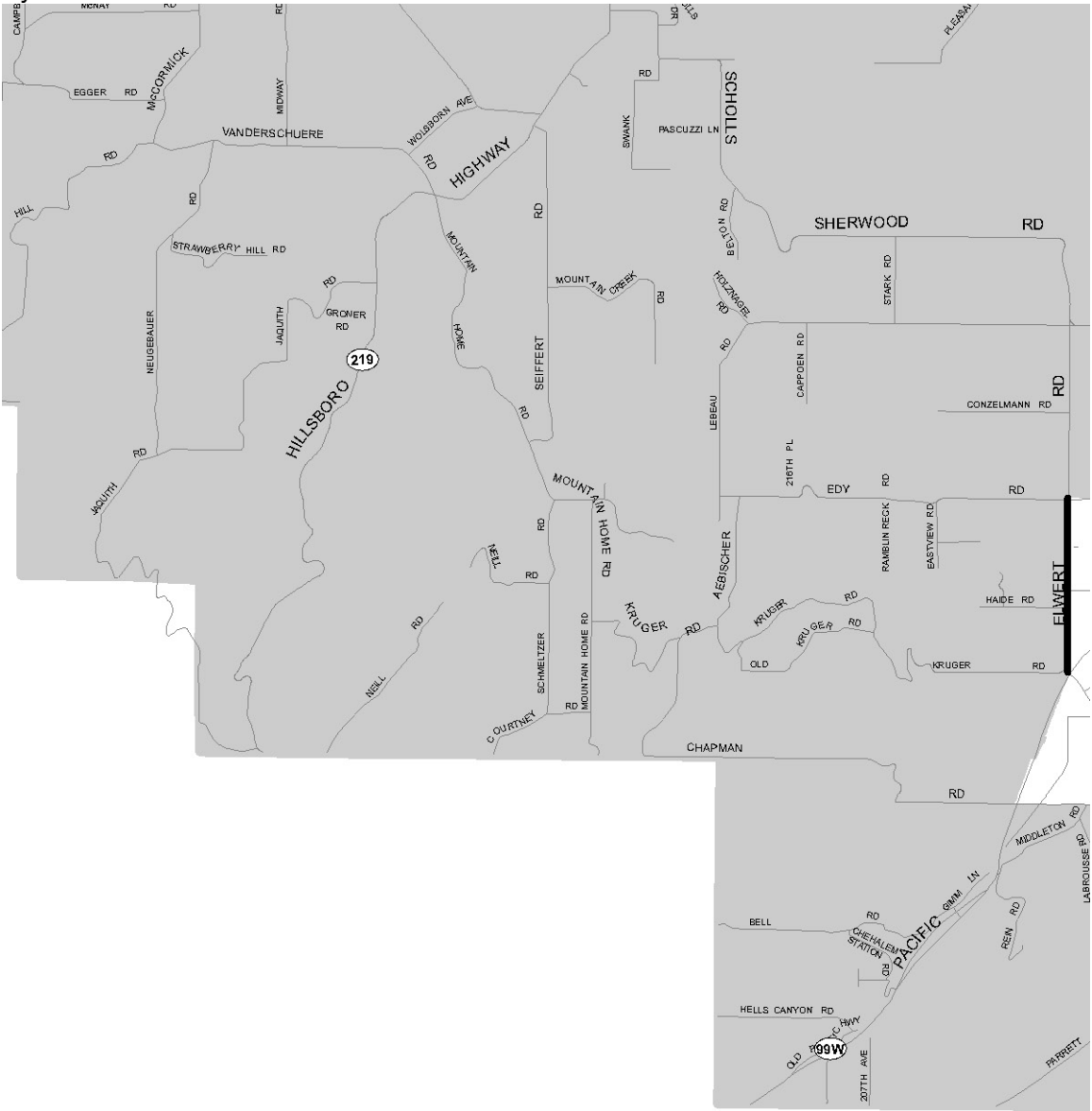


— Enhanced Major Street Bikeway

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The Bicycle System Map 7 of 8 is incorporated into the Washington County Transportation System Plan:

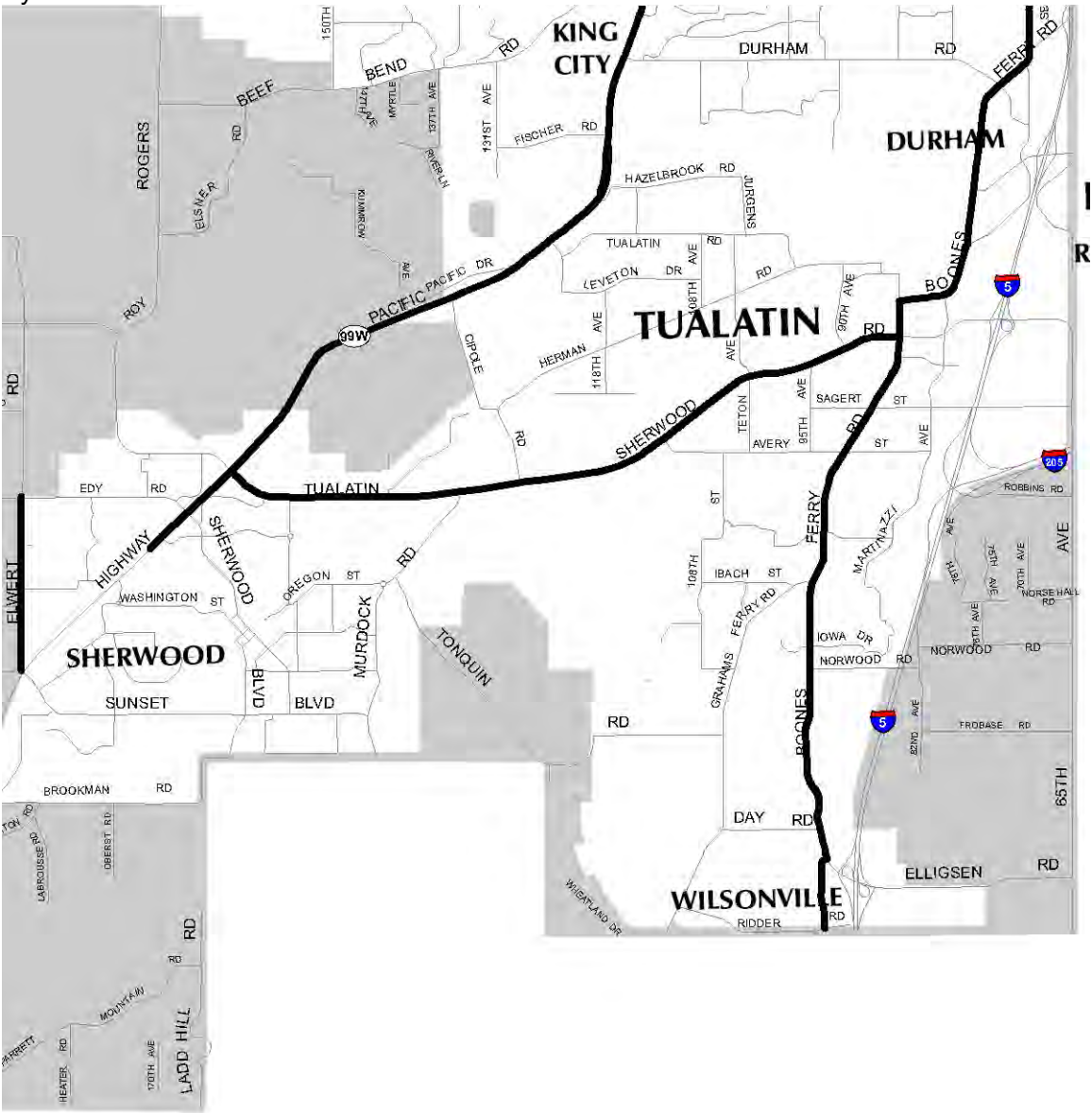


— Enhanced Major Street Bikeway

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abcdef Proposed additions
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The Bicycle System Map 8 of 8 is incorporated into the Washington County Transportation System Plan:



— Enhanced Major Street Bikeway

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Transit Element

Washington County's transit system, operated by several public transit agencies, consists of bus, light rail and commuter rail services as well as a number of community shuttle and paratransit services. Most transit service in Washington County is located within the urban growth boundary; however several rural and interregional routes are also available.

Transit System Map

The Transit Element identifies the future transit network as envisioned in the TriMet Westside Service Enhancement Plan, the draft TriMet Southwest Service Enhancement Plan and the Regional High Capacity Transit System Plan. It also responds to the Transit Service Needs Analysis (Figure 4-20) in the TSP Existing Conditions and Future Needs Report and assumes the continuation of existing transit services. The Transit Element also identifies a number of "point" features including Transit Centers, Park & Rides, Bicycle Transit Facilities and Major Transit Stops. The Transit Element does not identify or map paratransit services. However, it does identify potential areas for community shuttle service.

Transit System Classifications

Existing High Capacity Transit

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

High Capacity Transit Study Corridors

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

Metro's Regional High Capacity Transit System Plan 2035 divides HCT corridors into four implementation tiers. Within Washington County, the tiers and proposed corridors are defined as follows⁵:

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

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

⁵ Metro Regional High Capacity Transit System Plan 2035 Summary Report, 2010.

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

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

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

- Corridor 12: Hillsboro to Forest Grove extension

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

- Corridor 38S: Sherwood to Tualatin

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

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

Frequent Bus Service

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

Regular Bus Service

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

Peak Period Bus Service

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

Community Connector Service Area

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

Interregional Bus and Air Service

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

Transit Center and Bus or Air Terminal

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

Park & Ride

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

Bicycle Transit Facility

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

Major Transit Stops⁶

Major transit stops include:

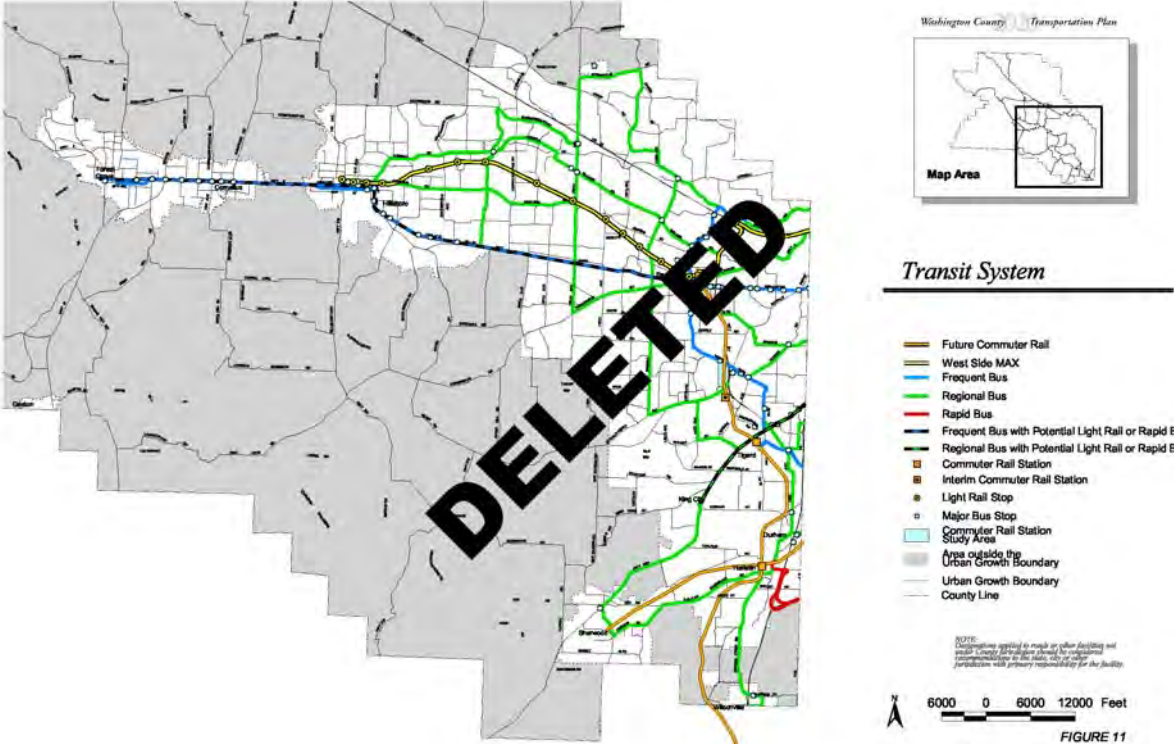
- Existing High Capacity Transit stations

⁶ Washington County Community Development Code Section 380 – Convenient Access to Transit Overlay District – refers to Major Bus Stops. Provisions in Section 380 apply only to Major Bus Stops mapped in the Washington County Community Plans, not those mapped in the TSP. The Community Plans and/or Community Development Code may be updated in the future to include the Major Transit Stops as shown in the TSP.

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

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

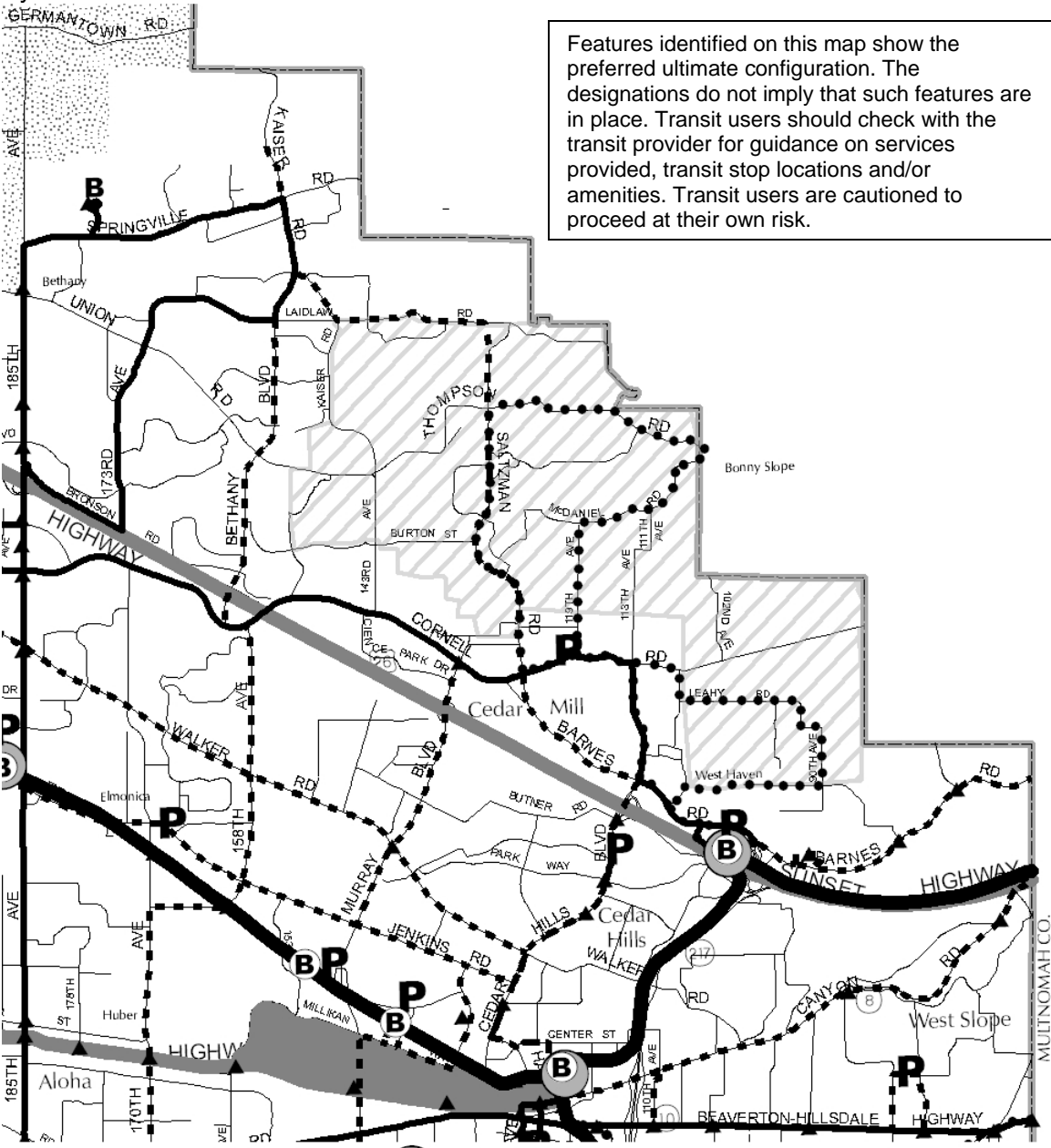
The following map is deleted from the Washington County Transportation System Plan:



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The Transit System Map 1 of 8 is incorporated into the Washington County Transportation System Plan:

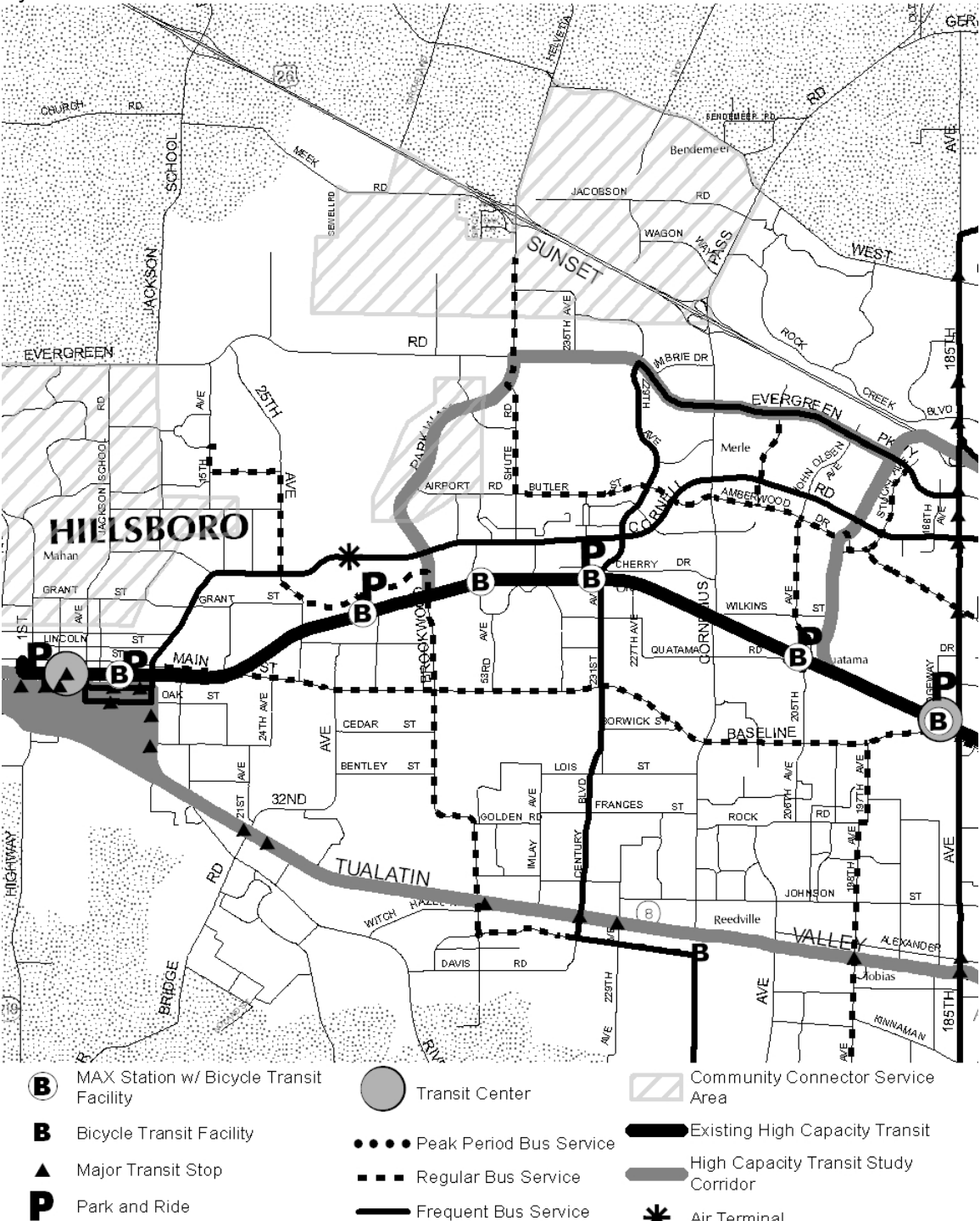
Features identified on this map show the preferred ultimate configuration. The designations do not imply that such features are in place. Transit users should check with the transit provider for guidance on services provided, transit stop locations and/or amenities. Transit users are cautioned to proceed at their own risk.



- B** MAX Station w/ Bicycle Transit Facility
- B** Bicycle Transit Facility
- ▲** Major Transit Stop
- P** Park and Ride
- Transit Center
- Peak Period Bus Service
- - - Regular Bus Service
- Frequent Bus Service
- ▨ Community Connector Service Area
- Existing High Capacity Transit
- High Capacity Transit Study Corridor

Features on this map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

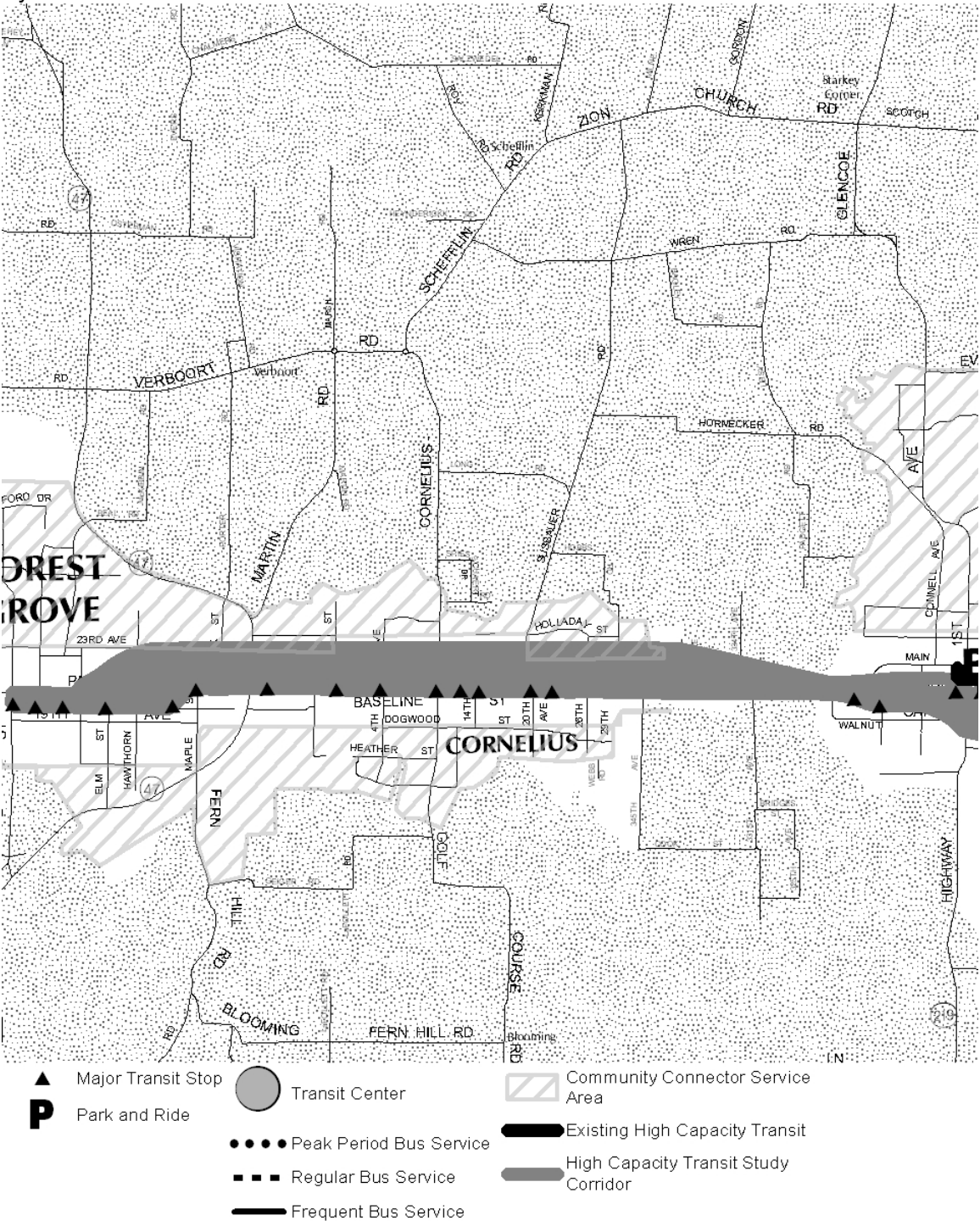
The Transit System Map 2 of 8 is incorporated into the Washington County Transportation System Plan:



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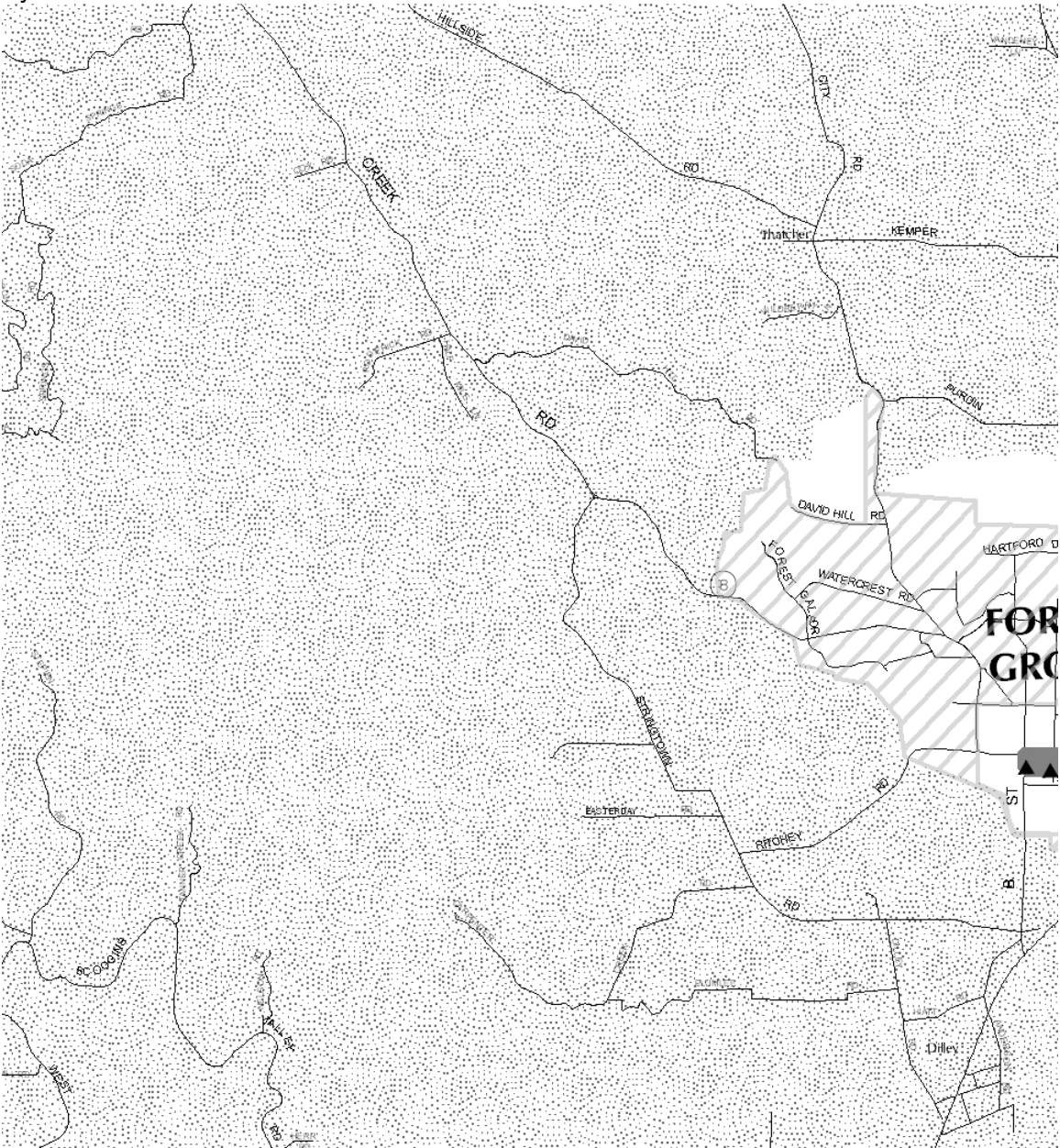
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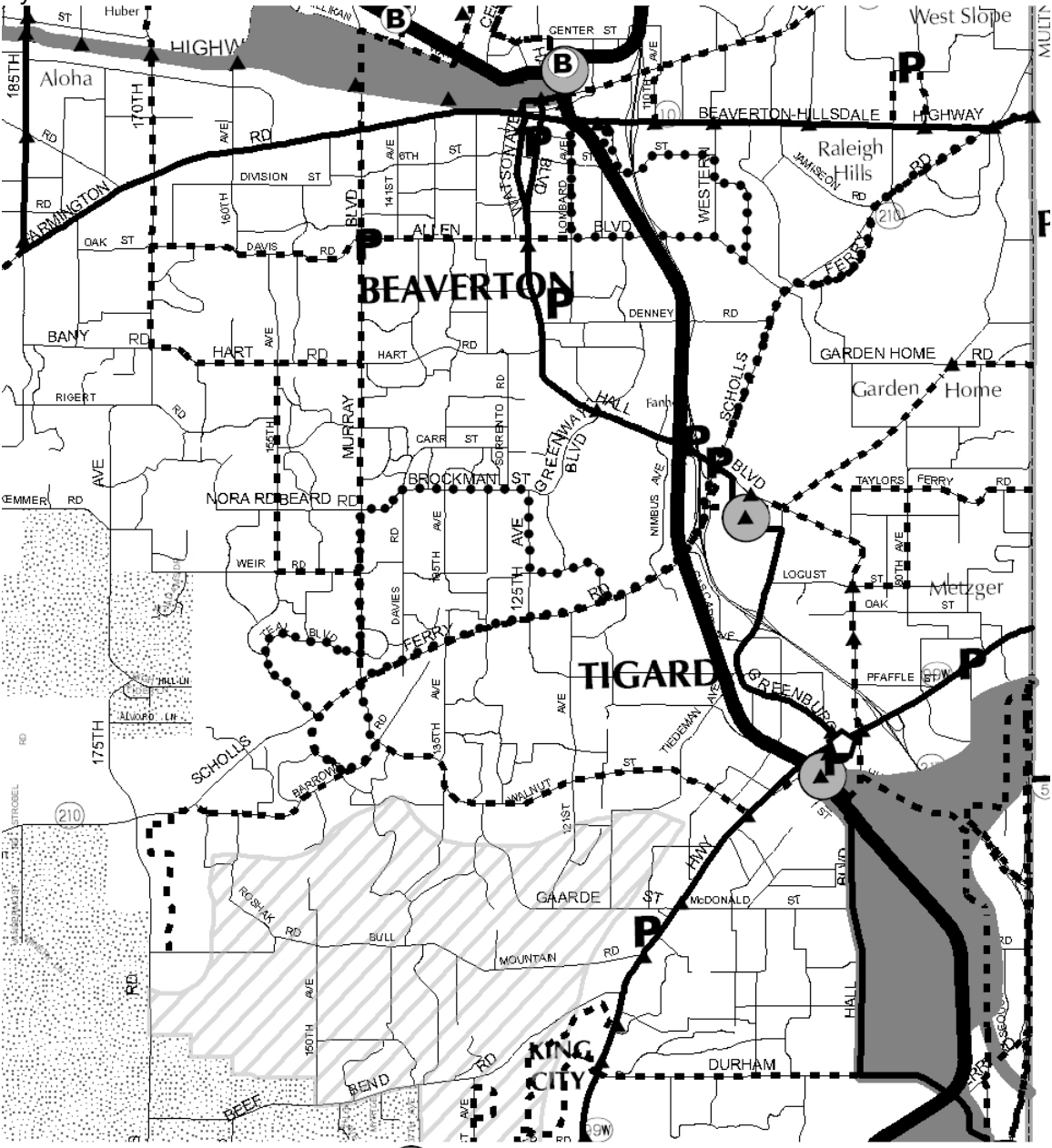
The Transit System Map 4 of 8 is incorporated into the Washington County Transportation System Plan:



- | | | |
|------------------------|------------------------------|--|
| ▲ Major Transit Stop | ● Transit Center | ▨ Community Connector Service Area |
| P Park and Ride | ●●●● Peak Period Bus Service | ▬ Existing High Capacity Transit |
| | ■ ■ ■ ■ Regular Bus Service | ▬ High Capacity Transit Study Corridor |
| | ▬ Frequent Bus Service | |

Features on this map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

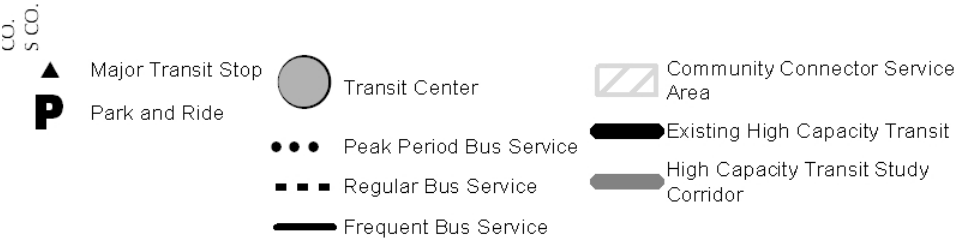
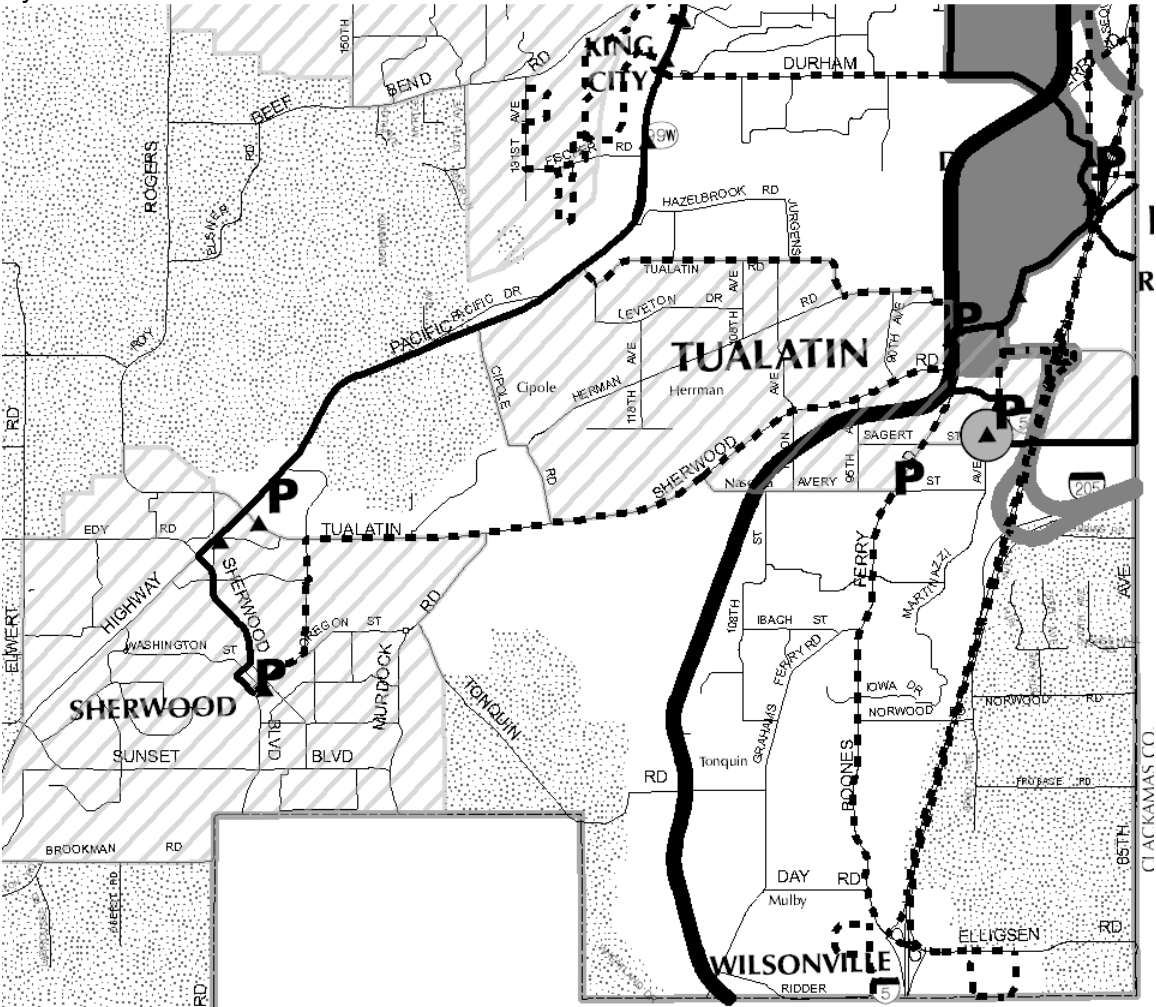
The Transit System Map 5 of 8 is incorporated into the Washington County Transportation System Plan:



- | | | |
|--|-------------------------|--------------------------------------|
| B MAX Station w/ Bicycle Transit Facility | Transit Center | Community Connector Service Area |
| Major Transit Stop | Peak Period Bus Service | Existing High Capacity Transit |
| P Park and Ride | Regular Bus Service | High Capacity Transit Study Corridor |
| | Frequent Bus Service | Bus Terminal |

Features on this map are shown in bold solid, dashed or patterned lines; as displayed in the legend. Other features shown are for reference only, and are not affected by this exhibit.

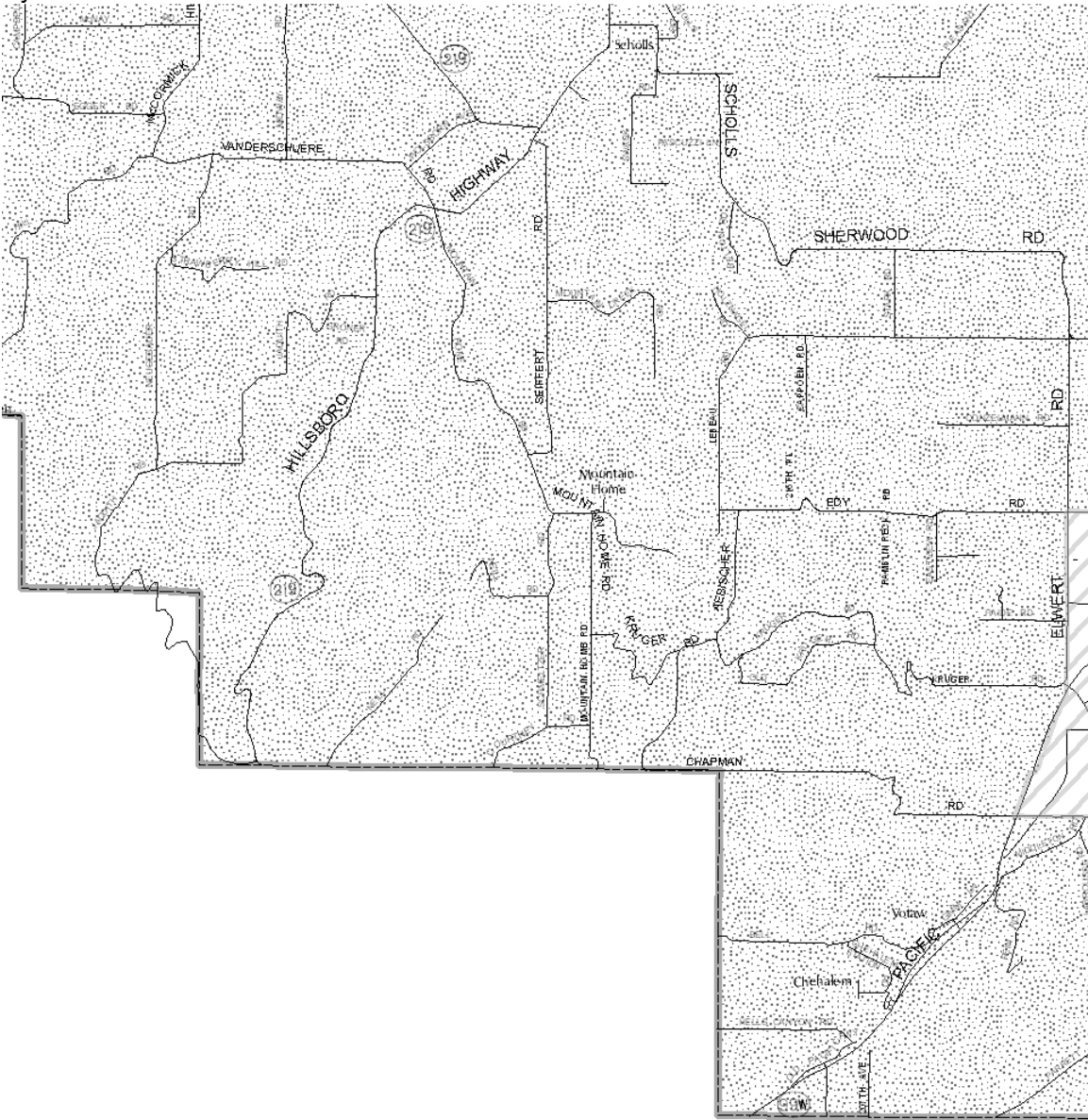
The Transit System Map 7 of 8 is incorporated into the Washington County Transportation System Plan:



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The Transit System Map 8 of 8 is incorporated into the Washington County Transportation System Plan:



- ▲ Major Transit Stop
- P** Park and Ride
- Transit Center
- Peak Period Bus Service
- - - Regular Bus Service
- Frequent Bus Service
- ▨ Community Connector Service Area
- ▬ Existing High Capacity Transit
- ▬ High Capacity Transit Study Corridor

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Transportation System Management & Operations Element

The Transportation System Management and Operations element of the Transportation System Plan (TSP) identifies systems and operational strategies for Washington County to pursue over time. This section focuses on the provision of systems to improve the management and operation of the integrated multi-modal network. Transportation System Management & Operations includes four functional areas:

- Multi-Modal Traffic Management
- Traveler Information
- Traffic Incident Response
- Transportation Demand Management

I) Multi-Modal Traffic Management, Operations and Traveler Information

Washington County's Intelligent Transportation System (ITS) plan has combined Multi-Modal Traffic Management and Operations with traveler information systems into a coordinated system management architecture. This section includes discussion of Traffic Control and Traveler Information systems as well as bicycle, pedestrian and rural systems.

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

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

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

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

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

1. Traffic Control & Traveler Information

The ITS plan focus on two major categories of systems:

- (a) Communication Backbone & Centers
- (b) Arterial Management System and traveler information systems

(a) Communications Backbone & Control Centers

The following figure depicts the high-level network architecture for connecting the operations centers that are operated by Washington County, and connections to other regional operations centers operated by other agencies.

The four operations centers operated by Washington County are:

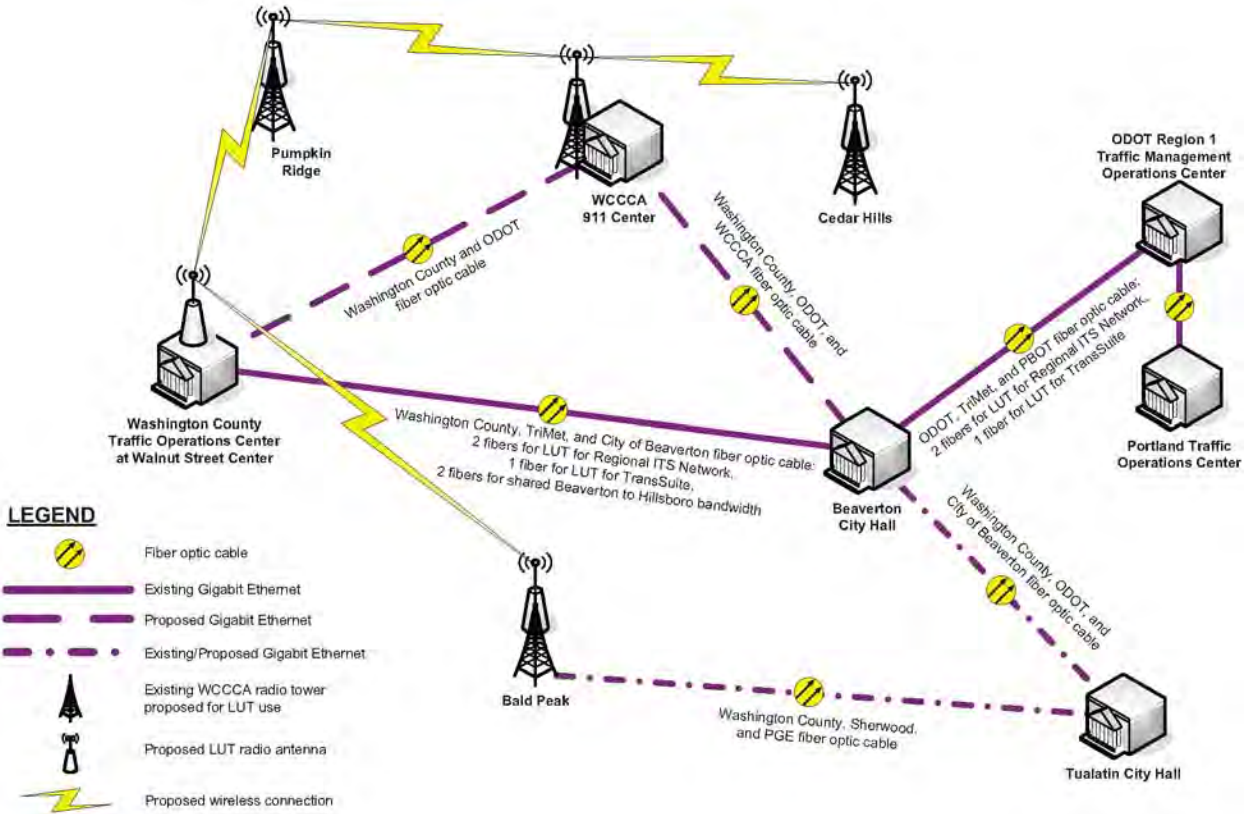
- Washington County Traffic Operations Center (TOC) at Walnut Street Center
- Washington County Consolidated Communications Agency (WCCCA) 911 Center
- Beaverton City Hall
- Tualatin City Hall

Regional operations centers operated by other agencies include:

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

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

Communications Backbone



(b) Arterial Management System and traveler information systems

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

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

Arterial Management System

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

- Improved travel time reliability
- Reduced travel delay

abcdef Proposed additions
 abcdef Proposed deletions

- Reduced fuel consumption and greenhouse gas emissions
- Reduced crashes and improved safety
- Comprehensive information for travelers to make informed decisions

2. Bicycle & Pedestrian

Bicycle and Pedestrian ITS strategies include information systems to collect data about bicycle and pedestrian travelers as well as operational systems to enhance the transportation network for these travelers.

Information systems may include:

- *Bicycle Detection* – Bicycle detection at traffic signals supports the operation of the signal and collects that the signal has responded to the detection (the presence of the cyclist is counted)
- *Trail Counters* – Washington County continues to work with Parks and Recreation departments to install bicycle and pedestrian counters where trails cross arterial roadways

System enhancements may include:

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

3. Rural

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

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

II) Traffic Incident Response

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

III) Transportation Demand Management

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

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

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

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

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

Funding Element

Goal 10 of the Transportation System Plan identifies the existing transportation funding framework within Washington County. The transportation plan Funding Element expands on the funding framework, goals, objectives and strategies identified in Goal 10. This transportation funding element identifies projected revenue sources and lists current transportation improvements and cost estimates necessary to implement this plan. Based on the identified projected revenue and estimated costs, the funding element also identifies the overall projected funding gap.

This document represents the funding conditions at the time this document was prepared (2014). The projected revenues and estimated costs are expected to change over time. Further, the list of transportation improvements is anticipated to evolve as development occurs and new opportunities and challenges develop.

This funding element is divided into two primary types of funding and expenditures: 1) capital and 2) maintenance. While these categories are not mutually exclusive, many funding sources are dedicated primarily toward one or the other. The Funding Element treats these categories separately.

CAPITAL FUNDING PROGRAMS:

Capital projects include improvements that expand, enhance or extend the current transportation system. The TSP identifies projects consistent with Metro's financially constrained 2014 RTP. The TSP projects financial resources over the planning horizon. The resulting revenue forecast is compared to the identified project list and used to define the gap between project needs and forecasted funding.

Major Streets Transportation Improvement Program (MSTIP)

MSTIP is a property tax measure that was passed by Washington County voters three times during the 1980s and 1990s. Each of the three ballot measures identified a specific list of improvements that would be completed if the measure passed.

In the late 1990s two statewide tax reform measures led to MSTIP being rolled into the County's general property tax rate. Those property tax revenues support the County's General Fund, which is used at the discretion of the Board of County Commissioners. Thus far, the Board of County Commissioners has invested the property tax revenue generated by MSTIP in transportation improvements. The TSP funding structure assumes that MSTIP will continue to fund transportation improvements at the same rate.

Periodically there has been discussion of a new MSTIP ballot measure. A new measure could ask voters to increase the countywide property tax for additional transportation investments. A new MSTIP ballot measure or other MSTIP increase is not included in the assumptions for the TSP financial analysis, consistent with Metro's RTP.

Transportation Development Tax (TDT)

The TDT was based on the Traffic Impact Fee (TIF). The TIF was enacted in 1986 for unincorporated Washington County. In 1990, the TIF was enacted countywide including

within cities. This was one of the first transportation related development impact fees in the nation. The TDT is imposed on all new development in Washington County. The TDT is collected prior to the issuance of a building permit; or in cases where no building permit is required (such as for golf courses or parks), prior to final approval of a development application.

North Bethany Roads

In addition to the existing funding sources, North Bethany has two additional funding programs: The North Bethany Transportation System Development Charge and the North Bethany County Service District for Roads. The funds collected under these programs are intended to provide additional revenue to fund specific capital improvements needed to serve the planned development. Together the funds collected under these programs are intended to raise over \$35 million towards 14 specific transportation projects.

The timeline for the complete development of North Bethany is unknown. The funding strategy was designed to implement transportation improvements as development occurs and funding becomes available. These two funding programs are intended to sunset once the area has developed, and the specified improvements have been implemented and purchased.

New road districts are likely to be established in the future for other developing areas, and some of these may contribute financially to Washington County facilities. These districts have yet to be defined and therefore are not considered in this context.

Federal and State funding

Federal and State transportation capital improvement funds are awarded through a variety of competitive application processes. These funding programs allocate improvements to the most competitive projects based on needs, system benefits and available funding.

The MTIP includes all federally funded transportation projects in the Portland Metropolitan area, including projects planned by TriMet, the Oregon Department of Transportation and local agencies receiving federal funds allocated by Metro. Metro currently uses a process known as the Regional Flexible Fund Allocation (RFFA) to distribute funds from three federal programs: the Surface Transportation Program, the Congestion Mitigation/Air Quality Program and the Transportation Alternatives Program. The RFFA process identifies which projects in the RTP will receive funding. RFFA funds are allocated every two years. Project and program applications may be nominated by jurisdictions, transportation or transit agencies within the region. These funds can be spent on a number of different types of improvements, except local street construction.

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

Capital Project Prioritization

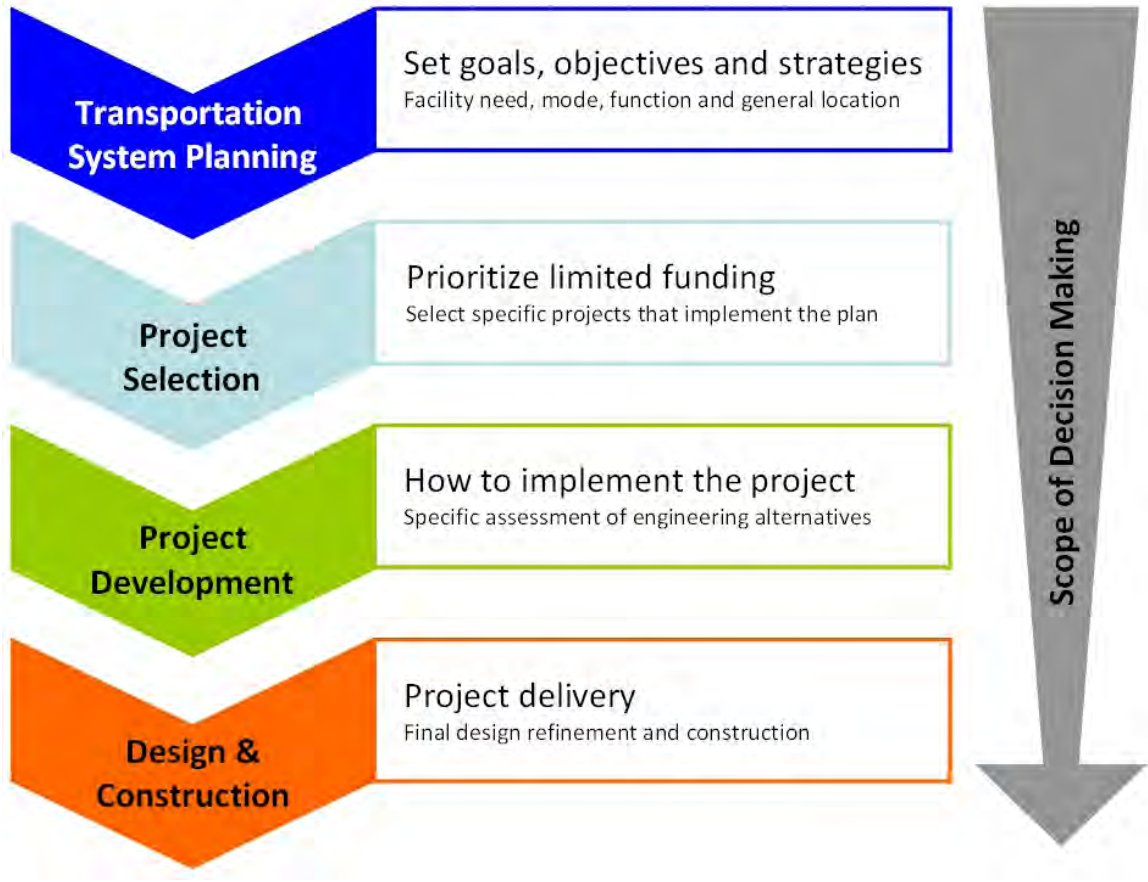
The goals, objectives and strategies of the TSP (adopted in A-Engrossed Ordinance 768) identify funding priorities. These reflect a balance of different important criteria to consider when selecting projects for funding. Each funding program has different rules, criteria and/or criteria weighting; these rules and criteria may change over time. Such changes to the funding program rules and criteria are generally established through an independent process and are not directly linked to the TSP. Balancing proposed projects to meet different goals of the TSP must be based on the specific situations being addressed.

Therefore, the TSP must be flexible enough to respond to the rules and criteria established by the various funding programs. Identifying how a particular project may score within the established funding program rules and criteria is the task of recommending and/or applying for the funding program. In many cases, it is important to demonstrate within the funding application how a particular project is consistent with the goals of the TSP, while meeting the specific requirements of the funding source.

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

The figure below describes the Transportation Project Development process, from establishing the need, mode, function and general location of the facility within the TSP to implementing the project on the ground.

Transportation Project Development Process



The figure depicts the four basic steps in the Transportation System Planning and project lifecycle. Each stage of the process yields key decisions that shape the transportation system. The scope of decision-making becomes more narrowly focused as projects advance through these stages. Bigger picture decisions occur during the planning and project selection stages, and more specific project-level decisions occur in the project development and the design/construction stages. DLUT staff strives to keep the public informed and involved as appropriate throughout each of the Transportation Project Development process steps.

MAINTENANCE FUNDING PROGRAMS:

In order to maximize the effectiveness of maintenance related resources, the Board has adopted target service levels for all different types of assets. The primary tool used for selecting road maintenance activities has been the *Road Maintenance Priority Matrix* as described in TSP Goal 11 maintenance.

Urban Road Maintenance District (URMD):

The Urban Road Maintenance District (URMD) was created by the voters in urban unincorporated Washington County in 1987; voters approved funding the district in 1994. URMD provides preventive road maintenance services for public roads within URMD boundaries, except roads that are designated as arterials or collectors on the Washington County Transportation Plan, for which maintenance funding comes from the Road Fund described below.

In 2011 the Board expanded the services eligible for URMD funding to include construction of safety improvements. All roads under County jurisdiction within the District are eligible for safety improvements, including Arterials and Collectors.

Road Fund:

Washington County receives a portion of state highway funds generated by Oregon's 30-cents-per-gallon tax on gasoline, truck weight-mile fees and vehicle registration fees. Anyone who buys gasoline, drives a truck that meets requirements for weight-mile fees or registers a vehicle in Oregon pays the tax. This fund has historically been distributed 50% to the state, 30% to the county and 20% to the cities. Washington County also collects a local one-cent-per-gallon tax on gasoline. Anyone who buys gas/diesel in Washington County pays the tax. These revenues are used by Washington County to maintain roads under County responsibility. For the purpose of the Funding Element, no increases or other significant changes to the Road Fund are assumed.

Sections of Ordinance 768 are amended to reflect the following:

1. Goal 1: Safety

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

Safety strategies in the TSP focus on:

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

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

Goal 1: Safety

Provide a safe transportation system for all users.

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

Strategy 1.1.1 Plan, engineer, design and construct the transportation system using accepted design standards that promote safety and that provide the intended multi-modal function as indicated in the TSP and the Road Design and Construction Standards.

Strategy 1.1.2 Regularly inspect the transportation system to identify and correct safety deficiencies.

Strategy 1.1.3 Use the Maintenance Priority Matrix to help prioritize maintenance and safety expenditures.

Strategy 1.1.4 Where and when practicable, separate travel modes and minimize conflicts between and within modes.

Strategy 1.1.5 Prioritize missing or incomplete facilities as safety enhancements where appropriate.

Strategy 1.1.5~~6~~ Limit sign clutter by utilizing the Manual on Uniform Traffic Control Devices or other appropriate standards for the design and placement of traffic signs.

2. Goal 2: Economic Vitality

Truck Routes

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

Economic Activity Centers

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

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

Strategy 2.1.1 Coordinate planning, development, maintenance and operation of an efficient and safe ~~truck route~~ roadway freight system with the private sector, ODOT, TriMet, Metro, the Port of Portland and the cities of Washington County.

Strategy 2.1.2 Improve monitoring, analysis and management of freight needs by maintaining a truck classification count database.

Strategy 2.1.3 Develop freight reliability criteria, including percentage reduction in delay per truck trip, for purposes of project prioritization.

Strategy 2.1.4 Proactively identify and correct roadway design, safety and operational deficiencies on truck routes to meet freight reliability targets.

Strategy 2.1.5 Coordinate with federal and state agencies as necessary for compliance with federal and state regulations pertaining to the safe transport of hazardous materials within and through Washington County.

Strategy 2.1.6 Designate and map over-dimensional ~~freight truck~~ routes, and identify where roadway improvement projects should not further restrict or limit over-dimensional vehicle operations, as appropriate.

3. Goal 5: Mobility

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

Strategy 5.1.1 Recognize that the functional classification system represents a continuum in which through traffic increases and provisions for vehicle access decrease in the higher classification categories (see figure 5). Designate a roadway Functional Classification Map utilizing some or all of the following criteria for defining or modifying the functional classification:

- A) Expected amount, type and characteristics of vehicle traffic.
- B) Distance between similar roadways within the system.
- C) Expected needs of the community and traveling public.
- D) Extent of appropriate access.
- E) Length of the roadway.
- F) Land use along the roadway.
- G) Neighborhood and community aspirations.

Strategy 5.1.2 Determine ultimate street design requirements and street profile for development review and/or public improvement based on the Functional Classification Map designation and/or Special Area Street Map designation; and utilize both the Pedestrian System Regional Street Design Overlay Map, the Bicycle System Map and the Lane Numbers Map to determine the appropriate right-of-way dedication and design treatment applicable within the currently adopted roadway standards (see table 3).

Strategy 5.1.3 Address potential impacts of long-distance trips on neighborhoods or communities by:

- A) Ensuring that the collectors and arterials of the transportation system are designed to adequately accommodate these trips.
- B) Designing and managing local streets to accommodate local trips and to discourage long-distance trips.

Strategy 5.1.4* Prior to adding through travel lane capacity to the Lane Numbers Map, or elsewhere in the transportation system plan, consider the following strategies in the order listed below:

- A) Transportation System Management strategies, including Travel Demand Management, safety, operational and access management improvements.
- B) Bicycle and pedestrian system improvements.
- C) Appropriate lane-markings, safety improvements and other operational devices to improve traffic flow.
- D) Land Use strategies to reduce motor vehicle congestion and peak-period demand.
- E) Parallel connections and local street connectivity improvements.

*Strategy 5.1.4 has been developed based on and in response to the Regional Transportation Functional Plan requirements in Title 2, 3.08.220.

Strategy 5.1.5 Define and maintain a ~~Countywide Roadway System~~ Long-Term Road Jurisdiction Map that is intended to serve major travel movements, and appropriate for long-term Washington County operation and maintenance. Maintain a map which identifies the Long-Term Road Jurisdiction of county and state facilities ~~on the Countywide Roadway System~~. ~~Pursue~~ Negotiate jurisdiction of facilities identified for long-term county operation and maintenance.

Functional Classification

This section elaborates on the functional classification system described by Strategy 5.1.1.

There are numerous ways in which the concept of roadway functional classification is defined and interpreted. Federal, state, regional and some city definitions within Washington County may differ from the classification scheme used here. In practice, this is not a problem because these classification systems reflect the general process described below.

~~Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Basic to this process is the recognition that individual roads and streets do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads. It becomes necessary then to determine how this travel can be channelized within the network in a logical and efficient manner. Functional classification defines the nature of this channelization process by defining the part that any particular road or street should play in serving the flow of trips through a highway network.⁴~~

Functional Classification introduces the two primary transportation functions of roadways, namely mobility and access, and describes where different categories of roadways fall within a continuum of mobility-access. Most travel occurs through a network of interdependent roadways, with each roadway segment moving traffic through the system towards destinations. The concept of functional classification defines the role that a particular roadway segment plays in serving this flow of traffic through the network. Roadways are assigned to one of several possible functional classifications within a hierarchy according to the character of travel service each roadway provides. Planners and engineers use this hierarchy of roadways to channel transportation movements through a highway network efficiently and cost effectively. Roadways serve two primary travel needs: access to/egress from specific locations and travel mobility. While these two functions lie at opposite ends of the continuum of roadway function, most roads provide some combination of each.¹

Both the Washington County Functional Classification System and Metro's Regional Transportation Plan Arterial and Throughway Network map describe a hierarchy of roadway types, their relative roles in the transportation system, and provide direction with regard to appropriate classification criteria and facility design.

⁴ FHWA Functional Classification Guidelines, 1989

¹ FHWA Highway Functional Classification Concepts, Criteria and Procedures, 2013

Table 3: Functional Classification Design Parameters

Roadway Classification	Lanes ¹	Bike Lanes ²	Max ROW ³	Max Paved Width ³
Principal Arterials & Arterials ^{4,5}	7	Yes	122 Feet	98 Feet
	5	Yes	98 Feet	74 Feet
	3	Yes	90 Feet	50 Feet
	2	Yes	90 Feet	48 Feet
Collectors ^{3,4}	5	Yes	98 Feet	74 Feet
	3	Yes	74 Feet	50 Feet
	2	Yes	74 Feet	50 Feet
Special Area Collectors ⁵	3	Yes	52 Feet	46 Feet
	2	Yes	40 Feet	34 Feet
Neighborhood Routes	2	No	60 Feet	36 Feet
Special Area Neighborhood Routes ⁵	2	No*	44 Feet	38 Feet
Commercial/Industrial	4	No	70 Feet	50 Feet
	3	Yes	64 Feet	50 Feet
	2	No	64 Feet	34 Feet
Special Area Commercial Streets ⁵	4	No*	70 Feet	64 Feet
	3	No*	58 Feet	52 Feet
	2	No*	46 Feet	40 Feet
Locals	24' Travel Way	No	60 Feet	32 Feet
Special Area Local Streets ⁵	16' Travel Way	No	38 Feet	32 Feet

*While these facilities do not include bike lanes, they do include wide travel lanes of 14 feet due to constrained right-of-way width – see Footnotes 2 and 5.

Footnotes:

1. The maximum number of travel lanes that can be built without a plan amendment is identified on the “Road Lane Numbers” Map except for roads allowed to be built as provided by the Community Development Code (CDC). This plan-level decision establishes the transportation system capacity necessary to adequately serve future travel demand identified in the TSP. The number of lanes required to accommodate turning movements at intersections and interchanges will be determined through traffic analysis conducted during the transportation project development process. This project-level decision identifies physical improvements necessary at or near intersections and interchanges to safely and efficiently move toward attaining the system capacity identified in the TSP. Improvements may include turn lanes and auxiliary lanes adjoining the traveled roadway to accommodate weaving, merging, speed changes or other purposes supplementary to through traffic movement. Auxiliary lanes to address spot area capacity and safety needs may extend between intersections (including interchanges) and beyond an intersection. Opportunities for public participation are available as provided by the CDC.

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2. Bikeways or bicycle lanes are required on all urban Collectors and Arterials, including Special Area Collectors. A six-foot wide, striped and stenciled bike lanes or other appropriate bicycle treatments shall be constructed along these facilities except where special constraints exist, as determined by the County Engineer. In those areas, five-foot wide bike lanes, 14-foot wide outside travel lanes or other appropriate facilities may be used and transitioned back to the appropriate bicycle facility when the constraint ends. The Bicycle Facility Design Toolkit should be referenced during the design of urban Collectors and Arterials. Outside of the UGB, refer to the Bicycle System Map and the Rural Roadway Enhancement Study Corridors Map to determine which facilities are intended to have bikeways. ~~These Rural bikeways may be a minimum of six-foot wide paved shoulders.~~

3. Minimum right-of-way and maximum paved widths identified here are, as a rule, the maximum that can be built on roadway segments without an amendment to the TSP. However, plan amendments will not be required when it is determined by the County Engineer during the project development or development review processes that these maximums should be exceeded. The reasons to exceed the maximums may include accommodation or topography or other project-level refinements associated with safety and/or wider than standard pedestrian facilities bus pullouts; on-street parking; project impact mitigation measures; and intersection, interchange or other project features identified as necessary for safe, efficient operation of the planned transportation system. All intersections along Arterials and Collectors shall be planned to include right-of-way necessary for turn lanes within ~~500~~1,000-feet of intersections based on a 20-year analysis of intersection needs. Actual right-of-way requirements may be less than the maximums specified in the table based on roadway characteristics and surrounding land uses, as determined by the County Engineer. On two and three lane urban Collectors, right-of-way may be reduced to 60 feet and maximum paved width may be reduced to 36 feet through the land development or project development processes. Such a determination can be made when there is a finding that a turn lane is reasonably unlikely to be needed based on anticipated future development and traffic analysis, and after consideration of other related transportation facilities including storm water quality facilities. Acquiring adequate right-of-way is important to avoid unnecessary and costly future improvement impacts. In all circumstances, Arterial, Collector and Neighborhood roadways right-of-way shall be no less than the roadway width (curb to curb or back of shoulder to back of shoulder) plus 24 feet. In rural areas, the maximum right-of-way for Collectors shall be 60-feet. Article VII of the CDC identifies land use standards, public notice and involvement provisions and appeal opportunities that are provided in the land use permitting process.

4. On those ~~Arterials and Collectors roadways~~ roadways designated on the 'Regional Street Design Overlay Pedestrian: System Map as 'Boulevards' Pedestrian Parkway', 'Streetscape Overlay', 'Boulevard Intersections' or 'Streets', or located within identified 'Pedestrian Districts' on the Pedestrian System map, sidewalks widths and other design features such as planter areas and crosswalks ~~shall~~ should be determined based on the Washington County Pedestrian Enhancements Design Guidelines and/or applicable standards in the Community Plans and/or the CDC, as determined by the County Engineer and based on engineering review as appropriate. On those ~~Arterials and Collectors roadways~~ roadways designated on the Bicycle System Map as 'Enhanced Major Street Bikeway', buffered bike lanes and other bicycle treatments shall be determined based on the ~~bicycle toolkit~~ Bicycle Facility Design Toolkit and/or other applicable standards in the Community Plans and/or CDC, as determined by the County Engineer.

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5. 'Special Area' streets (Collector, Neighborhood, Commercial or Local classifications) are shown on the 'Special Area Street Overlay' maps. Special Area Local Streets may also be designated in the appropriate Community Plans and/or by the CDC. Additional Special Area Neighborhood Routes and Special Area Local Streets may be designated using the development review process. Special Area Street designs will be determined via the development review process. While Special Area Commercial Streets do not include striped bicycle lanes, they shall include wide travel lanes of 14 feet to accommodate bicycle use. For Special Area Collectors, in addition to the right-of-way, a nine-foot minimum utility/sidewalk easement shall be dedicated on each side of the right-of-way. For Special Area Local streets, in addition to the right-of-way, a ten-foot minimum utility/sidewalk easement shall be dedicated on each side of the right-of-way. For Special Area Alleys, additional right-of-way may be required as part of development review. The right-of-way determination may include special consideration of other related transportation and water quality facilities, such as (but not limited to): low impact water quality treatment, parking, intersection bump outs, mid-block crossings and/or trail extensions.

4. Goal 7: Connectivity

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

Strategy 7.2.1 Within designated ~~Study Refinement Areas~~, require that development demonstrate how the development proposal shall either accomplish or not preclude the needs identified by the Refinement Area identified by the Study Area.

Strategy 7.2.2 Seek to identify the specific location, mode and/or function of the ~~Arterial or Collector connections~~ within Study Refinement Areas, and amend the appropriate maps and to remove the study refinement area designation as funding and resources allow.

5. Goal 8: Active Transportation

Active transportation refers to human-powered travel, including walking and bicycling. Public transit is also a component of active transportation because accessing transit stops usually involves walking or bicycling. Widespread use of the term began ~~in the first decade of the 21st century~~ as transportation policy placed increased emphasis on non-automobile modes and as the links between human health and transportation planning became more evident.

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

- **Environmental stewardship and energy sustainability** Replacing gasoline-powered automobile trips with active trips reduces the emission of greenhouse gases, air toxins and particulates, helping to maintain air quality and address energy sustainability.
- **Congestion alleviation** People who walk, bike and use transit reduce the number of motor vehicles vying for space on roadways and in parking lots. The active mode share for commuting from Washington County is currently estimated to be about 11% for work-related trips.² Reduced congestion improves air quality, livability and economic vitality.
- **Health** “Obesity is one of the biggest public health challenges the country has ever faced.”³ The conditions in which we live explain in part why some Americans are healthier than others and why Americans are generally not as healthy as they could be. The social determinates of health include five key areas: Economic Stability, Education, Social and Community Context, Health Care and the Neighborhood and Built Environment. The TSP sets the framework for future decisions about the Neighborhood and Built Environment component. Due to the connection to public health and healthy outcomes, it is necessary that public health and active lifestyles are considered as we make these choices. The transportation system is necessary to provide access to health care and emergency services. Furthermore the transportation system provides the environment for an active lifestyle. Infrastructure that enhances pedestrian, bicycle and transit networks also enhances opportunities for physical activity within our communities. This may in turn help address obesity and other public health related issues.
- **Safety** As walking and bicycling trips increase, so does the relative safety of those modes. In Portland, for example, the bicycle crash rate (reported crashes normalized by counted bicycle trips) has shown a general downward trend in the past decade, even as daily bicycle trips have more than doubled.⁴ This can be partly attributed to increased attentiveness on the part of motorists as they see more bicyclists on the road. The same trend applies to pedestrian safety.
- **Efficient travel** For many trips, active transportation choices are the most sensible and efficient mode. For very short trips, such as a quarter-mile trip to a convenience store, walking can be the best choice. Trips in the one to five mile range are often ideal for bicycling.
- **Cost savings and social equity** Some people in Washington County and ~~nationwide~~ region-wide cannot afford to or choose not to own or operate a private vehicle. For those who need or want to reduce their transportation costs, active transportation is a common solution.

² American Community Survey 2010 One-Year Estimates, U.S. Census Bureau, 2011.

³ *F as in Fat: How Obesity Threatens America's Future 2010*, a report from the Trust for America's Health.

⁴ 2011 Bicycle Counts Report, Portland Bureau of Transportation, 2012.

- **Attractive, efficient urban form** The popularity of neighborhoods designed around a higher density urban form with active transportation facilities shows this type of community is increasingly desirable. From the historic, tree-lined streets of Forest Grove to the rapidly growing Orenco Station neighborhood, active transportation facilities like sidewalks, bike lanes and frequent transit are drawing residents and businesses. Walkable neighborhoods tend to be compact, using urban land efficiently and helping to meet other land use policies such as agricultural preservation.

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

- Strategy 8.1.1 Prioritize public active transportation projects that are effective at improving connectivity, filling gaps, expanding coverage of the active transportation network and positively influencing walk/bike/transit mode shares.
- Strategy 8.1.2 Early in the project development process, solicit and consider input from active transportation advocates to help optimize the design of pedestrian, bicycle and access-to-transit projects.
- Strategy 8.1.3 On existing substandard streets where the construction of full street improvements is not practicable within the foreseeable future, consider the construction of interim pedestrian and bicycle facilities, as available public funding allows.
- Strategy 8.1.4 Require new development to provide multi-modal complete street connections as defined in the CDC.

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

- Strategy 8.2.1 Prioritize pedestrian projects that are technically and financially feasible and that also improve connectivity, fill gaps, and/or provide safe routes to schools, community facilities, commercial areas, transit stops or essential destinations.
- Strategy 8.2.2 Prioritize pedestrian projects based on need; factors to consider may include: safety, density (residential and employment), access to essential destinations and transit and environmental justice factors, among others.
- Strategy 8.2.3 Inside the Urban Growth Boundary, require that sidewalks are constructed along new or improved streets and along street frontages of new developments.

- Strategy 8.2.4 Facilitate safe, convenient and comfortable pedestrian facilities through the provision of pedestrian scale amenities as deemed appropriate and in compliance with applicable regulations.
- Strategy 8.2.5 Consider enhanced pedestrian crossings treatments at intersections and at other appropriate locations including school zones, commercial areas, ~~major~~ transit stops, trail crossings, Pedestrian Districts and warranted mid-block locations, using county-approved crossing treatments.
- Strategy 8.2.6 In rural pedestrian activity areas, which includes recreational trail crossings, consider improvements that enhance pedestrian safety.
- Strategy 8.2.7 On roadways designated on the Pedestrian System Map as 'Pedestrian Parkway' and/or 'Streetscape Overlay' and on roadways within identified Pedestrian Districts, enhanced pedestrian facility designs shall be considered based on applicable standards, land use context and physical constraints.

Objective 8.3 Expand and improve the quality of bicycling infrastructure.

- Strategy 8.3.1 Refer to the guidelines set forth in the Washington County Bicycle Facility Design Toolkit when designing new or reconstructed urban and rural Principal Arterials (except for freeways), Arterials and Collectors, and implement treatments as deemed appropriate.
- Strategy 8.3.2 Develop a system of neighborhood bikeways on appropriate low-volume streets (as defined in the Neighborhood Bikeways Plan) to supplement the system of bicycle lanes and paved shoulders on major streets.
- ~~Strategy 8.3.3 Designate a functional classification of bikeway travel, including a preferred bikeway network, considering the following criteria for defining or modifying the classification:~~
- ~~A) Expected amount, type and characteristics of bicycle use.~~
 - ~~B) Population density of surrounding community.~~
 - ~~C) Average daily vehicle traffic.~~
 - ~~D) Posted travel speed.~~
 - ~~E) Topography.~~
 - ~~F) Road network density.~~
 - ~~G) Land use mix.~~
- Strategy 8.3.3 On those Arterials and Collectors designated on the Bicycle System Map as 'Enhanced Major Street Bikeway' buffered bike lanes and other bicycle treatments shall be considered based on the Bicycle Facility Design Toolkit and/or other applicable standards.

- Strategy 8.3.4 Maintain and periodically revisit bicycle parking requirements in the CDC for applicable new development.
- Strategy 8.3.5 Coordinate the development of the bikeway system with other local and regional agencies and integrate it with the delivery of other transportation services.
- Strategy 8.3.6 Consider developing a rural road bicycle safety study that proposes solutions and strategies to increase the safety of recreational and utilitarian cycling in the rural area. Implement recommendations as appropriate.

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

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

6. Glossary

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

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

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

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

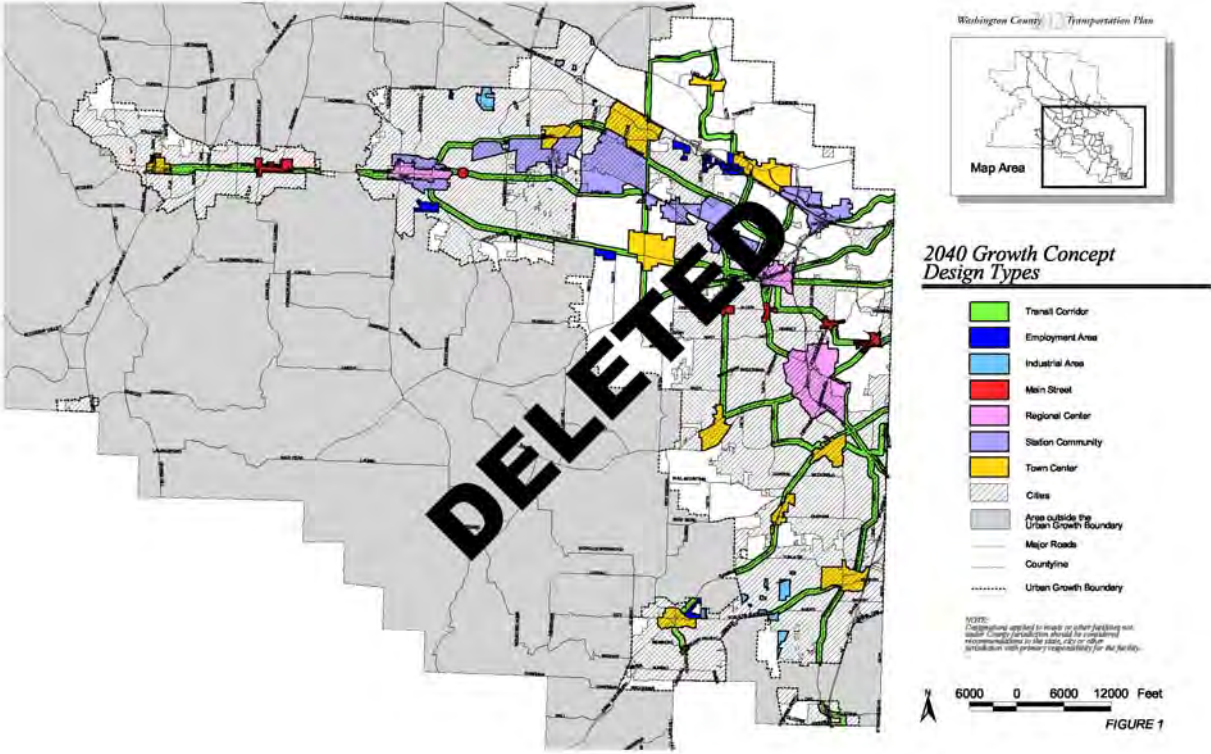
Place-Making Amenities – Features intended to improve the quality of public spaces by creating active, unique, interesting and/or visually attractive locations. Such features may include public art, plazas, ornamental lighting, banners, seating areas, wayfinding signage, transit shelters and/or bicycle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

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

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

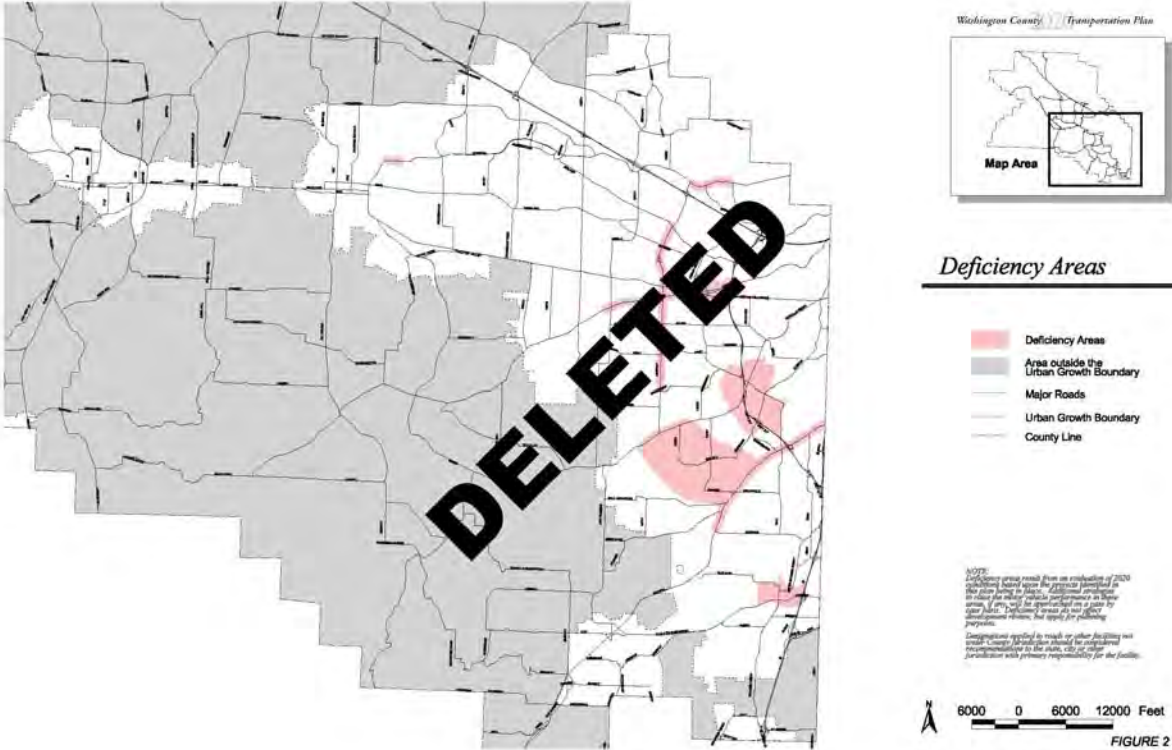
Study Area – In general, study areas relate to facilities or areas for which further study is required to determine specifically how an identified need should be met. In these cases the function, proposed alignment, or other specific solution has yet to be identified. Additional analysis will need to occur before solutions to the identified traffic problems can be addressed. The purpose of each study area is defined in the study area descriptions in the modal plans.

The following map is deleted from the Washington County Transportation Plan:

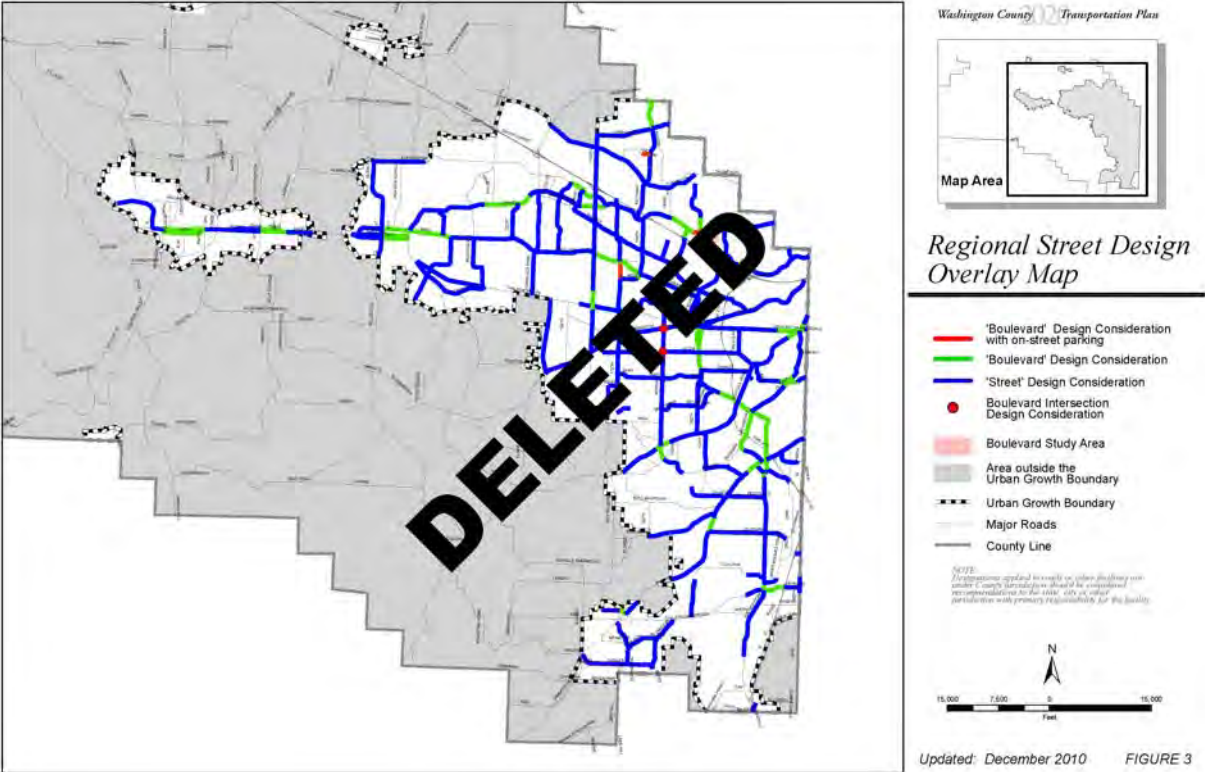


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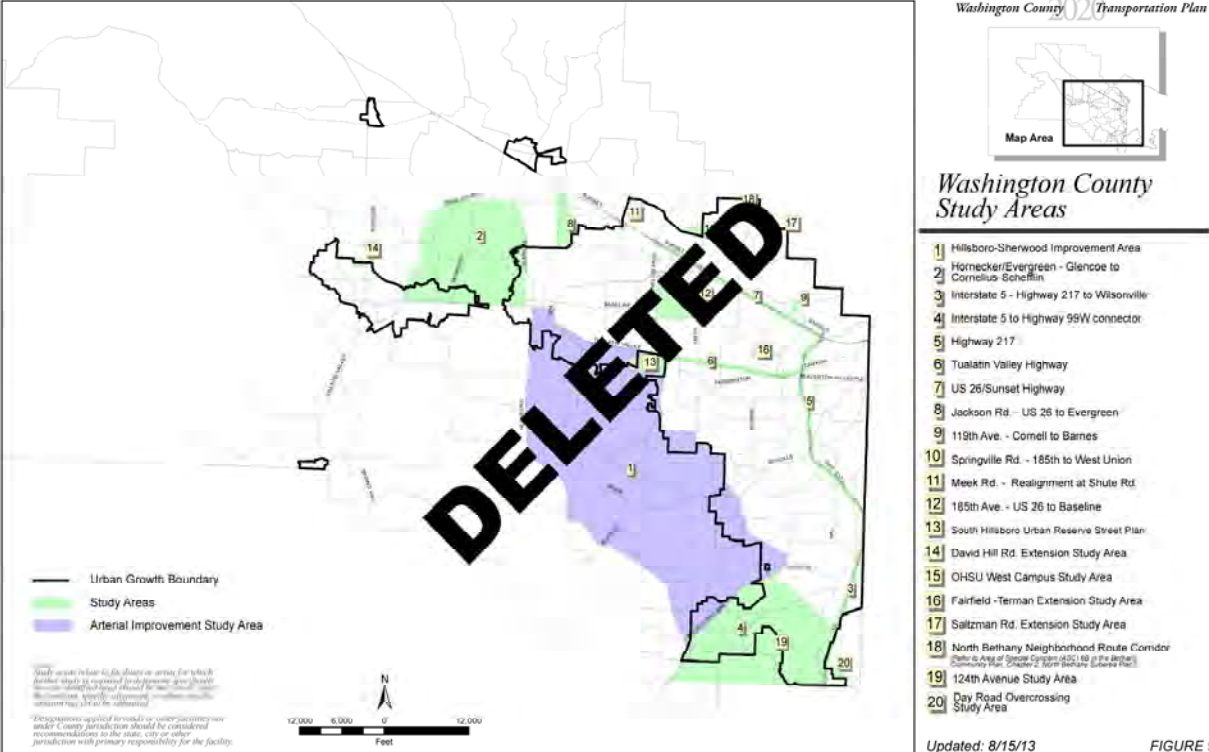


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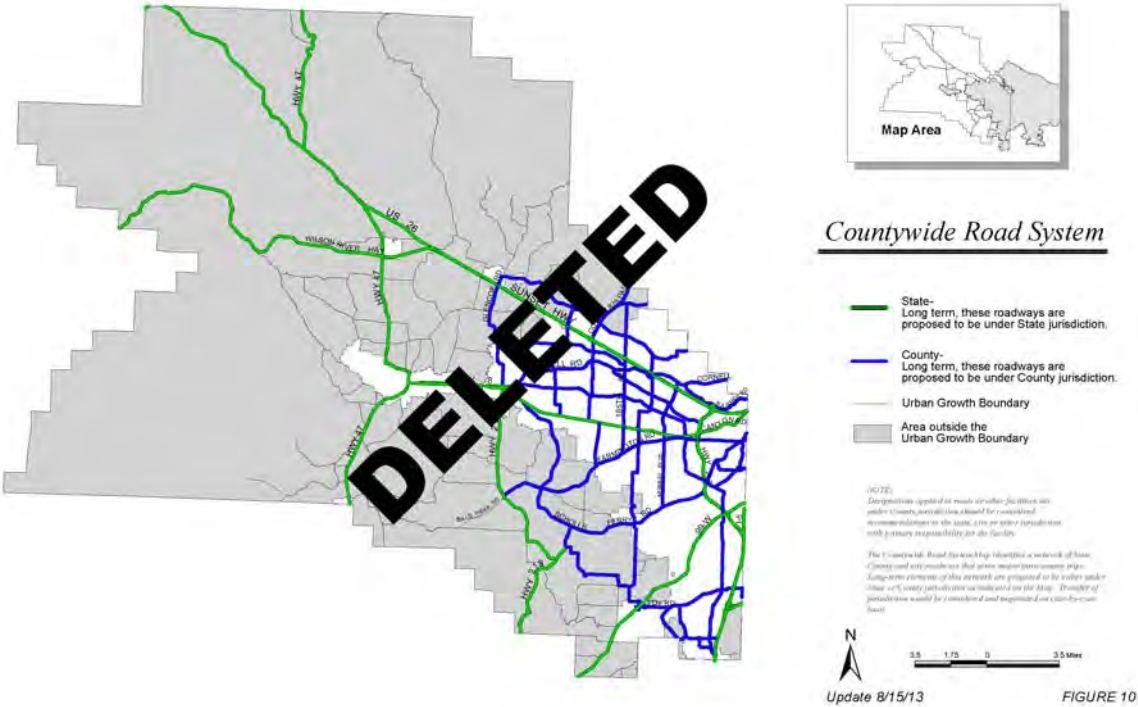


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The following map is deleted from the Washington County Transportation Plan:



The following map is deleted from the Washington County Transportation Plan:



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Sections of the Community Development Code are amended to reflect the following:

1. SECTION 300 - INTRODUCTION (Article III - Land Use Districts)

300-1 Intent and Purpose

300-1.4 Transportation System Plan

- A. ~~Policies 6, 7, 8, 10, 12, 14, 15, 22, and 23,~~ Goals 1 through 11 including their implementing objectives and strategies;
- B. The Functional Classification System Map;
- C. The Lane Numbers Map;
- D. The Special Area Streets Overlay Maps
- ~~E. The Regional Street Design Overlay Map~~
- EF. The Transit System Map;
- ~~FG.~~ The Pedestrian System Maps
- ~~H. The Off-Street Trail System Maps~~
- G. The ~~Planned~~-Bicycle System Map

2. SECTION 385 - PRIVATE USE AIRPORT OVERLAY DISTRICT

385-5 Uses Which May be Permitted Through a Type III Procedure

- A. The use is or will be supported by adequate types and levels of facilities and services and transportation systems consistent with the County’s adopted and acknowledged 2020-Transportation System Plan;

3. SECTION 390 - NORTH BETHANY SUBAREA OVERLAY DISTRICT

390-22 Additional North Bethany Subarea Development Standards

390-22.3 Neighborhood Circulation

In addition to the requirements of Section 408, the following standards apply:

- A. Streets

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- (1) Streets shall be public and designed according to the specific street cross-section type in the North Bethany Subarea Plan (or the County's 2020 Transportation System Plan functional classification, or in both).

4. SECTION 401 - INTRODUCTION (Article IV - Development Standards)

401-4 The Transportation System Plan

- 401-4.1 ~~Goals 1 through 11~~ Policies 6, 7, 8, 10, 12, 14, 15, 22 and 23, including their implementing objectives and strategies;
- 401-4.2 The Functional Classification System Map;
- 401-4.3 The Lane Numbers Map;
- 401-4.4 The Special Area Streets Overlay Maps;
- ~~401-4.5 The Regional Street Design Overlay Map;~~
- 401-4.~~5~~6 The Transit System Map;
- 401-4.7 The ~~Planned~~ Bicycle System Map; and
- 401-4.8 The Pedestrian System Maps; and
- ~~401-4.9 The Off-Street Trail System Maps.~~

5. SECTION 430 - SPECIAL USE STANDARDS

430-74 Living History Museum in the EFU and AF-20 Districts

- 430-74.2 In addition to the requirements of Section 501-9, an application for a living history museum shall include a transportation/traffic impact analysis which demonstrates the following. The analysis shall be prepared and certified by a traffic or civil engineer registered in the state of Oregon.
 - A. Consistency with the following standards based upon existing and planned conditions (planning horizon of the applicable transportation plan or functional plan):
 - (1) Washington County's functional classification system as shown on the Functional Classification Map ~~policy (Policy 10)~~ of the Transportation System Plan;
 - (2) Washington County's level of service standard, as defined by Section 501-8.8 I.; and

- (3) The Oregon Department of Transportation (ODOT) functional plans, including The Oregon Highway Plan and the Oregon Transportation Plan.

6. SECTION 431 - TRANSIT ORIENTED DESIGN PRINCIPLES, STANDARDS AND GUIDELINES

431-5 Streetscapes for Pedestrians

431-5.1 Streetscapes - Transit Oriented Districts

B. Standards:

- (4) Minimum sidewalk widths in Transit Oriented Districts shall be the widest identified by the Washington County Road Design and Construction Standards for the adjacent Special Area Street (as shown in the 2020 Transportation System Plan, ~~Figures 6 through 8~~), except for Special Area Commercial Streets. Special Area Commercial Streets shall have sidewalks that are a minimum of twelve (12) feet in width. On arterials within or adjacent to Transit Oriented Districts and which are designated as 'Streetscape Overlay' 'Boulevards' on the Pedestrian System Regional Street Design Overlay Map in the 2020 Transportation System Plan, the minimum sidewalk width shall be twelve (12) feet (~~see Technical Appendix B-8 of the 2020 Transportation Plan for typical roadway cross-sections~~).

7. SECTION 501 - PUBLIC FACILITY AND SERVICE REQUIREMENTS (Article V)

501-8 Standards for Development

501-8.2 Essential Services

- J. When a development site includes frontage on a roadway that is identified as a 'Pedestrian Parkway' 'Boulevard' or 'Streetscape Overlay' on the Pedestrian System Regional Street Design Overlay Map in the Transportation System Plan, the Director shall determine if additional right-of-way, set backs, easements or right-of-way reservations are required so that implementation of Pedestrian System designations ~~Regional Street Design Guidelines~~ will not be precluded.

8. SECTION 601 - LAND DIVISION AND PROPERTY LINE ADJUSTMENTS (Article VI)

601-2 Applicability

601-2.3

D. The Transportation System Plan

- (1) ~~Policies 6, 7, 8, 10, 12, 14, 15, 22, and 23~~ Goals 2, 3, 4, 5, 6, 7, 8, 9 and 11, including their implementing objectives and strategies;
- (2) The Functional Classification System Map;
- (3) The Lane Numbers Map;
- (4) The Special Area Streets Overlay Map;
- ~~(5) The Regional Street Design Overlay Map;~~
- ~~(6)~~ 5) The Transit System Map;
- ~~(7)~~ 6) The ~~Planned~~ Bicycle System Map; and
- ~~(8)~~ 7) The Pedestrian System Maps; and
- ~~(9) The Off-Street Trail System Maps.~~

9. SECTION 712 - PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES (*Article VII - Intent and Purpose*)

712-4 For ultimate capital improvements on ~~facilities designated to accommodate bikeways~~ Arterials or Collectors as identified on the ~~Planned Bicycle Functional Classification~~ System Map in the Transportation System Plan, bikeways shall be constructed consistent with the Bicycle Element of the Transportation System Plan. Bikeways include striped and stenciled lanes, five (5) to six (6) feet in width, buffered bike lanes, cycle tracks, paved shoulders at least four (4) feet in width and or fourteen (14) foot wide outside travel lanes in areas where constraints limit roadway width; these fourteen (14) foot wide shared, outside travel lanes shall transition to either paved shoulders or bikeways when the constraint ends.

712-5 For those road construction or reconstruction projects located within Pedestrian Districts or along 'Pedestrian Parkways' or 'Streetscape Improvement Areas Overlay' identified in the Pedestrian Element of the ~~2020~~ Transportation System Plan, pedestrian enhancements such as those amenities described in the County's Pedestrian Enhancements Design Guideline Booklet shall be considered as part of the project development process.

712-6 For interim capital improvements on roadways identified ~~for bikeways as Arterials or Collectors~~ on the Planned Bicycle Functional Classification System Map in the Transportation System Plan, a minimum of a five (5) foot paved shoulder for each outside travel lane shall be provided.

10. SECTION 714 - ADDITIONAL STANDARDS FOR CATEGORY A, B AND C PROJECTS

714-3 On those roadways that are designated as 'Pedestrian Parkways' ~~'Boulevard Intersections'~~, ~~'Boulevards'~~ or 'Streetscape Overlay' on the ~~Regional Street Design Overlay Pedestrian System Map~~ in the Transportation System Plan, consider the street design characteristics set forth in the Regional Transportation Plan and Metro's publication entitled 'Creating Livable Streets – Street Design Guidelines for 2040' during development review and project development, when construction or reconstruction is proposed.

714-4 For those roadway construction or reconstruction projects located within Pedestrian Districts or along 'Pedestrian Parkways' or 'Streetscape Overlay' Improvement Areas identified in the Pedestrian Element of the ~~2020~~ Transportation System Plan, pedestrian enhancements such as those described in the county's Pedestrian Enhancements Design Guideline Booklet shall be considered as part of the project development process.

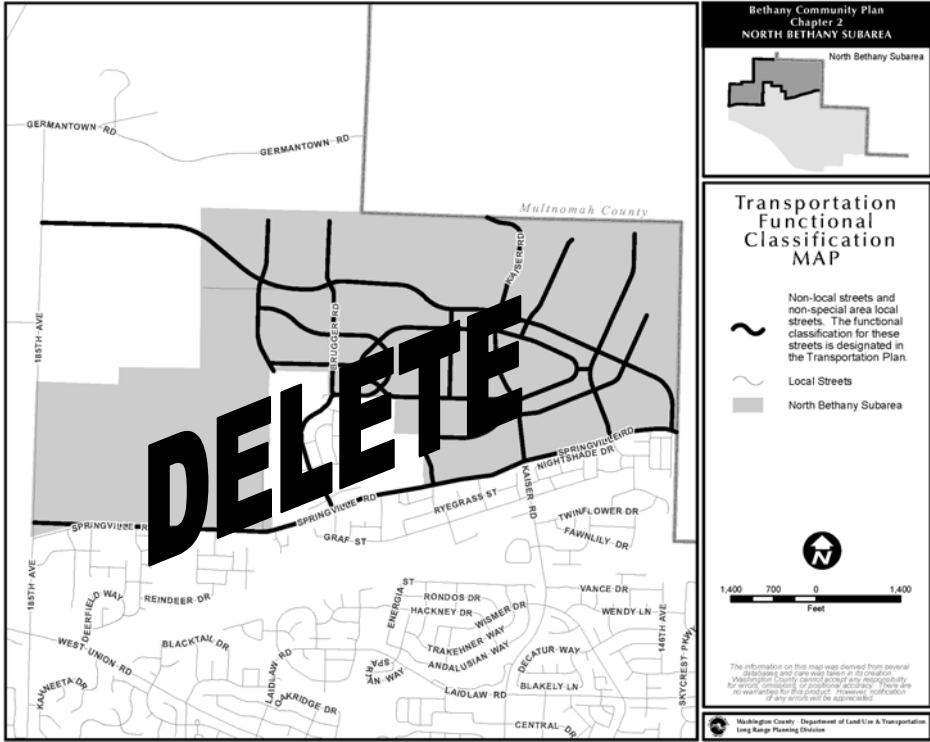
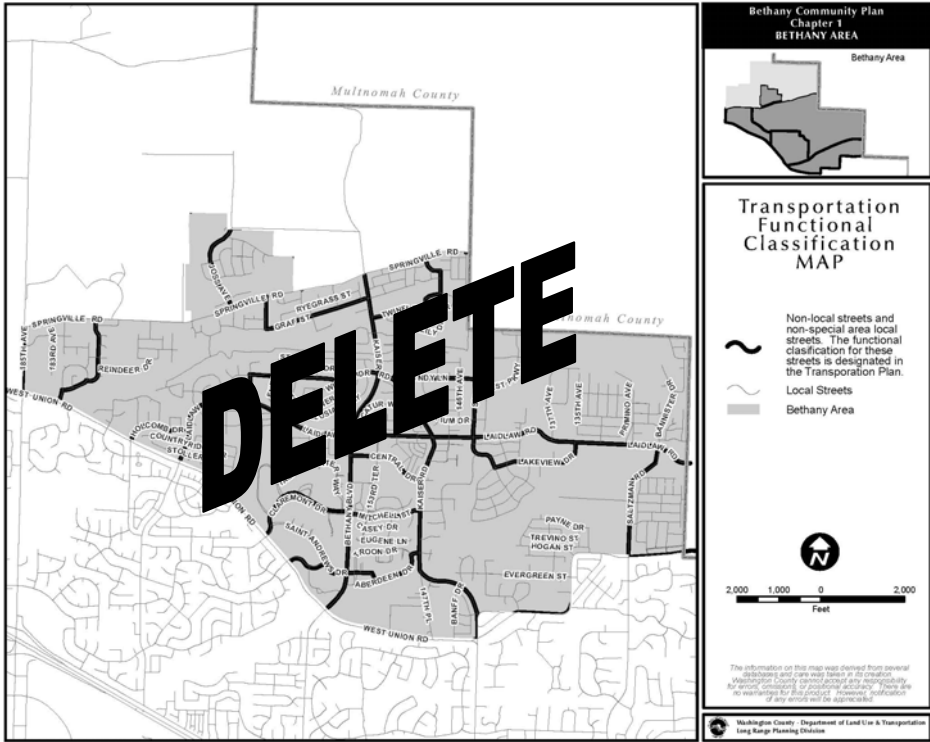
The following maps are to be deleted from the following Community Plan documents of the Washington County Comprehensive Plan:

Aloha, Reedville, Cooper Mountain Community Plan



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Bethany Community Plan



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~~abc~~~~def~~ Proposed deletions

Bull Mountain Community Plan



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Cedar Hills-Cedar Mill Community Plan



- Community Plan Boundary
- Local Street
- Non-local streets and non-special area local streets. The transportation functional classification for these streets and roads is designated in the Transportation Plan.

Transportation Functional Classification Map






Cedar Hills-Cedar Mill Community Plan
August 26, 2014

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East Hillsboro Community Plan



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-  Community Plan Boundary
-  Local Street
-  Non-local streets and non-special /area local streets.
The transportation functional classification for these streets and roads is designated in the Transportation Plan.


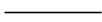

Transportation Functional Classification Map



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Metzger-Progress Community Plan



 Community Plan Boundary
 Local Street
 Non-local streets and non-special area local streets. The transportation functional classification for these streets and roads is designated in the Transportation Plan.

Transportation Functional Classification Map






Metzger-Progress Community Plan
A-Engrossed Ordinance No. 783
August 26, 2014
Page 6 of 10

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Raleigh Hills-Garden Home Community Plan



 Community Plan Boundary
 Local Street
 Non-local streets and non-special area local streets.
The transportation functional classification for these streets and roads is designated in the Transportation Plan.

Transportation Functional Classification Map






RAYLEIGH HILLS-GARDEN HOME COMMUNITY PLAN
DATE: 08/26/14

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Sherwood Community Plan



-  Community Plan Boundary
-  Local Street
-  Non-local streets and non-special area local streets. The transportation functional classification for these streets and roads is designated in the Transportation Plan.

Transportation Functional Classification Map



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AGENDA

WASHINGTON COUNTY BOARD OF COMMISSIONERS

Agenda Category: Action – Land Use & Transportation (CPO All)

Agenda Title: ADOPT FINDINGS FOR A-ENGROSSED ORDINANCE NO. 783

Presented by: Andrew Singelakis, Director of Land Use & Transportation

SUMMARY:

A-Engrossed Ordinance No. 783 amends the Washington County Transportation System Plan (TSP). The ordinance makes significant changes to the TSP by incorporating amendments to system plan elements and maps. A-Engrossed Ordinance No. 783 is posted on the county's land use ordinance web page at the following link:

<http://www.co.washington.or.us/LUT/Divisions/LongRangePlanning/2014-land-use-ordinances.cfm>

As required by ORS 197.615, post acknowledgment comprehensive plan amendments (e.g., amendments made to the County's Comprehensive Plan after it was acknowledged by the State Department of Land Conservation and Development as complying with the Statewide Planning Goals) must be accompanied by findings setting forth the facts and analysis showing that the amendments are consistent with the applicable Statewide Planning Goals, Oregon Revised Statutes, State Administrative Rules and the applicable provisions of Washington County's Comprehensive Plan. Additionally, as required by Title 8 of Metro's Urban Growth Management Functional Plan, any amendment to a comprehensive plan or implementing ordinance shall be consistent with the requirements of the Functional Plan.

Attached is the Resolution and Order to adopt the findings for A-Engrossed Ordinance No. 783. Prior to October 7, 2014 the proposed findings will be provided to the Board, posted on the above land use web page, and will also be available at the Clerk's desk.

Attachment: Resolution and Order

Clerk's Desk Item: Ordinance Findings (*click to access electronic copy*)

DEPARTMENT'S REQUESTED ACTION:

Adopt the findings for A-Engrossed Ordinance No. 783 and authorize the Chair to sign the Resolution and Order memorializing the action.

COUNTY ADMINISTRATOR'S RECOMMENDATION:

I concur with the requested action.

RO 14-109

Agenda Item No.	<u>6.a.</u>
Date:	10/07/14

1 IN THE BOARD OF COUNTY COMMISSIONERS

2 FOR WASHINGTON COUNTY, OREGON

3 In the Matter of Adopting) RESOLUTION AND ORDER
4 Legislative Findings in Support)
of A-Engrossed Ordinance No. 783) No. 14-109

5 This matter having come before the Washington County Board of Commissioners at its
6 meeting of October 7, 2014; and

7 It appearing to the Board that the findings contained in Exhibit "A" summarize relevant facts
8 and rationales with regard to compliance with the Statewide Planning Goals, Oregon Revised
9 Statutes and Administrative Rules, Washington County's Comprehensive Plan, and titles of Metro's
10 Urban Growth Management Functional Plan relating to A-Engrossed Ordinance No. 783; and

11 It appearing to the Board that the findings attached as Exhibit "A" constitute appropriate
12 legislative findings with respect to the adopted ordinance; and

13 It appearing to the Board that the Planning Commission, at the conclusion of its public hearing
14 on July 2, 2014, made a recommendation to the Board, which is in the record and has been reviewed
15 by the Board; and

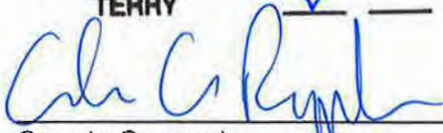
16 It appearing to the Board that, in the course of its deliberations, the Board has considered the
17 record which consists of all notices, testimony, staff reports, and correspondence from interested
18 parties, together with a record of the Planning Commission's proceedings, and other items submitted
19 to the Planning Commission and Board regarding this ordinance; it is therefore,

20 RESOLVED AND ORDERED that the attached findings in Exhibit "A" in support of
21 A-Engrossed Ordinance No. 783 are hereby adopted.


22 DATED this 7th day of October, 2014.

	AYE	NAY	ABSENT
23 DUYCK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24 SCHOUTEN	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
25 MALINOWSKI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ROGERS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26 TERRY	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPROVED AS TO FORM:

27 
County Counsel
For Washington County, Oregon

BOARD OF COUNTY COMMISSIONERS
FOR WASHINGTON COUNTY, OREGON


Chairman

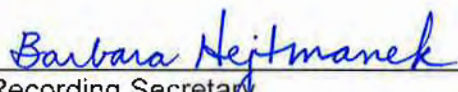

Recording Secretary

EXHIBIT A

FINDINGS FOR A-ENGROSSED ORDINANCE NO. 783 AN ORDINANCE AMENDING THE TRANSPORTATION ELEMENTS OF THE COMPREHENSIVE PLAN October 7, 2014

Part 1 – General Findings

Part 2 – Statewide Planning Goal Findings

Part 3 – Oregon Highway Plan Findings

Part 4 – Metro’s Urban Growth Management Functional Plan Findings

Part 1

GENERAL FINDINGS

A-Engrossed Ordinance No. 783 amends the Transportation Element of the Comprehensive Plan. The ordinance makes significant changes to the TSP, modifying and updating all transportation system elements.

Key Ordinance Provisions

- 1) Update all Transportation System Elements based on the policy framework adopted in 2013 by Ordinance No. 768.
- 2) Make minor revisions and clarifications to the transportation policy framework adopted in Ordinance A-Engrossed Ordinance 768 in 2013.
- 3) Make minor changes to the Community Development Code (CDC) to reference the correct name and terminology used in the proposed TSP.
- 4) Remove Transportation Functional Classification maps from all community plans; these have been superseded by the Functional Classification map in the TSP.

A-Engrossed Ordinance No. 783:

- Incorporates map and system plan amendments identified through countywide system evaluation, including recent planning efforts and public outreach.
- Updates the Roadway Element and amends the Functional Classification map, the Lane Numbers map, makes minor revisions to the Special Area Streets maps, incorporates the Long Term Roadway Jurisdiction map and Rural Road Enhancement Study Corridors map and identifies a number of refinement areas with maps and descriptive language.
- Updates the Freight Element with new descriptive language and an updated Roadway Freight map.
- Updates the Active Transportation Elements, including revised Pedestrian, Bicycle and Transit Elements; and provides new maps and descriptive language for each of these system elements.

- Updates the System Management and Funding Elements.
- Makes minor updates to the CDC to reference the correct name and terminology of the proposed TSP. No substantive changes to the CDC are included.
- Removes the Transportation Functional Classification maps from all community plans; these have been superseded by the Functional Classification map in the TSP.

Because the ordinance would make changes that do not affect compliance with Oregon’s Statewide Planning Goals (Goals), it is not necessary for these findings to address the Goals with respect to each amendment. The Board of County Commissioners (Board) finds that the Goals apply to amendments covered by these findings only to the extent noted in specific responses to individual applicable Goals, and that each amendment complies with the Goals. Goals 15 (Willamette River Greenway), 16 (Estuarine Resources), 17 (Coastal Wetlands), 18 (Beaches and Dunes) and 19 (Ocean Resources) and related Oregon Administrative Rules (OAR) are not addressed because these resources are not located within Washington County.

Part 2

STATEWIDE PLANNING GOAL FINDINGS

The purpose of the findings in this document is to demonstrate that A-Engrossed Ordinance No. 783 is consistent with Statewide Planning Goals (Goals), Oregon Revised Statutes (ORS) and Oregon Administrative Rules (OAR) requirements, Metro’s Urban Growth Management Functional Plan (UGMFP) and the Washington County Comprehensive Plan. The Washington County Comprehensive Plan was adopted to implement the aforementioned planning documents and was acknowledged by the State of Oregon. The county follows the post-acknowledgement plan amendment (PAPA) process to update the Comprehensive Plan with new state and regional regulations as necessary and relies in part upon these prior state review processes to demonstrate compliance with all necessary requirements. No Goal compliance issues were raised in the hearing proceedings described below. In addition, none of the proposed changes implicate a Goal compliance issue. The following findings are provided to demonstrate ongoing compliance.

Goal 1 - Citizen Involvement

Washington County has an acknowledged citizen involvement program that provides opportunities for citizens and other interested parties to participate in all phases of the planning process. In addition, Chapter X of the County Charter sets forth specific requirements for citizen involvement during review and adoption of land use ordinances. Washington County has utilized these requirements for the adoption of A-Engrossed Ordinance No. 783.

A-Engrossed Ordinance No. 783 was developed in consultation with staff from Metro, ODOT and the Cities and Special Districts of Washington County. An Interagency Coordinating Committee (ICC) was formed and met a total of nine times. The ICC committee was instrumental in guiding the development of A-Engrossed Ordinance No. 783. In addition to the ICC meetings, staff met individually with each of the ICC member agencies to discuss consistency between local plans and the county’s TSP.

Furthermore, an 18-member Community Advisory Committee (CAC) was appointed by the County Board of Commissioners to assist with the development of the TSP update. The CAC met fifteen times and was instrumental in guiding the development of A-Engrossed Ordinance No. 783. In addition to the CAC meetings, staff held a number of focus meetings with members of the CAC to discuss specific issues related to sub-areas of the county. In addition to the CAC, staff solicited input from a variety of community organizations, staffed farmers markets and attended community forums and citizen participation organization meetings. A summary of the Washington County TSP Public Involvement process is included in the record as an attachment to the staff report – dated August 5, 2014.

Washington County staff also made extensive efforts to engage disadvantaged populations during the development of the TSP. This included 2 briefings with Adalante Mujures, engagement at a number of farmers markets, and a statistically valid survey of Washington County residents.

Goal 2 - Land Use Planning

Statewide Planning Goal 2 addresses Land Use Planning by requiring an adequate factual base to support a decision as well as coordination with affected governmental entities. Washington County has an acknowledged land use planning process that provides for the review and update of the various elements of the Comprehensive Plan, which includes documents such as the Rural/Natural Resource Plan, Comprehensive Framework Plan for the Urban Area (CFP), Community Development Code (CDC), Transportation Plan, Community Plans and Urban Planning Area Agreements. Washington County utilized this process to adopt A-Engrossed Ordinance No. 783. Notice was coordinated with all affected governmental entities and no comments were received from these parties regarding the ordinance.

Goal 3 – Agricultural Lands

Policy 15, Implementing Strategies (a) and (f) of the Rural/Natural Resource Plan, includes provisions for the preservation of agricultural lands. Plan compliance with Goal 3 is maintained with the amendments made to the county's Transportation System Plan by A-Engrossed Ordinance No. 783 by providing a transportation element of the comprehensive plan that will allow the preservation of the county's resource lands. The amendments are consistent with Goal 3; OAR Chapter 660, Division 33; and the county's acknowledged policies for preservation of farmland.

Goal 4 – Forestlands

Policy 16 of the Rural/Natural Resource Plan includes provisions for the preservation of forest lands. Plan compliance with Goal 4 is maintained with the amendments made to the county's Transportation System Plan by A-Engrossed Ordinance No. 783. Amendments made by A-Engrossed Ordinance No. 783 are consistent with Goal 4; OAR Chapter 660, Division 06; and the county's acknowledged policies for preservation of forest lands.

Goal 5 – Natural Resources, Scenic and Historic Areas and Open Spaces

Goal 5 addresses the protection of natural resources and the conservation of scenic, cultural, and historic areas and open spaces by requiring local programs to protect these resources in order to promote a healthy environment and natural landscape that contributes to Oregon’s livability for present and future generations. Policies 10, 11 and 12 of the CFP, Policies 7, 9, 10, 11, 12 and 13 of the Rural/Natural Resource Plan and various sections of the Community Plans and the CDC include provisions for the protection of Goal 5 resources.

A-Engrossed Ordinance No. 783 did not amend any of the Goal 5 significant designations. The amendments made by A-Engrossed Ordinance No. 783 are consistent with the county’s acknowledged policies and standards for the protection of Goal 5 resources as well as those set forth in OAR 660 Division 23.

A-Engrossed Ordinance No. 783 does not amend other Comprehensive Plan policies or development regulations that would affect existing policies and standards applicable to natural resources. Plan compliance with Goal 5 is maintained with the amendments made by A-Engrossed Ordinance No. 783. The amendments are consistent with the county’s acknowledged policies and standards for the protection of Goal 5 resources.

Goal 6 - Air, Water and Land Resources Quality

Goal 6 requires the maintenance and improvement of the quality of the air, water and land resources of the state through the implementation of local plans that address waste and process discharge. Policies 4, 5, 6 and 7 in the CFP and Policies 4, 5, 6 and 7 of the Rural/Natural Resource Plan provide for the maintenance and improvement of the quality of air, water and land resources.

A-Engrossed Ordinance No. 783 does not amend the applicable Plan policies or CDC standards related to air, water or land resources, which impact the county’s compliance with Goal 6. A-Engrossed Ordinance No. 738 did not amend any provisions regarding Community Plan and CDC protections to significant wetlands, air quality or land resource quality. Plan compliance with Goal 6 is maintained with the amendments made by A-Engrossed Ordinance No. 783. The amendments are consistent with the county’s acknowledged policies and standards for the protection of Goal 6 resources.

Goal 8 - Recreational Needs

Goal 8 requires local jurisdictions to satisfy the recreational needs of citizens and visitors by planning and providing for necessary recreational facilities. Policies 33, 34 and 35 of the CFP, Policy 24 of the Rural/Natural Resource Plan and the individual Community Plans address the recreational needs of the residents of and visitors to Washington County.

A-Engrossed Ordinance No. 783 did not amend any Plan policies or development regulations related to parks. Plan compliance with Goal 8 is maintained with the amendments made by A-Engrossed Ordinance No. 783. The amendments are consistent with the county’s acknowledged policies and strategies for satisfying recreational needs as required by Goal 8.

Goal 9 – Economic Development

Goal 9 requires the provision of adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare and prosperity of citizens. Policy 20 in the CFP and Policies 15, 16, 20 and 21 in the Rural/Natural Resource Plan set out the county's policies to strengthen the local economy. The CDC contributes to a sound economy by providing standards that facilitate development in an orderly and efficient fashion. Plan compliance with Goal 9 is maintained with the amendments made by A-Engrossed Ordinance No. 783. The amendments are consistent with the county's acknowledged policies and strategies for strengthening the local economy as required by Goal 9.

Goal 10- Housing

Policies 21, 22, 23 and 24 of the Comprehensive Framework Plan for the Urban Area and Policies 19 and 25 of the Rural/Natural Resource Plan address the provision of housing in the urban and rural areas of the county. The Community Development Code contributes to the provision of adequate housing by establishing standards that facilitate development in an orderly and efficient fashion. Plan compliance with Goal 10 is maintained with the amendments made by A-Engrossed Ordinance No.783.

Goal 11 - Public Facilities and Services

Goal 11 requires a plan for the orderly and efficient provision of public facilities and services to serve as a framework for urban and rural development. Policies 15, 25, 26, 27, 28, 29, 30 and 31 of the CFP, and Policy 22 of the Rural/Natural Resource Plan address the provision of public facilities and services in the urban and rural areas of unincorporated Washington County.

The CDC requires that adequate public facilities and services be available for new development. Plan compliance with Goal 11 is maintained with the amendments made by A-Engrossed Ordinance No. 783. The amendments are consistent with the county's acknowledged policies and strategies for the provision of public facilities and services as required by Goal 11.

Goal 12 - Transportation

Goal 12 requires the provision and encouragement of a safe, convenient, multi-modal and economic transportation system. Policy 32 of the Comprehensive Framework Plan, Policy 23 of the Rural/Natural Resource Plan, and in particular the Washington County Transportation Plan, describe the transportation system necessary to accommodate the transportation needs of Washington County. Implementing measures are contained in the County's Transportation System Plan, Community Plans, and the CDC.

A-Engrossed Ordinance No. 783 amends and updates the Washington County Transportation System Plan (TSP). These amendments provide an update to the existing TSP, including updates to all transportation elements. A-Engrossed Ordinance No. 783 incorporates map and system plan amendments identified through countywide system evaluation, including recent planning efforts and public outreach. The updates to the Roadway Element amend the Functional Classification map and the Lane Numbers map, and make minor revisions to the Special Area Streets maps. Further, the Roadway Element incorporates the Long Term Roadway Jurisdiction

map and the Rural Road Enhancement Study Corridors map, and identifies a number of refinement areas with maps and descriptive language.

A-Engrossed Ordinance No. 783 also updates the Freight Element with new descriptive language and an updated Roadway Freight map. A-Engrossed Ordinance No. 783 updates the Active Transportation Elements; including revised Pedestrian, Bicycle and Transit Elements, and provides new maps and descriptive language for each of these system elements. In addition A-Engrossed Ordinance No. 783 updates the Transportation System Management and Operations Element and the Funding Element.

A-Engrossed Ordinance No. 783 is the second of two ordinances that amend the TSP. A-Engrossed Ordinance No. 768 adopted in 2013, established the policy framework including the goals, objectives and strategies used to guide the development of A-Engrossed Ordinance No. 783. Both A-Engrossed Ordinance No. 768 and A-Engrossed Ordinance No. 783 will become effective on December 1, 2014.

The Washington County TSP maps as amended by A-Engrossed Ordinance No. 783 continue to provide a system of transportation facilities and service adequate to meet identified transportation needs consistent with the Metro Regional Transportation Plan and the Oregon Highway Plan.

Brief summaries of the applicable TPR provisions are followed by findings of compliance.

660-012-0010 Provides that transportation planning be divided into two phases, transportation system planning and project development.

FINDING: A-Engrossed Ordinance No. 783, together with A-Engrossed Ordinance No. 768, constitutes Washington County's transportation system plan and has been developed in compliance with all applicable provisions of Division 12. Exhibit 6 of A-Engrossed Ordinance No. 783 describes the project prioritization process consistent with 660-012-0010. As provided under this subsection, project development is addressed separately under Article VII of the Community Development Code, which has been previously adopted and acknowledged.

660-012-0015 includes requirements for preparation and coordination of transportation system plans.

FINDING: A-Engrossed Ordinance No. 783 complies with all of the applicable requirements for preparation, coordination and adoption of TSP's required under this section of the TPR.

- A-Engrossed Ordinance No. 783 amends and is incorporated as part of Washington County's Comprehensive Plan.
- As described above, the preparation of A-Engrossed Ordinance No. 783 followed the process in place for the development of A-Engrossed Ordinance No. 768 and was closely coordinated with affected government agencies and service providers via the Interagency Coordinating Committee (ICC) that met nine times. In addition, as described above, the development of A-Engrossed

Ordinance No. 783 included extensive public involvement opportunities, and engagement of an active Community Advisory Committee throughout development of the ordinance.

- OAR 660-012-0015 also requires that regional TSPs, such as Metro’s Regional Transportation Plan (RTP), be coordinated with state transportation plans and policies, such as those found in the Oregon Highway Plan (OHP). Both ODOT and Metro were represented on the ICC and assisted in the development of A-Engrossed Ordinance No. 783. As detailed elsewhere in these findings, A-Engrossed Ordinance 783 is consistent with the RTP and with the OHP.

660-012-0016 This section of the TPR describes coordination with Federally-Required Transportation Plans in Metropolitan Areas.

FINDING: As discussed above, A-Engrossed Ordinance No. 783 was developed in cooperation with Metro and is consistent with the RTP and therefore is consistent with OAR-660-012-0016.

660-012-0020 This section of the TPR describes the elements that TSPs must contain.

FINDING: A-Engrossed Ordinance No. 783, together with A-Engrossed Ordinance No. 768 and the previously adopted and acknowledged comprehensive plan and Community Development Code provisions, includes all of the elements required by the TPR.

- As previously discussed in these findings, in developing A-Engrossed Ordinance No. 783, Washington County coordinated with state, regional and local jurisdictions via the ICC.
- Transportation needs were determined in accordance with OAR 660-012-0030 (and OAR 660-012-0020(2)(a)), and are addressed in the Technical Appendix 1 adopted by Resolution and Order of the Board in conjunction with A-Engrossed Ordinance No. 783.
- A-Engrossed Ordinance No. 783 updates the roadway element of the TSP for Washington County. Exhibit 2 includes updates to the functional classification map consistent with Metro’s RTP; exhibit 4 provides an update to the transit, bicycle and pedestrian elements of TSP. These systems identify planned extensions and connections of existing streets and destinations.
- The layout and standards for the spacing and extension of local streets and most neighborhood routes is controlled by Article V of the CDC.
- A-Engrossed Ordinance No. 783 updates the transit element of the TSP. Exhibit 4 updates the transit element of the TSP, which includes all the public transit services described in 660-012-0020(2)(c)(A)-(C).
- A-Engrossed Ordinance No. 783, exhibit 4 updates the bicycle and pedestrian elements of the TSP consistent with the RTP.
- A-Engrossed Ordinance No. 783, exhibit 3 updates the freight element of the TSP consistent with the RTP, including the aviation, pipeline and railroad components of the freight system.

- A-Engrossed Ordinance No. 783, exhibit 5 updates the Transportation System Management and Operations element of the TSP consistent with the RTP, including a demand management component of the management system.
- The planning framework, goals, objectives and strategies for roadway, parking, public transportation, bicycle, pedestrian, air, water, pipeline and freight were addressed in A-Engrossed Ordinance No. 768.
- The inventory and general assessment of existing and committed transportation facilities and services for each element of the transportation system as required by OAR 660-012-0020(3)(a) and its subsections, are included in the technical appendix, adopted by resolution and order.

OAR 660-012-0025 This section of the TPR describes the requirements for Goal compliance and refinement plans.

FINDING: A-Engrossed Ordinance No. 783 complies with the applicable provisions of Section 660-012-0025 of the TPR as demonstrated by the following facts.

- Chapter X of the County Charter sets forth specific requirements for citizen involvement during review and adoption of land use ordinances. Washington County has utilized these requirements for the adoption of A-Engrossed Ordinance No. 783. The findings contained herein satisfy the requirement of OAR 660-12-0025(2) and have been adopted in conjunction with A-Engrossed Ordinance No. 783.
- A-Engrossed Ordinance No. 783 identifies a number of refinement areas. Exhibit 2 includes nine roadway refinement areas where a need has been identified but the decision regarding the general location, alignment or mode has been deferred. Exhibit 4 identifies five regional trail refinement areas where a need for regional trail connection has been identified, but the alignment of the trail has not been determined. These include:
 - Turf-to-Surf Trail
 - Council Creek Trail
 - Cooper Mountain Trail
 - River Terrace Trail
 - Fanno Creek Greenway Trail

In these trail refinement areas additional study is necessary to make a decision. The study of the solution may be conducted as part of a multi-agency and multi-disciplinary public effort. If private development within the identified area wants to proceed prior to completion of such a study, the development must demonstrate how, at a minimum, the development will not preclude the ultimate solution.

- In addition to the refinement areas identified, a number of potential deficiency locations have been identified in Technical Appendix 3. These are locations that are not expected to perform to the standard in effect for that location even with the implementation of the project list improvements identified in Technical Appendix 2; therefore, the location has been identified as deficient.

These Deficiency Locations may need additional improvements that cannot be funded within existing revenue parameters. Alternatively, a different performance standard might be used to assess the location, which could yield different results.

- No Environment Impact Statement is included or necessary within A-Engrossed Ordinance No. 783, therefore OAR 660-12-0025(4) does not apply.

OAR 660-012-0030 The provisions of this section set forth how needs shall be identified in TSPs.

FINDING: A-Engrossed Ordinance 783 identifies transportation needs as required by OAR 660-012-0030.

- A-Engrossed Ordinance 783 addresses Washington County’s transportation system needs in the Technical Appendix to A-Engrossed Ordinance 783. A-Engrossed Ordinance 783 is consistent with the Oregon Highway Plan (OHP) and Metro’s RTP; and findings of compliance with the OHP and RTP are included herein.
- In addition, transit services are discussed in Exhibit 4 of A-Engrossed Ordinance No. 783. These services are provided by TriMet, the regional transit agency, and others. TriMet has adopted an Elderly and Disabled Transportation Plan, which addresses the needs of the transportation disadvantaged. Strategy 8.5.6 of A-Engrossed Ordinance 768 supports the implementation of TriMet LIFT services for the transportation disadvantaged.
- A-Engrossed Ordinance No. 783 exhibit 3 provides for the movement of goods and provision of services to support industrial and commercial development and job growth. The freight plan was based on the needs assessment described in Technical Appendix 1. The needs assessment was augmented by discussions with the CAC and ICC members, meetings with the Westside Economic Alliance and stakeholder interviews.
- The needs analyses that are part of A-Engrossed Ordinance 783 are based upon population and employment forecasts developed by Metro with local government participation (Exhibit 3 of A-Engrossed Ordinance 768 and Technical Appendix 1). These same regional forecasts have been used to implement Metro’s 2040 designations, which are part of the County’s adopted and acknowledged comprehensive plan.
- A-Engrossed Ordinance 783 is consistent with the requirements for vehicle miles traveled (VMT) reduction set forth in OAR 660-012-0035(4) and referenced by OAR 660-012-0030(4). Appropriate findings are provided herein under OAR 660-012-0035.

OAR 660-012-0035 This section of the TPR concerns how the transportation system alternatives analysis was performed.

- FINDING:** A-Engrossed Ordinance No. 783 is based on an extensive and diverse set of transportation system analysis techniques and measures.
- OAR 660-012-0035(1)(a) – (e) establishes a list of system assessments that shall be evaluated, which include: improvements to existing facilities, new facilities, different modes, transportation system management, transportation demand management and an assessment of a no-build alternative. Technical Appendix 1 establishes an assessment of the existing system and the no-build alternative. Strategy 5.1.4 describes the methodology used to assess the transportation system alternatives. The outcomes of this system assessment are discussed in Technical Appendix 3.
 - Analyses of system alternatives in A-Engrossed Ordinance 783 and its associated Appendices were based upon the land use factors detailed in OAR 660-012-0035(2)(a) – (d). These same land use considerations are required to be implemented in the County’s Comprehensive Plan by Metro’s Urban Growth Management Functional Plan (UGMFP). The County’s Comprehensive Plan was amended by a series of adopted and acknowledged ordinances that implement the UGMFP. Acknowledged and adopted amendments include, but are not limited to, Metro’s 2040 land use designations, Station Area Community Planning standards and land use designations, town center planning designations (for the Cedar Mill Town Center) and minimum density requirements.
 - As detailed in Technical Appendix 3 to A-Engrossed Ordinance 783, all of the factors in OAR 660-012-0035(3)(a)-(e) were considered in evaluating alternatives.
 - As discussed elsewhere in these findings, the transportation system assessment for A-Engrossed Ordinance 783 was based upon population and employment forecasts developed by Metro, with local government participation (Exhibit 3 of A-Engrossed Ordinance 768 and Technical Appendix 1). These same regional forecasts have been used to implement Metro’s 2040 designations, which are part of the County’s adopted and acknowledged comprehensive plan. In addition, a considerable public involvement effort was made with both rural and urban community members.
 - The economic, social, environmental and energy consequences were considered through a diverse public involvement program, as described elsewhere in these findings. A technical evolution of these resources, sufficient for the level of decision-making provided in this plan, is included in Technical Appendix 1.
 - The County’s Transportation Plan is also required to be consistent with Metro’s RTP. The RTP implements state and federal standards for protection of air, land and water quality, including the Federal Clean Air Act and State Water Quality Management Plan (OAR 660-012-0035(3)(b)). Specific findings of consistency with the RTP are included below. The State Water Quality Management Plan is implemented at the local level by compliance with the requirements of the Washington County Clean Water Services

(CWS) Agency. All new construction is required to meet applicable CWS standards.

- OAR 660-012-0035(4) and (5) concern VMT targets and alternative modal standards. As a county within an MPO, Metro's RTP modal targets are applicable to A-Engrossed Ordinance 783. The modal targets in the RTP have been established to implement VMT reductions required under the alternative standards provision of OAR 660-012-0035(5). As explained in the findings of compliance with the RTP, A-Engrossed Ordinance 783 is consistent with the mode share target implementation measures of the RTP. Technical Appendix 3 discusses how A-Engrossed Ordinance 783 meets the modal targets within the RTP.
- OAR 660-012-0035(5) through (7) concern measuring progress towards meeting non-SOV (single occupancy vehicle) modal targets and establishment of 'interim benchmarks' for monitoring the progress towards meeting modal targets/VMT reductions. Metro's RTP establishes regional targets for non-SOV modes. A-Engrossed Ordinance No. 768 adopted these targets countywide and A-Engrossed Ordinance No. 783 makes no change to these targets. As indicated above, the County's Comprehensive Plan was amended for consistency with the UGMFP. The provisions of these ordinances, together with those found in A-Engrossed Ordinance 588, are consistent with Metro's assumptions for achieving non-SOV mode targets.
- OAR 660-012-0035(10) allows inclusion of transportation improvements in an urban fringe only under those circumstances and conditions outlined in this section of the TPR and under OAR 660-012-0065(3)(d)-(g) and (o). No new projects within these parameters have been proposed by A-Engrossed Ordinance 783.

OAR 660-012-0040 This section of the TPR requires that a TSP must include a transportation financing program and sets forth what such a program is required to include.

FINDING: A-Engrossed Ordinance No. 783 updates the transportation funding element, which augments the funding goals, objectives and strategies adopted by A-Engrossed Ordinance No. 768. Together with Technical Appendix 2, these documents create a transportation financing element meeting the standards identified in OAR 660-012-0040.

- Exhibit 6 of A-Engrossed Ordinance No. 783 updates the funding element of the transportation system plan.
- Exhibit 16 of A-Engrossed Ordinance No. 768 discusses the funding goal, objectives and strategies and includes an overview of existing revenue sources for capital improvements as well as operations and maintenance.
- Project lists and rough cost estimates for roadway, bicycle and pedestrian system improvements are included in Technical Appendix 2, along with

planning level order of magnitude costs, anticipated timing, and an assessment of established revenue sources compared to the identified costs.

OAR 660-012-0045 The provisions of this section concern how a TSP is implemented.

FINDING: A-Engrossed Ordinance No. 783, together with previously adopted and acknowledged ordinances, fully implements all of the applicable provisions of OAR 660-012-0045 as detailed in the following findings of fact:

- The Community Development Code (CDC), together with R&O 86-95, provide a process for coordinated review of land use decisions affecting transportation facilities, corridors and sites as well as public notice.
- Article VII of the CDC, which is acknowledged to be consistent with the requirements of OAR 660-012-0050, provides a consolidated review process for land-use decisions regarding permitting of transportation projects.
- CDC Article V includes provisions for access control. Article V and the Washington County Uniform Road Improvement Design Standards, provide for review and protection of roadway safety, infrastructure and operations.
- Local street connectivity standards, as well as the requirements for safe and convenient pedestrian, bicycle and vehicular circulation, have been adopted into the CDC.
- A-Engrossed Ordinance No. 768 provides that plan amendment requests be reviewed for consistency with the applicable provisions of the Transportation Planning Rule (Strategy 9.4.2 – Exhibit 15).
- Exhibit 5 of A-Engrossed Ordinance No. 783 updates the Transportation System Management and Operations Element of the TSP, which includes Transportation Demand Management. These elements are also included in Article V of the Community Development Code.
- A-Engrossed Ordinance No. 783 does not amend the process for land use-review of transportation projects, and is therefore consistent with OAR 660-012-0045.

OAR 660-012-0050 This section concerns transportation project development.

FINDING: A-Engrossed Ordinance No. 783, together with previously adopted and acknowledged ordinances, fully implements all of the applicable provisions of OAR 660-012-0050.

- The CDC Article VII provides a consolidated review process for review of land-use decisions for permitting transportation projects; the goals, objectives and strategies related to the natural environment were updated in exhibit 8 of A-Engrossed Ordinance No. 768. A-Engrossed Ordinance No. 783 does not amend the current process for land use review of transportation projects.

OAR 660-012-0055 This section sets forth timelines for adoption of TSPs and for the specific requirements of OAR 660-012-0045(3), (4)(a)-(e) and (5)(d).

FINDING: A-Engrossed Ordinance No. 783, together with previously adopted and acknowledged ordinances, is consistent with the applicable provisions of OAR

660-012-0055. There are no other provisions in subsection -0055 that are required to be addressed as part of these findings.

OAR 660-012-0060 This section sets forth requirements for plan and land use regulation amendments.

FINDING: A-Engrossed Ordinance No. 783 is consistent with the provisions of OAR 660-012-0060.

- A-Engrossed Ordinance No. 768 established that all plan amendments be reviewed for compliance with OAR 660-012-060 (Exhibit 15, Strategy 9.4.2). No other provisions in subsection –0060 are required to be addressed as part of these findings.

OAR 660-012-0065 This section identifies the “transportation facilities, services and improvements” that may be permitted on rural lands without a goal exception.

FINDING: A-Engrossed Ordinance 783, as well as previously adopted and acknowledged ordinances, are consistent with the provisions of OAR 660-012-0065.

- A-Engrossed Ordinance 783 and Technical Appendix 2 identify transportation facilities, services and improvements. A-Engrossed Ordinance 783 does not propose any new roadways, services or improvements on lands located outside of the UGB.
- A-Engrossed Ordinance 783 exhibit 2 does identify rural road enhancement study corridors. Minor enhancements (consistent with OAR 660-012-0065) may be appropriate to consider along these corridors as resources allow (exhibit 2, page 4 of 39).

OAR 660-012-0070 This section identifies the requirements for exceptions to Goals 3, 4, 11 or 14 for transportation improvements on rural lands that do not meet the requirements of OAR 660-012-0065.

FINDING: This subsection is not applicable to A-Engrossed Ordinance No. 783, as no rural transportation improvements have been identified in this ordinance.

A-Engrossed Ordinance No. 783 updates the previously adopted (A-Engrossed Ordinance No. 768) transportation goals, objectives and strategies to amend the modal elements and provide a complete TSP update. Planned transportation facilities, services and improvements as well as planned capacities, functional classification and levels of service have been amended to be consistent with Regional and State transportation plans. The update includes amended transportation system maps for roadway and freight designations, as well as amendments to the active transportation plan consistent with the regional active transportation plan, and provides significant revisions to the transit, bicycle and pedestrian elements. Furthermore, the update includes the freight, transportation system operations and management, and funding elements.

The amendments are consistent with the county's acknowledged policies and strategies for the provision of transportation facilities and services as required by Goal 12 (the Transportation Planning Rule or TPR, implemented via OAR Chapter 660, Division 12). A-Engrossed Ordinance No. 783 complies with all of the applicable requirements of OAR 660, Division 12. Only those provisions of Division 12 that require specific findings are summarized and addressed herein. Plan compliance with Goal 12 is maintained with the amendments made by A-Engrossed Ordinance No. 783. The amendments are consistent with the provision of transportation facilities and services as required by Goal 12.

Goal 13 - Energy Conservation

Goal 13 requires developed land uses to be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles. Policies 36, 37, 38, 39 and 40 of the CFP and Policy 25 of the Rural/Natural Resource Plan address energy conservation in the urban and rural areas of unincorporated Washington County. The CDC implements the energy conservation policies by establishing standards that promote energy efficient development, especially in Article IV.

A-Engrossed Ordinance No. 783 does not amend the applicable Plan policies or CDC standards related to energy conservation, which impact the county's compliance with Goal 13.

A-Engrossed Ordinance No. 768 established a transportation policy framework to reduce the energy and resource consumption associated with transportation, and promotes energy sustainability with transportation.

A-Engrossed Ordinance No. 783 does not amend any Community Plan policies and development regulations related to energy conservation. Plan compliance with Goal 13 is maintained with the amendments made by A-Engrossed Ordinance No. 783. The amendments are consistent with the county's acknowledged policies and strategies for promoting energy conservation as required by Goal 13.

Goal 14 - Urbanization

Goal 14 requires provisions for the orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land and to provide for livable communities. Policies 13, 14, 16, 17, 18, 19, 41 and 42 of the CFP address urbanization within the Regional Urban Growth Boundary. The CDC implements the urbanization policies by establishing standards to promote appropriate urban development. The Community Plans implement the urbanization policies by designating sufficient land for appropriate development.

A-Engrossed Ordinance No. 783 complies with the Title 11 UGMFP provisions for the urbanization of new land. Plan compliance with Goal 14 is maintained with the amendments made by A-Engrossed Ordinance No. 783. The amendments are consistent with the county's acknowledged policies and strategies for urbanization as required by Goal 14.

Part 3

Findings of Consistency with the Oregon Highway Plan

This section addresses the consistency of A-Engrossed Ordinance No. 783 with the applicable policies of the Oregon Highway Plan (OHP). The Board finds that the OHP applies to the amendments covered by these findings only to the extent noted in specific responses to the applicable elements of this plan, and that the amendments comply with the applicable goals and policies of the OHP.

Policy 1A: State Highway Classification System

A-Engrossed Ordinance No. 783 exhibit 2 updates Washington County's Functional Classification maps. No new classifications are introduced, and no changes inconsistent with State Highway Classifications have been made. Therefore, the Washington County Transportation System Plan is consistent with the OHP.

Policy 1B: Land Use and Transportation

A-Engrossed Ordinance No. 768 and A-Engrossed Ordinance No. 783 do not change any land use designations. Exhibit 10 of A-Engrossed Ordinance No. 768 addresses mobility standards consistent with State Highway mobility standards. The Washington County Community Development Code addresses access spacing standards and other development related concerns. Exhibit 4 of A-Engrossed Ordinance No. 783 and Exhibit 13 A-Engrossed Ordinance No. 768 both address Active Transportation. Taken together, A-Engrossed Ordinance No. 768, A-Engrossed Ordinance 783 and the Community Development Code provide a coordinated land use and transportation system consistent with the OHP.

Policy 1C: State Highway Freight System

A-Engrossed Ordinance No. 768 exhibit 6 established the Economic Vitality goal of the TSP. Exhibit 3 of A-Engrossed Ordinance No. 783 updates the Freight System Element of the TSP, including a revised roadway freight map. These are consistent with the requirements of the OHP.

Policy 1D: Scenic Byways

No Oregon Scenic Byways are located with Washington County. Therefore A-Engrossed Ordinance No. 768 and A-Engrossed Ordinance 783 are consistent with the requirements of the OHP.

Policy 1F: Highway Mobility Standards

As described in A-Engrossed Ordinance No. 783, exhibit 2, the roadway system identified by the functional classification and lane numbers maps is adequate to meet anticipated travel needs. Technical Appendix 3 to A-Engrossed Ordinance No. 783 includes a Countywide Motor Vehicle Deficiency Evaluation. This evaluation included all ODOT and other facilities within Washington County and assessed the system performance based on the applicable mobility standards, including OHP mobility targets and standards, as well as the Regional Transportation Functional Plan interim mobility deficiency thresholds and operating standards.

The potential deficiency locations identified in Technical Appendix 3 will require additional monitoring and system performance evaluation over time. For such locations, the ultimate decisions regarding the modes, functions, and general locations of solutions; and potential development of alternative mobility measures and standards, are deferred to future refinement planning to be incorporated into the next TSP update. Based on the system assessment, the TSP provides a plan for a transportation system consistent with the requirements of the OHP.

Policy 1G Major Improvements

A-Engrossed Ordinance 768 identified transportation improvement procedures. Article VII of the Community Development Code (CDC) controls the land use processes necessary when implementing transportation improvements. Together, these regulations provide a TSP consistent with the requirements of the OHP.

Policy 2G: Rail and Highway Compatibility

A-Engrossed Ordinance No. 783 does not propose any new at-grade crossings of railroad facilities. A-Engrossed Ordinance 768 exhibit 5, objective 2.2 encourages the safe, efficient operation of railroad facilities. Together, these Ordinances provide a TSP consistent with the requirements of the OHP.

Policy 3A: Classification and Spacing Standards

A-Engrossed Ordinance 768, exhibit 10 updated the functional classification system. Article V of the CDC controls access spacing standards. Together, these regulations meet the requirements of the OHP.

Policy 3B: Medians

The Washington County TSP (including A-Engrossed Ordinance No. 783), does not identify any median locations or treatments. The Washington County Road Design & Construction Standards control the design and placement of medians on Washington County roadways. Washington County Resolution and Order 10-107 adopted Washington County’s Mid-Block Crossing Policy. These previously adopted documents are consistent with the OHP and have not been modified by A-Engrossed Ordinance No. 783.

Policy 3C: Interchange Access Management Areas

A-Engrossed Ordinance No. 783 does not make any changes to the previously adopted plan for any interchange area. Therefore, the TSP is consistent with the requirements of the OHP.

Policy 3D: Deviations

A-Engrossed Ordinance No. 783 does not make any requests for deviations to state highway standards. Therefore, the TSP is consistent with the requirements of the OHP.

Policy 4A: Efficiency of Freight Movement

A-Engrossed Ordinance 768, exhibit 6 and exhibit 15, adopt economic vitality and coordination strategies that meet the requirements of the OHP freight policies. A-Engrossed Ordinance No.

783, exhibit 3, adopts a roadway freight system plan consistent with State Highway Freight System designations. Therefore, the TSP is consistent with the requirements of the OHP.

Policy 4D: Transportation Demand Management

A-Engrossed Ordinance 768, exhibit 10 (objective 5.4) and A-Engrossed Ordinance No. 783, exhibit 5, adopt a Transportation Demand Management policy and system element that is consistent with the requirements of the OHP.

Part 4

Findings of Compliance with Metro’s Urban Growth Management Functional Plan for A-Engrossed Ordinance No. 783

Title 8 - Compliance Procedures

Title 8 sets forth Metro’s procedures for determining compliance with the Urban Growth Management Functional Plan (UGMFP). Included in this title are steps local jurisdictions must take to ensure that Metro has the opportunity to review amendments to Comprehensive Plans.

Title 8 requires jurisdictions to submit notice to Metro at least 45 days prior to the first evidentiary hearing for a proposed amendment to a comprehensive plan. Consistent with Title 8, staff sent a copy of proposed Ordinance No. 783 to Metro on May 15, 2014, 48 days prior to the first evidentiary hearing. Metro was mailed a copy of A-Engrossed Ordinance No. 783 on September 12, 2014. Metro provided no comments on A-Engrossed Ordinance No. 783.

The findings in this document demonstrate that the amendments made by this ordinance are in compliance with the UGMFP.

Findings of Compliance with Metro’s Regional Transportation Functional Plan

A-Engrossed Ordinance No. 783 amends the Washington County Transportation System Plan (TSP) consistent with the Regional Transportation Plan (RTP), the Regional Active Transportation Plan (RATP), and Title 2 “Development and Update of Transportation System Plans” of the Regional Transportation Functional Plan (RTFP) Sections 210, 220 and 230.

A-Engrossed Ordinance No. 783 amends and updates the Washington County Transportation System Plan (TSP). These amendments provide an update to the existing TSP, including updates to all transportation elements. A-Engrossed Ordinance No. 783 incorporates map and system plan amendments identified through countywide system evaluation, including recent planning efforts and public outreach.

The transportation system classifications adopted in A-Engrossed Ordinance No. 783 are consistent with the classifications identified in the 2014 RTP. The following table provides an equivalency between the designations in the Washington County TSP and the designations in the RTP.

Regional Transportation Plan	Washington County TSP	Notes
REGIONAL DESIGN CLASSIFICATIONS		
Throughway	Principal Arterial	
Regional Boulevard	Streetscape Overlay	
Community Boulevard	Not shown	Regional Trails + Road Design & Construction Standards for all roads are consistent with this regional designation
Regional Street	Streetscape Overlay	
Community Street	Not shown	Road Design & Construction Standards for all roads are consistent with this regional designation
ARTERIAL AND THROUGHWAY NETWORK		
Principal Arterial	Principal Arterial	
Major Arterial	Arterial	
Minor Arterial	Arterial	
Rural Arterial	Arterial	
REGIONAL TRANSIT NETWORK		
Light Rail	High Capacity Transit	
Commuter Rail	High Capacity Transit	
Streetcar	High Capacity Transit	
Rapid Bus	High Capacity Transit	
Frequent Bus	Frequent Service Bus	
Regional Bus	Regular Service Bus	
Inter-City High Speed Rail	Not shown	No Inter-City High Speed Rail facilities are identified within Washington County
Transit Center	Transit Center	
Light Rail Station	Not shown	Identified as Major Transit Stops
Major Bus Stop	Major Transit Stop	
REGIONAL FREIGHT NETWORK		
Main Railroad Lines	Railroads	
Branch Railroad Lines and Spur Tracks	Railroads	
Main Roadway Routes	Truck Routes, Over-Dimensional Truck Routes	
Road Connectors	Truck Routes, Over-Dimensional Truck Routes	
Marine Facilities	Not shown	No Marine Facilities are identified within Washington County
Rail Yards	Not shown	No Rail Yards are identified within Washington County
Airports	Airports	

Regional Transportation Plan	Washington County TSP	Notes
REGIONAL BICYCLE NETWORK		
Bicycle Parkway	Enhanced Major Street Bikeway	
Regional Bikeway	Major Street Bikeway	
Local Bikeway	Not shown	All roadways in Washington County, with the exception of freeways, are on-street bikeways.
Regional Bicycle District	Pedestrian / Bicycle District	
Bike-Transit Facility	Bicycle Transit Facility	Shown in Transit Modal Element
REGIONAL PEDESTRIAN NETWORK		
Pedestrian Parkway	Pedestrian Parkway, Regional Trail	Washington County differentiates on-street Pedestrian Parkways from Regional Trails because of the major differences in design, operation, maintenance and jurisdiction between the two facility types.
Regional Pedestrian Corridor	Not shown	Washington County Road Design & Construction Standards for all urban roadways are consistent with this regional designation.
Local Pedestrian Connector	Not shown	All roadways in the urban area, with the exception of freeways, are pedestrian routes.
Regional Pedestrian District	Pedestrian / Bicycle District	

As further described in the Goal 12 findings above, The Washington County TSP maps as amended by A-Engrossed Ordinance No. 783, continue to provide a system of transportation facilities and services adequate to meet identified transportation needs consistent with the RTP.

Brief summaries of the applicable RTFP provisions are followed by findings of compliance.

Title 1 This section identifies the requirements for Transportation System Design, including provisions for complete streets, the transit system, pedestrian system, bicycle system, freight system and system management and operations.

FINDING: The Washington County Road Design & Construction Standards, together with A-Engrossed Ordinance No. 768 and A-Engrossed Ordinance No. 783, provide for a transportation system design consistent with all the requirements of Title 1.

Title 2 This section identifies the process for developing a Transportation System Plan within the Metro region. Provisions include identification of transportation system performance, needs, and solutions.

3.08.210 This section contains provisions regarding the assessment of transportation needs.

FINDING: A-Engrossed Ordinance 783, as well as previously adopted and acknowledged ordinances, is consistent with the provisions.

- A-Engrossed Ordinance No. 783 updates the transportation system elements consistent with both the 2035 RTP and the 2014 RTP. System gaps are documented in Technical Appendix 1 of A-Engrossed Ordinance No. 783. Motor Vehicle deficiency locations are documented in Technical Appendix 2 of A-Engrossed Ordinance No. 783. Considerations for transportation disadvantaged individuals are documented in Technical Appendix 1 and Technical Appendix 3 of A-Engrossed Ordinance No. 783.
- The analysis for the development of A-Engrossed Ordinance No. 783 was based on the population and employment forecasts documented in exhibit 3 of A-Engrossed Ordinance No. 768. This analysis was confirmed with an assessment of the transportation system based on the 2040 population and employment forecasts used for the 2014 RTP. As explained in the table above, the system classifications identified in A-Engrossed Ordinance No. 783 are consistent with the RTP classifications. The non-SOV modal targets for Washington County are located in A-Engrossed Ordinance No. 768 exhibit 3.
- Washington County staff considered the mobility corridor strategies of the RTP during the system analysis and development of A-Engrossed Ordinance No. 783. The results of the system analysis are included in Technical Appendix 3 of A-Engrossed Ordinance No. 783. The RTP mobility corridor update process for the 2014 RTP occurred concurrently with the development of A-Engrossed Ordinance No. 783, as documented in the comments on the mobility corridors submitted by Washington County and incorporated into Chapter 5 of the 2014 RTP.

3.08.220 This section contains provisions regarding the development of planned transportation solutions.

FINDING: A-Engrossed Ordinance 783, as well as previously adopted and acknowledged ordinances, is consistent with the provisions.

- A-Engrossed Ordinance No. 768 exhibit 10, strategy 5.1.4 documents considerations prior to adding through travel lane motor vehicle capacity consistent with the RTFP and the OHP policy 1G.
- A-Engrossed Ordinance No. 768 exhibit 15 identifies coordination strategies consistent with the RTFP.
- The projects identified in Technical Appendix 2 of A-Engrossed Ordinance No. 783 are consistent with the projects listed in the 2014 RTP.

3.08.230 This section contains provisions regarding transportation performance targets and standards.

FINDING: A-Engrossed Ordinance 783, as well as previously adopted and acknowledged ordinances, is consistent with the provisions.

- A-Engrossed Ordinance No. 768 exhibit 10 identifies interim performance targets and standards consistent with the RTFP. Washington County has not adopted alternative targets, and has not applied mobility standards different from those identified in the RTFP.

- A-Engrossed Ordinance No. 783 Technical Appendix 3 identifies and calculates system performance measures consistent with the requirements of the RTFP.
- The Washington County Community Development Code Article IV, section 413 includes adopted provisions for parking minimums and maximums consistent with the RTFP.
- The Washington County Road Design & Construction Standards provide for a transportation system design consistent with the requirements of the RTFP.
- A-Engrossed Ordinance No. 783 exhibit 5 provides for the management and operation of the transportation system consistent with the requirements of the RTFP.
- As described previously in these findings, the analysis for the development of A-Engrossed Ordinance No. 783 was based on the population and employment forecasts documented in exhibit 3 of A-Engrossed Ordinance No. 768 and consistent with OAR 660-012-0035(2).

Title 3 This section pertains to the general location and size of transportation facilities.

FINDING: A-Engrossed Ordinance No. 783 exhibits 2 and 4 update the existing TSP with transportation facility locations consistent with the requirements of the RTFP.

Title 4 This section pertains to parking management and standards.

FINDING: The Washington County Community Development Code Article IV, section 413 includes provisions for parking minimums and maximums consistent with the RTFP.

Title 5 This section pertains to amendment of the Comprehensive Plan and the TSP.

FINDING: A-Engrossed Ordinance No. 783 was developed based on the policy framework identified in A-Engrossed Ordinance No. 768 and the projects identified in Technical Appendix 2 are consistent with the projects identified in the 2014 RTP. As described previously in these findings, this process is consistent with all of the requirements of the RTFP.

Title 6 This section pertains to requirements associated with amendments to the Washington County TSP.

FINDING: The adoption of A-Engrossed Ordinance No. 783 and its associated Technical Appendices complies with the RTFP requirement for an update of the Washington County TSP by the end of 2014.

AGENDA

WASHINGTON COUNTY BOARD OF COMMISSIONERS

Agenda Category: Action – Land Use & Transportation (CPO All)

Agenda Title: ADOPT THE TECHNICAL APPENDIX FOR THE
TRANSPORTATION SYSTEM PLAN

Presented by: Andrew Singelakis, Director of Land Use & Transportation

SUMMARY:

A-Engrossed Ordinance No. 783 and A-Engrossed Ordinance 768 (adopted in 2013) update the Washington County Transportation System Plan (TSP) as well as portions of the Comprehensive Framework Plan for the Urban Area, the Rural/Natural Resource Plan, the Community Plans and the Community Development Code relating to transportation planning. The Technical Appendix provides support and context for the plan as amended and defined by A-Engrossed Ordinance 783 and A-Engrossed Ordinance 768. The Technical Appendix will be addressed in the staff report for A-Engrossed Ordinance No. 783.

<http://www.co.washington.or.us/LUT/Divisions/LongRangePlanning/2014-land-use-ordinances.cfm>

The Technical Appendix will be provided to the Board, posted on the above land use web page, and will also be available at the Clerk's desk prior to the meeting. Attached is the Resolution and Order that adopts the Technical Appendix.

Attachment: Resolution and Order

Clerk's Desk Items: Technical Appendix: Existing Conditions & Future Needs Report
Capital Project List
Hillsboro-Bethany - Study Area #1

DEPARTMENT'S REQUESTED ACTION:

Adopt the Technical Appendix for the Transportation System Plan and authorize the Chair to sign the Resolution and Order memorializing the action.

COUNTY ADMINISTRATOR'S RECOMMENDATION:

I concur with the requested action.

RO 14-113

Agenda Item No.	<u>6.e.</u>
Date:	10/07/14

1 IN THE BOARD OF COUNTY COMMISSIONERS
2 FOR WASHINGTON COUNTY, OREGON

3 In the Matter of Adopting the) RESOLUTION AND ORDER
4 Technical Appendix for the)
5 Transportation System Plan) No. 14-113

6 This matter having come before the Washington County Board of Commissioners at its
7 meeting of October 7, 2014; and

8 It appearing to the Board that A-Engrossed Ordinance No. 783 along with A-Engrossed
9 Ordinance No. 768 update the Transportation System Plan, the Rural/Natural Resource Plan, the
10 Urban Framework Plan, the Community Plans and the Community Development Code, all elements
11 of the Comprehensive Plan; and

12 It appearing to the Board that information providing context and support for changes to the
13 Plan is contained in the Technical Appendix, attached hereto as Exhibit "A", which, is necessary to
14 meet state requirements, now, therefore, it is


15 RESOLVED AND ORDERED that the Board of County Commissioners of Washington
16 County, Oregon, does hereby adopt the Technical Appendix for the Transportation System Plan,
17 attached hereto as Exhibit "A."

18 DATED this 7th day of October, 2014.

19 BOARD OF COUNTY COMMISSIONERS
20 FOR WASHINGTON COUNTY, OREGON

21 
22 _____
23 Chairman

24 APPROVED AS TO FORM:

25 
26 _____
27 County Counsel
28 For Washington County, Oregon

29 
30 _____
31 Recording Secretary

	AYE	NAY	ABSENT
DUYCK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SCHOUTEN	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
MALINOWSKI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ROGERS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TERRY	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Washington County
Transportation System Plan 2035



Existing Conditions and Future Needs Report

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Chapter 1: Introduction

1.1 ABOUT THIS DOCUMENT

This report documents existing conditions and assesses future needs for Washington County’s transportation system. The primary purpose of this report is to inform policy recommendations to be included in the new Washington County 2035 Transportation System Plan (*TSP 2035*). It is envisioned that parts of this report will be incorporated into the main body of the adopted *TSP 2035* or its appendices. Other parts of this report may be folded into a background document or into separate documents that address specific issues.

This report begins with a discussion of transportation policy considerations and countywide growth trends, then moves into detailed descriptions of transportation facilities and performance for all modes of conveyance, from motorized transportation and freight movement to bicycle, pedestrian and transit options.

While Washington County’s emphasis is on the transportation facilities that it owns and maintains, this report (as well as the larger plan) must consider existing and future conditions on all transportation facilities in the county, including Oregon Department of Transportation (ODOT) freeways and arterial roads, multi-use trails through park district lands, privately-owned railroads, and transit routes operated by TriMet or other transit agencies.

This report documents and responds to changes in the state and regional transportation policy context, in particular Metro’s 2035 Regional Transportation Plan (RTP) and its constituent documents. This report also accounts for the latest planning efforts at the local level, including city TSPs, county community plans and park district trail plans.

For a majority of the quantitative data measured in this report, the baseline year is 2010, corresponding with the most recently available regional travel demand model and census data. More recent figures are provided for other elements, such as traffic counts. The forecast year for the plan, in concordance with the Metro RTP, is 2035.

Unlike the previous version of the TSP (*Washington County 2020 Transportation Plan*, adopted in 2002), this report merges existing conditions and future needs into one cohesive document, rather than treat them in two separate reports. Content is organized as follows:

- Chapter 1: Introduction
- Chapter 2: Roadways
- Chapter 3: Transportation System Management Options and Travel Demand Management
- Chapter 4: Active Transportation and Transit
- Chapter 5: Goods Movement and Aviation
- Appendices with more detailed data and technical information

Funding considerations, alternative transportation scenario testing, and selection of a preferred transportation alternative will be treated in subsequent reports.

1.2 PLANNING CONTEXT

Public policies at the state, regional, county and local levels provide policy direction and legal requirements for transportation planning in Washington County. This section summarizes pertinent transportation policies at multiple levels of government, as well as planning efforts (such as land use plans) that have significant impacts on transportation planning and the system itself.

1.2.1 State Transportation Planning Policies

Transportation Planning Rule

Oregon Administrative Rule 660-012-0000 is referred to as the Transportation Planning Rule (TPR). It implements Statewide Planning Goal 12: Transportation. The purpose of the TPR is to ensure adequate coordination of transportation and land use planning both for TSPs and in project development. The TPR is the legislative mandate that requires Washington County to prepare and update its TSP. The TPR has been amended three times since the adoption of the last Washington County TSP:

- The **2005 Amendments (660-012-0060 and 660-012-0005)** specify measures that jurisdictions must take when adopting changes to land use documents that have the potential to affect the performance of an existing or planned transportation facility.
- The **2006 Amendments (660-012-0035, 660-012-0055)** clarify that Metropolitan Planning Organizations (such as Metro) must adopt standards to measure progress for increasing transportation choices and reducing automobile reliance. Local TSPs are required to comply with these regional goals. The 2006 amendments also require local governments to comply with regional efforts to adopt integrated land use and transportation strategies. Finally, these amendments specify that local governments must update TSPs within one year of an updated Regional Transportation Plan, unless they are granted an extension by Metro’s Chief Operating Officer.
- The **2011 Amendments (660-012-0010)** specify that local governments can designate “multi-modal mixed-use areas” (MMAs) and/or “industrial areas” where traffic congestion does not have to be considered for new developments or higher density zoning, provided that these areas meet certain guidelines and are located entirely within an urban growth boundary.

Oregon Transportation Plan

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

Oregon Highway Plan

The Oregon Highway Plan (OHP) is the modal element of the OTP that sets visions, policies, and strategies for investing in state and federal highways in Oregon. The OHP was last adopted in 1999. Since the adoption of the last Washington County TSP in 2002, there have been two major amendments to the OHP that affect Washington County:

- Amendments to **Policy 1B: Land Use and Transportation** create new access spacing standards for statewide, district and regional highways, as well as new definitions for “special transportation areas” (STAs), which have less stringent mobility standards. These modified definitions result in three STAs on state road segments in Washington County:
 - Hwy. 8 from milepost 16.06-16.67 in Cornelius
 - Hwy. 47 from milepost 25.34-26.54 in Gaston
 - Hall Blvd. from milepost 2.84-3.84 in Beaverton, unincorporated Washington County, and Tigard
- Amendments to **Policy 1F: Highway Mobility** include new mobility targets for state highways within and outside of the Portland metro area Urban Growth Boundary (UGB). These are described in chapter 2.

Oregon Bicycle and Pedestrian Plan

The Oregon Bicycle and Pedestrian Plan was originally adopted in 1995 as a modal element of the Oregon Transportation Plan (OTP). It is the planning and design manual for pedestrian and bicycle transportation in Oregon and is used to implement the actions recommended by OTP. The technical section of the Plan was updated October 2010 and re-titled as the Bicycle and Pedestrian Design Guide to offer a greater level of guidance on the provision of bicycle and pedestrian facilities. The standards and designs shown in the plan -- ODOT standards used on state highway projects -- meet or exceed national standards. These standards are recommended but not required for use by local jurisdictions in Oregon. The overarching goal, actions, and strategies of the Oregon Bicycle and Pedestrian Plan relevant to the Washington County TSP are unchanged from the 1995 version of the Plan.

The Design Guide updated design standards for on-road bikeways, walkways, street crossings, intersections, shared use paths, restriping and bicycle parking. Washington County may choose to incorporate in the *TSP 2035* or its supporting documents methodologies for selecting type of bicycle facility based on context sensitive design guidelines. The *Washington County Bicycle Facility Design Toolkit*, completed in 2012, incorporates a variety of these and other design guidelines.

Oregon Freight Plan

The *Oregon Freight Plan (OFP)* adopted in 2011, is the first state wide plan devoted entirely to freight. Similar to the OTP, the OFP is needed to comply with federal and State of Oregon regulations. At the federal level, the OFP is required to comply with the current federal transportation act, Moving Ahead for Progress in the 21st Century (MAP-21); the Passenger Rail Investment and Improvement Act and Federal Aviation Administration policy and guidance for aviation system planning. At the state level, the OFP addresses freight needs as required under the Transportation Planning Rule, which also requires local governments to address goods movement in their TSPs in a fashion that is consistent with the state TSP.

1.2.2 Regional Transportation Planning

Metro 2035 Regional Transportation Plan

The 2035 Regional Transportation Plan (RTP) was adopted by the Joint Policy Advisory Committee on Transportation on June 10, 2010. Several companion plans are included in the RTP by reference; these include the Regional High Capacity Transit System Plan, the Regional Transportation System Management and Operations Plan, the Regional Freight Plan, and the 2035 RTP Technical Appendix.

The overall desired outcomes for the 2035 RTP are as follows:

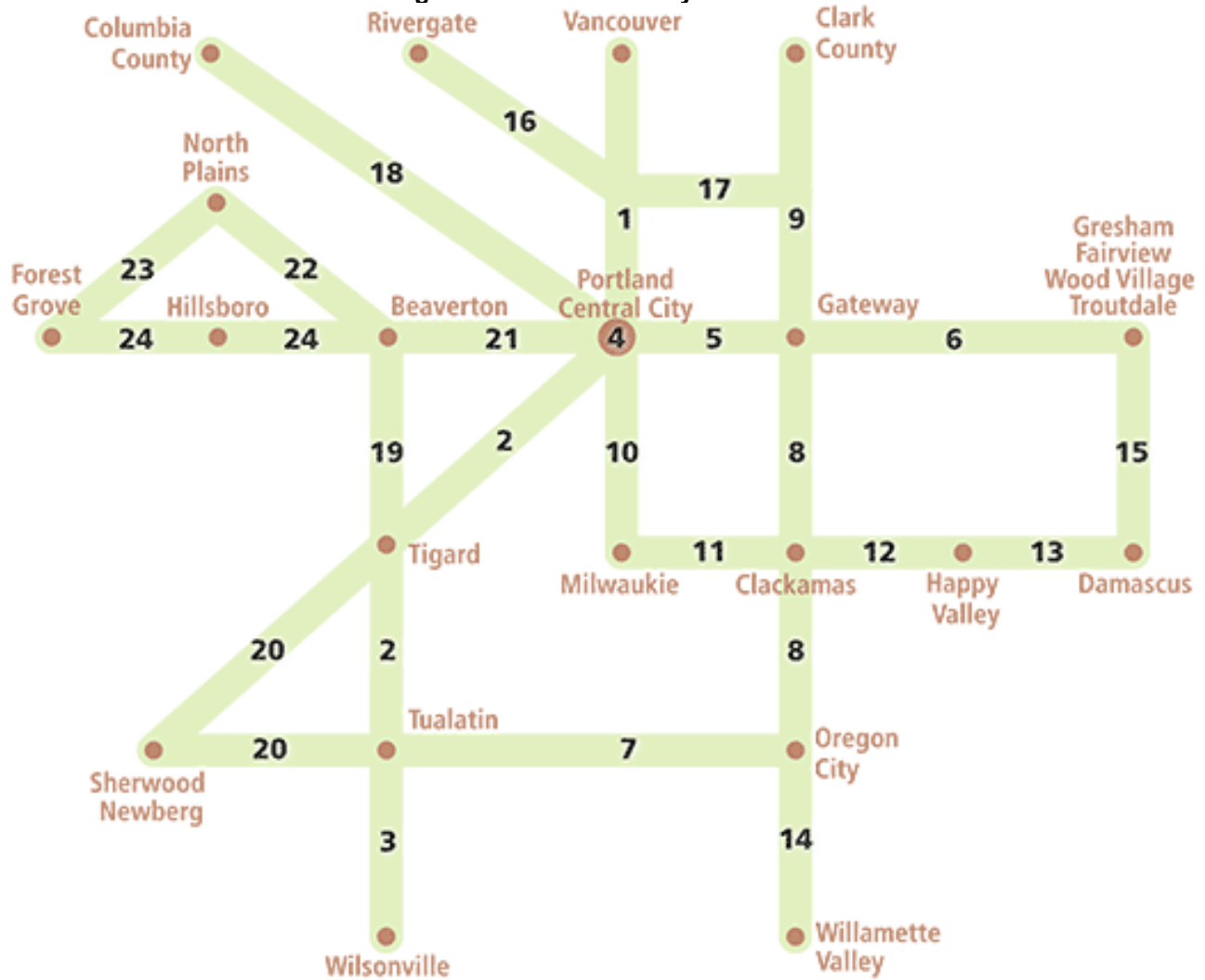
- **Vibrant communities** – People live and work in vibrant communities where they can choose to walk for pleasure and to meet their everyday needs.
- **Economic prosperity** – Current and future residents benefit from the region’s sustained economic competitiveness and prosperity.
- **Safe and reliable transportation** – People have safe and reliable transportation choices that enhance their quality of life.
- **Leadership on climate change** – The region is a leader in minimizing contributions to global warming.
- **Clean air and water** – Current and future generations enjoy clean air, clean water and healthy ecosystems.
- **Equity** – The benefits and burdens of growth and change are distributed equitably.¹

There are several key items in the RTP that affect transportation planning in Washington County. These include the designation of mobility corridors, performance targets, modal targets, and mobility standards, all of which are described below.

- **Mobility corridors.** The 2035 RTP describes the Portland metro region in the context of 24 mobility corridors. Mobility corridors are major components of the Portland region where movement is important and should be facilitated to the degree and in the manner defined in RTP performance standards. The mobility corridor framework requires consideration of multiple facilities, modes, and land use when identifying solutions. There are nine mobility corridors in Washington County, shown in Figure 1-1. They are:
 - #2: Portland Central City to Tigard
 - #3: Tigard to Wilsonville
 - #7: Tualatin to Oregon City
 - #19: Beaverton to Tigard
 - #20: Tigard to Sherwood and Sherwood to Newberg
 - #21: Portland Central City to OR 217
 - #22: OR 217 to North Plains
 - #23: Forest Grove to U.S. 26
 - #24: Beaverton to Forest Grove

¹ Metro 2035 RTP, page 2-2.

Figure 1-1: Metro Mobility Corridors



Source: <http://www.oregonmetro.gov/index.cfm/go/by.web/id=35555>

Metro Regional Transportation Functional Plan

The Metro Regional Transportation Functional Plan (RTFP) is chapter 3.08 of the Metro Code. It implements the RTP and includes requirements for the design of streets, transit systems, pedestrian systems, bicycle systems, freight systems, and transportation system management and operations. The RTFP includes several requirements for city and county TSPs. The most recent version of the RTFP became effective in September 2010. Requirements for city and county TSPs within the RTFP are as follows (paraphrased from Titles 1-5 of the RTFP):

- **TSPs must include adoption of street design regulations** that are consistent with complete street designs, green street designs, and transit-supportive street designs. Street design regulations must allow implementation of pavement widths of less than 28 feet, sidewalk widths that include at least 5 feet of pedestrian through zones, landscaped pedestrian buffer strips, traffic calming devices, short and direct right-of-way routes and shared-use paths, opportunities to extend streets in an incremental fashion.
- **TSPs must include:**
 - Documentation of regional and state transportation needs, as listed in the RTP and the OTP
 - Analysis of existing conditions, gaps, and deficiencies for streets, bicycle facilities, pedestrian facilities, transit, freight, and transportation system management and operations (TSMO).
 - Identification of facilities that exceed regional mobility targets or alternative targets
 - Consideration and documentation of the needs of youth, seniors, people with disabilities, and environmental justice populations
 - Consideration of ways to meet documented needs using the following strategies in the order listed, and documentation of the reasons each was chosen or not chosen :
 - Transportation System Management and Operation (TSMO) strategies
 - Transit, bicycle, and pedestrian system improvements
 - Traffic calming designs and devices
 - Land use strategies
 - Connectivity improvements to the street network that include improvements to pedestrian and bicycle facilities
 - Motor vehicle capacity improvements
 - Performance measures for safety, vehicle miles traveled per capita, freight reliability, congestion, bicycling, walking, and transit mode shares
 - Parking ratios for motor vehicle and bicycle parking

Regional High Capacity Transit System Plan

The Regional High Capacity Transit (HCT) System Plan was adopted by Metro in 2009. This plan, which was incorporated into the Regional Transportation Plan in 2010, provides an outline of the regional goals and aspirations for high capacity transit. The HCT system plan established near-term priorities and adopted a system expansion policy. Furthermore, the planning process evaluated the benefits of high capacity transit to our local communities.

Potential high-capacity transit corridors are organized into four tiers based on the 2009 assessment of the system expansion targets described above. The HCT plan calls for a focus on three transit corridors for investment in the near-term, two of which are in Washington County:

- A corridor in the vicinity of Powell Boulevard, connecting Gresham to downtown Portland;
- The “Southwest Corridor” in the vicinity of Barbur Boulevard/Highway 99W, connecting downtown Portland to Tigard and possibly Sherwood; and
- The WES commuter rail corridor that connects Beaverton to Wilsonville, which could see WES service upgraded to all day service with trains running at 15-minute intervals.

As part of the Regional Transportation Functional Plan, counties and cities are required to be consistent with regional Transit System Design and Parking Management Policies, several of which have additional requirements in the vicinity of High Capacity Transit station areas. The HCT plan is described in greater detail in chapter 4.

RTP Freight Component

The Regional Freight Plan 2035 is one of several RTP-related plans whose policies and strategies have been integrated into the larger 2035 RTP, the others being *The Regional Transportation System Management and Operations Plan* and *The High Capacity Transit Plan*. These policies are included in chapter 2 of the 2035 RTP and are as follows:

- Use a systems approach to plan for and manage the freight network
- Reduce delay and increase reliability
- Protect industrial lands and freight transportation investments
- Look beyond the roadway network to address critical marine and rail needs
- Pursue clean, green and smart technologies and best practices

RTP TSMO Component

Transportation system management options (TSMO) is a combination of transportation system management and transportation demand management strategies that are intended to improve transportation system performance at a lower cost than traditional capital investments such as new transit service, roads or additional roadway lanes.

The four policies below form the foundation of the RTP approach to TSMO:

- Use advanced technologies, pricing strategies and other tools to actively manage the transportation system

- Provide comprehensive real-time traveler information to people and businesses
- Improve incident detection and clearance times on the region's transit, arterial and throughway networks
- Implement incentives and programs to increase awareness of travel options and incentive change

Urban and Rural Reserves

The urban and rural reserves regional planning effort began in 2008 and concluded with acknowledgment of project outcomes by the Land Conservation and Development Commission (LCDC) in August of 2012. Urban reserves were established in the three metropolitan counties as areas in which future urbanization would occur in the region. Those urban reserves requested for inclusion in the Urban Growth Boundary in Washington County must have a city willing to plan and govern the areas. The cities of Hillsboro, Beaverton and Tigard have significant reserves available, and Sherwood, Tualatin, Forest Grove, King City and Cornelius have lesser amounts.

Transportation systems within these new urban areas will be planned and developed under the respective cities' jurisdiction. Ultimately, city and county TSPs will need to include provisions for facilities and services necessary to adequately serve the newly urban areas.

Climate Smart Communities Scenarios Project

This three-phase planning effort responds to the Jobs and Transportation Act (House Bill 2001) passed in 2009. Section 37 of the Act requires Metro to adopt a preferred land use and transportation scenario by 2014 that is designed to accommodate planned population and job growth while reducing greenhouse gas emissions to a particular target by 2035. Section 37 also calls for local governments in the Portland metropolitan region to implement the adopted scenario.

Phase 1 was completed January, 2012. Phase 1 focused on understanding the region's land use and transportation choices by conducting a review of published research and testing 144 regional scenarios. The analysis demonstrated the GHG emissions reduction potential of current plans and policies, as well as which combinations of more ambitious land use and transportation strategies are needed to meet the state target.

Phase 2 is currently underway and is aimed at designing and evaluating more customized alternative scenarios. This phase will examine the benefits, impacts, costs and savings associated with different strategies for meeting environmental, economic and equity goals. Case studies will be developed to illustrate potential community effects. The final phase, which is scheduled to be completed in 2014, will build and select a preferred scenario as well as define policies, investments and actions needed to implement the preferred scenario.

A variety of strategies from six categories were tested during Phase 1. The strategies address community design, pricing, technology, fleet, marketing and incentives, and roads. The following transportation system-related strategies were considered:

- Reducing delay through traffic management;
- Potential limitation on arterial and freeway expansion;
- Emphasis on transit and bicycle mode shares; and
- Potential pricing of parking and vehicle road-use.

A combination of these and other strategies are anticipated to make-up the final preferred scenario. Implementation of the adopted scenario will probably entail a significant update of the Regional Transportation Plan sometime soon after the year 2014.

Completion of the county's TSP 2035 update will precede the completion of the Climate Smart Communities Scenario Project, which will therefore need to be addressed in a subsequent TSP update. Ultimately, city and county TSPs will need to include policies and strategies outlined in the preferred scenario and be consistent with the region's Green House Gas (GHG) reduction targets.

Southwest Corridor Plan

The Southwest Corridor Plan integrates multiple planning efforts in a broad transportation corridor extending from downtown Portland to the city of Sherwood. These include local land use plans developed to support livable communities; a corridor refinement plan to examine the function, mode and general location of transportation improvements; and the transit alternatives analysis to define the best mode and alignment of high capacity transit to serve the corridor. Southwest Corridor planning work is undertaken through a partnership that includes Metro, Multnomah County, Washington County, the Oregon Department of Transportation, TriMet and the cities of Portland, Sherwood, Tigard, Tualatin, Beaverton, Durham, King City and Lake Oswego.

TV Highway Corridor Plan (TVCP)

The City of Hillsboro and ODOT are leading this refinement plan for the Tualatin Valley Highway corridor between 10th Street in Hillsboro and Cedar Hills Boulevard in Beaverton. The effort began in March of 2011, concurrently with the Aloha-Reedville Study and Livable Community Plan. The two plans are being closely coordinated, with recommendations of the TVCP to be included in the Aloha-Reedville Plan, and with the Aloha-Reedville Plan serving as the platform for land use, economic development and housing recommendations in the corridor. As of January 2013, the TVCP is close to completion. Its most significant recommendation is to retain TV Highway's current configuration as a five-lane urban arterial. Other recommendations include enhanced pedestrian crossings, completion of missing sidewalk and bike lane gaps, addition of street lighting, capacity improvements at intersections (such as new turn lanes and signal phase adjustments), and transit operational improvements. A second phase of the project, called the Focus Area Plan, will analyze transportation impacts associated with future development of South Hillsboro. Future high capacity transit planning along TV Highway will be further refined through a transit alternatives analysis that is not yet funded.

Basalt Creek Transportation Refinement Plan

Prior to identifying land uses and urban development concepts in the area between Sherwood, Wilsonville and Tualatin (the Basalt Creek and West Railroad areas), the cities of Tualatin and Wilsonville are collaborating with Washington County and Metro to define the future major transportation infrastructure needed in this area consistent with the RTP. Draft recommendations include an east-west arterial that would connect the southern terminus of the proposed 124th Avenue extension with Boones Ferry Road and potentially Interstate 5. Once the major network has been adopted, the cities will address local street circulation and access during the concept planning process, which will begin in 2013.

1.2.3 Washington County Plans

Washington County Comprehensive Plan

The Washington County Comprehensive Plan provides the basis for the future growth and development of the County. The Comprehensive Plan includes two primary policy documents, the (1) Comprehensive Framework Plan for the Urban Area (CFP) and (2) the Rural/Natural Resource Plan. Other more specific elements of the Comprehensive Plan are the Community Plans, the Transportation System Plan and the Public Facility Plan.

The CFP contains policies and strategies specifically designed to address growth and development issues for areas of the County inside the regional Urban Growth Boundary. The Rural/Natural Resource Plan contains policies and strategies intended to guide resource conservation and development for lands outside the urban growth boundaries.

The CFP and the Rural/Natural Resource Plan provide the framework of policies and strategies to be used as the basis for more specific planning activities, functional elements (e.g. transportation, housing, solid waste), community plans, regulatory ordinances, capital improvement programs, etc.

Washington County 2020 Transportation Plan

The *Washington County 2020 Transportation Plan* is one element of the County's Comprehensive Plan. The plan was last comprehensively updated in 2002 through A-Engrossed Ordinance 588 and has been periodically amended since then. Plan policies, strategies and system improvements were designed to meet existing and future travel needs associated with projected population and employment growth through the year 2020.

This plan and its related documents are intended to help achieve Statewide Planning Goal 12; Transportation. More specific guidance toward this end is provided by the State Transportation Planning Rule (TPR) (Oregon Administrative Rule 660-012-0000). Like other local governments in the Portland Metro Area, Washington County achieves many of these state planning requirements indirectly, by addressing provisions of Metro's Regional Transportation Plan.

The plan identifies general policies, strategies and system improvements necessary to address travel needs, system safety, impacts on the built and natural environment, system funding, and system implementation and plan management. The plan also includes more specific policies and strategies pertaining to the roadways, transit, demand management, pedestrians, bicycles, freight, and air, rail, pipeline and water elements. It identifies system needs under each of these elements through the year 2020, and identifies alternatives for financing improvements necessary to address identified needs.

The plan is supplemented by and used in conjunction with other Comprehensive Plan documents, including the County's Uniform Road Improvement Design Standards, Community Development Code and Community Plans (County Code Chapter 15).

This plan has been modified through 20 separate ordinances since 2002. Most of these ordinances included more than one plan modification, generally focusing on policy or strategy changes, modifying the designation or alignment of specific transportation facilities, or changing process provisions to clarify or modify existing language. The twenty actions are described in table 1-1.

Table 1-1: Washington County Ordinances Modifying the Transportation Plan

Ordinance Number	Year	Description
601	2003	Incorporated the Jackson School Road Interchange Area Management Plan
609	2003	Adopted an Airport Planning Program for small airports
611	2003	Housekeeping and refinement changes to Ordinance 588: amended plan text, Functional Classification map, Lane Numbers map, Special Area Street Overlay map, and Countywide Road System map
626	2004	Added the Saltzman Road Extension Study Area
627	2004	Amended Functional Classification, Lane Numbers and Study Areas maps to define the location of the 170 th / 173 rd realignment
631	2004	General housekeeping update and amended Functional Classification map to correct a previously adopted road alignment
642	2005	Amended Pedestrian Element to provide consideration of enhanced pedestrian design guidelines; amended Bicycle Element to add a strategy calling for bicycle route signage
649	2005	Updated road Functional Classification names, reflected changes made to the transportation systems within city jurisdiction, updated Study Area designations, and added trail and pipeline alignments
663	2006	Amended a portion of Table 6, the Functional Classification Design Parameters
674	2007	Amended Road Jurisdiction Policy
683	2007	Clarified provisions and use of System Performance Standards, added illustration of preferred alternative for Beaverton-Hillsdale/Scholls Ferry/Oleson intersection design
712	2009	Added the North Bethany Subarea Plan, establishing a primary street network, a trails and accessway network, and conceptual design provisions for transportation facilities
713	2009	Added the 'B' Street Trail south of Forest Grove
717	2009	Modified the planned street network and functional classifications in the Elmonica Station Area
718	2009	Changed the functional classification of one roadway, and sections of four other roadways in the Cedar Mill/Cedar Hills area; clarified that removal of proposed roadways from the Plan must be done through a legislative action
730	2010	Further refinements for the North Bethany Subarea Plan
739	2011	Further refinements for the North Bethany Subarea Plan
744	2011	Further refinements for the North Bethany Subarea Plan
749	2012	Adopted ODOT's Brookwood Interchange Area Management Plan and designated Cornelius Pass Road from HWY 26 to Cornell Road as 7-lanes
750	2012	Added a proposed SW 124 th Avenue between Tualatin-Sherwood Road and Tonquin Road to facilitate industrial development between Tualatin and Sherwood

Washington County Bike and Pedestrian Plan

This document organizes bicycle and pedestrian elements adopted as part of the Washington County 2020 Transportation Plan in a more focused and accessible form. During discussion of bicycle and pedestrian issues in 2010 and 2011 it was determined that a separate document focusing on plan provisions associated with these two modes would be useful. The document is intended to reflect transportation plan provisions and is for informational purposes only. It has no regulatory or policy status of its own.

Washington County Public Facilities Plan

Cities and counties are required under ORS 197.712 to adopt public facility plans for areas within urban growth boundaries containing populations exceeding 2,500 persons.

Public facilities plans describe the water, sewer, storm drainage, and transportation facilities needed to support land use designations in local government comprehensive plans. Washington County maintains responsibility for public facility planning throughout those areas of urban, unincorporated Washington County that are not either formally incorporated within the city limits or covered by an Urban Planning Area Agreement (UPAA) with a municipality.

Based upon the 1988 Washington County Transportation Plan, the public facilities plan is outdated and of little value for transportation planning. For transportation facilities, however, the state transportation planning rule (TPR) states that transportation system plans adopted pursuant to TPR provisions fulfill state public facilities planning requirements (see 660-012-0000-4). The existing *2020 Transportation Plan* is consistent with these provisions.

Washington County Community Development Code

The purpose of the Community Development Code (CDC) is to implement the Washington County Comprehensive Plan. Standards and requirements of the Community Plans, the Rural/Natural Resource Plan, and the Transportation Plan that are applicable to development applications are specified in the CDC.

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

Land within the unincorporated portion of Washington County may be used, or developed by land division or otherwise, and a structure may be used or developed by construction, reconstruction, alteration, occupancy or otherwise only as the Comprehensive Plan and this Code permit. The provisions of the CDC, including standards and requirements of the Community Plans, the Rural/Natural Resource Plan, and the Transportation Plan that development applications are required to comply with, apply to any person developing or using land or a structure, and to the person's successor(s) in interest.

In general, Article V of the CDC identify those public facilities and services that are necessary at a minimum level to accommodate development particularly transportation facilities. Land within incorporated areas of Washington County may also be subject to article V requirements, depending on location of the development, and if access to County roadways is contemplated. Article VII of the code identifies public transportation improvements authorized by the transportation plan that are subject to development review, and establishes the standards and procedures for such review.

Washington County Community Plans

Community plans provide specific land use designations on properties within the urban unincorporated areas of the County as well as detailed policy direction to guide development based upon community needs and desires. The policy framework of the CFP is reflected in the specific Community Plans. A Community Plan is the legally binding statement of County policy within the boundaries of the planning area. With regard to transportation matters, if there is a conflict between a provision in the community plan and a provision in the transportation plan, the transportation plan provision applies.

The following community plans have been developed:

- Aloha-Reedville-Cooper Mountain Community Plan
- Bethany Community Plan
- Bull Mountain Community Plan
- Cedar Hills-Cedar Mill Community Plan
- East Hillsboro Community Plan
- Metzger-Progress Community Plan
- Raleigh Hills-Garden Home Community Plan
- Sherwood Community Plan
- Sunset West Community Plan
- West Tigard Community Plan
- West Union Community Plan

North Bethany Subarea Plan

Since September 2006, Washington County staff, a consultant group, two citizen-driven advisory groups and interested Washington County residents have worked to develop plans for the North Bethany area. First a Concept Plan was developed. Following adoption by the Board of Commissioners, the Concept Plan was refined through development of the comprehensive plan and community development code provisions necessary for its implementation. Amendments to the Washington County 2020 Transportation Plan were adopted through A-Engrossed Ordinance No. 712 in 2009. These amendments included changes to the Functional Classification System map to reflect newly proposed arterial, collector and neighborhood routes, changes to the Lane Numbers map and Study Areas map as well as the addition of an off-street trail to the Off-Street Trails System map. An infrastructure funding plan and further discussion of a range of outstanding issues followed.

Aloha Reedville (AR) Study and Livable Community Plan

A three-year community planning effort for this large area of urban unincorporated Washington County began in March 2011, and has a wide-ranging set of objectives. Among the transportation-related deliverables for this project will be a bike/pedestrian plan and streetscape improvement plan. Public involvement thus far has revealed significant support for more sidewalks, crossing improvements and street lighting, among other improvements. The plan will also address other topics, including economic development, affordable housing and land use. The Aloha-Reedville effort is being closely coordinated with the TV Highway Corridor Plan and Focus Area Plan being conducted by the City of Hillsboro and ODOT. Outcomes of the TV Highway effort will significantly affect the Aloha-Reedville planning process.

1.2.4 City Plans

There are 16 cities wholly or partially located in Washington County:

- Banks
- Beaverton
- Cornelius
- Durham
- Forest Grove
- Gaston
- Hillsboro
- King City
- Lake Oswego
- North Plains
- Portland
- River Grove
- Sherwood
- Tigard
- Tualatin
- Wilsonville

Cities are generally responsible for the transportation system within their boundaries, with the exception of transportation facilities under the jurisdiction of the state or county. In those cases the agency with jurisdiction over the facility retains authority and responsibility for its maintenance and improvement.

Given the interdependence of city, county and state transportation facilities and services, coordination of system design, system improvement and system management policies and practices is vitally important. Washington County staff and inter-jurisdictional coordination occurs frequently on an as needed basis. The formal coordination generally occurs in a couple of ways:

- Through formal arrangements such as Urban Planning Area Agreements (UPAAs) or other intergovernmental agreements that specifically define local government relationships and responsibilities.
- On-going and active coordination, including the Washington County Coordinating Committee (the WCCC, which is composed of elected officials) and the WCCC Transportation Advisory Committee (The WCCC TAC, which is composed of senior planning or engineering staff).

1.3 CHANGES IN WASHINGTON COUNTY

Washington County in 2012 is not the same place it was in 2002. This section documents changes in population, employment and travel demand and land use over the past decade, and projects those trends into the future.

1.3.1 Changes in Population and Employment

Historic Growth Rates

As indicated in Figure 1-2 and Table 1-4 below, Washington County has grown considerably during the last 40 years. Since 1970 the population within Washington County² has increased from 311,544 to 532,620 an increase of 71 percent or just over 221,000 residents. Employment since 1970 within Washington County² has increased from 180,302 to 232,019 an increase of 29 percent or 51,717 jobs.

Comparison to 2002 Plan

The 2002 Transportation Plan estimated that the population of Washington County would increase to approximately 544,000 by 2010. This estimate was 11,380 more than actual (about 2% high).

Recession

The County has experienced a significant increase in jobs over the 40 years between 1970 and 2010. During that time frame, Washington County increased from 51,935 jobs to over 232,000 jobs – adding over 180,000 jobs in 40 years. From 2005 to 2010 Washington County employment decreased from over 284,000 jobs to 232,000 jobs, a decline of about 52,000 jobs or 22 percent in only five years.

Forecast

The forecast population and employment growth within Washington County is based upon historic trends and assumptions related to remaining growth capacity. Remaining growth capacity includes assumptions related to zoned capacity of lands within the existing Urban Growth Boundary as well as lands designated as Urban Reserves. The forecast has been reviewed by all jurisdictions in the region. Washington County's dramatic growth rate over the past 40 years is expected to slow down in the future, but continue above the national average.

By the year 2035, the population of Washington County is expected to increase to 758,500, an increase of 42 percent from 2010. The forecasted average annual growth is approximately 1.42% per year for the 25 year period. This is down significantly from the 2.8% annual average growth rate of the preceding 25 years.

As the economy recovers from the current downturn, employment is expected to increase at a faster rate than population. From a long term planning point of view, Washington County is expected to recover from the recent recession and continue to gain jobs at a relatively rapid pace. By 2035 the employment in Washington County is expected to increase to about 382,000 jobs. This would be an increase of about 150,000 jobs above the 2010 employment, or about 100,000 above 2005 employment. The forecasted average annual employment growth is

² Includes growth within cities in Washington County.

approximately 2.02% per year for the 25 year period 2010-2035. This is down slightly from the 2.11% annual average employment growth rate of the preceding 25 years (1985-2010), and down yet further, from the 3.69% annual average employment growth rate of the pre-recession 20 year period from 1985 to 2005.

Figure 1-2: Washington County Population and Employment Trends

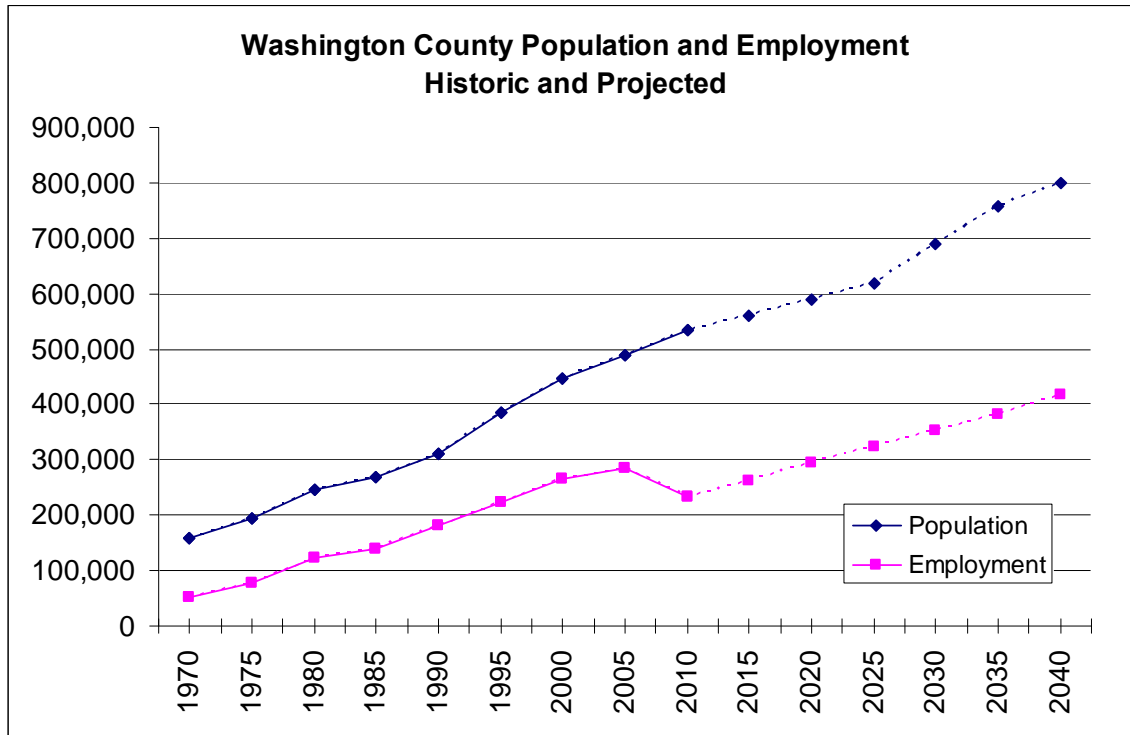


Table 1-2: Washington County Population and Employment Historic and Projected

Year	Population	Employment
1970	157,920	51,935
1975	192,900	78,639
1980	245,808	122,558
1985	268,000	137,741
1990	311,554	180,302
1995	384,335	222,002
2000	445,342	265,353
2005	489,785	284,422
2010	532,620	232,019
2015	561,056	263,127
2020	589,491	294,234
2025	617,927	325,342
2030	688,329	354,077
2035	758,500	382,812
2040	799,000	416,836

The growth envisioned in the 2035 population and employment forecast translates directly into transportation system needs within Washington County. Of particular significance for the transportation system is the jobs growth and peak-hour travel demand. Travel most often occurs to, from, or between areas where employment is located. Population numbers are an important indication of the number of travelers, but employment perhaps has a greater impact on traffic volumes. As can be seen in the traffic count trends reported in chapter 2, there has been limited growth in traffic counts between 2007 and 2012, which roughly corresponds to the economic downturn that produced the loss of more than 50,000 jobs in Washington County between 2005 and 2010. Meanwhile population increased by almost 43,000 people during the same period.

Population and employment statistics and trends could encompass an entire report. A brief summary of several key elements related to travel for both population and employment are provided below.

Population Statistics

In 2010 there were approximately 199,000 households in Washington County. Figure 1-3 shows household types, indicating that more than 50 percent of the households were married couple families. The average household size was 2.6 people.

Figure 1-3: Types of Households in Washington County – 2010

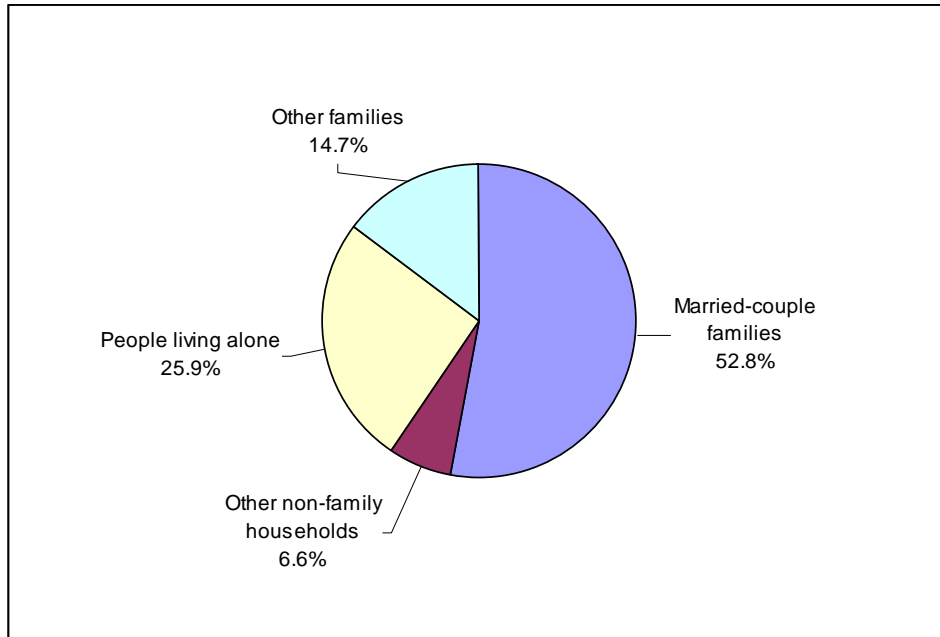
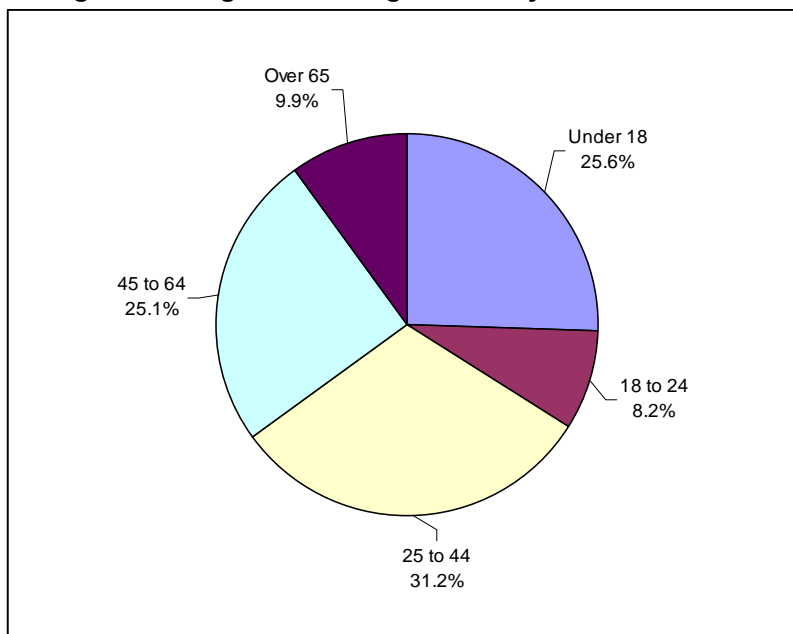


Figure 1-4 shows the age breakdown of residents of Washington County. The median age of Washington County residents in 2010 was 35.3 years. Twenty-six percent of the population was under 18 years of age, and 10 percent was age 65 years or older.

Figure 1-4: Age of Washington County Residents – 2010



Employment Statistics

Figure 1-5 shows educational attainment of Washington County residents. In 2010, nearly 40% of the residents of Washington County had a bachelor’s degree or higher, whereas only 9% had less than a high school diploma.

Figure 1-5: Educational Attainment of Washington County Residents – 2010

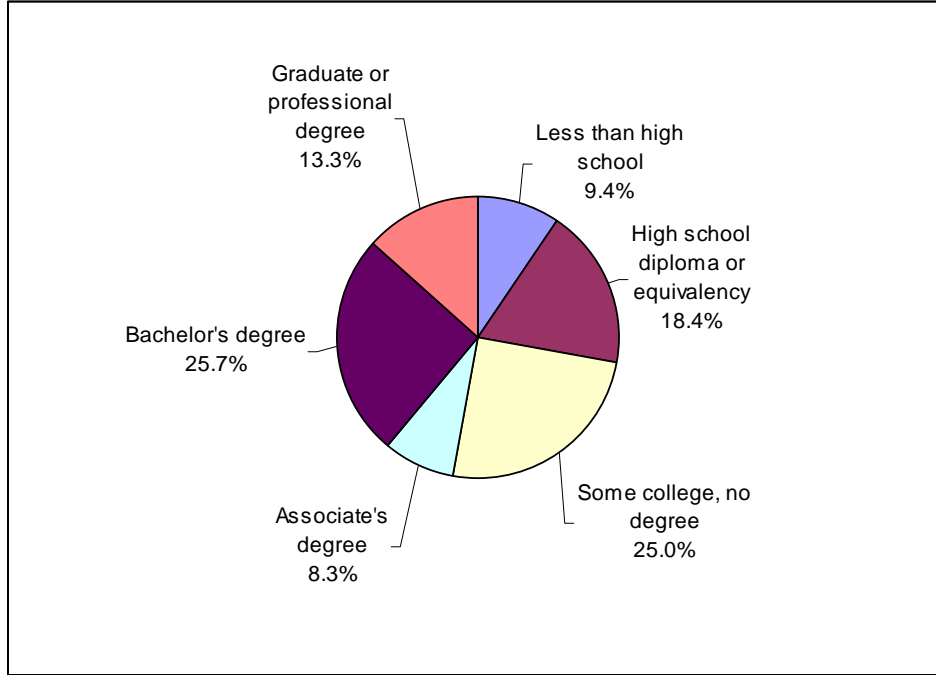


Table 1-5 below shows the occupation of employed Washington County residents, 16 years and over, in 2010. Note that almost 43 percent of Washington County residents were employed in the predominantly white-collar management, business, science and arts occupations.

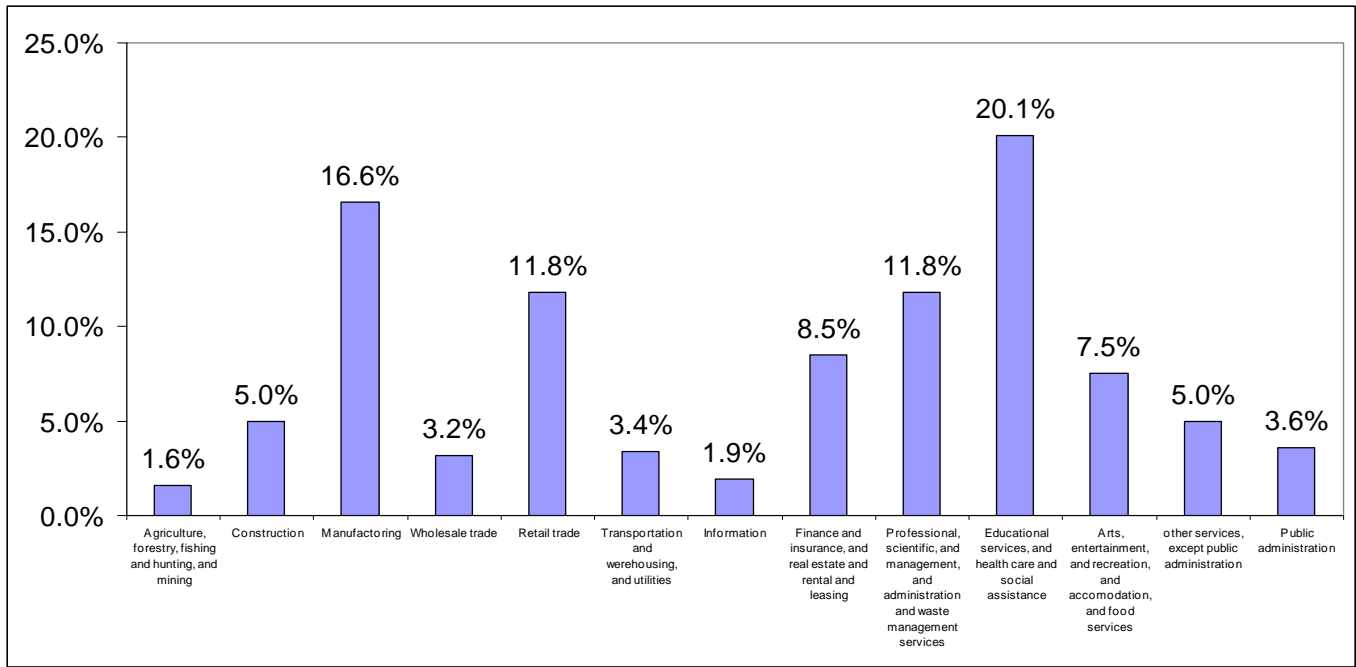
Table 1-3: Occupation of Washington County Residents – 2010¹

Occupation	Number	Percent
Management, business, science, and arts	109,032	42.7%
Service	39,958	15.6%
Sales and office	66,836	26.2%
Natural resources, construction and maintenance	18,237	7.1%
Production, transportation and material moving	21,452	8.4%

¹ Does not match employment within Washington County; some residents work outside the County and some employees commute from outside the County.

Figure 1-6 shows the percentages of Washington County workers, 16 years or older, working in various industrial sectors.

Figure 1-6: Industry of Washington County workers – 2010



The highest category is educational services and health care with over 20% of the labor force. Second highest is manufacturing (which includes high-tech) with over 16% of the labor force. The construction sector still had 5% of the employed labor force even with the economic downturn in 2010.

1.3.2 Travel Demand

The RTP provides both a policy framework and regional transportation system elements and services that local governments must recognize and address in their transportation planning work. An understanding of some of the RTP provisions is helpful in understanding some provisions of the Washington County Transportation Plan.

While recognizing that the significant majority of trips will continue to be taken by automobile, the RTP places a premium on encouraging non-auto travel. As a result of RTP policies, facilities, services, and programs that support and encourage the development and use of non-auto travel, the percentage of daily trips taken by some means other than driving alone is expected to increase.

The currently adopted Washington County TSP supports these RTP policies. Table 1-4 below describes the forecasted model outcome based upon the implementation of the State RTP list of projects.³

Table 1-4: Washington County Travel Demand (Average Weekday)¹

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

- Notes:
1. All modes include all daily trips that either start or end within Washington County, including the rural areas outside the Metro Boundary. Other chapters focus on urban travel and report fewer daily trips (only those within the urban area).
 2. SOV – Single Occupancy Vehicle, a vehicle in which the driver is traveling alone (this is a subset of the Auto category).
 3. Shared Ride – Includes both the driver and other passengers (this is a subset of the Auto category).
 4. Yellow school bus trips are not included.
 5. Pedestrian and Bicycle trips do not include travel for the purpose of exercise.

Achieving these results depends upon the facilities, services and strategies necessary to support this non-auto travel being in place. The RTP identifies local government and transportation service provider responsibilities in this regard. The Washington County Transportation Plan contains systems, services and strategies intended to recognize and respond to those provisions.

³ The State RTP network for modeling assumes \$3.9 billion in revenues will be available through 2035 for transportation improvements in Washington County, however, only about 60 percent of that revenue is assumed to be available under the more realistic Financially Constrained funding scenario (source: Metro 2035 Regional Transportation Plan tables 3.2 and 3.4)

1.3.3 LAND USE PATTERNS

Metro 2040 Growth Concept

The 2040 Growth Concept is the region's growth management policy; it defines development in the metropolitan region through the year 2040. The 2040 Growth Concept:

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

Areas added to UGB since 2002

In 2002, 18,867 acres were added to the Urban Growth Boundary to provide 38,657 housing units and 2,671 acres for additional jobs. This action also created important regional policies to support neighborhoods, protect industrial areas and enhance regional and town centers. In 2004, an additional 1,956 acres were added to the boundary to address the need for industrial lands identified as part of the 2002 planning process. In 2005, the Metro Council added 345 acres of land for industrial purposes which completed the 2002 planning process.

In 2011, the Metro Council added 1,985 acres to the boundary to address the anticipated 20-year need for new housing and jobs. The four areas in Washington County that were added to the urban growth boundary in the Metro Council's Oct. 2011 decision include:

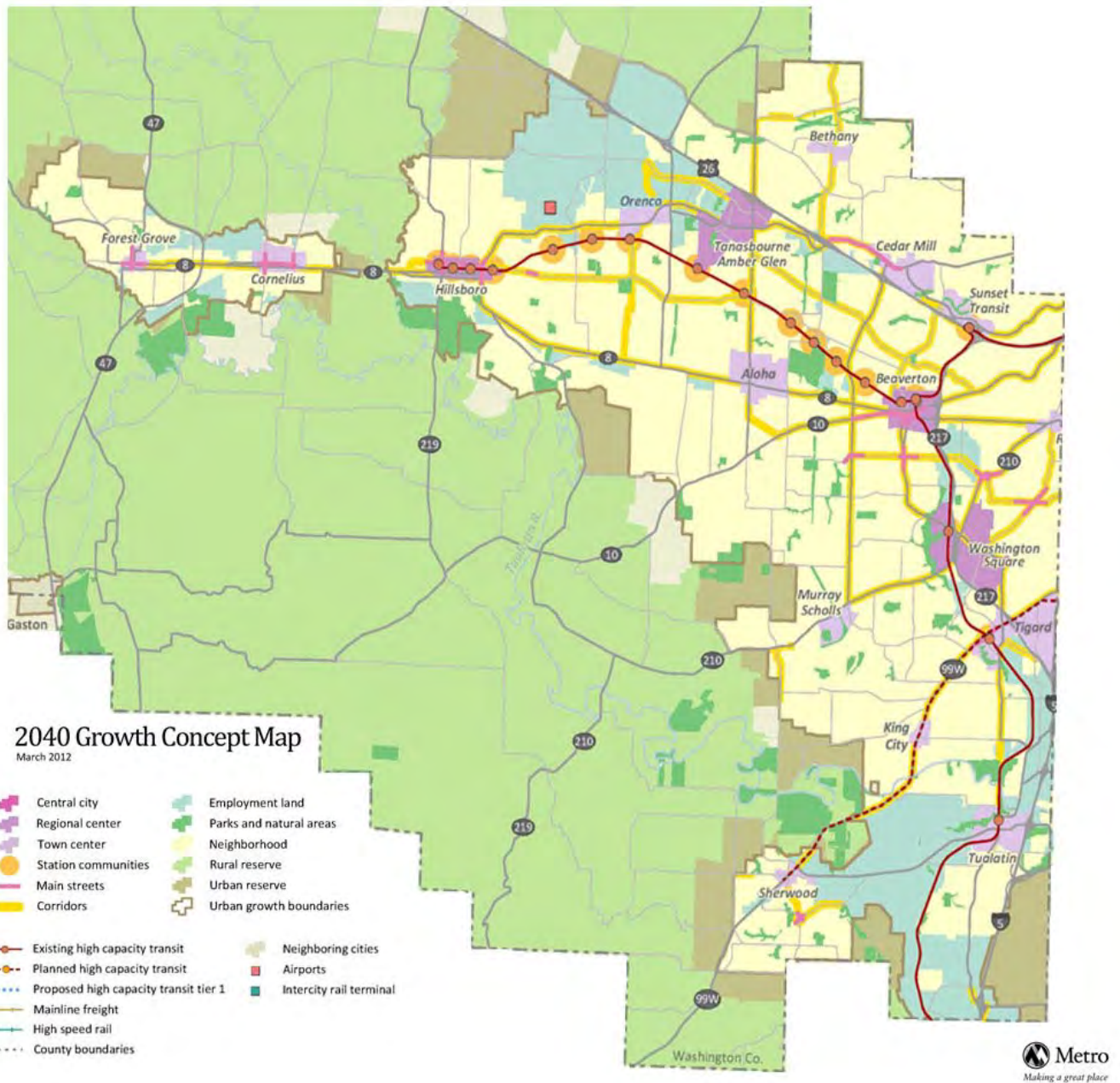
- a 330-acre area north of Hillsboro, in the vicinity of Northwest Meek Road and south of U.S. Highway 26, for the purposes of attracting future large-site industrial employers;
- a 1,063-acre area south of Hillsboro, in the vicinity of Southwest 229th Avenue and Southeast Tualatin Valley Highway, to achieve a target of approximately 10,776 new housing units;
- a 543-acre area west of Beaverton, in the vicinity of Southwest 175th Avenue and Scholls Ferry Road, for a minimum of 4,651 new housing units; and
- a 49-acre area west of Tigard, east of Southwest Roy Rogers Road and south of Southwest Bull Mountain Road, for new residential development and to provide public structures in the West Bull Mountain area.

Urban and Rural Reserves

As mentioned in section 1.2, Clackamas, Multnomah and Washington counties and Metro collaborated on a regional effort to help determine the shape of the region over the next 40 to 50 years. Urban and rural reserves are intended to provide greater predictability for the region as to where future growth may take place both inside and outside the current Urban Growth Boundary over the next 40 to 50 years, while protecting important

farmland and natural areas from urbanization for that same period of time. Urban and rural reserves are shown on the Metro 2040 Growth Concept map below.

Figure 1-7: Metro 2040 Growth Concept and Urban and Rural Reserves in Washington County



Chapter 2: Roadways

2.1 FUNCTIONAL CLASSIFICATION

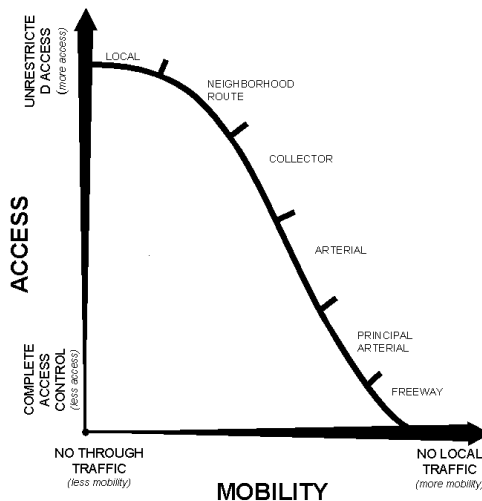
There are numerous ways in which the concept of roadway functional classification is defined and interpreted. federal, state, regional and some city definitions within Washington County all differ from the classification scheme used by the county. In practice though, this is usually not a problem because all classification systems reflect the general thought process described below.

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Basic to this process is the recognition that individual roads and streets do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads. It becomes necessary then to determine how this travel can be channelized within the network in a logical and efficient manner. Functional classification defines the nature of this channelization process by defining the part that any particular road or street should play in serving the flow of trips through a highway network.¹

As such, both the Washington County Functional Classification System and Metro’s 2035 Regional Transportation Plan Arterial and Throughway Network map describe a hierarchy of roadway types, their relative roles in the transportation system, and provide direction with regard to appropriate classification criteria and facility design.

As depicted in Figure 2-1, roads perform two essential functions: they facilitate mobility and they provide access to individual properties. At the top end of the system, a Freeway’s main function is to provide a continuous route that enables traffic to move easily over long distances. At the bottom end, a Local Street’s primary function is to provide access to individual properties. Between these extremes, roadways provide access and mobility to varying degrees. In this manner the functional classification system represents a continuum in which through-traffic increases and provisions for access decrease in the higher classification categories.

Figure 2-1: Relationship between Functional Classification, Mobility and Access



Relationship Between Functional Classification, Mobility and Access

Reference: [Design of Urban Streets](#), FHWA

¹ FHWA Functional Classification Guidelines, 1989

2.1.1 Washington County Functional Classification System

The Washington County functional classification system consists of six basic underlying classifications: Freeway, Principal Arterial, Arterial, Collector, Neighborhood Route and Local streets. Figure 2-2 and 2-3 show the designated functional classification for all roads except local roads, which are not shown to improvement readability. Each of these classifications except the Freeway, Principal Arterial and Local street classifications have either an “existing” or “proposed” designation. Each of the underlying designations (Arterial, Collector, Neighborhood Route and Local) also may have an existing or proposed Special Area designation relating to special design standards that support transit-oriented development. The Special Area functional classification designations currently appear only in RTP designated Town Centers and Station Community Areas. For Washington County, these Special Areas are the Sunset Station, Cedar Mill, Willow Creek, Merlo and Elmonica areas.

While not part of the Functional Classification System, the Rural Resource Route designation in the rural area is used to differentiate and give higher maintenance priority to the subset of local roadways that are most important to the rural economy. This aspect of functional classification, however, is addressed at a programmatic rather than plan level to allow more flexibility in responding to the changing locations of active farming, mining and timber harvesting activities.

Table 2-1: Washington County Road Mileage by Functional Classification

	Mileage	Percent of Total Miles
Urban Area		
Arterial	125	9.7%
Collector	74	5.8%
Neighborhood Route	83	6.5%
Local	362	28.2%
Urban Total	644	50.2%
Rural Area		
Arterial	74	5.8%
Collector	191	14.9%
Local	374	29.2%
Rural Total	639	49.8%
County Total	1283	100%

Source: Washington County

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

As shown in Table 2-1, as of 2011, Washington County had jurisdiction over nearly 1300 centerline miles (lane mile data unavailable) of urban and rural roadway in the county with roughly 650 miles of roadway in both the urban and rural areas. The Local road classification accounted for almost 60 percent of the total road mileage. These mileages include roads that are under county jurisdiction but are located within city limits. Most of these “county roads” are in the Arterial road functional class, and include Tualatin-Sherwood Road in Tualatin and Sherwood, Cornell Road in Hillsboro and Walker Road in Beaverton.

Functional Classification Definitions

Principal Arterials form the backbone of the road network. These routes connect over the longest distance (sometimes miles long) and are spaced less frequently than other Arterials. These freeways and highways generally span several jurisdictions and can have statewide importance. At a minimum, highways that are classified by ODOT as Interstate or Statewide Highways are considered Principal Arterials. Examples of Principal Arterials in Washington County include Tualatin Valley Hwy., Hwy. 47, Hwy. 6 and parts of Hwy. 99W and U.S. Hwy. 26. General characteristics of Principal Arterials can include:

- Freeways have the highest level of access control, including grade separated interchanges. No at-grade driveways or connections are allowed.
- Highways generally have limited at-grade connections.
- Freeways and highways provide connections for the movement of people, services and goods between the central city, regional centers and destinations beyond the region.
- Principal Arterials that are not freeways are managed to minimize the degradation of capacity while providing limited access to abutting properties.

Arterial streets interconnect and support the Principal Arterial highway system. Arterials provide general mobility for travel within the Washington/Multnomah/Clackamas County area. Correctly sized Arterials at appropriate intervals allow through-trips to remain on the Arterial system thereby discouraging use of Local streets for cut-through traffic. Arterials streets link major commercial, residential, industrial and institutional areas. General characteristics of Arterials can include:

- Arterials serve as primary connections to Principal Arterials, and connect to other Arterials, Collector and Local streets, where appropriate.
- Arterials in the rural area provide connections to neighboring cities, and farm-to-market access between urban and rural areas. Most rural Arterials serve a mix of rural-to-urban and farm-to-market traffic. In some cases rural Arterials, especially in rural/urban fringe areas, accommodate significant amounts of urban-to-urban through-traffic during peak commuting time periods. This is not the intended function of the rural Arterial designation and is often the result of congestion on urban Arterials
- Arterials provide freight movement in support of Principal Arterials.
- Arterials have moderate access control for cross streets and driveways. Typically, residential driveways are not allowed access to Arterials.

Collector Streets provide both access and circulation between residential, commercial, industrial and agricultural community areas and the Arterial system. As such, Collectors tend to carry fewer motor vehicles than Arterials, with reduced travel speeds. Collectors may serve as freight access routes, providing local connections to the Arterial network. General collector characteristics can include:

- Collectors connect neighborhoods to nearby centers, corridors, station areas, main streets and nearby destinations in the urban area. Land development should not be sited to obstruct the logical continuation of Collector streets.
- In the rural area, Collectors are a primary link between the local street system and Arterials for freight, people, goods and services.
- Access control on Collectors is lower, and direct driveway connections

Commercial/Industrial Streets are a design variant of the Collector street designation and are intended to provide access to commercial or industrial properties. The application of this designation through the development review process may require a different design standard than the underlying functional classification designation.

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

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

Local Streets primarily provide direct access to adjacent land. While Local streets are not intended to serve through-traffic, the aggregate effect of local street design can impact the effectiveness of the Arterial and Collector system when local trips are forced onto the Arterial street network due to a lack of adequate local street connectivity. Local street connectivity maps in the Community Plans identify new local street connections that are required by the Community Development Code in conjunction with development.

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

- Paved or oftentimes unpaved surfaces
- Narrow lane widths with roadside ditches to provide drainage
- No access control and access points spaced far apart
- Lack of traffic calming measures, sidewalks and illumination

Urban Local street characteristics include:

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

Special Area Streets are sub-categories of Collector, Neighborhood Route, Commercial Street and Local Street underlying functional classification designations. Special Area street designations are most frequently applied in transit-oriented overlay districts within RTP 2040 center and station community area designations with good transit service. They are identified on the Special Area Street Overlay Map as well as in the Community Plans. Special Area Street design standards are included in the Washington County Uniform Road Improvement Design Standards.

- **Special Area Collectors** are intended to link traffic from Special Area Local Streets, Special Area Neighborhood Routes, and some Special Area Commercial Streets to Arterials. Posted speeds are low to moderate. A moderate degree of non-transit oriented development traffic would be acceptable for these facilities.

The design of a Special Area Collector provides multi-modal access to the Arterial system, station area employment and high density residential areas while discouraging traffic infiltration on local streets. In

addition to autos, these facilities accommodate primary and secondary bus lines, bike lanes, and sidewalks separated from the street by a landscape strip. Left turn lanes in medium and low density residential areas are generally provided at intersections with Arterials.

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

- **Special Area Neighborhood Routes** serve both a traffic collection and distribution function and provide access to adjacent properties. These facilities are intended to have less volume and less through-traffic than Special Area Collectors. Posted speeds are low, and limited amount of non-transit oriented development traffic is acceptable for these facilities.

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

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












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

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

- **Special Area Local Streets** provide direct property access. They are not intended to serve through-traffic. Posted speeds are low, and non-transit oriented development traffic is inappropriate for these facilities.

The design of Special Area Local Streets reflects the residential neighborhood function by accommodating on-street parking on a narrow paved width which can include traffic calming measures to slow down traffic. Special Area Local Street serve only low to medium density residential districts.

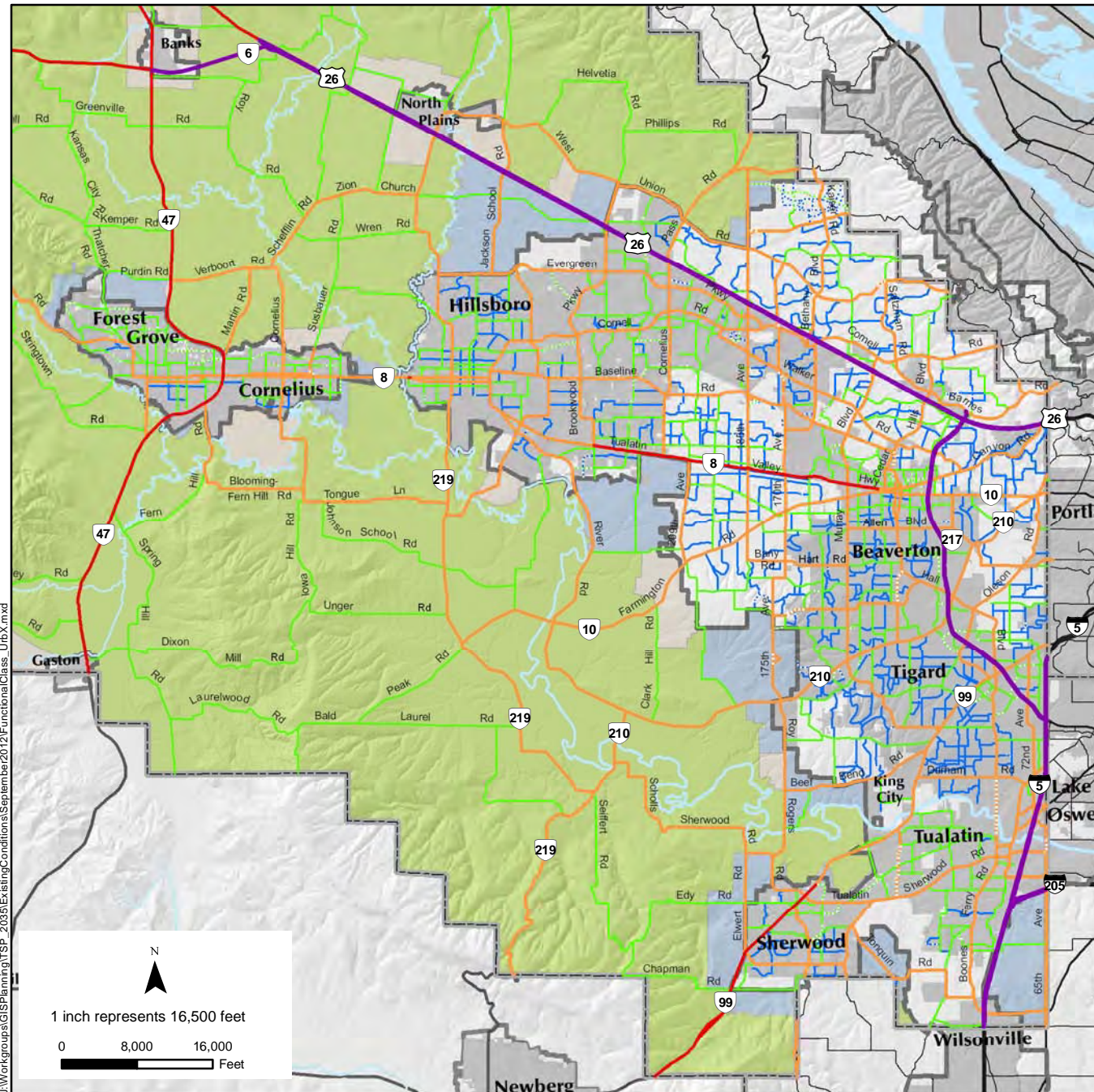
Functional Classification System

-  Freeway
-  Principal Arterial
-  Arterial
-  Collector
-  Neighborhood Route
-  Proposed Arterial
-  Proposed Collector
-  Proposed Neighborhood Route
-  Rural Reserves
-  Urban Reserves
-  Rural Washington County

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Care was taken in the mapping but there are no warranties for this product. However, notification of any errors will be appreciated.












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Figure 2-2



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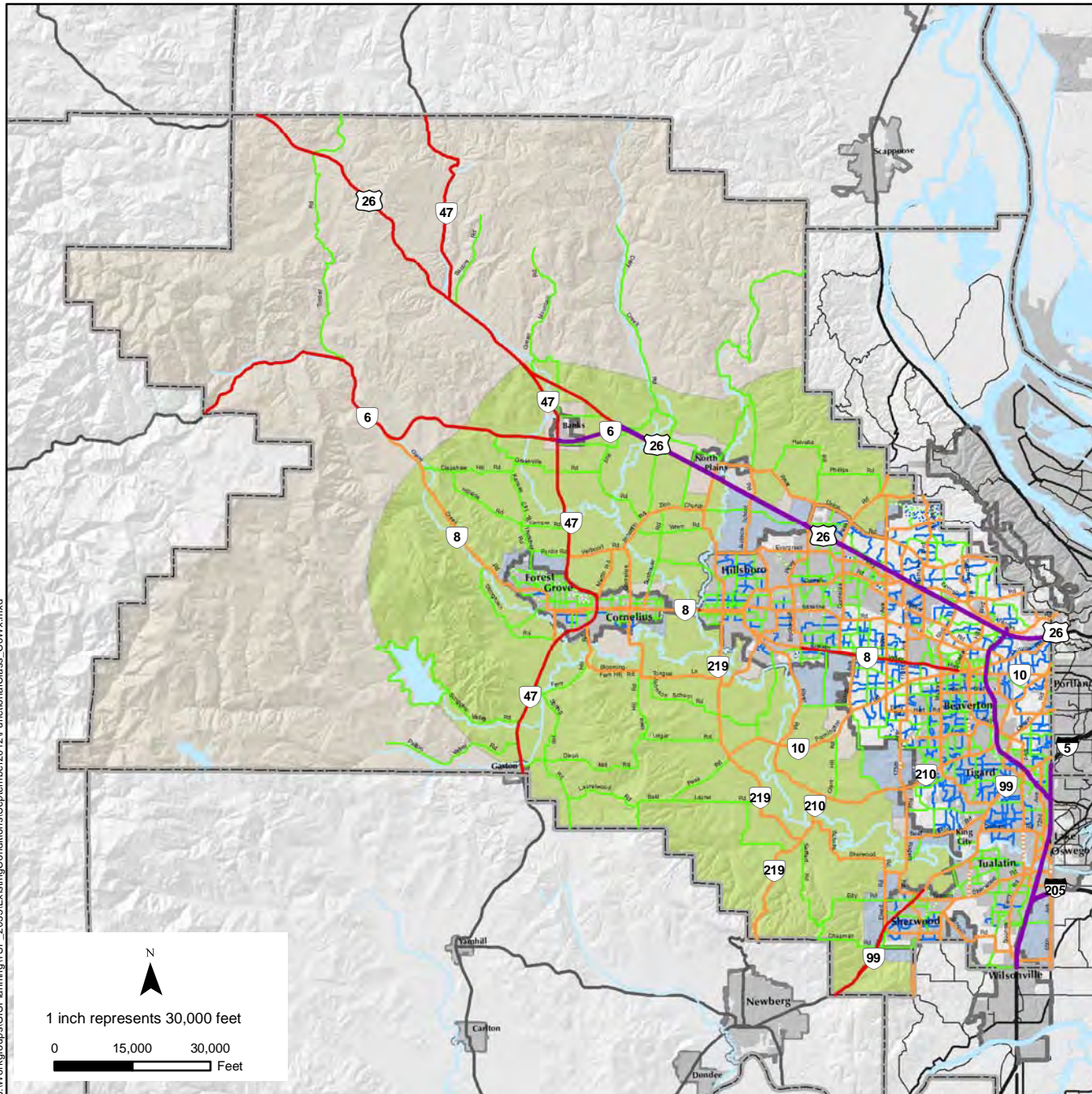
Functional Classification System

-  Freeway
-  Principal Arterial
-  Arterial
-  Collector
-  Neighborhood Route
-  Proposed Arterial
-  Proposed Collector
-  Proposed Neighborhood Route
-  Rural Reserves
-  Urban Reserves
-  Rural Washington County

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Department of Land Use and Transportation
Planning and Development Services

Figure 2-3










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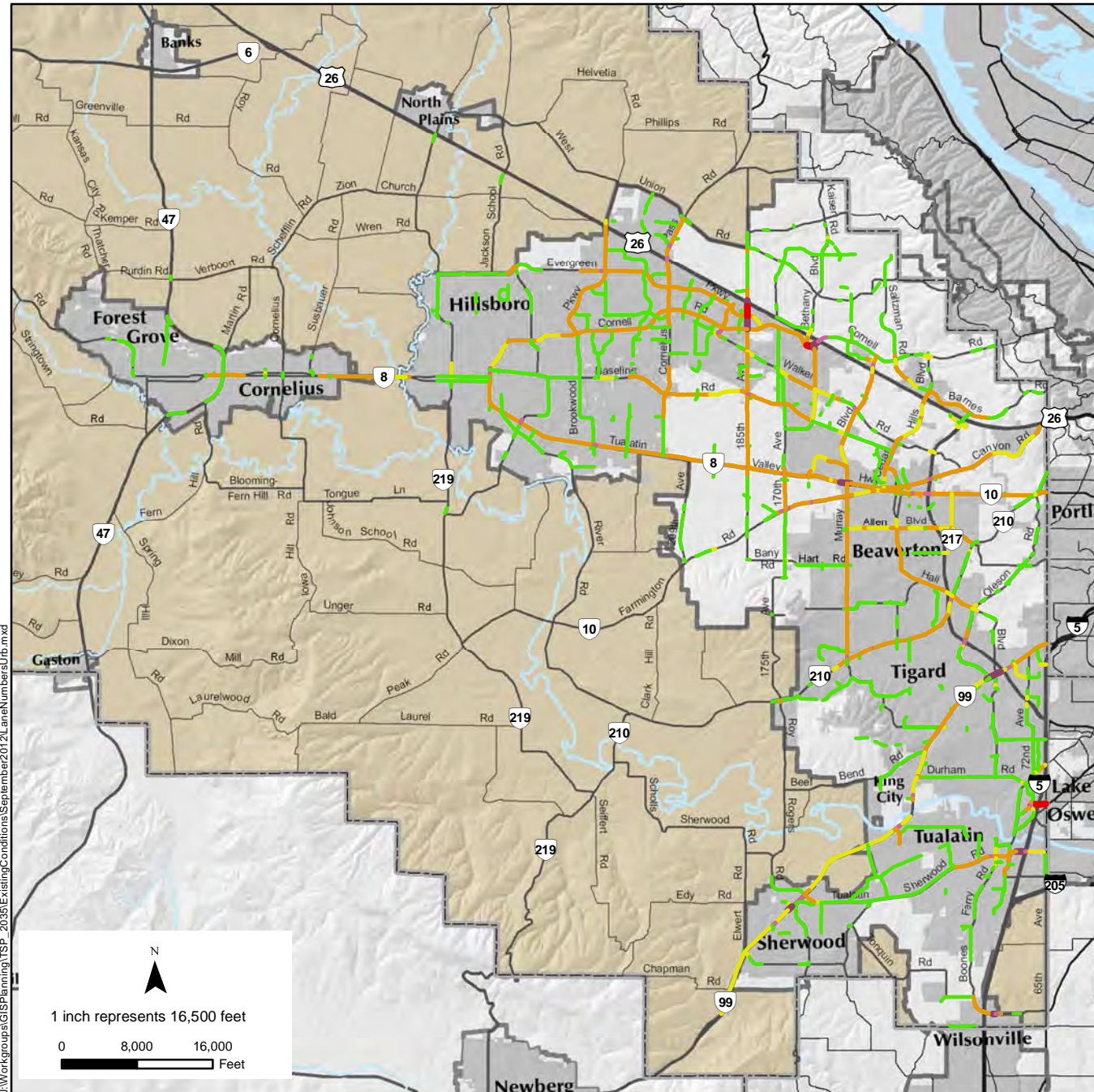
2.2 WASHINGTON COUNTY DESIGN STANDARDS

Design and construction standards are set forth in the Washington County Code Chapter 15.08. Design standards for rural and urban functional classifications are described in Table 2-2 and Table 2-3 below. All engineering plans for public or private transportation improvements under the jurisdiction of Washington County shall conform to these standards. These tables generally identify the maximum right-of-way and pavement widths that can be built without amending the transportation plan. In some cases though, plan amendments may not be required if it is determined through the project development or development review process that these maximums need to be exceeded to ensure safe and efficient operation. Actual required right-of-way widths, however, may be less than those specified depending upon roadway characteristics and surrounding land uses. Sufficient right-of-way to accommodate turn lanes is required within 500 feet of all arterial and collector intersections. Design standards are, in part, based upon the future number of lanes that are called for in the plan. The number of required lanes for roads in the urban area are shown in Figure 2-4.



Lane Numbers

-  8 Lanes
-  7 Lanes
-  6 Lanes
-  5 Lanes
-  4 Lanes
-  3 Lanes
-  Rural Washington County



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Department of Land Use and Transportation
Planning and Development Services

Figure 2-4

2.2.1 Rural Area Design Standards

Rural area design standards for the various rural functional classifications are displayed in Table 2-2. Although five basic underlying classifications exist, only three (Arterial, Collector and Local) are currently designated in the *Washington County 2020 Transportation Plan*. In general, between 50 and 90 feet of right-of-way is required on all rural roads with pavement widths ranging from 24 to 60 feet. Travel lane widths are generally 12 feet, bike lane or paved shoulders are 6 feet wide and center-turn lanes are 14 feet wide. Note that parking (one side only) is allowed in one Neighborhood Route sub-class and on Commercial or Industrial classes.

Recent discussions with some rural residents have indicated a desire to revise the arterial standards to address the increasing presence of urban commuter traffic passing through the rural area. Increased traffic in rural areas can cause conflicts with slower moving farm equipment as well as increased dust, noise and air pollution. Potential modifications to consider include wider roads to better accommodate all users, increased right-of-ways to create more effective buffers between traffic, residences and farming operations. A contrasting point of view expressed by some rural residents would not expand roadways in hopes of not increasing traffic speeds. Given these contrasting opinions, will present a challenge in development equitable solutions.

Table 2-2: Washington County Rural Functional Classification Design Standards

Classification	Max. Right-of-Way (Ft.)	Max. Paved Width (Ft.)	Number of Lanes	Bike Lane/Paved Shoulder Width (Ft.)	Curb Travel or Parking Lane Width (Ft.)	Travel Lane or Travel Way Width (Ft.)	Center Turn Lane Width (Ft.)	Parking Allowed
Rural Arterial	90	60	4	6	12	12	0	None
	90	50	3	6	0	12	14	None
Rural Collector	60	36	2	6	--	12	0	None
Rural Neighborhood Route	60	28	2	0	--	14	0	None
	60	32	2	0	8	12	0	One side
Rural Local	50	24	2	--	--	24	0	None
Rural Commercial or Industrial	Ultimate or 64	34	2	0	8	13	0	One side

2.2.2 Urban Area Design Standards

To better accommodate the greater variety of traffic and land use conditions that exist in the urban area, the five underlying classifications (Arterial, Collector, Neighborhood Route, Local and Commercial/Industrial) have 23 different variations within them plus an additional four Special Area classifications having 14 variations contained within them. The most common designs are based on 12-foot wide travel lanes, 6-foot wide bike lanes or paved shoulders, 8-foot wide parking lanes and 14-foot wide center turn lanes. Typical right-of-way and paved road widths for the various urban area functional classes are as follows:

- Arterials – 90-98 feet of right-of-way and 50-74 feet of pavement width
- Collectors – 74 feet of right-of-way and 36-50 feet of pavement width
- Neighborhood Routes – 60 feet of right-of-way and 36 feet of pavement width
- Local roads – 34 feet of right-of-way and 28 feet of pavement width
- Commercial or Industrial roads – 64 feet of right-of-way and 50 feet of pavement width

Table 2-3: Washington County Urban Functional Classification Design Standards

Classification	Max. Right-of-Way (Ft.)	Max. Paved Width (Ft.)	Number of Lanes	Bike Lane/ Paved Shoulder Width (Ft.)	Curb Travel or Parking Lane Width (Ft.)	Travel Lane or Travel Way Width (Ft.)	Center Turn Lane Width (Ft.)	Parking Allowed
Urban Arterial	122	98	7	6	12 + 12	12	14	None
	98	74	5	6	12	12	14	None
	90	60	4	6	12	12	--	None
	90	50	3	6	--	12	14	None
Urban Collector	74	50	3	6	--	12	14	None
	Ultimate or 74	36	2	6	--	12	--	None
Urban Neighborhood Route	60	28	2	--	--	14	--	None
	60	32	2	--	--	12	--	One side
	60	36	2	0	8	10	--	Both sides
	60	36	2	6	--	12	--	None
	50	28	2	--	--	14	--	None
	50	32	2	--	8	12	--	One side
Urban Local	50	24	2	--	--	24	0	None
	38	32	2	--	--	24	--	None
	34	28	2	--	--	12	--	Both sides
	30	24	2	--	--	16	--	One side
	26	20	2	--	--	20	--	None
Urban Commercial or Industrial	64	50	4	--	--	12	--0	None
	64	50	3	6	--	12	14	None
	62	48	3	--	8	13	14	One side
	56	42	3	--	--	14	14	None
	Ultimate or 64	34	2	--	8	13	--	One side
	54	40	2	--	8	12	--	Both sides

2.2.3 Special Area Road Design Standards

Special Area road design standards reflected in Table 2-4 are intended to be applied in high-density, mixed-use areas of development. Special Area roads are generally two or three lanes wide with designs that support multi-modal travel with bicycle lanes, sidewalks up to nine feet in width with landscaping provided within 9 to 10-foot wide easements. These designations also permit the use of traffic management devices such as speed cushions, curb extensions and medians. Special Area street designs are limited to the Cedar Mill, Sunset MAX station area, Willow Creek/185th Ave. and Merlo/158th Ave. MAX station areas as identified in the current *Washington County 2020 Transportation Plan*.

Table 2-4: Washington County Special Area Functional Classification Design Standards

Classification	Max. Right-of-Way (Ft.) ¹	Ease-ment Width (Ft.)	Max. Paved Width (Ft.) ²	Number of Lanes	Bike Lane Width (Ft.)	Parking Allowed	Parking Lane Width (Ft.)	Travel Lane or Travel Way Width (Ft.)	Center Turn Lane Width (Ft.)	Design Speed	Planting Strip Width (Ft.)	Side-walk Width (Ft.)	Traffic Management
Collector ³	40	9	34	2	5	None	NA ⁶	12	--	35	4.5	5	Allowed
	52	9	46	3	5	None	NA	12	12	35	4.5	5	Allowed
	40	9	34	2	5	None	NA	12	--	35	--	9	Allowed
	52	9	46	3	5	None	NA	12	12	35	--	9	Allowed
Neighborhood Route ⁴	44	9	38	2	Shared	Both sides	8	11	None	25	4.5	5	Required
	44	9	38	2	Shared	Both sides	8	11	None	25	--	9	Required
Commercial ⁵	46	9	40	2	Shared	Both sides	8	12	None	25	--	9	Allowed
	58	9	52	3	Shared	Both sides	8	12	12	25	--	9	Allowed
	70	9	64	4	Shared	Both sides	8	12	None	25	--	9	Allowed
Local	38	10	32	NA	Shared	Both sides	8	(16)	None	25	4.5	5	Required
	34	10	28	NA	Shared	Both sides	8	(12)	None	25	4.5	5	Required
	30	10	24	NA	Shared	One side	8	(16)	None	25	4.5	5	Required
	28	10	20	NA	Shared	One side	8	(12)	None	25	4.5	5	Required
	16	--	16	NA	Shared	None	NA	(16)	None	15	--	--	--

¹An additional three feet of right-of-way beyond the curb face is needed to accommodate traffic management devices except for curb extensions.

²Use of traffic management devices may require different pavement widths than indicated in table.

³Exclusive turn lanes allowed only at intersections with arterial roads. Speed cushions are not allowed.

⁴Exclusive turn lanes allowed through design exception only when Neighborhood Route intersects an arterial and left turn warrants are met.

⁵The number of lanes shall be established through land development process. On road parking is required on these facilities, but Washington County will not maintain delineation of spaces.

⁶Not Applicable

2.3 REGIONAL TRANSPORTATION PLAN FUNCTIONAL CLASSIFICATION AND DESIGN

The 2035 Regional Transportation Plan focuses on the “regional” system, which generally corresponds to Arterial and a few Collector street functional classifications in the county and city transportation plans. Regional Transportation Plan arterial and throughway network designations are shown in Figure 2-5.

Although many of the functional classification systems found throughout the Portland region use similar terminology, comparing different systems can be confusing. Much of this confusion stems from the need to fit an over-simplified classification system to a dynamic and complex transportation network, and a general lack of solid transportation data upon which to base designation criteria. In the spirit of simplification, the regional network is shown in the attached maps. It consists of a Principal Arterial classification and three-sub-classes of Arterial classification, which are most generally defined as follows:

- **Principal Arterials** which emphasize high-volume, high-speed auto and truck mobility on freeway, highway or parkway types of roadway design. These facilities may be grade-separated or may have a mix of grade-separated and at-grade access points with interchanges typically spaced at no less than two miles apart. Principal Arterials generally span several jurisdictions and often link the Portland metropolitan area to other parts of the state or to other states.
- **Arterials** are intended to provide general mobility for motorized as well as non-motorized travel and connect to important destinations within the Portland metropolitan area as well as to the Principal Arterial system. These arterials are generally spaced at one-mile intervals, although this spacing tends to break down in areas that do not have grid street patterns. The major distinction between the **Major Arterial** and **Minor Arterial** designation is the relative volume of traffic they carry and the length of the trip they serve. Generally speaking, Major Arterial streets can be expected to carry more vehicles and serve longer trips than Minor Arterial streets, although the distinction is not always apparent. The **Rural Arterial** designation is assigned to those rural roads that extend into the rural area but connect to the Principal Arterial, Major Arterial and Minor Arterial roads in the urban area.



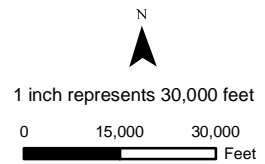
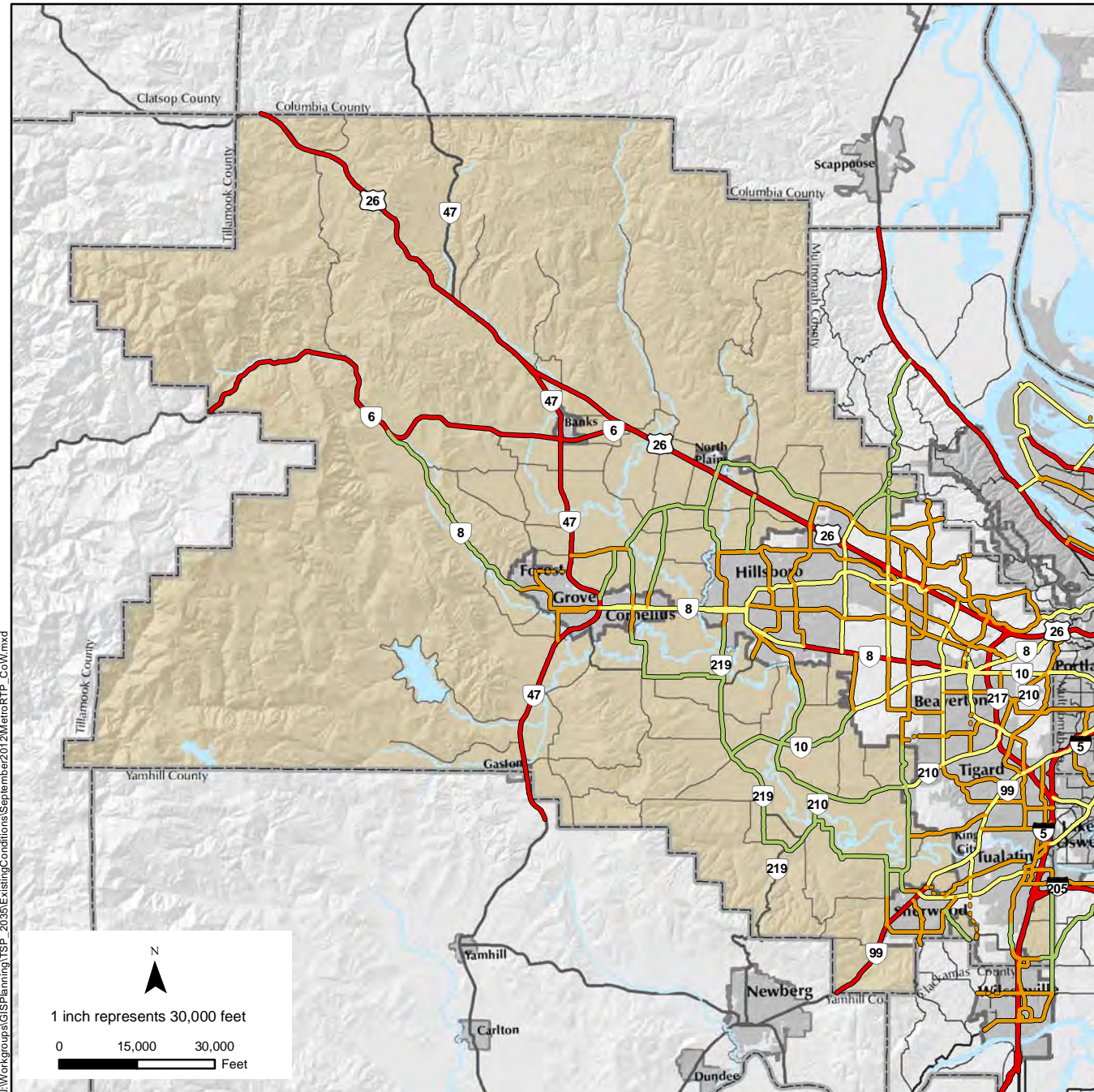
Metro RTP Arterial & Throughway Network

- Principal arterial
- Principal arterial (proposed)
- Major arterial
- Major arterial (proposed)
- Minor arterial
- Minor arterial (proposed)
- Rural arterial
- Rural arterial (proposed)
- Rural Washington County

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Figure 2-5



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2.4 FACILITY CONDITIONS

Maintenance is an essential element of the transportation system. With nearly 1300 miles of paved roadway, almost 200 bridges, over 3000 culverts, close to 900 miles of drainage ditches and numerous miles of roadside vegetation to maintain, Washington County’s Operations and Maintenance Division (OPS) works hard to protect the County’s growing investment in transportation infrastructure. As a plan whose primary focus is on long-term capital projects (i.e., relatively expensive projects that do not recur annually, last a long time and result in a fixed asset), the *Washington County 2035 Transportation System Plan* will be limited to looking at two aspects of transportation that come under the purview of OPS: roadway pavement condition and bridge conditions.

2.4.1 Roadway Conditions

Roadway conditions vary throughout the County although the overall network condition is classified as fair or above. Roadway maintenance is largely funded through State of Oregon gas tax revenues for the urban arterials, urban collectors, and all rural roads while the Urban Road Maintenance District provides funding for roadway maintenance on the urban locals and urban neighborhood routes.. Although these revenues have been sufficient to fund most roadway maintenance needs in the past, improved vehicle fuel efficiency and infrequent gas tax increases that have not kept up with the rate of inflation are making it more difficult to adequately fund roadway maintenance. In addition, fuel prices have been steadily increasing and the citizenry is encouraged to reduce the number of vehicular trips through public service campaigns such as “Drive Less / Save More”. The County has been able to manage the maintenance of the transportation system by utilizing the Road Maintenance Priority Matrix shown in Table 2-5, which was initially adopted with the 1988 Transportation Plan. This matrix has provided guidance to the County with respect to maintaining the major system first in order to maximize the funds available for road and bridge repairs.

Table 2-5: Road Maintenance Priority Matrix

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

Source: Policy 21, Washington County 2020 Transportation Plan (Oct. 2002)

¹Activities required by federal, state or local law, for example installation and maintenance of traffic control devices.

²Occurrences which cause a road to become impassable or require prompt action to protect human life; for example, flooding, slides or washouts.

³Existing or pending conditions which may cause a vehicle operator to lose control or lead to an emergency situation where persons or property is at risk for injury or damage; for example, pot hole patching, replacing damaged or missing safety equipment.

⁴Preventive activities required to keep a road in good condition; for example, street cleaning and asphalt overlays.

⁵Removal of a specific problem on a short section of roadway.

⁶Rebuilding substandard or deteriorated roads to County design standards; for example, resurfacing with minor shoulder or lane widening and major structural repairs.

As seen in table 2-5, mandated, emergency and hazard types of activities all receive the highest priority designation, regardless of functional classification. For general maintenance, minor improvements and reconstruction activities, however, the road with the higher functional classification generally has priority over a road with a lower functional classification designation. This prioritization system generally ensures that those roads that play the most vital role in moving people and goods throughout the county, are prioritized over other roads when it comes to general maintenance, minor improvements and reconstruction.

Pavement Condition Index

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

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

The average 2011 PCI for all roads in a particular functional classification as compared to their target PCI are shown in Table 2-6. The system average PCI of 81 indicates that the overall road system is in Good condition, and all functional classifications meet or exceed their target PCI, except for the urban and rural arterial classifications. While the arterial classifications fall slightly short of their targets, however, they still fall in the Good condition rating range.

Table 2-6: Average 2011 PCI vs. Target PCI by Functional Classification



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

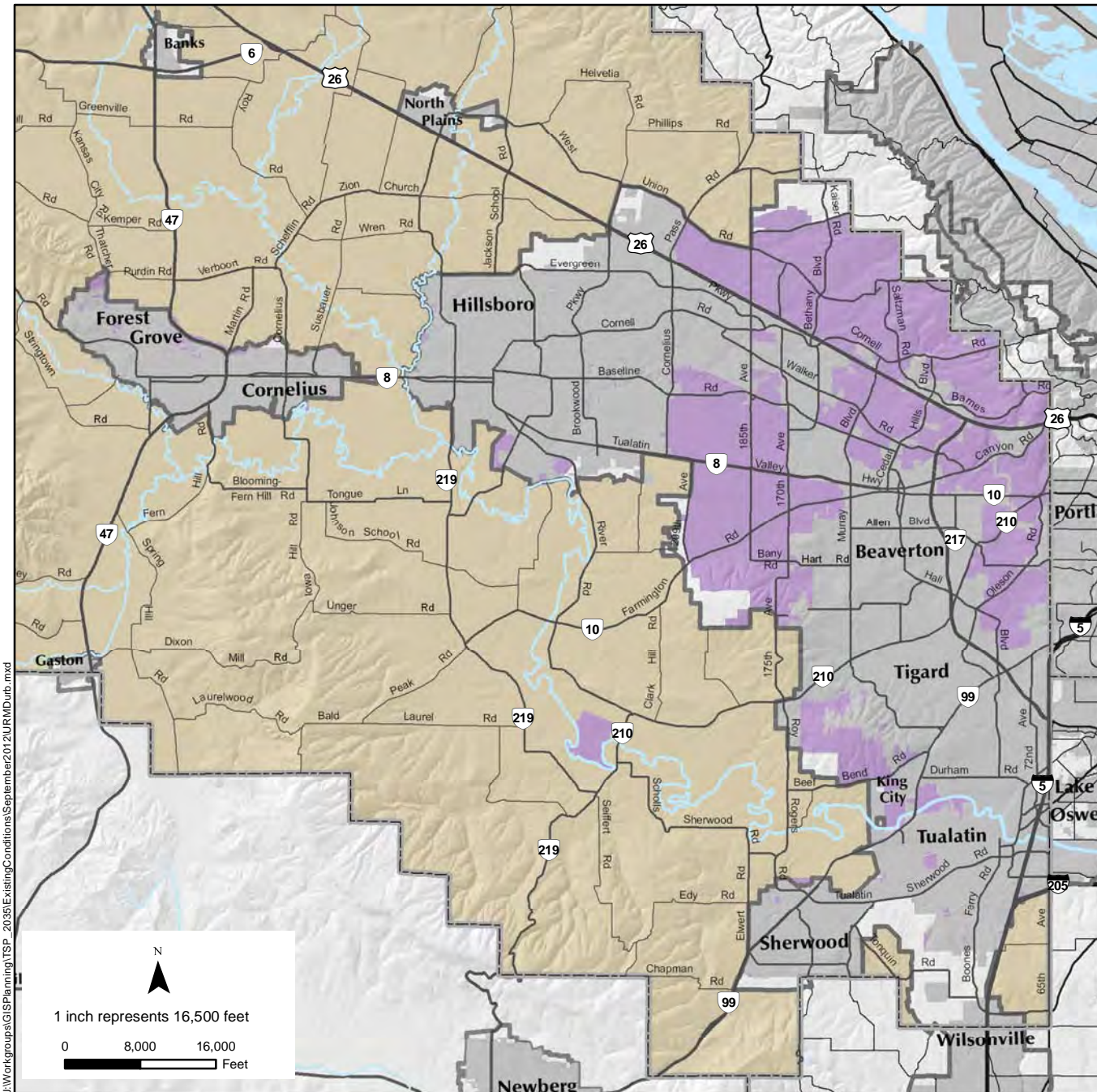
2.4.2 Urban Road Maintenance District

The Urban Road Maintenance District (URMD) was approved by voters in urban unincorporated Washington County in 1987 to improve the condition of urban local roads that had deteriorated due to the lack of adequate maintenance funding. Before 1994, more than 80 miles of local (i.e., roads currently having a Neighborhood Route and Local road functional classification designation) were classified as being in poor or very poor condition, and only 77 percent were in fair or better condition.

The URMD was not funded until 1994 when voters approved a property tax levy of \$0.365 per \$1000 of assessed value. Ballot Measure 50 in 1997 made this levy permanent at a rate of \$0.2456 per \$1000 of assessed valuation. URMD now funds road maintenance for approximately 430 miles of Neighborhood Routes and Local roads within its service area. URMD boundaries are shown in Figure 2-6. Although URMD funds cannot be used for maintenance needs outside its district or for maintenance needs on Arterial or Collector roads within its district, in 2011 the Washington County Board of Commissioners expanded the list of eligible activities under URMD to include safety improvements (e.g., sidewalks, bike lanes, paved shoulders) on any road (including Arterial and Collector roads) within the district. To free-up funds for safety improvements, a target PCI of 75 was adopted for URMD roads, which already had an average PCI of 85. The condition of URMD roads will be closely monitored and funds for safety improvements determined through the annual budget process, so as to prevent any undue deterioration of URMD roads.

Urban Road Maintenance District (URMD)

-  Urban Road Maintenance District
-  Rural Washington County



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Figure 2-6

2.4.3 Gravel Road Upgrade Program

Over the past 20 or so years the subject of forming a road maintenance district in the rural area or expanding the URMD to include the rural area has periodically surfaced without any positive results. To address the problem of deteriorating gravel roads and increased dust damage to nearby crops, Washington County has developed a program of upgrading some rural Local roads from gravel to a hard chip seal surface. The chip seal process involves applying two to three layers of rock and emulsified asphalt to create a hard driving surface. Since upgrading all gravel roads to hard surface would cost more than \$15 million, a prioritization methodology based on crop frontage, number of houses, traffic volumes and other factors has been developed to identify roads for chip sealing from a list of over 100 candidates. On average, several miles of gravel roadway per year get upgraded to chip seal through the Gravel Road Upgrade Program, although funding for this program is nearing an end and it is a possibility that 2013 may be the last year for work under this program for the foreseeable future.

2.4.4 Bridge Conditions

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

Distribution of Bridges by Area

Bridges in Washington County are not uniformly distributed. As indicated in Figure 2-7 and Table 2-7, 70 percent or 132 of the bridges in Washington County are located in the rural area and 30 percent or 56 bridges are located in the urban area.

Figure 2-7: Bridge Percentage Distribution

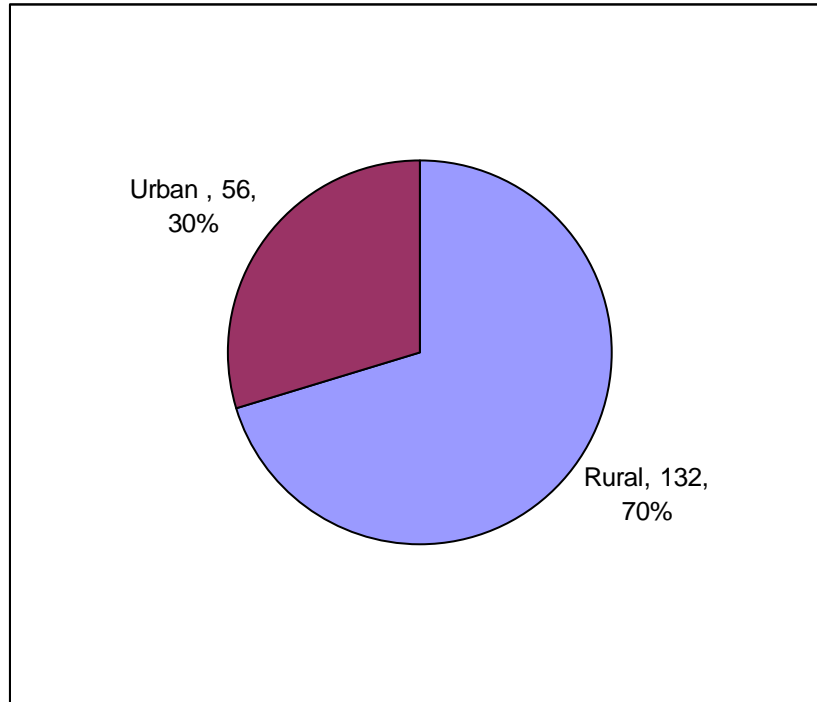


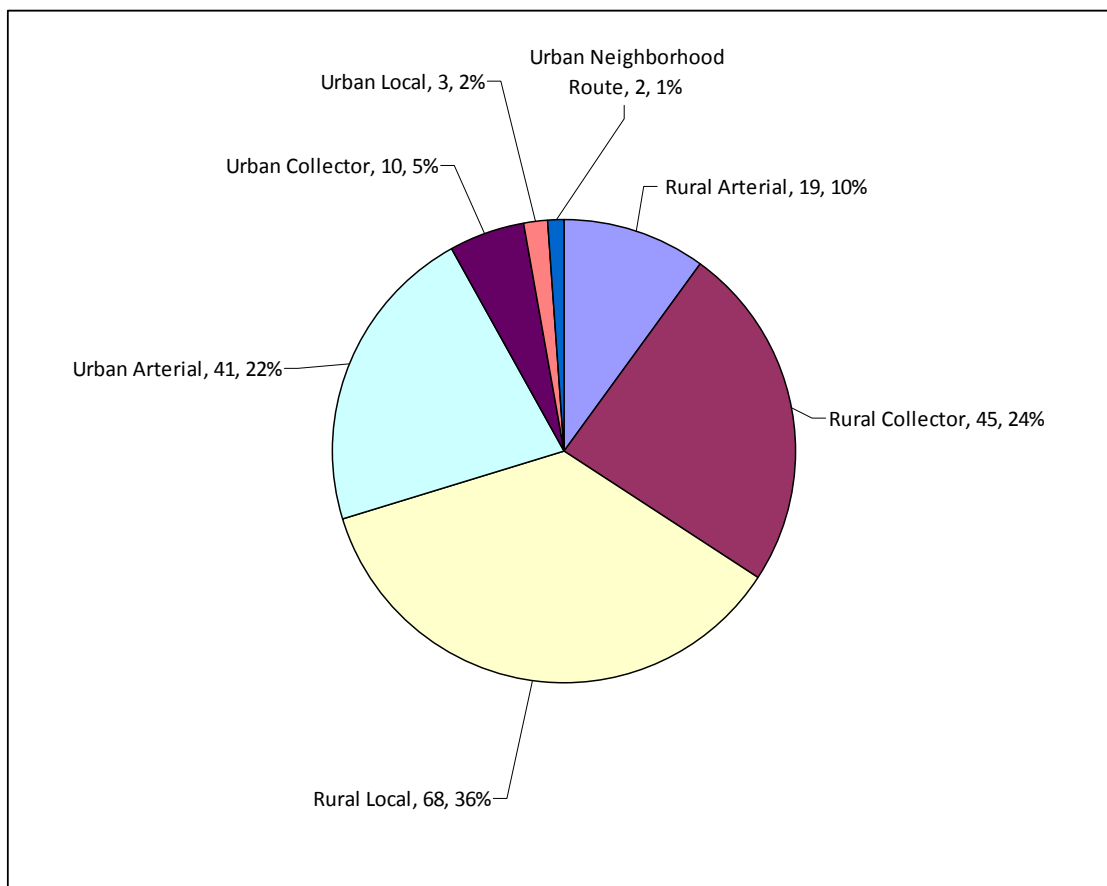
Table 2-7: Number of Bridges

	Number of Bridges
Rural	132
Urban	56
Total Rural + Urban	188

Distribution of Bridges by Functional Classification

Figure 2-8 shows the distribution of bridges by functional classification for the rural and urban areas. In the rural area, 86 percent or 113 of the bridges are on the Collector or Local road system with the remaining 14 percent or 19 bridges on Arterial roads. This number highlights the importance of bridges to the rural Local road system. For the urban area the distribution is almost the reverse, as 72 percent of the urban bridges are on Arterial roads and only 28 percent are on non-Arterial roads.

Figure 2-8: Number and Percentage of Bridges by Functional Classification



Bridge Material Types

Figure 2-9 indicates the numbers of concrete, steel and timber bridges in rural and urban areas of Washington County. The material used to construct a bridge is important because it is the primary determinant of a bridge’s expected life span. Concrete structures typically have the longest life span, ranging from 50 years for bridges constructed of reinforced concrete to 100 years for those constructed of pre-stressed concrete. At the other extreme are timber bridges. Although timber structures are treated with preservatives to inhibit rot, their expected average life span is only 30 years. In the middle are bridges constructed of steel with galvanized, painted or powder coated components. These bridges are susceptible to chipping, rust and corrosion, however, their average life expectancy is 65 years.

Of particular concern in Washington County is the large number of timber bridges in the rural area. According to the most current bridge inventory data provided by the Washington County Dept. of Land Use and Transportation, Operations Division, 65 of the County’s timber bridges have already reached or exceeded their 30-year life expectancy. Fifty-two bridges were replaced between 1995 and 2012, which is an average of three bridge replacement per year. Although it is impossible to predict the longevity of any particular bridge, and routine maintenance can allow many bridges to exceed their average life expectancy, at this low rate of replacement the County will still have timber bridges in its inventory until at least the year 2030. A target replacement rate of eight to ten bridge replacements per year for 15 years has been suggested, but securing the additional \$8 million to \$15 million per year needed to do this will be a challenge. If the replacement rate is not increased to this suggested

rate then it is likely that bridge closures and posting weight limits will be required to protect the traveling public. Such actions, however, will negatively impact the movement of products and the overall economy of Washington County.

Figure 2-9: Rural and Urban Bridge Material Types

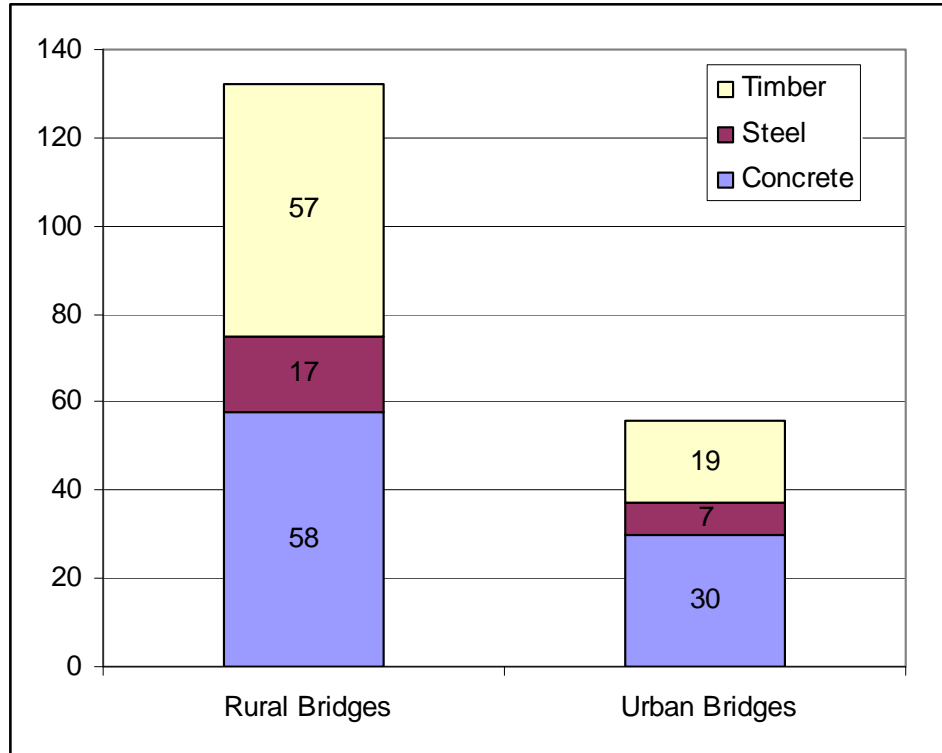
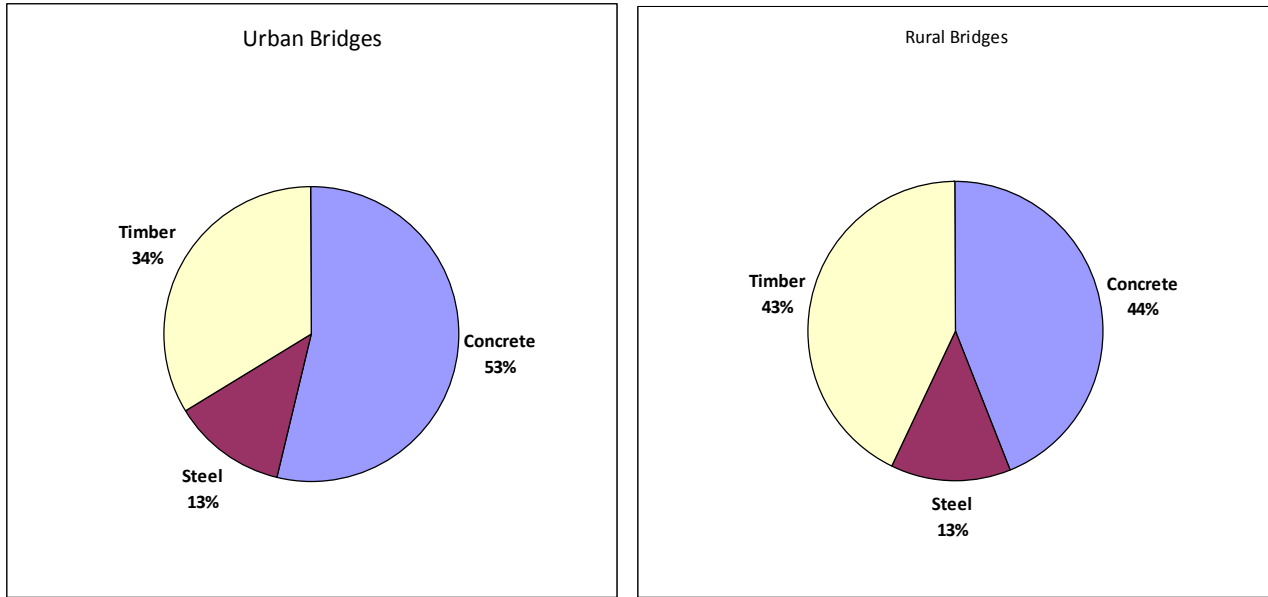


Figure 2-10 shows the percentages of bridges in the urban and rural areas by their primary type of construction material (concrete, steel or timber). As indicated in Figure 2-10, the predominant bridge type in the urban area is the relatively long-lasting concrete bridge, which accounts for over half the bridges in this area. However, in the rural area, as shown in Figure 2-10, the proportions of concrete and timber bridges are roughly equal.

Figure 2-10: Percentages of Bridge Types



Source: Washington County DLUT, Operations Division

Bridge Status

In addition to deterioration that is caused by age or the environment, load carrying trucks can do substantial damage to roads and bridges. To protect the integrity of these facilities as well as public safety, Washington County can designate bridges as length and width limited or as weight limited. Although the vast majority of bridges in Washington County are considered to be Highway Legal and capable of carrying trucks who have axle weights and spacing that do not exceed statutory limits, there are currently 10 bridges that have been posted as Weight Limited because they have structural components or features that have been compromised or the design has been determined to be insufficient to carry specified loads or configurations. Two bridges in Washington County are designated as Length or Width Limited because of geometric features that restrict certain size vehicles from traversing the structure without damaging the bridge or conflicting with other traffic movements. The location of all bridges and their status is depicted on Figure 2-11 and 2-12.

Bridge Status

- Highway Legal
- Length or Width Limited
- Weight Limited
- Pedestrian
- Rural Washington County

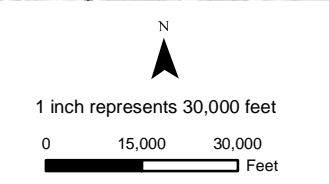
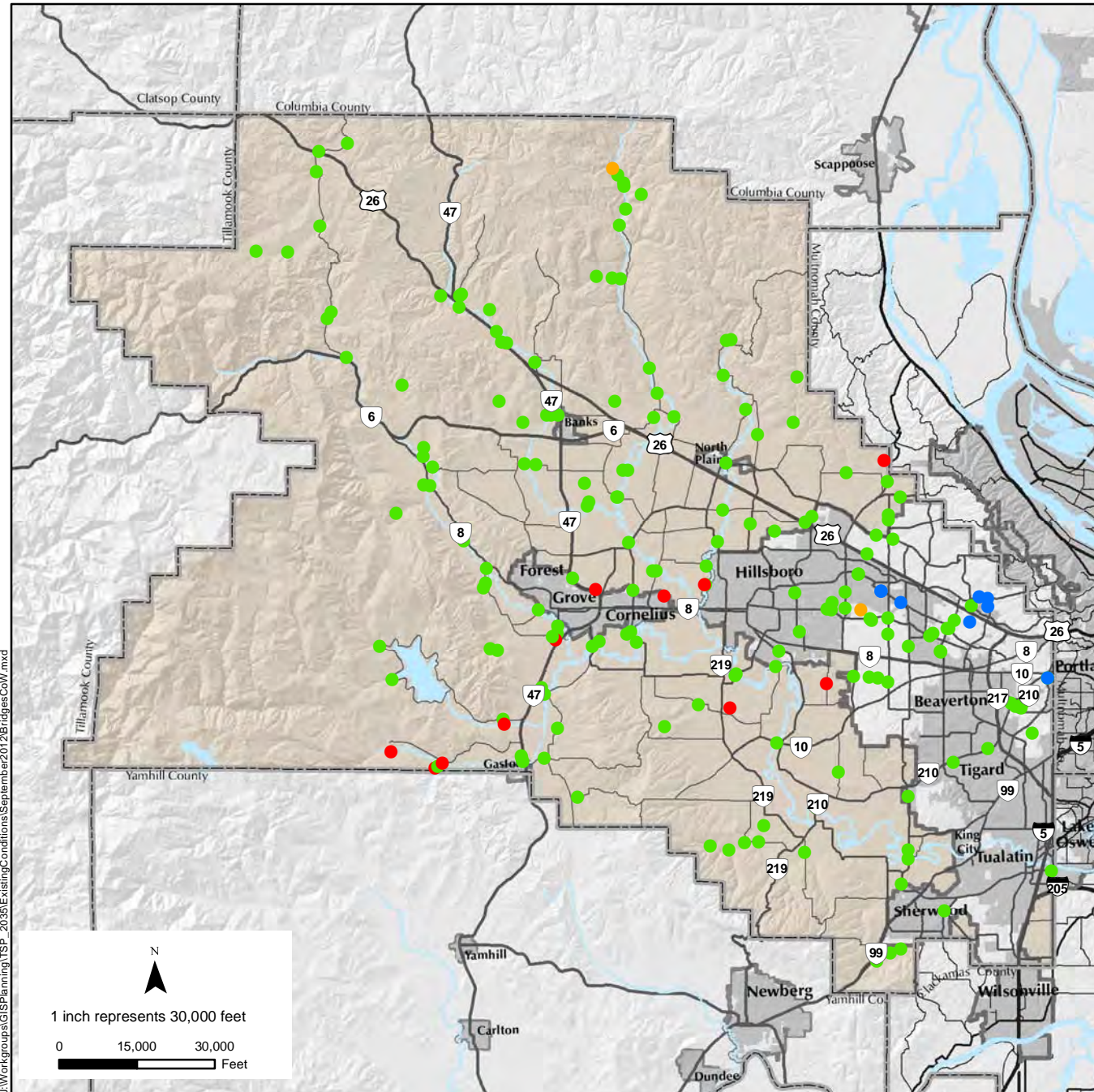
Highway Legal: A bridge with this label is capable of carrying trucks who have axle weights and spacings that do not exceed statutory thresholds

Weight Limited: A bridge with this label has certain structural components or features that have been compromised or the design has been determined to be insufficient to carry specified loads and / or configurations.

Length / Width Limited: A bridge with this label has certain geometric features that restrict certain size vehicles from traversing the structure without damaging the bridge or conflicting with other traffic movements.

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Figure 2-11

Bridge Status

- Highway Legal
- Length or Width Limited
- Weight Limited
- Pedestrian
- Rural Washington County

Highway Legal: A bridge with this label is capable of carrying trucks who have axle weights and spacings that do not exceed statutory thresholds

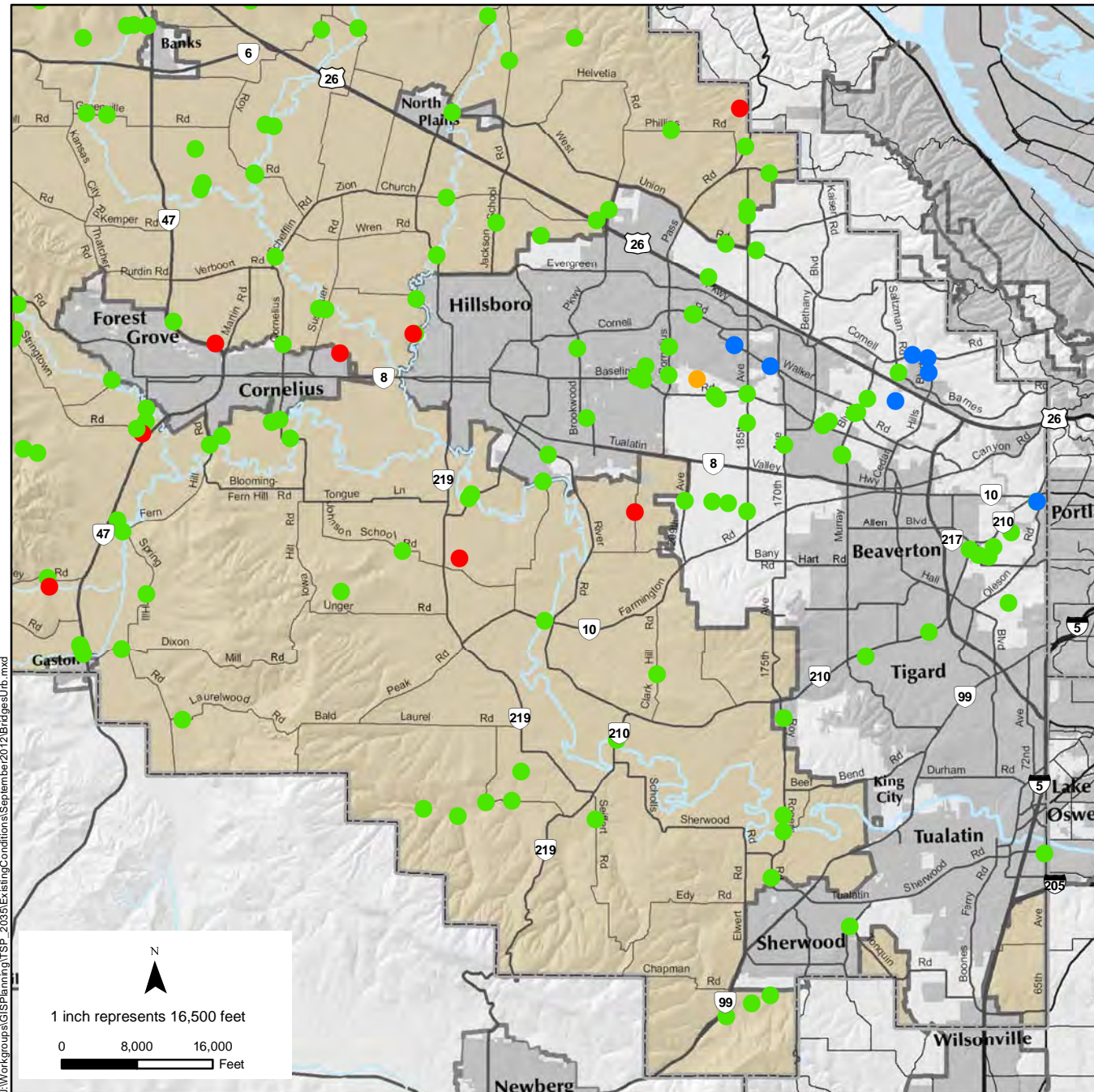
Weight Limited: A bridge with this label has certain structural components or features that have been compromised or the design has been determined to be insufficient to carry specified loads and / or configurations.

Length / Width Limited: A bridge with this label has certain geometric features that restrict certain size vehicles from traversing the structure without damaging the bridge or conflicting with other traffic movements.

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Figure 2-13



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2.5 SYSTEM PERFORMANCE

2.5.1 Performance Targets and Standards

Regional Performance Targets

The Metro Regional Transportation Plan (RTP)² identifies a number of Regional Performance Targets. These targets have been established with planning towards 2035. The regional targets below are excerpted from Table 2-3 of the Metro RTP. These regional targets include:

- **Safety** – reduce the number of pedestrian, bicyclist, and motor vehicle occupant fatalities plus serious injuries each by 50% compared to 2005.
- **Congestion** – reduce vehicle hours of delay (VHD) per person by 10 percent compared to 2005.
- **Freight reliability** – reduce vehicle hours of delay truck trip by 10 percent compared to 2005.
- **Climate change** – reduce transportation-related carbon dioxide emissions by 40 percent below 1990 levels.
- **Active transportation** – triple walking, biking and transit mode share compared to 2005.
- **Basic infrastructure** – increase by 50 percent the number of essential destinations accessible within 30 minutes by trails, bicycling and public transit or within 15 minutes by sidewalks for all residents compared to 2005.
- **Clean air** – ensure zero percent population exposure to at-risk levels of air pollution.
- **Travel** – reduce vehicle miles traveled per person by 10 percent compared to 2005.
- **Affordability** – reduce the average household combined cost of housing and transportation by 25 percent compared to 2000.
- **Access to daily needs** – increase by 50 percent the number of essential destinations accessible within 30 minutes by bicycling and public transit for low-income, minority, senior and disabled populations compared to 2005.

The Washington County Transportation System Plan must work towards the direction identified by these targets.

In addition to the mobility targets identified in the RTP, the Regional Transportation Functional Plan (RTFP) establishes regional Performance Targets and Standards. The RTFP establishes two primary performance targets:

- Non-Single Occupant Vehicles (modal performance)
- Roadway Mobility Operating Standards (mobility performance)

This report will address the Modal Performance Target first.

² Throughout this section, there are references to the “State RTP” and the federal “Financially Constrained RTP”. These are both considered the “Regional Transportation Plan” which functions as the TSP for the region. The “State RTP” includes a number of projects, programs and services to adequately address identified needs. The federal “Financially Constrained RTP” only includes projects, programs and services that can be reasonably funded according to federal guidelines. When a reference is not defined, it can be assumed to reference the “State RTP”.

2.5.2 Modal Performance

RTFP Section 3.08.230 Performance Targets and Standards

Each city and county shall demonstrate that solutions adopted will achieve progress toward the targets and standards in Tables 3.08-1. The city or county shall include the regional targets and standards or its alternatives in its TSP.

Table 2-8: Regional Non-SOV Modal Targets from RTFP Table 3.08-1
(share of average daily weekday trips for the year 2035)

2040 Design Type	Non-drive alone modal target
Portland central city	60-70%
Regional centers	45-55%
Town centers	
Main streets	
Station communities	
Corridors	
Passenger intermodal facilities	
Industrial areas	40-45%
Freight intermodal facilities	
Employment areas	
Inner neighborhoods	
Outer neighborhoods	

Existing Modal Performance

In 2010 the urban area of Washington County already meets the regional Non-SOV targets for 2035. As shown in the Table and chart below, 47.8% of all trips starting or ending in Washington County are Drive Alone.

Figure 2-13: Urban – Washington County – ALL Trips 2010

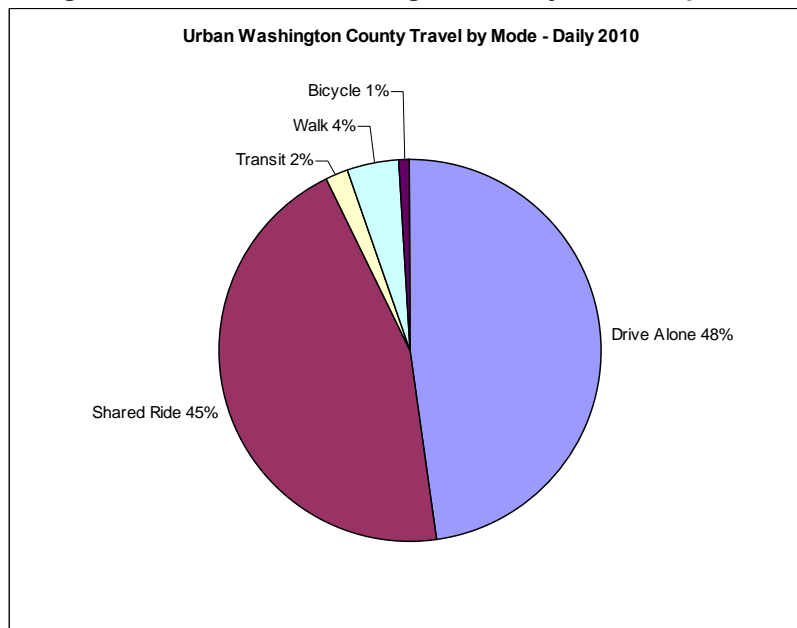


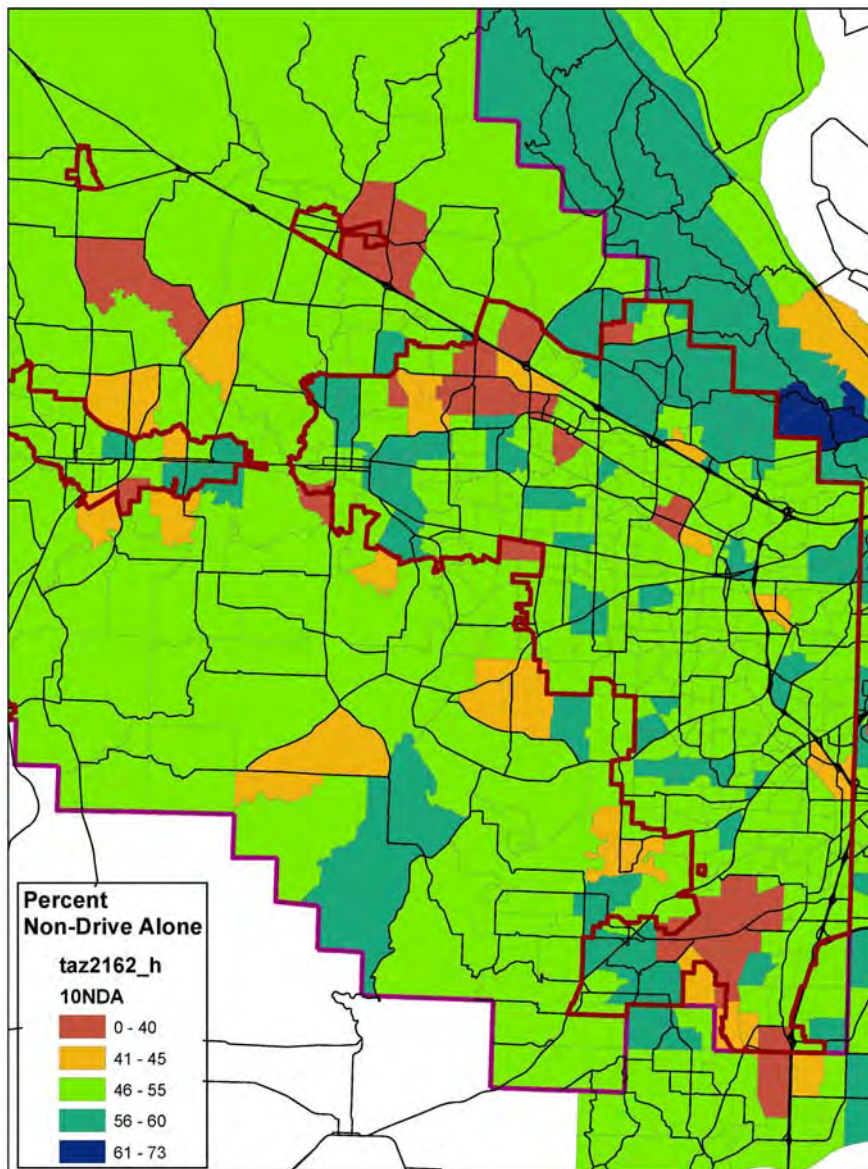
Table 2-9: Urban – Washington County – ALL Trips 2010

Mode	Trips	Percent
Drive Alone	1,784,283	47.8%
Shared Ride	1,679,233	45.0%
Transit	67,469	1.8%
Walk	167,312	4.5%
Bicycle	34,466	0.9%
Total	3,732,763	100.0%

Source: Metro Regional Travel Demand Forecast.

Figure 2-14 below presents the same information geographically. Note that table and chart only represent the urban area. The rural area is not subject to the same requirements.

Figure 2-14: 2010 Non-SOV Percent



The Metro 2035 State RTP does not show a significant change in modal performance within Washington County. The regional travel demand forecasts are based on the existing measured preferences. Growth and changes to system attributes are then projected into the future. Future forecasts do not attempt to account for changes in attitudes or preferences – as such changes are subjective and difficult to quantify.

Figure 2-15: Urban – Washington County – ALL Trips 2035

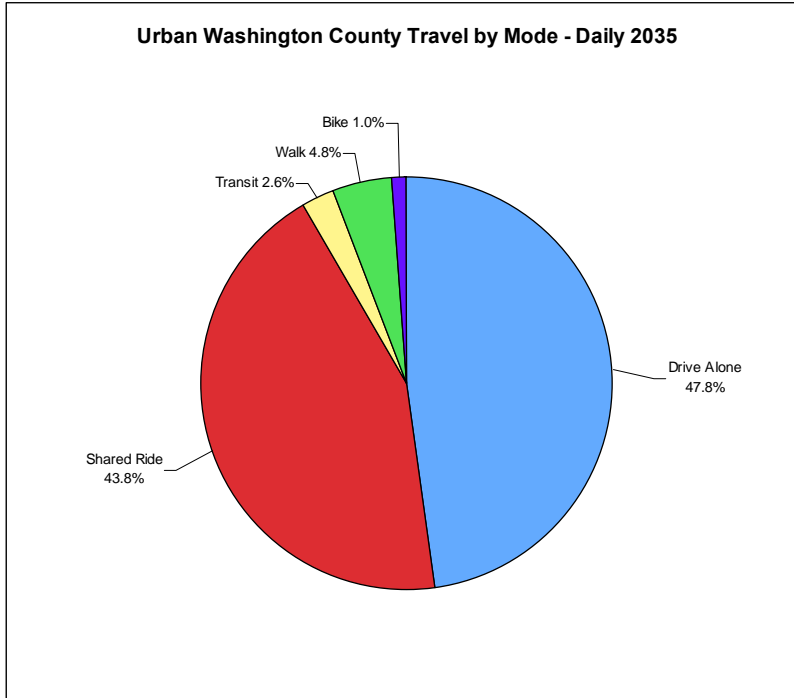


Table 2-10: Urban – Washington County – ALL Trips 2035

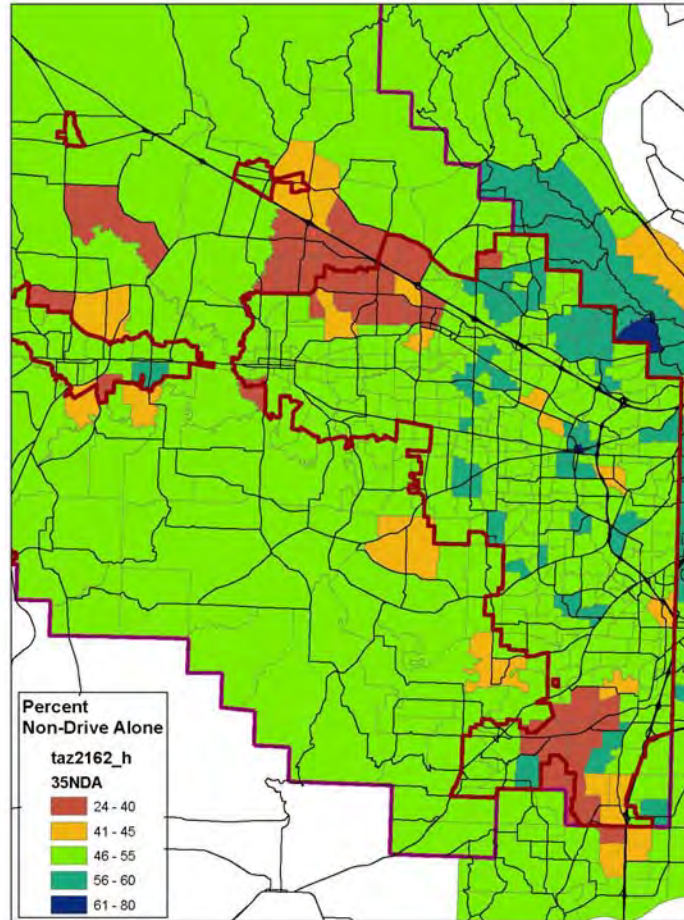
Mode	Trips	Percent
Drive Alone	2,360,367	47.8%
Shared Ride	2,161,094	43.8%
Transit	126,904	2.6%
Walk	237,581	4.8%
Bicycle	49,375	1.0%
Total	4,935,321	100.0%

Source: Metro Regional Travel Demand Forecast (State RTP).

Comparing the 2035 with the 2010, shows an increased reliance on Transit (increased from 1.8% to 2.6%) and bicycling (increased from 0.8% to 1.0%). However, the Shared Ride rate decreased and the Drive Alone rate remained virtually unchanged. This means that proposed State RTP changes in system attributes alone, cannot be expected to induce significant changes in travel behavior.

Washington County already meets the 2035 targets for most areas. Review of the map below indicates that the industrial areas within Washington County may have the hardest time meeting the 2035 Non-SOV targets.

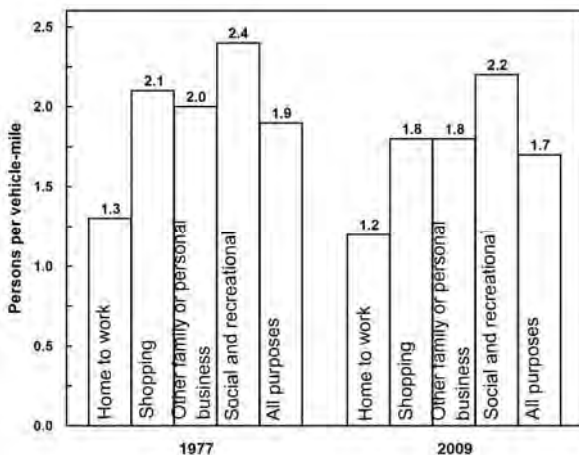
Figure 2-16: 2035 Non-SOV Percent



Comparison to National Data

One of the potentially surprising aspects of this data is the amount of “shared” ride trips. Shared Ride trips can be translated to vehicle occupancy rates. The following information is provided as a point of reference, and to check the validity of these numbers, this report reviews National vehicle occupancy rates by trip purpose.

Figure 2-17: National Average Vehicle Occupancy Rates



The national average vehicle occupancy, calculated as person-miles per vehicle-mile, is highest for social and recreational purposes. The highest vehicle occupancy levels for all purposes were in 1977. The increase in number of vehicles per household and the decrease in average household size could have contributed to the decline since then.

Transportation, Federal Highway Administration, 1990 Nationwide Personal Transportation Survey: Summary of Travel Trends, FHWA-PL-92027, Washington, DC, March 1992, Figure 6. Data from 2009 NHTS were generated from the Internet site nhts.ornl.gov, March 2011. (Additional resources: www.fhwa.dot.gov, nhts.ornl.gov)

Daily Trips by Mode - Summary

The chart below depicts the 2010 Daily trips by Mode, and the 2035 State RTP trips by mode.

Figure 2-18: Daily Trips by Mode

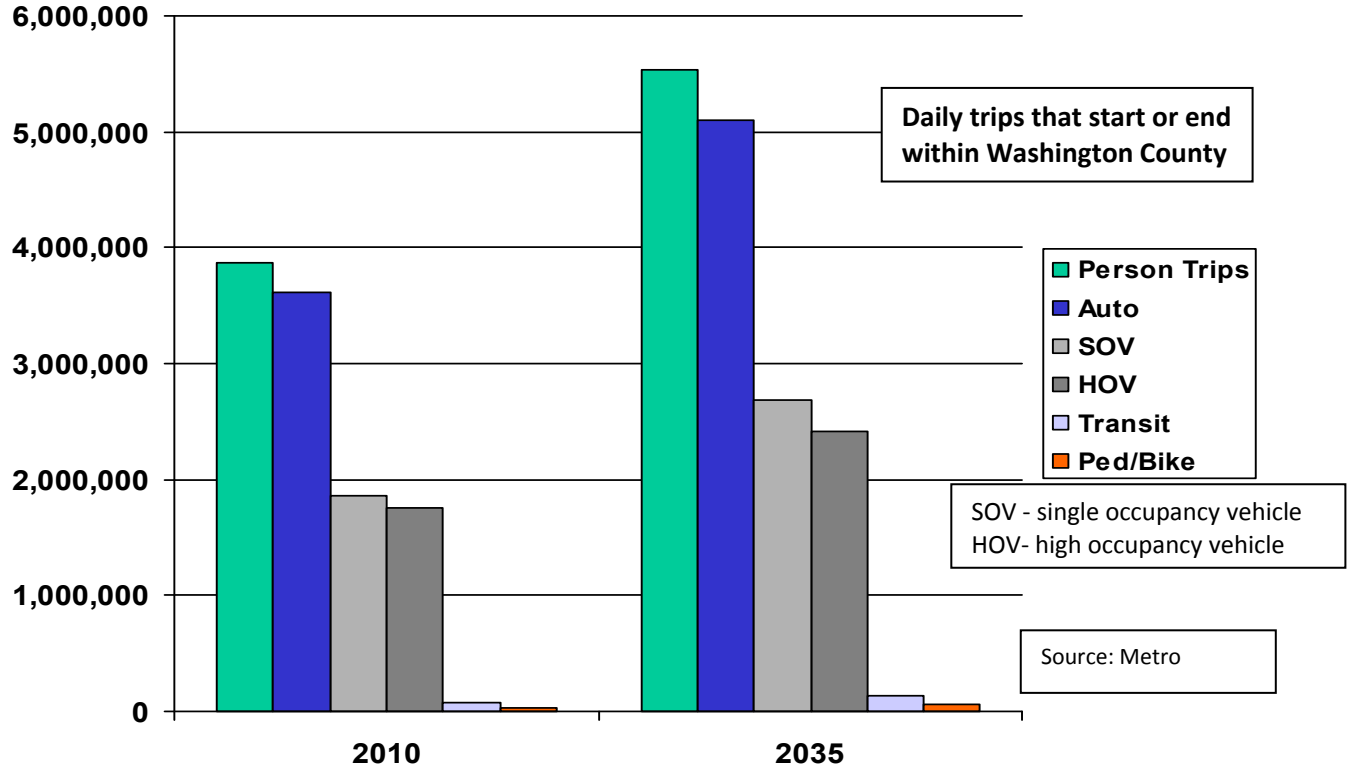


Table 2-11: Washington County Travel Demand (Average Weekday)¹

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

- Notes:
1. Includes all daily trips that either start or end within Washington County, including the rural areas outside the Metro Boundary. Other chapters focus on urban travel and report fewer daily trips (only those within the urban area).
 2. SOV – Single Occupancy Vehicle, a vehicle in which the driver is traveling alone (this is a subset of the Auto category).
 3. Shared Ride – Includes both the driver and other passengers (this is a subset of the Auto category).
 4. Yellow school bus trips are not included.
 5. Pedestrian and Bicycle trips do not include travel for the purpose of exercise.

Home to Work Trips

Much of the discussion around modal targets relates to the journey to and from work. As can be seen on the following table, the journey to/from work trip purpose currently makes up about 27%³ of all trips.

Figure 2-19: Urban – Washington County – ALL Trips 2010 by Trip Purpose

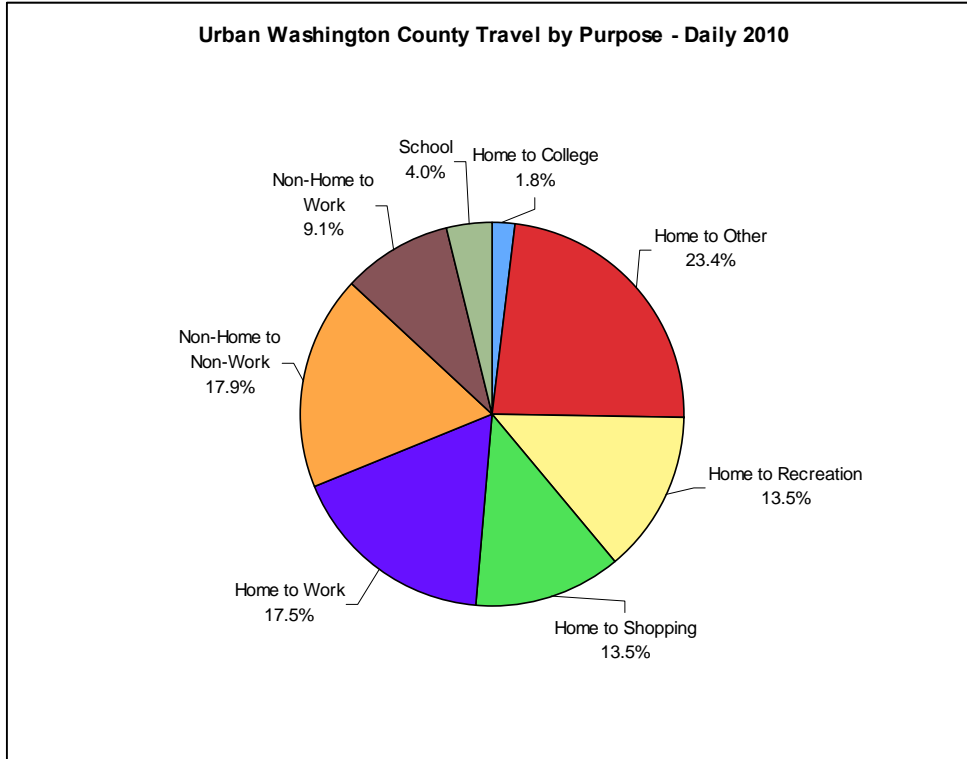


Table 2-12: 2010 Urban Washington County Trips – by trip purpose

Trip Purpose	Trips	Percent
Home to College	67,666	1.8%
Home to Other	874,175	23.4%
Home to Recreation	505,040	13.5%
Home to Shopping	475,852	12.7%
Home to Work	652,457	17.5%
Non-Home to Non-Work	668,706	17.9%
Non-Home to Work	339,073	9.1%
School*	149,795	4.0%
2010 Total	3,732,763	100.0%

Source: Metro Regional Travel Demand Forecast.

*Yellow School Bus trips have been excluded.

Note: trip purpose description has been simplified. Trips are referred to as “Home to ABC” the data does include “ABC to Home” trips (any end of the trip is home).

³ Home to Work 17.5% plus Non-Home to Work 9.1% is 26.6%

Figure 2-20: Urban – Washington County – ALL Trips 2035 by Trip Purpose

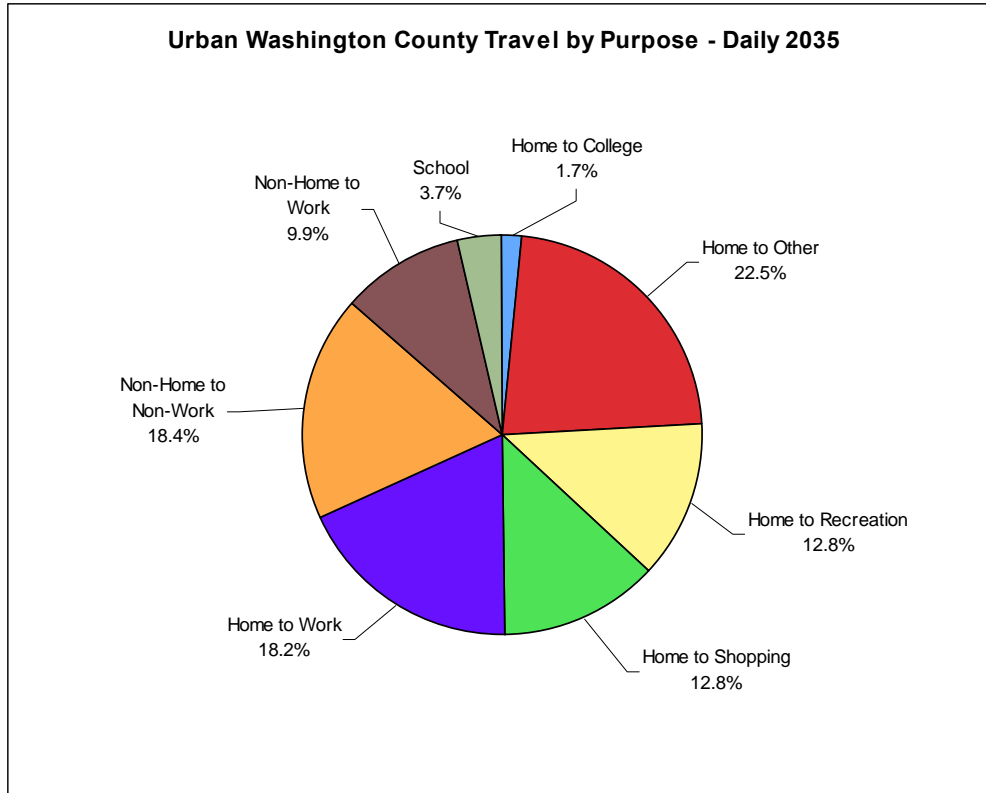


Table 2-13: 2035 Urban Washington County Trips – by Trip Purpose

Trip Purpose	Trips	Percent
Home to College	83,376	1.7%
Home to Other	1,108,128	22.5%
Home to Recreation	632,324	12.8%
Home to Shopping	632,940	12.8%
Home to Work	898,746	18.2%
Non-Home to Non-Work	905,915	18.4%
Non-Home to Work	490,369	9.9%
School*	183,524	3.7%
2035 Total	4,935,321	100.0%

Source: Metro Regional Travel Demand Forecast (State RTP).

*Yellow School Bus trips have been excluded.

Table 2-14: Journey to Work Trips (Urban Washington County) Summary

	Home Based Work Trips (directly between Home & Work)	% of all Trips	All Work Trips (includes Home Based Work, and other trips that start or end at work)*	% of all Trips	ALL Trips
2010	652,457	17.5%	991,531	26.6%	3,732,763
2035	898,746	18.2%	1,389,115	28.1%	4,935,321

Source: Metro Regional Travel Demand Forecast (State RTP).

*examples include travel to and from lunch, or meetings, errands performed during the workday, and/or trips associated with work.

Mode Share for Work Trips

U.S. Census Bureau conducts the “American Communities Survey”. This survey asks for respondents to report journey to work travel. The reported journey data is summarized in Table 2-15 below. Current estimates of commuter travel characteristics are also summarized along with a comparison to 2005. The data indicates that workers in Washington County are carpooling and using public transportation less often, compared to 2005. Driving alone, walking, and other modes of travel (including biking) are increasingly being used instead. Active transportation modes (walking and other) increased their combined share of work trips from 4.2% to 6.2%.

Table 2-15: Commuter Mode Share – 2005 & 2010

Mode	2005 Share	2010 Share	2005 to 2010 Change
Drive Alone	75.4%	76.5%	+1.1%
Carpool	9.4%	6.8%	-2.6%
Public Transportation	6.0%	5.7%	-0.3%
Walk	2.6%	3.6%	+1.0%
Other (e.g., Bike)	1.6%	2.6%	+1.0%
Work at Home	4.9%	4.9%	0%

Source: U.S. Census Bureau - Commute to Work Data

This data is presented as one of the data sources available regarding existing mode of travel, and is provided in this report to allow for another perspective on the journey to work data. The Census based survey asks individuals questions – and relies upon the memory of the respondents. The small changes noted may be due to the survey sample size, weather at the time of the survey, and/or other factors.

Washington County staff agrees with Metro staff that while the Census information provides an additional point of reference, greater detail about observed travel is necessary. The Regional Travel Demand Model is based on daily activity diary, and a robust record of all daily activities, including travel. The Regional Travel Demand Model it establish a mechanism for Households to record there daily activities, collects this information and asks respondents questions about the records. Metro and Washington County staff believe the travel demand model information is more accurate for the Portland Metro urban area, than the Census Journey to work survey. Additionally the Travel Demand model is designed to allow forecasting of travel.

Figure 2-21: Urban – Washington County – Home to Work Trips 2010

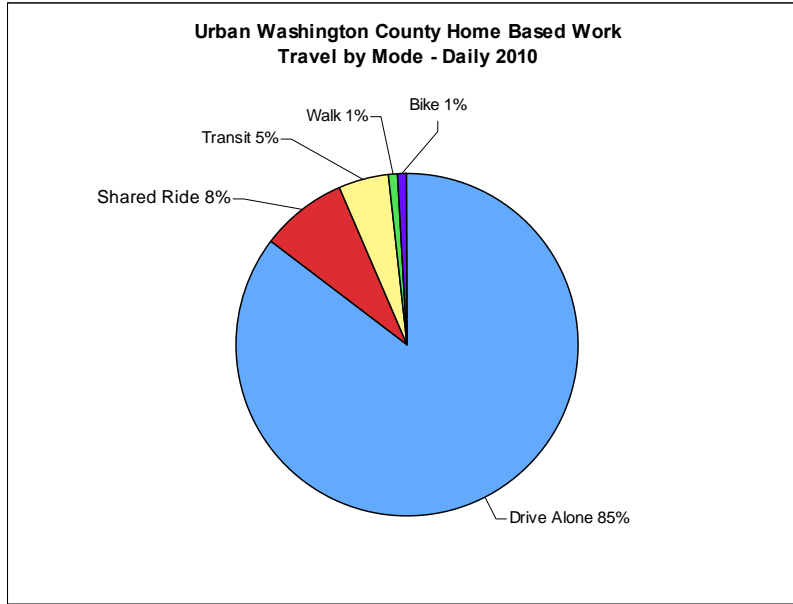


Table 2-16: 2010 Home to/from work trips by Mode

Mode	Trips	Percent
Drive Alone	556,106	85.2%
Shared Ride	55,378	8.5%
Transit	29,369	4.5%
Walk	6,693	1.0%
Bicycle	4,911	0.8%
Total	652,457	100.0%

Source: Metro Regional Travel Demand Forecast

Figure 2-22: Urban – Washington County – Home to Work Trips 2035

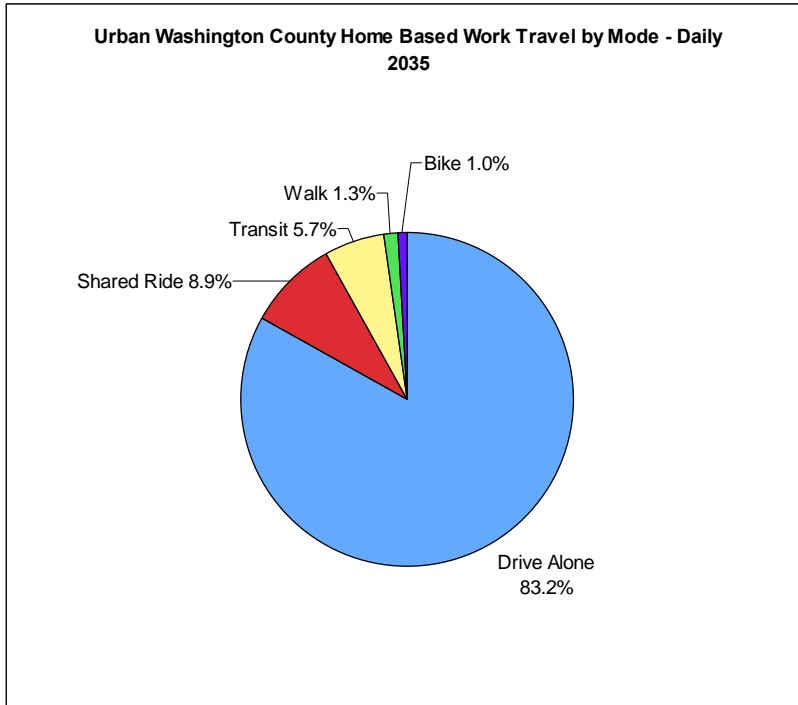


Table 2-17: 2035 Home to/from work trips by Mode

Mode	Trips	Percent
Drive Alone	747,355	83.2%
Shared Ride	79,905	8.9%
Transit	50,924	5.7%
Walk	11,899	1.3%
Bicycle	8,662	1.0%
Total	898,746	100.0%

Source: Metro Regional Travel Demand Forecast (State RTP).

As can be seen above, the travel model indicates a much higher drive alone rate for work trips than the census data. Furthermore, the Non-SOV rate for urban Washington County for home to/from work trips is significantly lower than for other trip purposes. The 2010 Non-SOV rate is 14.8% for home to/from work trips, as compared to 47.8% for all trip purposes.

2.5.3 Commuter Travel Characteristics

The following section describes travel characteristics of Washington County commuters who either lived or worked in the County. Table 2-18 shows a slight increase in employed residents and jobs in Washington County between 2002 and 2010. In 2010, nearly half of Washington County residents worked outside the County and nearly half of Washington County employees lived outside the County. The increase, relative to 2002, of Washington County commuters traveling between counties may partially explain the increasing mode share for drive alone commuter trips evident in Table 2-17.

Table 2-18: Commuter Residence Characteristics – 2002 & 2010

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

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

The distance traveled for Washington County commuters is shown in Table 2-19. Most trips are less than 10 miles but 5 to 7 percent of commuter trips are over 50 miles. Most commuters travel between Washington County and points east (e.g., Portland). Most trips longer than 50 miles are between Washington County and points south (e.g., Salem).

Table 2-19: Commuter Travel Distance (2010)

Commute Distance	Work to Home	Home to Work
Less than 10 miles	57.9%	64.5%
10-24 miles	28.5%	26.6%
25-50 miles	6.7%	3.7%
Greater than 50 miles	6.9%	5.2%

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

2.5.4 Mobility Standards

Washington County maintains a Level of Service standard for vehicle operations. This standard is currently defined in the Roadway System Policy.

Existing Strategy 6.1 *“Provide a roadway system necessary to support travel demand associated with anticipated future development of land uses identified in the County’s Comprehensive Plan at or better than the standards identified in Table 5 and consistent with policies identified in this plan.”*

Table 2-20 shows the currently adopted Washington County Motor Vehicle Performance Standards.

Table 2-20: Washington County Motor Vehicle Performance Measures (“Table 5”)

MAXIMUM VOLUME TO CAPACITY (V/C) RATIO STANDARDS				
Location ²	AM/PM Peak Two-hour Period			
	Target ¹ Performance Measures ³		Acceptable ¹ Performance Measures ³	
	First Hour ⁴	Second Hour ⁴	First Hour ⁴	Second Hour ⁴
Regional Centers				
Town Centers	.99	.9	.99	.99
Main Streets	(E)	(D)	(E)	(E)
Station Communities				
Other Urban Areas	.9	.9	.99	.9
	(D)	(D)	(E)	(D)
Rural Areas	.9	.9	.9	.9
	(D)	(D)	(D)	(D)

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

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

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

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

A list of “deficiency areas” is also included in the adopted table 5.

Deficiency Areas are facilities, system elements or sub-areas of Washington County which are expected to exceed the acceptable performance measures defined above by 2020. Additional improvements and strategies to raise the motor vehicle performance in these areas, if any, will be approached on a case by case basis.

The adopted list of deficiency areas is expected to be re-examined and updated consistent with the level of service standard.

Metro identifies mobility targets through the Regional Transportation Plan and the Regional Transportation Functional Plan. The targets define deficiency thresholds for both the mid-day peak (highest 60 minute period between 9AM to 3PM) and the highest overall two consecutive hours of weekday traffic volumes. The RTP mobility policies define an operating standard for different land use types within the urban growth boundary. Although these standards are labeled “interim,” they apply to the Washington County Transportation Plan until Metro issues a revision to these policies. The 2-hour peak standards are identical to those identified within the Portland Metropolitan Region by ODOT in the Oregon Highway Plan. Table 2-21 shows the mobility standards for Metro.

Table 2-21: Metro Mobility Standards (RTFP Table 3.08-2)

Location	Mid-day Peak	Peak First Hour	Peak Second Hour
Regional Centers Town Centers Main Streets Station Communities Central City	.99	1.1	.99
Corridors Industrial Areas Intermodal Facilities Employment Areas Inner Neighborhoods Outer Neighborhoods	.90	.99	.99
US 26 (from I-405 to Sylvan Interchange)	.99	1.1	.99
Other Principal Arterial Routes I-205 I-5 (Marquam Bridge to Wilsonville) OR 217 US 26 (west of Sylvan Interchange) US 30 OR 8 (Murray Blvd. to Brookwood Ave.) OR 212	.90	.99	.99

Source: Metro

Notes:

- Performance standard is defined by Demand to Capacity (D/C) ratio. Application of D/C is identical to V/C but acknowledges that ratios over 1.0 reflect demand rather than actual traffic volume.
- Corridor refinement plans are required in Chapter 6 of the Metro RTP and will include a recommended mobility policy for the following corridors: I-205, I-5 (Marquam Bridge to Wilsonville), and OR 8 (Murray Blvd. to Brookwood Ave.)

Portions of Washington County are outside of the Portland Metro UGB, ODOT mobility targets⁴ identified for rural highways also apply. This Transportation Plan must incorporate the ODOT mobility targets when evaluating congestion on ODOT facilities within Washington County over the 20-year planning horizon, or must adopt alternative mobility standards that better reflect goals of the Transportation Plan process.

Certain segments of Statewide, Regional or District Highways may be designated as Special Transportation Areas (STA) and therefore subject to alternative mobility targets. An STA is a designated district of compact development located on a state highway where the need for appropriate local access outweighs considerations of highway mobility. There are three existing Special Transportation Areas within Washington County:

- **OR 47** (Tualatin Valley Highway) from milepost 16.06-16.67 in Cornelius
- **OR 47** (Tualatin Valley Highway) from milepost 25.34-26.54 in Gaston
- **OR 141** (Hall Blvd.) from milepost 2.84-3.84 in Beaverton, unincorporated Washington County, and Tigard
- Add STA in **Banks**

OR 141 is classified as a District Highway and OR 47 is classified as a Statewide Highway. The mobility targets for outside of the UGB are quoted in Table 2-22. Mobility targets for ODOT highways inside the Portland metropolitan

⁴ On December 21, 2011 the Oregon Transportation Commission approved revisions to their Highway Mobility Policy 1F replacing the term “mobility standard” with “mobility target”. This change in terminology was prompted by the recognition that it might be infeasible or impractical to meet mobility standards, and that the term “target” more aptly reflected the flexibility needed to consider alternate mobility measures in some situations. These targets apply primarily to transportation and land use planning decisions, and do not replace design mobility standards contained in ODOT’s Highway Design Manual.

area are the same as those in Table 2-21, except that Hwy. 99W is also included on the list of Other Principal Arterial Routes and there is no mid-day peak target.

Table 2-22: ODOT Mobility Targets Outside of Metro

Highway Category	Inside UGB					Outside UGB	
	STA	MPO	Non-MPO outside of STA where non-freeway posted speed <=35 mph*	Non-MPO outside of STA where non-freeway posted speed > 35 but < 45 mph	Non-MPO where non-freeway posted speed >=45 mph*	UC	Rural Lands
Interstate Highways	N/A	.85	N/A	N/A	.80	.70	.70
Statewide Highway – Expressway	N/A	.85	.80	.80	.80	.70	.70
Statewide Highway – Freight Route	.90	.85	.85	.80	.80	.70	.70
Statewide Highway – Not a Freight Route	.95	.90	.90	.85	.80	.75	.70
Regional or District Highway – Freight Route	.95	.90	.90	.85	.85	.75	.70
Regional or District Highway – Expressway	NA	.90	N/A	.85	.85	.75	.70
Regional Highways – Not a Freight Route	1.0	.95	.90	.85	.85	.75	.70
District / Local Interest Roads	1.0	.95	.95	.90	.90	.80	.75

Source: ODOT

Notes:

- Performance standard is defined by V/C ratio targets for peak hour operating conditions
- UGB = Urban Growth Boundary
- STA = Special Transportation Area
- MPO = Metropolitan Planning Organization
- UBA = Urban Business Area
- UC = Unincorporated Communities
- *Non-MPO standards apply outside of STAs and not freeways.

Roadway Traffic Volume Trends

Washington County maintains several hundred traffic count stations. These stations are counted either annually or every three years. To get an idea of how traffic volumes have changed since 2007, Table 2-23 compares the average total motor vehicle volumes and truck volumes for all urban and rural count stations with counts taken in both 2007 and 2012. Based upon counts recorded at 211 urban count stations and 53 rural stations, this data shows a three to four percent drop in overall average motor vehicle volumes over the five-year 2007 to 2012 time period. Average truck volumes also decreased during this time period by approximately two percent in the urban area and by over 12 percent in the rural area. These decreases in volume, especially rural truck volumes, can largely be attributed to the recent economic downturn. The roughly 10 percent difference in truck volume decreases between urban and rural counts is, in part, simply due to higher proportion of trucks in the rural area (10 to 11 percent) as compared to a five to six percent share of trucks in the urban area.

Table 2-23: Traffic Volume Comparison, 2007 and 2012

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

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

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

Details of the 2007 and 2012 traffic counts and speeds are presented in Appendix A.

2.5.5 System Demand Patterns

Origin-Destination Patterns

A common question about traffic is “where do all the cars come from?” Often assumptions and discussion about travel patterns reflect assumed predominant traffic flows, but such anecdotal discussions may neglect significant routes. The Westside travel demand forecast is a tool built specifically to answer these questions.

Staff has identified 10 locations where a select link / flow bundle will be included in the existing conditions. Additional locations may be desirable as future needs analysis is developed.

These are:

1. Tualatin-Sherwood Road (west of Boones Ferry Road)
2. Roy Rogers Road (south of Scholls Ferry Road)
3. Scholls Ferry Road (west of Highway 217)
4. River Road (south of Farmington Road)
5. Murray Blvd (south of TV Highway)
6. 185th Avenue (north of Baseline Road)
7. Walker Road (west of 158th Avenue)
8. Cornell Road (west of Cornelius Pass Road)
9. West Union Road (west of Bethany Blvd)
10. Zion Church Road (west of Glencoe Road)

The results of this analysis are shown in Appendix B.

2.5.6 Vehicle Miles Traveled

Vehicle Miles Traveled (VMT) can be calculated a variety of different ways. The important element of these calculations is to make comparisons between alternatives and/or identify trends.

For the Transportation System Plan Update purpose VMT has been computed based on the regional travel demand model. This methodology has advantages and disadvantages. The primary advantage is it will allow the forecast of VMT in the future, and for comparison of VMT between alternatives. The primary disadvantage is that the model is not available for each year. Therefore historical VMT numbers and trends can not be calculated consistently and without bias. Also the models are only valid for the specific level of land use development in the adopted forecast, and therefore cannot be used to test alternative land use scenarios that might be developed through this update process. The projections into the future must be calculated for a specific point in time in the future. Therefore the evaluation cannot show trends over time, but rather will evaluate the absolute change at the end of the planning horizon. Given these limitations, additional information has been provided to assist with past trends, both nationally and locally.

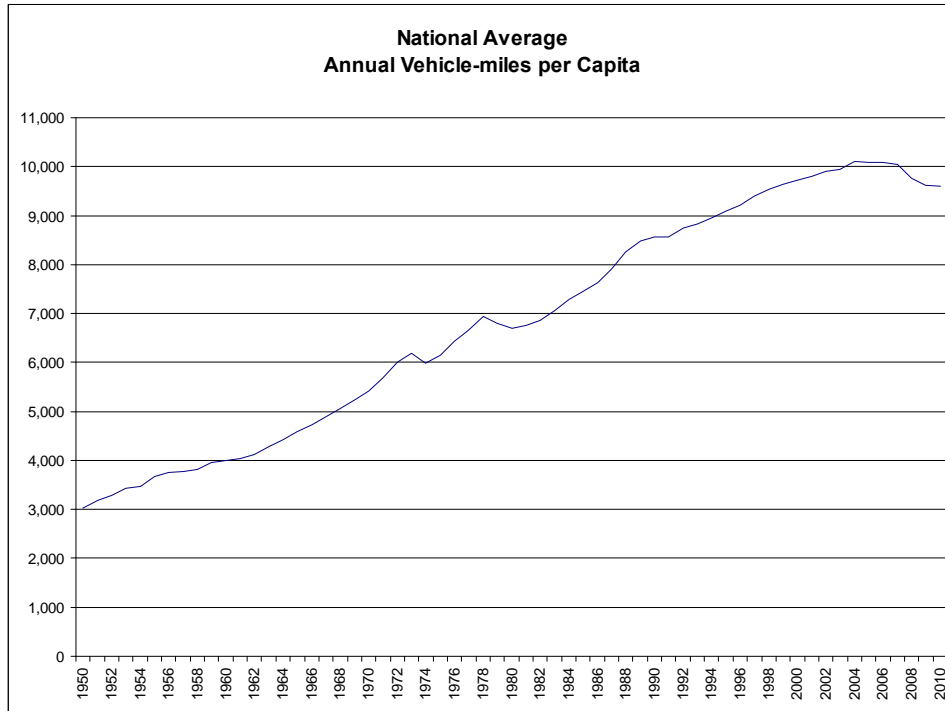
Washington County VMT Estimates

The VMT within Washington County in 2010 is estimated at: 8.4 million miles of travel per weekday. Given the population of Washington County in 2010, that would translate to approximately 15.76 miles per day per capita. The Metro regional travel demand forecast has been used to estimate both the 2010 and the State RTP forecast for 2035. Using this forecast, VMT within Washington County is expected to increase to 11.9 million miles per day. Given the expected population increase within Washington County the VMT per resident would decrease to 15.71 miles per day. This represents a small percentage decrease in miles per day per resident. The VMT within Washington County includes travel by residents from outside the County, but does not include travel by County residents outside the County. Note this does not include weekend or holiday travel.

Data Related to VMT

Many forms of VMT calculations are annual numbers. The U.S. Department of Energy reports annual vehicle miles per capita as shown in Figure 2-23 below.

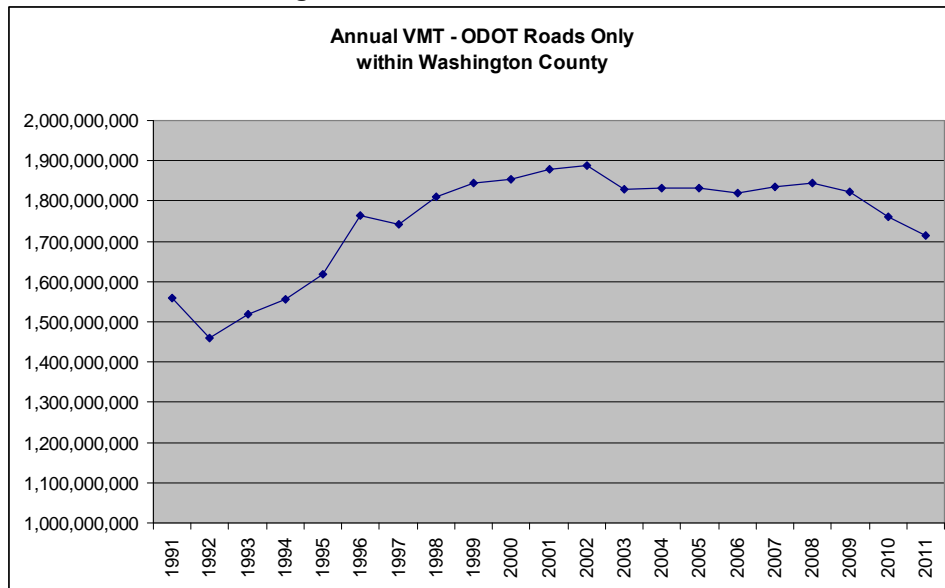
Figure 2-23: US Department of Energy VMT per Capita Estimate



Source: US Department of Energy.

The Oregon Department of Transportation (ODOT) estimates VMT on state Routes by county, as shown in Figure 2-24 below. Please note that some of the decline may be due to ODOT transferring ownership of several routes to Washington County.

Figure 2-24: ODOT VMT Estimate

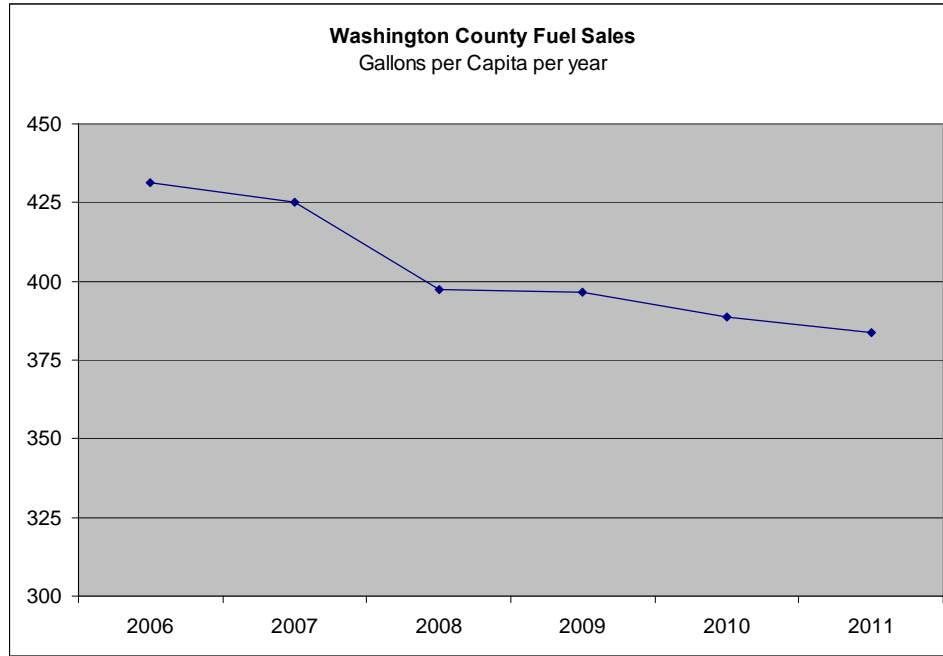


Source: ODOT

Fuel sales may also be interesting and may relate to Vehicle Miles of Travel (VMT). Fuel consumption is important for Green House Gas emissions, which is often part of the reason given to reduce VMT. Figure 2-25 reports fuel sales within Washington County. Related to fuel sales, fuel efficiency is tracked by the Bureau of Transportation

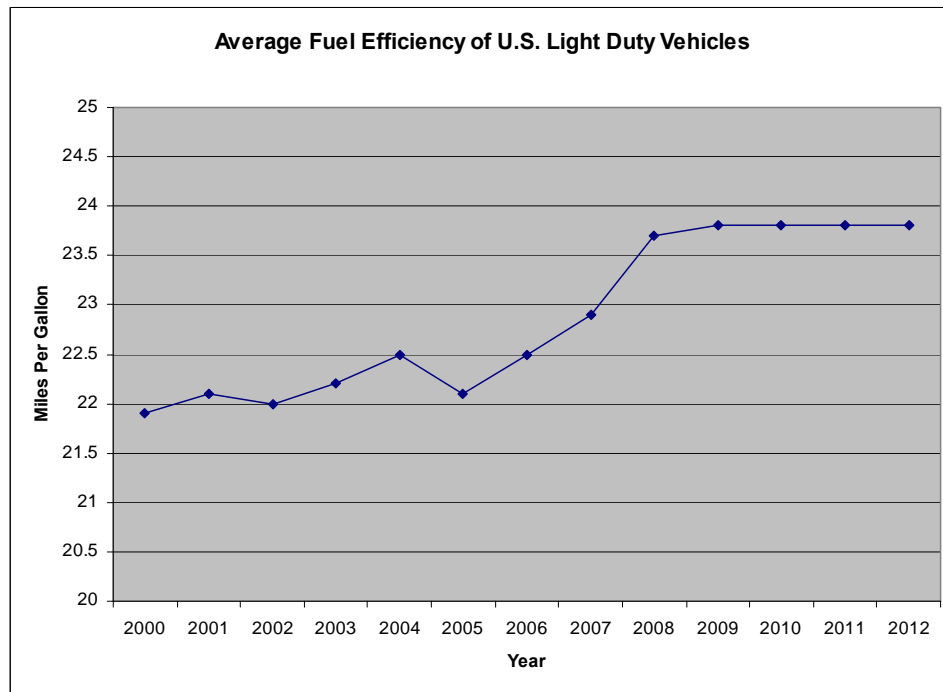
Statistics. If average fuel efficiency is known an estimate of total VMT, including weekend and recreational VMT, can describe inform total vehicle travel rate and growth. Figure 2-26 reports the average fuel efficiency of light vehicles.

Figure 2-25: Washington County Fuel Sales



Source: ODOT Fuels Tax Group Reports, PSU Population Center

Figure 2-26: Average Fuel Efficiency of Light Vehicles



Source: Bureau of Transportation Statistics

(2009 is the last year for which information is available).

2.5.7 Roadway Performance

The following section discusses roadway travel conditions and congestion measures in Washington County.

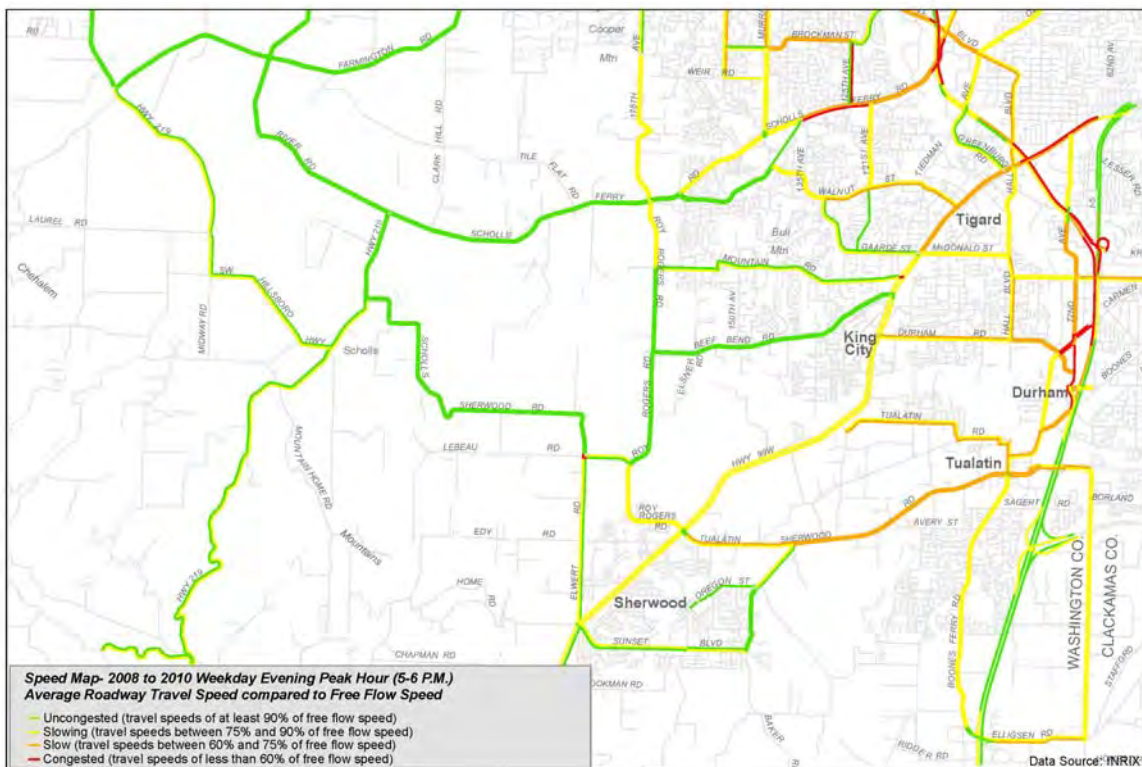
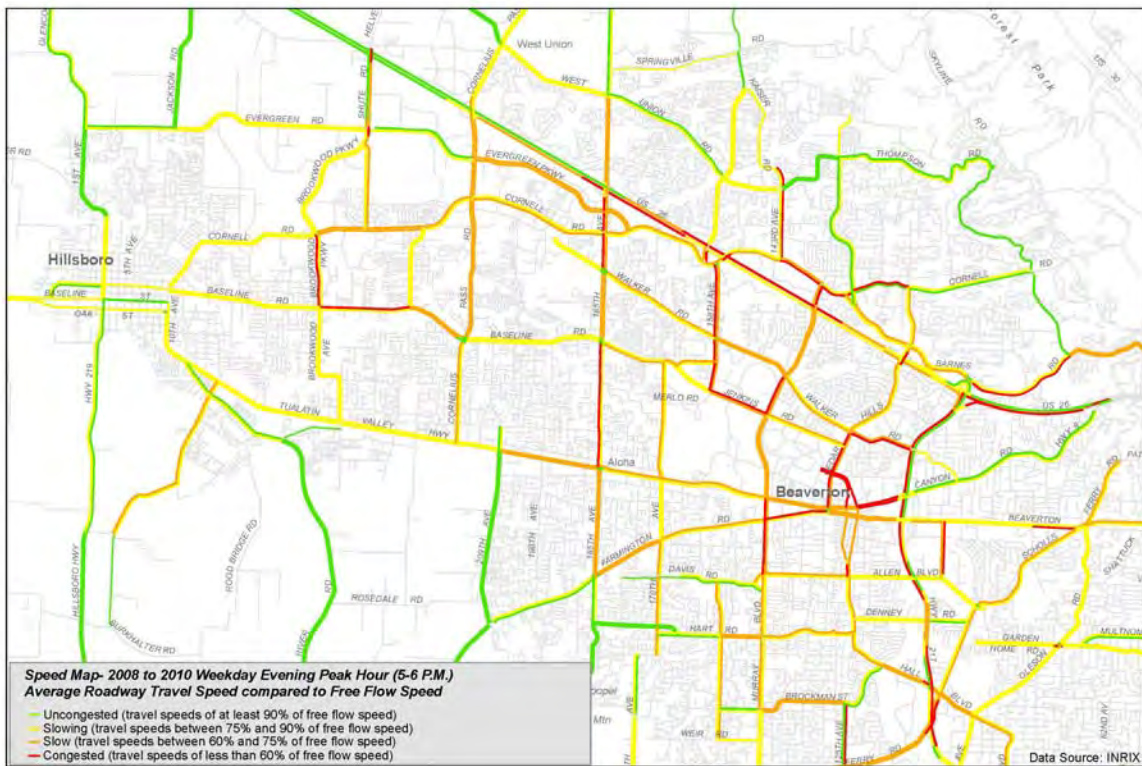
Speed & Reliability

Travel time data has been collected on most highways and arterials in Washington County for each day in 2008 through 2010. By comparing 'free flow' vehicle speeds to those detected on an 'average' weekday peak hour (Tuesday through Thursday, 5-6PM), the effects of congestion on travel times and vehicle speed can be identified. Free flow travel refers to conditions where there are no slow-downs due to the volume of vehicles in the roadway or other unexpected events. However, free flow conditions may include normal stopping at stop signs or traffic lights and therefore differ from posted speeds. Figure 2-27 illustrates average speed relative to free flow speed. Travel time reliability refers to the consistency or dependability in travel times. While reliability is related to speed reductions, the two measures are significantly different. Reliability focuses on the day-to-day consistency in travel times rather than the level of delay caused by congestion on a 'typical' day. If a corridor is normally slower than free-flow conditions, it may be considered reliable, as long as the travel time is consistent on a daily basis. However, if travel times dramatically increase compared to 'normal' or 'expected' conditions the roadway is not considered to be reliable.

Figure 2-28 illustrates travel time travel time reliability. The figure shows the level of travel time increase (compared to an 'average' day) that occurs on a 95th percentile slowest travel time day. This measure reflects what is often referred to as a Buffer Time Index. A buffer index of 0.0 indicates that travel times are consistent nearly every day of the year, and likely reflect free flow conditions. A buffer index of 1.0 (equivalent to a 100% increase in travel time on a 95th percentile day) represents roadways with significant congestion impacts. A buffer index higher of 2.0 or more indicates that travel times triple, representing severe congestion impacts that may spread across multiple hours.

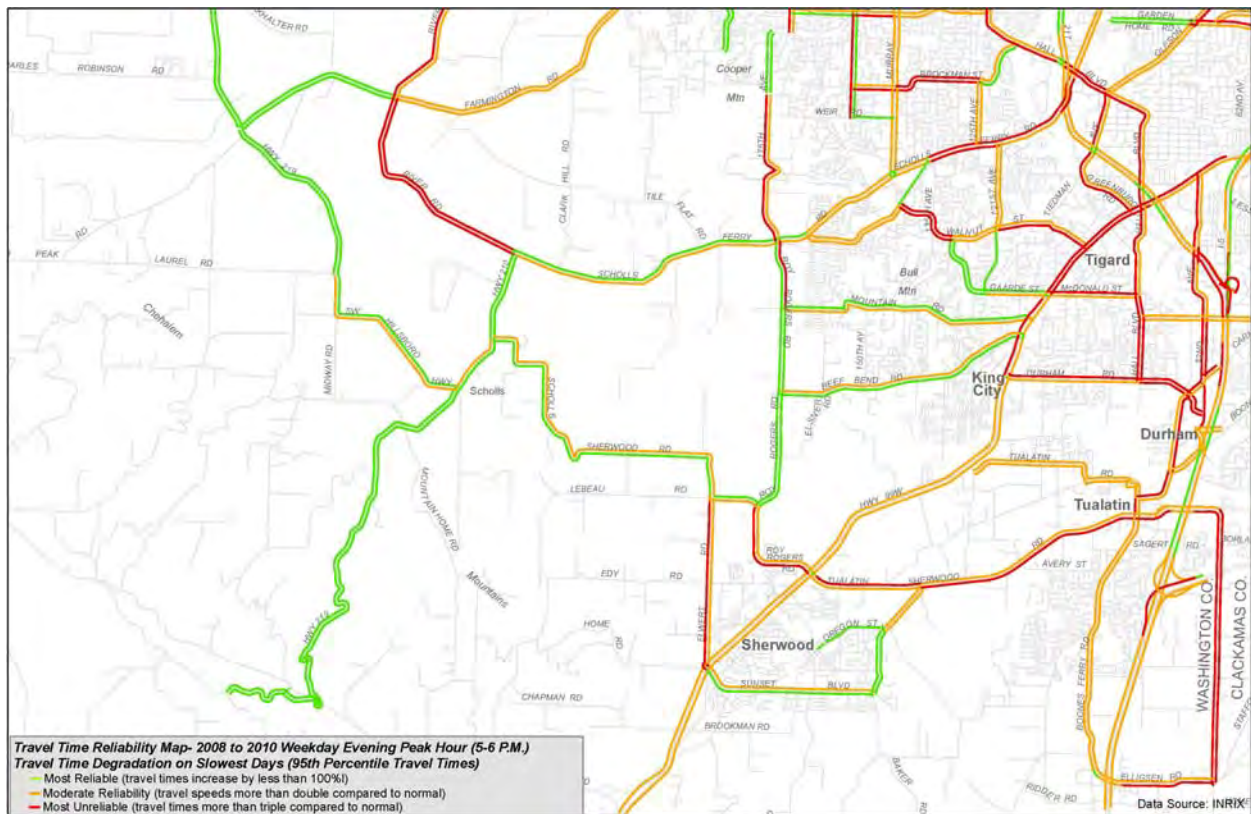
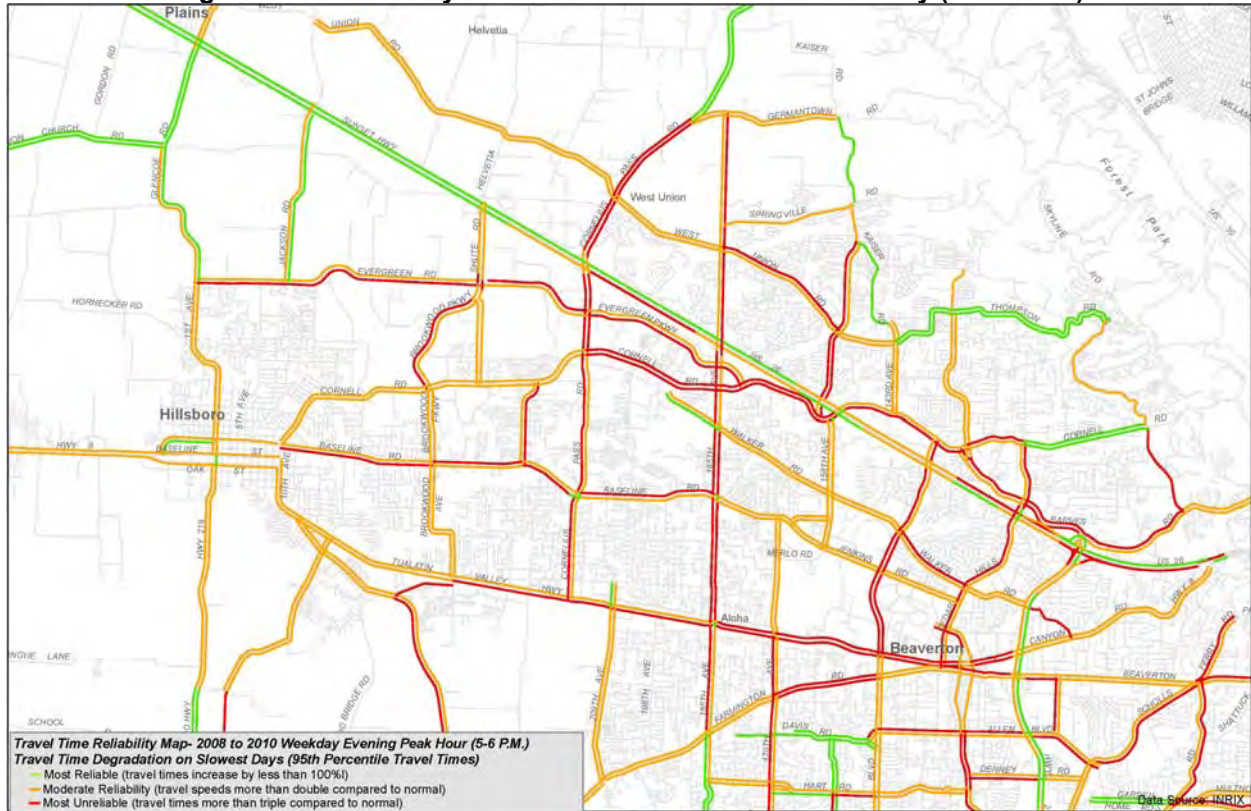
The 'average day' speed measure and the travel time reliability measure may identify congestion effects in different locations. Unlike 'typical' day congestion which results from high traffic volumes, reliability in travel times may reflect some less common causes of congestion such as high crash frequency locations, special event traffic, susceptibility to weather-related slowing, etc. Travel time reliability may also be influenced by the availability of alternative routes, travel lanes, or shoulder widths (for incidents).

Figure 2-27: Weekday PM Peak Hour Speed compared to Free Flow (2008-2010)



Source: INRIX

Figure 2-28: Weekday PM Peak Hour Travel Time Reliability (2008-2010)



Source: INRIX

Table 2-24 and 2-25 summarize the total roadway miles in Washington County that fall into each identified class for average speed and travel time reliability, respectively. The data includes freeways and arterials but generally not local or neighborhood streets or many collectors. The results indicate that approximately half of these roadways operate at 90 percent of free flow speed on a typical day. Congested conditions where speed is reduced to 60% or less of free flow speed on an average day occurs on less than five percent of roadways in Washington County. Travel time reliability findings indicates that approximately one third of roadways in Washington County maintain slow day (95th percentile) travel times that are less than double those of a normal day. Unreliable roadways that experience travel times that triple or more on slow days make up 18 percent of county roads. The remaining 49 percent of roadways are categorized as ‘moderately reliable’ and experience travel times that increase by 100 to 200 percent on high congestion (95th percentile) travel days.

Table 2-24: Average Weekday Peak Hour Speed Summary
(2008-2010, Tuesday-Thursday, 5-6 PM)

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

Source: INRIX

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

Table 2-25: Weekday Peak Hour Travel Time Reliability
(2008-2010, Tuesday-Thursday, 5-6 PM)

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

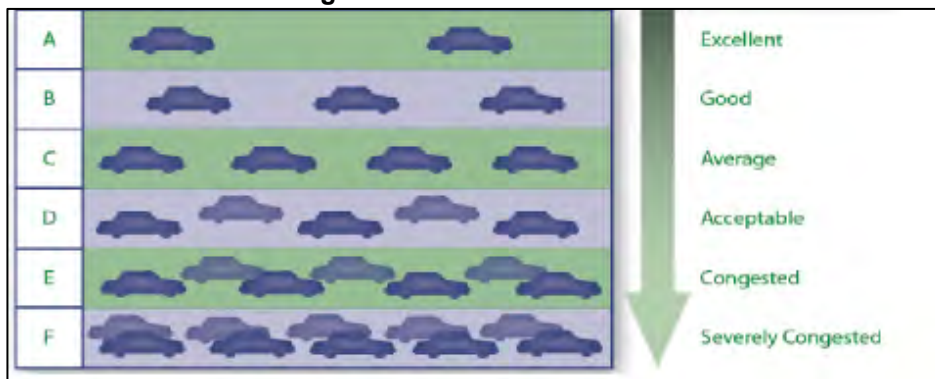
Source: INRIX

*Represents 95th percentile day travel times compared to average day

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

Level of Service

Figure 2-29: Level of Service



Roadway congestion is often scored by a letter grade A through F, similar to a report card. Figure 2-29 describes the Level of Service and expected congestion levels for each grade.

Roadway Congestion Measures

Traffic congestion is often represented as a ratio of the motor vehicle volume (or demand) to roadway capacity. Demand-to-capacity (D/C) ratios are estimated for the 2010 PM peak hour (between 4-6PM) via the Washington County Travel Demand Model. The model includes most collectors, arterials, and highways in Washington County. The 2010 D/C ratios are illustrated in Figure 2-30. Locations in Washington County where peak period minimum performance standards are likely to be exceeded include:

- I-5 (various segments between OR 217 and I-405)
- OR 217 (various segments between US 26 and I-5)
- OR 99W (south of OR 217)
- TV Highway (east of 185th Avenue)
- Durham Road (west of Boones Ferry Road)
- Greenburg Road
- Scholls Ferry Road (west of OR 217)
- Boones Ferry Road (between Bridgeport Village and east of Tualatin Road and in the vicinity of 95th Ave / Commerce Circle)
- Walker Road (various segments between Cedar Hills Boulevard and Amberglen Parkway)
- Roy Rogers Road (south of Scholls Ferry Road)
- Cornell Road (west of Saltzman, west of 185th, and west of Brookwood)
- West Union (west of 185th)
- Evergreen (west of 185th and west of Imbry)
- Tualatin-Sherwood Road

In the Portland Metro region, some roadways experience congestion that extends beyond the peak periods of travel. Because off peak travel conditions are not directly represented in the available peak period travel demand models, the Hours of Congestion tool was developed⁵ to estimate the duration of congestion, especially for future conditions where 'peak spreading' is more likely to occur. Peak spreading refers to travelers shifting to peak-shoulder hours in response to severe congestion. The Hours of Congestion tool uses the peak period demand models together, estimated roadway capacities, and 24-hour traffic volume profile data to estimate the duration of congestion per day for area roadways.

The 2010 hours of congestion for Washington County roadways is illustrated in Figure 2-31. Congestion is defined where hourly directional traffic volume is at least 90 percent of estimated roadway capacity (i.e., level-of-service E or F in the far left column of figure 2-29 above). Locations where congestion may occur for 8 hours or more per day may include:

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

⁵ ODOT Region 1 Hours of Congestion Report, DKS Associates, March 2010.

Figure 2-30: Roadway Demand-to-Capacity Ratio (2010 Weekday PM Peak Hour)

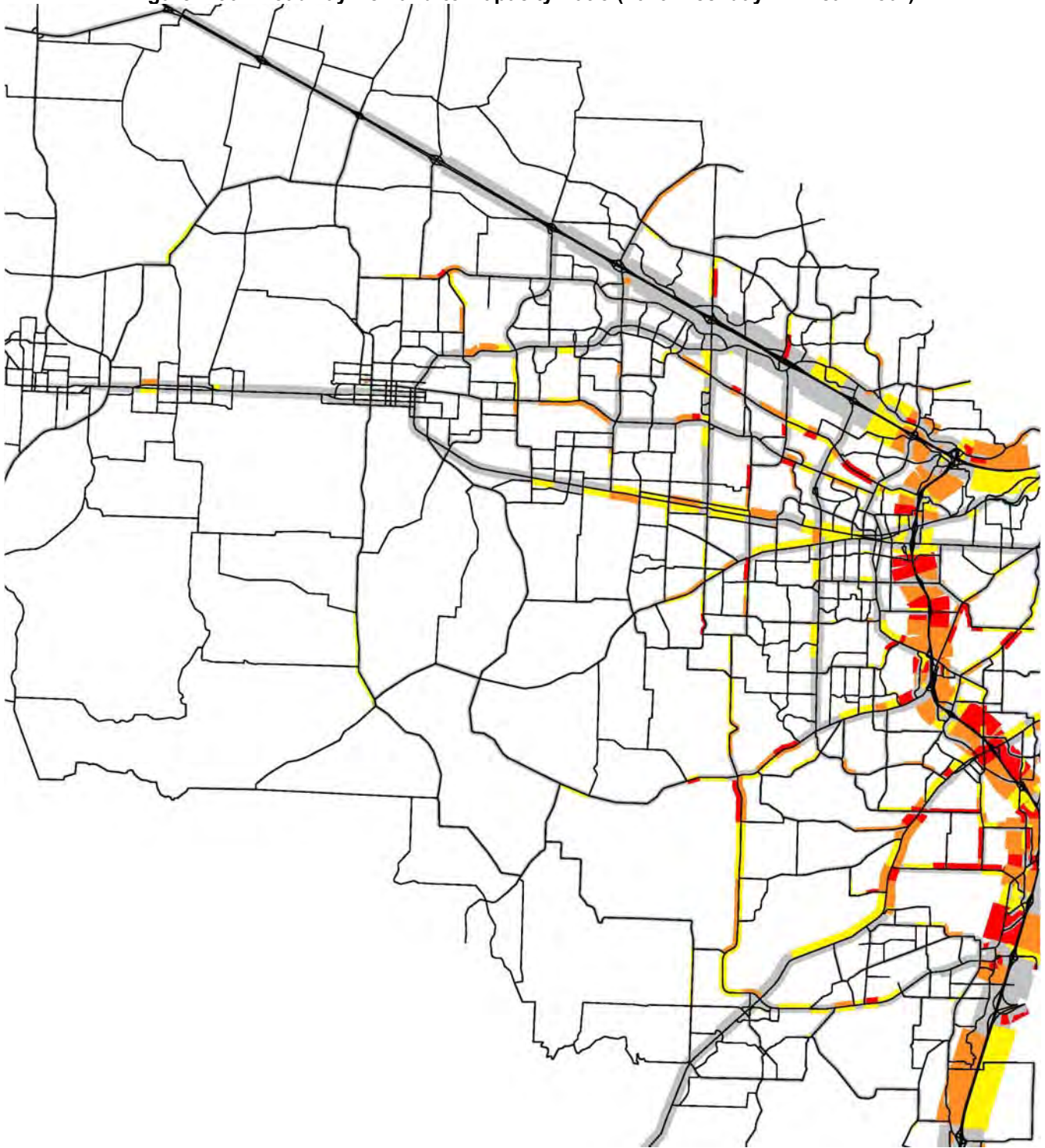
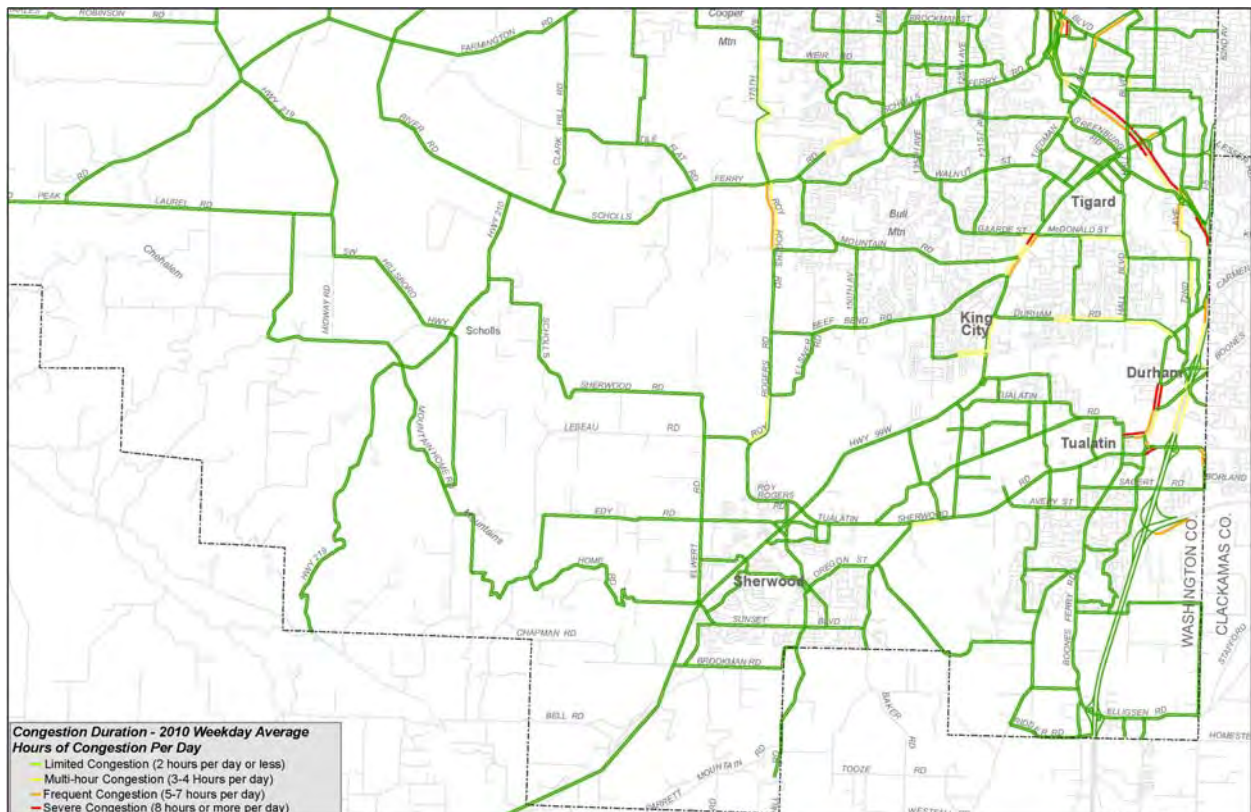
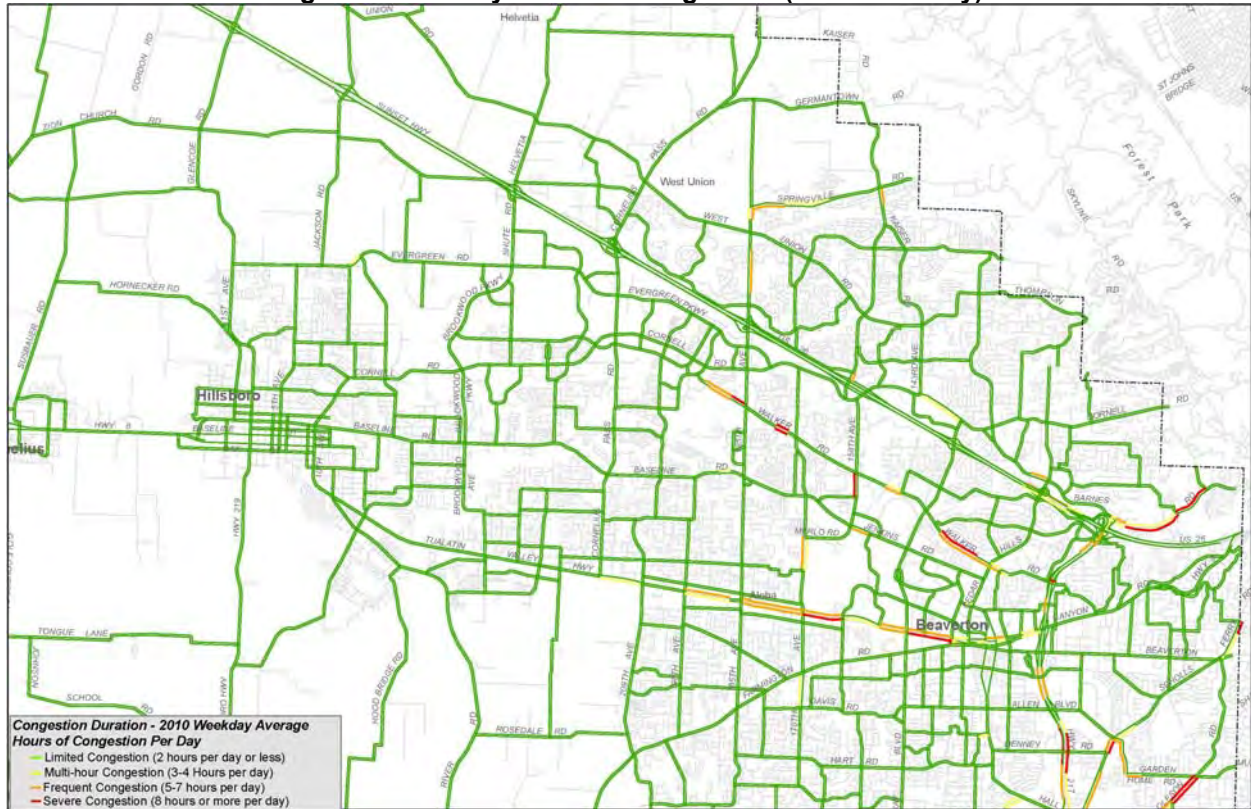


Figure 2-31: Daily Hours of Congestion (2010 Weekday)



Source: Washington County, DKS Associates

Future Needs

Future 2035 Travel Demand (Based on Regional Growth Projections) on the current system, including currently funded improvements (MSTIP 3d and others) is reported in Figure 2-32.

- **Yellow** is D/C greater than 0.8.
- **Red** indicates D/C greater than 0.99 which is the currently adopted Washington County Level of Service (LOS) Standard.
- **Purple** indicates D/C greater than 1.1 which is the currently adopted Metro Level of Service (LOS) Standard.

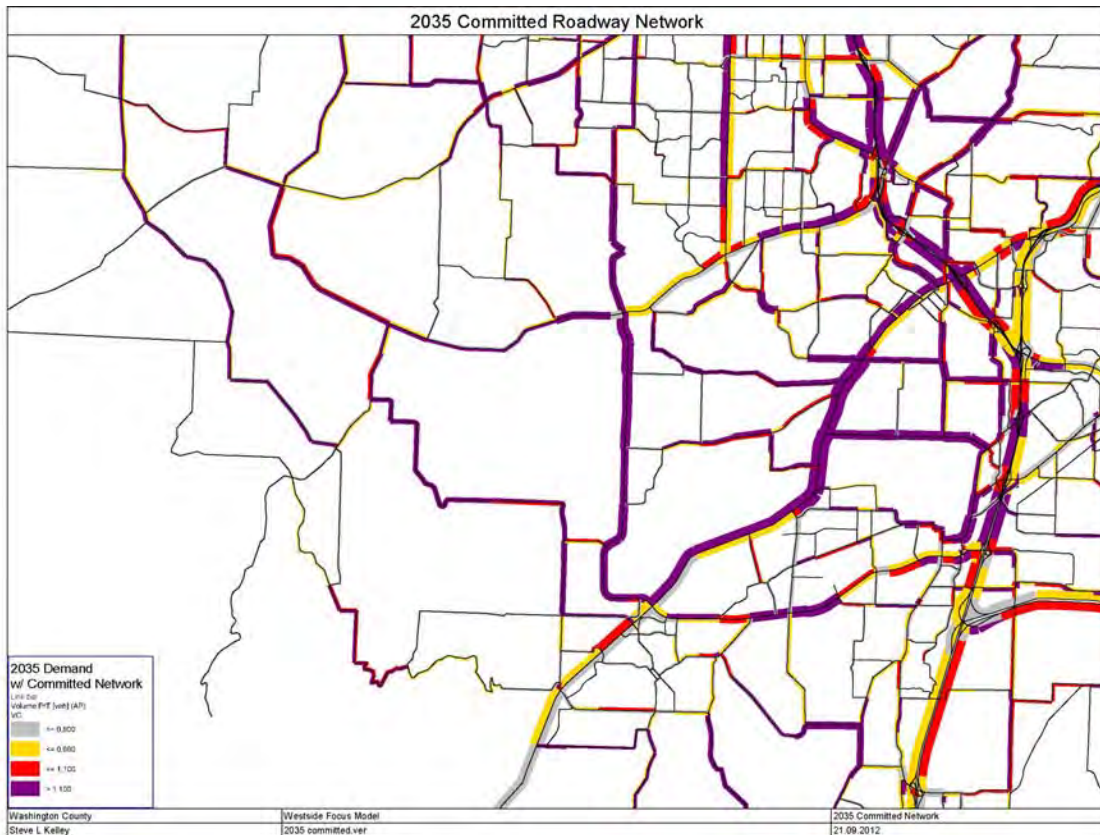
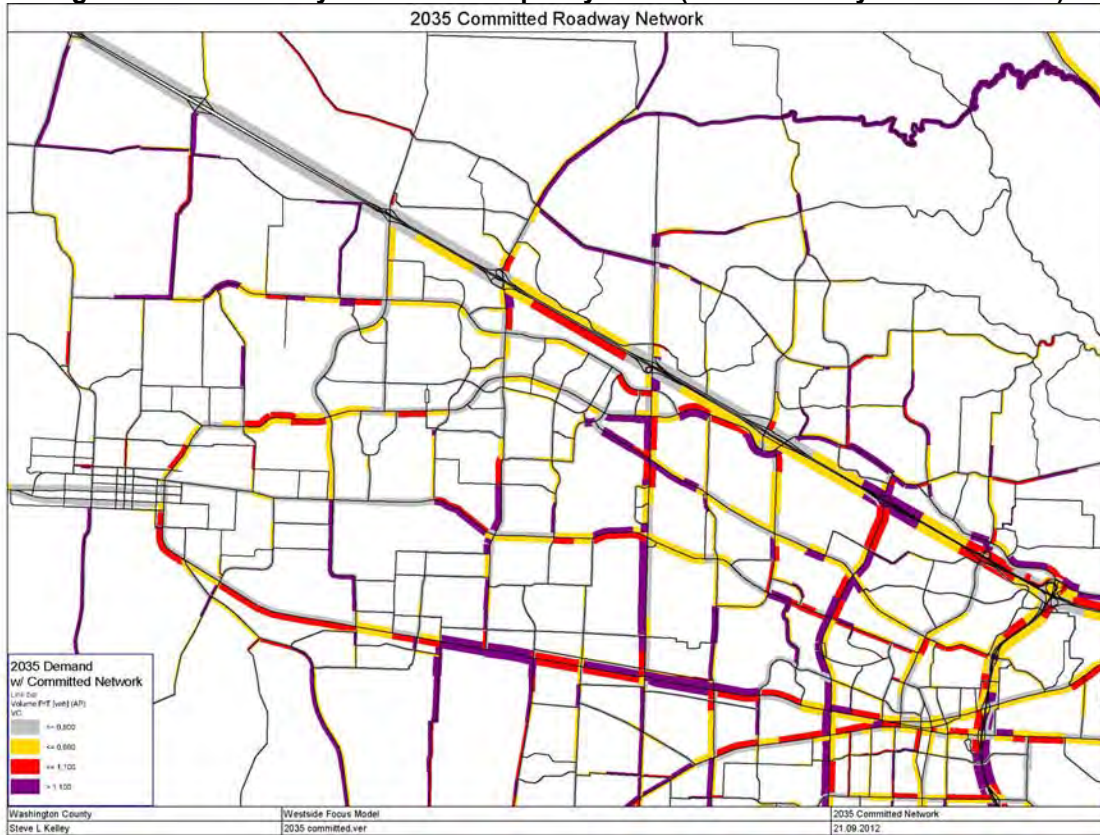
The assumed network includes the existing system on the ground today, and funded improvements in the process of being implemented. Many of the roadways in Washington County will not meet Metro LOS standards without some form of improvement to the roadway system. Three categories of system improvements should be expected.

- 1) The roadways in the vicinity of urban reserves will need to be planned for improved to accommodate the demands created by the development in the urban reserve areas. This system picture would certainly change if a complete urban network was assumed to be provided within the urban reserve areas. Since this is a committed funding only network, such improvements have not been included but can be expected.
- 2) Development along arterial and collector roadways that are not currently completed to urban standards (as described in table 2-3). In many locations roadway improvements are deferred until development occurs on the adjacent property. It is assumed that the development will likely be conditioned to complete the roadway to urban standards along the frontage.
- 3) It is expected that additional funding will be available between now and 2035. This network does not utilize that funding. One of the purposes of this planning effort is to investigate the best and highest priority improvements to consider future public funding.

A discussion of transportation funding and system improvement priorities is anticipated to occur later in the Transportation System Plan Update process. These maps provide an indication of the future needs without a plan to address them.

It should be noted that this sort of big picture of countywide system needs and is not location specific. Arterial and collector roadways are controlled by intersection geometry, and signal operations. It is entirely possible that a roadway will perform better or worse than shown. The D/C ratios provide an indication of a potential problem that should be investigated further. Not a specific problem to be addressed at the location identified.

Figure 2-32: Roadway Demand-to-Capacity Ratio (2035 Weekday PM Peak Hour)



Source: Washington County

Figure 2-33 applies the same demand to capacity ratios shown in figure 3-32, but shows the expected outcome from the State Regional Transportation Plan (RTP):

- **Yellow** is D/C greater than 0.8.
- **Red** indicates D/C greater than 0.99 which is the currently adopted Washington County Level of Service (LOS) Standard.
- **Purple** indicates D/C greater than 1.1 which is the currently adopted Metro Level of Service (LOS) Standard.

The State RTP achieves significant improvement roadway performance when compared to the committed system. The change to the graphic is noticeable, and the expected operation of most facilities is drastically improved. Two of the three categories of system improvements described above have been implemented in by the State RTP improvements.

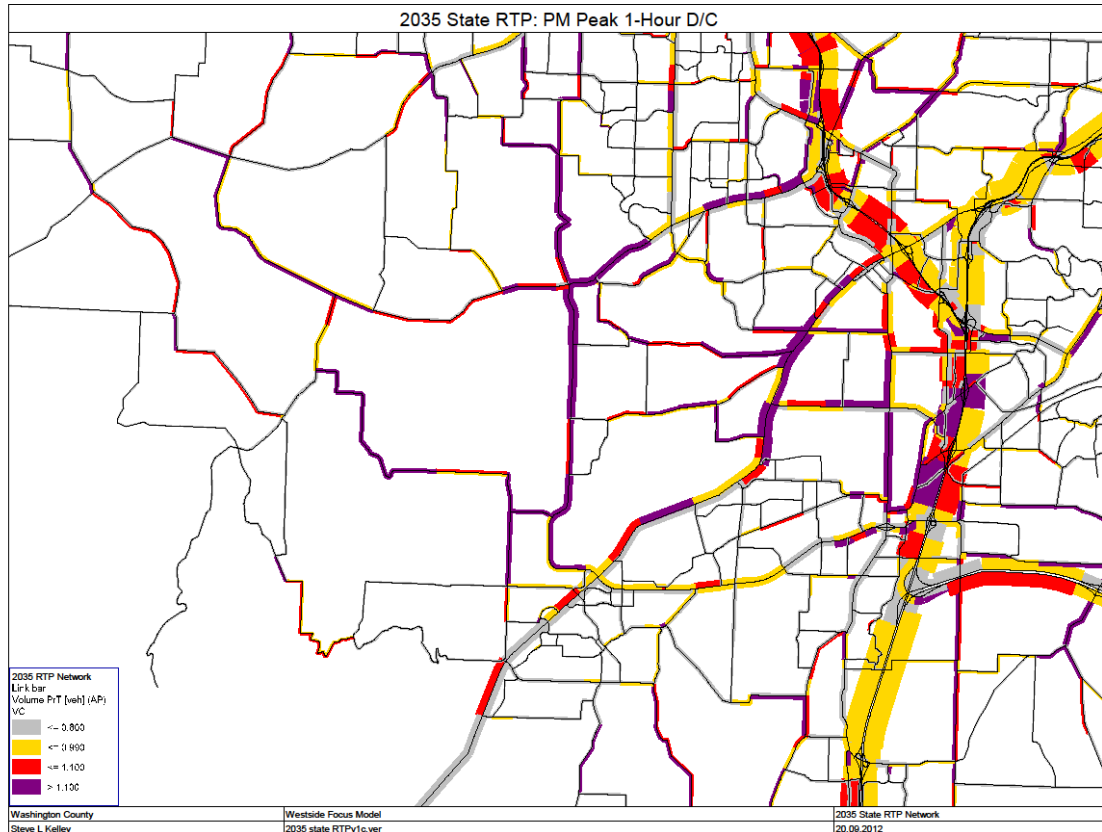
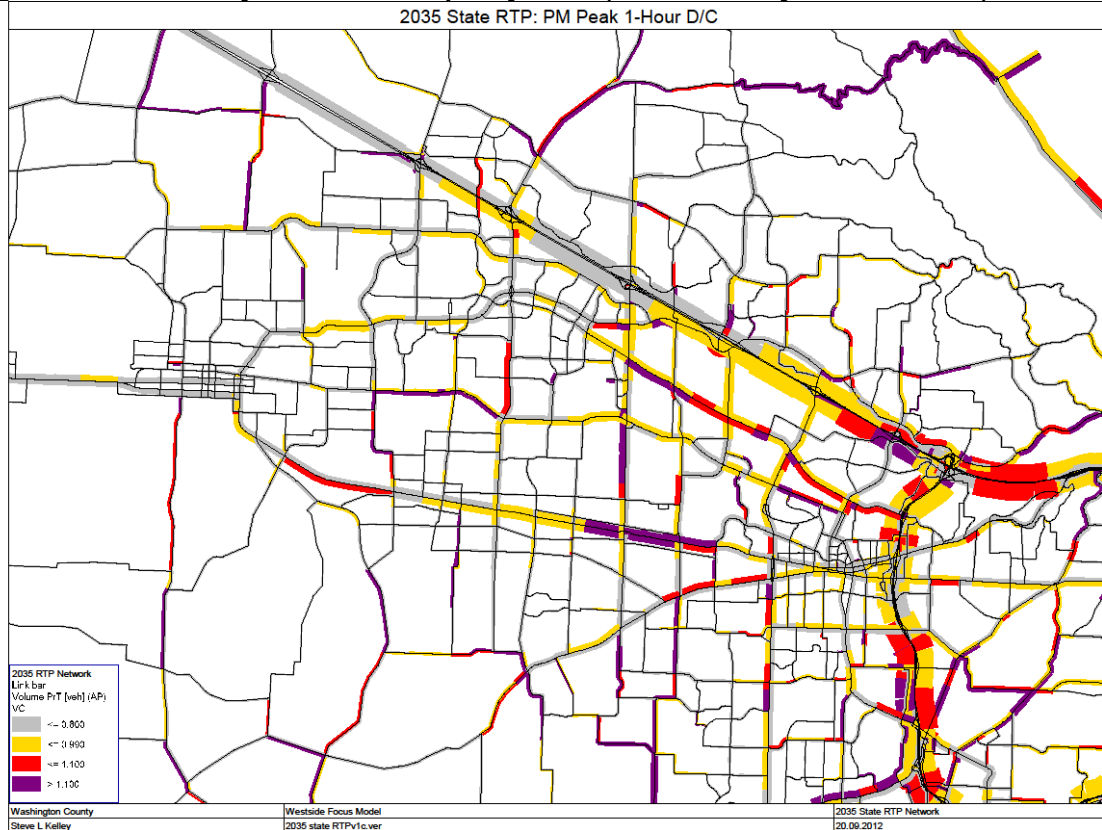
- 1) In many cases the roadways in the vicinity of urban reserves have been improved to accommodate the demands created by the development in the urban reserve areas.
- 2) Development along arterial and collector roadways that are not currently completed to urban standards (as described in table 2-3). In many locations roadway improvements are deferred until development occurs on the adjacent property. It is assumed that the development will likely be conditioned to complete the roadway to urban standards along the frontage.
- 3) Additional public funding has been assumed to be available between now and 2035, and a broad array of improvements are assumed to be on the ground.

A discussion of transportation funding and system improvement priorities is anticipated to occur later in the Transportation System Plan Update process. These maps provide an assessment of the future needs with the State RTP in place to address them.

It should be noted that this sort of big picture of countywide system needs and is not location specific. Arterial and collector roadways are controlled by intersection geometry, and signal operations. It is entirely possible that a roadway will perform better or worse than shown. The D/C ratios provide an indication of a potential problem that should be investigated further. Not a specific problem to be addressed at the location identified.

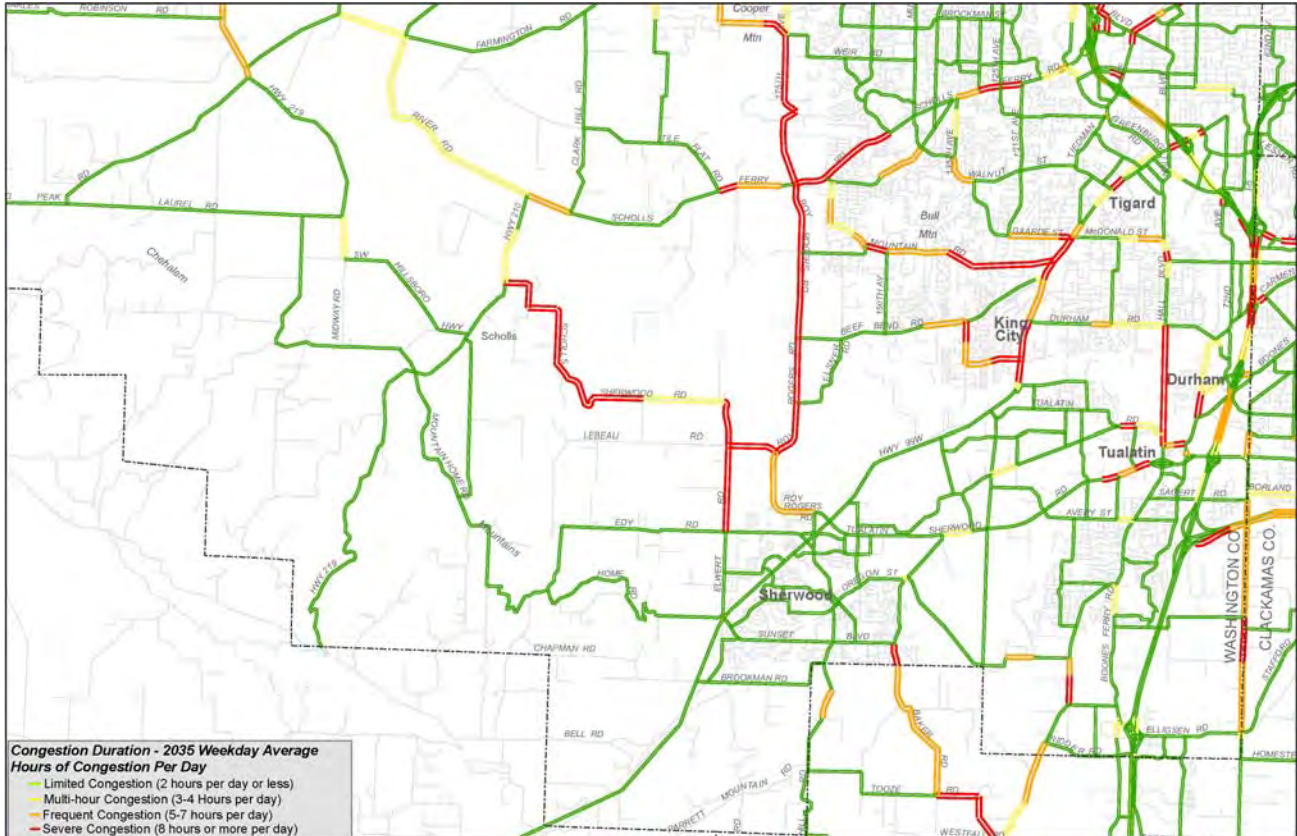
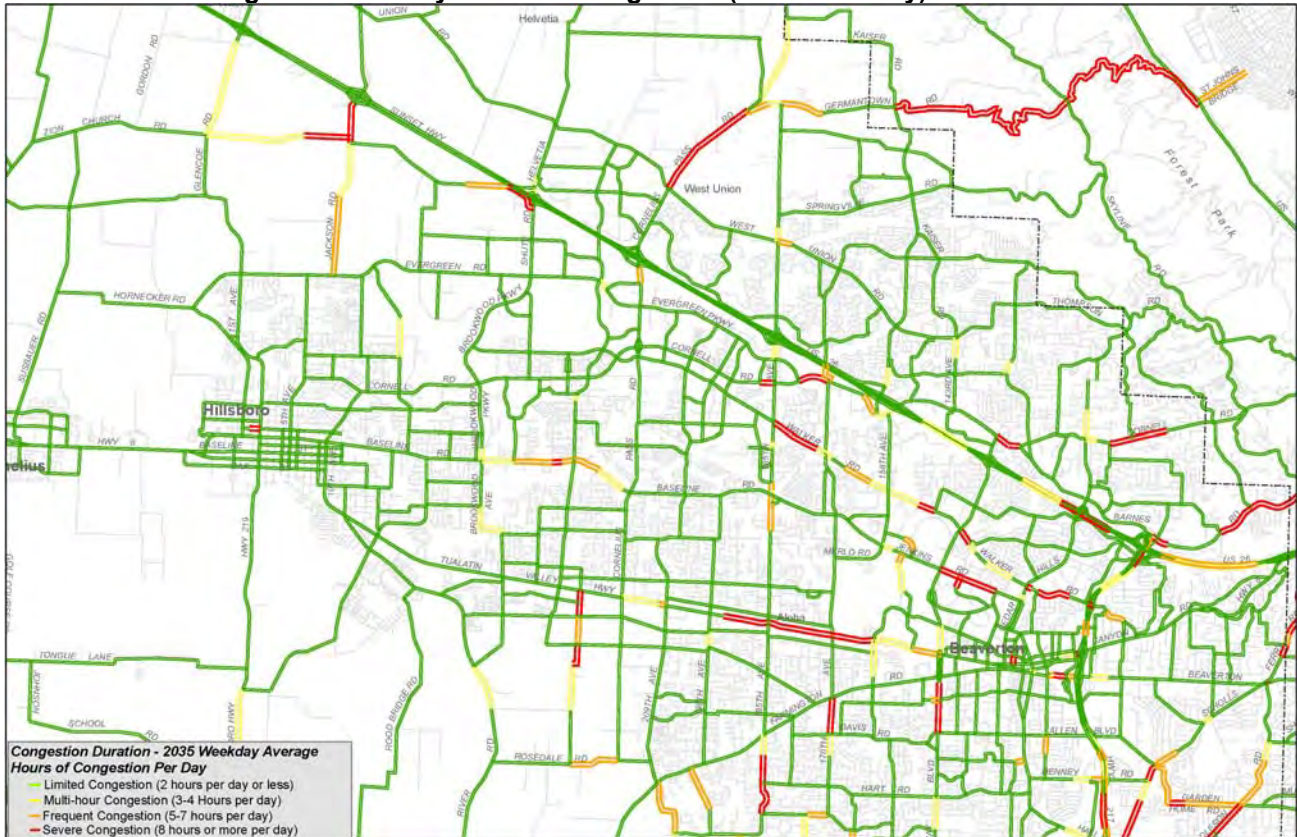
The 2035 hours of congestion for Washington County roadways resulting from the State Regional Transportation Plan (RTP) is illustrated in Figure 2-34.

Figure 2-33: Roadway Demand-to-Capacity Ratio (2035 Weekday PM Peak Hour) – State RTP



Source: Washington County

Figure 2-34: Daily Hours of Congestion (2035 Weekday) – State RTP



2.6 EXISTING ROADWAY SAFETY CONDITIONS

Highway safety is a complex subject due to the variety of factors that interact with each other during the course of person's use of the right-of-way. Road conditions, weather, driver ability, and vehicle type are just some of the factors that come into play when considering the safety of a particular situation or location. Predictive models are available, along with anecdotal knowledge and experience with similar conditions. Traffic volumes, crash data, and citizen observations are just some of the ways that staff can analyze locations and corridors to determine what type of improvements or changes to the transportation infrastructure would add an element of safety. Each situation and location is unique requiring engineering analysis and professional judgment. This section is intended to provide a broad explanation of safety trends and considerations for planning purposes.

2.6.1 Overview

New road construction, as well as the ongoing maintenance of the existing transportation system in Washington County uses modern techniques, industry standards, and best management practices to create a complex network of roads and bridges that are safe and reliable. In addition, an active presence by law enforcement personnel can reinforce the rules of the road. Road and bridges in Washington County are generally safe as long as the traveler uses care and caution. The quality of a user's experience is often a function of their skill and ability. Even during adverse situations, drivers, cyclists, and pedestrians can typically negotiate marginal road conditions when they exercise reasonable and prudent judgment.

Tens of thousands of vehicles traverse Washington County roads on a daily basis and the vast majority of those trips are without incident. However, there are some locations that tend to have an increased rate of accidents or crashes. While the Transportation System Plan cannot, in and of itself, reduce the number of crashes, it can provide an overall summary of the transportation network's performance as it relates to crashes.

2.6.2 Motor Vehicle Collision Data

Traffic safety monitoring is based on historical collision data. The primary evidence comes from local police agency reports that are fed back to the Oregon Department of Transportation (ODOT) for processing and evaluation statewide. This data only reflects collisions that were reported. A percentage of the collisions that occur are not reported. Washington County publishes a summary of the reported collisions referred to as the Safety Priority Indexing System (SPIS) list.

ODOT Crash Data

Washington County's roads, bridges and traffic safety appurtenances are engineered, constructed, and maintained using modern techniques, industry standards, and best management practices. The deliberate approach to the design, construction and maintenance of our transportation infrastructure is intended to curtail fatalities, minimize personal injuries, and reduce property damage. Despite these efforts, crashes will continue to occur on Washington County roads and the Department of Land Use and Transportation will continue to make reasonable efforts to improve the transportation system in order to alleviate or improve situations that pose possible risks.

The County realizes that some areas may be prone to a higher rate of crashes than others. Many of these areas are tracked and categorized through the Safety Priority Index System (SPIS). The SPIS is a tool that planners and

engineers use for identifying locations that may need design modifications or some other treatment to reduce the number or severity of crashes occurring. In addition, the County has a Minor Betterment Program which is intended to provide interim solutions to site specific situations in order to improve motor vehicle, pedestrian, and bicycle safety in the county right-of-way.

The quality of the driving experience is also a function of the driver's knowledge, skills and ability. Obeying traffic laws, properly maintaining vehicles, and using all available safety features are important elements to a safe driving experience. Even during adverse situations, a responsible driver can typically negotiate marginal road conditions when they exercise reasonable and prudent judgment.

Crash statistics in Oregon are maintained by the Oregon Department of Transportation (ODOT). The ODOT Crash Analysis and Reporting Unit compiles data for reported motor vehicle traffic crashes occurring on city streets, county roads and state highways. Table 2-26 shows the countywide crashes for the three counties in this region.

Table 2-26: 2011 Crashes by County

County	Fatal Crashes	Total Crashes	Truck Crashes
Clackamas	31	4,434	151
Multnomah	38	13,244	445
Washington	13	6,659	171

Source: ODOT Crash Analysis Unit

Table 2-27 below reports the urban and rural crashes by type that occurred in Washington County during calendar year 2011. This represents a snap-shot of crash statistics that occurred during 2011⁶. The trends shown in the table were generally expected. Some crashes have multiple people injured, while many other crashes (about half) are property damage only. For this comparison all types of injuries were combined. Fixed Object crashes in the rural area, and rear-end crashes in the urban area are considered to be the most prevalent.

⁶ In 2011 ODOT changed accident reporting methods, so comparison to prior year data is biased.

Table 2-27: Washington County Crashes by Type (2011)

Accident Type	Urban		Rural		Total Accidents		Fatalities	Number of people Injured
Angle	347	5.7%	25	4.7%	372	5.6%	0	361
Backing	100	1.6%	6	1.1%	106	1.6%	0	37
Fixed Object	482	7.9%	251	47.4%	733	11.0%	5	362
Head-On	23	0.4%	7	1.3%	30	0.5%	1	45
Misc	15	0.2%	21	4.0%	36	0.5%	0	7
Non-Collision	27	0.4%	21	4.0%	48	0.7%	0	35
Parking	3	0.0%	0	0.0%	3	0.05%	0	0
Pedestrian	76	1.2%	3	0.6%	79	1.2%	5	83
Rear-End	3,076	50.2%	68	12.8%	3,144	47.2%	2	2,602
Sideswipe – Meeting	41	0.7%	26	4.9%	67	1.0%	0	64
Sideswipe – Overtaking	364	5.9%	15	2.8%	379	5.7%	0	148
Turning Movement	1,575	25.7%	87	16.4%	1,662	25.0%	0	1,228
TOTAL	6,129		530		6,659	100%	13	4,972

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

Source: ODOT Crash Analysis Unit

Contributing Factors to Crashes in Washington County (2011)

Table 2-28 compares the contributing factor data for and crashes within Washington County by the urban and rural area.

Table 2-28: Urban/Rural Crashes by Contributing Factor

Factor	Urban		Rural	
Total Accidents	6,129		530	
Alcohol Involved	214	3.5%	31	5.8%
Speed Involved	696	11.4%	228	43.0%
Hit & Run	230	3.8%	14	2.6%
School Zone	30	0.5%	2	0.4%
Work Zone	73	1.2%	8	1.5%
Wet Surface	1,697	28.8%	215	41.9%
Dark	1,633	26.7%	219	41.4%

Some accidents list multiple factors, and some do not list any.

Source: ODOT Crash Analysis Unit

Speed, wet, and dark conditions appear to have been the most common contributing factors to rural crashes within Washington County in 2011. Many roads in the rural area have no set speed limit (i.e. Basic Rule)⁷ and no illumination, which when combined with wet surface conditions, makes these factors more important than in urban areas. Crashes involving fixed objects also were more common in the rural area in Washington County in 2011. Read-End crashes accounted for over 50% of all crashes in the urban area of Washington County in 2011 due to the existence of more signalized intersections in urban areas than in rural areas. Trucks were involved in 171 crashes in 2011 or 2.6% of all crashes.

⁷811.100¹ Violation of basic speed rule (ORS 811.100): (1) A person commits the offense of violating the basic speed rule if the person drives a vehicle upon a highway at a speed greater than is reasonable and prudent, having due regard to all of the following: (a) The traffic; (b) The surface and width of the highway; (c) The hazard at intersections; (d) Weather; (e) Visibility; (f) Any other conditions then existing.

Safety Priority Indexing System (SPIS) list

The Safety Priority Index System (SPIS) List is the primary tool that Washington County uses to identify locations where conflicts between motorists have been occurring most frequently. The SPIS is a method originally developed in 1986 by the Oregon Department of Transportation (ODOT) for identifying potential safety problems. SPIS has been recognized as an effective problem identification tool for evaluating roadway intersections and segments with higher crash histories. Locations that exhibit a high number of crashes may or may not have remedies to reduce the frequency or severity of crashes. A careful investigation is required to determine the causes or root problem of the crashes, and even then a relatively high occurrence of crashes may only be due to the oftentimes random nature of crashes. The goal of investigating these locations is to systematically investigate sites where there is potential to reduce the risk, occurrence and/or severity of crashes. The SPIS score is based on a running three years of crash data where the first year’s data is dropped as the current year’s data is included. This score is based upon crash frequency, crash rate, and crash severity. A roadway segment becomes a potential SPIS site if a location has three or more crashes **or** one or more fatal crashes over the three year period. The SPIS score has three parameters, which are weighted as follows:

Table 2-29: Safety Priority Index System Parameters




Crash frequency	25% of SPIS score
Crash rate	25% of SPIS score
Crash severity	50% of SPIS score

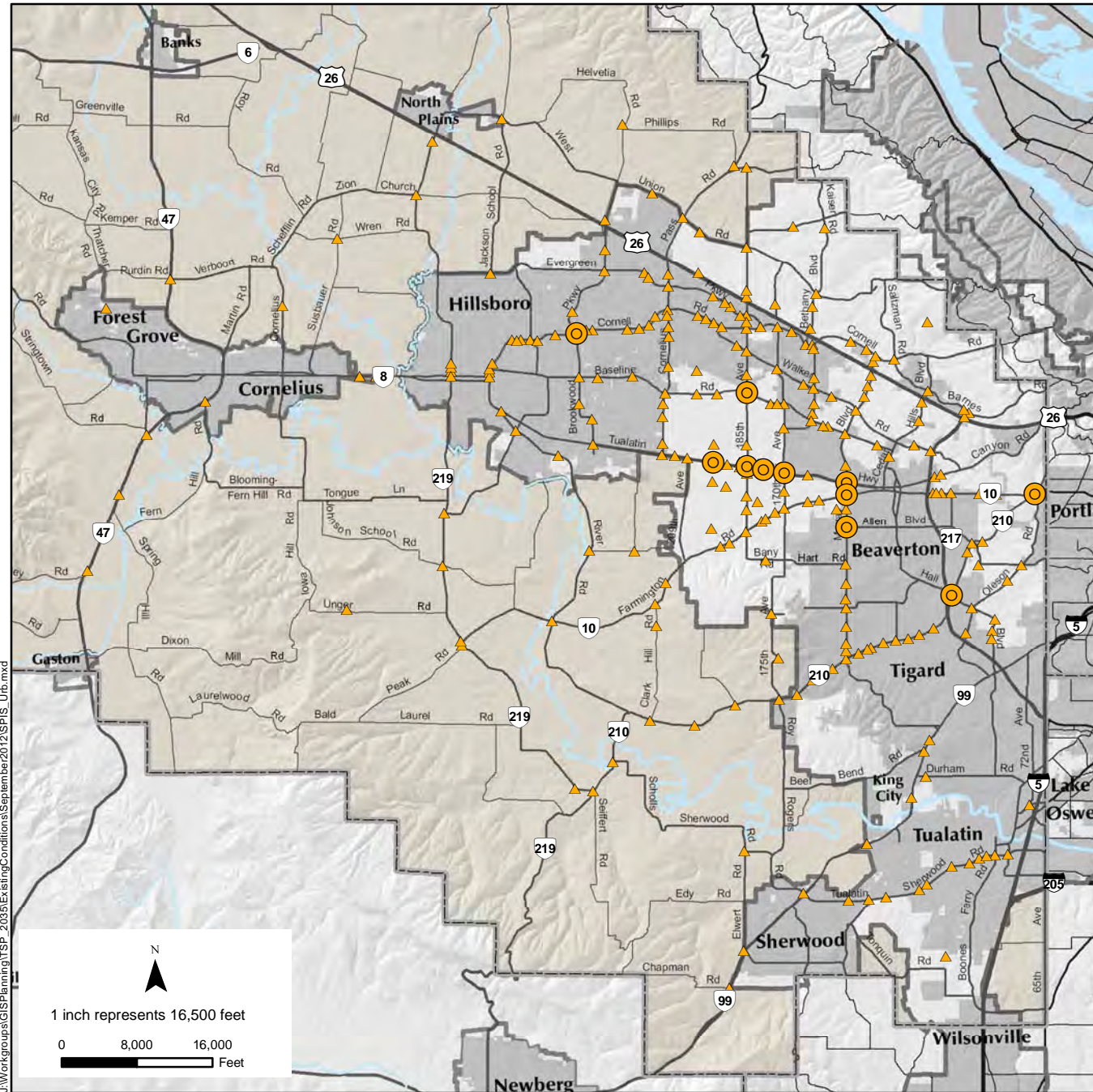
The disadvantage of the SPIS formulation is that a high SPIS does not always indicate a roadway deficiency or a location where a fix can be accomplished. For example, an intersection can end up on the SPIS list as a result of a single fatality involving a drunken driver even though there may be no geometric way of preventing this type of accident. SPIS alone also often gives no clue to the real problem or root cause of the high occurrence of crashes. Finally, SPIS is only as good as the crash records that feed the system, which rely on the interpretation of the investigating officer and the skill of the data entry operator. Figure 2-34 presents the current SPIS List for Washington County roadways. This figure reflects the top 50 percent⁸ of all SPIS locations where there were three or more accidents or one or more fatalities over a three-year survey period.

⁸ Washington County staff typically considers only the top 50 percent of SPIS scores when prioritizing funds for intersection improvements.



SPIS List 2006-08

-  Top 11 Ranking SPIS locations
-  SPIS locations
-  Rural Washington County

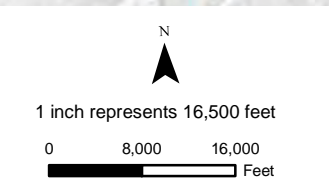


This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Care was taken in the mapping but there are no warranties for this product. However, notification of any errors will be appreciated.

Department of Land Use and Transportation
Planning and Development Services

Figure 2-35

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Washington County Resolution and Order 86-95

In 1986, Washington County adopted Resolution and Order 86-95 titled “Determining Traffic Safety Improvements Under the Traffic Impact Fee.” This resolution identified the process by which development applications are reviewed. The Traffic Impact Fee (TIF), which has since been updated and replaced by the Transportation Development Tax (TDT), significantly changed the method by which developments assure for adequate levels of service for roadways. The adoption of TIF shifted the basis for determining conditions of development approval from an assessment of capacity deficiencies to a determination of when and where traffic safety improvements are required. It was the need for a distinction between safety and capacity that initiated the development of R&O 86-95. The basic approach assumed in determining necessary traffic safety improvements is that:

- 1) There currently exists hazardous locations that present an unacceptable risk to the traveling public’s safety, and increasing accident exposure by significant increases in traffic resulting from development is unacceptable without mitigation measures.
- 2) Significant increases in traffic resulting from development can create hazard locations that currently do not exist and mitigating measures are necessary to protect the traveling public.

For the former (1), a comprehensive analysis of accident data for County intersections is used to determine existing hazard locations. The top 50% of all SPIS scores, as established by policy of the Board of County Commissioners are defined as existing hazard locations on the premise that this would reflect a manageable number of locations where safety issues might be addressed.

An update of Resolution and Order 86-95 has been contemplated by staff to clarify procedures, specify current traffic engineering standards, and better address ambiguous situations. The update would also address “in process” traffic expected to be generated by development that is approved but not yet constructed.

Metro State of Safety Report (April 2012)

In addition to general goals and objectives, the 2035 RTP contains specific performance measures or targets to track the region's progress in achieving the goals and objectives of the plan. The stated regional performance target for safety is as follows :

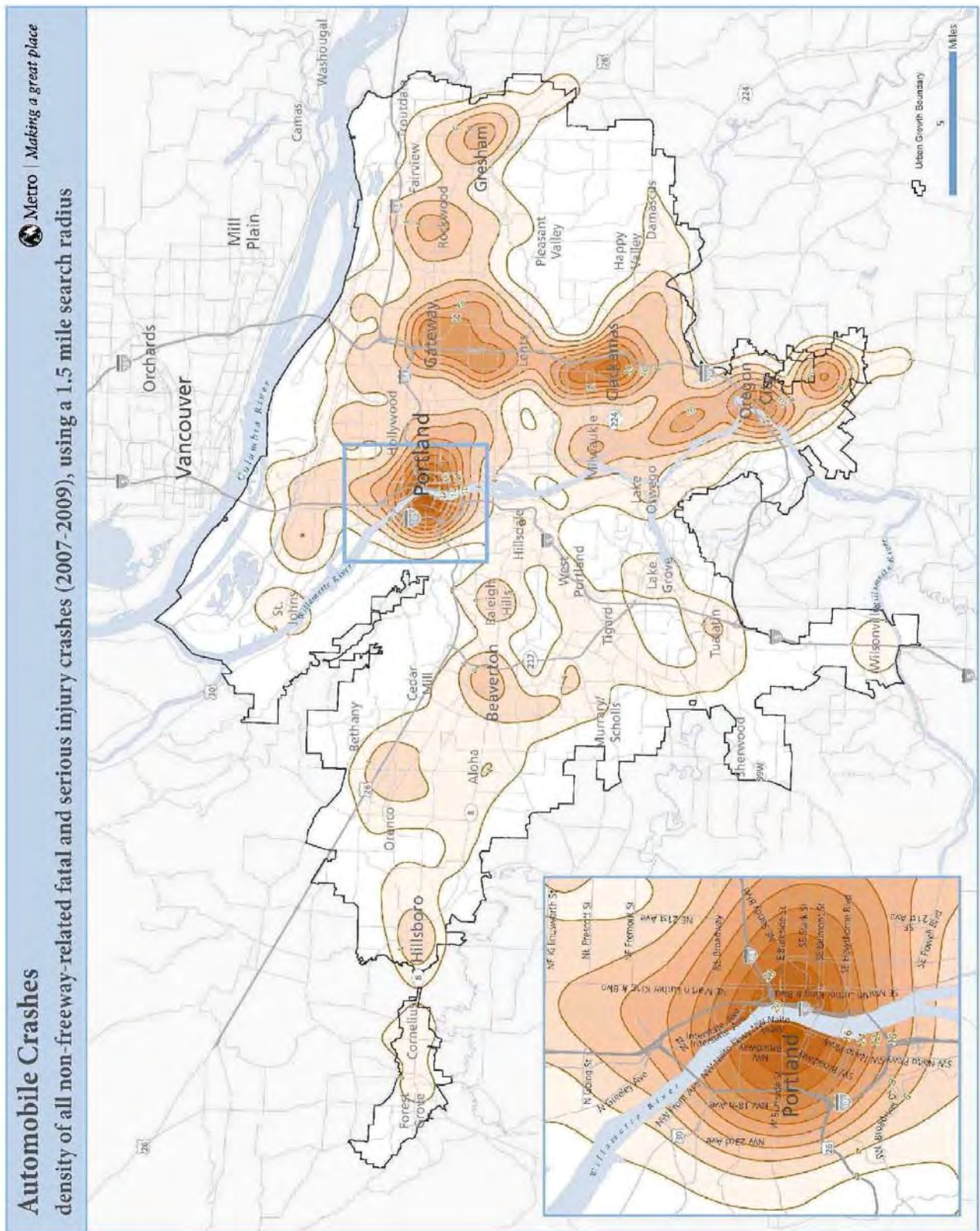
Safety - By 2035, reduce the number of pedestrian, bicyclist, and motor vehicle occupant fatalities plus serious injuries each by 50% compared to 2005⁹.

The purpose of the *Metro State of Safety Report* is to document roadway crash data, patterns, and trends in the Portland Metro area and beyond. Given this purpose, the report presents considerable data on the safety of the transportation system within the Portland metropolitan area. It also includes a number of findings and potential strategies which may inform the policies and strategies section of the Washington County transportation system plan update, as appropriate.

Some of the data in the report has been made available by sub-region. According to this report, Washington County has the lowest rate of serious crashes (combined motor vehicle, bicycle and pedestrian crashes) per capita and per vehicle mile traveled of any county in the Portland metropolitan area. Furthermore, Washington County has the lowest rate for all injuries per million residents in the region. Figure 2-36 has been extracted from the report and appears to indicate that the density of crashes in Washington County is much lower than other locations in the Portland Metropolitan Area. Furthermore, the figure appears to indicate that regional centers and town centers may have higher concentrations of serious incidents.

⁹2035 Regional Transportation Plan (June 2010, Table 2.3)

Figure 2-36: Metro Automobile Crash Density



Automobile Crashes

density of all non-freeway-related fatal and serious injury crashes (2007-2009), using a 1.5 mile search radius

2.6.3 Roadway Safety Summary

Staff has identified several key elements worth keeping in mind during the update of the Transportation System Plan.

Rural Accidents

Rural accidents are a small percent of all accidents within Washington County. About 8% of all crashes in Washington County in 2011 occurred in the rural area (530 out of 6,659). Speed, wet, and dark conditions were contributing to rural more often than urban accidents in 2011. Accidents involving fixed objects were the most common type of accident (47%) in the rural area in 2011.

Read-End Accidents

Read-End accidents were the most common type of accident in Washington County in 2011. Over 50% of all Washington County urban area accidents in 2011 were rear-end accidents. No particular correlation between the contributing factors was evident for read-end collisions in 2011. Other than their frequency, and tendency to be in the urban area, no other statistical category is noteworthy. Rear-end collisions are an important consideration in roadway safety simply because these are the most frequent type of collisions.

Injuries and Fatalities

Head-On and pedestrian accidents cause the most injuries and fatalities. Angle, Sideswipe – Meeting, and Rear-End accidents also have a higher than average injury rate per accident.

Washington County Accidents

Review of the Metro Safety Report indicates that roadways within Washington County had fewer accidents per mile traveled than other areas in the Portland metropolitan region.

R&O 86-95

Washington County currently bases conditions of development approval on a traffic safety analysis. An update from the adopted 1986 resolution has been contemplated on and off. The established program has been working effectively, and an update has not been a priority.

Chapter 3: Transportation System Management & Operations and Travel Demand Management

As roadways in Washington County grow more congested, it becomes increasingly important to focus on cost-effective strategies that maximize the efficiency of the existing system. Transportation System Management and Operations (TSMO) strategies seek to improve the performance of existing transportation infrastructure without taking additional land for new roadways or additional lanes. TSMO strategies emphasize multimodal traffic management, traveler information, incident management and transportation demand management (TDM) strategies that promote travel options and reduce drive-alone trips.

3.1 OVERVIEW

Transportation System Management and Operations (TSMO) strategies are consistent with the goals and desired outcomes in the 2035 Regional Transportation Plan (RTP), including Goal 3: Expand Transportation Choices; and Goal 4: Emphasize Effective and Efficient Management of the Transportation System. Metro adopted the Portland Regional TSMO Refinement Plan¹ in 2010, which identifies the following four project categories:

- Section 3.2 below describes **Multimodal Traffic Management** – provides arterial and freeway multimodal traffic management and operations functions including advanced signal timing, access management, arterial performance monitoring, transit priority treatments, data collection, and detection and countdown timers for pedestrians and bicyclists.
- Section 3.3 below describes **Traveler Information** – provides current and forecasted travel conditions information via a variety of sources to help people make better informed travel decisions, including travel mode, route, and time of day.
- Section 3.4 below describes **Incident Management**– provides resources and builds partnerships to foster a coordinated, timely and efficient response to traffic incidents that block travel lanes, slow or stop travel, and lead to unreliable travel times. The strategies include improved surveillance, expanded service, expanded training, and incident response teams.
- Section 3.5 below describes **Transportation Demand Management**– Impacts traffic congestion by reducing the demand for roadway capacity using strategies such as telecommuting, flexible work hours and ride sharing, particularly during peak hours.

The following sections describe how the TSMO strategies are currently operating in Washington County.

¹ Portland Regional TSMO Refinement Plan 2010-2020, Metro, June 2010.

3.2 MULTIMODAL TRAFFIC MANAGEMENT

There are four multimodal traffic management strategies that currently operate in Washington County:

1. **Operate and maintain a regional communications network** – A communications network connects traffic signals with each other and to a central server, so that operators can efficiently manage the transportation system. Currently only a small portion of Washington County traffic signals are connected to the regional TransSuite server, using either fiber optic or interconnect cables. The ultimate goal is to install communications that connect all traffic signals in Washington County to the regional server. The Washington County ITS Plan² includes detailed information regarding the communications infrastructure in Washington County.

The Oregon Department of Transportation (ODOT) operates a staffed regional Traffic Management and Operations Center (TMOC). The center operates around the clock and performs the following functions for the state highway system in Washington County:

- **Traffic Management:** Operation of traffic control devices (e.g. signal timing, signal interconnects and variable speed limit signs)
- **Incident Management:** Detection/identification, response (e.g. dispatch), and management of incidents
- **Maintenance Support:** Dispatch and communications for ODOT maintenance crews
- **Information Services:** Dissemination of traveler information to the public via variable message signs and online computer services such as “TripCheck”.

The TMOC has access to video images from other agencies’ closed-circuit television cameras as well as their own cameras in Washington County.

The Washington County Traffic Operation Center (TOC) currently consists of two workstations that have access to the county’s traffic signal systems. These workstations are not staffed continuously in the way that the regional TMOC is, rather remote connectivity allows staff to remotely control the traffic management systems on an as needed basis. Since 2005, Washington County has been installing video detection for all new traffic signals and existing traffic signal retrofits. However, many of the county’s traffic signals still use inductive loops, In addition to detecting motor vehicles bicycle detection is available at some locations in the county.

The majority of the traffic signals in Washington County have emergency vehicle preemption on all intersection approaches. Most fire vehicles and some police vehicles have the capability to preempt these traffic signals. The preemption allows the emergency vehicles to turn the signal green to safely navigate the intersection when responding to an emergency. Furthermore the preemption system allows for a lower priority green time adjustment for non-emergency transit vehicles.

2. **Freeway management** – OR 217 and the portions of US 26 and I-5 within Washington County are operated by ODOT and are all equipped with technologies that improve the operational efficiency of the system. Those technologies include vehicle detection, video surveillance, and ramp meters. Variable

² Washington County ITS Plan – Chapter 2, Current and Future Transportation Conditions. July 2012 Draft Update. Prepared by DKS Associates.

message signs currently operate on US 26 and I-5. On OR 217 a project to install variable message signs (and variable advisory speeds) is included in ODOT's FY2010-2013 Statewide Transportation Improvement Program Amended.

3. **Coordinated signal timing** – Based on a long history of working together and sharing the same local traffic signal hardware and software, agencies in the Portland region have jointly selected and agreed to implement the TransSuite traffic signal system. The county's long term signal coordination goal is to connect all signals to the regional TransSuite traffic signal system. The shared central signal system provides many benefits for the region such as:
- Reduced implementation and maintenance/operations costs since there is one region-wide software license and only two servers
 - Shared control and monitoring of multiple agencies' traffic signals for cross-jurisdictional coordination during normal operations, incidents, and special events
 - Reduced maintenance/operations costs when a traffic signal timing issue can be handled in the office instead of in the field
 - A large pool of trained staff on a common software system
 - A common source for traffic data (volume, speed, and occupancy) from the region's traffic detectors

Washington County, ODOT, and the Cities of Beaverton, Hillsboro, and Tigard still operate time-based coordination at many of the signalized intersections during the weekday and weekend peak periods. Such time-based systems use a combination of a.m., mid-day, p.m., and weekend peak coordinated timing plans. Washington County uses GPS to coordinate time clocks on a number of corridors that do not have communications interconnect between the traffic signals. Many of these traffic signals operate in the free mode because they are isolated and not conducive to coordination. Coordinated signal timings have been updated on several corridors within the past 10 years including: SW Murray Boulevard, SW Scholls Ferry Road, SW Farmington Road, NW Cornell Road, NW Bethany Boulevard, NW 185th Avenue, SW Cornelius Pass Road, NW Cornell Road, and SW Boones Ferry Road. Ideally these timing plans should be updated every few years to reflect changes in traffic demand.

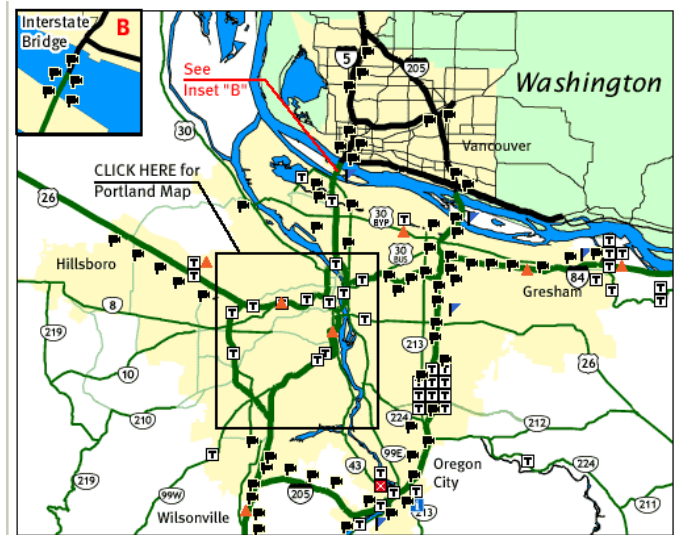
4. **Adaptive signal timing** – Adaptive signal timing systems have been deployed on a few heavily congested corridors in Washington County. These systems adjust green time given to each movement based on real-time changing traffic conditions. Washington County has installed advanced systems on Cornell Road and Tualatin-Sherwood Road (Teton to I-5, with HWY 99W to Teton scheduled to be implemented). The City of Beaverton has installed a similar advanced system on Farmington Road/Beaverton-Hillsdale Highway. The City of Beaverton has a programmed project to expand their system to Canyon Road (OR 8).



3.3 TRAVELER INFORMATION

Region-wide traveler information is provided by the Oregon Department of Transportation (ODOT), and Washington County Consolidated Communications Agency (WCCCA). The Washington County website includes a site dedicated to road work traveler information (www.wc-roads.com). It provides information about road closures, traffic advisories, and construction and maintenance projects. The site also highlights road work activities on a weekly basis. Cities within the county also provide a variety of construction and maintenance traveler information on their websites.

The ODOT TripCheck system includes a website (www.tripcheck.com), mobile phone applications, Twitter feed, 511 phone system, and a data feed to the media and other interested parties. Washington County uses the TripCheck Local Entry tool to input information about events with major traffic impacts so that the information may be shared with the public and media through the TripCheck system. A comprehensive description of the TripCheck system is included in the Oregon Statewide ITS Architecture and Operational Concept Plan.



3.4 INCIDENT MANAGEMENT

The Oregon Department of Transportation (ODOT) operates an incident response and management system known as “COMET”. ODOT currently operates an incident response program to address traffic congestion and delays caused by incidents on freeways within the Portland metropolitan region. The incident response program has full-time employees who staff several incident response vehicles, which are equipped with flat tire repair gear, gasoline, jumper cables, water, and other essentials for rescuing disabled vehicles and getting them on the move again. Incident response vehicles are available for service 24 hours per day, seven days a week, and on the road 24 hours per day on weekdays and most of Saturdays and Sundays. Incident response vehicles currently patrol I-5, I-84, I-205 and I-405 freeways as well as OR 217 and US 26 (Sunset Highway) daily. The drivers are in constant communication with the ODOT Traffic Management and Operations Center (TMOC). If an incident occurs on an ODOT roadway, incident response vehicles are available to respond. The main priority for responders is to keep travel lanes clear by helping a vehicle off the road and assisting the motorist if possible. The responders assist motorists with flat tire repairs, extra gasoline, battery jumps, and so forth. If the responder’s equipment cannot help move the disabled vehicle off the travel lanes, then the responder will call a tow truck at the motorist’s expense.



The freeways in Washington County are equipped with traffic monitoring cameras; however, few arterials have traffic monitoring cameras in place. The County has traffic monitoring cameras along the eastern section of Tualatin-Sherwood Road. Plans for the installation of traffic monitoring cameras along the western section of Tualatin-Sherwood Road are being prepared. Traffic monitoring cameras are scheduled to be installed along Scholls Ferry Road by the end of 2012.

In addition, emergency responders are available to assist. The Washington County Consolidated Communications Agency (WCCCA) manages the 9-1-1 call center and provides information. The WCCCA is the 9-1-1 dispatch agency for all public safety agencies in Washington County³. The WCCCA acts as the central answering point for all of the public safety agencies. WCCCA has over 50 full-time dispatchers for the more than 500,000 Washington County residents it serves. WCCCA operates 24 hours a day, 365 days a year. They dispatch calls to 12 police agencies and 7 Fire / Emergency Medical Service agencies. The consolidated agency houses a computer-aided dispatch system that maps addresses and provides other information that enhances 911 services. The Oregon Interoperability Service message broker allows WCCCA’s dispatch system to communicate with other dispatch systems used by other 9-1-1 centers in the region and the ODOT TMOC.

³ Except the Forest Grove Police Department

3.5 TRANSPORTATION DEMAND MANAGEMENT

Metro oversees the Regional Travel Options (RTO) program. The RTO program implements Transportation Demand Management (TDM) strategies across the Portland region to increase travel options, reduce pollution, and improve mobility. The following region-wide TDM strategies are supported by the RTO program and extend to Washington County:

- **Marketing and Providing Resources** – The RTO Program funds collaborative and individualized marketing, as well as updating resources such as the “Bike There!” and “Walk There!” maps. The “Drive Less. Save More” campaign is one example of collaborative marketing, which aims to increase awareness and use of travel options that reduce drive along trips.
- **Employer Services**– The RTO programs supports outreach efforts to employers to decrease drive alone trips and vehicle trips during peak periods. Figure 3-1 shows employer mode-split performance in 2007-2008, with the majority of participating employers in Washington County at a rate of over 83% employee drive-alone trips.
- **Rideshare Services**– The RTO program supports rideshare services by funding marketing, outreach, and incentives that encourage ridesharing (carpool or vanpool). The area north of Beaverton, on either side of US 26, has the highest number of registered CarpoolMatchNW.org commuters (over 200) for Washington County zip code areas, as of 2007-2008⁴.
- **Measuring program effectiveness**– The RTO program measures the effectiveness of the services provided.
- **Regional TSMO program**– Support program oversight, and administer RTO and TSMO grant programs.

Founded in 1996, the Westside Transportation Alliance (WTA) is a non-profit business association, and the only transportation management association on the west side of Portland. The WTA stated mission is as follows:

“To provide programs and services to Westside employers that reduce single-occupant vehicle trips, reduce greenhouse gas emissions, foster economic vitality and improve health.”

The WTA provides the following services to employers:

- **Employee Commute Option (ECO)**⁵ – The WTA Creates and administers a survey and files the results as part of a mandated ECO report to the Department of Environmental Quality (DEQ). Table 3-1 compares commuter trip mode share changes between 2009 and 2011. This data was compiled for 40 employers and over 19,000 employees in the WTA area who participated in the ECO survey or TriMet Employer Pass Program survey. As indicated by this data, the percentage of single-occupant (i.e., drive alone) trips decreased by five percent while bike, transit, compressed work week, and telecommuting all increased by one to three percent. Over the same period, carpooling use decrease by three percent, probably as a result of commuters switching to other modes.

⁴ Portland Regional TSMO Refinement Plan 2010-2020. Metro. June 2010, Figure 8

⁵ The comply with the federal Clean Air Act, the Department of Environmental Quality’s Employee Commute Options (ECO) Rule mandates that employers with more than 100 employees at one site must provide commute options designed to reduce the number of cars driven to work in the Portland and surrounding areas.

- **Auto Trip Reduction Plan** – Helps create and implement DEQ compliance plan.
- **Transportation Coordinator Support** – Provides training, programs and incentives to transportation coordinators.
- **GIS Support** – Geo-codes mapping of employee home locations for carpool matching.
- **New Employee Transportation Options Packet** – Develops and distributes information on commute options.

Table 3-1: Commute Trip Mode Share Change for WTA Worksites 2009-2011

Mode	Percent of Surveyed Workers Using Mode in 2009	Percent of Surveyed Workers Using Mode in 2011
Single-Occupant Vehicle	82%	77%
Transit	5%	8%
Bike	3%	4%
Carpool	9%	6%
Compressed Work Week	1%	2%
Telecommute	0%	3%

Source: Metro Regional Travel Options 2012-2017 Strategic Plan, Nelson/Nygaard Consulting Associates, Appendix, March 2012, Fig. 21)

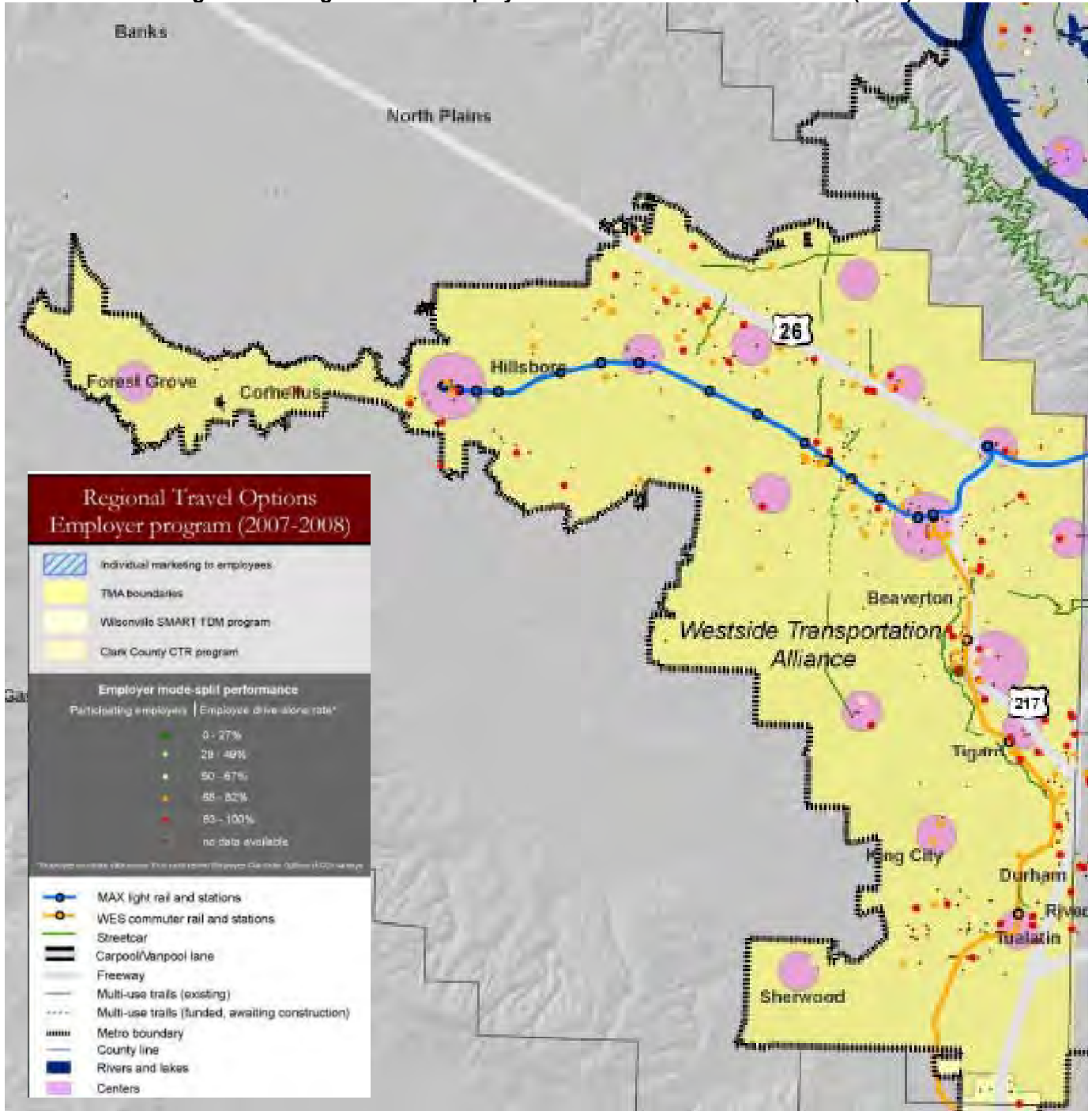
The WTA provides the following services to employees:

- Prepares personalized commute trip planning
- Publishes monthly commute newsletter
- Holds on-site transportation fairs
- Distributes transportation information (transit schedules, bike maps)
- Disseminates information concerning road closures and transit service disruptions
- Organizes the annual Carefree Commuter Challenge, which awarded prizes to individuals who reduced driving during the month of July⁶.

Much of what the WTA does involves marketing, the effects of which are often difficult to quantify. In terms of measurable results, a 2008-2009 program evaluation showed a reduction of 3.4 million in vehicle miles traveled through its programs. A more recent WTA accomplishment was the installation of 25 bike racks in front of participating businesses in the Tigard area. A post-installation survey indicated that 86 percent of the riders reported that the bike racks encouraged them to ride their bikes to downtown Tigard. Sixty-one percent of the participating businesses reported that the racks were used more than once and week and 54 percent of the businesses responded that the racks were good for business.

⁶ In 2010, 201 companies and 1,672 individuals participated in this challenge, resulting in an estimated 43 percent reduction in miles driven between pre and post-challenge surveys.

Figure 3-1: Regional TDM Employer Service and Drive-Along Rates (2009)



Source: Metro

Chapter 4: Active Transportation and Transit

4.1 ACTIVE TRANSPORTATION OVERVIEW

This chapter describes existing conditions and future needs for three “active” modes of travel: walking (including the use of personal mobility devices), bicycling and taking transit.

4.1.1 What is Active Transportation?

Active transportation refers to human-powered travel, including walking and bicycling. Public transit is also a component of active transportation because accessing transit stops usually involves walking or bicycling. Widespread use of the term began in the first decade of the 21st century as transportation policy placed increased emphasis on non-automobile modes, and as the links between human health and transportation planning became more evident.

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

- **Environmental stewardship.** In Oregon, approximately 34% of greenhouse gas emissions – the largest share – can be attributed to motor vehicles.¹ Replacing automobile trips with active trips reduces the emission of greenhouse gases, air toxics and particulates, helping to improve air quality in the Tualatin Valley and address one of the leading causes of global climate change.
- **Congestion alleviation.** It is simple arithmetic that walk, bike and transit trips reduce the number of motor vehicles vying for space on roadways and in parking lots. The active mode share for commuting from Washington County is about 11%, representing roughly 27,000 people who do not drive to work.² Reduced congestion improves air quality, quality of life, and economic productivity.
- **Health.** America is facing a health epidemic related to obesity and inactivity. About 1/3 of adult Americans were obese in 2008, and an estimated 200,000 people die prematurely each year from inactivity.³ In Washington County, a 2006 survey found that 24% of 8th graders and 22% of 11th graders were overweight or obese; only a quarter of 8th graders and one fifth of 11th graders were getting the recommended level of physical activity; and 11% of 8th graders and 64% of 11th graders do not have access to or are not enrolled in physical education classes at school.⁴ Active transportation, which involves moderate-intensity physical activity, can help address these challenges.
- **Safety.** As walking and bicycling trips increase, so does the relative safety of those modes. In Portland, for example, the bicycle crash rate (reported crashes normalized by counted bicycle trips) has shown a general downward trend in the past decade, even as daily bicycle trips have more than doubled.⁵ This can be partly attributed to increased attentiveness on the part of motorists as they see more bicyclists on the road. The same trend applies to pedestrian safety.

¹ Clean Fuels Program, Oregon Department of Environmental Quality, 2012 <http://www.deq.state.or.us/eq/cleanFuel/index.htm>

² American Community Survey 2010 One-Year Estimates, U.S. Census Bureau, 2011.

³ TCRP Report 95: Traveler Response to Transportation System Changes, Chapter 16: Pedestrian and Bicycle Facilities, Transportation Research Board, 2012.

⁴ OR CHS 2005-2006 Oregon Healthy Teens survey

⁵ 2011 Bicycle Counts Report, Portland Bureau of Transportation, 2012.

- **Efficient travel.** For many trips, active transportation is the most sensible, efficient mode. For very short trips, such as a quarter-mile trip to a grocery store, walking is often the best choice. Trips in the one- to five-mile range are often ideal for bicycling. For trips to places with limited or paid parking, such as downtown Portland, many people choose to ride transit for cost and convenience reasons.
- **Cost savings and social equity.** Many people in Washington County and nationwide cannot afford to own a car or pay for gasoline. For these and other people who need or want to reduce transportation costs, active transportation is a clear solution. The savings associated with not purchasing, registering, insuring, fueling or maintaining a vehicle – the “green dividend” – can go toward other costs such as housing, food and education. These choices are increasingly pertinent in the context of an aging baby boom generation as well as a younger millennial generation that is less interested in cars and driving than their parents were.
- **Attractive, efficient urban form.** The advent and popularity of walkscore.com joins other evidence that neighborhoods designed around active transportation are growing in desirability. From the historic, tree-lined streets of Forest Grove to the rapidly-growing Orenco Station neighborhood, active transportation amenities like sidewalks, bike lanes and frequent transit are drawing residents and businesses. Walkable neighborhoods tend to be compact, using urban land efficiently and helping to meet other regional land use policies such as agricultural preservation.

4.1.2 Active Transportation Trends and Forecasts

Due in part to the benefits and policy goals above, a growing proportion of Washington County residents are using active transportation modes for some or all of their trips. According to the U.S. Census Bureau, about 11% of workers who live in Washington County walked, biked or took transit to work in 2010, compared to about 8% in 2000 (Table 4-1). With an estimated 249,753 workers in Washington County, that amounts to approximately 27,000 commuters using active modes. Bicycling saw the greatest increase, quadrupling from 0.4% of commutes in 2000 to 1.6% in 2010. Commuting by transit, representing 5.7% of trips, was statistically flat between 2000 and 2010.

Washington County active mode shares are lower than the tri-county average (Clackamas, Multnomah and Washington county), but higher than national rates. The tri-county average is heavily influenced by Portland, whose mode split includes the highest share of bicycle commuters of any large American city: 6%. Conversely, only 5% of Clackamas County workers use active modes – less than half of the Washington County rate.

Table 4-1: Use of Active Transportation Modes for the Journey to Work

	Washington Co.	Clackamas Co.	Multnomah Co.	Tri-County Area	United States
Walk	2010	3.6%	1.8%	4.7%	2.8%
	2000	2.2%	2.1%	4.6%	2.9%
Bicycle	2010	1.6%	0.2%	4.9%	2.8%
	2000	0.4%	0.3%	1.5%	0.9%
Transit	2010	5.7%	2.8%	10.9%	7.4%
	2000	5.8%	3.1%	11.1%	7.6%
Total Active Modes	2010	10.9%	4.8%	20.5%	14.0%
	2000	8.4%	5.4%	17.2%	11.8%

Source: U.S. Census Bureau American Community Survey 2010 One-Year Estimates and 2000 Decennial Census Summary File 3

Looking at mode split data from Metro’s regional travel demand model, active mode share appears more modest. Comparing different trip types and locations reveals additional distinctions. In general, transit rates are lower and

walking rates are higher for non-work trips, compared to work trips. This reflects a general tendency to use transit more for commuting and less for mid-day errands, as well as the convenience of walking for short utilitarian trips. Comparing urban and rural portions of Washington County reveals an expected contrast in active mode usage. Rural walking and biking rates are roughly 2/3 the urban rates; transit is less than half. Not shown in any of the data are potentially thousands of **recreation or exercise trips** that begin and end at the same point, i.e. going for a jog or bike ride.

Table 4-2: Active Transportation Trips and Mode Share, Washington County, 2010

	Urban Area			Rural Area All Trips	Entire County All Trips
	Work Trips*	Non-Work Trips**	All Trips		
Walk trips share	20,660 2.1%	146,652 5.3%	167,312 4.5%	4,403 2.9%	171,716 4.4%
Bicycle	6,619 0.7%	27,847 1.0%	34,466 0.9%	918 0.6%	35,383 0.9%
Transit	34,782 3.5%	32,686 1.2%	67,469 1.8%	1,250 0.8%	68,719 1.8%
Total Active Modes	62,061 6.3%	207,185 7.6%	269,247 7.2%	6,571 4.3%	275,818 7.1%

Source: West side component of Metro Regional Travel Demand Model, 2010

*Includes home-based work and non-home-based work trips, explaining part of the discrepancy with Census data in Table 4-1.

**Includes college, recreation, shopping, non-home-based, school (but not school bus) and other trips.

The past decade also saw a slight increase in households with no vehicles available, from 5.6 to 6.2% of households. Though small as a percentage, the 2010 figure represents about 12,000 households across the county that do not have access to a personal vehicle. Other than staying home or getting a ride from someone else, these households assumedly rely on active transportation to get around.

Table 4-3: Vehicle Availability at Households

Number of vehicles available	Washington Co.	Tri-County Area	United States
Zero	2010 6.2%	9.9%	9.1%
	2000 5.6%		
1	31.7%	33.5%	33.8%
	33.5%		
2	44.1%	38.7%	37.6%
	43.9%		
3 or more	28.1%	17.9%	19.5%
	17.0%		

Source: U.S. Census Bureau American Community Survey 2010 One-Year Estimates and 2000 Decennial Census Summary File 3

Future Demand

Forecasting future active transportation demand is challenging. Modelers must make assumptions and guesses about a number of future conditions, from land use and density patterns to fuel and parking prices. The regional travel demand model estimates future mode split in each traffic analysis zone based on these and other factors. The mode split forecast for Washington County in 2035 predicts very meager gains in active transportation mode share. Walking and bicycling rates increase by just a few tenths of a percentage point in all categories and geographies. The rural transit share actually decreases. The greatest gain is in transit use for work trips in the

urban area, increasing 1.1 percentage points, or a 31% relative increase. Countywide, the share of trips that use active transportation is forecasted to increase from 7.1% to 8.1%. By contrast, the 2035 RTP region-wide performance target for active mode share is 32%, including 19% walk, 3% bike and 10% transit.⁶

Table 4-4: Forecast of Active Transportation Mode Share, 2035

	Urban Area			Rural Area All Trips	Entire County All Trips
	Work Trips*	Non-Work Trips**	All Trips		
Walk	2035	2.5%	5.7%	4.8%	4.7%
	<i>2010</i>	<i>2.1%</i>	<i>5.3%</i>	<i>4.5%</i>	<i>4.4%</i>
Bicycle		0.8%	1.1%	1.0%	1.0%
		<i>0.7%</i>	<i>1.0%</i>	<i>0.9%</i>	<i>0.9%</i>
Transit		4.6%	1.9%	2.6%	2.4%
		<i>3.5%</i>	<i>1.2%</i>	<i>1.8%</i>	<i>1.8%</i>
Total Active Modes		7.9%	8.7%	8.4%	8.1%
		<i>6.3%</i>	<i>7.6%</i>	<i>7.2%</i>	<i>7.1%</i>

Source: West side component of Metro Regional Travel Demand Model, 2010

*Includes home-based work and non-home-based work trips.

**Includes college, recreation, shopping, non-home-based, school (but not school bus) and other trips.

Despite the forecasts above, a number of anecdotal considerations put Washington County in a good position for growth in active mode share. For example:

- **Information technology workers**, many of whom are employed in Washington County’s growing “Silicon Forest,” tend to demand quality of life amenities in the places where they choose to live. This includes access to good transit and opportunities to walk and bike for transportation and recreation. This lifestyle preference is the underlying cause of many “reverse commutes” observed throughout the United States – Seattle to Redmond/Bellevue, San Francisco to the Silicon Valley, Boston to Route 128, and locally, Portland to Washington County. Increasing active transportation options, along with other quality-of-life investments, may convince more IT workers to live near where they work in Washington County, rather than heading home “through the tunnel.” Across all professions, younger workers are driving less and using active transportation more, compared to their older coworkers.⁷
- Washington County is home to **Nike**, whose products focus on active pursuits like running, and whose presence may have spillover effects on the local population. Global buzz generated from Nike’s Oregon Project (which produced 2012 Olympic medal-winners Galen Rupp and Mo Farrah), along with other corporate initiatives, may have the potential to spur increased local interest in running and fitness. In addition, the Nike workforce includes many young people with preferences similar to the IT workers above.
- **Portland**, a well-known American hub of active transportation, has an undeniable influence on Washington County. Portland chronically scores at the top of national polls on walk-, bike- and transit-friendly cities. Washington County, by virtue of proximity and its strong jobs base, also experiences much of this active culture. Hundreds of Portland residents bring their bikes on MAX trains to commute to jobs in Washington County. Bicycle innovations like cycle tracks and bike boulevards have been regionally pioneered in Portland and are generating interest and implementation in Washington County. This relationship with Portland has many benefits, including learning from the successes and flaws of brand new facility innovations.

⁶ Metro 2035 Regional Transportation Plan, page 2-14, March 2010.

⁷ Transportation and the New Generation: Why Young People Are Driving Less and What It Means for Transportation Policy, Frontier Group and U.S. PIRG Education Fund, 2012.

- The relatively flat terrain of the Tualatin Valley, combined with an ever-increasing mileage of “complete streets,” multi-use trails and high-capacity transit routes, creates a **favorable physical environment** for increased use of active transportation. Washington County has the potential to become a North American model for suburban active transportation.

4.1.3 What We’ve Heard About Active Transportation

Active transportation themes were prevalent throughout the public involvement process for TSP 2035. One of the seven “community values” developed by the TSP 2035 Community Advisory Committee is having a transportation system that “**makes it safe and convenient to get around by biking, walking or taking transit.**” Stakeholder interviews – representing diverse interests from large private sector employers to environmental advocacy groups – revealed similar support for an enhanced active transportation network. Frequently-cited priorities included improving transit service to better serve suburb-to-suburb trips; developing comfortable and convenient walking and biking facilities that connect homes, businesses and transit; and making sure that bicycle facilities serve a variety of cyclist types from young children to fearless commuters.

Public open houses, community events and online surveys elicited a wider range of comments, opinions and specific suggestions on active transportation. Major themes included:

- Improving pedestrian connectivity in neighborhoods that lack it;
- Building bicycle facilities that provide greater separation from automobile traffic on busier roads;
- Creating safer pedestrian crossings of busy, wide roads like TV Highway, and more pedestrian improvements in regional centers like Washington Square and Tanasbourne;
- Completing bikeway gaps, from adding bike lanes on sub-standard arterial roads to paving wider shoulders on certain rural roads;
- Expanding and improving the county’s multi-use trail network; and
- Offering improved transit service and new or extended bus routes that better serve trips within Washington County.

4.1.4 Active Transportation Planning Context

Active transportation is a critical component of transportation planning at all levels of government in Oregon.

State of Oregon

Statewide Planning Goal 12 (Transportation) states, among other things, that a transportation plan must:⁸

- consider all modes of transportation;
- avoid principal reliance on any one mode,
- conserve energy; and

⁸ Statewide Planning Goals, Oregon Department of Land Conservation and Development, 1973.

- meet the needs of the transportation disadvantaged.

Mandates for active transportation are found explicitly and implicitly throughout other State of Oregon transportation plans and policies, including:

- The **Transportation Planning Rule** (1991), which requires local jurisdictions to include a bicycle/pedestrian component in their transportation plans, and to establish a network of walking and biking facilities throughout the plan area;⁹
- The **Oregon Transportation Plan** (2006), which calls for a “balanced” transportation system and communities that provide “transportation choices;”¹⁰
- The **Oregon Highway Plan** (1999), which requires state highways to accommodate alternative modes;¹¹ and
- The **Oregon Bicycle and Pedestrian Plan** (1995), which calls for the integration of said modes into all transportation planning and design activities, and provides design guidelines for bicycle and pedestrian facilities.¹²

Metro

Metro’s **2035 Regional Transportation Plan** (RTP, 2010) relies heavily on active transportation and transit to achieve regional land use and transportation goals. RTP Goal 3 – Expand Transportation Choices – includes the following objectives:

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

The RTP designates preferred networks for pedestrian, bicycle and transit modes across the region. In Washington County, the regional pedestrian network focuses on mixed-use corridors, existing and planned regional trails, and pedestrian districts. The regional bicycle network includes many of these same corridors and trails, but adds “community bikeways” that would take the form of lower-traffic bike boulevards. The regional transit network includes existing transit routes, potential future bus routes in growing areas, and a separate High Capacity Transit Plan that prioritizes the next corridors for light rail, commuter rail or bus rapid transit. The latter is described in more detail in section 4.4 of this report.

The RTP also includes a **regional street design overlay** for arterial streets. These designations – regional boulevards, regional streets, community boulevards and community streets – encourage street designs that are conducive to active transportation and that support implementation of the Metro 2040 Growth Concept. The

⁹ Transportation Planning Rule, OAR 660-12-020(2)d, State of Oregon, 1991.

¹⁰ Oregon Transportation Plan, Goals 1 and 4, Oregon Department of Transportation, 2006.

¹¹ Oregon Highway Plan, Action 1B.14, Oregon Department of Transportation, 1999.

¹² Oregon Bicycle and Pedestrian Plan, Oregon Department of Transportation, 1995.

regional street designation overlaps with nearly all of Washington County’s arterial roadways outside of industrial areas, and includes most of the 2040 mixed-use corridors. The less common boulevard designation is found primarily along arterials within regional and town centers. Boulevards should include wide sidewalks, safe crosswalks, planter strips, medians, ample trees and vegetation, and other pedestrian-friendly design features.

A separate but related Metro initiative examines demographic and socio-economic data to identify areas with disproportionate concentrations of poverty, minority residents, older adults, youth and low English proficiency, as measured by the US Census. These “**Environmental Justice**” (EJ) scores indicate, among other things, where active transportation investments may have a particularly high benefit. Areas with higher EJ scores generally correlate with lower rates of automobile availability, usage and affordability, putting residents at a transportation disadvantage. In these areas, active transportation investments such as sidewalks, bike lanes and transit service are particularly critical. As shown in Figure 4-1, Washington County contains several areas with high EJ scores, including the Aloha-Reedville area, downtown Hillsboro, downtown Beaverton and a majority of the City of Cornelius.

Washington County

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

- The **Washington County Pedestrian and Bicycle Plan** (2010), which built upon the wealth of information collected in the 2020 Transportation Plan and lists, prioritizes and estimates costs for pedestrian and bicycle improvements needed throughout the county;
- The **Washington County Bicycle Toolkit** (2012), a design guide that helps county transportation planners and engineers make informed decisions on how to establish context-specific bikeway facilities; and
- The **Washington County Bicycle and Pedestrian Improvement Prioritization Project** (2013), which performed a detailed gap analysis of sidewalk and bikeways along arterial and collector roads, followed by a criteria-based prioritization of projects. This project was funded by a grant from the U.S. Department of Energy (DOE).

Recommendations from all of the above county documents are discussed in further detail in the modal sections of this chapter.

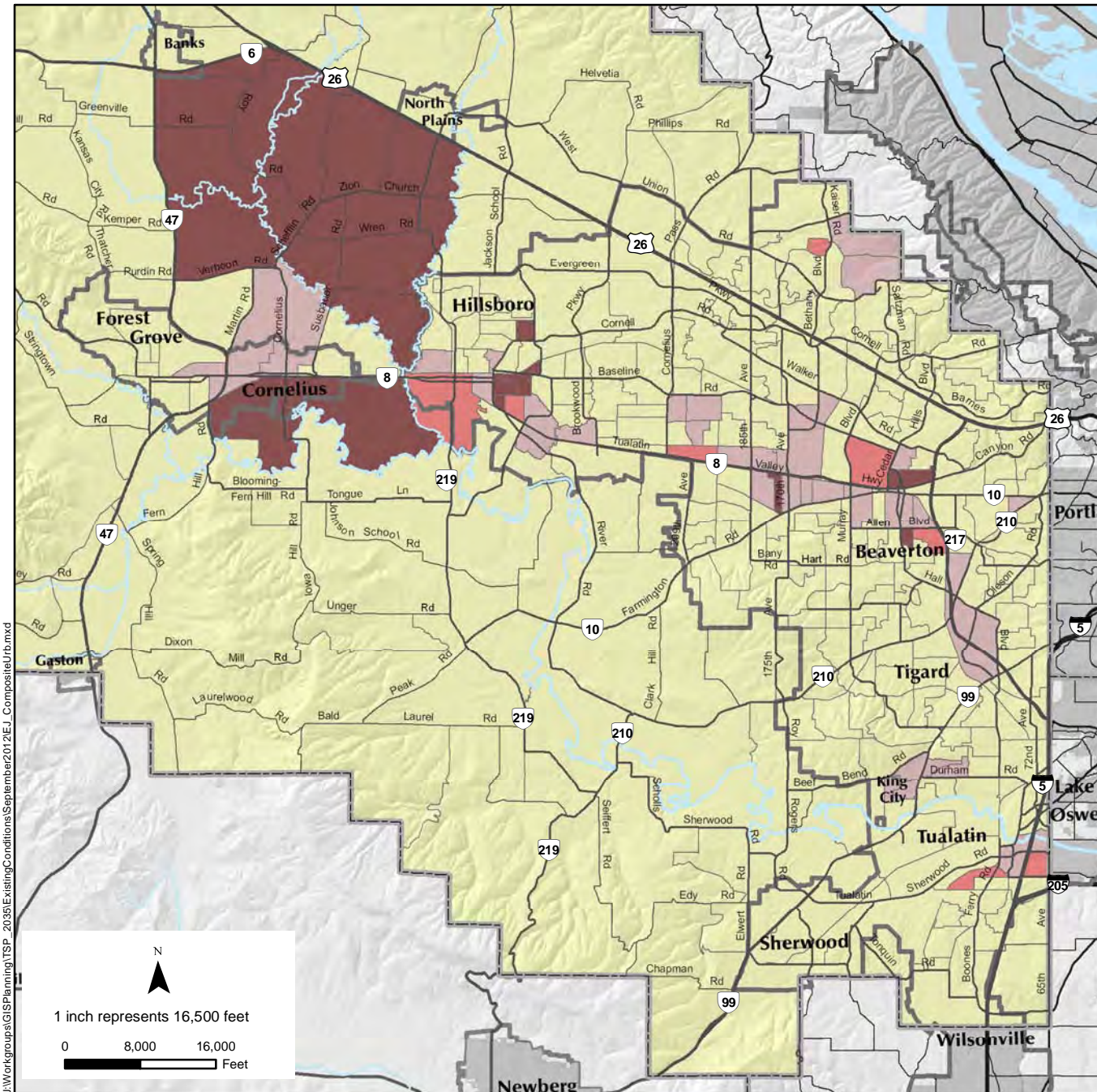
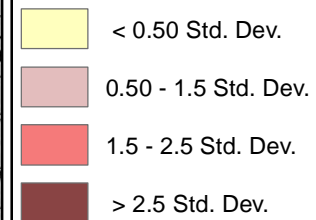
Cities and Other Jurisdictions

Each city in Washington County has a transportation system plan with pedestrian, bicycle and transit components. Tualatin Hills Parks and Recreation District (THPRD) has a district-wide trail plan as well as several specific trail feasibility or master plans. TriMet, through its Westside Service Enhancements Project, is studying population, employment, socio-economic and ridership trends to determine potential service enhancements in Washington County. All of these plans help Washington County provide accurate and concurrent recommendations within the respective jurisdictions. Recommended active transportation projects from these plans are reflected in the modal sections of this chapter.

Composite of Demographics

Proportion of:

- non-white residents,
- older adults (age 65+),
- youth (age under 17),
- income below poverty line
- person with low English proficiency

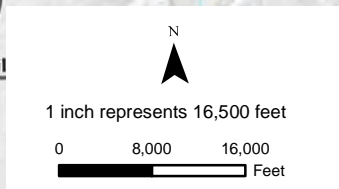


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Figure 4-1

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4.1.5 Recently Completed and Planned Active Transportation Projects

Washington County and its partner jurisdictions are constantly improving the county's active transportation network through a variety of capital projects and programs. Often times, these investments are part of multi-modal "**complete street**" projects that provide sidewalks, bike lanes and lighting in concert with automobile capacity and/or safety improvements. The county continues to make progress on complete street projects through the Major Streets Transportation Improvement Program (MSTIP), the Minor Betterments program, development-prompted road projects funded through the Transportation Development Tax, and partnerships with other jurisdictions. Other recent accomplishments include ongoing development of the **regional trail network** and major new **transit services**.

Table 4-5 and Figure 4-2 show major active transportation investments completed in Washington County since the 2002 adoption of the 2020 Transportation Plan. *For complete street projects, the cost figures shown are 25% of the total project cost.* These figures, shown in italics, roughly estimate the proportion of total project costs spent on pedestrian and bicycle facilities. In total, Washington County has invested at least \$55 million in active transportation capital projects between 2002 and 2012. This is a very rough and conservative estimate, and does not include the \$161 million capital cost of the Westside Express Service commuter rail.

Table 4-5: Major Active Transportation Investments, 2002-2012*

Facility	Extent/Location	City/Area	Description	Funding Sources	Cost (x 1M)
119 th Avenue	McDaniel – Cornell	Cedar Mill	Sidewalk (1 side)	OJTA	\$2.20
170 th /173 rd Ave	Walker – Baseline	Beaverton	Complete street	MSTIP	<i>\$0.94</i>
170 th Ave	MAX – Merlo	Beaverton	Sidewalk (1 side), lighting, trees	MTIP, MSTIP	\$0.35
170 th Ave	Alexander – Rigert	Aloha / Cooper Mountain	Complete street	MSTIP	<i>\$7.25</i>
185 th Ave	West Union – US 26	Rock Creek	Complete street, including buffered bike lanes	MSTIP	<i>\$1.28</i>
185 th Ave	Shaw – Kinnaman	Aloha	Complete street	MSTIP	<i>\$1.46</i>
198 th Ave	Johnson – TV	Aloha	Sidewalk (1 side), lighting, trees	MTIP, MSTIP	\$0.23
Baseline Rd	231 st – 177 th	Hillsboro	Complete street	MSTIP	<i>\$4.65</i>
Brookwood Ave	Baseline – TV	Hillsboro	Complete street	MSTIP	<i>\$3.50</i>
Brookwood Ave	TV – Witch Hazel	Hillsboro	Complete street	MSTIP	<i>\$2.34</i>
Butner Road	Woodward – Park	Cedar Hills	Sidewalk (1 side), lighting, trees	MTIP, MSTIP	\$0.23
Cornelius Pass Rd	Wilkins – Frances	Hillsboro	Complete street	TIF, MSTIP	<i>\$3.80</i>
Cornelius-Schefflin Rd	Verboort – Council Creek	Verboort	Wide shoulders	MSTIP	Unavailable
Cornell Rd	Evergreen – 158 th	Beaverton	Complete street	MSTIP	<i>\$1.65</i>
Cornell Rd	Science Park – Murray	Oak Hills	Complete street	MSTIP	Unavailable
Cornell Rd	Murray – Barnes	Cedar Mill	Complete street	MSTIP	<i>\$3.75</i>
Evergreen Rd	Glencoe – 25 th	Hillsboro	Sidewalk (1 side), bike lanes, lighting, trees	MSTIP	Unavailable
Glencoe Rd	West Union – US 26	North Plains	Complete street	MSTIP	<i>\$0.58</i>
Murray Blvd	Cornell – US 26	Oak Hills	Complete street	MSTIP	Unavailable
Murray Blvd	Fountain Park Apartments – Farmington	Beaverton	Sidewalk (1 side)	MTIP, MSTIP	\$0.15

Facility	Extent/Location	City/Area	Description	Funding Sources	Cost (x 1M)
Oleson Rd	Fanno Creek – Hall	Metzger	Complete street	MSTIP	\$3.35
Park Way	Parkwood – Butner	Cedar Hills	Sidewalks, lighting, trees	MTIP, MSTIP	\$0.29
River Rd	Rood Bridge – Davis	Hillsboro	Complete street	MSTIP	\$2.75
Roy Rogers Rd / 175 th Ave	99W – north of Scholls Ferry	Sherwood, Beaverton	Wide shoulders, realignment	MSTIP	\$2.379 +
Saltzman Rd	Bauer Woods – Cornell	Cedar Mill	Complete street	MSTIP	\$2.88
Sunset Drive	OR 47 – University	Forest Grove	Complete street	MSTIP	Unavailable
Veterans Drive	28 th – 34 th	Hillsboro	Complete street with cycle track	TDT	\$0.88
B Street Trail	16 th St – OR 47	Forest Grove	Paved, multi-use trail		Unavailable
Banks-Vernonia Trail	Sellers Road – 2/3 mile north	Banks	Paved, multi-use trail extension	TE, ARRA	\$1.20
Banks-Vernonia Trail	Stub Stewart State Park	Buxton	Paved, multi-use trail	Oregon Lottery	Unavailable
Fanno Creek Greenway Trail	105 th – Scholls Ferry	Beaverton	Paved, multi-use trail		Unavailable
Ki-a-Kuts Bike-Ped Bridge	Tualatin River	Durham, Tigard, Tualatin	Ped-bike bridge over river	ODOT, cities, CWS	\$2.90
Rock Creek Trail	Rock Creek – Kaiser	Rock Creek, Bethany	Paved, multi-use trail		Unavailable
Rock Creek Trail	Evergreen Pkwy	Hillsboro	Enhanced at-grade trail crossing	ODOT Bike/Ped	\$0.51
Waterhouse Trail	Walker Rd	Beaverton	Enhanced at-grade trail crossing	ODOT Bike/Ped	\$0.24
Westside Trail	Millikan – Davis	Beaverton	Paved, multi-use trail	ODOT, THPRD	\$2.30
Westside Trail	Scholls Ferry – Barrows	Tigard	Paved, multi-use trail	THPRD	Unavailable
Westside Express Service	Beaverton – Wilsonville	Beaverton, Tigard, Tualatin, Wilsonville	Commuter rail	FTA, ODOT, local	\$161.2
Bike & Rides	Sunset TC, Beaverton TC	Cedar Hills, Beaverton	2 secure bike parking facilities at light rail stations	ARRA	\$0.73

*This table is not an exhaustive list of all projects involving active transportation improvements in Washington County.

Many additional active transportation or complete street projects are planned and funded for the next several years. Table 4-6 and Figure 4-3 show major active transportation projects that are funded through 2018. This table reports full cost estimates, and does not proportionally reduce the estimates to reflect just bike/ped costs.


Table 4-6: Planned Major Active Transportation Investments*


Facility	Extent	City/Area	Description	Funding Sources	Cost Estimate (x 1M)
198 th Ave	TV – Farmington	Aloha-Reedville	Complete street or interim solution	MSTIP	\$14
124 th Ave	Tualatin-Sherwood – Tonquin	Basalt Creek	New road with wide shoulders	MSTIP	\$15
205 th Ave	Quatama – Baseline	Reedville	Complete street	OJTA	\$31.30
Baseline Rd	Brookwood – 231 st	Hillsboro	Complete street	MSTIP	\$11.30
Bethany Blvd	West Union – Cornell	Bethany	Complete street	MSTIP	\$24.60
Boones Ferry Rd	Norwood – Day	Tualatin	Bike lanes, sidewalk on one side	MSTIP, OTIA	\$10
Cornelius Pass Rd	Alocleck – Wilkins	Hillsboro	Complete street	TIF, MSTIP	\$10.10
Cornell Rd	107 th – Cedar Hills	Cedar Mill	Complete street	MSTIP	\$19
David Hill Rd	Brooke – OR 47	Forest Grove	New complete street	MSTIP	\$8.80
Evergreen Pkwy	25 th – 253rd	Hillsboro	Complete street	TIF	\$6.50
Farmington Rd	141 st - Hocken	Beaverton	Complete street	MSTIP	\$12.20
Jackson School Rd	Rogahn – Grant	Hillsboro	Complete street	MSTIP	\$5
Leahy Rd / Stark St	90 th – 88th	Cedar Mill	Sidewalks	ODOT SR2S	\$0.41
Veterans Drive	34 th – Brookwood	Hillsboro	Complete street with cycle track	TDT	Unavailable
Walker Rd	173 rd – 158 th	Beaverton	Complete street	MSTIP	\$5.80
Walker Rd	158 th – Murray	Beaverton	Complete street	MSTIP	\$11.60
Walker Rd	Ecole – OR 217	Beaverton	Interim safety improvements	MSTIP	\$33
Walnut St	116 th – Tiedeman	Tigard	Complete street	MSTIP, ODOT	\$5.40
Forest Grove Emerald Necklace	Numerous locations	Forest Grove	Multi-use trail network		Unavailable
Fanno Creek Greenway Trail	Hall Blvd	Beaverton	Enhanced at-grade trail crossing		\$0.40
Waterhouse Trail	Rock Creek Trail – Merlo Road MAX station	Oak Hills, Beaverton	Paved, multi-use trail	THPRD bond	\$3.70
Westside Trail	Rock Creek Trail – Bronson Creek Trail	Bethany	Paved, multi-use trail	MTIP	\$2.40


*This table is not an exhaustive list of proposed projects involving active transportation improvements in Washington County.



Major Active Transportation Investments 2002-2012

 Major Active Transportation Investments (Bridges, At-Grade Crossings, Bike Parking)

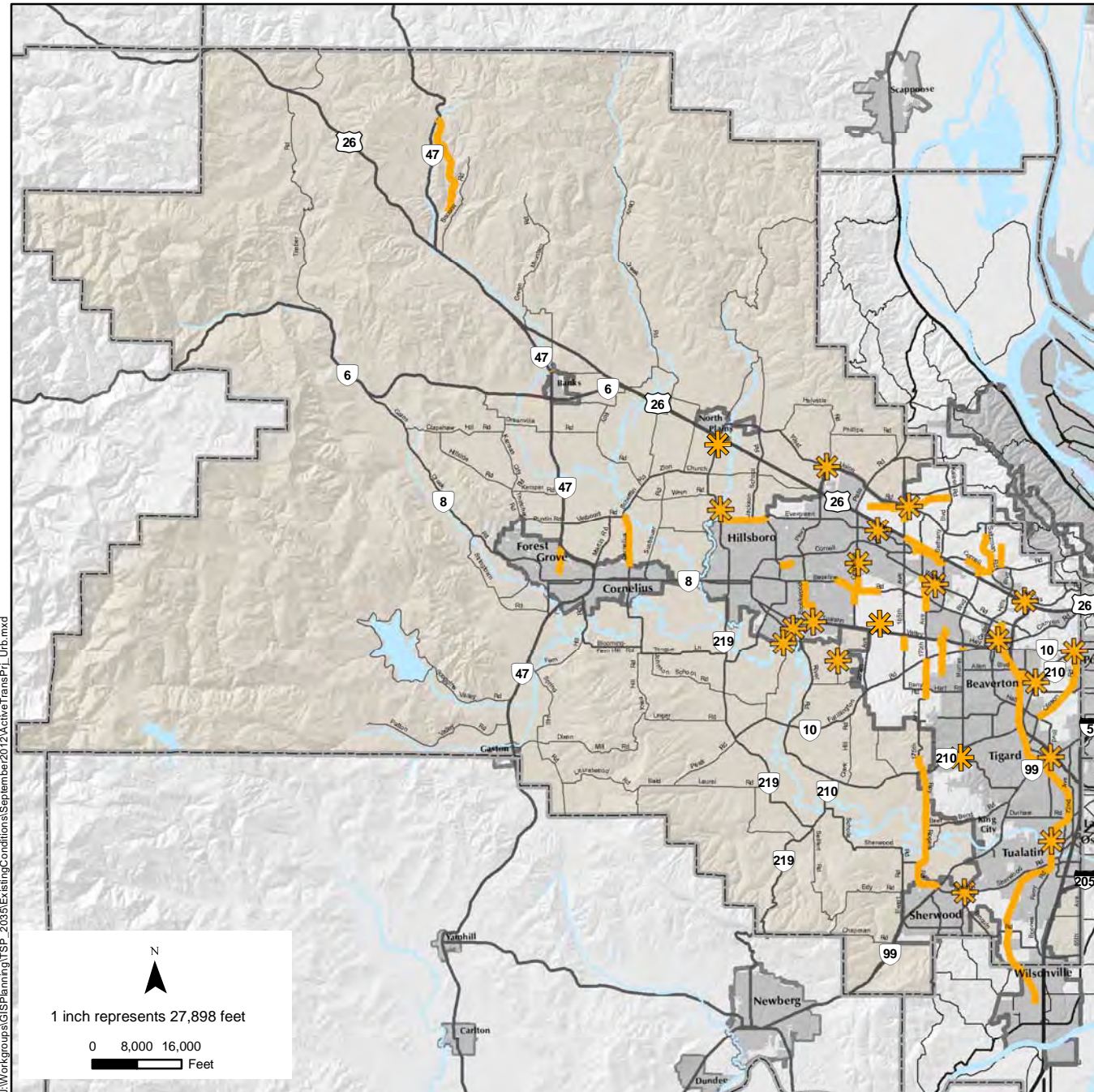
 Major Active Transportation Investments (Bike Lanes, Sidewalks, Complete Streets, Wide Shoulders, Paved Trail, Commuter Rail)

 Rural Washington County

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Figure 4-2



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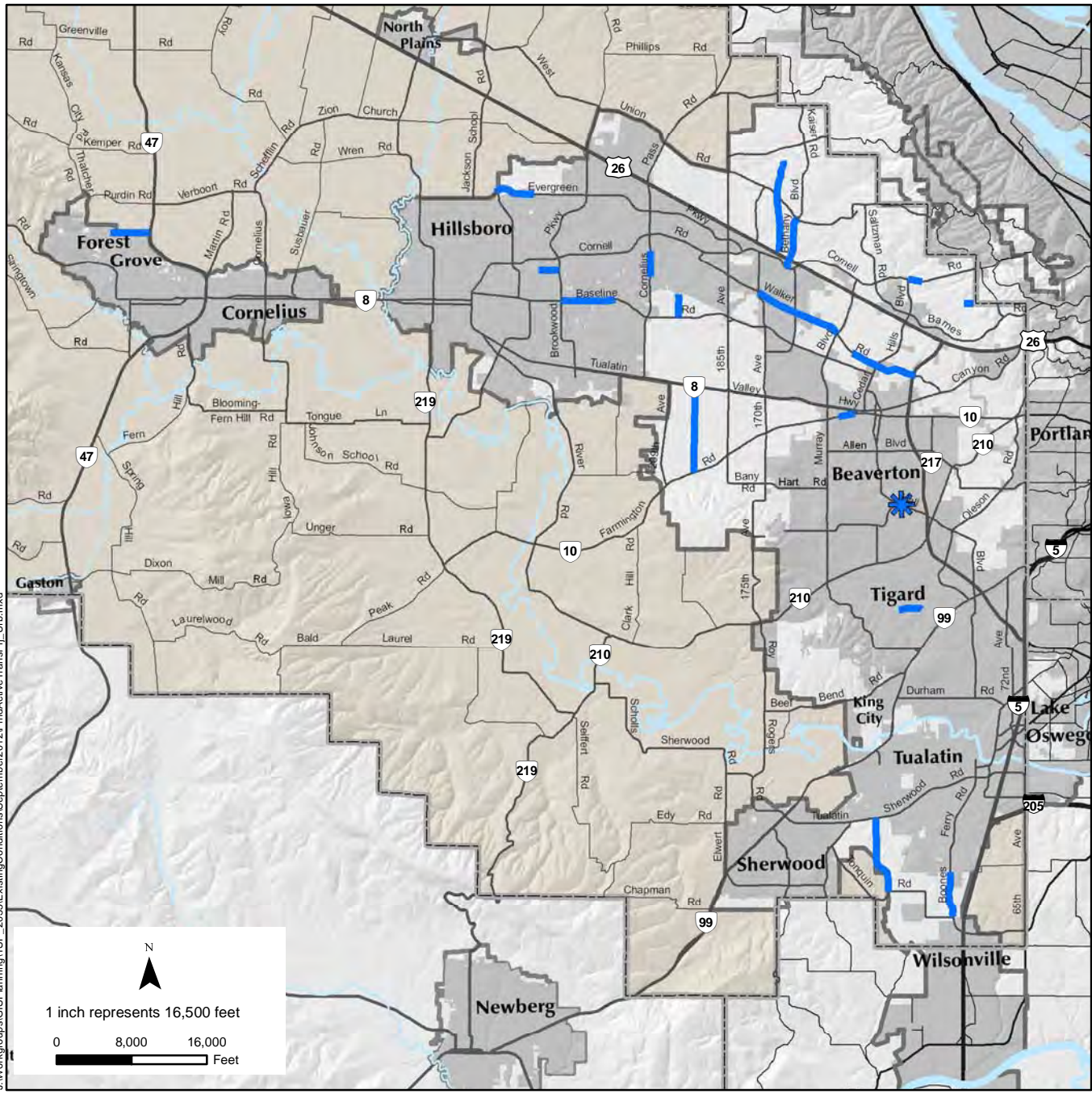
Planned Major Active Transportation Investments

-  Planned Major Active Transportation Project (At-Grade-Crossing)
-  Planned Major Active Transportation Project (Streets, Bike Lanes, Sidewalks, Safety Improvements)
-  Rural Washington County

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Figure 4-3



N

1 inch represents 16,500 feet

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Feet

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4.2 WALKING

Walking, the most basic form of human travel, plays a fundamental role in the transportation system. It has many advantages: travel times are predictable, expenses are minimal, and health benefits are proven. For the county, a shift to more walking trips could reduce the need or scope of roadway and parking facilities, especially in regional and town centers. Compared to facilities for other modes, walkways are easy to maintain and inexpensive to install. A good pedestrian network also supports and leverages investments in transit.

Walking plays an important role in community design (and vice versa). Put simply, places designed for walking usually result in more walking. Researchers generally agree that most people are willing to walk between a quarter and a half mile to reach destinations like stores and transit stops, and up to a mile to reach schools. Neighborhoods that include these mixed uses and that have safe, convenient and attractive walking facilities, tend to encourage walking. Regionally and nationwide, walkable neighborhoods increasingly rank among the most desirable and economically vibrant areas within urban regions.



Evergreen Parkway, Tanasbourne.

Regional Pedestrian Network

The RTP 2035 Pedestrian Network is a Metro recommendation on where investments in pedestrian facilities make the most sense – in mixed-use centers, along major mixed-use corridors, and as a component of regional trails. Regional centers, town centers and station areas in the Metro 2040 Growth Concept are designated as pedestrian districts in the RTP, reflecting the important role of a walkable environment in supporting land use and urban form goals. Table 4-7 and Figure 4-4 shows locations in Washington County included in the RTP 2035 Pedestrian Network. These delineations should be considered when applying for Metro-administered grants for walking infrastructure.



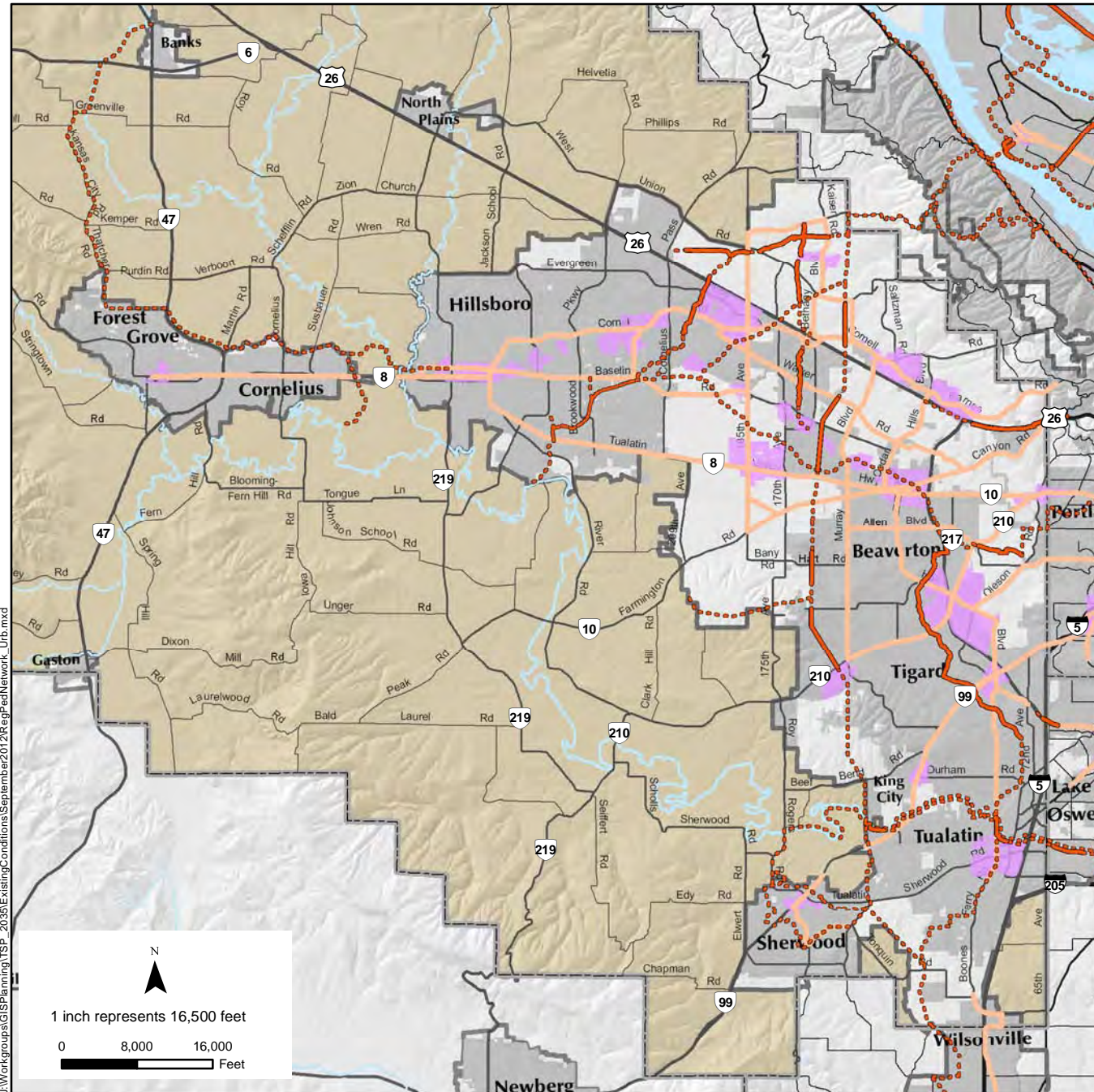
Existing Regional Pedestrian Network

- Regional trail
- Regional trail (proposed)
- Mixed-use corridor
- Pedestrian Districts
- Rural Washington County

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Figure 4-4



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Table 4-7: RTP 2035 Pedestrian Network in Washington County

Pedestrian Districts	Mixed-Use Corridors	Regional Trails
<u>Regional Centers</u> Beaverton RC Hillsboro RC Tanasbourne / Amber Glen RC Washington Square RC	1 st /Oregon (Sherwood) 185 th Ave 229 th Ave Allen Blvd Barnes Rd	Beaverton Creek Trail Cooper Mountain Trail Council Creek Trail Fanno Creek Greenway Trail
<u>Town Centers</u> Aloha TC Bethany TC Cedar Mill TC Cornelius TC Forest Grove TC King City TC Murray Scholls TC Orenco TC Raleigh Hills TC Sherwood TC Sunset Transit TC Tigard TC Tualatin TC	Baseline/Adair (Cornelius) Baseline/Oak (Hillsboro) Baseline Rd Beaverton-Hillsdale Hwy Bethany Blvd Boones Ferry Rd Canyon Rd Cedar Hills Blvd Century Blvd Cornell Rd Edy Rd Evergreen Pkwy Farmington Rd Garden Home/Multnomah/92nd Hall Blvd Hunziker Rd (Tigard)	Highway 26 Trail Red Electric Trail Rock Creek Trail Tonquin Trail Tualatin River Trail Waterhouse Trail Westside Trail Willow Creek Trail
<u>Station Areas</u> (outside RCs & TCs) Beaverton Creek SA Elmonica SA Hawthorne Farm SA Fairgrounds SA Millikan Way SA Quatama SA Willow Creek SA	Kinnaman Rd Main St (Hillsboro) Main/Adair (Cornelius) Murray Blvd Oleson Rd Pacific Hwy Pacific/19 th (Forest Grove) Roy Rogers Rd Scholls Ferry Rd Sherwood Blvd Tualatin Valley Hwy Walker Rd	

Walking Facilities

Transportation facilities for walking (and for the use of personal mobility devices such as wheelchairs) include sidewalks, street crossings, trails, accessways and wide shoulders. Supporting facilities that make walking safer include street lighting and pedestrian signals. The following sections describe general considerations, existing conditions and future needs for these fundamental transportation facilities.

4.2.1 Sidewalks

Washington County has required concrete or other hard-surface walkways within new development and road projects in the urban area since the mid-1980s. Before then, provision of sidewalks was largely a function of developer preferences, local codes and covenants, urban/rural location, and historical period. As a result, the county remains a blend of suburban communities with and without sidewalks, surrounded by rural areas largely without sidewalks.

Today, sidewalks are usually built in one of three contexts:

- within and/or alongside new development;
- as part of a major road expansion or safety project funded by MSTIP, TDT or a federal or state grant; or
- as an interim improvement funded through the county’s Minor Betterments program. Interim improvements include asphalt or gravel spaces for walking.

Through these efforts, the county and its partner jurisdictions have made significant progress in adding sidewalks to major roads. As of 2012, 82% of arterials and collectors in the urban area, or 354 centerline miles, have a walkway facility on one or both sides. On roads maintained by Washington County, 77% have a walkway facility of some kind. Table 4-8 and Map 4-5 illustrate sidewalk coverage in urban Washington County.

Table 4-8: Arterial/Collector Sidewalk Coverage, Urban Washington County

Sidewalk presence, reported in roadway centerline miles	Maintained by Washington County	%	Maintained by ODOT (does not include freeways)	%	Maintained by Cities	%	Total Arterial/Collectors	%
Sidewalk on both sides	97	51%	18	41%	129	68%	245	57%
Sidewalk on one side	48	25%	17	38%	38	20%	104	24%
Substandard path on both sides	0	0%	0	0%	0	0%	1	0%
Substandard path on one side	1	1%	1	1%	2	1%	4	1%
No walkway facilities	46	24%	9	9%	22	12%	76	18%
Total mileage of arterial/collector	192	100%	45	100%	191	100%	430	100%

Standards

In urban unincorporated Washington County, sidewalks are required along both sides of new public streets, new private commercial streets, and new private residential streets that access nine or more residential units.¹³ Developers also must provide “half street improvements” along existing, adjacent roads that do not already meet county road standards.¹⁴ Half street improvements include a sidewalk, planter strip, street lighting, and – if along an arterial or collector – a bike lane, as well as any associated dedication of public right-of-way.

Sidewalks must be a minimum of five feet wide, and separated from the roadway by a planter strip at least four feet, six inches wide, including curb. Sidewalks also must be designed for people of all abilities. To aid people who use mobility devices such as wheelchairs, this means minimizing cross slope, limiting the impact of driveway crossings, and installing curb ramps with level landings at every street crossing. For people who are blind or have low vision, accessibility is enhanced by establishing a clear path of travel and tactile warnings at curb ramps.

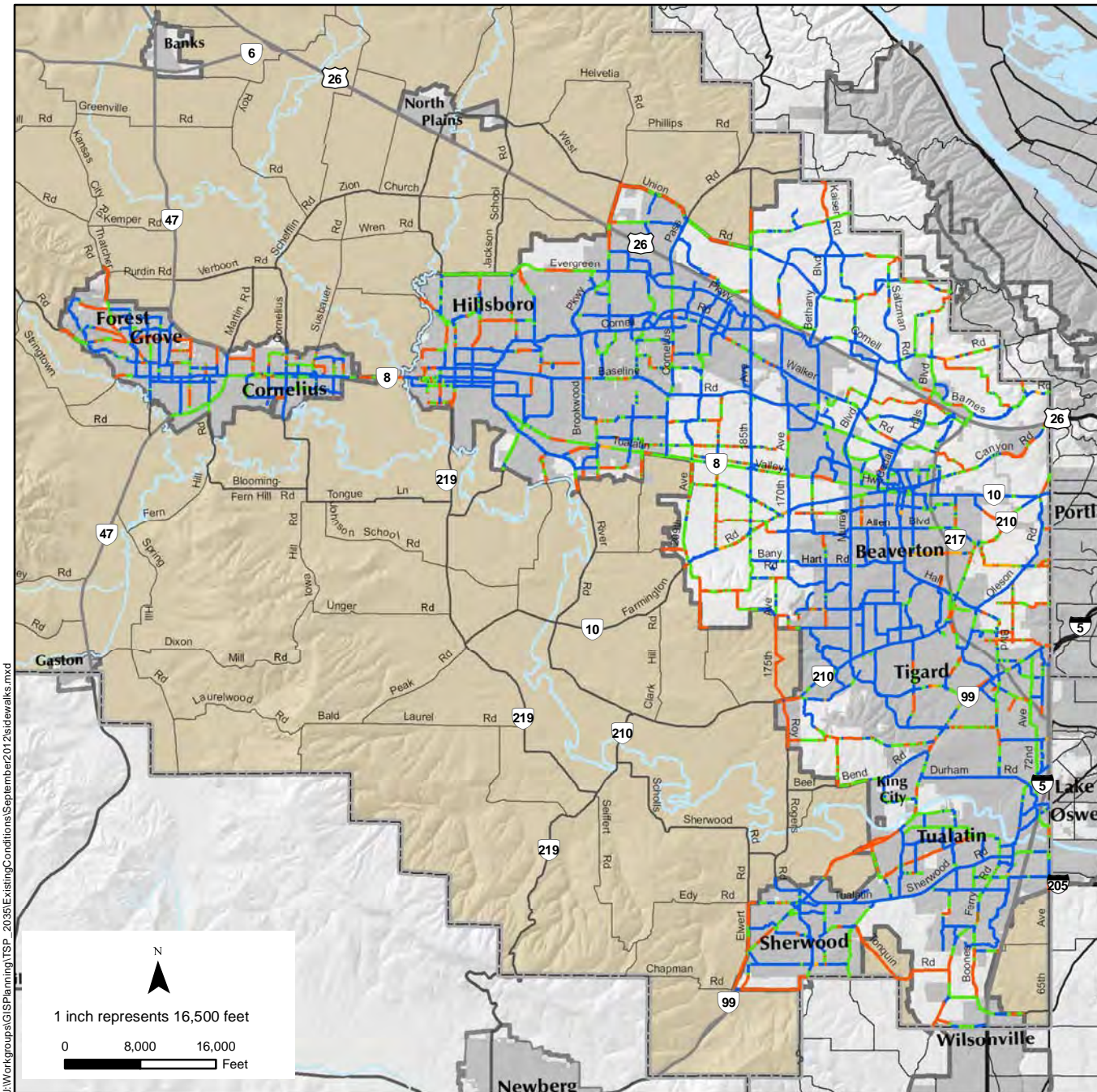
¹³ Washington County Community Development Code, Article IV, Section 409.

¹⁴ Washington County Community Development Code, Article V, Section 501.



Sidewalk Inventory

- Both Sides of Road Standard
- One Side of Road Standard
- Both Sides Substandard
- One Side Substandard
- No Sidewalk Both Sides



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Figure 4-5

Streetscape Enhancements

Wider pedestrian corridors provide the opportunity for streetscape improvements such as pedestrian-scale lighting, additional street trees, landscaping, benches, public art, and space for store displays or café seating. Cornell Road in Cedar Mill Town Center is an example where Washington County constructed an enhanced streetscape to promote commercial redevelopment and a safe, inviting pedestrian environment.



Cornell Road in Cedar Mill Town Center. Image: Google

Generally speaking, enhanced streetscapes are most appropriate within Metro 2040 centers, where aesthetic and safety improvements can help foster growth and redevelopment. The county has designated numerous roads within centers as special area streets, along with giving a

smaller set of arterials a regional boulevard overlay generally corresponding with the RTP. County road standards call for a pedestrian corridor of nine or ten feet on both sides of special area streets, to be fitted with enhanced sidewalks ranging in width from five to nine feet, depending on functional class and provision of planter strip.

Non-Standard Sidewalks

The county may grant modifications to sidewalk standards in circumstances where topography or other natural hazards present insurmountable difficulties. For public road projects not triggered by development, right-of-way is an additional constraint that can curtail the provision of standard sidewalks. While developers are required to dedicate sufficient right-of-way to build standard sidewalks, the county often must purchase right-of-way at significant cost from established property owners for its own projects.

The most common departure from sidewalk standards is not including a planter strip. **Curb-tight sidewalks** can be found on numerous Washington County arterial and collector roads where existing development, topography, right-of-way constraints, project cost, or a combination of those factors prevented the provision of a full 10-foot pedestrian corridor on each side of the road. Omitting the planter strip removes a key visual and physical buffer between pedestrians and automobile traffic – a major concern on arterials with posted speeds of 35 mph or higher. Curb-tight sidewalks also tend to have obstructions such as signposts, utility poles and mailboxes, as well as driveway aprons that change the sidewalk grade. These obstructions, which would normally be placed within the planter strip, are especially problematic for people using mobility devices.

Other non-standard sidewalks include **asphalt pathways** or delineated areas of wide shoulders. These are interim solutions used in circumstances where greater walking safety is needed, but funds for standard sidewalks are not available in the short term. Asphalt pathways have been installed along numerous county roadways, often funded by the Minor Betterments program.



Washington County expanded 185th Avenue to 3 lanes with sidewalks and bike lanes in an established area of Aloha. Planter strips were not included due to right-of-way constraints.



This section of Cornell Road in the Orenco Station community has wide sidewalks and a generous planter strip. The trees and vegetation provide a visual and physical buffer between pedestrians and fast-moving cars.

Arterial/Collector Sidewalk Needs

As shown in Table 4-8 above, approximately 76 miles of arterial or collector roads in Washington County – representing 18% of those roadway types – do not have separated walkway facilities. The **Washington County Bicycle and Pedestrian Prioritization Project** of 2013, funded by a U.S. Department of Energy grant, took inventory of these gaps and used weighted criteria to prioritize which ones have the highest need to be filled. Criteria included density and mix of land uses, observed safety issues and crash rates, street network connectivity, and social equity. A subsequent round of analysis determined which of those high-scoring projects are most feasible from a technical and financial standpoint. Priority sidewalk gaps are listed in Table 4-9 and shown on Map 4-6. These gaps total 8.7 miles.¹⁵



Table 4-9: Prioritized Sidewalk Needs

Road	From	To	Total Length	Cost Estimate
92 nd Avenue	Garden Home Road	Allen Road	2,115	\$602,775
170 th Avenue	150' south of Heritage Court	Augusta Street	2,353	\$670,605
174 th Avenue	Bronson Road	Madras Court	1,621	\$461,985
197 th Avenue	100' south of Alderwood Court	Baseline Road	726	\$206,910
1 st Avenue	Grant Street	south of Tiffany Lane	501	\$142,785
Glencoe Road	400' north of Tiffany Street	150' north of Cody Court	904	\$257,640
209 th Avenue	160' south of RR	300' north of Blanton Street	910	\$259,350
209 th Avenue	250' south of Stoddard Drive	McInnis Lane	286	\$81,510
209 th Avenue	Carlin Boulevard	Manor Way	600	\$171,000
209 th Avenue	Martini Court	208 th Terrace	1,093	\$311,505
209 th Avenue	Blanton Street	Kinnaman Road	1,015	\$289,275
Alexander Street	172 nd Avenue	173 rd Avenue	160	\$45,600
Alexander Street	173 rd Avenue	178 th Avenue	1,048	\$298,680
Alexander Street	178 th Avenue	182 nd Avenue	468	\$133,380
Barnes Road	Cedar Hills Blvd	117 th Avenue	1,145	\$326,325
Boones Ferry Road	250' north of Norwood Road	Horizon Comm. Church	904	\$257,640
Bronson Road	174 th Avenue	179 th Avenue	1,768	\$503,880

¹⁵ The total length reflects the extent of filling gaps and improving one side of the road. Cost estimates are planning-level based on an average cost of \$285 per lineal foot of improvement including curb, gutter and concrete sidewalk.

Road	From	To	Total Length	Cost Estimate
Brookwood Parkway	Huffman Street	Meek Road	2,162	\$616,170
Bull Mountain	Hazeltree Terrace	120 th Place	939	\$267,615
Cedar Hills Boulevard	Butner Road	WB Sunset-Cedar Hills Off Ramp	865	\$246,525
Cornell Road	99 th Avenue	102 nd Avenue	711	\$202,635
Farmington Road	171 st Avenue	173 rd Avenue	778	\$221,730
Farmington Road	176 th Avenue	185 th Avenue	2,214	\$630,990
Farmington Road	300' east of 188 th Court.	100' west of 189th Avenue	768	\$218,880
Garden Home Road	77 th Avenue	92 nd Avenue	3,147	\$896,895
Johnson Street	95' west of 214th Avenue	214 th Avenue	95	\$27,075
Johnson Street	204 th Avenue	85' east of 203 rd Avenue	389	\$110,865
Johnson Street	174 th Avenue	180 th Terrace	632	\$180,120
Locust Street	80 th Avenue	Hall Boulevard	1,392	\$396,720
Meadow Drive	Trout Creek Lane	Surrey Street	656	\$186,960
Rock Creek Boulevard	Malhuer Avenue	Rock Creek Drive	845	\$240,825
Rock Creek Boulevard	West of 185 th Avenue	Columbia Drive	808	\$230,280
Scholls Ferry Road	Heather Lane	McKay Elementary	440	\$125,400
Scholls Ferry Road	75' west of Northvale Way	395' east of Northvale Way	472	\$134,520
Scholls Ferry Road	Heather Lane	south of Merry Lane	530	\$151,050
Scholls Ferry Road	90 th Avenue	235' southwest of 86 th Avenue	919	\$261,915
Scholls Ferry Road	250' west of 155 th Terrace	250' east of 155 th Terrace	504	\$143,640
Springville Road	178 th Avenue	181 st Avenue	439	\$125,115
Taylor's Ferry Road	80 th Avenue	75 th Place	612	\$174,420
Walker Road	240' west of Bronson Creek Bridge	248' east of Bronson Creek	488	\$139,080
Walker Road	180 th Avenue	178 th Avenue	572	\$163,020
Walker Road	183 rd Avenue	180 th Avenue	746	\$212,610
West Union Road	LDS Church Property	203 rd Place	2,577	\$734,445
West Union/Thompson Road	Banff Drive	147 th Place	422	\$120,270
West Union/Thompson Road	Bronson Creek Drive	143 rd Avenue	1,091	\$310,935
		TOTAL	45,962	\$13,024,550

Prioritized Sidewalk Needs

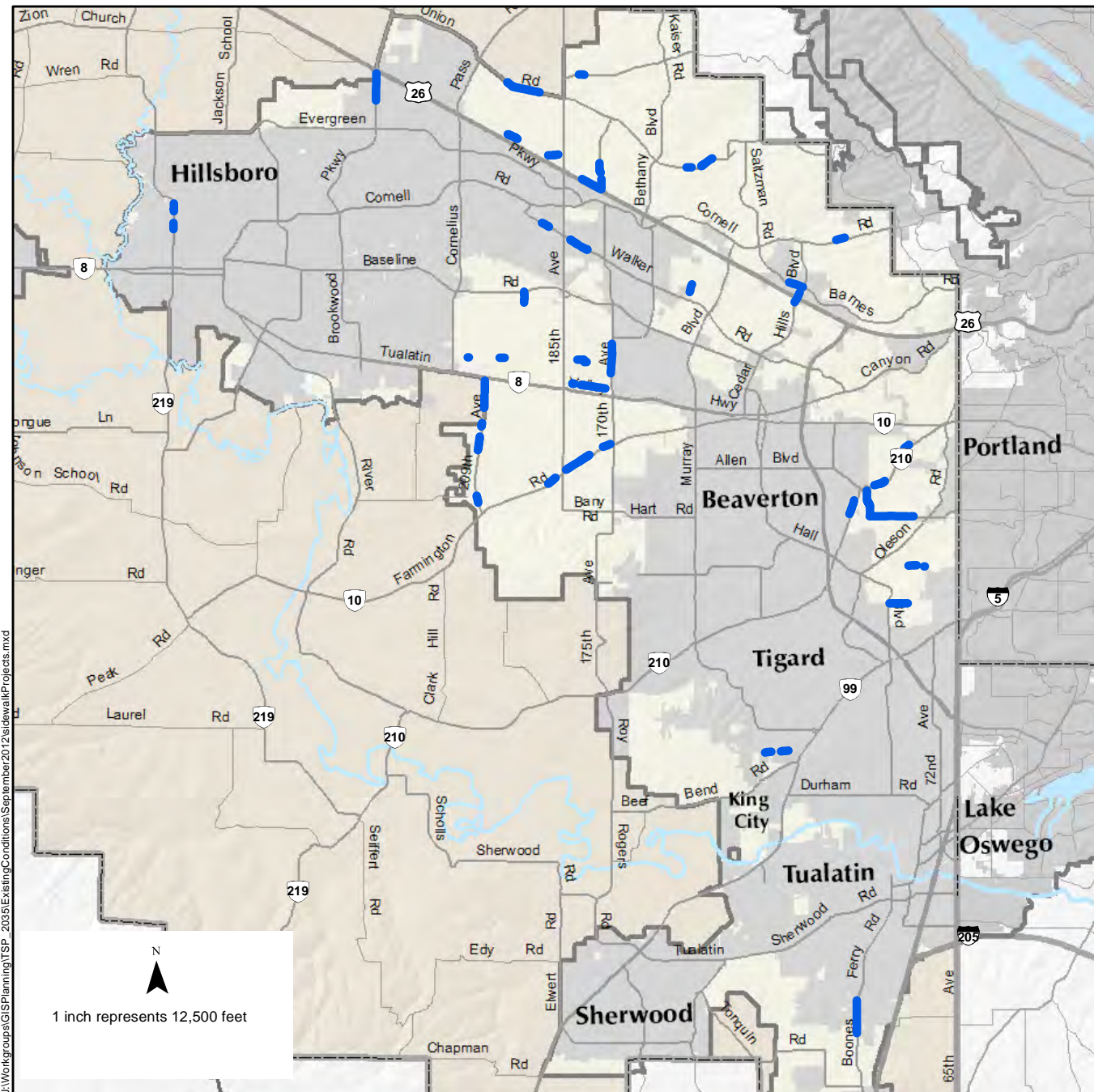
-  Top 45 Sidewalk Gaps*
-  Urban Growth Boundary

*As identified through Washington County Bicycle and Pedestrian Improvement Prioritization Project.

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Department of Land Use and Transportation
Long Range Planning Division

Figure 4-6



Non-Arterial/Collector Sidewalk Needs

The county generally does not pursue sidewalk infill projects on existing local streets or neighborhood routes. One major exception is streets near schools. For example, the county has installed a sidewalk along NW Stark Street, a local roadway near West Tualatin Elementary School in the Cedar Mill Area, and is in the process of building a sidewalk on SW 173rd Avenue near Aloha-Huber Park K-8 School. These projects, funded through state and federal grants, help children from immediately surrounding neighborhoods safely reach their school on foot.

Public input received during the *Aloha-Reedville Study and Livable Community Plan* process has revealed a desire to build sidewalks along local streets near schools in that area.

Maintenance

The cost of maintaining sidewalks is the responsibility of the adjacent property owner. While most concrete sidewalks in the county are relatively new and in good condition, there are several miles of asphalt pathways along county roads that are in need of repair. In general, the county needs a long-term systematic approach to maintaining sidewalk and roadside pathways. The county may consider regular inspection and maintenance of walkways to protect its investments and continue to provide safe access for people walking. The addition of other elements in the roadway to enhance pedestrian safety – such as planted medians – can also add to maintenance budget needs. It is crucial that maintenance budgets be increased to handle additional needs as more pedestrian amenities are constructed.

4.2.2 Crossings

Street crossings form critical connections in the pedestrian network, facilitating the simple but sometimes dangerous act of walking to destinations across the street. Crossings are particularly important for accessing transit, since a round trip usually involves crossing at one end of the journey. Bicyclists also use crossings, especially in circumstances where they are not mixed with traffic, such as a trail crossing.

By state law, every intersection is a legal crosswalk, even if none are marked. In practice, this law is not sufficient to ensure safe passage across many urban arterial roads. The difficulty and danger of crossing increases with roadway width, volume and speed. Arterials like TV Highway, 185th Avenue and Pacific Highway statistically pose a higher risk to pedestrians than streets with fewer lanes, slower speeds and lower functional classes. Inconveniently, the most difficult roads to cross often have the highest pedestrian crossing demands, due to high concentrations of businesses, multi-family housing and transit stops.



Existing Crossing Facilities

Marked crosswalks in Washington County are mostly limited to signalized intersections, of which there are nearly 600 countywide. Most, but not all, signalized intersections in the county feature delineated crosswalks and walk signals. Outside of major road intersections, jurisdictions including THPRD and ODOT are increasingly targeting

crossing improvements at mid-block locations and minor intersections that have high pedestrian crossing demand. Recently completed crossing projects in Washington County include:

- a full traffic signal and median refuge at TV Highway and SW 178th Avenue, connecting a heavily-used #57 bus stop with businesses and homes in the Aloha town center; and
- a mid-block, signal-controlled crossing of the Rock Creek Trail at NW Evergreen Parkway in north Hillsboro, featuring a staggered refuge island and bike lane connections.

Mid-Block Crossing Policy

In November 2010, in response to increased requests for trail crossings of county roads, Washington County adopted standards for evaluating and approving mid-block crossings of county roadways.¹⁶

Each mid-block crossing must be evaluated based on existing and planned roadway characteristics, observed speeds and volumes, pedestrian trip generators, proximity of existing traffic signals, sight distance, topography and other considerations. At-grade crossings are not permitted within 300 feet of an existing signalized intersection.

Crossing design features are chosen from a tiered selection of improvements based on roadway lane numbers, as described in Table 4-10 below.

Table 4-10: Mid-Block Crossing Improvement Tiers

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

The policy further describes these and other county-approved crossing devices, as shown in Table 4-11 below.

¹⁶ Washington County Resolution and Order 10-107, November 23, 2010.

Table 4-11: County-Approved Pedestrian Crossing Treatments

	Crossing Treatment	Description	Objective
A	Roadway signing	Passive signs are placed in the roadway right-of-way within or near the crosswalk.	To remind drivers to obey the law and yield to pedestrians while in the crosswalk.
B	High-visibility markings	Uses a ladder or “zebra” style crosswalk pavement markings.	To provide drivers with information at uncontrolled crosswalks where pedestrians may not be expected to cross the street, such as a mid-block crossing.
C	Double-posted pedestrian crossing signs	Standard pedestrian crossing signs are installed on both sides of the approaching roadway at a mid-block pedestrian crossing.	To provide additional notice to drivers that are approaching a pedestrian crossing.
D	Advance placement of yield lines	Standard yield lines are placed in advance of marked, uncontrolled crosswalks.	To encourage drivers to stop a greater distance from the marked crosswalk.
E	Pavement legends	Word legends are placed on the pavement at the ends of the crosswalk.	To encourage pedestrians to look each direction before proceeding to cross the street.
F	Fluorescent yellow-green signs (school zones only)	Pedestrian signs made of fluorescent yellow-green color are posted at school crossings.	To improve pedestrian safety at crossings by enabling drivers to detect signs from a greater distance.
G	Refuge islands	Raised median islands are placed in the center of the roadway separating opposing lanes of traffic and are slotted along the pedestrian path.	To provide a sheltering place in the median where pedestrians can wait for adequate crossing gaps in the traffic stream.
H	Staggered pedestrian refuge islands	Raised islands are laid out in a staggered configuration that requires pedestrians to walk towards traffic before crossing.	To provide a better view of oncoming traffic.
I	Pedestrian railings	Railings are placed along the top of the curb.	To effectively channelize pedestrians to the safest designated crossing points.
J	Street and trail lighting	Lights are installed on both sides of the street and on the trail. Comply with Washington County Illumination Standards for the roadway.	To provide levels of lighting that are oriented toward pedestrian trail activity at the crossing and not exclusively for traffic.
K	Flashing beacons	Flashing amber lights are installed on signs, in advance of the crosswalk, or on signs located at the entry of the crosswalk.	To increase driver attentiveness when approaching marked crosswalks at uncontrolled locations.
L	Rectangular-shaped rapid flashing LED crosswalk beacon (RRFB)	Special traffic signal installed to the bottom of the crosswalk sign at marked crosswalks. Pedestrian actuated.	To improve visibility of pedestrian crossing locations and increase driver recognition of changing conditions.
M	Rumble strips and rumble stripes	Raised or grooved patterns on the roadway that provide both an audible warning and a physical vibration.	To alert drivers of an upcoming change in the roadway environment.
N	Grade separated crossings	A bridge or tunnel that carries non-motorized traffic over or under a motorized corridor.	To physically separate the crossing of non-motorized and motorized vehicles.
O	Mid-block signal-controlled crossing	Traffic signals are used to control traffic at mid-block crosswalks. Signals remain green until pedestrians activate the push button. May include passive detection such as video.	To provide pedestrians an opportunity to cross mid-block at a controlled crosswalk.
P	Two-stage signal-controlled crossing	Traffic signal with median island, staggered crossings, coordinated with signals on corridor.	To provide safe crossing opportunities with minimum disruption of traffic.

Source: Washington County Resolution and Order 10-107, November 2010.

Spacing Considerations

Other than the requirement to avoid establishing at-grade crossings within 300 feet from an existing traffic signal, the county's mid-block crossing policy does not provide guidance on the overall spacing of multiple crossings on a particular roadway. In the aggregate, crossings must carefully balance pedestrian safety and convenience with other modal needs, including vehicular traffic flow. Several standards in the Washington County development code provide implicit guidance:

- Block faces in new development along arterials and collectors cannot be longer than 600 feet. For those that are, an accessway must be provided every 400 feet.¹⁷ Within designated "connectivity lands," these maximums are reduced to 530 and 330 feet. These standards may result in pedestrian crossing demand where local streets and accessways meet the arterial/collector.
- Direct vehicular access to an arterial in new development can be no less than 600 feet from another vehicular access point.¹⁸ While a pedestrian crossing may still be allowed within 300 feet of a signalized intersection, this code requirement essentially establishes a desired spacing of 600 feet between decision points along arterial roadways.
- ODOT recommends traffic signal spacing between 1,100 and 4,840 feet on urban arterials, depending on posted speed and length of signal phase.¹⁹ These distances are too great to foster a well-connected pedestrian network, but they provide a starting point for establishing crossings in locations where there may be none for long distances.

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

Existing Signalized Intersections

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

Crossing Needs

Table 4-12 and Figure 4-7 show urban Washington County corridors where new, additional or enhanced crossings should be evaluated and potentially provided. These corridors, many of them four-or-more-lane arterials with transit service, were compiled from the *Washington County 2020 Transportation Plan Background Report*, TriMet's 2011 *Pedestrian Network Analysis* document,²⁰ and public comment received during this plan update. A finer-scale analysis of each corridor is recommended before pursuing crossing projects.

¹⁷ Washington County Code, Article IV, Section 408-5.2.



¹⁸ Washington County Code, Article V, Section 501-8.5.

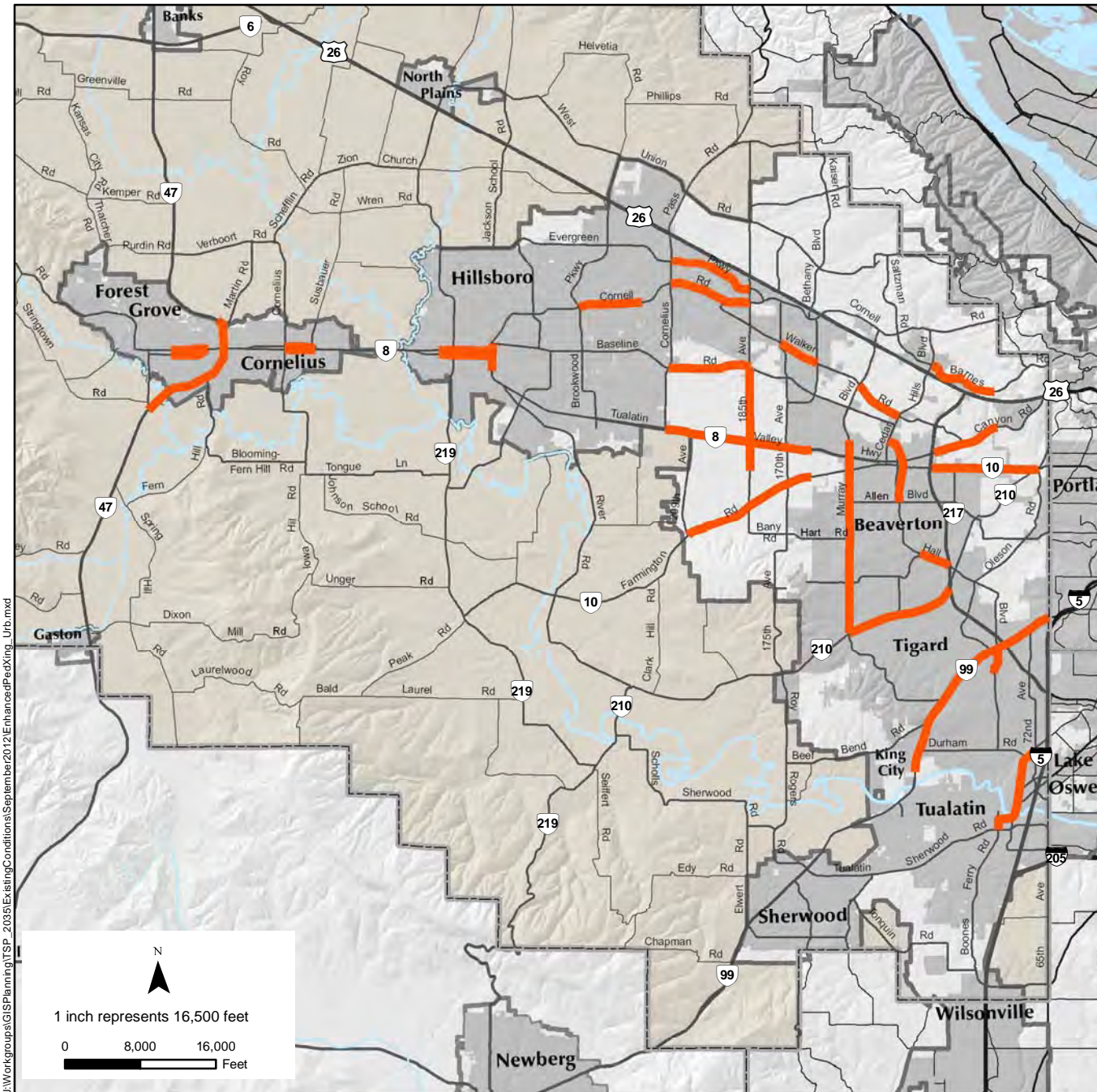
¹⁹ Signalized Intersection Spacing, prepared for Oregon Department of Transportation by Oregon State University Transportation Research Institute, 1996.

²⁰ Pedestrian Network Analysis, TriMet, 2011.



Enhanced Crossing Study Corridors

-  Enhanced Crossing Study Corridors
-  Rural Washington County



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Department of Land Use and Transportation
Planning and Development Services

Figure 4-7

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Table 4-12: Enhanced Crossing Study Corridors

Roadway	Extent	Location
185 th Ave	Baseline Rd – Kinnaman Rd	Washington County (Aloha)
Barnes Rd	Cedar Hills Blvd – 87 th Ave	Washington County (Sunset)
Baseline Rd	Cornelius Pass Rd – 185 th Ave	Washington County (Aloha)
Farmington Rd	209 th Ave – 160 th Ave	Washington County (Aloha)
Tualatin Valley Hwy	Cornelius Pass Rd – 160 th Ave	Washington County / Beaverton
Beaverton-Hillsdale Hwy	Hwy 217 – Oleson Rd	Beaverton / Washington County
Canyon Rd	Hwy 217 – Canyon Dr	Beaverton / Washington County
Hall Blvd / Watson Ave	Cedar Hills Blvd – Allen Blvd	Beaverton
Hall Blvd	Greenway Blvd – Hwy 217	Beaverton
Jenkins Rd	Murray Blvd – Cedar Hills Blvd	Beaverton
Murray Blvd	Millikan Way – Scholls Ferry Rd	Beaverton
Scholls Ferry Rd	Murray Blvd – Hwy 217	Beaverton
Walker Rd	173 rd Ave – 158 th Ave	Beaverton
Adair St / Baseline St	10 th Ave – 20 th Ave	Cornelius
Highway 47	Porter Road – B St	Forest Grove
Pacific Ave / 19 th Ave	Cedar St – Maple St	Forest Grove
10 th Ave	Main St – Shute Park	Hillsboro
Baseline St / Oak St	Dennis Ave – 10 th Ave	Hillsboro
Cornell Rd	Brookwood Pkwy – 229 th Ave	Hillsboro (Orenco)
Cornell Rd	Cornelius Pass Rd – 185 th Ave	Hillsboro (Tanasbourne)
Evergreen Pkwy	Cornelius Pass Rd – 185 th Ave	Hillsboro (Tanasbourne)
Hall Blvd	Pacific Hwy – Burnham St	Tigard
Pacific Hwy	65 th Ave – Fischer Rd	Tigard / King City
Upper Boones Ferry Rd	72 nd Ave – Tualatin-Sherwood Rd	Tigard / Durham / Tualatin

Other Crossing Needs

Other transportation facilities present barriers to crossing, including railroads and freeways.

- The **Portland & Western Railroad (PNWR)** that parallels TV Highway between Beaverton and Hillsboro is a barrier for people accessing #57 bus stops and shopping areas from the south. Demand paths worn into the ground indicate that many people trespass across the tracks rather than walk out of direction to the nearest legal crossing. Some have gone as far as building makeshift timber bridges across the drainage ditch next to the railroad. To explore official solutions, the county will need to engage PNWR. Precedent exists in downtown Lake Oswego, where a staggered pedestrian crossing of the same railroad provides access to Millennium Park and the Oswego Lake shore.
- **Sunset Highway (US 26)** is a major physical and psychological barrier that effectively defines the northern area of Washington County. Between Highway 217 and Brookwood Parkway, the average interchange spacing is about 1.4 miles, and few roads or trails cross in between those locations. Several planned corridors would provide additional crossings of Sunset:
 - Century Boulevard / 229th Avenue
 - 173rd Avenue / 174th Avenue / Bronson Creek Trail
 - 143rd Avenue / Meadow Drive / Westside Trail
 - North Johnson Creek Trail

- **Highway 217** imposes a north-south barrier between intensely developed areas on either side. One location of particular concern is Washington Square Regional Center, where the namesake mall and bus transit center sit opposite the WES Commuter Rail station and Nimbus Avenue employment corridor. The RTP proposes a pedestrian bridge here.

4.2.3 Connectivity

Pedestrian connectivity is the degree to which walkways intersect with other walkways, and can be measured by the density of intersections in a given area. Neighborhoods with a high density of intersections – such as those with a compact grid network – have higher connectivity than neighborhoods with fractal street networks, large blocks and cul-de-sacs. Along with more obvious factors like sidewalk presence and lighting, connectivity plays a major role in encouraging or discouraging walk trips. Development patterns where the only through routes are arterials or collectors tend to discourage pedestrian travel. Out-of-direction travel makes trips longer and the concentration of traffic onto a few streets can make them less pleasant for walking.

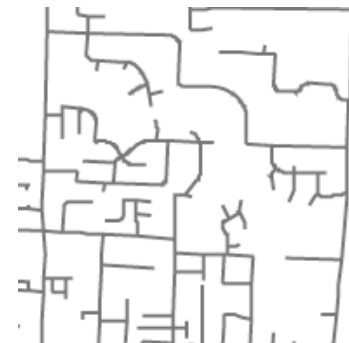
Washington County has a few small pockets of excellent connectivity, mostly limited to original town plat areas such as downtown Beaverton or new developments like Orenco Station. Much of the remainder of the county exhibits low connectivity, either due to mid-century development features like cul-de-sacs and loops, large block sizes, or natural or man-made barriers like creeks, hillsides, freeways and railroads. Examples of areas with low connectivity include Aloha-Reedville, Rock Creek, Cedar Mill (especially north of Cornell Road) and Tanasbourne Regional Center.



High connectivity: downtown Beaverton



Medium connectivity: Cedar Hills



Low connectivity: Aloha

Connectivity in the Code

Improvements that enhance connectivity may take the form of new street connections, multi-use trails, or **accessways** – off-street corridors built exclusively for walking or bicycling (and sometimes emergency vehicle access). In 1994, Washington County adopted connectivity standards requiring street block faces no longer than 600 feet and accessway spacing every 400 feet in new development in the urban unincorporated area.²¹ In 2000, Washington County amended the code to include “required” and “potential” future street and accessway connections in areas with five or more acres of developable land. Within these “connectivity lands,” shown on Figure 4-8, the maximum block length for new development is 530 feet and accessways must be provided every 330 feet.²² Accessways must be paved, ten feet wide, within a 15 to 20 foot-wide right-of-way, and include pedestrian-scale lighting at each entrance and landscaping throughout.²³

²¹ Washington County Community Development Code, Article IV, Section 408-5.1

²² Washington County Community Development Code, Article IV, Section 408-6.2

²³ Washington County Community Development Code, Article IV, Section 408-9

Connectivity in Washington County has also been improved by a code provision that prohibits cul-de-sacs, a hallmark of 20th century suburban development.²⁴

Connectivity Needs

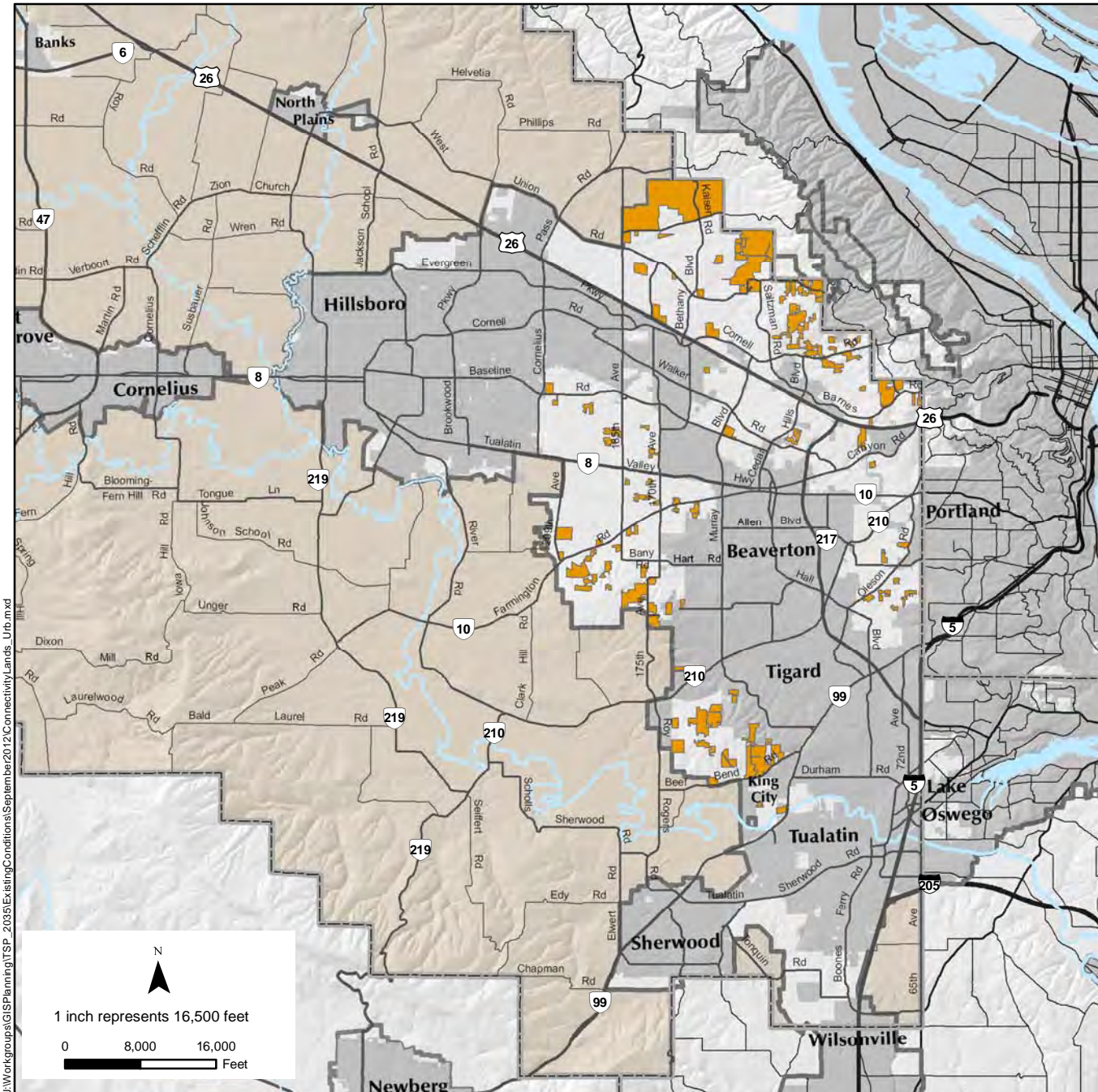
While the connectivity code is effective in creating new street connections and accessways in newly developing areas, this still leaves many established neighborhoods with poor connectivity. In these areas, opportunities may exist to retrofit accessways between streets. A 2012 mapping and inventory effort undertaken by LUT revealed numerous public easements and vacant rights-of-way in the urban unincorporated area. Designed properly, and with buy-in from surrounding property owners, new accessways could greatly improve connectivity and encourage more walking in many urban areas of the county. In some cases, additional features such as footbridges and stairways would be necessary to traverse natural barriers.

In unincorporated Washington County, Aloha-Reedville and Cedar Mill arguably have the highest connectivity improvement needs and the most opportunities (through public easements and rights-of-way) to provide them. Specific locations are not identified in this plan update, but any future prioritization exercise should consider connections to schools, transit stops, commercial areas and parks as having the most utility.

²⁴ Washington County Community Development Code, Article IV, Section 408-5.1

Connectivity Lands

- Local Street Connectivity Lands
- Rural Washington County



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Department of Land Use and Transportation
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Figure X

4.2.4 Lighting

Sufficient street lighting is key to walking safely in the urban area from dusk till dawn. This is especially true in the fall and winter, when much of the AM and PM peak traffic hours are dark. In addition to helping people see and be seen, street lighting also increases perceptions of personal safety. The presence or lack of street lighting has a major influence on people's route choice as well as their decision to walk at all.

Lighting in the Code

In urban unincorporated Washington County, all new local, neighborhood route, collector and arterial streets, as well as half street improvements thereof, must be fitted with street lighting consistent with county engineering standards.²⁵ Developers must arrange maintenance and electricity payments for street lights by annexing to the county's **Service District for Lighting (SDL)**.

Lighting Inventory

In 2012, there were 15,204 street lights in place on all roadways maintained by Washington County. Approximately six percent of those street lights are on arterials, collectors and neighborhood routes, with the remainder on local streets. Currently, there are several miles of streets within existing neighborhoods without illumination, particularly in areas built before the 1990s. Significant segments of the major roadway system also remain without lighting. Illumination tends to decrease with functional class. Arterials have the highest degree of roadway illumination due to improvements made during road expansion projects. Neighborhood routes have the lowest levels of illumination. In the rural area, street lighting is limited to villages and major intersections.

Lighting Funds

When street lights are installed in unincorporated Washington County, they are funded through either the SDL or the general Washington County Road Fund. New street lights may be installed on major roads when the road is reconstructed to ultimate standards, or when an adjacent property is developed and illumination is needed at the development's access to a major road or at another location. Along local streets, illumination is provided through the SDL at the request of developers or property owners. The current extent of the SDL is shown on Figure 4-9. In these areas, all costs associated with providing illumination along local streets are paid by property owners. These costs include the capital expense of the light itself, as well as the county's electric bill payments to PGE.



Lighting Needs

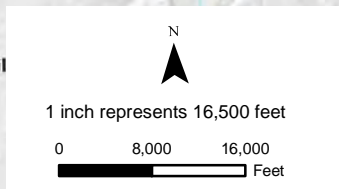
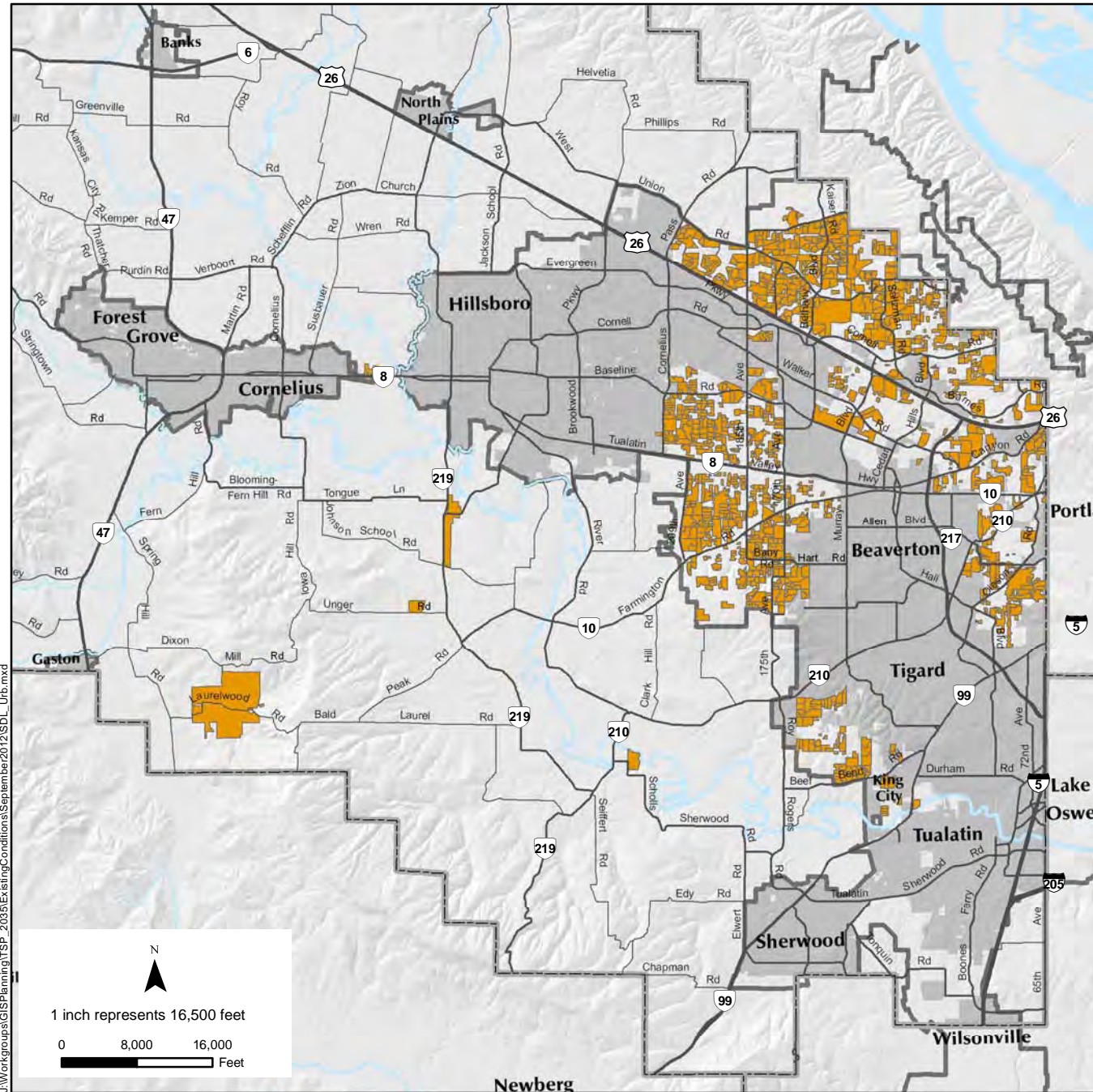
Insufficient street lighting has emerged as a top-level concern among community members in the Aloha-Reedville area. While much of that area is within the SDL, scattered road segments remain without street lighting. Elsewhere in the urban unincorporated area, significant portions of Cedar Mill, Raleigh Hills, Metzger, Cooper Mountain and Bull Mountain remain outside the SDL and without consistent street lighting, especially away from arterials and collectors. In the rural area, many intersections of minor rural roads lack street lighting. However, public comment revealed a desire to limit roadway lighting in the rural area to minimize light pollution and effects on crop growth.

²⁵ Washington County Code Article V, Section 501-8.2



Street Light District

-  Street Lighting District
-  Rural Washington County



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Department of Land Use and Transportation
Planning and Development Services

Figure X

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4.2.5 Trails

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

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



Banks-Vernonia Trail

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

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

Table 4-13 and accompanying Figure 4-10 account for major existing and proposed trails in Washington County. Regional trails are typically longer and help build out the regional trail and greenway vision. Community trails are shorter, often connecting neighborhoods or parks within a single jurisdiction. Many shorter, localized trails and accessways can be found throughout the county, but a complete inventory is not within the scope of this plan update.

Table 4-13: Existing and Planned Trails

Trail Name, Description and Status	Existing Mileage*	Planned Mileage*
REGIONAL TRAILS		
<p>Banks-Vernonia Trail. Stretching 21 miles through farms and forests between the namesake towns, this State Parks-operated rail-trail is a major regional recreation destination. 14 miles of the trail are within Washington County. The trail was recently improved within Stub Stewart State Park, including asphalt surfacing and the Tophill Trestle bypass. Washington County extended the southern end of the trail to Sellers Road and provided a trailhead. In the long term, the trail is envisioned to connect to Hillsboro by either continuing along the Portland & Western Railroad or using the proposed Council Creek Regional Trail.</p>	14 (WC) 21 (total)	9.5
<p>Beaverton Creek Trail. Originally envisioned as a conservation greenway, THPRD completed a 2007 feasibility study that proposes a 7-mile trail along Beaverton Creek from the Fanno Creek Greenway Trail at Denny Road and Highway 217, northwestward to Arleda Park at SW 194th Place and Willow Creek Drive. A more recent iteration of the trail combines it with the adjacent Fanno Creek Greenway Trail in a multi-jurisdictional trail completion initiative called the Crescent Connection.</p>	2.1	5.3
<p>Burlington Northern Rail Trail. This rail corridor between North Plains and US 30 is occasionally discussed as a potential rail-trail. However, trail development is unlikely in the near term as freight trains still actively use this line.</p>	0	6.0
<p>Cooper Mountain Trail. This trail would provide an east-west connection from the Westside Trail to Cooper Mountain Nature Park, then northwestward to the South Hillsboro area.</p>	0	4.1
<p>Council Creek Regional Trail. A master planning process begun in 2012 will study potential trail alignments in a 15-mile corridor connecting Hillsboro, Cornelius, Forest Grove and Banks. The trail would provide a key active transportation link between the four cities and effectively extend the Banks-Vernonia Trail to the urban area. One potential route follows the namesake creek along the north edges of Cornelius and Forest Grove, then turns northward along the Highway 47 corridor.</p>	0	15
<p>Fanno Creek Greenway Trail. One of the first paved multi-use trails in Washington County, the Fanno Creek Greenway forms a major spine of active transportation connecting Tigard, Beaverton and Portland. Several sections remain to be done, including a short segment in downtown Tigard and a longer extension from Bonita Road southward to the Ki-a-Kuts Bike-Ped Bridge over the Tualatin River. These missing sections are part of the Crescent Connection initiative that bundles the Fanno Creek Greenway and Beaverton Creek trails.</p>	8.2	2.6
<p>Hagg Lake Greenway. A greenway and potential trail is envisioned between Henry Hagg Lake and the Tualatin River, following the Scoggins Creek Valley and adjacent railroad corridor.</p>	0	4.4
<p>Ice Age Tonquin Trail. A three-pronged network of trails will eventually connect Tualatin, Sherwood and Wilsonville. One section has been completed within Metro’s Graham Oaks Nature Park in Clackamas County. The northern prong of the trail would connect with the Westside Trail at a proposed ped/bike bridge over the Tualatin River near King City. The western prong would pass through the City of Sherwood as the Cedar Creek Trail.</p>	0	18.1 (total)
<p>Oregon Electric Trail. An abandoned railroad extends from the Cornelius Pass / Sunset Highway interchange northward to Helvetia. A finished section extends eastward from the railroad, connecting to the Rock Creek Trail. Both segments provide a trail connection to Liberty High School.</p>	1.0	2.8
<p>Path to the Pacific. Also called the Turf-to-Surf Trail, Portland-to-Coast Trail, and (in one segment) the TV Highway Trail, this ambitious concept aims to connect the Portland region with the Oregon Coast through a series of off-road and on-road connections. Multiple route alternatives through Washington County have been studied. A northern route would use the aforementioned Burlington Northern Railroad and US 26 right-of-way. A southern route would follow TV Highway and the either the unfinished portion of the Banks-Vernonia Trail or the proposed Council Creek Trail. Both proposed routes converge in Manning, with hopes of using the Port of Tillamook Railroad (which was irreparably damaged in a 2007 winter storm) to reach the coast near Manzanita.</p>	0	40+

Trail Name, Description and Status	Existing Mileage*	Planned Mileage*
Pearl-Keeler Power Line Trail. This trail, shown in Hillsboro’s 2009 Parks and Trails Master Plan as the BN Powerline Trail, would diverge southward from the Rock Creek Trail at Orchard Park, following BPA’s Pearl-Keeler transmission line through the Reedville area. Portions of the trail exist within Paula Jean and Trachsel Meadows parks, but are deficient by modern regional trail standards. Recent planning for South Hillsboro continues the trail corridor south of TV Highway along the BPA line to Rosedale Road and potentially beyond.	0.5	3.9
River-to-River Trail. This proposed route, mostly within Clackamas County, would connect Tualatin with Lake Oswego using the Portland & Western Railroad corridor.	0	1.1 (WC) 5.6 (total)
Rock Creek Trail. This trail uses a combination of stream valleys and power line corridors to travel southwestward from Bethany to Hillsboro. With some minor exceptions, the trail is complete north of Wilkins Street. Major gaps exist southward to TV Highway.	4.6	4.2
Sunset Highway Trail. A utilitarian bike-ped trail parallels Sunset Highway from Highway 217 eastward and uphill to the Oregon Zoo. From the zoo, numerous low-traffic streets and trails provide ped/bike connections to downtown Portland.	2.2	0
Tualatin River Greenway Trail. This riverside trail would extend from the Tualatin River National Wildlife Refuge eastward through downtown Tualatin, underneath Interstate 5 and into Clackamas County, where it would enter the Stafford urban reserve.	0	12.7
Washington Square Loop Trail. A proposed loop trail would encircle Washington Square Regional Center and connect to the Fanno Creek Greenway Trail at two points.	0	3.8
Westside Trail. Generally following a north-south power line corridor for over 20 miles across Washington and Multnomah counties, the Westside Trail will eventually connect the Tualatin River near King City with the Willamette River in far northwest Portland. Many portions are complete between Barrows Road in Tigard and TV Highway in Beaverton. Major challenges in the remaining sections include steep topography on Bull Mountain, and costly crossings of Sunset Highway and the Tualatin River.	5.5	15.9
Yamhelas Westsider Trail. The Yamhelas Westside Trail Coalition is working to acquire a 17-mile abandoned Union Pacific railroad connecting McMinnville and Carlton in Yamhill County with Gaston in Washington County. The abandoned segment stops just east of Hagg Lake.	0	1.8 (WC) 17 (total)
COMMUNITY TRAILS		
Ascension Trail. Proposed in the Tigard Greenways Master Plan, this trail would ascend the north side of Bull Mountain in a forested canyon between two residential streets.	0	0.6
Bannister Creek Trail. This trail, proposed in the THPRD Trails Master Plan, is a northeastward extension of the Bronson Creek Trail near NW Laidlaw and Saltzman roads.	0	0.6
Bethany Terrace Trail. This partially-completed trail extends eastward from the intersection of the Westside and Rock Creek trails in Bethany.	0.3	0.5
Bronson Creek Trail. This proposed trail would follow Bronson Creek through several greenway parks from Bethany to Tanasbourne.	0.2	2.7
Cedar Creek Trail. This City of Sherwood project would form a part of the Ice Age Tonquin Regional Trail, while also serving the immediate community. It would link Old Town Sherwood to northern neighborhoods of Sherwood, passing underneath Highway 99W.	0	1.5
Cedar Mill Trails. Numerous trails course through the Cedar Mill area, including the Cedar Mill Creek and North Johnson Creek trails. Several of the trails include grade-separated timber bridges over roadways. The North Johnson Creek Trail is proposed to continue south underneath Sunset Highway and connect to Commonwealth Lake.	2.3	2.6
Dawson Creek Trails. A series of existing paved trails connect light industrial and office businesses with the Hillsboro Library and Brookwood Parkway, all surrounding a natural area of ponds and wetlands. The Hillsboro Parks and Trails Master Plan envisions a trail continuing southward along Dawson Creek to the unfinished portion of the Rock Creek Trail.	Unavailable	0
Forest Grove Emerald Necklace. The 2007 Forest Grove Trails Plan envisions a trail encircling Forest Grove. Southern and eastern portions of the route are complete, consisting of the B Street Trail and Highway 47 Trail.	4.5	5.8

Trail Name, Description and Status	Existing Mileage*	Planned Mileage*
Glencoe Swale Trail. The City of Hillsboro envisions formalizing and extending an existing demand path in the stream corridor behind Glencoe High School. At its longest, it would extend 1.7 miles from Glencoe Road to NE 15 th Avenue.	0	1.7
Hiteon-Conestoga Trail. This trail connects Hiteon Park with Conestoga Middle School in the Progress Ridge area of south Beaverton.	1.1	0.5
North Bethany Trails. As part of the concept plan for North Bethany, Washington County has planned an interconnected network of trails and greenways. The network is based on an earlier vision from the THPRD Trails Master Plan.	0	5.9
Oak Hills Trails. The mid-century Oak Hills subdivision was one of the first in Washington County to provide a community trail network. In addition to serving the immediate community, the Oak Hills Trails include a section of the Waterhouse Trail, which will eventually connect North Bethany and Beaverton. With the exception of the Waterhouse corridor owned by BPA, the Oak Hills Trails are located on private homeowners' association property.	Unavailable	0
Pathfinder Genesis Trail. Named for two nearby residential streets, the Pathfinder Genesis Trail follows a wooded stream corridor in the heart of Tigard. A short connection is needed to link the trail with the Fanno Creek Greenway.	1.0	0.2
Reedville Creek Greenway. Hillsboro envisions long-term development of a greenway trail along this east-west creek between the BN Powerline Trail and Brookwood Avenue. The corridor passes along the north edge of Century High School.	0	1.9
Summercreek Trail. Using a vacated alignment of Scholls Ferry Road, this short, ADA-accessible trail is a highlight of Barrows Park in the Progress Ridge area of far southwestern Beaverton.	0.5	0
Tigard Street Trail. Tucked between Tigard Street and the adjacent WES commuter rail is a gravel access driveway that, if improved into a trail, would provide a direct connection with few interruptions between downtown Tigard and the Fanno Creek Greenway further north.	0	0.8
Turner Creek Trail. Turner Creek separates downtown Hillsboro from neighborhoods to the east. The city envisions a greenway trail along this corridor from the MAX line to Valley Memorial Park Cemetery on TV Highway.	0	1.6
TV Highway Trail. A proposed trail parallel to TV Highway between Hillsboro and Beaverton would provide local utility for the Aloha-Reedville and South Hillsboro areas. Right-of-way associated with the Old Hillsboro Highway may be available in various segments along the south side of the Portland & Western Railroad. The TV Highway Trail is one potential route for the larger Path to the Pacific concept.	0	9.0
Waible Creek Greenbelt. Located in the urban reserve north of Hillsboro, the east-west Waible Creek is a likely location for a greenway trail upon future development. The corridor is shown in the Hillsboro Parks and Trails Master Plan.	0	Unavailable
Waterhouse Trail. This trail, about 50% complete, follows a north-south power line corridor parallel to and west of the one used by the Westside Trail. Once complete, it will provide a mostly car-free connection from North Bethany to the Nike campus area.	2.8	2.8
Willow Creek Trail. Trending northeast to southwest like several other streams in the area, Willow Creek flows from Oak Hills to 185 th and Baseline before joining Beaverton Creek. THPRD envisions expanding the existing trail in Willow Creek Nature Park in both directions.	0.6	2.8

*Mileage estimates are approximate.

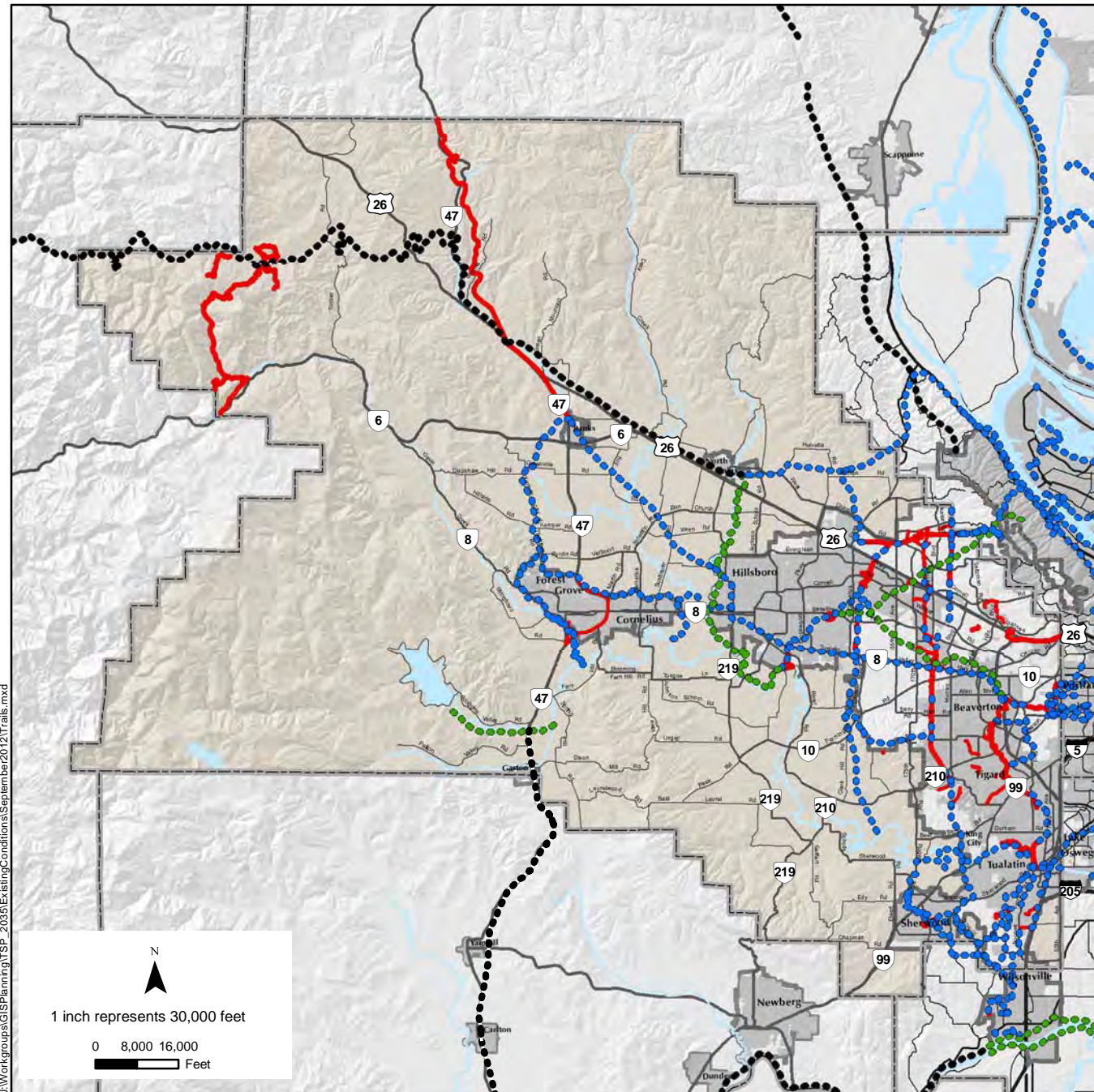
Regional Trail Network

- Existing Regional Trails
- Existing Community Trails
- Proposed Regional
- Proposed Inter-Regional Trail
- Proposed Greenway Corridor
- Rural Washington County

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Figure 4-10



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Nodal Trail Destinations

In addition to an interconnected network of linear trails, Washington County also includes a number of nodal recreation destinations such as nature parks. These sites have interior trail networks that may or may not connect with exterior destinations, but are nonetheless popular for walking, hiking, running or nature viewing. Nodal trail destinations include:

- Chehalem Ridge Natural Area
- Cooper Mountain Nature Park
- Fernhill Wetlands
- Hagg Lake Park
- Jackson Bottom Wetlands
- Jenkins Estate
- L.L. Stub Stewart State Park
- Nike World Headquarters
- Tillamook State Forest – Gales Creek area and University Falls area
- Tualatin Hills Nature Park
- Tualatin River National Wildlife Refuge

Future Needs

Trails or portions of trails with “planned” mileage in Table 4-10 provide a record of trail needs throughout Washington County. In terms of prioritization, the county will largely defer to the jurisdictions that would build and maintain these trails – THPRD and the cities. THPRD, Beaverton, Tigard, Hillsboro and Forest Grove have each completed trail master plans in the past five years that prioritize projects and provide implementation direction.

The county supports **filling gaps in existing regional trails**, since these projects would have a greater potential to improve countywide trail connectivity. The Crescent Connection (Beaverton Creek and Fanno Creek Greenway trails) and Westside Trail are probably the best examples of this. However, the county also supports **new trail efforts in areas that lack them**, including the Ice Age Tonquin Trail, Council Creek Trail and Yamhelas Westsider Trail. As an entity focused more on transportation and less on recreation, the county would tend to support trail projects that provide **active transportation access to major employment hubs, transit stops and mixed-use centers**.

In fact, county residents involved in the TSP 2035 process have voiced a strong interest in building **trails for transportation, not just recreation**. This means facilitating efficient and safe movement of people 24 hours a day, all year long, on appropriate urban trails. Design and management solutions to achieve this goal include:

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

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

4.2.6 Pedestrian Safety

In 2008 through 2010, Washington County experienced 225 pedestrian/automobile collisions (Table 4-14). Of these, 14 were fatal. By comparison, 190 pedestrian crashes with 14 fatalities occurred in 1997 through 1999, the three-year period studied for the previous TSP update. Normalized by population, the pedestrian crash rate has decreased very slightly.

Table 4-14: Pedestrian Crashes, 2008-2010

	2008-2010	1997-1999
Non-fatal injury	211	176
Fatal	14	14
Total	225	190
County population	529,710 (2010)	445,342 (2000)
Pedestrian crash rate	0.0425%	0.0427%

Pedestrian Crash Locations

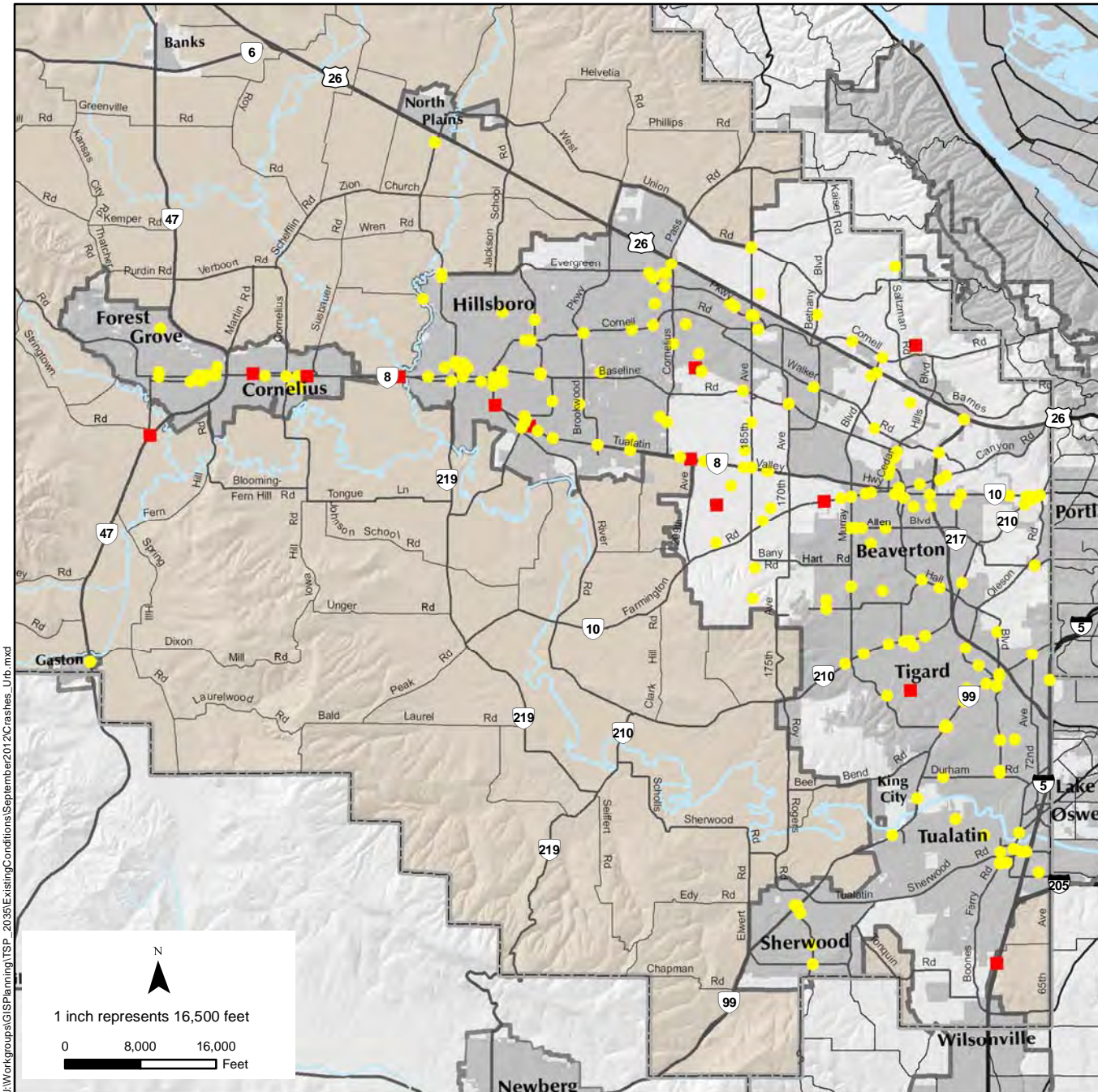
Pedestrian crash locations are shown on Figure 4-11. A majority of crashes occur along arterial roadways. Countywide, the road with the most pedestrian crashes – and the most fatalities – is TV Highway. In the unincorporated area, the most significant cluster of pedestrian crashes is at the five-leg Beaverton-Hillsdale/Scholls Ferry/Oleson intersection in Raleigh Hills. On roadways owned and maintained by the county, notable concentrations of pedestrian crashes took place in the Evergreen/Imbrie/Cornelius Pass triangle in north Hillsboro, along Scholls Ferry Road west of Highway 217, and in the Tualatin town center where Tualatin-Sherwood and Boones Ferry roads meet. Two pedestrian crashes took place in the rural area, including one fatal.

Pedestrian Crash Circumstances and Age

Looking at pedestrian crash circumstances for the year 2010, an overwhelming majority occurred as people were crossing streets at intersections or crosswalks. In terms of the age, adults age 25-44 comprise the largest group of pedestrian crash victims. Table 4-15 cross-tabulates pedestrian crash circumstances with age.

Pedestrian Crashes 2008 - 2010

- Fatal
- Non-fatal Injury
- Rural Washington County



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Figure 4-11

Table 4-15: Pedestrian Crash Circumstances and Age, 2010

Circumstance	Peds killed	Age of pedestrians killed and injured									
		Total	0-4	5-9	10-14	15-19	20-24	25-44	45-64	65 +	Not stated
Crossing at intersection or crosswalk	2	55	1		1	6	5	18	14	5	5
Crossing not at intersection	1	16	1	1	1	2	3	2	1	5	
Walking in road with traffic		1								1	
Walking in road against traffic		1								1	
Standing in roadway	2	5			1	1		3			
Attending to vehicle in roadway											
Other working in roadway											
Playing in roadway											
Other in roadway		1							1		
Not in roadway	1	16			2	2		6	4	2	
Not stated		1						1			
Totals	6	96	2	1	5	11	8		20	14	5

Source: Oregon Department of Transportation 2010 Crash Summary Book

Additional safety data and considerations are covered in Chapter 2 of this report.

4.2.7 Education & Encouragement

Providing safe, convenient facilities for walking is a logical first step. Encouraging people to use them and to do so safely is the next critical step. Washington County collaborates with a variety of public and private providers of walking education and encouragement. Major initiatives include the following:

- Safe Routes to School.** In 2001, the State Legislature passed enabling legislation for Safe Routes to School, hoping to help reverse the national decline of walking and biking to school. Bill 3712 requires counties and cities to work with schools districts to identify barriers and hazards to students walking or bicycling to and from school. Together, these partners develop Safe Routes to School programs focused on the “4 Es”: education, encouragement, enforcement and engineering. The county and cities may be involved in all four activities, but particularly in implementing engineering solutions on roadways. Safe Routes to School programs are active in most of the public school districts in Washington County. The county has partnered with Beaverton School District on several sidewalk projects near elementary schools.
- Walk There.** Metro’s *Walk There* guidebook describes and maps 50 walking routes throughout the Portland region, including nine in Washington County. The book is intended to encourage walking for exercise, and to showcase the region’s neighborhoods, historic sites, natural areas and parks.
- Oregon Walks.** Previously called the Willamette Pedestrian Coalition, Oregon Walks is the Portland region’s primary advocacy organization focused on walking. A non-profit organization formed in 1991, Oregon Walks is dedicated to promoting walking and making conditions for walking safe, convenient and

attractive throughout the Portland region. In 2011, Oregon Walks jointly hosted a public forum on active transportation in Washington County along with the Bicycle Transportation Alliance. Oregon Walks is becoming increasingly involved with transportation planning. Two members of Oregon Walks served on the TSP 2035 CAC.

- **Sunday Trailways.** Inspired by Portland's very successful Sunday Parkways events (in which a network of streets and trails are closed to automobile traffic for a celebration of walking, biking, food, music and community), THPRD held an inaugural Sunday Trailways event in 2012 along the Fanno Creek Greenway Trail. By merging active transportation encouragement with a fun community event, Sunday Trailways increases exposure to the county's walking and biking infrastructure.

Education and Encouragement Needs

Washington County may consider building upon the efforts described above to further encourage walking as a means of transportation and recreation. Potential future efforts may include:

- Increasing the quantity and scope of **Safe Routes to School** programs throughout the county, especially at schools in the urban unincorporated area. In addition to seeking funds for engineering solutions, the county may be able to help with walking route recommendations, safety events, and, through the Sheriff's department, stepped up traffic enforcement in school zones. Many jurisdictions throughout the US have a dedicated Safe Routes to School staff person to coordinate these efforts.
- Building on Metro's *Walk There* **guidebook** by establishing more walking tour routes throughout the county and publishing them online and in print. The Washington County Visitors Association, Westside Transportation Alliance, THPRD and cities could be partners in this effort.
- Further engaging **Oregon Walks** to advocate and consult on transportation projects, plans and programs.
- Working with THPRD to continue and expand the **Sunday Trailways** event, including routes with on-street segments that would be temporarily closed to automobile traffic.
- Installing **wayfinding signage** that identifies suitable walking routes between major destinations such as schools and shopping areas. Wayfinding signage may be especially helpful in neighborhoods with accessways and trails that may be unfamiliar to visitors. Wayfinding signage typically points the way to specific destinations and reports distances or estimated walking times. Some communities, like Southwest Portland, have established named or numbered walking routes and a guide map.

4.2.8 Rural Pedestrian Considerations

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

Rural Walking Facilities

Designated facilities for walking in the rural area are few. Sidewalks are not required along rural roads in Washington County, and the intensity of land development that would trigger a need for sidewalks is limited by land use policies. Many rural roads in Washington County are narrow, forcing pedestrians to share the roadway with fast-moving automobile traffic.

A limited number of rural roads, including Roy Rogers and Cornelius-Schefflin, have been intentionally improved with **wide shoulders** to accommodate farm equipment and bicyclists. These roads can also safely accommodate pedestrians. Additionally, portions of some rural arterials have reasonably sized shoulders (four feet or more) that can facilitate walking or running, such as Highway 47 between Forest Grove and Gaston, and Scholls Ferry Road west of Roy Rogers Road. The Oregon Bicycle and Pedestrian Plan recommends that shoulders to accommodate pedestrian and bicycle travel on state roads be a minimum of six feet wide.

Perhaps the most significant and well-developed pedestrian facility in rural Washington County is the **Banks-Vernonia Trail**, which extends 21 miles between the namesake towns, and connects to one of Oregon’s newest state parks, Stub Stewart. More rugged trails can be found at Henry Hagg Lake and in the Tillamook State Forest.

Rural Pedestrian Activity Areas

Several locations in rural Washington County attract or generate a small number of localized walking trips. These “rural pedestrian activity areas” include small villages with clusters of houses, businesses or public uses like schools, churches and social halls. Also included are road segments that connect nearby urban areas, and major recreational destinations such as regional parks and trails. Rural pedestrian activity areas, shown on Figure 4-12, include:

- the villages of Blooming, Buxton, Cherry Grove, Dilley, Farmington, Gales Creek, Glenwood, Greenville, Groner, Helvetia, Kinton, Laurel, Laurelwood, Manning, Midway, Roy, Scholls, Verboort and West Union;
- the half-mile rural section of Highway 8 between Hillsboro and Cornelius;
- the intersection of B Street, Highway 47 and adjacent multi-use trails south of Forest Grove;
- the area surrounding Farmington View School along Highway 219 south of Hillsboro;
- Henry Hagg Lake County Park;
- L.L. Stub Stewart State Park, which includes multiple trail crossings of Highway 47;
- Tualatin River National Wildlife Refuge, which straddles Highway 99W; and

- a 2½ mile stretch of Highway 6 in the Tillamook State Forest between Gales Creek Campground and the Coast Range Summit, featuring a parallel hiking trail, a scenic viewpoint, and several parking areas for other trails.

Figure 4-12 also illustrates linear pedestrian facilities in the rural area, including the Banks-Vernonia Trail and rural roadways with reasonably wide shoulders for walking (about 4 feet or wider).

Rural Pedestrian Crashes

From 2008 through 2010, there were two pedestrian crashes involving injuries outside of urban growth boundaries in Washington County. One was fatal, at the intersection of Highway 47 and B Street just south of Forest Grove. The other crash was non-fatal, and occurred on Glencoe Road just south of the Sunset Highway interchange near a gas station and convenience store.

Rural Pedestrian Needs

Existing and future needs for walking in the rural area vary, and are largely dependent on context.

- Installing **walkway facilities in rural villages** should be approached on a case-by-case basis. Village areas are not likely to see major growth due to land use regulations, but traffic passing through them may increase as housing and employment grows in nearby urban areas. Some villages may exhibit enough pedestrian demand and automobile traffic conflict to warrant building walkway facilities. Villages with schools, such as Groner, provide additional rationale for walkways. However, construction of sidewalks or walkways could have unwanted impacts on the aesthetics of a village. Enhanced crosswalks, which have fewer property impacts, may be more appropriate in some locations. Coordination with village residents, business owners and school officials is the best way to determine these needs.
- Use of major recreation facilities such as Stub Stewart State Park and the Banks-Vernonia Trail are likely to increase as population grows in the Portland region. Supportive pedestrian facilities on county roads may be needed, such as **enhanced crosswalks where trails cross roads**.
- **Rural areas that are close to urban areas** may have urban levels of pedestrian demand. The most significant example is the half-mile stretch of Highway 8 between Hillsboro and Cornelius, which includes bus service. Public comment revealed a need for better walking facilities along this stretch, especially at the bridge over Dairy Creek.

Rural Pedestrian Considerations

Pedestrian Crashes ('08-'10)

- Fatal
- Non-fatal Injury

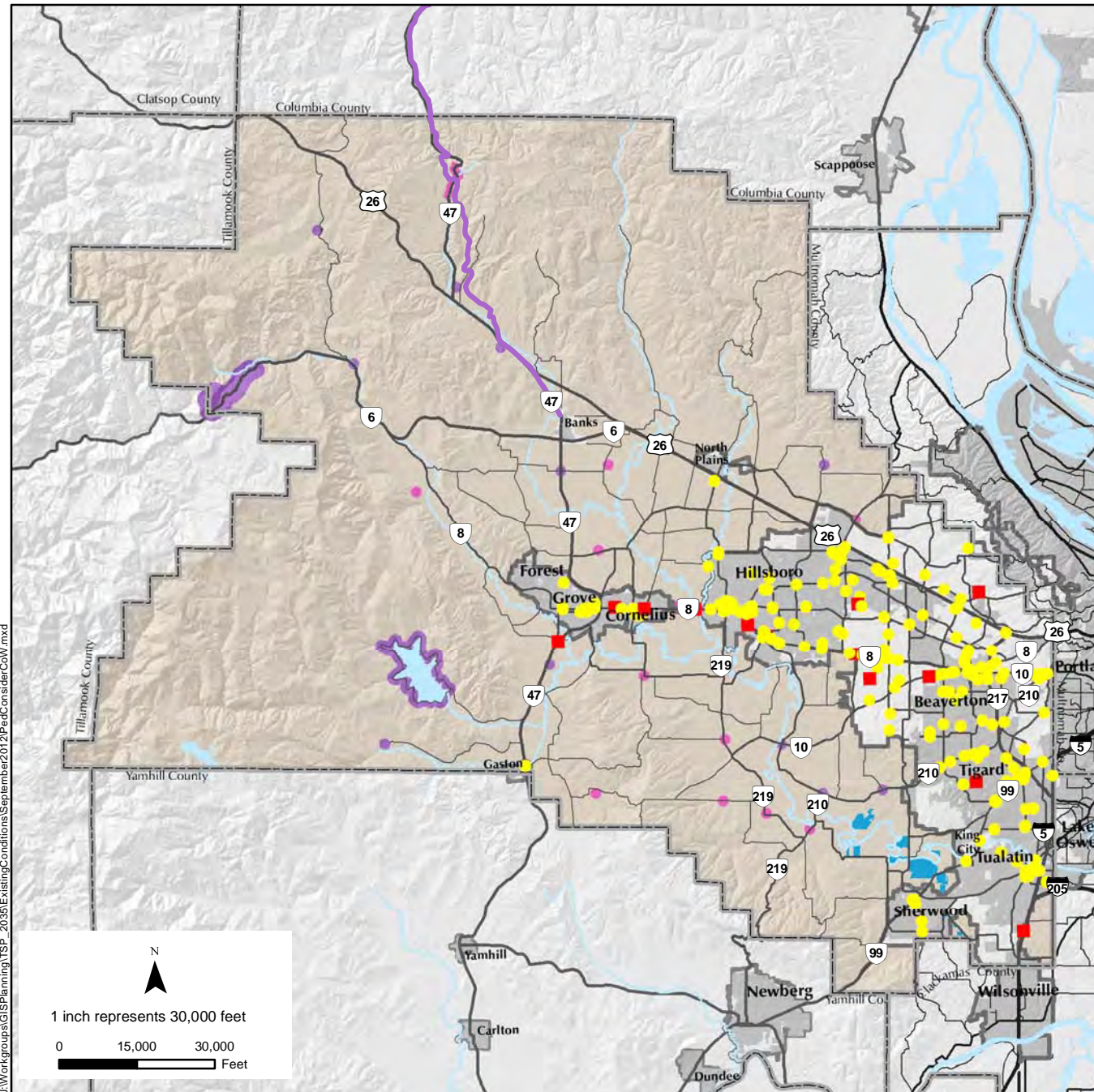
Rural Pedestrian Activity Areas

- Existing
- Other
- Banks to Vernonia Trail
- Tualatin River Nat'l Wildlife Refuge
- Rural Washington County

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Planning and Development Services

Figure 4-12



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4.3 BICYCLING

4.3.1 Overview

Bicycle planning in Washington County began in earnest following the passage of the Oregon Bicycle Law in 1971. The Washington County Bicycle Pedestrian Pathway Master Plan soon followed, adopted in 1974. The master plan proposed an extensive network of on-street and off-street bicycle routes and a point system to prioritize routes for construction. By 1983 approximately 7 miles of pathways had been completed. In 1986, the County adopted bikeway standards as part of the Uniform Road Improvement Design Standards calling for “a six-foot wide bicycle lane constructed adjacent to the curb within the pavement area.” The 1988 Transportation Plan notes 15 miles of bike lanes built to design standard and 14 miles of sub-standard bicycle paths existed on or adjacent to county roads. By 2002 that number had grown to over 64 miles of existing on-street bikeway facilities, the result of over 2.5 miles of additional bikeways added to the system annually between 1988 and 2002 in conjunction with the Major Streets Transportation Improvement Program. Today, the County’s major street network (arterials and collectors) has over 91 miles of on-street urban bikeway (6’ bicycle lanes and minimum 4’ width paved shoulders) and 36 miles of rural on-street bikeways (minimum 4’ width paved shoulders).



Buffered bike lane on NW 185th Avenue.

By 2002 that number had grown to over 64 miles of existing on-street bikeway facilities, the result of over 2.5 miles of additional bikeways added to the system annually between 1988 and 2002 in conjunction with the Major Streets Transportation Improvement Program. Today, the County’s major street network (arterials and collectors) has over 91 miles of on-street urban bikeway (6’ bicycle lanes and minimum 4’ width paved shoulders) and 36 miles of rural on-street bikeways (minimum 4’ width paved shoulders).

Bicycle Trip Characteristics

Bicycling is an important mode of transportation, whether used separately or with other modes. Bicycling is the most efficient form of transportation and is considered particularly well suited for shorter trips, typically less than three miles. A recent study that track cyclists’ activity in the Portland Metropolitan Region, including Washington County, found the median bicycle trip of study participants was 2.8 miles. However, it was found that participants were willing to travel further from home to work; the median single trip distance was 3.8 miles with an average trip length of 5.2 miles.²⁶ However, acceptable trip length can vary greatly depending on the skill and fitness level of the cyclist.

The bicycle can be used for a variety of uses and trip purposes. Bicycle trips in Washington County include trips to work, school, shopping and for recreational purposes. The same study noted above found that other than riding to home, riding to work was the most frequent trip purpose (25%), with approximately 18% for shopping/dining out/or other personal business, and 12% for social/recreation purposes (such as going to the movies, the gym, or visiting friends).²⁷

Nationally approximately 39 percent of all trips are less than two miles.²⁸ This suggests that with improved access to safe and comfortable bikeways, bicycling can be a feasible option for many people.

²⁶ Understanding and Measuring Bicycling Behavior: a Focus on Travel Time and Route Choice. OTREC-RR-08-03, December 2008., p. 35

²⁷ Understanding and Measuring Bicycling Behavior: a Focus on Travel Time and Route Choice. OTREC-RR-08-03, December 2008. p. 34

²⁸ Regional Transportation Plan Active Transportation Fact Sheet. Metro, Fall 2009.

Types of System Users

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

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

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

4.3.2 Bikeway Facilities

The following describes the spectrum of existing and potential separated on-street bikeways:

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

of bicycle users than a conventional bike lane. Cycle tracks are not currently addressed in the Washington County Road Design Standards. Table 4-16 shows the types of enhanced facilities that have been constructed in Washington County.

According to Washington County’s Bicycle Facility Design Toolkit there are three types of cycle tracks:

- **Protected cycle tracks** are on-street bikeway facilities that provide the safety and comfort of multi-use paths within the road right-of-way. This is accomplished by combining a painted buffer with a physical barrier such as flexible bollards, a landscaped buffer, or a parking lane.
- **Raised cycle tracks** are grade separated. Commonly located above the adjacent travel lane and below the sidewalk, they can also be found at sidewalk grade.
- **Two-way cycle tracks** allow for bicycle travel in two directions on the same side of the road.



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

Table 4-16: Enhanced Bikeways in Urban Washington County

Road	Jurisdiction	From	To	Type of Facility	Approximate Extent (lane miles)
Brookwood Parkway	Washington County	Cornell Rd	Evergreen	Multi-use path	3.8
Evergreen Parkway	Washington County	225 th Ave	Brookwood Parkway	Buffered bike lane	3.8
Tualatin-Sherwood	Washington County	Teton Ave	Gerda Ln	Buffered bike lane	4.4
Veterans Dr.	Hillsboro	29 th Ave	Fairground Roundabout	Cycle track	0.7
185th Ave	Washington County	Westview High	West Union	Buffered bike lane	1.0
				Total	13.7

Existing Urban Bicycle Facility Network

Today the major bikeway system is comprised of a variety of facilities and treatments on collector and arterial roadways. As in many growing areas, bicycle facilities in Washington County are still developing. In some cases there are complete, continuous bike lanes, while in others, significant gaps in connections between facilities exist. The Regional Transportation Functional Plan (RTFP) requires an inventory of existing facilities that identifies gaps and deficiencies in the bicycle system. Washington County performed a complete inventory of the County’s existing on-street bicycle facilities between 2011-2012 for the **Bicycle and Pedestrian Improvement Prioritization Project**. The study examined all urban arterial and collector streets using the latest aerial imagery to identify the presence or absence of on-street bicycle lanes five to six feet wide and paved shoulders at least four feet wide. The inventory was publicly vetted using an online interactive map that allowed visitors to the project’s website to

review the mapped inventory and comment on its accuracy as well as provide other information like system needs and route preferences. The following provides descriptive analysis of the existing bicycle network:

Arterials and Collectors

There are a total of 838.7 lane miles of urban collector and arterial roadways (includes incorporated cities, county and state facilities) throughout Washington County.

Table 4-17: Arterial/Collector Bikeway Coverage, Urban Washington County

	Lane miles: Urban area	% of urban area total	Washington County Maintained
Enhanced bike lanes*	13.7	2%	13
Bike lanes on both sides of road	324	39%	150
Bike lane on one side of road	24	3%	7
Shoulder suitable for bikes (both sides)	16	2%	10
Shoulder suitable for bikes (one side)	9	1%	4
No separated bikeway facilities	452	53%	198
Total mileage of arterials/collectors	838.7	100%	382

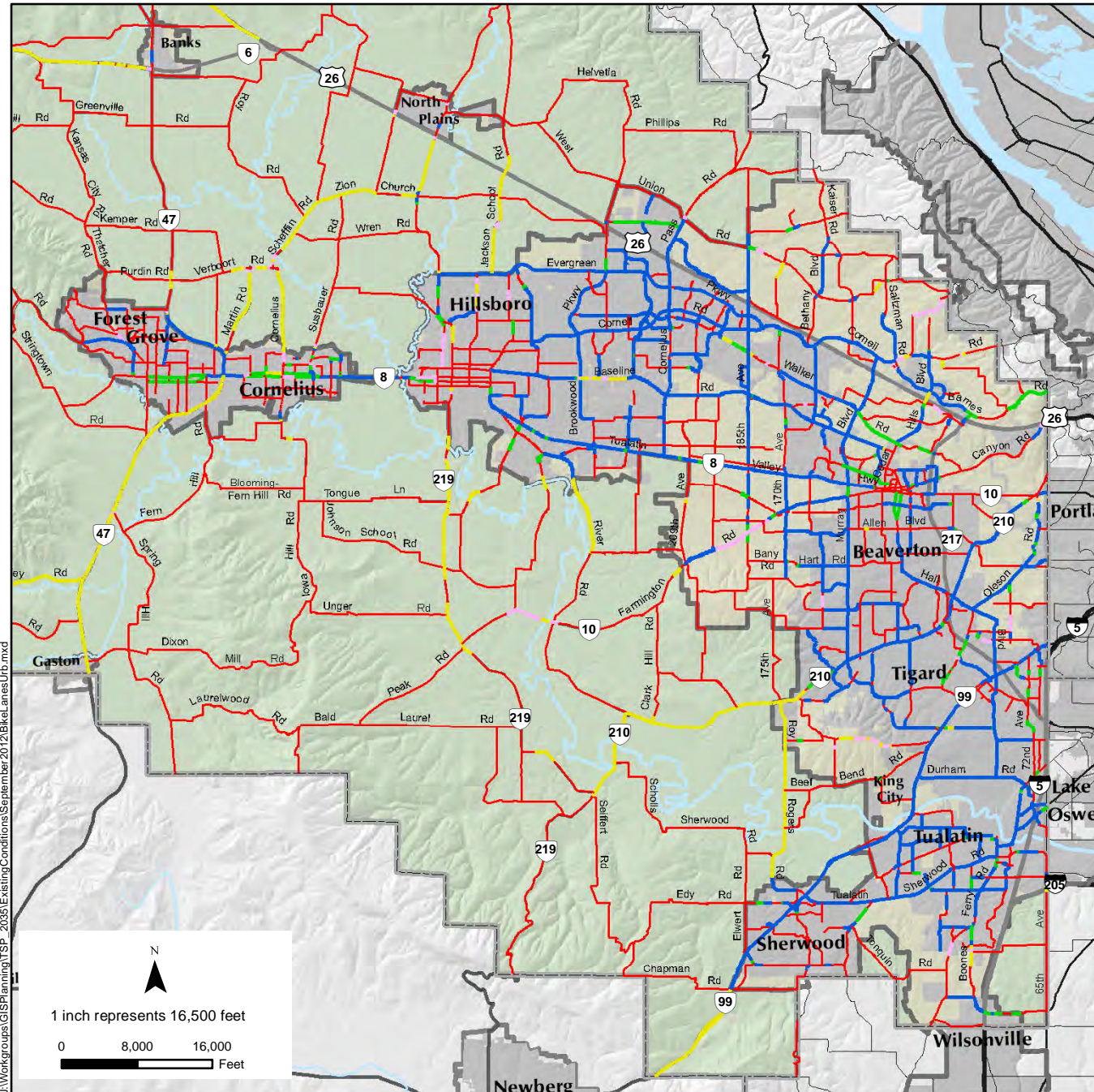
*Includes buffered bike lanes, cycle tracks and parallel multi-use trails.

As illustrated in Table 4-17 Washington County has jurisdiction of 382 lane miles of urban arterial and collector streets. Bicycle lanes exist on a number of major routes including Highway 99W, Scholls Ferry Road, Tualatin Valley Highway, Evergreen Road, 185th Avenue, Walker Road, Cornell Road, Murray Boulevard and other major streets; however, not all of these roads have continuous bike lanes. There are approximately 184 lane miles of existing bikeways (minimum 4' width paved shoulders or 6' bicycle lanes). Therefore, **the on-street bicycle system is approximately 47% complete** on the major urban street network. Figure 4-13 shows the County's existing bicycle system, which is a combination of on-street and off-street facilities.



Bike Lane Inventory

- Existing Both Sides
- Existing One Side
- Shoulder Suitable Both Sides
- Shoulder Suitable One Side
- No Bike Lane



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Care was taken in the mapping but there are no warranties for this product. However, notification of any errors will be appreciated.

Department of Land Use and Transportation
Planning and Development Services

Figure 4-13

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Committed Bikeway Improvements

Some of the gaps in the system will be alleviated as part of committed road improvement projects. Lack of appropriate facilities and local street connectivity as well as missing key sections on some major roads such as Canyon Road and Beaverton-Hillsdale Highway make safe and convenient bicycle travel difficult in some parts of the county. However, new bicycle facilities are systematically constructed on the County's urban arterial and collector street network in conjunction with roadway improvement projects. Table 4-18 shows committed bikeway improvements scheduled to be completed by 2018 through the Major Streets Transportation Improvement Program.

Table 4-18: Committed Bikeway Improvements

County Roads	From	To	Facility	Approximate Extent (lane miles)
Cornelius Pass Rd	Cherry	past Wilkins	bike lanes both sides	0.6
Bethany Blvd	Cornell	West Union	bike lanes both sides	1.8
Boones Ferry Rd	Norwood	Day	bike lanes both sides	1.8
Farmington	Murray	Hocken	bike lanes both sides	1.2
Walker	Murray	158th Ave	bike lanes both sides	2.0
Baseline	Brookwood	231st Ave	bike lanes both sides	2.2
198th Ave	TV Hwy	Farmington	bike lanes both sides	3.4
Walker	Ecole	Hwy 217	bike lanes both sides	2.6
Cornell	107th	113th	bike lanes both sides	0.6
Tualatin-Sherwood Rd	Langer Farms	Borchers	bike lanes both sides	1.2
Walnut	116th Ave	Tiedeman	bike lanes both sides	1.0
Brookwood	SE 41st	Golden	bike lanes both sides	0.8
Total Miles				19.2
Non-County Roads	From	To	Facility	
Jackson School Rd	Grant	Rogahn	bike lanes both sides	2.2
David Hills Rd	Brooke St	Hwy 47	bike lanes both sides	1.6
Total Miles				3.8

Note: MSTIP 3c and 3d Projects to be completed by 2018

Once the committed bikeway improvements are completed, the County's on-street bicycle system will be approximately 51% complete on the major urban street network.

Bicycles are allowed on all paved roadways in Washington County except I-5, and part of Highway 26. Although allowed on Highway 26, bicycle movement along this highway in the urban area is hazardous due to high traffic volumes, vehicle speeds and conflicted traffic movements at on- and off-ramp facilities. Table 4-19 shows the existing and committed bikeway system by jurisdiction.

Table 4-19: Existing & Committed Urban Bikeway System Approximate Lane Miles

Jurisdiction	Bicycle Lanes		Paved Shoulders	
	Existing	Committed	Existing	Committed
Washington County	170	19	14	NA
Incorporated Cities	135	4	4	NA
ODOT	56	Unknown	6	NA
Total Mileage	361	23	24	-

Notes: Bicycle Lanes include on-street striped & stenciled lanes, buffered bike lanes, cycle tracks and parallel multi-use trails. Paved shoulders include areas beyond fog line at least four feet in width.

Neighborhood Routes and Local streets

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

4.3.3 Bikeway Maintenance

While constructing bikeway facilities is important, keeping them well maintained and in good condition is equally important. Cyclists are often forced to ride outside of bicycle lanes and in motor vehicle travel lanes, to avoid glass and other debris when lanes are not swept regularly. Additionally, various utility cuts that occur in the area of a street where bike lanes are located can cause temporary or long-term hazards for cyclists if they are not adequately resurfaced.

Maintenance of bikeways is complicated by the existence of multiple jurisdictions within Washington County. The County maintains its roads in unincorporated Washington County as well as County roads within various city limits. ODOT maintains its roads throughout Washington County. Added to this mix are city streets maintained by the various individual jurisdictions within Washington County. Bicyclists and residents may not know who to call for maintenance requests or problems.

Sweeping

Bicycle lanes on County roads with curbs and gutters are swept regularly by Clean Water Services (CWS); roads without curbs and gutters do not receive regular sweeping. CWS performs sweeping as part of its Surface Water Management program to help ensure water quality, not for road maintenance purposes. However, the sweeping obviously provides a benefit to the bikeway system. For the purposes of sweeping, unincorporated Washington County is broken into nine zones, which are each swept monthly. In addition to sweeping performed by CWS, most cities sweep their roadways on a monthly basis. The cities sweep County roads that are within their jurisdictions. ODOT performs sweeping of its roadways on a regular basis between October and May and on an as-needed basis during construction season (June-September).

Washington County's Department of Land Use and Transportation Operations Division responds to reported problems through the use of hand sweeping, either by its own crews or community service crews, or by putting a request in to CWS.

Winter ice storms can present lingering challenges for cyclists. Gravel placed on roadways to reduce motorists' skidding on ice may collect in bicycle lanes and on shoulders and cause a hazard and severe nuisance for cyclists. The County has worked to reduce the impact of sanding by using anti-icing chemicals in advance of winter storms.

Striping, Signing, and Stencils

Washington County attempts to maintain a regular annual striping and stenciling schedule for bicycle lanes on its roads. Although complete re-striping has not occurred in some recent years, the Operations Division believes that the annual maintenance schedule will be met in the future.

Vegetation Management

Washington County devotes a full-time vegetation crew as well as community service crews to trim blackberry vines and ivy, prune tree limbs, and keep roads and sidewalks free from vegetative overgrowth. Washington County prioritizes the roads based on their classification and volume, maintaining roads on a regular cycle as well as handling individual requests.

Drainage Grates

Drainage grate inlets for stormwater are potential hazards for bicyclists. Those with bars that are parallel to the direction of travel can trap the front wheel of a bicycle, resulting in loss of control of the bike and serious injury to a cyclist. Even if they are oriented correctly, the metal surfaces can become slippery.

It is not known how many bicycle-unsafe drainage grates may exist within the bikeway network. To address the issue, the County includes curb inlet drainage grates whenever possible for new construction and reconstruction. These grates are flush with the curb face and are not a hazard to bicyclists. When standard drainage grates are installed in new construction or reconstruction they are required to be fitted with cross bars running perpendicular to the direction of bicycle travel thereby eliminating the chance of a bicycle tire catching in the gaps. Finally, existing storm drain grates are retrofitted or "strapped" with cross bars on request or as identified by crews. A new effort by Washington County's Department of Land Use and Transportation Operations Division involves placing a diagonal stencil placed before grates to inform and direct the bicyclist around the problematic drainage grate. Stenciling of problem drainage grates is occurring on a case-by-case basis when requested or as they are identified by crews.

Railroad Crossings

Accepted design standards for bicycle crossings of railroad tracks at-grade recommend that such crossings ideally be at a right angle to the rails. The greater the deviation from this crossing angle, the greater the potential for a bicycle's front wheel to be trapped in the flangeway, resulting in a loss of control. Other design standards recommend that crossings be designed so that the road approach is at the same grade as the rails and that for angles of less than approximately 45 degrees, consideration be given to providing a wider outside lane, shoulder

or bike lane to allow enough room for a bicyclist to cross at a right angle. Consideration should also be given to materials of the crossing surface and flangeway width and depth.

Identified problems at railroad crossings are referred to the owner of the rail line and the County may notify the Public Utility Commission if a problem is not addressed. The County and railroads share in the responsibility of resolving crossing issues.

Signal Detection

Some intersections in Washington County have actuated signals, which are triggered when the presence of a bicycle is detected by a sensitive wire buried in the pavement-usually in the shape of a diamond. This sensitive wire detects the presence of a bicyclist, and relays the information to a signal control box. However, some bicyclists are not aware that they can actuate the signal by properly positioning their bicycle over the signal detector loop. The Oregon Bicyclist's Manual contains information on positioning bicycles for detection by actuated signals. Washington County provides detectors for bicycles per ODOT standards on new traffic signals and can adjust the loop detectors' sensitivity when problem locations are identified.

The County has installed bicycle push buttons at several locations throughout the major road network, including Cornell and 229th. However, the most common method used currently is video detection. More detail will be provided on video detection at a later point.

Signing

Currently Washington County uses pavement stencils to identify bicycle lanes. Directional signs are generally not provided on County bicycle facilities although the County provides green and white reflective signs meeting MUTCD standards along bicycle lanes. However, in accordance with State standards, it is now acceptable to use stencils within the bicycle lanes instead of the signs, which were formerly required every 500'. The County is converting to the stenciling to avoid a proliferation of signs. Additionally, signing is provided at intersections to inform roadway users of conflict points in the transition areas between through bicycle lanes and right-turn lanes. Signs are inventoried annually on all collector and arterial roadways.

Neighborhood Streets Program

The Neighborhood Streets Program works to reduce cut-through traffic and improve safety for pedestrians, bicyclists, and drivers. Some design elements used to improve neighborhood streets are speed cushions and traffic circles. The goals of the Neighborhood Streets Program are to preserve and improve neighborhood livability by:

- Discouraging undesirable driver behavior,
- Encouraging safe pedestrian and bicycle use,
- Improving the safety of pedestrians, bicyclists, and drivers,
- Involving area residents in solving traffic problems, and
- Making efficient use of your tax dollars by prioritizing requests for improvements.

4.3.4 Urban Bikeway Facility Needs

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

Obstacles to bicycle travel in urban Washington County include physical gaps in facilities, lack of regular maintenance, funding adequacy, historic development patterns where there is a lack of local street connectivity and the presence of flood plains and topographic constraints. Intersections that are not designed for current and future traffic volumes, such as Beaverton-Hillsdale Highway at Scholls Ferry Road, and missing links in facilities such as those found along Boones Ferry Road, Canyon Road and Highway 8 are obvious obstacles to bicyclists.

The County’s major streets evolved from “farm-to-market” roads at a time when principal markets and employment centers were located in Portland. The result was a system that primarily served east-west travel needs. This historic trend, as well as topographic conditions, has resulted in a street pattern that, for the most part, is not developed in an interconnected, grid pattern. For bicycle travel, grid-pattern streets have the advantage of providing multiple routes on parallel roadways, some of which typically carry lower traffic volumes with lower speeds, making them particularly suitable for bicycle travel.

Although the County has undertaken an ambitious program to improve the road system in recent years, it continues to lack adequate peak hour capacity and includes many substandard roadways that are consequently more costly to maintain than roads built to County and city design standards. The road system is also lacking in serving new demand for north-south travel.

Major streets in Washington County provide the most continuous and direct routes connecting business and residential areas in Washington County. As a result, they are required to serve as true multi-modal facilities, balancing the needs for peak-period motor-vehicle capacity, public transit, pedestrian and bicycle travel. Bikeways on the major street system provide direct connections for bicyclists, making them the logical choice for longer trips. At the same time, the high traffic volumes, greater speeds and the potential for conflicting turning movements at intersections, which are common on the major street network, may also be considered obstacles by some bicyclists.

Identification of low traffic volume streets for use as “bicycle boulevards” (shared roadways, bike routes, or shoulder bikeways) may be possible in some areas at relatively low cost. Many areas of Washington County lack well - connected low traffic volume streets for such a system. However, newer developments do tend to have well connected local street networks and an effort to identify these areas could help facilitate the establishment of an alternative to the bicycle network that is on the major street system.

Regional goals aim at increasing the commuting mode share of bicycling and walking by nearly three-fold over the next 25 years. Due to incremental expansion and improvement of collector and arterial roadways it is unlikely a complete bicycle and pedestrian system will be realized in the near-term. Adopting strategies to support bicycle travel are consistent with the goals and desired outcomes of the 2035 Regional Transportation Plan (RTP). The 2035 RTP recognizes the important role active transportation plays in achieving regional objectives, such as

increasing non-SOV mode share, reducing vehicle miles traveled, reducing the cost of transportation, improving public health and meeting state goals for greenhouse gas reduction.²⁹

The bicycle needs analysis must be consistent with the Regional Transportation Functional Plan (RTFP) section 3.08.140. The County must also evaluate the bikeway system with the intent of providing bicycle connections to the Regional Trails and Greenways network.

A study for the Bicycle and Pedestrian Improvement Prioritization Project (2012) compared the existing and planned urban bicycle network (collector and arterial roadways) to help determine how to optimize the planned bicycle system and the suitability of future improvements. The bicycle network was evaluated using context sensitive suitability criteria. The RTFP directs the local jurisdictions to pay particular attention to bicycle access to transit and essential destinations. The RTFP defines “essential destinations” as hospitals, medical centers, grocery stores, schools, and social service centers with more than 200 monthly LIFT pick-ups. This approach aimed at measuring the suitability of a roadway for a particular improvement using spatial data in a geographic information system (GIS). The analysis suggests that the land use characteristics of the County are suited for greater use of the bicycle as a mode of travel. However, the traffic characteristics of the major street system, with high peak period traffic volumes, make it essential that appropriate bicycle facilities be in place if the bicycle mode-share is to increase.

Table 4-20 illustrates the prioritized list of bike lane needs on collectors and arterials, representing 66.3 lane miles.³⁰

²⁹ Regional Transportation Plan, p. 2-60, Metro, July 2010

³⁰ The total length illustrates the extent of widening and striping both sides of the road six feet. Cost estimates are planning-level based on an average cost of \$200 per lineal foot of improvement.

Table 4-20: Prioritized Bike Lane Needs

Road Name	From	To	Total Length (lane feet)	Cost Estimate
1 st Avenue	Baseline Road	500' north of Grant	7,174	\$1,434,800
65 th Avenue	Sagert Street	Nyberg Street	2,466	\$493,200
92 nd Avenue	Garden Home	Scholls Ferry	5,310	\$1,062,000
143 rd Avenue	Cornell Road	West Union Road	8,889	\$1,777,800
158 th Avenue/Merlo	Jenkins Road	170 th Avenue	6,682	\$1,336,400
170 th Avenue	Merlo Road	Alexander Street	8,448	\$1,689,600
170 th Avenue	Baseline Road	Merlo Road	2,918	\$583,600
173 rd Avenue	Cornell Road	Walker Road	7,956	\$1,591,200
174 th Avenue	Laidlaw Road	Bronson Road	8,192	\$1,638,400
185 th Avenue	Alexander Street	Blanton Street	1,966	\$393,200
205 th Avenue	Quatama Street	Baseline Road	4,664	\$932,800
209 th Avenue	TV Highway	Farmington Road	11,036	\$2,207,200
Alexander Street	178 th Avenue	170 th Avenue	4,880	\$976,000
Barnes Road	St. Vincent's Medical Center	Leahy Road	8,617	\$1,723,400
Baseline Road	158 th Avenue	Jenkins Road	4,712	\$942,400
Beef Bend Road	150 th Avenue	Pacific Highway	20,868	\$4,173,600
Bronson Road	185 th Avenue	Bethany Boulevard	15,565	\$3,113,000
Brookwood Parkway	Evergreen Parkway	Sunset Highway	7,467	\$1,493,400
Cornell Road	Main Street	25 th Avenue	12,124	\$2,424,800
Evergreen Parkway	Cornelius Pass Road	215 th Avenue	1,214	\$242,800
Farmington Road	198 th Avenue	176 th Avenue	6,348	\$1,269,600
Fischer Road	131 st Avenue	Pacific Highway	6,916	\$1,383,200
Glencoe Road	Cody Court	Tiffany Street	2,984	\$596,800
Glencoe Road	Cory Street	Camp Ireland Street	1,600	\$320,000
Greenburg Road	Hall Boulevard	Oak Street	5,540	\$1,108,000
Johnson Street	198 th Avenue	185 th Avenue	7,000	\$1,400,000
Johnson Street	Cornelius Pass	198 th Avenue	10,873	\$2,174,600
Johnson Street	185 th Avenue	170 th Avenue	5,801	\$1,160,200
Kinnaman Road	185 th Avenue	Farmington Road	7,392	\$1,478,400
Kinnaman Road	198 th Avenue	185 th Avenue	6,720	\$1,344,000
Langer Drive	Langer Drive	Roy Rogers Road	3,428	\$685,600
Murray Boulevard	TV Highway	Farmington Road	1,138	\$227,600
Oregon Street	Tualatin-Sherwood	300' east of Tonquin Road	3,563	\$712,600
River Road	TV Highway	Rood Bridge Road	12,488	\$2,497,600
Roy Rogers Road	Borchers Drive	Pacific Highway	2,198	\$439,600
Saltzman Road	Cornell Road	Barnes Road	1,709	\$341,800
Springville Road	185 th Avenue	Joss Avenue	8,085	\$1,617,000
Thompson Road	East of 143 rd Avenue	Saltzman Road	8,873	\$1,774,600
Tualatin-Sherwood	Boones Ferry	I-5 Interchange	4,824	\$964,800
Walker Road	173 rd Avenue	185 th Avenue	7,548	\$1,509,600
Walker Road	185 th Avenue	Von Neumann Drive	4,186	\$837,200
West Union Road	Cornelius Pass Road	185 th Avenue	15,367	\$3,073,400
West Union Road	185 th Avenue	Bethany Boulevard	16,558	\$3,311,600
West Union Road	Helvetia Road	Cornelius Pass Road	16,996	\$3,399,200
		Total	349,811	\$70,460,340

Prioritized Bike Lane Needs

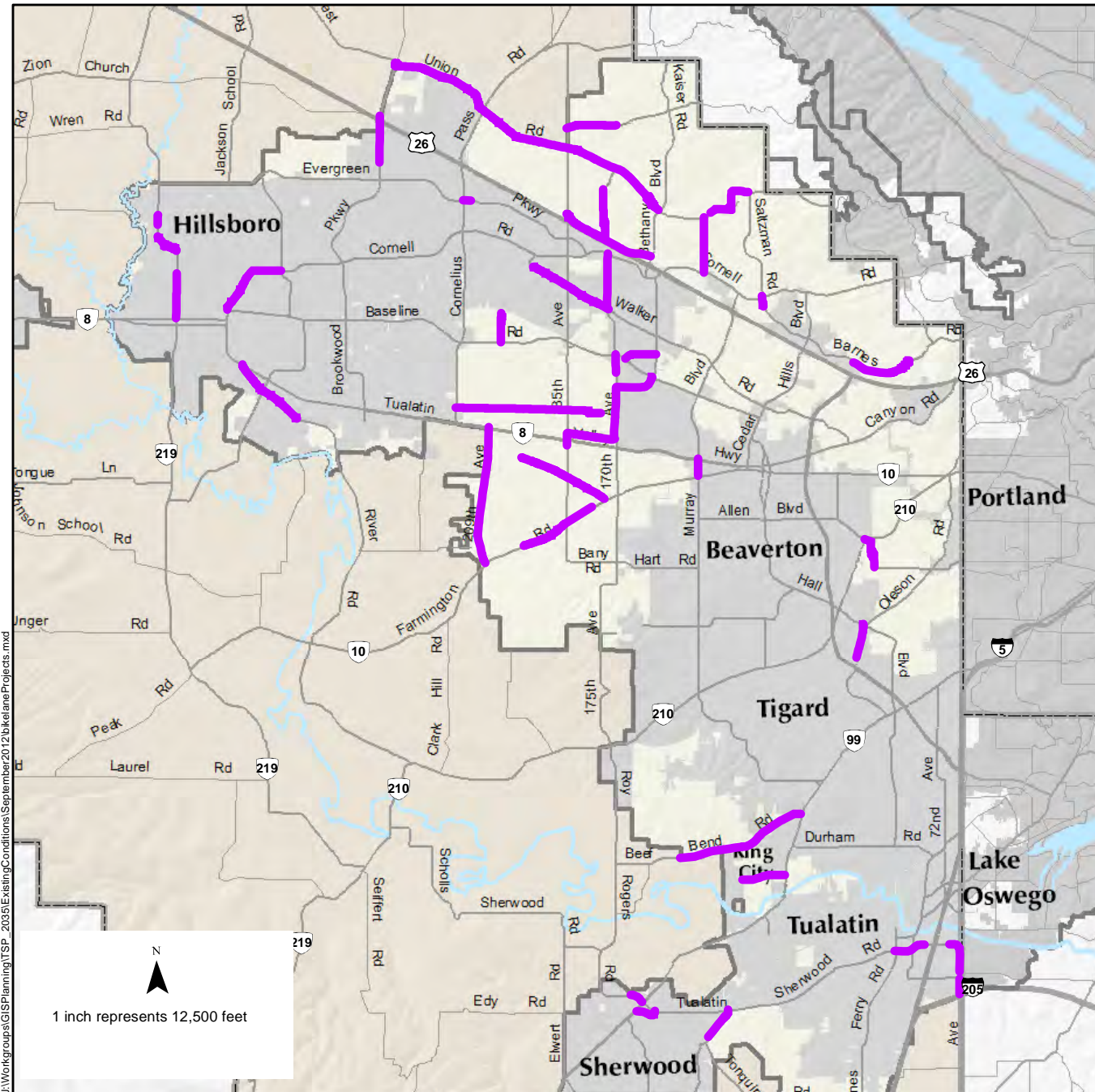
- Top 45 Bike Lane Gaps*
- Urban Growth Boundary

*As identified through Washington County Bicycle and Pedestrian Improvement Prioritization Project.

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Department of Land Use and Transportation
Long Range Planning Division

Figure 4-17



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4.3.5 Bicycle Parking

Bicyclists also often note that improved facilities, including improved bicycle parking and showers at work, would make bicycling more attractive as a commute alternative. Secure bicycle parking or storage facilities are a recognized need at cyclist destination points. Riders may be discouraged from using a bicycle to make an otherwise appropriate trip if secure parking is not available at the destination. Bicyclists' needs for bicycle parking range from simply a convenient piece of street furniture, to storage in a bicycle locker that affords weather, theft and vandalism protection, gear storage space, and 24-hour personal access. The type of facility needed is determined by several factors:

- **Type of trip being made:** whether or not the bicycle will be left unattended all day or just for a few minutes.
- **Security of area:** determined by factors such as visibility, presence of people, type of area and perception of the bicycle owner.
- **Value of the bicycle:** the more a cyclist has invested in a bicycle, the more concern she or he will show for theft protection or how prone a given area is to bicycle theft.

Additional needs for some commuting cyclists include shower, locker, and changing facilities at trip destinations. For those cyclists needing to dress more formally, travel longer distances, or cycle during wet or hot weather, the ability to shower, change, and store clothing can be as critical as bicycle storage.

The County's existing Community Development Code includes bicycle parking requirements for new development. While bicycle parking has been required in new developments since 1994 by Section 429 of the Community Development Code, little or no baseline information is available on the amount or quality of existing bicycle parking. However, Washington County's Development Standards for Bicycle Parking are comprehensive, with provisions in the Code for development of minimum bicycle parking facilities in conjunction with multi-family developments of four units or more, retail, office, institutional, and industrial development, transit centers and park and ride lots. Larger employers may choose to provide additional amenities as part of DEQ's Employee Commute Options (ECO) program.

4.3.6 Bicycles and Transit

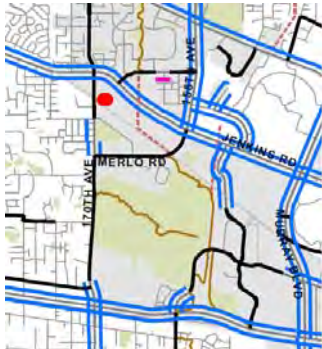
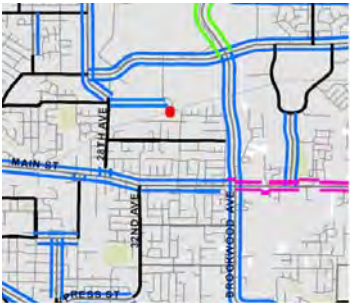
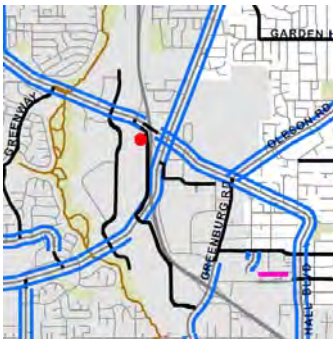
Another important context factor is the connection between the bicycle and transit systems. This can enable a cyclist to avoid certain barriers such as steep terrain or facilitate longer distance or even regional trips using a combination of bicycling and transit. Because this type of trip can have a great deal of utility in increasing the attractiveness of cycling, it is important, in assessing bicycle needs, to identify how the bicycle system connects to the transit system. Such an analysis was undertaken in preparing the 2020 Transportation Plan, and is updated in Table 4-21 below.

Several options are available for combining bicycle and transit trips. Bike parking is available at most MAX and WES stations either by keyed bicycle lockers or short term bicycle parking racks. Secure, enclosed parking with keycard access is provided at Sunset and Beaverton transit centers. TriMet and SMART have bike racks on the front of their buses that can carry two bikes. In addition, a customer can bring their bike onboard MAX, WES and Portland Streetcar if room is available in one of the designated bike spaces.

Connections to WES and MAX, which are as important as connections to regional bus routes have also been evaluated. The table below provides an assessment of bicycle accessibility to MAX and WES stations within Washington County, including stops within incorporated cities. Improving the bicycle-transit link can create more options for bicycle travel in Washington County. Linking bicycles with transit mitigates some obstacles to bicycling such as lengthy trips, personal security concerns, riding at night, poor weather, or steep topography.

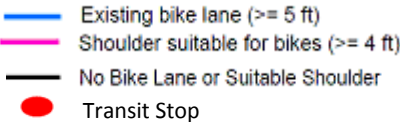

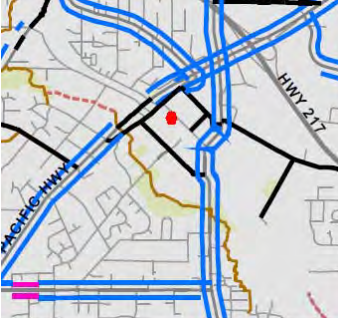
Table 4-21: MAX and WES Station Bicycle Accessibility

<u>MAX/WES Station Location</u>	<u>Road Jurisdiction</u>	<u>Access Characteristics as defined in 2002*</u>	<u>Map of Existing Network Characteristics Accessing Transit</u>	<u>Changes since 2002*</u>
Beaverton Central	Beaverton	Poor bicycle access – Area under redevelopment; bike lanes not present on any feeder street		Improved bicycle access - Bike lanes are present on Millikan Way between Murray Blvd and Rose Biggi Ave
Beaverton Creek	Beaverton	Fair bicycle access – Bike lanes located on Jenkins Road, approximately ½ mile north of MAX station. Bike lanes also located on Murray, approximately ½ mile southeast of the station. Direct access from 153rd Avenue, which is a wide street that is suitable for shared use.		No change
Beaverton Transit Center	Beaverton	Good bicycle access – Bike lanes on Lombard, which fronts the station and connects to bicycle lanes on Center Street to the north and TV Highway to the south.		Fair bicycle access - No bike lanes exist on TV Highway to the south as indicated in 2002 and network connectivity is islanded in all directions on the major street system.

MAX/WES			Map of Existing Network		
Station Location	Road Jurisdiction	Access Characteristics as defined in 2002*	Characteristics Accessing Transit		Changes since 2002*
			<ul style="list-style-type: none"> — Existing bike lane (>= 5 ft) — Shoulder suitable for bikes (>= 4 ft) — No Bike Lane or Suitable Shoulder ● Transit Stop 		
Elmonica/SW 170th Avenue	Washington County	Good bicycle access from the north (Baseline Rd.), poor bicycle access from the south – Bike lanes located on Baseline, approximately 500' north of station; south of the station, it is approximately 1.2 miles to TV Highway, the nearest street with bicycle lanes.			No change
Fair Complex/Hillsboro Airport	Hillsboro	Good bicycle access – Bike lanes on Cornell; approximately ¼ mile north of the station via NE 34th Avenue, a wide street with relatively low traffic speeds and volumes. Access is also available from the south via NE 37th Avenue, a city street with low traffic speeds and volumes. NE 37th Avenue connects to a shared use path at its north terminus that provides direct access to the station.			Improved bicycle access - Veterans Drive, a new facility completed in 2012, extends Grant from 28 th Avenue to 34 th Avenue with enhanced bicycle facility design (cycle tracks) on both sides of the road.
Hall/Nimbus WES Station	Washington County	No station existed in 2002.			Good bicycle access – Bike lanes on Hall Boulevard and Scholls Ferry Road, accept on Highway 217 overpass, provide adequate access.

<u>MAX/WES Station Location</u>	<u>Road Jurisdiction</u>	<u>Access Characteristics as defined in 2002*</u>	<u>Map of Existing Network Characteristics Accessing Transit</u>	<u>Changes since 2002*</u>
Hatfield Government Center	Hillsboro	Good bicycle access – This station is served by relatively low speed and traffic volume streets from all directions.		Reclassify to Fair – Access from the south is not served by low speed, low volume streets and no bike lanes exist on the major streets within ¼ mile in all directions.
Hawthorn Farm	Hillsboro	Fair bicycle access – Station is located approximately 0.8 miles north of bicycle lanes on Baseline Road and 0.25 mile south of bicycle lanes on Cornell Road. Direct access from Elam Young Parkway and NE 53rd Avenue, both of which are wide streets that are adequate shared road type facilities.		Improved bicycle access - NE 53 rd is improved with bicycle lanes between Baseline Road and Elam Young Parkway.
Hillsboro Central & SE 8th Avenue Stations	Hillsboro	Good bicycle access – Stations are served by a low volume and speed downtown street grid from all directions.		No change.
Merlo Road/SW 158th Ave	Washington County	Good bicycle access – Good access from the north, bicycle lanes are located on Jenkins Road, 0.1 mile north of station; fair access from Merlo Road, which runs generally east – west and would be considered a shared facility with wide travel lanes.		Reclassify to Fair - Merlo Road does not have bike facilities.

<u>MAX/WES</u>	<u>Station</u>	<u>Road</u>	<u>Jurisdiction</u>	<u>Access Characteristics as defined in 2002*</u>	<u>Map of Existing Network</u>	<u>Characteristics Accessing Transit</u>	<u>Changes since 2002*</u>
	<u>Location</u> Millikan Way	Washington	County	Fair bicycle access – Millikan Way, ¼ mile south of the station, has bike lanes; Jenkins Road, ½ mile to the north also has bike lanes. Direct access is from 141st Avenue, which connects to Millikan and also to Jenkins via Terman Road and Hocken Avenue. The connection to the north is considered ‘fair’ due to the distance to bicycle lanes.		<ul style="list-style-type: none"> — Existing bike lane (>= 5 ft) — Shoulder suitable for bikes (>= 4 ft) — No Bike Lane or Suitable Shoulder ● Transit Stop 	No change.
	Orenco/NW 231st Ave	Hillsboro		Fair bicycle access – Bike lanes present on Cornell Road <1/4 mile north of station. There is no access available from the south to this station.			Improved bicycle access – NW 229 th Avenue is improved with bicycle lanes between Baseline Road and Cornell Road.
	Quatama/NW 205th Ave	Washington	County & Hillsboro (206th Ave. north of station)	Good to poor bicycle access – Bike lanes present on Cornell Road, 0.8 miles north of station and on Baseline Road, approximately 0.4 miles south of the station; bicycle lanes also exist on NW Quatama, which the station fronts. From Baseline or Cornell, access is via NW 205th/206th Avenue, which has mixed characteristics. From the north, NW 206th is a wide street with a continuous two-way center turn lane that is fair for cycling. Access from the south is generally poor for cycling, although a separated path exists for			Improved bicycle access – Amberglen Parkway/Wilkins Road provide bike lanes to NW 206 th Avenue from Cornell and Cornelius Pass Road ¼ mile north of the station.

<u>MAX/WES Station Location</u>	<u>Road Jurisdiction</u>	<u>Access Characteristics as defined in 2002*</u>	<u>Map of Existing Network</u> <u>Characteristics Accessing Transit</u> 	<u>Changes since 2002*</u>
Sunset Transit Center	Washington County	<p>northbound pedestrians and cyclists; this path only exists along one side of the road so southbound bicycle facilities are virtually non-existent. Southbound cyclists will also encounter a narrow bridge that is extremely hazardous.</p> <p>Good bicycle access – From the south, access is via a pedestrian bridge over Highway 26. The pedestrian bridge can be reached via existing bicycle lanes or wide low speed, low volume streets such as Parkway, Roxbury or Wilshire. From the east and west, cyclist can reach Sunset Transit Center via Barnes Road, which has paved shoulders or bicycle lanes and which fronts the access to the transit center.</p>		<p>Improved bicycle access – bike lanes now exist on Barnes Road between the transit station entrance to the interchange triangle. However, access from the east of Baltic Avenue is complicated by high traffic volumes and a lack of bike lanes or wide shoulders.</p>
Tigard WES Station	Tigard	<p>No station existed in 2002.</p>		<p>Fair bicycle access – Bike lanes present on Hall Boulevard <1/4 mile south of station.</p>

<u>MAX/WES Station Location</u>	<u>Road Jurisdiction</u>	<u>Access Characteristics as defined in 2002*</u>	<u>Map of Existing Network Characteristics Accessing Transit</u>	<u>Changes since 2002*</u>
Tualatin WES Station	Tualatin	No station existed in 2002.	<p>Legend: Existing bike lane (>= 5 ft) Shoulder suitable for bikes (>= 4 ft) No Bike Lane or Suitable Shoulder Transit Stop</p>	Good bicycle access – Bike lanes present on Boones Ferry Road adjacent to station.
Washington Street/SE 12th	Hillsboro	Good bicycle access – Bicycle lanes present on Baseline, which is less than 300’ north of the station and provides east-west access. From the south, access is available via a grid street system that has low to moderate traffic volumes and low speeds.		No change.
Willow Creek/SW 185th Transit Center*	Washington County	Good bicycle access – Bicycle lanes present on 185th Avenue, which provides access from north and south directions. Baseline Road currently has bicycle lanes east of 185th Avenue and under construction to the west of 185th Avenue. It provides (or will provide in the immediate future) an east-west bicycle connection to the existing facilities on 185th Avenue.		No change.

*Notes Access Characteristics are ranked as poor, fair or good followed by a description of the characteristics that result in the ranking. Since the MAX line serves an east-west alignment, the most critical station access is provided by north-south oriented streets.

Additional bicycle/transit considerations are described in section 4.4.3 (TriMet) and 4.4.6 (Transit Needs).

4.3.7 Urban Bicycle Safety

Conflicts with automobiles and the lack of safe routes is a key reason why more people don't bike. Studies have shown that increasing the separation from automobiles encourages more bicycling. Safety problems are especially acute at intersections and other crossings. Between 50 and 65 percent of all bicycle accidents in the Portland Metropolitan region result from turning or crossing movements.³¹ Focusing on improvements that address these conflicts could encourage more bicycling.

Crash data is useful for analyzing trends and identifying locations with potential safety problems. However, it is not possible to draw substantive conclusions regarding the relationship between reported crashes and facility design. It is important to recognize that most bicycle crashes are not reported and that many crashes result from traffic law violations rather than system design deficiencies. It is generally accepted that 65 to 85 percent of bicycle crashes do not involve a motor vehicle, according to national studies of bicycle safety. These crashes typically involve falls or collisions with stationary objects, other cyclists or pedestrians.

Crashes involving motor vehicles tend to have much more serious injuries and may point to engineering solutions at certain locations where an identified design deficiency might be correctable.

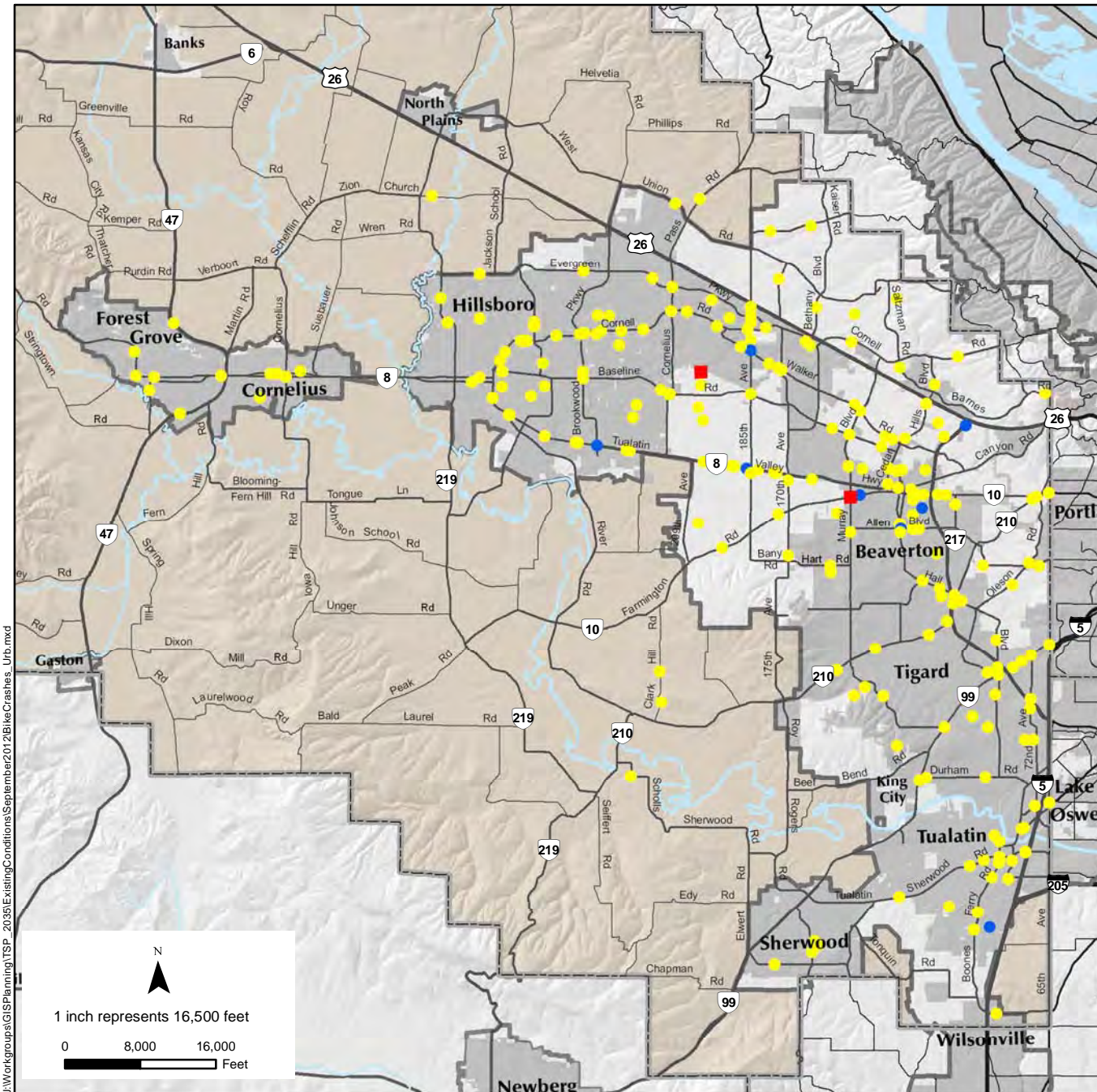
The available accident data for Washington County shows that many of the crashes reported over the three-year data period (2008-2010) occurred along major road corridors. However, few conclusions can be drawn from this data. These crash concentrations are likely reflective of the level of use on these roadways by bicyclists and traffic volumes rather than design deficiency. A closer examination of crash locations that lack existing bicycle facilities may help prioritize future improvements.

Two fatal accidents occurred during the 2008-2010 data period: one on 205th Avenue and a second at the intersection of Murray Boulevard and Farmington Road. Both facilities are not built to ultimate design standard. Accident trends will need to continue to be monitored over time to determine if system design deficiencies exist.

³¹ Metro State of Safety 2011 Report, p. 59.

Bicyclist Crashes 2008 - 2010

- Fatal
- Non-fatal Injury
- Property damage only
- Rural Washington County

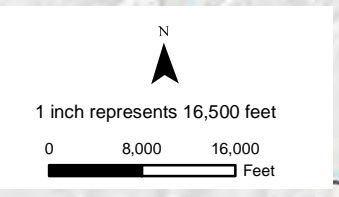


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Figure 4-15

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4.3.8 Education and Encouragement

Encouragement, education and other types of support programs are typically run by a variety of entities like non-profit organizations, bicycle shops and ride groups, local governments, police/sheriff's offices, and others. They help support the County's efforts to improve facilities by encouraging cyclists, offering incentives, and providing safety education. The organizations listed below help encourage and support bicycling in Washington County.

- **Westside Transportation Alliance (WTA)** is a transportation management association set up to assist businesses in meeting the state's ECO Rule requirements for decreasing single occupancy motorized vehicle commuting. The intent of this law is to improve air quality in the urbanized areas.
- **Washington County Bicycle Transportation Coalition's** mission is to promote bicycle transportation, protect bicyclists' rights and improve bicycling conditions throughout Washington County, Oregon through education, advocacy and community.
- The **Beaverton Bicycle Club (BBC)** is a racing club that works to elevate the sport of bicycle racing.
- The **Bicycle Transportation Alliance**, based in Portland, promotes bicycling for safer streets, cleaner air, and energy independence.
- The **Portland Wheelmen Touring Club** is based in Portland but with members throughout the region.

Education is an important element in increasing bicycling while also improving safety. Information available from other communities indicates that the number of bicycle accidents does not necessarily rise with increases in cycling. While improving the quality of Washington County's bikeway facilities is key, there is also a need for proper education of both youth and adult cyclists as well as motorists.

4.3.9 Rural Bicycle Considerations

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

Rural Bicycling Facilities

Outside of the Urban Growth Boundary (UGB), improvement projects for major roadways typically include wide shoulders (4-6 feet) to accommodate wide and slow moving farm equipment. While not specifically designated as bike lanes, these wide shoulders serve as shared-roadway bikeways and are considered part of the rural bikeway system.

As Table 4-22 shows, **approximately 23% of the major rural road network is improved with wide shoulders (4-6 feet)**. The majority of rural bikeway facilities (81 lanes miles) are located on state highways. The portions of the state highway system that have reasonably sized shoulders (4 feet or more) that can facilitate bicycling include

Highway 47 between Forest Grove and Gaston, and Highway 99W between Tigard and the county line. A limited number of county rural roads, including Roy Rogers and Cornelius-Schefflin, have been improved with wide shoulders. In total, there are approximately 69 lane miles of existing rural bikeways (minimum 4' width paved shoulders) on county facilities. Washington County has jurisdiction of 548 lane miles of rural arterial and collector roads, therefore the County's rural bikeway system is approximately 13% complete.

Table 4-22: Arterial/Collector Bikeway Coverage, Rural Washington County

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

Rural Bicycle Crashes

Eight bicycle involved crashes resulting in non-fatal injury or property damage occurred on rural roads in Washington County between 2008 and 2010. The majority of locations where crashes occurred lack wide shoulders, including **Cornelius Pass, West Union, Clark Hill, Tile Flat, Scholls-Sherwood, and Glencoe** Roads.³² Crash incidences are not necessarily the result of poor road design or inadequate facilities, but do require additional examination.

Popular Bicycling Roads

Many popular recreational bicycling routes exist on rural Washington County roads. The Washington County Visitors Association and Ride Oregon are two organizations that promote bicycling in rural Washington County and have mapped routes. Some of the route travel along Helvetia Road, West Union, Fern Hill Road, Blooming Fern Hill Road, and Tongue Lane, just to name a few. Although none of these routes are formally designated, there are efforts underway to designate a state scenic bikeway.

The **Tualatin Valley State Scenic Bikeway** is proposed to go from Rood Bridge Park in Hillsboro to Vernonia via the Banks-Vernonia Trail. If approved, the proposed bikeway would consist of approximately 80 miles of combined on-street and off-street bikeways and be among the first wave of mapped and signed cycling routes in the state. Several deficiencies have been noted along this route that may need to be addressed in order to accommodate bicycle travel that will attract a broader set of users:

- **Osterman Road / Visitation Road from OR 47 to Verboort:** There are consistent double-yellow centerline striping that makes the travel lanes appear very narrow, and may confuse motorists trying to veer around cyclists.

³² Often times not all incidences are reported and the crash locations are not precisely defined.

- **OR 47 Crossings:** The crossings of Route 47 at Porter Road and at Fern Hill are unsignalized, and could be difficult at times. At the very least, warning signs may be appropriate.
- **Geiger Road:** Portions of this road have deep drainage ditches close to the road.
- **Golf Course Road:** A relatively higher volume portion of the route, serving as the main road into Cornelius from the south.

Rural Bicycling Considerations

Bicyclist Crash ('08-'10)

- Fatal
- Non-fatal Injury
- Property damage only

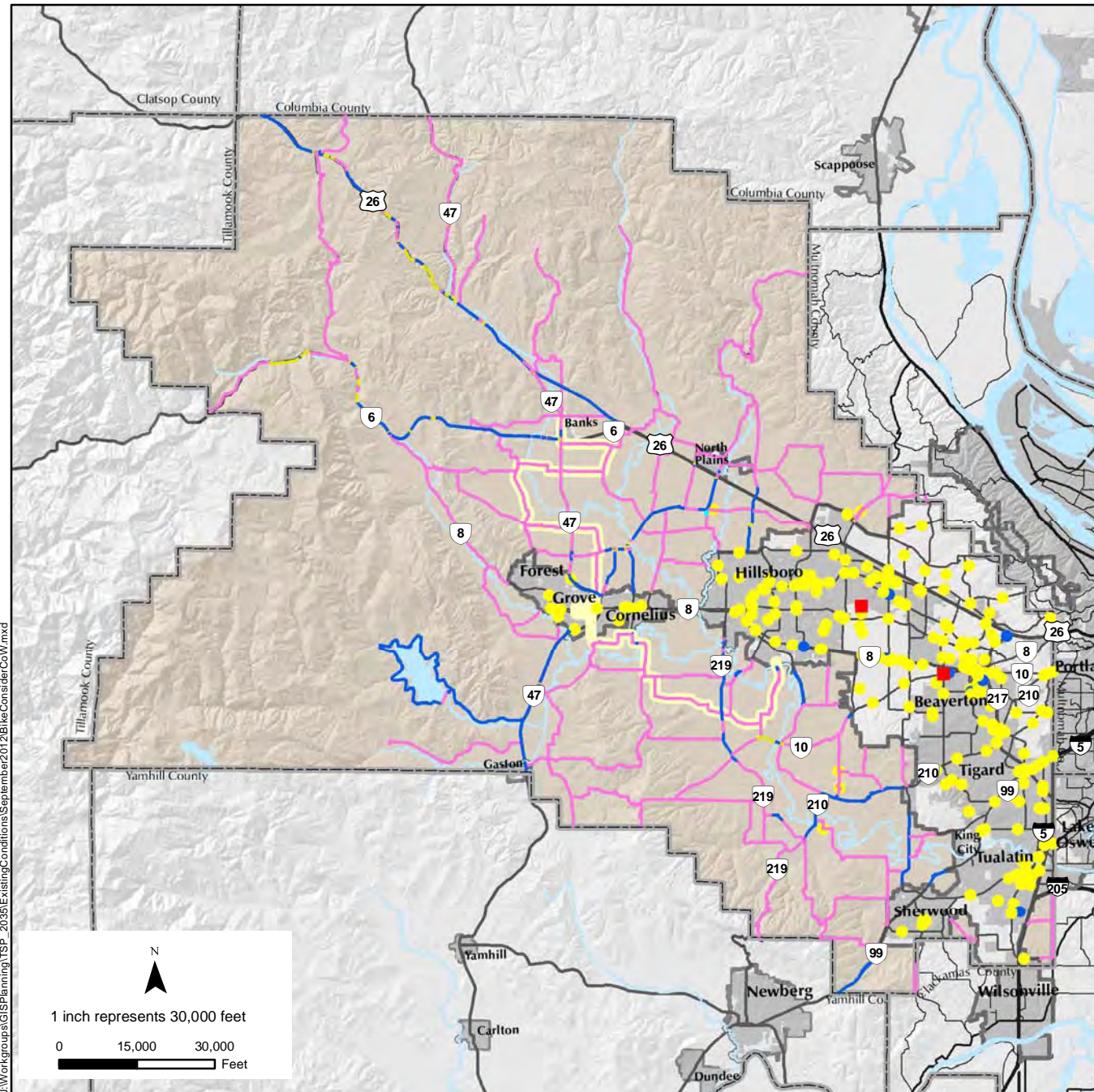
Bike Lane Inventory.

- Lane or Shoulder Suitable; 2 sides
- Lane or Shoulder Suitable; 1 side
- None
- Tualatin Valley Scenic Bikeway
- Rural Washington County

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Figure 4-16



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4.4 TRANSIT

Washington County’s location in the Portland region places it within one of the most successful and pioneering public transportation systems in the nation. Transit is a critical component of the county transportation system, reducing automobile trips and congestion, providing travel options for people without vehicles, curbing greenhouse gas and other emissions, and reducing transportation costs for individuals and families. The American Public Transportation Association reports that residents of the Portland region save an average of \$867 per month if they use transit instead of driving and owning a car.³³

This report section provides an overview of existing and planned transit service, transit stop access and amenity considerations, and an assessment of transit needs in Washington County.

4.4.1 Transit History

Washington County has a rich history of public and private transit, beginning in earnest with the **electric interurban railways** of the early 20th century. Two competing companies – Oregon Electric Railways (OE) and the Southern Pacific Railroad (SP) – established passenger service connecting Washington County with Portland and much of the Willamette Valley.³⁴

Three OE lines extended into the county from Portland: one entering along modern-day Multnomah Boulevard and connecting Garden Home, Beaverton, Orenco, Hillsboro, Cornelius and Forest Grove; a second branching southward from Garden Home and passing through Metzger, Tigard, Tualatin and Wilsonville before proceeding to Salem; and a third tunneling through the Tualatin Mountains near Cornelius Pass and extending to Helvetia and Banks. Various portions of these historic OE routes now host MAX light rail, WES commuter rail and the Fanno Creek Greenway Trail.



The original Orenco station. Image: pdxhistory.com

Rival SP, known for its “Red Electric” trains, also operated three routes through the county. A northern line roughly paralleled modern-day Beaverton-Hillsdale Highway, then continued westward through Aloha, Hillsboro, Forest Grove, then southward to Gaston and Yamhill County. A southern SP line connected Milwaukie, Lake Oswego, Tigard, Sherwood and Newberg. A third line connected the two, using today’s Highway 217 corridor. Many portions of the SP inventory continue to operate today as Portland & Western freight railroads.

In the mid-20th century, Washington County experienced the familiar American story of private automobile travel and diesel buses usurping passenger rail. During the 1950s and 1960s, Tualatin Valley Buses provided service within Washington County and to downtown Portland. Along with other private bus companies in the region, they were informally known as the “blue buses” for their shared paint scheme. As part of an agreement with Rose City Transit Company (Portland’s primary transit provider at the time), the blue buses were not allowed to stop within the City of Portland, other than dropping off and letting on passengers in downtown Portland.³⁵

³³ Transit Savings Report, American Public Transportation Association, August 2012, <http://www.publictransportation.org/tools/transitsavings/Pages/default.aspx>

³⁴ “Interurbans,” <http://www.pdxhistory.com/html/interurbans.html>

³⁵ Blue Bus Lines, [http://en.wikipedia.org/wiki/Blue_Bus_lines_\(Oregon\)](http://en.wikipedia.org/wiki/Blue_Bus_lines_(Oregon))

By the late 1960s, most private transit companies could not operate profitably, prompting public intervention at multiple levels of government. The **Tri-County Metropolitan Transit District of Oregon** was established in 1969, the same year Oregon House Bill 1808 authorized public transit districts to raise revenue through a payroll tax.³⁶ Most private bus operators in the region discontinued service shortly after.

TriMet began as an all-bus system, but system planning as early as the 1970s called for a rail transit network following existing railroad rights-of-way throughout the region. The first line, the Banfield Metropolitan Area Express (MAX), connected downtown Portland with east Portland and Gresham in 1986. Service to rapidly-growing Washington County was an obvious choice for the next line. Construction began on the 18-mile **West Side MAX** in 1993, with service beginning in 1998. A significant portion of the previously abandoned OE Forest Grove line came back to life as a modern light rail line. West Side MAX provided not just a new travel option but also an incentive to revitalize historic downtowns and to focus new, transit-oriented development in “greenfield” areas between Beaverton and Hillsboro.

The west side experienced additional travel demand in the Highway 217/Interstate 5 corridor from Beaverton to Wilsonville. From 1994 to 2000, the corridor’s growth in households was 34% more robust, and employment growth 55% greater, than those of the Portland region as a whole.³⁷ Feasibility studies and political support favored a diesel commuter rail solution along an existing Portland & Western freight railroad. The **Westside Express Service (WES)** opened in early 2009 as one of the nation’s few suburb-to-suburb commuter rail lines. It has since seen two consecutive years of double-digit percentage growth in annual ridership.

Wilsonville’s transit history is also unique. In 1988, the city successfully petitioned to secede from the TriMet service district and create its own transit system. **South Metro Area Regional Transit (SMART)** began operating in 1989 with door-to-door passenger van service.³⁸ Ridership grew steadily, and in 1993 SMART established fixed route service. Today, the agency operates over 35 vehicles on seven fixed routes, including two routes with stops in Washington County.

Due to the effects of the Great Recession on payroll tax revenues, combined with uncertainty in state and federal transportation funding and unsustainable health care costs for union employees, TriMet has experienced multiple years of **extreme budget pressures**, resulting in repeated budget cuts, including service reductions. This funding instability comes at a time when there is increasing demand for transit service. TriMet has cut service and raised fares system-wide, even as ridership reaches all-time highs. In Washington County, no bus lines have been eliminated, however weekend service has been eliminated on a few lines and frequencies have been reduced on several bus routes and during off-peak hours on MAX.

Nevertheless, TriMet, SMART and several other transit agencies continue to provide Washington County residents and workers with convenient, affordable travel options that take cars off the road and reduce the environmental impact of the transportation system as a whole.

³⁶ “The TriMet Story,” http://www.trimet.org/about/history/trimet_story.htm

³⁷ Growing Places: WES Commuter Rail, TriMet fact sheet, 2012.

³⁸ SMART Timeline, <http://www.ridesmart.com/Index.aspx?page=72>

4.4.2 Transit Providers

Five public transit providers offer transit service in Washington County:

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

Additionally, six private, non-profit or employer-based transit services operate in Washington County:

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

The following sections provide additional detail on each of these services.

4.4.3 TriMet

TriMet is the principal public transit system serving Washington County. TriMet services in the County include 29 bus routes, one light rail line (including two routes), a commuter rail line, and 1,993 transit stops. The TriMet service district extends west to Forest Grove, north to Bethany and south to Sherwood. In spring 2012, TriMet recorded an average of 114,331 weekday boardings and alightings (“ons/off”) at Washington County transit stops during its quarterly passenger census, accounting for 17% of ons/off systemwide.³⁹

Service

TriMet transit routes in Washington County generally exhibit a radial pattern following major corridors from downtown Portland or Beaverton, along with several north-south “cross-town” routes and localized loop routes. Two rail lines and seven bus lines provide “**frequent service**” with 15-minute or better peak-hour headways along with late-night service on all or portions of their alignments. These routes, shown in bold type in Table 4-23, are:

- MAX Blue Line;
- MAX Red Line;
- 12- Barbur/Sandy Blvd.;
- Weekday service on 52 -Farmington/185th;
- The shared portion of lines 54 and 56 on Beaverton-Hillsdale Highway east of Scholls Ferry Road;
- The shared portion of lines 76 and 78 on Hall Boulevard and Greenberg Road between the Beaverton and Tigard transit centers, and;
- 57- TV Highway/Forest Grove.

³⁹ TriMet Spring 2012 Passenger Census, provided by TriMet staff.

Due to recent service cuts, TriMet's Frequent Service bus routes run every 17-20 minutes in the mid-day period. MAX Blue Line, along with the interwoven MAX Red Line service operating on the same trackway as far west as Beaverton, offers the most frequent transit service, with headways as short as six minutes during peak hours. MAX also has the longest span of service of any transit route in Washington County, operating 20+ hours a day.

WES commuter rail and nine TriMet bus routes in Washington County operate only during weekday peak periods. Five other bus routes operate all day Monday through Friday, with a sixth operating Monday through Saturday. The remaining 14 bus routes operate seven days a week, with service from early morning through late evening.

Cumulative **travel times** on MAX Blue Line from Hatfield Government Center in Hillsboro are 17 minutes to Willow Creek Transit Center at 185th Avenue, 29 minutes to Beaverton Transit Center, 34 minutes to Sunset Transit Center and 53 minutes to Pioneer Courthouse Square in downtown Portland. WES commuter rail cumulative travel times from Beaverton Transit Center are five minutes to Hall/Nimbus, 11 minutes to Tigard, 17 minutes to Tualatin and 27 minutes to Wilsonville.

Table 4-23 provides further details on all TriMet rail and bus routes in Washington County, including:

- **Route name and number;**
- **Terminus locations**, where the route starts and ends, with "inbound" referring to destinations within or closer to downtown Portland;
- **Headways**, the number of minutes between consecutive transit vehicle arrivals at a given transit stop (this is the inverse of "frequency," which is how many times per hour a transit vehicle stops at a given location);
- **Span of Service**, the time of day when transit service is available; and
- **Days of service**, the days of the week when transit service is available.

TriMet routes are mapped in Figure 4-17.



TriMet Transit System

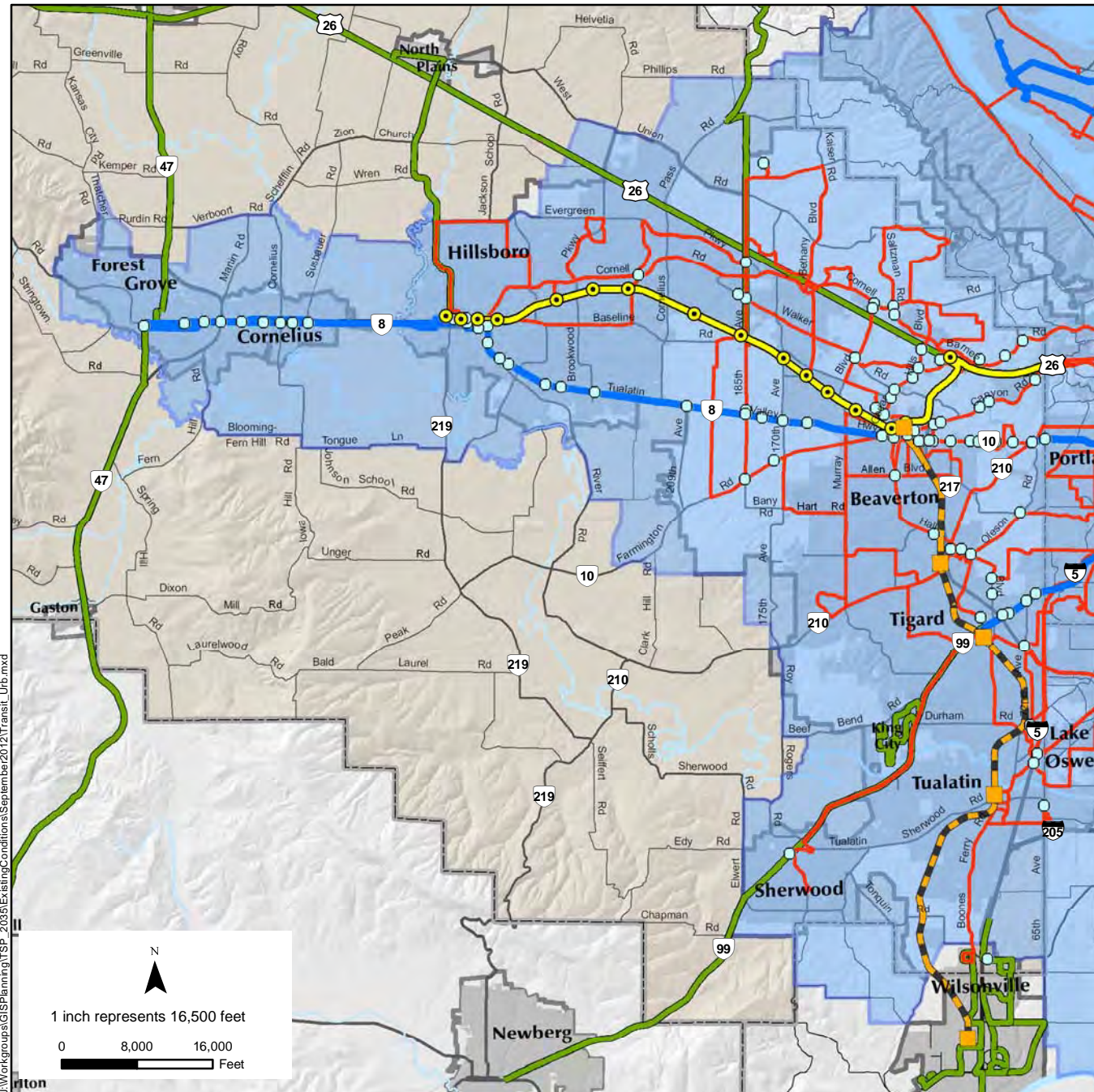
- Commuter Rail Station
- Commuter Rail Route
- Light Rail Station
- Light Rail Route
- Major Bus Stop
- Frequent Service Bus Routes
- Bus Routes
- Other Transit Providers*
- TriMet Service District
- Rural Washington County

* Other Transit Providers include:
 Wilsonville SMART, Yamhill County Transit Authority (YCTA), CC Rider (Columbia County), Tillamook Wave, NW Point, Washington County Ride Connection and King City Ride-About

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Figure 4-17



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Table 4-23: TriMet Transit Routes Serving Washington County

Route (Weekday frequent service routes in bold)	Terminus (outbound)	Terminus (inbound)	Headways (weekday peak/mid-day, minutes)	Span of Service (weekdays)	Days of Service
MAX Blue Line	Hillsboro	Gresham	6/15	3:37am – 2:02am	7 days
MAX Red Line	Beaverton/ Hillsboro	Portland Airport	15/15	3:37am – 12:50am	7 days
Westside Express Service (WES) Commuter Rail	Wilsonville	Beaverton	30/NA	5:21am – 9:55am; 3:20pm – 8:02pm	M-F peak
12 – Barbur/Sandy Blvd	Tigard TC	Parkrose- Sumner TC	15/20	4:54am – 1:54am	7 days
20 – Burnside/Stark	Beaverton TC	Gresham TC	20/20	4:24am – 2:07am	7 days
36 – South Shore	Tualatin Park & Ride	Lake Oswego TC or Portland	30/90	6:58am – 7:08pm	M-F
37 – Lake Grove	Tualatin Park & Ride	Lake Oswego TC	90/90	7:03am – 5:20pm	M-F
38 – Boones Ferry Rd	Tualatin Park & Ride	Portland City Center	30/NA	5:50am – 9:39am; 2:29pm – 7:19pm	M-F peak
43 – Taylors Ferry Rd	Washington Square TC	Portland City Center	60/60	5:45am – 7:42pm	M-F
45 – Garden Home	Tigard TC	Portland City Center	20/60	5:28am – 9:33pm	7 days
46 – North Hillsboro	Hillsboro TC	Hillsboro Main Library	60/60	5:45am – 7:31pm	M-F
47 – Baseline/Evergreen	Hillsboro TC	Sunset TC	45/75	5:26am – 10:55pm	M-F
48 – Cornell	Hillsboro TC	Sunset TC	40/40	5:10am – 10:08pm	7 days
50 – Cedar Mill (loop)	Sunset TC	Sunset TC	45/NA	5:26am – 9:17am; 4:30pm – 7:23pm	M-F peak
52 – Farmington/185th	PCC Rock Creek	Beaverton TC	15/20	4:42am – 12:42am	7 days
53 – Arctic/Allen (loop)	Beaverton TC	Beaverton TC	30/NA	5:55am – 8:50am; 3:05pm – 6:27pm	M-F peak
54 – Beaverton-Hillsdale Hwy*	Beaverton TC	Portland City Center	20/30	4:55am – 12:31am	7 days
55 – Hamilton	Raleigh Hills	Portland City Center	60/NA	7:02am – 8:39am; 4:00pm – 5:50pm	M-F peak
56 – Scholls Ferry*	Washington Square TC	Portland City Center	20/30	5:28am – 1:04am	7 days
57 – TV Hwy / Forest Grove	Forest Grove	Beaverton TC	15/20	4:08am – 2:47am	7 days
58 – Canyon Rd	Beaverton TC	Portland City Center	30/30	5:01am – 10:55pm	7 days
59 – Walker / Park Way	Willow Creek TC	Sunset TC	60/NA	6:06am – 9:01am; 3:16pm – 6:17pm	M-F peak
61 – Marquam Hill / Beaverton	Beaverton TC	Marquam Hill	20/NA	6:19am – 8:27am; 3:32pm – 6:16pm	M-F peak
62 – Murray Blvd	Washington Square TC	Sunset TC	30/30	4:57am – 11:00pm	7 days
64 – Marquam Hill / Tigard	Tigard TC	Marquam Hill	30/NA	5:47am – 8:29am; 3:47pm – 6:42pm	M-F peak
67 – Bethany/158 th	PCC Rock Creek	Merlo Rd / SW 158th	30/30	5:49am – 9:54pm	M-Sat

Route (Weekday frequent service routes in bold)	Terminus (outbound)	Terminus (inbound)	Headways (weekday peak/ mid-day, minutes)	Span of Service (weekdays)	Days of Service
76 – Beaverton/Tualatin*	Legacy Tualatin	Beaverton TC	30/30	5:42am – 11:17pm	7 days
78 – Beaverton / Lake Oswego*	Lake Oswego TC	Beaverton TC	30/30	5:29am – 12:27am	7 days
88 – Hart/198 th	Willow Creek TC	Beaverton TC	30/30	5:32am – 10:57pm	7 days
92 – South Beaverton Express	Murrayhill	Portland City Center	30/NA	5:32am – 8:54am; 3:36pm – 7:06pm	M-F peak
94 – Pacific Hwy / Sherwood	Sherwood	Tigard TC or Portland	30/30	4:32am – 1:09am	7 days
96 – Tualatin/I-5	Commerce Circle	Portland City Center	15/NA	5:17am – 9:50am; 1:33pm – 9:00pm	M-F peak

Source: TriMet, September 2012

*Only the shared portion of lines 54 and 56 on Beaverton-Hillsdale Highway and the shared portion of lines 76 and 78 on Hall Boulevard and Greenburg Road have frequent service.

In addition to the fixed routes above, TriMet offers **LIFT paratransit service**, a shared ride advance-reservation service for people who cannot use regular buses or trains due to a disability or disabling health condition. Users must meet ADA eligibility criteria and be registered with TriMet. The LIFT vehicle fleet includes small buses, vans and taxis. The LIFT service area, mapped in Figure 4-18, extends generally ¾ mile beyond the outer limits of TriMet bus and MAX lines, but no further than the TriMet service district boundary. As of September 2012 the LIFT paratransit service area and hours of operation match nearby bus/MAX service. There are six LIFT paratransit service boundaries: weekdays, weekday evenings, Saturdays, Saturday evenings, Sundays, and Sunday evenings. LIFT trips are provided if there is nearby fixed-route bus or rail service in operation during that time. The non-profit **Ride Connection**, described in section 4.4.5, offers paratransit service in a larger area of Washington County.

Fares

In September 2012, TriMet eliminated its zonal fare system as part of a fare increase and service adjustment process. TriMet now charges an adult boarding fare of \$2.50 throughout the entire system, with free transfers allowed within two hours of the original boarding (MAX and WES tickets) or past the last scheduled stop on the route or Downtown Portland, for connections with other buses or trains (bus transfer receipts). Youth (\$1.65) and Honored Citizen (\$1.00) fares offer discounts to eligible users. Day passes are available for adults, Youth and Honored Citizens (\$5, \$3.30, \$2) offering convenience and savings for anyone making two or more transit trips in the span of one service day.

Table 4-24 shows the complete TriMet fare structure.

Table 4-24: TriMet Fare Structure
Effective Sept. 1, 2012

	Two-hour ticket	One-day pass	One-week pass	14-day pass	One-month pass	One-year pass
Adult (18-64)	\$2.50	\$5	\$26	\$51	\$100	\$1,100
Honored citizen (65+, Medicare, disability)	\$1	\$2	\$7	\$13.50	\$26	\$286
Youth (7-17, high school, GED)	\$1.65	\$3.30	\$8	\$15.50	\$30	\$330
LIFT paratransit	\$2.15	N/A	N/A	\$31.50	\$62	\$744

Ridership

Systemwide, TriMet has seen year-to-year ridership increases in all but two years since 1999.⁴⁰ Only 2006 and 2010 saw decreases. In fiscal year 2012, TriMet boardings surpassed 102 million, an all-time high. Between 2000 and 2010, boardings increased 23%, significantly higher than the tri-county population increase of 14% during the same decade. Between 2011 and 2012, the greatest gains by service type occurred on WES Commuter Rail, with a 12.8% increase in boardings, compared to a 2% increase on MAX and 2.4% increase on buses.⁴¹

Comparing individual TriMet rail and bus lines, the highest weekday ridership figures are found on lines that offer frequent service and have long routes – **MAX Blue Line, 57-TV Highway and 52-Farmington/185th**. Table 4-25 ranks lines by total weekday ons/offers at stops within Washington County. (Some lines may have higher ridership over the course of their entire routes, but would skew the analysis of transit ridership within Washington County. For example, Line 12 -Barbur/Sandy Blvd.begins in Tigard, passes through southwest and downtown Portland, and terminates at Parkrose Transit Center in outer northeast Portland. Table 4-25 does not include ons/offers that occur outside of Washington County, but it does account for trips that begin in Washington County and end elsewhere, and vice versa. Routes that are totally within Washington County are shown in bold.)

⁴⁰ TriMet Annual Performance Report, FY199-FY2011, <http://www.trimet.org/about/performance.htm>

⁴¹ TriMet celebrates record boardings, The Oregonian, July 25, 2012, http://blog.oregonlive.com/commuting/2012/07/trimet_celebrates_record_board.html

Table 4-25: Weekday Ridership on TriMet Routes at Washington County Transit Stops, Spring 2012

Route (Routes in bold travel entirely within Washington County)	Average Weekday Ons/Offs in Washington County	Route (Routes in bold travel entirely within Washington County)	Average Weekday Ons/Offs in Washington County
MAX Blue Line	41,870	89 – Tanasbourne*	1,127
57 – TV Hwy/Forest Grove	15,102	45 – Garden Home	949
52 – Farmington/185th	8,893	94 – Sherwood/Pacific Hwy Express	938
MAX Red Line	5,416	47 – Baseline/Evergreen*	908
76 – Beaverton/Tualatin	5,227	53 – Arctic/Allen	592
62 – Murray Blvd	4,942	50 – Cedar Mill	438
12 – Barbur/Sandy Blvd	4,394	46 – North Hillsboro	413
78 – Beaverton/Lake Oswego	4,020	92 – South Beaverton Express	372
88 – Hart/198th	2,868	61 – Marquam Hill/Beaverton	367
WES Commuter Rail	2,720	43 – Taylors Ferry Rd	251
20 – Burnside/Stark	2,369	59 – Walker/Park Way	244
54 – Beaverton/Hillsdale Hwy	2,189	64 – Marquam Hill/Tigard	104
67 – Jenkins/158th	1,952	38 – Boones Ferry Rd	100
56 – Scholls Ferry Rd	1,493	36 – South Shore	43
48 – Cornell*	1,467	37 – Lake Grove	38
96 – Tualatin/I-5	1,337	55 – Hamilton	22
58 – Canyon Rd	1,166		

Source: TriMet, Spring 2012 Passenger Census

*Bus routes and service characteristics changed in September 2012, after the above census. Among these changes, the #47 and #48 lines were realigned to operate between the Hillsboro and to Sunset transit centers, and the #89 line was eliminated.

At a finer scale, some transit stops/stations see more patronage than others. In Washington County, stops with the highest ridership are typically MAX stations and at transit centers. Tables 4-26, 4-27 and 4-28 report ridership at rail stations, transit centers and other major stops, respectively. Locations are listed in order from highest to lowest ridership.

Table 4-26: Weekday Ridership at TriMet Rail Stations, Spring 2012

Station	Average Weekday Ons/Offs	Station	Average Weekday Ons/Offs
Beaverton Transit Center (MAX)	10,122	Beaverton Central	1,779
Sunset Transit Center	5,932	Merlo Rd/SW 158 th Ave	1,727
Willow Creek Transit Center	4,744	Beaverton Creek	1,614
Millikan Way	3,433	Tuality Hospital/SE 8 th Ave	1,404
Hatfield Government Center	3,042	Beaverton Transit Center (WES)	1,350
Elmonica/SW 170 th Ave	2,745	Washington/SE 12 th Ave	1,316
Quatama/NW 205 th Ave	2,670	Hawthorn Farm	968
Orenco/NW 231 st Ave	1,994	Tigard Transit Center (WES)	628
Hillsboro Central/SE 3 rd Transit Center	1,971	Tualatin (WES)	455
Fair Complex/Hillsboro Airport	1,825	Hall/Nimbus (WES)	287

Source: TriMet, Spring 2012 Passenger Census

Note: Bus ons/offers are not included in transit center and park&ride counts. Total transit center and park&ride ons/offers are provided in Table 4-25. For stations with combined MAX Blue Line and Red Line service, combined counts are shown. WES counts are shown separately for Beaverton Transit Center.

Table 4-27: Weekday Ridership at Transit Centers and Park and Rides, Spring 2012

Transit Center / Park and Ride	Average Weekday Ons/Offs
Beaverton Transit Center	20,303
Sunset Transit Center	7,683
Willow Creek Transit Center	7,412
Millikan Way Park & Ride	4,129
Hillsboro Transit Center	3,759
Tigard Transit Center	3,302
Washington Square Transit Center	2,694
Merlo Rd/SW 158 th Ave Turnaround	2,055
Tualatin Park & Ride	745

Source: TriMet, Spring 2012 Passenger Census

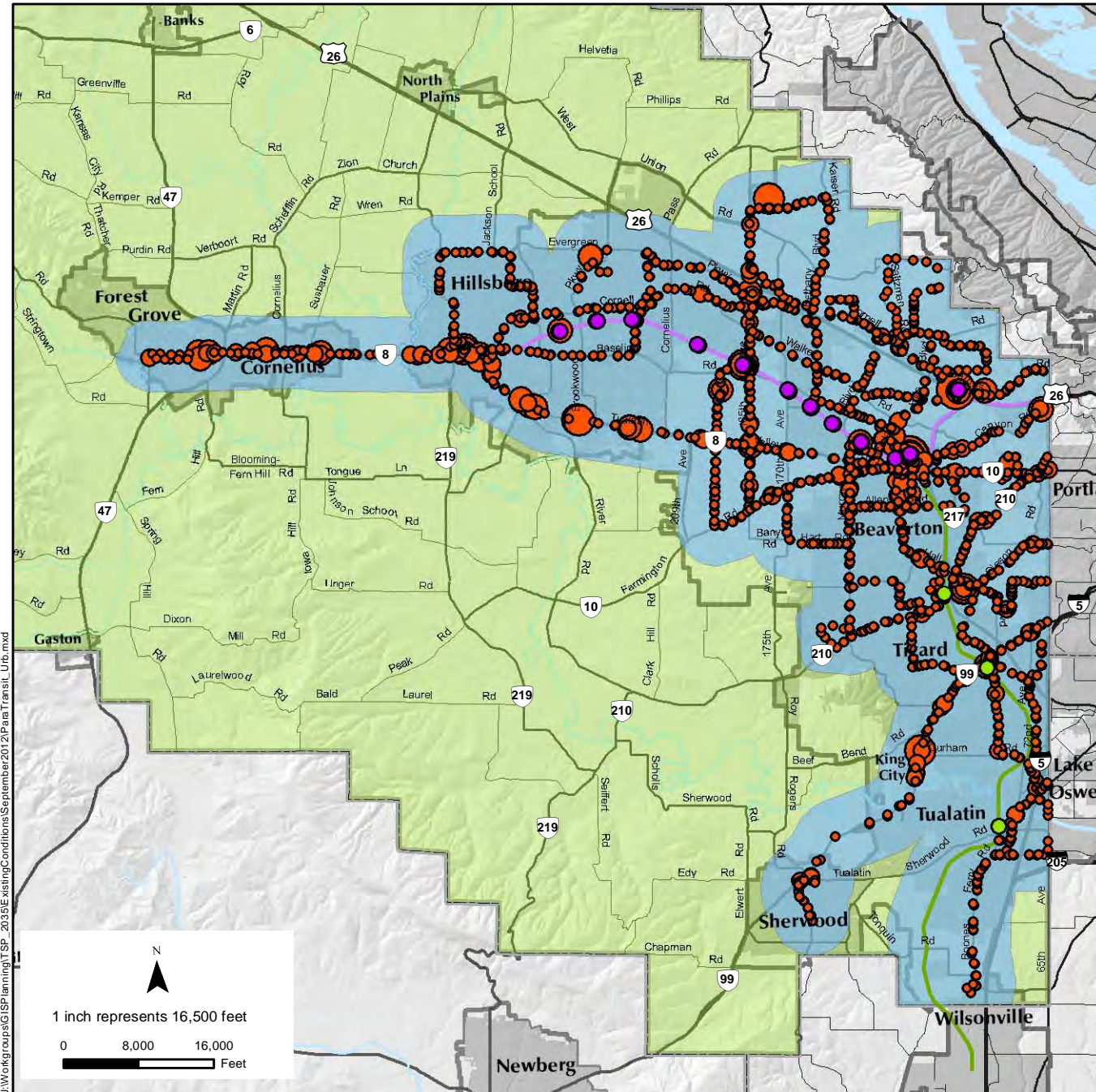
Note: Includes ons/offers for all service types – bus, MAX and WES. For bus only, subtract rail ons/offers from Table 4-26.

Table 4-28: Top 20 Non-Transit Center Bus Stops by Ridership, Spring 2012

Bus Route(s)	Stop Location	Direction	City/Area	Average Weekday Ons/Offs
52	PCC Rock Creek main stop	Northern terminus	Rock Creek	1,158
57	SW Washington & Adams	Eastbound	Hillsboro	369
57	SW TV Hwy & 185 th	Eastbound	Aloha	285
12	SW Main & Pacific Hwy	Northbound	Tigard	274
57	19 th & B St	Eastbound	Forest Grove	246
57	SW TV Hwy & 185 th	Westbound	Aloha	246
47,48,57	SE Baseline & 2nd	Westbound	Hillsboro	244
57	19 th & Main	Eastbound	Forest Grove	242
57	SW TV Highway & 170 th	Westbound	Aloha	220
57	SW TV Highway & 170 th	Eastbound	Aloha	217
57	SE 10 th & Walnut	Southbound	Hillsboro	202
57	SE TV Hwy & Minter Bridge	Eastbound	Hillsboro	200
57	SE TV Hwy & 234 th	Eastbound	Hillsboro	196
94	SW Pacific Hwy & Durham	Southbound	King City	193
57	SE TV Hwy & Century	Westbound	Hillsboro	190
57	SE 10 th & Walnut	Northbound	Hillsboro	183
52	SW 185 th & Farmington	Northbound	Aloha	183
52	NW 185 th & Tanasbourne Rd	Northbound	Hillsboro	182
57	SE TV Hwy & Cypress	Westbound	Hillsboro	177
57	N Adair & 4 th	Westbound	Cornelius	172

Source: TriMet, Spring 2012 Passenger Census

As seen above, 15 of the 20 highest ridership non-transit center bus stops are associated with the **#57 – TV Highway/Forest Grove** line. The top stop, however, is the northern terminus of the **#52 bus at Portland Community College Rock Creek** campus. These and other “major bus stops” – stops with 100 or more boardings per weekday – are shown in Figure 4-19.



Paratransit Service

- MAX
- WES
- Commuter Rail Route
- Light Rail Route

Monthly Ramp Deployments

- 0-8
- 8-29
- 29-68
- 68-126
- 126-244

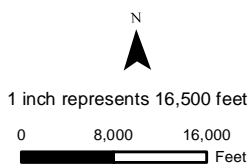
- TriMet LIFT Service
- Washington County Ride Connection

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Department of Land Use and Transportation
Long Range Planning Division

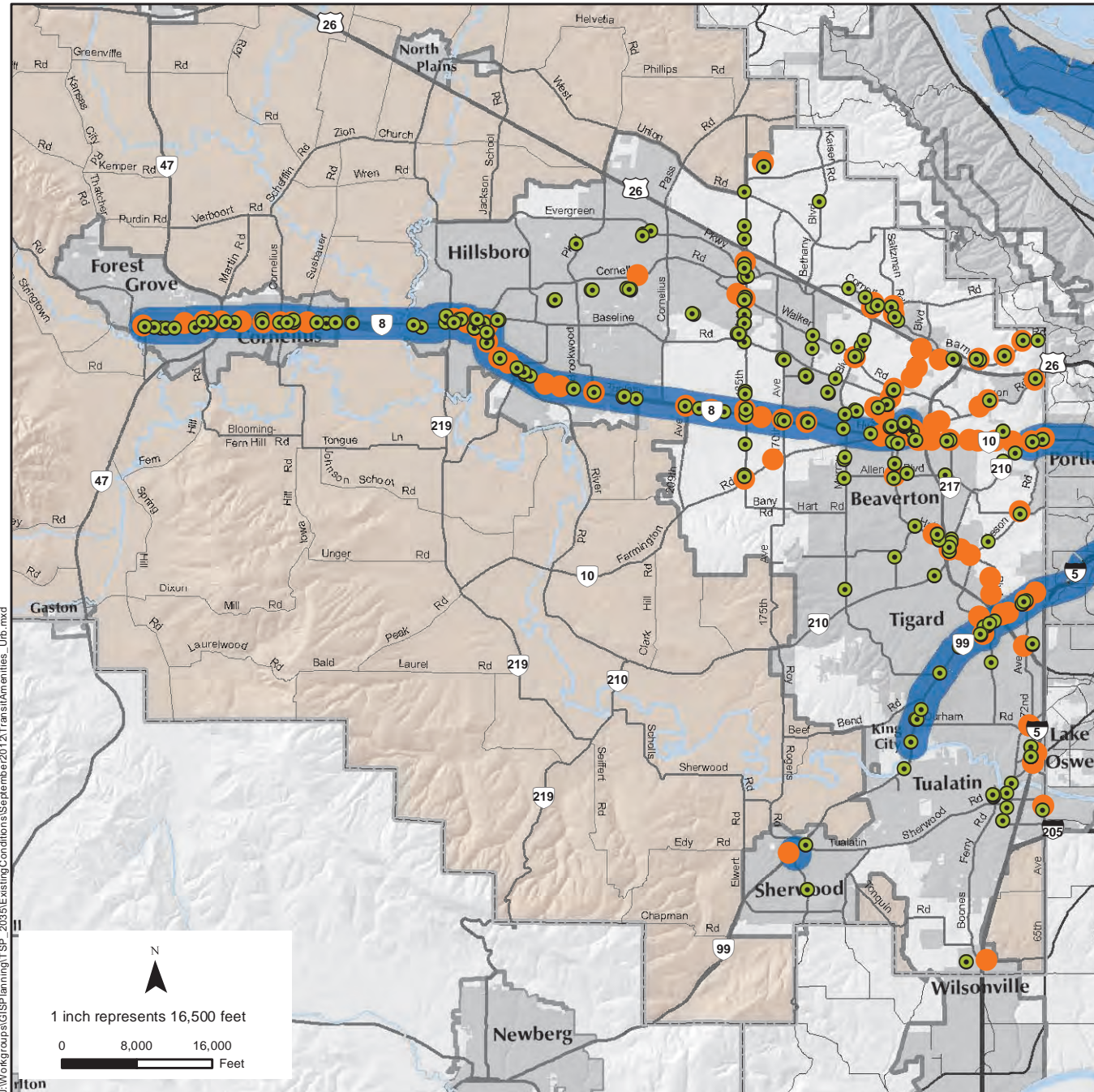
Figure 4-18

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Transit Stop Amenities

-  Transit Amenities (Includes bus shelters, benches, trashcans)
-  Major Bus Stop
-  Frequent Service Bus Routes
-  Rural Washington County



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Care was taken in the mapping but there are no warranties for this product. However, notification of any errors will be appreciated.

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Figure 4-19

Bus Lift/Ramp Deployments

All TriMet buses have ramps or lifts to accommodate persons who have difficulty with steps or who use mobility devices. Low-floor buses with ramps make up about two-thirds of the fleet as of 2012. On MAX, every train has at least one low-floor car to accommodate people with disabilities. All WES commuter trains have accessible level boarding from station platforms.

TriMet records the location and frequency of all bus ramp/lift deployments to understand where additional bus stop or other access improvements may be needed. Table 4-29 ranks the top 20 non-transit center bus stops by the **number of ramp/lift deployments per month**. (Transit centers represent many of the highest ramp deployment locations due to overall trip volume, and are typically well-equipped to accommodate people with disabilities.) Non-transit center bus stops with high ramp/lift activity are often located near senior housing or health care facilities. Figure 4-18 symbolizes bus stops with larger dots corresponding to more monthly ramp deployments. Line 57 scores highly in this regard.

Table 4-29: Top 20 Non-Transit Center Bus Stops by Monthly Ramp/Lift Deployments, Spring 2012

Bus Route(s)	Stop Location	Direction	City/Area	Monthly Ramp Deployments
57	SE TV Hwy & 44 th	Westbound	Hillsboro	130
57	SE TV Hwy & 44 th	Eastbound	Hillsboro	125
88	SW 197 th & Frances	Northbound	Aloha	74
52	PCC Rock Creek main stop	Northern terminus	Rock Creek	73
57	2200 block Baseline St	Westbound	Cornelius	60
47,48,57	SE Baseline St & 7 th	Westbound	Hillsboro	56
57	SE TV Hwy & Sunset Esplanade	Eastbound	Hillsboro	52
47,48,57	SE Oak & 7 th	Eastbound	Hillsboro	50
57	SW Washington & Adams	Eastbound	Hillsboro	47
57	SW TV Hwy & 198 th	Westbound	Aloha	46
20	SW Cedar Hills & Fairfield	Northbound	Cedar Hills	43
88	SW 197 th & Stacey	Southbound	Aloha	43
57	SE TV Hwy & 67 th	Westbound	Hillsboro	42
57	SE TV Hwy & 24 th	Westbound	Hillsboro	42
46	3100 block Dawson Creek Dr	Northbound	Hillsboro	42
57	SE TV Hwy & Minter Bridge	Eastbound	Hillsboro	39
96	10100 block SE Commerce Circle	Southern terminus	Wilsonville	39
57	SE TV Hwy & 229 th	Eastbound	Hillsboro	38
52	NW 185 th & West Union	Southbound	Rock Creek	38
57	2900 block Pacific Ave	Westbound	Forest Grove	36

Source: TriMet, Spring 2012 Passenger Census

Transit Stop Amenities

TriMet bus stops range from signposts along unimproved road shoulders to more functional and fully-accessible stops with sidewalk connections, concrete pads, bus shelters, benches, trash cans and lighting. TriMet has guidelines and standards for bus stops and amenities. As funds are limited, TriMet typically provides shelters and benches only at the highest ridership bus stops (and at all rail stations). Figure 4-19 shows those transit stops that include a shelter, bench and trash can. Out of 1,993 transit stops in Washington County, 318 have these amenities. Also visible in Figure 4-19 are several “major bus stops” – stops with 100 or more boardings during an average weekday – that have no amenities. Many of these deficient stops are on busy roadways like Cedar Hills

Boulevard or Hall Boulevard. MAX and WES stations and transit centers generally have more amenities than individual bus stops, with shelters and seating joined by real-time arrival displays, bicycle parking, public art, and at some locations, food vendors.

Park and Rides

In the suburban setting that characterizes much of Washington County, park and rides provide a convenient option for people who are not within reasonable walking or bicycling distance of a transit stop but have access to an automobile. TriMet offers designated automobile parking at a majority of its rail stations in Washington County, on property either owned or leased by the agency. Park and rides are available at other locations through leases and agreements with churches, businesses and shopping centers. Many of these secondary locations are available Monday through Friday only. Table 4-30 lists TriMet-approved park and ride locations. A total of **5,447 parking spaces** are available at TriMet park and rides countywide.

Table 4-30: TriMet Park and Ride Locations in Washington County

At Rail Stations		At Other Locations	
Location (West to east, then north to south)	Parking Spaces	Location	Parking Spaces
Hillsboro Parking Garage (Hatfield Government Center)	250	Bethel Congregational Church* 5150 SW Watson Ave	50
Hillsboro Intermodal Transit Facility (Tuality Hospital/SE 8 th Ave)	85	Boones Ferry Community Church* 20500 SW Boones Ferry Rd	20
Fair Complex/Hillsboro Airport MAX station	396	Cedar Hills United Church of Christ* 11695 SW Park Way	46
Orenco Station/NW 231 st Ave MAX station	180	Cedar Mill Bible Church* 12208 NW Cornell Rd	16
Quatama/NW 205 th Ave MAX station	310	Christ the King Lutheran Church* 11305 SW Bull Mountain Rd	30
Willow Creek/NW 185 th Ave Transit Center	595	Mohawk Park & Ride SW Martinazzi & Mohawk	232
Elmonica/SW 170 th Ave MAX station	430	Progress Park & Ride SW Scholls Ferry & Hwy 217	122
Beaverton Creek MAX station	417	Seventh Day Adventist Church* 14645 SW Davis St	113
Millikan Way MAX station	400	Sherwood Park & Ride* SW Main & Railroad	30
Sunset Transit Center	627	Sherwood Regal Cinemas* 15995 SW Tualatin-Sherwood Rd	50
Hall/Nimbus WES station	50	Somerset Christian Church* 16255 NW Bronson Rd	30
Tigard Transit Center (Tigard WES station)	100	Southminster Presbyterian Church* 12250 SW Denney Rd	20
Tualatin South Park & Ride* (Tualatin WES station)	147	Tigard Park & Ride SW 74 th & Pacific Hwy	220
TOTAL	3,987	Tualatin Park & Ride SW 72 nd & Bridgeport	466
		Valley Community United Presbyterian Church,* 8060 SW Brentwood St	15
		TOTAL	1,460

Source: TriMet, <http://trimet.org/parkandride/index.htm>
*Parking available Monday through Friday only.

Transit and Bicycles

Bicycling is a convenient method of traveling to and from transit stops that are too far to reach by walking or inconvenient to reach by car. It is also an essential means of transportation for people without cars. Upon arriving at a transit stop by bicycle, two choices are available: bringing the bicycle aboard the transit vehicle, or parking the bicycle at the transit stop.

For those that wish to travel with their bikes, all regular TriMet buses and full-size SMART buses are equipped with **retractable bike racks** at the front of the vehicle, with room for two bicycles. TriMet trains also provide **designated space for standard-size bicycles**. Newer, low-floor MAX cars have four vertical bicycle hooks in addition to four “priority seating areas” that may be used by bicyclists in the absence of any older adults or people with disabilities that may need the space. Older, high-floor MAX cars have six designated spaces for bicycles. WES commuter trains feature two bike racks and space for four additional bikes in the priority seating areas. Even with as many as 16 spaces for bicycles on a newer two-car MAX train, demand exceeds capacity on many trains through Washington County, especially during peak hours.

For those concerned about not finding space for their bikes on a train or bus, bicycle parking is an alternative. Most MAX and WES stations feature staple- or loop-style **bicycle racks** – the most secure type of non-enclosed bicycle parking. TriMet also offers **bicycle lockers** at every MAX and WES station in Washington County except Tuality Hospital/SE 8th Avenue. These key-access lockers are available for \$25 per six-month period. As of October 2012, all TriMet bike lockers in Washington County were rented, with waiting lists in effect. In addition, TriMet has recently installed electronic bike lockers at Tigard WES Station and Orenco MAX Station, which are available on demand as opposed to in 6 month cycles for keyed bike lockers. The access key cards for these electronic bike lockers are the same as below.

Two MAX stations – Sunset and Beaverton transit centers – offer European-style bicycle parking facilities called **bike and rides**. These enclosed, secure facilities are accessed through a digital key card. Once inside, users secure their bicycles to metal racks using their own locks. After purchasing and activating a key card for \$25, bicycle parking prices are three cents per hour on weekdays and one cent per hour on weekends. Sunset TC and Beaverton TC bike and rides can accommodate 74 bicycles and 100 bicycles, respectively. TriMet partnered with Washington County and the City of Beaverton to build the bike and rides using American Reinvestment and Recovery Act (federal stimulus) funding. Sunset Bike and Ride opened in 2009 as the first of its kind in the region. Beaverton’s opened in 2011 simultaneously with one in Gresham. Primary goals of bike and rides are to reduce automobile trips to rail stations, to manage demand for bringing bicycles aboard MAX and WES trains, and to provide a higher level of security for people leaving their bikes at stations. As of this writing, TriMet has no formal plans for additional bike and ride facilities in Washington County.

Additional considerations related to bicycles and transit, including roadway access to TriMet rail stations, were discussed in section 4.3.4. Broader access-to-transit needs are discussed in section 4.4.6.

4.4.4 Other Public Transit Providers

SMART

South Metro Area Regional Transit (SMART) operates seven fixed-route bus or shuttle routes in the Wilsonville area. Two SMART routes have stops in Washington County:

- **Route 2X** connects the Wilsonville WES station and Wilsonville Civic Center area with TriMet's Tualatin Park and Ride in Washington County and Barbur Transit Center in southwest Portland. Tualatin Park and Ride offers connections to TriMet's #36, #37, #38, #76 and #96 buses, which collectively link Lake Oswego, Tualatin, Durham, Tigard, Beaverton and Portland. Route 2X provides all-day service from 4:59am to 8:51pm, including half-hour peak headways and one-hour off-peak headways. The route also provides an abbreviated day of service on Saturday.
- **Route 5** has a northern terminus at SW Commerce Circle near the I-5/Elligsen Road interchange in Washington County. This location provides connections to TriMet's #96 express bus to downtown Portland. Route 5 proceeds southward on SW 95th Avenue through a major Wilsonville employment area, ultimately terminating at the Wilsonville WES commuter rail station. Route 5 is an extended peak hour service, running every half hour from 5:25 to 10:10am, and from 3:17 to 7:15pm, weekdays only. The schedule is coordinated with the WES commuter rail.
- **Route 6** connects the Canyon Creek Business Park east of I-5 with the Wilsonville WES station.

One-way fares on the above SMART routes are \$1.25.

Other SMART bus routes provide travel utility to Washington County residents by offering connections from the Wilsonville WES station to other locations in Wilsonville, as well as to Salem and Canby. For example, Washington County residents can commute to State of Oregon jobs in Salem for \$5 one way, using a combination of WES commuter rail and SMART's 1X express bus.

Yamhill County Transit Area

The Yamhill County Transit area (YCTA) provides a hub-and-spoke network of bus routes centered in McMinnville. Two YCTA routes extend into Washington County:

- **Route 33 – McMinnville to Hillsboro** connects McMinnville, Carlton, Yamhill, Gaston, Forest Grove and Hillsboro. It operates five daily round trips on weekdays only. For passengers connecting to MAX, the first northbound trip arrives at Hillsboro Transit Center at 6:50am. The final return trip leaves Hillsboro Transit Center at 6:20pm. Other round trips are spaced throughout the day. Scheduled travel time is 50 minutes from McMinnville to Hillsboro.
- **99W Link** consists of three related bus routes – #44, #45X and #46S – that connect McMinnville, Lafayette, Dayton, Dundee, Newberg, Sherwood and Tigard. All three routes terminate at Tigard Transit Center, providing connections to TriMet's WES and bus #12-Barbur/Sandy. YCTA Route 44 runs Monday through Friday and provides 12 round trips between all of the communities above, including three consecutive hourly trips in both the morning and evening peaks. The first trip reaches Tigard Transit Center at 6:33am; the last trip leaves at 6:20pm. Route 45X is a weekday express bus that follows a similar route as Route 44, but does not stop in Dundee, Dayton or Lafayette. It consists of one morning round trip

and one evening round trip. Route 46S runs on Saturdays only, following the same route as Route 44, but with four total round trips. For all three routes, scheduled travel time from McMinnville to Tigard Transit Center is 62 to 72 minutes.

One-way fares on YCTA buses are \$1.25. Day passes are available for \$2.50.

Columbia County Transit Division

Columbia County operates a system of shuttle buses collectively called the “CC Rider,” including two routes that extend southward into Washington County. Both routes operate Monday through Friday, with one way fares of \$6 between the two counties.

- **Nehalem Valley Route:** This route provides service between Vernonia, Stub Stewart State Park, Staley’s Junction and TriMet’s Willow Creek Transit Center, generally following Highway 47, Highway 26 and 185th Avenue. Service consists of a morning, mid-day and evening round trip. The morning trip reaches Willow Creek Transit Center at 7:15am; the evening trip leaves at 5:30pm. Scheduled travel time from Vernonia to Willow Creek Transit Center is one hour.
- **St Helens/Scappoose to Hillsboro/Beaverton Route:** This route connects St Helens and Scappoose in Columbia County with destinations in central Washington County, including Portland Community College Rock Creek campus, Tanasbourne regional center and Willow Creek Transit Center. Service consists of six round trips per weekday. Scheduled travel time from Scappoose to Willow Creek is 55 minutes.

Tillamook County Transportation District

Tillamook County’s bus service, known as “The Wave,” includes a route from Tillamook to the Portland metro area. **Route 5 Tillamook-Portland** provides two round trips per day, seven days a week, with stops at the Tillamook Forest Center, Banks, North Plains, Tanasbourne and Sunset Transit Center. The route continues to Union Station in downtown Portland. Westbound buses to the coast stop at Sunset Transit Center at 11:00am and 3:40pm daily; eastbound buses stop there at 9:55am and 2:15pm. One way fare to the coast is \$15; round trip is \$20. Scheduled travel time from Sunset Transit Center to downtown Tillamook is one hour, 45 minutes.

4.4.5 Private and Non-Profit Transit Providers

Ride Connection

Ride Connection is a Portland-based non-profit organization that provides several transportation services in Washington County: door-to-door paratransit for seniors and people with disabilities, rural transportation for the general public, rural and urban job access for transportation-disadvantaged commuters, circulator routes for seniors in King City and Beaverton, and one rural transit commuter line connecting North Plains, Banks and the Hillsboro Transit Center. Ride Connection also offers a number of educational programs intended for older adults and people with disabilities, including one-on-one travel training and group travel training. Ride Connection is funded through an agreement with TriMet, and with grants from federal, state, foundation, corporate and

individual entities. Ride Connection provided over 416,000 rides in and offered travel training to over 1,000 participants in 2011.⁴² Additional details on Ride Connection services are provided below:⁴³

- **Door-to-Door:** Door-to-door paratransit service is available for adults 60 and older and people with disabilities, free of charge countywide. Common uses include rides to medical appointments, grocery shopping and other basic errands.
- **U-Ride:** Ride Connection's U-Ride is a rural transportation service open to the general public covering western Washington County. U-Ride operates through contracts with private transportation providers such as taxi companies. U-Ride has two service outlines:
 - **Banks and North Plains:** This Dial-A-Ride program serves customers within the city limits of Banks and North Plains. Service is door-to-door for destinations in Forest Grove, Cornelius or Hillsboro (west of 10th Street). Customers can request trips to and from medical appointments as far east as 185th Avenue in Hillsboro.
 - **Rural West Washington County:** This Dial-A-Ride program serves residents in areas outside the TriMet service district. The service is intended to encourage shared rides. Service is door-to-door to and from destinations in Forest Grove, Cornelius or Hillsboro (west of 10th Street). Customers can request trips to and from medical appointments as far east as 185th Avenue in Hillsboro.
- **Urban Job Access:** This service provides transportation for qualifying lower-income workers in Tigard and Forest Grove. Trips must originate and terminate within the City or Tigard or within the City of Forest Grove, from 6am to 6pm, Monday through Friday.
- **RideAbout:** Ride Connection operates two circulator routes through communities in Washington County that have a high concentration of older adults. In both cases, call-ahead door-to-door service is available for seniors and people with disabilities. The two routes are as follows:
 - **King City RideAbout** connects several neighborhoods in King City with shopping centers on Highway 99W. This service also has a fixed-route, fixed schedule component available to the general public. That service operates 3½ round trips per day, Wednesday through Friday.
 - **Beaverton RideAbout** connects residents of Hollytree Village on Murray Boulevard with destinations including Elsie Stuhr Center (a community center intended for adults 55 and over) and the Cedar Hills WinCo. Call-ahead trips are available Monday through Friday.
- **Community Bus Service:** Ride Connection operates morning and evening commuter transit service open to the general public between downtown Forest Grove, Banks, North Plains and Hillsboro Transit Center. Service is limited to one morning round trip and one evening round trip, Monday through Friday. Service is free of charge.

⁴² Ride Connection, About Us, <http://www.rideconnection.org/Ride/AboutUs.aspx>

⁴³ Ride Connection, Services, <http://www.rideconnection.org/Ride/Services.aspx>

OC&W Coachways

Northwest POINT (Public Oregon Intercity Transit) is one of three inter-city shuttle bus routes in Oregon operated by private sector OC&W Coachways with supplemental funding from ODOT. This particular route provides twice-daily round trips between Portland Union Station, Cannon Beach and Astoria. The service includes a “flag stop” in Manning along Highway 26 in western Washington County. Westbound buses stop in Manning at 10:05am and 6:55pm daily; eastbound buses stop at 9:55am and 7:50pm. One-way adult fares from Manning to Cannon Beach and Seaside are \$12; Manning to Astoria, \$13; Manning to Union Station, \$7. Discounts of 15% are available for adults 62 and older.

Tualatin Chamber of Commerce

The Tualatin Chamber of Commerce operates the **Tualatin Shuttle** in partnership with major employers in that city. The service uses a dial-a-ride model and operates from 5:30am to 9:30am and from 2:00pm to 6:00 pm, Monday through Friday. The transit vehicle is either a 15-passenger van or a mini-van, depending on demand. Service is free of charge. The first morning pick-up is in downtown Portland, allowing commuters to reach Tualatin before bus service starts. Remaining service is in the Tualatin area, including stops at the Tualatin WES station and Tualatin Park and Ride. The Tualatin Shuttle fills a major gap in public transit service in this area.

Employee and Student Shuttles

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

- The Intel shuttle connecting Orenco Station MAX station with Ronler Acres campus;
- The Intel shuttle connecting Fair Complex MAX station with Jones Farm campus; and
- A group of Nike shuttles that connect to Millikan Way, Beaverton Creek and Elmonica MAX stations.

Nike reported 84,000 person trips on its five employee shuttles in fiscal year 2012 (that’s roughly 350 trips per average weekday). Ridership on Intel shuttles was not available, but the company provides:

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

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

- The **PCC Blue Line** shuttle provides 11 weekday round trips between PCC Rock Creek campus, Sunset Transit Center and PCC Sylvania Campus in southwest Portland.

- The **PCC Red Line** shuttle provides ten roundtrip weekday round trips between PCC Rock Creek campus, Sunset Transit Center and PCC Cascade campus in north Portland.

Systemwide ridership of PCC's shuttles has doubled in the past five years, totaling 265,190 trips in Fiscal Year 2011-2012.

4.4.6 Transit Needs

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

What We've Heard

Public involvement as part of *TSP 2035*, combined with community input from other planning projects (including the *Aloha-Reedville Livable Community Plan* and *TV Highway Concept Plan*), have revealed a variety of concerns about transit service, amenities and safety in Washington County. Major themes and particular concerns raised during the public involvement process include the following:

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

Analysis of Transit Service and Density

A geographic analysis of transit service and land use patterns helps inform the discussion of transit deficiencies and future needs. Figure 4-20 compares existing transit service with household and employment distributions anticipated in 2035, based on the following assumptions and methodology:

- A location is considered to be “served by transit” if it is within **reasonable walking distance** of a transit stop. Commonly used thresholds to define walking distance to transit are ¼ mile for bus service and ½ mile for rail service. This analysis follows suit, except that ½ mile is also used for frequent service bus routes (those with 15-minute peak headways). The analysis uses Euclidean (straight line) buffers of bus routes (lines) and rail stations (points), rather than network distance and individual bus stops. This means that transit service areas may be overrepresented in some locations, especially near major linear barriers such as freeways and creeks.

- **Transit frequency level of service (LOS)** is defined by weekday peak-hour headways on each existing transit route. LOS classes are customized to TriMet’s current portfolio of service frequencies and differ from guidelines in the Highway Capacity Manual published by the Transportation Research Board. Delineations for the purposes of this analysis are:
 - LOS A: 1 – 8.99-minute headways (includes routes with 7.5-minute or more frequent service)
 - LOS B: 9 – 17.99-minute headways (includes 15-minute service)
 - LOS C: 18 – 25.99-minute headways (includes 20-minute service)
 - LOS D: 26 – 36.99-minute headways (includes 30-minute service)
 - LOS E: 36-minute or greater headways (includes 45 and 60-minute service)
 - LOS F: No regular service available

- **Transit-supportive densities** are based on the number of households and jobs per acre in traffic analysis zones (TAZs), as forecasted for 2035 in the Regional Travel Demand Model. It is generally accepted that the minimum density needed to support regular transit service is three households per acre or four jobs per acre. This analysis goes further, matching increasing densities with more frequent transit service. First, households and jobs are combined into a single unit of measurement – “household/job equivalent units” (HHJEUs) – by multiplying the number of jobs in a TAZ by $\frac{3}{4}$ and then adding them to the number of households in that TAZ. Dividing the resulting number by the gross acreage of the TAZ results in density, which is then assigned into one of the following classes:
 - 0 – 2.99 HHJEU/acre: not a transit-supportive density
 - 3 – 5.99 HHJEU/acre: appropriate for LOS E (45-60-minute or less frequent headways)
 - 6 – 8.99 HHJEU/acre: appropriate for LOS D (30-minute headways)
 - 9 – 11.99 HHJEU/acre: appropriate for LOS C (20-minute headways)
 - 12 – 19.99 HHJEU/acre: appropriate for LOS B (15-minute headways)
 - 20 HHJEU/acre or greater: appropriate for LOS A (7.5-minute or more frequent headways)

- Transit service areas, classified by frequency level of service, are overlaid with TAZs, classified by households and jobs per acre. The two measures are compared by performing a spatial join. Any given location can then be described as **not served, underserved, appropriately served or well served** by transit. These conditions are displayed in Figure 4-20.

According to the analysis, areas in 2035 that would be underserved by existing transit service include:

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

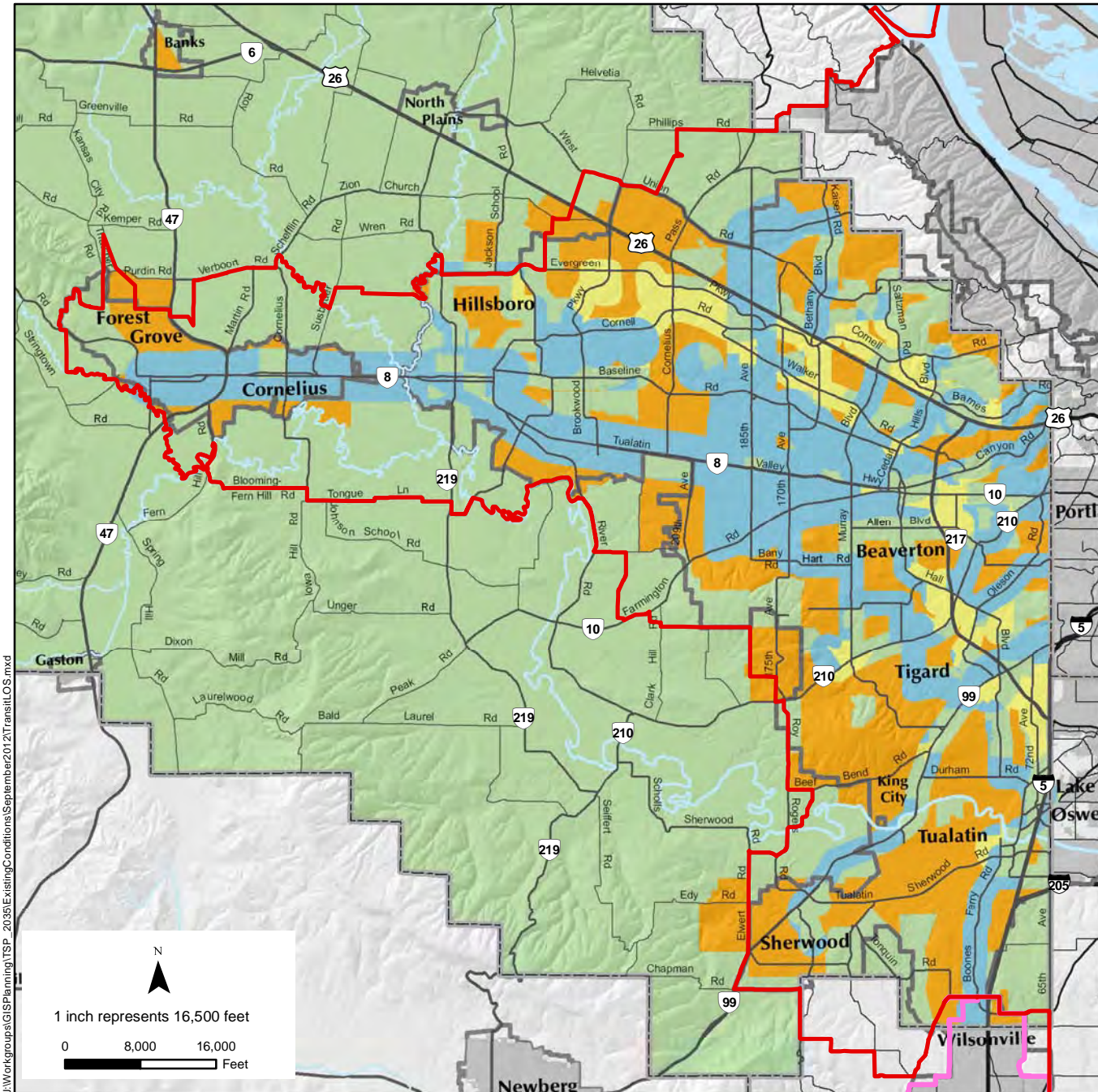
- Southern areas of Tigard, especially along Durham Road;
- The Tualatin-Sherwood industrial employment area; and
- Southern and western neighborhoods of Sherwood.

Many of these areas are underserved based on present densities and transit service.

Areas shown as *well served* are places that are less densely developed than what a high-frequency transit route would typically serve. Such areas often correspond with single-family neighborhoods and suburban-format retail areas near frequent service transit lines including MAX, bus #57 – TV Highway and bus #52 – Farmington/185th. Portions of Aloha, Cornelius, Rock Creek and Raleigh Hills meet this description and benefit from it. Being well served by transit does not mean that transit service should be reduced or that transit headways should be longer in these locations. It may indicate where denser development could be feasible, if a number of other criteria were met, including support by the community and local officials.

Many other factors play a role in transit demand and ridership, including the demographic and socio-economic characteristics of neighborhoods (especially income and age), the safety and “walkability” of areas near transit stops, the reliability of transit service, and qualitative perceptions about the transit experience.

Transit Service Needs Analysis



- Well-served by Transit
- Appropriately Served by Transit
- Underserved by Transit
- Underserved - No Transit
- TriMet Service District
- SMART District

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Planning and Development Services

Figure 4-20

Westside Service Enhancements Project

In 2012, TriMet began a study of transit service needs in Washington County called the Westside Service Enhancements Project. The study area is limited to TriMet's service district north of Scholls Ferry Road and Barrows Road. Data collection included a public survey of resident and worker travel habits and perceptions, interviews with study area stakeholders, and a geographic analysis of residential concentrations, employment hubs and commuting travel patterns. Preliminary findings reveal existing or future needs for transit service in many of the areas described in Washington County's analysis above, including:

- Laidlaw Road and 174th Avenue in Bethany;
- 170th Avenue south of Elmonica MAX station;
- Alocleck Drive, Amberwood Drive and 206th Avenue between Evergreen Parkway and Quatama MAX station;
- Century Boulevard (including present-day 229th and 231st avenues and a future bridge over Rock Creek) from Gordon Faber Recreation Complex to the South Hillsboro plan area;
- Brookwood Parkway/Avenue from Fair Complex or Hawthorne Farm MAX station to the South Hillsboro/Witch Hazel area;
- Evergreen Road/Parkway, Shute Road and Butner Road in north Hillsboro; and
- Horizon Boulevard and Barrows Road in the Progress Ridge area of south Beaverton.

For many of the above corridors, significant development and infrastructure investment would need to occur before TriMet provides new service. For example, a route along the Century Boulevard corridor would likely be prompted by major development in the South Hillsboro plan area and construction of the Century Boulevard bridge over Rock Creek. In the near term, TriMet plans to focus largely on restoring more frequent service on existing bus routes that were impacted by recent service cuts.⁴⁴

TriMet plans to undertake a similar service analysis for the Southwest Corridor, including Tigard, Tualatin, Sherwood and King City, once the Westside Service Enhancements Project is complete.

Bus Stop Amenity Needs

As mentioned earlier, TriMet does not have sufficient resources to provide the full array of amenities – shelters, benches, trash cans – at every bus stop. TriMet works with partner jurisdictions including Washington County to appropriately match amenities with transit patronage at each stop. TriMet generally does not provide shelters and benches at locations that lack sidewalks and curbs.

The geographic comparison of major bus stops and stops without amenities shown in Figure 4-19 reveals those stops that may warrant amenity improvements. Particular concentrations of such stops include:

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

⁴⁴ Correspondence with Tom Mills, Service Planner at TriMet, September 2012.

Access to Transit Needs

TriMet's 2011 *Pedestrian Network Analysis* project assessed the availability of pedestrian amenities such as sidewalks and crosswalks near high-ridership transit stops throughout the region. Locations with a significant concentration of high-ridership transit stops, a relatively high density and mix of land uses, and an observed deficiency of pedestrian facilities, were advanced as "focus areas" for further site study and consideration of solutions. Washington County contains four focus areas where, according to the analysis, safer access to transit is needed. The analysis recommends specific solutions to address these needs, including wider sidewalks, enhanced and more frequent pedestrian crossings, pedestrian pathways and bus shelters. Recommended solutions are reported in Table 4-31. Note that each focus area includes at least a ½-mile buffer of the location listed in the table.

Table 4-31: TriMet Pedestrian Network Analysis- Access to Transit Focus Area Recommendations

Focus Area	Transit Routes	Recommended Solutions (edited for brevity)
SW Farmington Road and Murray Boulevard	52, 57, 62	<ul style="list-style-type: none"> • 10- to 14-foot sidewalks, including planted buffer, along Farmington Rd east and west of Murray Blvd. • Bus shelter at stop ID 1660. • Frequent, enhanced pedestrian crossings and 10-foot sidewalks (including planted buffer) along TV Highway east and west of Murray Boulevard. • Additional, frequent, enhanced pedestrian crossings along Farmington Rd. • Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at Farmington/Murray and TV/Murray. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions.
Tanasbourne Regional Center	47, 48, 52	<ul style="list-style-type: none"> • Shorten crossing distances and provide more time for pedestrians to cross at 185th/Cornell. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. • Shorten crossing distances and provide more time for pedestrians to cross at the 185th/Evergreen. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. • Enhanced crossing treatments to assist people crossing the street at the driveway into the Tanasbourne Town Center on Stucki Ave. • Build sidewalks along Walker Rd between Amberglen and 185th, including landscaped buffer. • Provide ADA accessible landing pads at bus stops along Evergreen Pkwy.
Tigard Transit Center	WES, 12, 45, 64, 76, 78	<ul style="list-style-type: none"> • 10- to 14-foot sidewalks, including planted buffer, along Pacific Highway. • Fill sidewalk gaps along Scoffins and Ash streets, which provide access to the transit center. • Formalize informal path between Commercial and Center streets by paving it, making it ADA accessible, providing lighting, and wayfinding signage. • Provide a designated pedestrian path through the transit center park and ride, connecting to Main Street. • Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at Pacific/Greenberg, Pacific/Hall and Pacific/Dartmouth. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions.
SW Beaverton-Hillsdale Highway and Scholls Ferry Road	54, 55, 56, 61	<ul style="list-style-type: none"> • Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at Beaverton-Hillsdale/Oleson and Beaverton-Hillsdale/Oleson. Consider other signal treatments like leading pedestrian phases, automatic recall for pedestrian actuated signals, and right turn on red restrictions. • 10- to 14-foot sidewalks, including planted buffer, along Scholls Ferry Road. • Enhanced crossing treatments along Scholls Ferry Road. • 10- to 14-foot sidewalks, including planted buffer, along Beaverton-Hillsdale Highway.

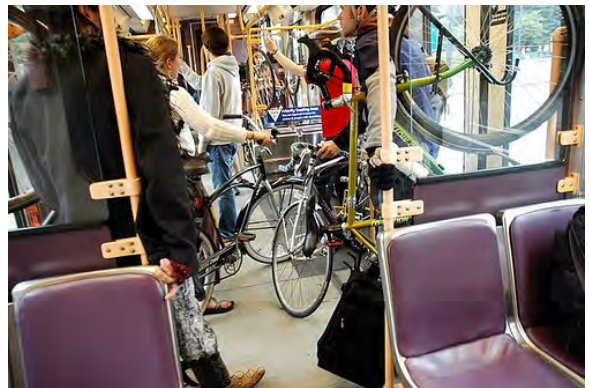
Source: TriMet Pedestrian Network Analysis, 2011

Additional locations in Washington County would benefit from improvements that provide safer and more convenient access to transit. Resources to help identify additional locations include Table 4-28 in this report (Top 20 Non-Transit Center Bus Stops by Ridership), Table 4-29 in this report (Top 20 Non-Transit Center Bus Stops by Monthly Ramp Deployments), and remaining portions of TriMet’s Pedestrian Network Analysis document.

Other Transit Needs

Based on observed conditions and public input, other transit needs in Washington County include:

- Additional and higher-quality **bicycle parking** at MAX and WES stations, including more bicycle lockers, bike and ride facilities, or other secure bike parking solutions. Based on ridership and major employment locations, bicycle parking improvements could particularly benefit **Willow Creek, Millikan Way, Hatfield Government Center, Orenco Station and Fair Complex** MAX stations. Outside of Washington County, a bike and ride at **Goose Hollow** MAX station in Portland would provide significant utility for those who commute from Portland to Washington County, and could potentially reduce demand for bringing bikes aboard MAX.



MAX train with more bikes than allowed. *Photo: Jonathan Maus*

- **Bus pull-outs** or other operational treatments at in-lane bus stops on roadways with congestion problems, including TV Highway and 185th Avenue. Companion solutions may also be helpful, such as **queue-jump lanes** in which buses can proceed through an intersection using a right-turn lane before or after a bus stop. **Transit signal priority** is another tool that can improve transit service reliability along with general traffic operations. It extends a traffic signal green phase by a few seconds if an approaching bus is observed to be running behind schedule.
- **Real-time transit arrival displays** at any rail stations that lack them, and at appropriate major bus stops.
- A comprehensive look at **park and rides**, including demand, capacity, pricing, redevelopment considerations and structured parking. The most obvious location where demand exceeds capacity is Sunset Transit Center. Car parking here is usually unavailable after 7:30am on weekdays, which may discourage some transit use.
- A comprehensive **rider's guide** for the many overlapping transit services in Washington County. Some information about other services is posted on the TriMet website at <http://trimet.org/schedules/othertransit.htm>

4.4.7 High Capacity Transit Planning

As part of the 2035 RTP, Metro completed a Regional High Capacity Transit (HCT) System Plan in 2010. It is the first comprehensive vision for HCT in the Portland region since 1982. The HCT Plan explores the feasibility of new light rail, commuter rail, rapid streetcar or bus rapid transit lines in the region, both to improve mobility and transit performance, and to support land use goals set out in the Metro 2040 Growth Concept. HCT routes are envisioned to connect the region's centers – areas with higher densities, mixed land uses, walkable streets and higher expectations for non-automobile modal targets. Metro developed the HCT Plan in coordination with TriMet, counties (including Washington), cities, and a range of private stakeholders from development and corporate interests to environmental and active transportation advocates. The HCT Plan also included public workshops in communities throughout the region.

Starting with 55 potential HCT corridors collected from past plans, stakeholder interviews and public workshops, Metro used a screening process based on ridership, cost, environmental constraints, equity, connectivity, congestion, land use and travel demand. The result was 18 refined HCT corridors divided into four tiers. In Washington County, the tiers and proposed corridors are as follows:⁴⁵

Near-term regional priority corridors: Corridors that are most viable for implementation in the next four years.

- Corridor 11: Portland to Sherwood in the vicinity of Highway 99W (the “Southwest Corridor”)
- Corridor 34: WES commuter rail frequency improvements to 15-minute all-day service, seven days a week

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

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

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

- Corridor 12: Hillsboro to Forest Grove extension

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








- Corridor 38S: Sherwood to Tualatin

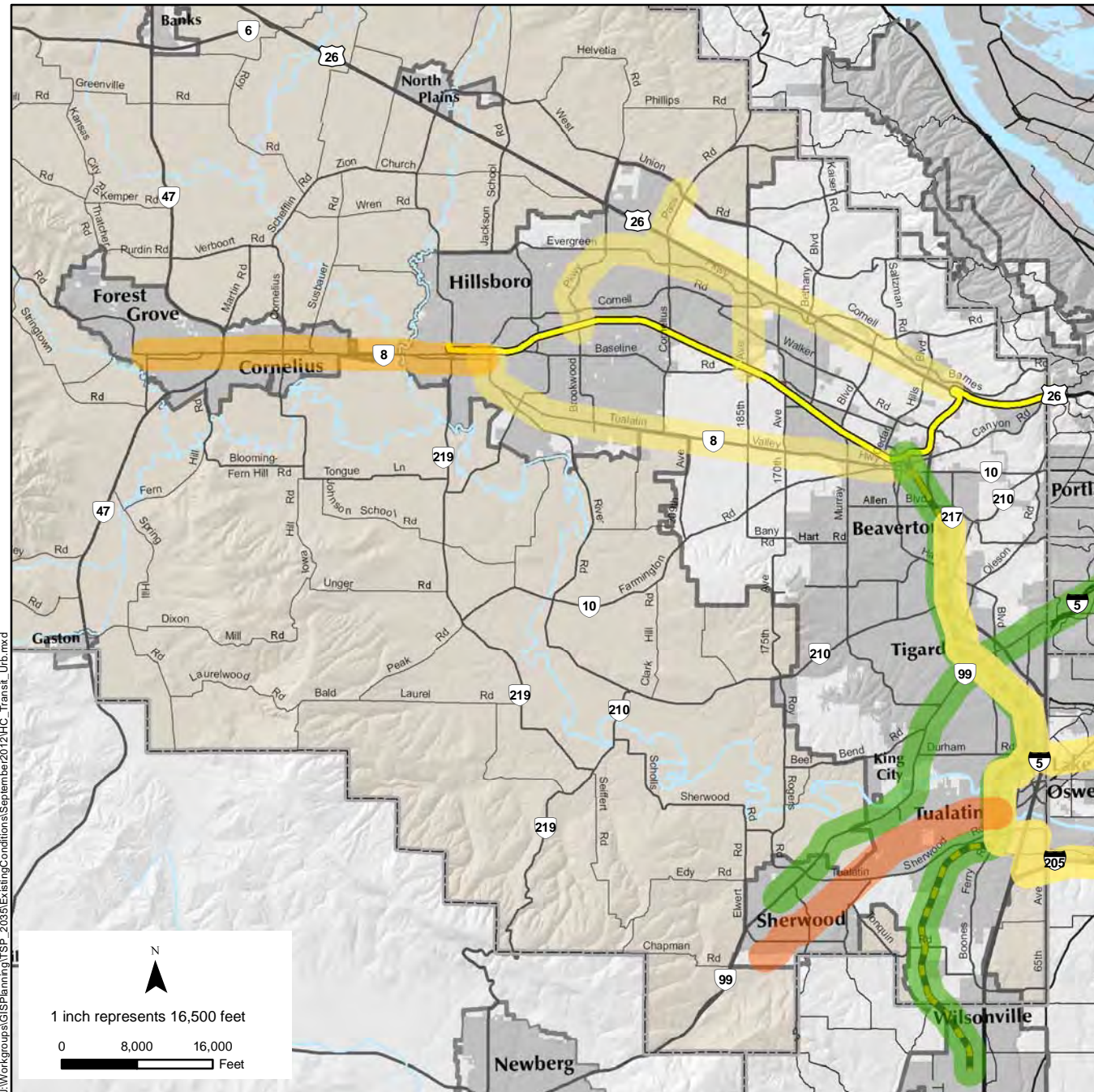
Washington County HCT corridors are mapped in Figure 4-21. Initial planning has begun in the **Southwest Corridor** (Corridor 11) connecting Portland, Tigard, Tualatin and Sherwood. The results of that planning effort will include a series of HCT alternatives for further study. Elsewhere in the county, **TV Highway** (Corridor 32) is often discussed as a potential corridor for bus rapid transit (BRT), a service that runs on rubber tires but has stations and amenities similar to light rail.

⁴⁵ Metro, Regional High Capacity Transit System Plan 2035 Summary Report, March 2010.



Proposed High Capacity Transit

-  Near-Term Regional Priority Corridors
-  Next Phase Regional Priority Corridors
-  Developing Regional Priority Corridors
-  Regional Vision Corridors
-  Light Rail Route
-  Commuter Rail Route
-  Rural Washington County



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Department of Land Use and Transportation
Planning and Development Services

Figure 4-21

4.4.8 Oregon Passenger Rail Planning

In 2010, ODOT was awarded a Federal Railroad Administration appropriation to develop an environmental impact statement (EIS) for improving inter-city passenger rail service in Oregon's portion of the federally-designated Pacific Northwest Rail Corridor connecting Vancouver (Canada), Seattle, Portland and Eugene/Springfield. ODOT began the EIS process in 2012. The project will have two primary deliverables, due in 2015: a **Tier 1 EIS** that will select a preferred route alternative and a **System Development Plan** that will describe how the preferred alternative will be implemented. Major decisions will include the locations of stops, the propulsion system used, and service characteristics such as travel time and the number of daily trips.

Even in this early stage of the EIS process, it is understood that three corridors will likely form the basis of the alternatives:

- The existing Amtrak/Union Pacific route through Portland, Oregon City, Canby, Woodburn, Salem, Albany and Eugene;
- An alignment that combines the Portland & Western Tillamook branch and the former Oregon Electric Railway, passing through Lake Oswego, Tualatin and Wilsonville; and
- A potential alignment in the median of Interstate 5.

The latter two corridors pass through Washington County. Representatives from the County, City of Tualatin and City of Wilsonville are participating in the EIS process to ensure that any new passenger rail alignment provides the most benefits and the least negative impacts. Concerns raised in initial workshops include:

- Automobile traffic impacts in the Tualatin Town Center, especially freight traffic on Tualatin-Sherwood Road;
- Community/environmental impacts associated with transferring from the Tillamook Branch to the Oregon Electric Railway, which meet at a grade-separated right angle in Tualatin Community Park; and
- Potential conflicts with future service improvements on WES commuter rail, which would share the Oregon Electric portion of the route.

If these concerns were addressed, and a Washington County route chosen, the Oregon Passenger Rail project could provide significant transportation utility to county residents and businesses, particularly by offering daily commuting options to and from Salem.

4.5 TUALATIN RIVER WATER TRAIL

A water trail is a river, creek or other linear waterway that is designated for recreational paddling, typically by people in canoes, kayaks or rafts. While the primary facility is the waterway itself, water trails are enhanced by establishing designated put-in and take-out sites with parking and signage, and by providing maps that identify the route, access sites, aquatic hazards and interpretive information on the surrounding natural and cultural landscape.

The non-profit Tualatin Riverkeepers group has established a Tualatin River Water Trail stretching 33 meandering river miles from Rood Bridge Park south of Hillsboro to Stafford Road in Clackamas County. A majority of the water trail passes through rural farmland and natural areas. A section within the urban growth boundary begins in King City, passes through the Tualatin town center, then exits the county just east of Interstate 5.

Existing Access Points

For Washington County, the most practical concern for the Tualatin River Water Trail is facilitating roadway access to the trail’s boat launch sites. Following the water trail from northwest to southeast, the designated access points are shown in Table 4-32 below.

Table 4-32: Tualatin River Water Trail Access Points in Washington County

River Mile	Access Point	Nearest Road	General Location
38.4	Rood Bridge Park	Rood Bridge Road	South of Hillsboro
29.6	Eagle Landing	Rainbow Lane	Scholls
26.9	Scholls Bridge	Scholls Ferry Road (OR 210)	Scholls
16.2	Schamburg Bridge	Roy Rogers Road	North of Sherwood
11.5	99W Bridge	Pacific Highway (99W)	South of King City
10.6	Jurgens	Jurgens Avenue	Tualatin
8.9	Tualatin Community Park	Tualatin Road	Tualatin

Future Needs

Tualatin Riverkeepers has identified additional locations in Washington County where river trail access would be desirable but is not currently possible:

- Farmington Road bridge
- Munger Lane Natural Area, a Metro-owned property near the village of Scholls
- Tualatin River National Wildlife Refuge

Establishing access at these locations would primarily involve coordination with property owners, including private property owners at Farmington Road and public agencies for the remaining two sites. Tualatin Riverkeepers would likely take the lead in these efforts, with Washington County handling road access issues. At these and other access sites, the county may also play a role in placing water trail signage.

Chapter 5: Goods Movement and Aviation

Washington County is often dubbed “the Economic Engine of Oregon.” Led by established industry clusters in high-tech, clean tech and activewear, Washington County is home to over 232,000 jobs and the highest average weekly wages in Oregon.¹ Critical to maintaining and raising this status is the efficient movement of goods by road, rail, and air. This chapter discusses existing conditions and future needs for roadway freight, freight rail, and air cargo. General aviation and pipelines are also covered.

5.1 ROADWAY FREIGHT CONNECTIONS

This section deals primarily with the transport of freight on roadways because it is the only mode of freight travel over which Washington County has control. Although it is recognized that significant amounts of freight are also transported by rail and pipeline, and to a much lesser extent air, the planning for these modes is done by private companies or other government agencies. Rail, pipeline, and air modes are more specifically discussed as separate elements later in this chapter.

Given the close connection between freight movement and economic growth, it is critically important for Washington County’s freight connections to provide efficient and reliable access for the transport of goods. To keep pace with regional trade volumes that are expected to double by 2035², the Washington County Transportation Plan must identify and address gaps and deficiencies in the freight network. The following section identifies key freight connections and summarizes existing freight needs. Also included are previous findings regarding freight system needs from the Metro Regional Transportation Plan, the Metro Regional Freight Plan, and the ODOT Portland Region Economic Corridor Evaluation Report.

Freight is transported via intermodal, roadway, rail, air and marine facilities. Each of these modes provides an important element of goods movement in Washington County and the Portland Metro region. While all modes are important the majority of freight is moved via roadways, as approximately 67% of freight tonnage in the Portland Metropolitan area moved by truck in 2000³. The following section identifies freight roadway designations and truck demand in Washington County.

5.1.1 Freight Route Destinations

The Countywide Through-truck route system is an important element of the plan. To provide for the most efficient transport of freight and to minimize impacts on residential neighborhoods, through-truck routes are designated primarily on Arterial and Collector roads. However through-truck route designations in this Plan encourage the use of these routes for through-truck travel, but do not restrict through-truck travel or local pickup and delivery by truck to these routes. The primary purpose of designating through-truck routes in this plan is to ensure that any future improvements on these roads provide for the safe and efficient movement of trucks.





¹ County Employment and Wages in Oregon – Fourth Quarter 2011, U.S. Bureau of Labor and Statistics, 2012.

² Regional Freight Plan, Metro, June 2010, pg. 32

³ 2035 Regional Transportation Plan, Metro, June 2010, pg. 1-17



Through-Truck Routes

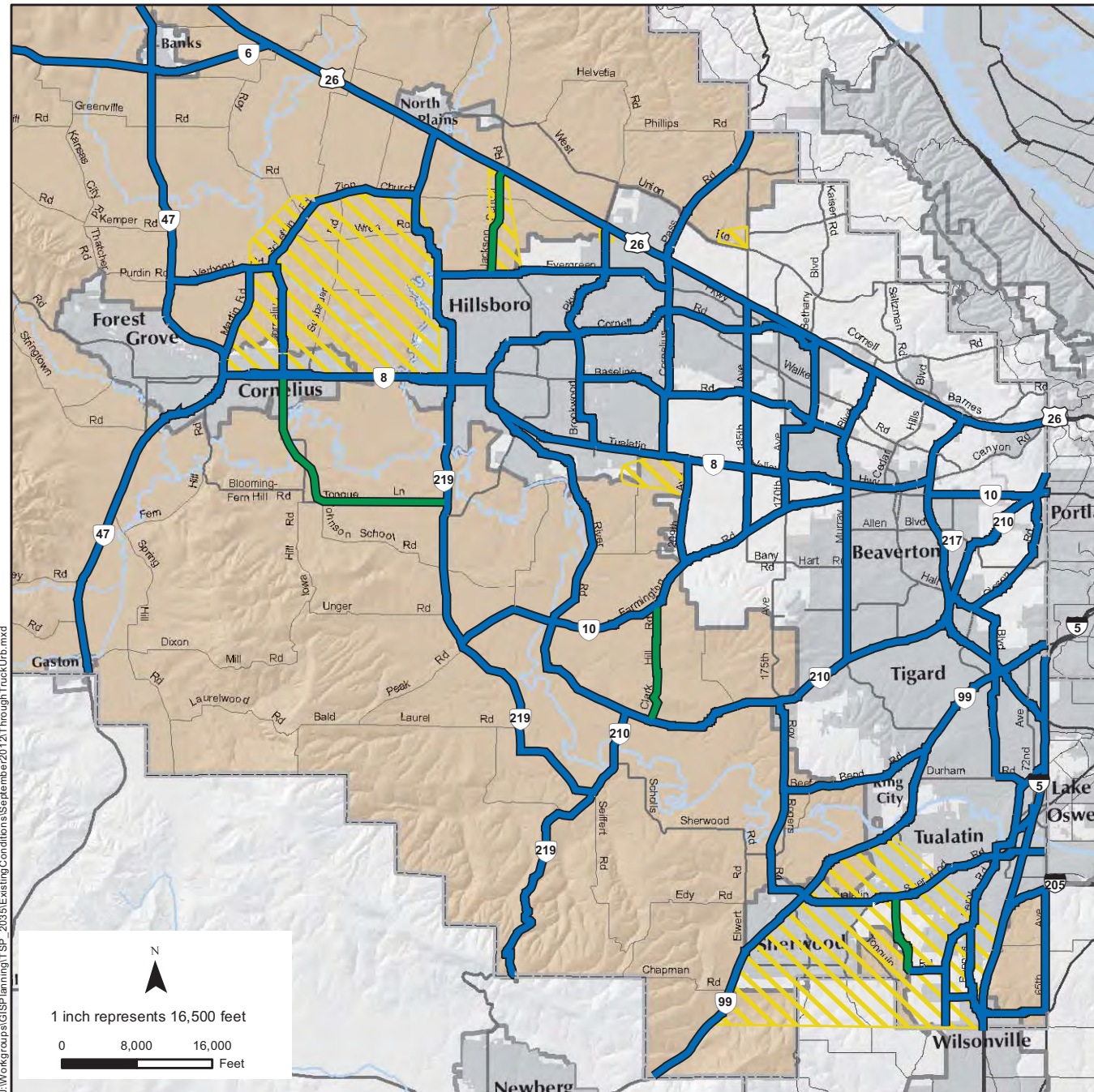
-  Existing Route
-  Proposed Route
-  Study Area*
-  Rural Washington County

* Additional through-truck route designations to be determined by further study.

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Long Range Planning Division

Figure 5-1



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Hazardous Materials







The transport of hazardous materials is regulated by the Federal Motor Carrier Safety Administration under Title 49 Code of Federal Regulations, Parts 390-397, and is not governed by local jurisdictions. Hazardous materials include a variety of substances, ranging from radioactive and medical wastes to gasoline. The transport of non-radioactive hazardous materials requires that vehicles transporting these materials comply with any routing designations of a state, be placarded or marked and not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets or alleys, except where there is no practicable alternative. The transport of radioactive materials is generally restricted to designated preferred routes on interstate highways, beltways or bypasses, where alternative routes have not been designated by a state.

Transport of hazardous materials is permitted on all Through Truck Routes within the County, however the Vista Ridge tunnel (on US 26 near downtown Portland) is closed to such traffic. As a result, hazardous materials are frequently transported via Cornelius Pass Road.

Regional Freight System

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

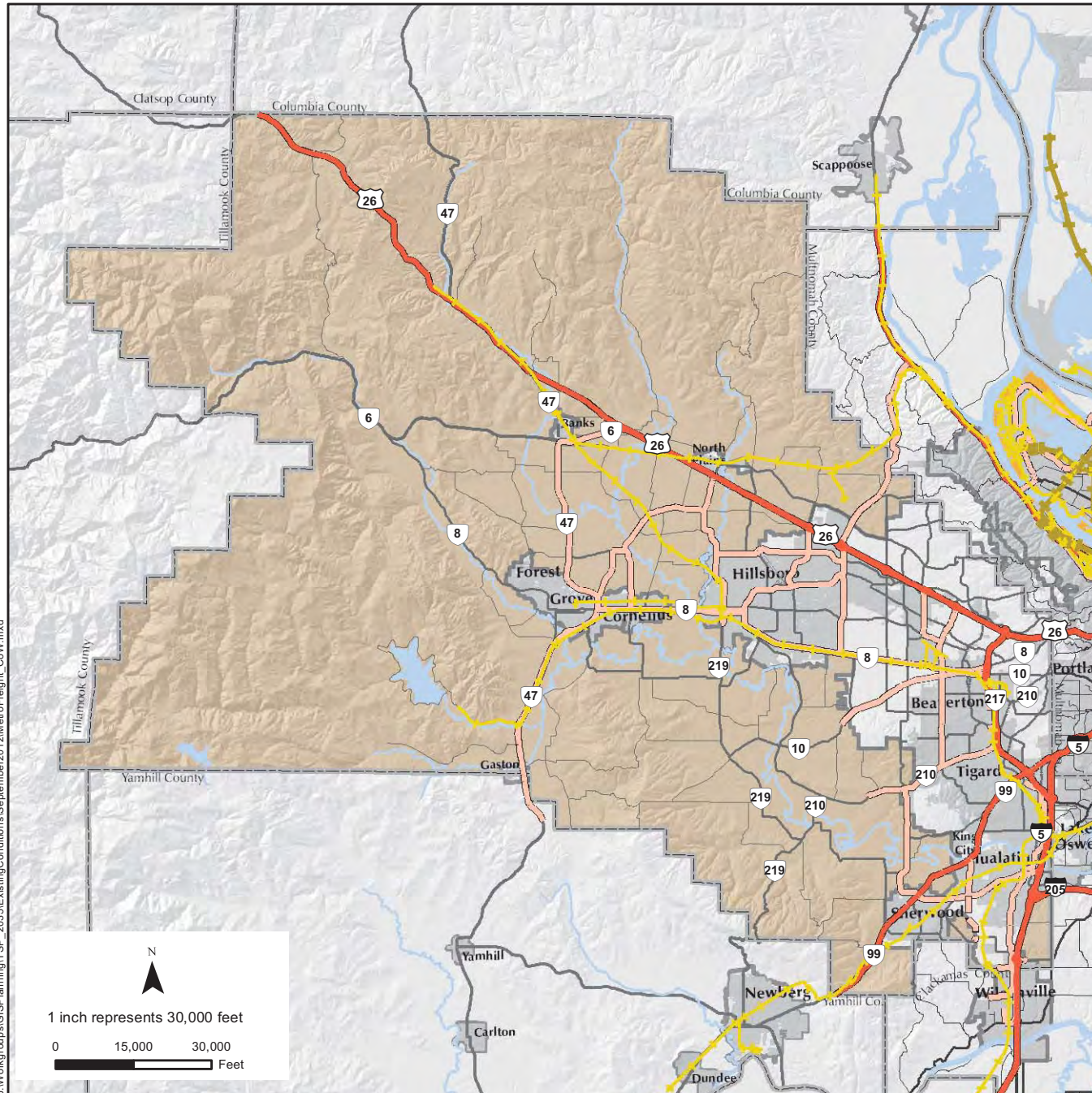
Regional Freight Network

-  Main railroad lines
-  Branch railroad lines and spurs
-  Main roadway routes
-  Main roadway routes (proposed)
-  Road connectors
-  Road connectors (proposed)
-  Rail yards
-  Marine facilities
-  Airports
-  Rural Washington County

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Care was taken in the mapping but there are no warranties for this product. However, notification of any errors will be appreciated.

Department of Land Use and Transportation
Long Range Planning Division

Figure 5-2



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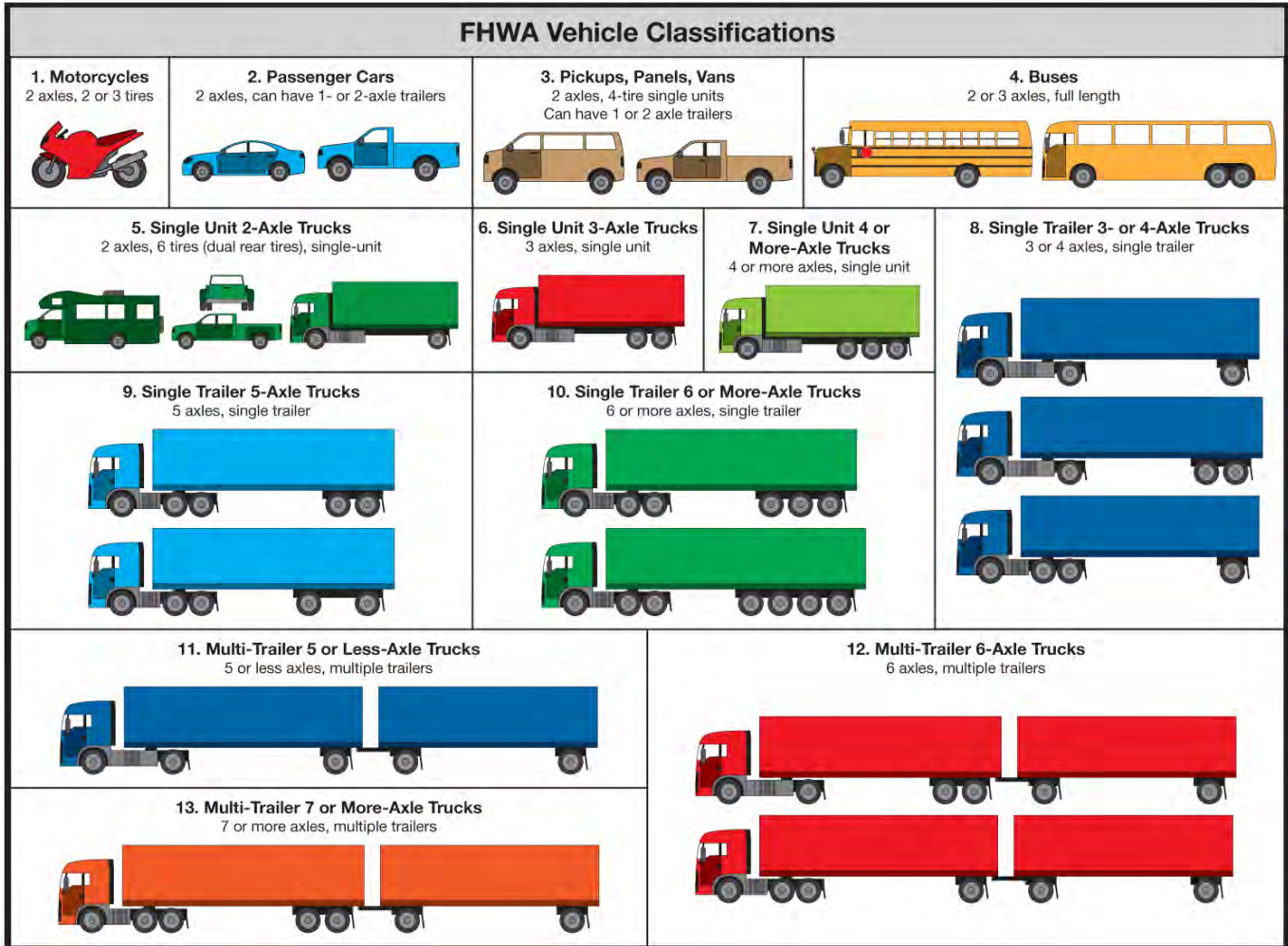
5.1.2 Truck Demand

Truck Counts

Counts of truck traffic have been taken at various locations within Washington County. These provide an understanding of truck operation within the county, but only at the points where the counts are taken. Specific path information about truck trips is extremely limited.

For operational purposes, FHWA classifies vehicles into the following 13 categories:

Figure 5-3: FHWA Vehicle Classifications



Source: FHWA

Washington County vehicle classification counts, use this classification scheme, and describe trucks as class 4 through 13.

Vehicle Classification Counts have been taken at most Washington County count stations over the last 5 years.

Count locations with Highest Truck **Volumes**:

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

Count locations with Highest Truck **Percentages**:

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

The Washington County information is also available in Appendix A.

The Washington County traffic count stations do not include ODOT or City operated roadways. ODOT has a limited number of Automatic Traffic Recorder (ATR) count stations that count trucks on their roads in Washington County. A comparison of 2008 and 2010 (latest comparable data available) truck volumes and percentages for five **ODOT ATR stations** is listed below.

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

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



⁴ All of Tualatin-Sherwood has extremely high truck volumes, a listing of the highest truck volumes in Washington County would be a descriptions of the count station locations along Tualatin-Sherwood Rd. It is listed once with the highest truck volume location.

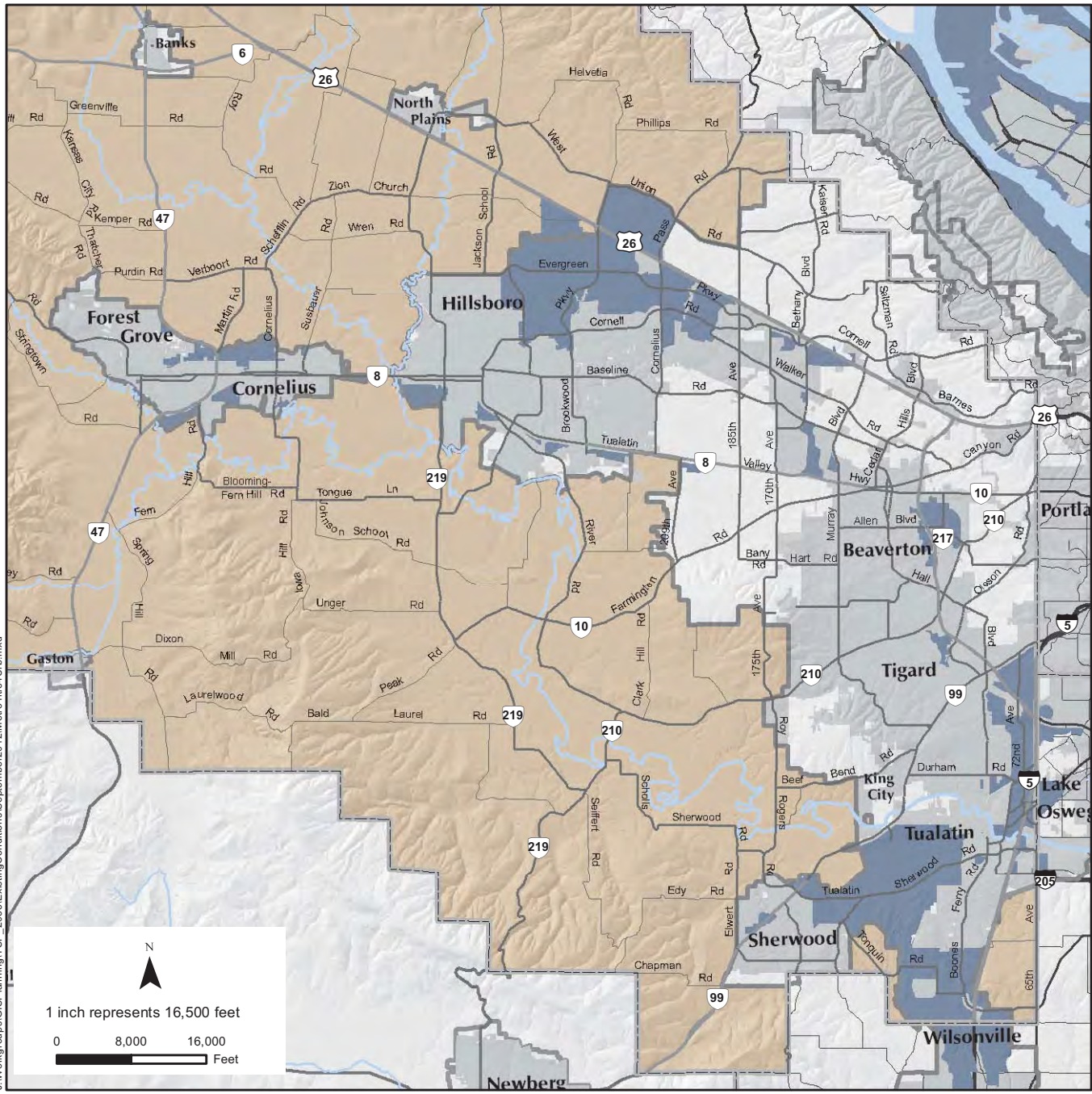
Freight & Truck Traffic Generating Areas

The Roadway Freight System needs to serve industrial and employment locations within Washington County. Many of these locations within the Urban Growth Boundary are identified by Metro Title 4, as shown in figure 5.4 on the following page. Other truck generating uses include many rural activities such as rock quarries, logging, and farming. No map of these activities is included, as they span most of the rural area.



Metro Title 4 Lands

-  Title 4 - Industrial Lands
-  Rural Washington County



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Long Range Planning Division

Figure 5-4

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5.2 ROADWAY FREIGHT GAPS AND DEFICIENCIES

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

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

Findings relevant to Washington County are summarized in the following section.

5.2.1 Metro RTP

The 2035 Metro Regional Transportation Plan (RTP) was completed in June 2010 and characterizes freight travel in the state and the region. The RTP provides a vision for the regional freight network; to enhance freight mobility and access to industrial area and intermodal facilities by focusing strategies on the most critical locations where roadway congestion occurs. That vision is focused on a system approach to plan and manage the freight system in order to reduce delay, increase reliability, protect industrial lands and freight transportation investments, address critical marine and rail needs, and utilize ‘clean, green, and smart’ technologies and practices.

Performance thresholds for reliability on the regional freight transportation system are identified in the Interim Regional Mobility Policy. The threshold is a midday (9 AM to 3PM) one-hour peak period with demand capacity ratio of 0.99 or 0.90, depending on the facility⁵. These thresholds are intended to support off-peak freight mobility and reliability.

The RTP identifies long-term multi-modal needs for key regional corridors. The eight RTP ‘mobility corridors’ that were located in Washington County are listed in Table 5-1, as are the regional freight needs identified for each corridor. Also noted in Table 5-1 are arterial and throughways needs that may be significant to local freight mobility and reliability or address other potentially freight-related concerns. The RTP recommends implementation of the Regional Transportation Functional Plan and Urban Growth Management Functional Plan as the applicable strategy to address the identified freight needs for these corridors. Future Corridor Refinement Plans are recommended for two of the corridors; the Portland Central City to Wilsonville and Sherwood, and from Beaverton to Forest Grove.

⁵ 2035 Regional Transportation Plan, Metro, June 2010, Table 2.4

Table 5-1: Metro RTP Mobility Corridor Freight Needs

Mobility Corridor	Regional Freight Needs
Portland City Center to Tigard	<p>Performance thresholds not met in 2035 midday on:</p> <ul style="list-style-type: none"> • I-5 between Tualatin Town Center and SW Durham Road (both directions) • I-5 around the Lake Grove Town Center(both directions) • SW Durham Road between I-5 and SW Pacific Hwy at the King City Town Center (both direction) • OR 217 between Denney Road and SW Hall Blvd. <p>Throughway needs identified include the close spacing of I-5 interchanges south of the Ross Island Bridge (US 26) and additional crossings over I-5. Fanno Creek, the rail line, and I-5 are located close to each other and function as barriers to crossings. Most of I-5 does not meet peak hour performance thresholds. Arterial connectivity gaps exist between OR 43 and I-5, OR 99W and I-5 (south of Durham Road), between Taylors Ferry Road and Oleson Road, and between I-5/Terwilliger and Washington Square. Arterial performance deficiencies include segments of OR 43, OR 99W, and Boones Ferry Road.</p>
Tigard to Wilsonville	<p>The Grahams Ferry undercrossing of the P&W line and WES has a height restriction which affects freight vehicles. It is a safety hazard and limits mobility.</p> <p>The Tonquin-Day-Graham’s Ferry-Boones Ferry route between the Tualatin Industrial Area and the Elligsen interchange has geometric deficiencies that need to be improved to function reliably for freight traffic.</p> <p>Performance thresholds not met in 2035 midday on:</p> <ul style="list-style-type: none"> • I-5 from I-205 to Boones Ferry Road • I-5 between Wilsonville Road and the next interchange south (both directions) • I-5 around the Lake Grove Town Center(both directions) <p>Throughway needs include the less than one-mile distance between I-5 interchanges at Nyberg Road and I-205, including merge-weave conflicts on northbound I-5. 2035 PM peak hour performance thresholds are not met on I-5 between I-205 and Wilsonville Road. Arterial gaps are identified east of I-5 and south of I-205, and on either side of Tualatin-Sherwood Road. Arterial deficiencies are identified for crossing the Tualatin River, Willamette River, and I-5. Arterial performance thresholds will be exceeded for segments of Boones Ferry Road, Stafford Road, and Grahams Ferry Road.</p>
Beaverton to Tigard	<p>Performance thresholds not met in 2035 midday on:</p> <ul style="list-style-type: none"> • OR 217 from south of Denney Way to Hall Blvd (northbound) <p>Throughway needs include performance thresholds on OR 217, OR 99W, Beaverton-Hillsdale Highway, Canyon Road. The close spacing of OR 217 interchanges and design constraints due to Fanno Creek are identified as well. Arterial deficiencies are noted around Washington Square regional center, as well as on OR 99W, Scholls Ferry Road, and Oleson Road. Arterial connectivity gaps are noted in multiple locations on either side of OR 217.</p>

Mobility Corridor	Regional Freight Needs
Tigard to Sherwood & Sherwood to Newberg	<p>Future (2035) midday freight reliability is compromised by intersection operations and driveway turn movements on OR 99W between SW McDonald St and SW Beef Bend Road and from Durham Road to just north SW 124th Ave (both directions)</p> <p>Performance thresholds not met in 2035 midday on:</p> <ul style="list-style-type: none"> • Tualatin Sherwood Road from Avery Street to NE Oregon Street <p>Throughway needs include the close spacing of traffic signals and driveways along OR 99W south of the I-5 interchange. Performance thresholds are exceeded along OR 99W between I-5 to 124th Avenue. Several arterial connectivity gaps are identified around OR 99W and another is identified south of Tualatin-Sherwood Road. Arterial performance deficiencies are identified for segments of Scholls Ferry Road, OR 99W, Roy Rogers Road, Hall Boulevard, Boones Ferry Road, Tualatin-Sherwood Road, and 72nd Avenue.</p>
Portland Central City to OR 217	<p>Performance thresholds not met in 2005 and 2035 midday on:</p> <ul style="list-style-type: none"> • US 26 near the Vista Ridge tunnel (both directions) • US 26 from Central City to Scholls Ferry Road (westbound) <p>Performance thresholds not met in 2035 midday on Cornelius Pass Road, which also includes SPIS locations on the section north of the Urban Boundary including hairpin turns.</p> <p>Throughways needs note the close spacing of six interchanges on US 26 between OR 217 and Portland Central City. Arterial gaps in connectivity include south of US 26, between Scholls Ferry Road and Barbur Boulevard, north of US 26, and north of Beaverton-Hillsdale Highway. Arterial deficiencies are identified for Cornell Road, Barnes Road, and Burnside Road.</p>
OR 217 to North Plains	<p>Performance thresholds not met in 2005 and 2035 midday on:</p> <ul style="list-style-type: none"> • US 26 between 158th Ave and Cedar Hills Blvd <p>Lack of freight reliability on Murray Blvd between TV Hwy and US 26.</p> <p>Throughways needs include more crossings across US 26 and note the close spacing of interchanges on US 26 between OR 217 and Brookwood Parkway. Arterial deficiencies are identified for Walker Road (between OR 217 and 185th Avenue)</p>
Forest Grove to US 26	<p>Better freight reliability on Zion Church Road.</p> <p>Throughways needs are identified for OR 47 intersections approaching Forest Grove Town Center. An arterial gap is identified for east/west connectivity, with no alternative to TV Highway (OR 8) available.</p>
Beaverton to Forest Grove	<p>No regional freight needs were identified.</p> <p>Throughways needs are identified along TV Highway (OR 8), between OR 47 and OR 217 and a need is identified for an east-west connection between Forest Grove and Hillsboro.</p> <p>Arterial gaps are identified south of TV Highway (OR 8), and between Farmington Road and Scholls Ferry Road. Arterial deficiencies are identified for Walker Road (between OR 217 and 185th Avenue)</p>

Source: Metro Regional Transportation Plan

The RTP includes a long list of regional projects to prioritize funding of transportation system improvements in the region. Many of the projects are focused on multi-modal improvements that will directly or indirectly benefit freight transportation.

5.2.2 Metro Regional Freight Plan

The 2010 Metro Regional Freight Plan is an element of the Metro RTP that provides data and analysis of freight and goods movement in the region. The plan describes the close relationship between freight transportation, trade, and economic growth. The plan provides an action plan and a tool kit of strategies designed to address freight needs and issues in conjunction with the RTP and the 2040 Growth Concept.

The plan identifies locations of recurring highway congestion (chokepoints) that affect freight movement. The locations and issues identified in Washington County are:

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

Improved access to the North Wilsonville-Tualatin-Sherwood industrial area is identified as one of the highest road improvement priorities in the region. OR 99W through Tigard is also identified as a core throughway system bottleneck with substantial freight impacts. While truck traffic makes up the dominant share of freight movement, upgrades to rail main line and rail yard infrastructure were also found to be critical transportation needs. Included in the Regional Freight Plan is a prioritized project list developed by Metro's Regional Freight and Goods Movement Task Force 2008. The projects are categorized as high, medium-high, medium-low, or low regional priority and may not be included in the financially constrained RTP project list. The highest priority projects identified for Washington County are listed in Table 5-2. The projects listed below were identified as medium-high priority, as no high priority projects were identified for Washington County by the Task force.

Table 5-2: Washington County Priority Freight Projects

Project	Description	RTP Project #
Tualatin-Sherwood/Boones Ferry Intersection	Grade separate Tualatin-Sherwood/Boones Ferry intersection.	10556
Grahams Ferry Rd Improvements	Widen Grahams Ferry Rd to 3 lanes, add bike/pedestrian connections to regional trail system, and fix undersized railroad overcrossing.	10588*
I-5/OR 99W Connector Related Arterial Improvements	Improve arterial roads to enhance the function of the I-5/OR 99W Connector.	10598
OR 217/72nd Ave. Interchange Improvements	Complete interchange reconstruction with additional ramps and overcrossings.	10599
US 26/Brookwood Parkway (formerly Shute) Interchange Improvements	Add westbound to southbound loop ramp, additional northbound through lane and relocate Jacobsen intersection.	10600*
Oregon-Tonquin Intersection & Street Improvements	Intersection improvements (consider roundabout) on Oregon at Tonquin Road; sidewalks and bike access through the intersection.	10674*
Adams Ave Signal & Interconnect on Tualatin-Sherwood Road	Install traffic signal at Adams Ave. and interconnect the signals along Tualatin-Sherwood Road between Cipole and Borchers.	10675
I-205 SB to I-5 SB	Merge lane to I-5 south	10734**
OR 217 Overcrossing	Realign Hunziker Road to meet Hampton Street at 72 nd Ave. and removes existing 72 nd /Hunziker Road intersection.	10751*
72nd Ave. Intersection Improvements	Southbound right turn lane, northbound right turn overlap at OR 99W and 72nd; Southbound or Eastbound right turn lane at 72nd/Hampton/Hunziker.	10767
OR 99W Intersection Improvements	Provide increased capacity at priority intersections, including bus queue bypass lanes in some locations, improved sidewalks, priority pedestrian crossings, and an access management plan, while retaining existing 4/5-lane facility from I-5 to Durham Road.	10770*
I-5/OR 99W Connector Phases 1-6	Phase 1: Conduct study, complete environmental design work and NEPA for I-5 to OR 99W Connector and acquire ROW. Phase 2: Construct minimal connection to I-5 and two lane arterial to Tonquin Road/124 th extension. Phase 3: Extend two lanes to OR 99W and construct interchange. Phase 4: Improve I-5 interchange connections and add braids on I-5. Phase 5: Construct mid-point interchanges. Phase 6: Widen from two lanes to four lanes on corridor.	10870, 10878-10882
SB I-205 to SB I-5 interchange ramp	Add lane to SB I-205 to SB I-5 interchange ramp and extend acceleration lane and add auxiliary lane on SB I-5 to Stafford Road.	10872**
OR 217 ramps	Braid OR 217 ramps between Beaverton-Hillsdale Highway and Allen Boulevard in both directions.	10875*
I-5 South Corridor Refinement Plan	Wilsonville to North Tigard.	11062
I-5 Auxiliary Lanes	Add auxiliary lane to I-5 southbound between Wilsonville Rd. and Elligsen Rd. Extend Boeckman Rd. overcrossing bridge on both ends.	11068
OR 217: Sunset Hwy to TV Hwy	Widen OR 217 and structures.	11122*
US 26: Cornell to 185 th	Widen US 26 to 6 lanes from Cornell to 185th	11124**

Source: Metro Regional Freight Plan

*Included in Financially Constrained RTP project list

**Constructed or under construction

5.2.3 Portland Region Economic Corridor Evaluation Report

The 2011 ODOT Portland Region Economic Corridor Evaluation identified key corridors that serve the region’s top economic centers for existing and future industrial employment. Five regional economic centers (out of 14) were located in Washington County: Beaverton, Hillsboro, Tigard/SW 72nd, Tualatin/Sherwood, and Wilsonville. Two of the eight economic corridors identified were located in Washington County: I-5 (Elligsen Road to OR 217) and US 26 (I-405 to Cornelius Pass Road). OR 217, OR 99W, and other corridors were not determined to be in the top eight regional facilities serving industrial uses. Figure F4 shows the location of regional economic centers along with the top locations for industrial employment in 2005.

The regional corridors were prioritized based on assessment of regional truck traffic, industrial traffic, traffic generated from the identified economic centers, and total number of economic centers served by the corridor. Both the I-5 and U.S. 26 segments in Washington County were ranked in the second highest prioritization tier based on the amount of criteria satisfied.

Findings from analysis of the operational performance of these corridors indicate significantly more congestion occurring by 2035. As a result, the corridors will experience increases in travel delay and degradation of travel time reliability. Table 5-3 summarizes daily performance measures for the Washington County economic corridors.

Table 5-3: Daily Traffic Performance Measures by Corridor

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

Note:

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

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

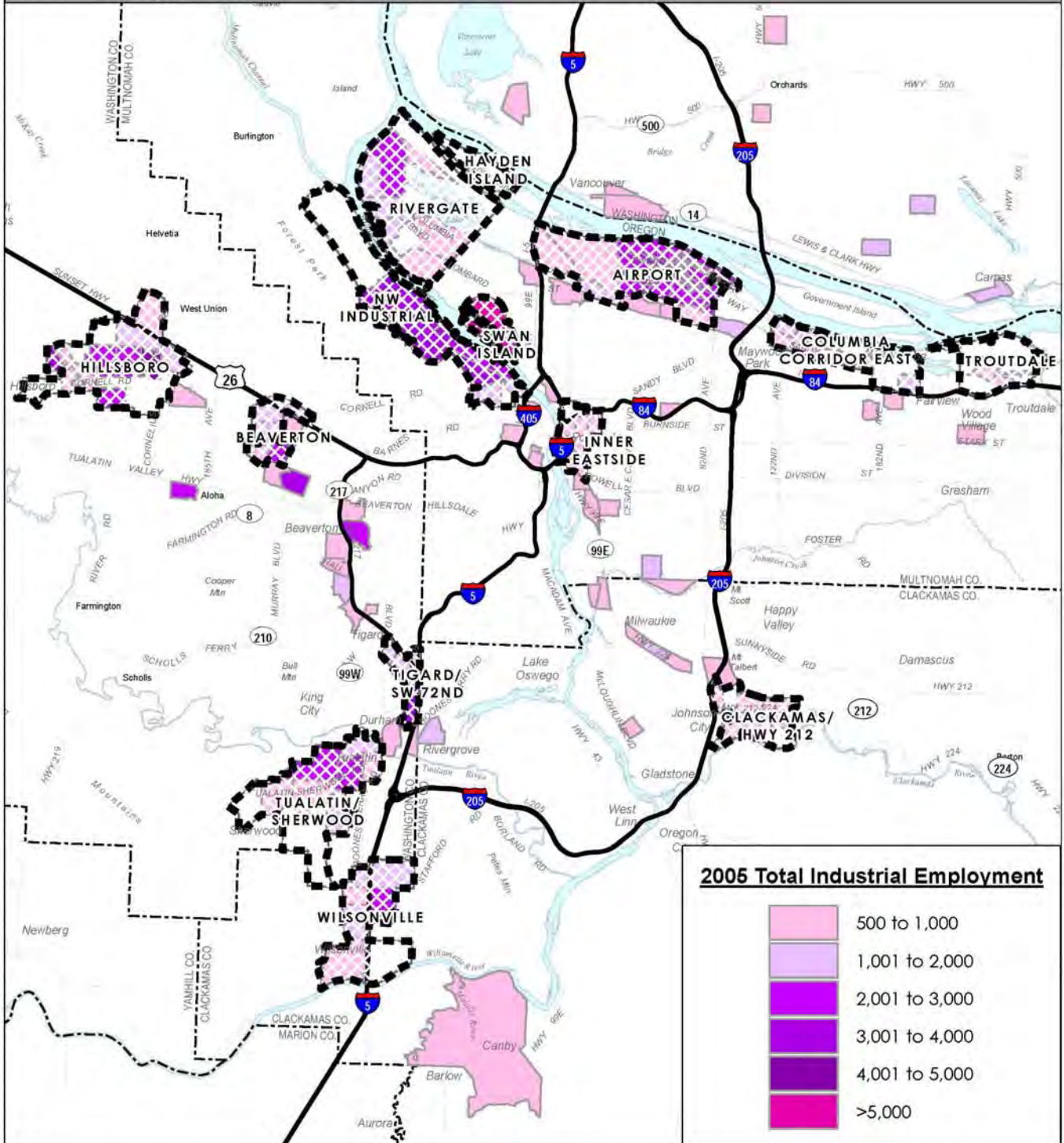
Amongst all the corridors analyzed in the region, the I-5 segment between Elligsen Road and OR 217 would degrade the most under future conditions. The corridor will experience one of the highest drops in average speed and greatest degradation in travel time reliability (as measured by buffer index).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

Figure 5-5: Regional Economic Centers and Top Industrial Employment Locations (2005)



Oregon Department of Transportation

2005 Top Regional Industrial Land Use



Key Industrial Site

Source: Portland Region Economic Corridor Evaluation Report, December 2011, Figure 2.

The regional picture of economic centers is important to assist with understanding freight travel patterns in Washington County.

The opportunities and constraints for growth to each regional economic site were also identified for sites expected to have significant industrial growth, including Hillsboro, Tualatin/Sherwood, and Wilsonville. The economic areas in Beaverton and Tigard/SW 72nd were not considered to have significant industrial growth in the future. The opportunities and constraints identified for each site analyzed are summarized below:

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

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

5.3 ROADWAY FREIGHT FINDINGS

Existing and Future Industrial Areas

Key industrial centers are located in Hillsboro, Beaverton, Tigard/SW 72nd, Tualatin/Sherwood, and Wilsonville. Hillsboro, Tualatin/Sherwood, and Wilsonville include areas identified as regionally significant industrial with high growth potential. Mobility and reliability in accessing these locations should be improved particularly to the regional freeway corridors.

Cornelius Pass Road

Trucks traveling to the region's ports often use Cornelius Pass Road to reach US 30, where they either turn right to reach Port of Portland terminals, or turn left to reach ports in St Helens and Longview. Though Cornelius Pass Road has some sharp curves, it is a designated freight route. Approximately 14% of traffic on Cornelius Pass Road is trucks. Cornelius Pass Road also serves as a hazardous materials route for cargo that cannot pass through the Vista Ridge Tunnel. Germantown Road, though more direct for reaching Port of Portland terminals, is far less suitable for large trucks due to sharp curves and steep grades. Still, 5% of traffic on Germantown is truck traffic. There is a need for improved connection between the Washington County industrial areas, and the river ports; this need is particularly important for hazardous materials.

Tualatin-Sherwood Road

Tualatin-Sherwood Road has the highest truck volume of any arterial in Washington County. This road is congested during much of the day. Furthermore, the railroad crossing at Boones Ferry further affects freight traffic. Many of these trucks are accessing the industrial areas of Sherwood and Tualatin, and headed to or from Interstate 5 or Interstate 205. Chapter 2 shows that travel time along Tualatin-Sherwood Road is extremely unreliable. There is a need for improved freight reliability between the industrial areas in Sherwood and Tualatin and the Interstate system and/or the rest of the region.

Gaps and Deficiencies

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

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

5.4 FREIGHT RAIL

Many Washington County communities developed around railroads in the 19th century, from bustling Beaverton to tiny Timber. Railroad builders laid tracks to bring Coast Range logs and Tualatin Valley grain to markets in Portland and beyond. While the role of railroads in Washington County's overall freight network has diminished, a number of modern day firms continue to use them regularly. Rail shipping remains the most fuel-efficient method of moving goods over land. A train can move one ton of goods 400 miles on one gallon of diesel, compared to three gallons on most trucks.⁶

5.4.1 Railroad Routes, Owners and Users

Washington County hosts over 90 miles of active "short line" freight railroads, all of them owned and operated by Portland and Western (PNWR), a Salem-based subsidiary of short line holding company Genesee and Wyoming. Washington County does not contain any Class I railroads, intermodal facilities or major rail yards. The PNWR system interchanges with the Albany & Eastern Railroad, BNSF Railway, Central Oregon & Pacific Railroad, Coos Bay Rail Link, Hampton Railway, Port of Tillamook Bay Railroad and Union Pacific Railroad. Commodities transported include aggregates, brick and cement, chemicals, construction and demolition debris, food and feed products, forest products, metallic ores and minerals, and steel and scrap. PNWR lines in Washington County, mapped in Figure 5-6, include the following:

- **Tillamook Branch:** This PNWR -operated line originates in Banks, where it serves the Banks Lumber Mill. Port of Tillamook Bay owns the segment from Banks to Schefflin, with the remainder owned by PNWR. The line proceeds generally southeastward, passing through Hillsboro, Aloha, Beaverton, Tigard and Lake Oswego, ultimately connecting with the Union Pacific main line in Milwaukie. Rail traffic on the busiest section of track (between Hillsboro and Beaverton) is currently two to four trains per day. It is expected that this may increase to six trains per day by 2014.⁷
- **Oregon Electric (OE) Line:** Once part of an extensive electric interurban rail network connecting much of the Willamette Valley, the OE now carries WES diesel commuter trains and P&W freight trains. The line officially begins in Tigard, where it diverges southward from the Tillamook Branch and passes through Tualatin and Wilsonville. The OE usually carries one freight round trip per day, in addition to 16 WES round trips. The OE is currently under consideration as one of the possible route for high-speed passenger rail between Portland and Eugene.
- **Newberg Branch:** This PNWR line diverges from the Tillamook Branch in the Lake Grove area of Lake Oswego, heading southwest through Tualatin, Sherwood and into Yamhill County. Cascade Steel is a major railroad client in McMinnville that occasionally sends trains through Washington County. The Newberg branch typically carries two to three freight round trips per week.
- **Westside-Seghers Branch:** One of two spurs heading west from the Tillamook Branch in Hillsboro, this PNWR line skirts the southern fringes of Cornelius and Forest Grove before turning south to reach the Stimson Lumber Mill near Henry Hagg Lake. The line typically carries one daily freight round trip. South of Seghers, the line is abandoned and being considered for a rail-trail to Carlton and McMinnville.

⁶ Center for Ports and Waterways & Texas Transportation Institute, "A Modal Comparison of Domestic Freight Transportation Effects on the General Public," 2007.

⁷ Aloha-Reedville Study and Livable Community Plan, Appendix 5 Report: Transportation, 2012.

- **Forest Grove Branch:** The other PNWR spur heading west from Hillsboro is rarely used. It passes through the northern half of Cornelius and ends just short of Pacific University in Forest Grove. The line has been considered for a future extension of MAX light rail from Hillsboro to Forest Grove.
- **United Railways Line:** Also called the BN Line, referring to its original ownership by Burlington Northern Santa Fe, this PNWR line connects Banks with existing BNSF tracks in Portland’s Northwest Industrial area. The line traverses Helvetia-area farmland before climbing to a tunnel through the Tualatin Mountains near Cornelius Pass. The line is technically the shortest rail link between Washington County and Port of Portland terminals.

The **Port of Tillamook Bay (POTB)** short line railroad operated between Tillamook and Banks until December of 2007, when flood waters from a major storm destroyed large sections of the roadbed in the mountainous area of the Salmonberry River Canyon. Prior to the storm, the railroad had hauled freight six days a week, carrying lumber and feed grains. Because of the extraordinary expense that would be entailed in rebuilding the damaged rail bed over the mountains, POTB has, instead, opted to use Federal Emergency Management Agency funds to expand and enhance the port's industrial park and airport facilities. The Port of Tillamook Bay retains ownership and now leases a 3.5 mile section from Banks to Schefflin to the Portland & Western Railroad.

Table 5-4 describes the PNWR operations within Washington County. Since PNWR owns the right-of-way, public agencies have limited control over such operations. These operations are subject to changing needs and demands for freight rail service.





Table 5-4: Current Portland and Western Operations*

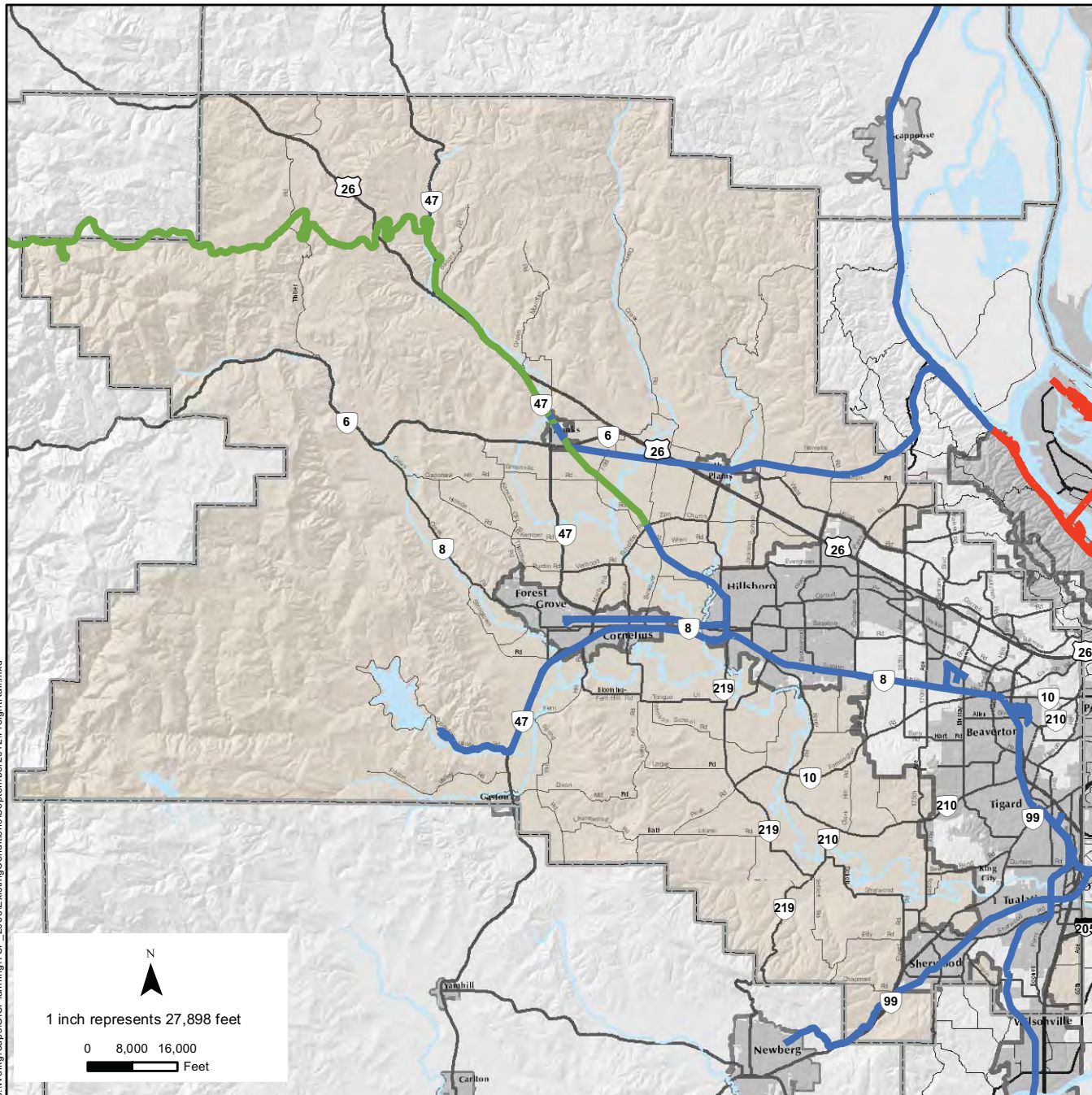
Train	Frequency	Description
Rock Train (Job 355)	On duty at 0530 Monday through Friday	Usually on duty at Reed Quarry near Hopmere on the former Oregon Electric between Greton and Salem. Routine varies according to the needs of Morse Brothers. Works from Reed Pit, Tonquin, Hillsboro, or Deer Island as needed by Morse Brothers. Note: This job uses remote control.
Beaverton Switcher (Job 684)	On duty at 1200 Monday through Friday	Services industries as need from Hillsboro to Kellogg Industrial Park.
Brooklyn Hauler (Job 686)	On duty at 2100 Sunday through Thursday	Normal work pattern is to pick up traffic from Union Pacific's Brooklyn yard. Usually works to Harbor Saturday nights.
Harbor Turn (Job 687)	On duty at 1900 Monday through Friday.	Moves traffic between the Astoria line and St. Marys.
Hillsboro Switcher (Job 685)	On duty at 0930 Monday through Saturday.	Works St. Marys and Hillsboro area as needed. Usually this job runs to Stimson mill on the Seghers line west of Forest Grove and the former Oregon Electric Forest Grove branch.
St. Marys-Albany Turn (Job 342)	On duty at 0800 daily	Moves traffic between St Marys and Albany.

Source: Unofficial Portland & Western Fan Site

*Information is not confirmed by ODOT Rail, or PNWR. Operations are subject to change without notice.

Freight Rail

-  Burlington Northern
-  Portland and Western
-  Port of Tillamook Bay
-  Rural Washington County



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Department of Land Use and Transportation
Long Range Planning Division

Figure 5-6

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5.4.2 Freight Rail Users and Demand

Class I railroads such as Union Pacific and BNSF have seen major business growth in the past decade, largely due to increased fuel costs that make rail shipping less expensive than trucking. Washington County, however, has only short line railroads, which are generally in a distressed or static state. The railroads’ primary business – forest products – remains in an uncertain economic state, and few funds are available (public or private) for track maintenance or upgrades. Putting particular short lines at further risk is reliance on a single customer, such as the Stimson lumber mill at the terminus of the Westside-Seghers Branch.

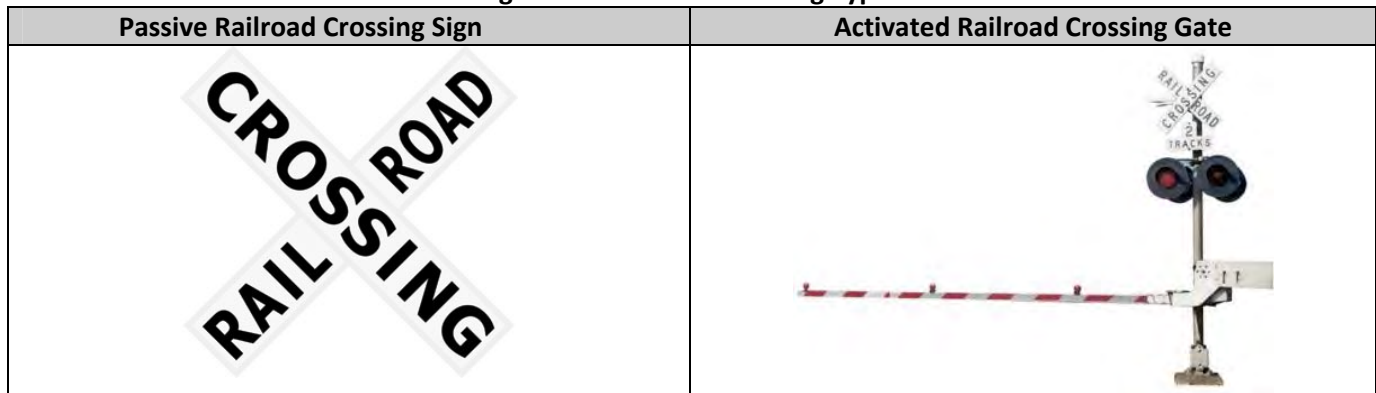
While freight rail demand is uncertain, it is existing county policy to preserve these corridors for future needs, including freight and passenger service.⁸ (Passenger rail is discussed in the Transit section of this report – Chapter 4, Section 4-4.)

5.4.3 Railroad Crossing Considerations

The majority of roadway rail crossings in Washington County are at grade, posing potential conflicts and hazards. The Oregon Department of Transportation Rail Division authorizes any new rail crossing, or any modification to an existing rail crossing.

Trains are required to signal with horns when approaching a highway crossing. All Highway crossings are required to be marked with a passive stop sign and railroad crossing sign. Alternatively, an activated crossing guard arm may be implemented if the expected traffic at the crossing warrants this treatment.

Figure 5-7: Railroad Crossing Types



Passive railroad crossing signs may also be accompanied by active flashing lights. These are to be treated the same as red traffic light. A 2011 USDOT report⁹ indicates that passive crossings are almost 10 times more risky than active crossings. This same report indicates that the incidents per year at railroad crossings have been declining over the last 20 years.

Until recently, the State of Oregon regulated the length of time a railroad train may block a public highway-rail crossing. An Oregon Court of Appeals ruling determined that federal law preempted the State from continuing this practice. So, the State of Oregon can no longer control public crossings that are blocked by trains.

⁸ Washington County 2020 Transportation Plan, Policy 17, Strategy 17.3, 2002.

⁹ RR 11-27 / December 2011

Today, trespassing has become the leading cause of railroad fatalities [USDOT FRA Annual issues]. Each year, approximately 500 people are killed as a result of trespassing on railroad rights-of-way. Railroads face the challenge of identifying sites vulnerable to trespassing, improving awareness, and installing fencing. Oregon Operation Lifesaver is a not-for-profit devoted to ending tragic collisions, fatalities and injuries at highway-railroad crossings and on railroad rights-of-way. To accomplish their mission, they promote the 3 E's: Education, Enforcement, and Engineering. One particular area of concern is in Aloha, where people often cross the railroad tracks at unauthorized locations to reach bus stops and businesses along TV Highway.

Railroad crossings also significantly affect the operations of a number of roadways in Washington County. Tualatin-Sherwood Road and TV Highway are perhaps the most significant.

5.5 MARINE SHIPPING

No freight-navigable rivers pass through Washington County. While the Tualatin River is occasionally suggested as a possible route for moving goods, the river's limited width, depth and surrounding environmentally sensitive areas prohibit the movement of large vessels.

Of greater relevance are the major west coast ports located just over the Tualatin Mountains from Washington County. The Port of Portland maintains four marine terminals: three on the Willamette and one on the Columbia, all within ten miles of Washington County. Other regional port facilities near Washington County are located along the Columbia River in St Helens, Oregon and in Vancouver, Kalama and Longview, Washington.

Cornelius Pass Road will continue its role as a freight and hazardous materials route for cargo reaching ports on the Columbia and Willamette Rivers. Considering that one out of every seven vehicles on Cornelius Pass Road north of Sunset Highway is a large truck, roadway safety and durability should be top values when considering improvements.

5.6 PIPELINES




Figure 5-8 shows major pipelines that traverse Washington County. Most significant is the **Kinder-Morgan gas pipeline** that transports pressurized, refined gas products from a facility on the Willamette River in Northwest Portland to Eugene and points between. The pipeline generally follows a north-south BPA electric transmission line corridor through Bethany, Beaverton, Bull Mountain and Sherwood, portions of which also accommodate the Westside Regional Trail. Several other gas pipelines cross the county, including another north-south corridor from the Dairy Creek valley to Sherwood, and several east-west routes.

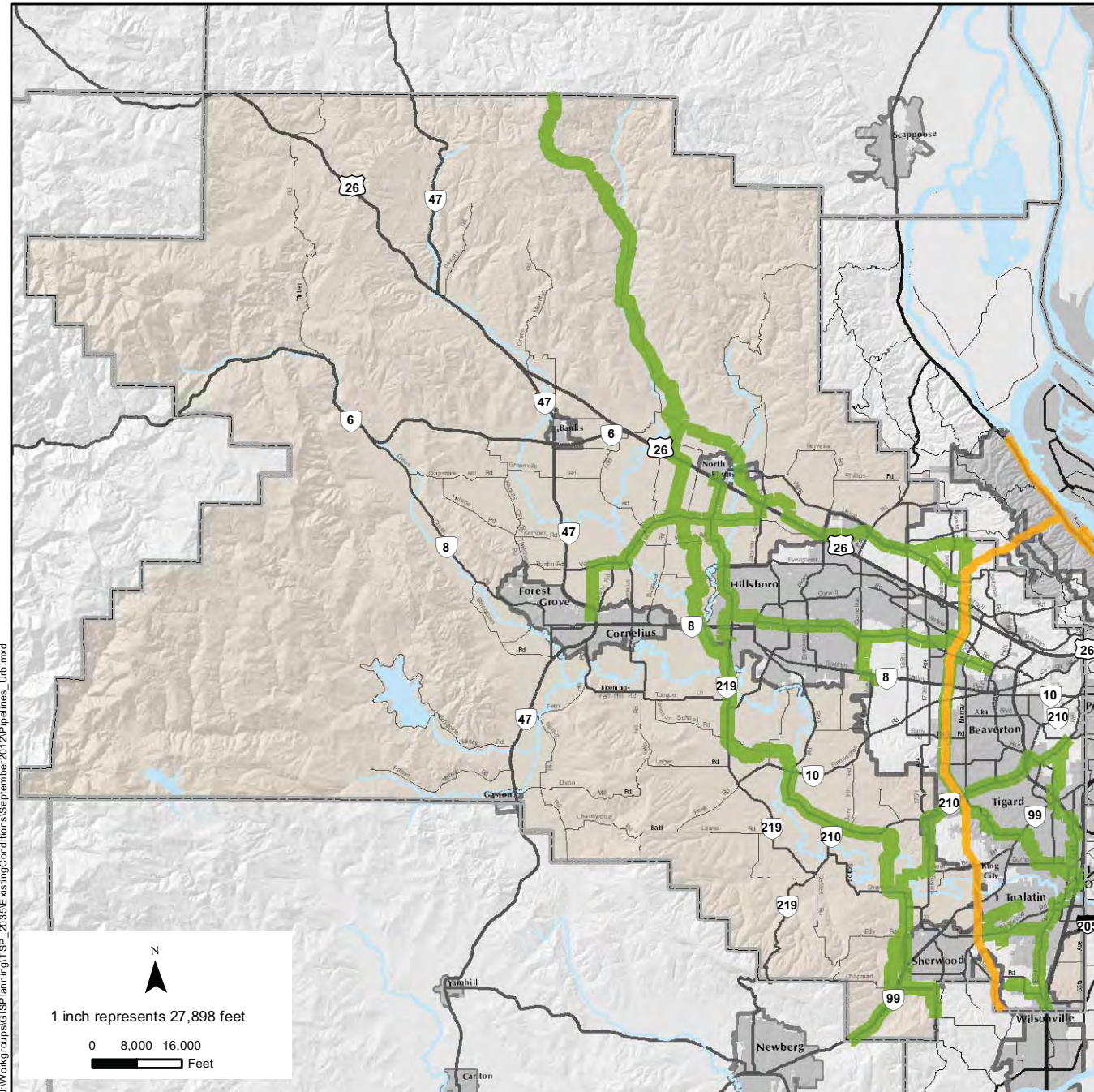
For Washington County Department of Land Use and Transportation, the primary concerns with major pipelines are:

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



Pipelines

-  Natural Gas Pipeline Corridor
-  Kinder-Morgan Propane Pipeline Corridor
-  Rural Washington County



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Department of Land Use and Transportation
Long Range Planning Division

Figure 5-8

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5.7 AVIATION

Washington County contains one medium-sized general aviation airport, two smaller private airports, and approximately 23 other airstrips or helipads. These are identified in figure 5-9.

5.7.1 Hillsboro Airport

Hillsboro Airport (HIO) is located northeast of downtown Hillsboro and operated by the Port of Portland. HIO is defined by the Federal Aviation Administration (FAA) as a reliever airport for Portland International Airport (PDX). In this role, HIO's function is to preserve capacity at PDX by offering an alternative facility for general aviation aircraft, separate from commercial airline and air cargo activities.¹⁰ At the state level, the Oregon Aviation Plan defines HIO as a Category 2 airport that accommodates "corporate aviation activities, including business jets, helicopters, and other general aviation activities."¹¹ HIO functions thusly, receiving corporate air traffic associated with Intel and other large Washington County companies, while also accommodating personal aircraft.

HIO features two runways, one 6,600 feet in length, the other 4,050 feet. In 2012, HIO had 277 "based aircraft" – meaning aircraft that are typically stored and flown from the airport – down from the upper 300s ten years prior. In 2008, HIO averaged 695 operations (takeoffs and landings) daily.¹²

Future Demand

A demand analysis in the 2005 Hillsboro Airport Master Plan projected based aircraft to increase from 363 (in 2003) to 465 by 2025, and annual operations to increase from 253,847 to 323,000 – a 27% operational increase. However, based aircraft and operations both dropped significantly in the subsequent recession. The master plan envisions HIO's role either as remaining a general aviation/reliever airport, or adding scheduled commuter airline operations with aircraft containing fewer than ten passenger seats.

Based on this assessment, the Port of Portland in 2009 proposed to construct a parallel runway at HIO. The project's environmental assessment earned a federal Finding of No Significant Impact in 2010, but was appealed by community members. Federal circuit court remanded the case back to FAA for further study of potential impacts, a process that is still underway as of 2012. In the mean time, a new taxiway was constructed in summer 2011.

Surface Transportation

HIO is well-served by surface transportation. The airport terminal is accessed by four-lane Cornell Road between downtown Hillsboro and the north Hillsboro employment area. Two TriMet buses stop at the airport, MAX light rail is a 0.4-mile walk to the south, and private rental cars are available across Cornell Road.

No major future impacts are expected on the surface transportation system from increased operations at HIO, as currently forecasted. Increased operations may have more impacts on land use and community livability issues not addressed in this plan, including future development in the North Hillsboro urban reserve.

¹⁰ Hillsboro Airport Master Plan, Port of Portland, 2005.

¹¹ Oregon System Plan, Chapter 4, Oregon Department of Aviation, 2008.

¹² Airnav website on Portland-Hillsboro Airport, <http://www.airnav.com/airport/HIO>

5.7.2 Other Airports

Two smaller, privately-owned airports are located in the rural area:

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






Both airports primarily cater to single-engine hobby aircraft. In addition to these two facilities, Washington County has 23 other air facilities. These include small airstrips as well as helipad facilities at hospitals.

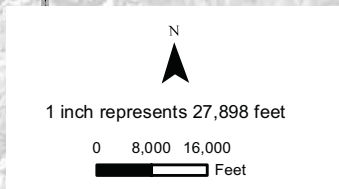
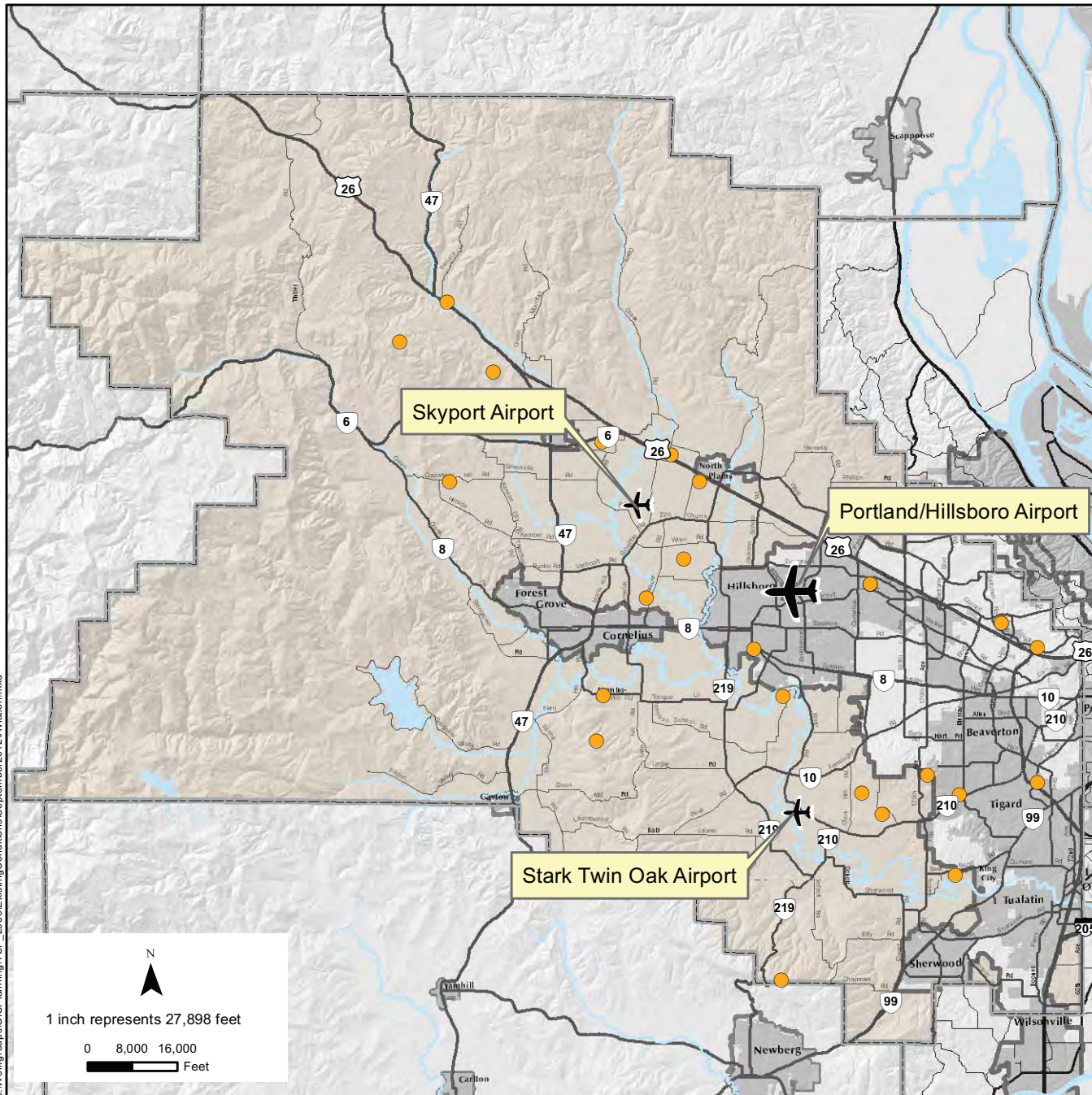
5.7.3 Air Cargo to PDX

Much of Washington County's high tech cargo is shipped by air, in part due to the small size of the products. Air cargo is almost always shipped from Portland International Airport (PDX), where a number of established air freight carriers such as UPS, FedEx and Asiana Cargo fly out many times daily. The key transportation concern for air cargo traveling from Washington County to PDX is congestion and travel time reliability on Sunset Highway.



Airports

-  Portland/Hillsboro
-  Skyport
-  Stark Twin Oak
-  Other Airports and Airstrips
-  Rural Washington County



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Department of Land Use and Transportation
Long Range Planning Division

Figure 5-9

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Washington County TSP 2035 Existing Conditions and Future Needs Report

STATION COUNT COMPARISON DATA

STA #	ROAD NAME	DIST (miles)	DIR	LIMITS	2007			POSTED SPEED	85th % Speed	2012			POSTED SPEED	85th % Speed
					ADT	Trucks	% trucks			ADT	Trucks	% trucks		
101	Barnes Rd	0.10	E	Leahy Rd	18694	754	4%	35	39	17009	626	4%	35	41
102	Barnes Rd	0.02	W	084th Ave	18957	912	5%	35	40	16530	707	4%	35	43
103	Leahy Rd	0.10	N	084th Ave	3892	181	5%	30	35	3742	116	3%	30	34
104	Cornell Rd	0.02	E	093rd Ave	9413	353	4%	45	44	9706	300	3%	45	46
105	Cornell Rd	0.10	W	107th Ave	13063	595	5%	40	40	14064	653	5%	40	44
106	113th Ave	0.10	N	Cornell Rd	5947	216	4%	35	43	5822	207	4%	35	47
107	McDaniel Rd	0.30	E	111th Ave	2378	119	5%	35	40	2943	137	5%	35	38
108	119th Ave	0.14	N	Cornell Rd	4644	179	4%	35	32	4710	221	5%	35	39
109	Cornell Rd	0.10	E	Saltzman Rd	12989	671	5%	30	34	12286	941	8%	30	38
110	Saltzman Rd	0.10	N	Cornell Rd	13339	425	3%	35	34	13953	630	5%	35	33
111	Cornell Rd	0.10	E	143rd Ave	18659	808	4%	30	29	17713	636	4%	30	33
112	143rd Ave	0.10	N	Cornell Rd	15255	598	4%	40	36	13773	588	4%	40	43
113	Thompson Rd	0.10	W	Saltzman Rd	5581	174	3%	40	40	5859	170	3%	40	38
114	West Union Rd	0.10	W	Kaiser Rd	7706	365	5%	40	41	7325	207	3%	40	42
115	Cornell Rd	0.10	E	153rd Ave	16273	652	4%	40	42	15998	703	4%	40	43
117	Bethany Blvd	0.25	N	Bronson Rd	18851	707	4%	35	40	19419	631	3%	35	40
118	Kaiser Rd	0.30	N	West Union Rd	7655	286	4%	35	39	7937	197	2%	35	38
119	West Union Rd	0.30	W	Bethany Blvd	8932	320	4%	40	47	8249	270	3%	40	46
120	Bronson Rd	0.25	E	185th Ave	7388	191	3%	45	47	7411	173	2%	45	48
121	185th Ave	0.50	N	Rock Creek Rd	19961	884	4%	45	42	21742	1449	7%	45	46
122	Rock Creek Blvd	0.20	W	185th Ave	6396	183	3%	35	37	3396	95	3%	35	39
123	West Union Rd	0.50	W	185th Ave	9175	401	4%	45	52	10171	330	3%	45	49
124	185th Ave	0.10	S	Springville Rd	15947	832	5%	40	42	16437	766	5%	40	41
125	Springville Rd	0.15	E	185th Ave	10521	541	5%	45	42	14286	516	4%	45	42
126	Germantown Rd	0.40	E	185th Ave	4070	228	6%	45	53	4177	197	5%	45	53
127	Cornelius Pass Rd	0.10	S	Germantown Rd	11391	1511	13%	BR-55	57	12028	1255	10%	BR-55	57
128	Cornelius Pass Rd	0.30	S	West Union Rd	18758	1779	9%	45	43	19248	1927	10%	45	47
129	West Union Rd	0.20	W	Cornelius Pass Rd	3513	440	13%	45	45	4147	408	10%	45	48
130	Leahy Rd	0.10	E	107th Ave	1982	95	5%	35	44	1836	101	6%	35	42
131	185th Ave	0.10	S	Rock Creek Rd	26282	1371	5%	45	40	27582	1421	5%	45	40
132	Germantown Rd	0.10	W	185th Ave	6208	364	6%	45	48	6570	317	5%	45	47
133	Cornelius Pass Rd	0.10	N	Germantown Rd	8700	1324	15%	BR-55	54	9078	1224	13%	BR-55	56
134	Barnes Rd	0.10	E	Sunset Transit Center	16626	1087	7%	40	40	15908	772	5%	40	45
135	Barnes Rd	0.20	W	117th Ave	15022	552	4%	45	49	18021	512	3%	45	45
136	Murray Blvd	0.10	S	Cornell Rd	22761	1417	6%	35	29	22074	759	3%	35	29
137	Saltzman Rd	0.16	N	Thompson Rd	4911	167	3%	35	39	5193	150	3%	35	39
138	Laidlaw Rd	0.10	E	Kaiser Rd	7828	285	4%	40	35	8746	226	3%	40	33
139	Kaiser Rd	0.10	N	Springville Rd	2468	281	11%	BR 45-50	47	2268	151	7%	BR 45-50	48

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					ADT	Trucks	% trucks			ADT	Trucks	% trucks		
140	185th Ave	0.30	N	Springville Rd	4825	246	5%	BR-55	59	4661	245	5%	BR-55	59
141	Phillips Rd	0.30	E	Helvetia Rd	745	85	11%	BR-55	57	853	83	10%	BR-55	56
143	Rock Creek Blvd	0.10	E	Cornelius Pass Rd	4138	168	4%	25	28	4733	225	5%	25	30
144	174th Ave	0.05	N	Bronson Rd	8839	241	3%	40	35	8603	221	3%	40	35
145	Cedar Hills Blvd	0.10	N	Barnes Rd	13317	659	5%	40	43	13587	518	4%	40	39
146	Bethany Blvd	0.10	S	Laidlaw Rd	10876	428	4%	35	34	10268	351	3%	35	31
156	Saltzman Rd	0.15	S	Thompson Rd	8030	259	3%	40	43	7746	355	5%	40	44
157	Thompson Rd	0.09	E	Saltzman Rd	3912	128	3%	40	43	3988	211	5%	40	41
158	Kaiser Rd	0.10	S	Springville Rd	6180	338	5%	35	38	7171	302	4%	35	36
159	Miller Rd	0.20	N	Barnes Rd				45		9185	330	4%	45	42
160	West Union Rd	0.20	W	Laidlaw Rd				40		11012	289	3%	40	43
161	Laidlaw Rd	0.30	N	Holcomb Dr				30		6958	133	2%	30	38
162	Baltic Ave	0.10	S	Barnes Rd				BR-55		13844	503	4%	BR-55	31
163	Science Park Dr	0.10	W	Murray Blvd				30		7017	287	4%	30	39
164	Old Cornelius Pass Rd	0.10	S	Phillips Rd				BR-55		1145	97	8%	BR-55	52
201	Cornelius Pass Rd	0.20	N	Cornell Rd	28559	2172	8%	45	47	25159	2359	9%	45	43
202	Cornell Rd	0.20	E	Cornelius Pass Rd	24251	738	3%	45	48	21479	1177	5%	45	47
203	Cornell Rd	0.10	E	231st Ave	30384	1327	4%	45	42	29407	2315	8%	45	45
204	Cornell Rd	0.10	W	Brookwood Pkwy	32973		0%	45		32477	1598	5%	45	44
206	Baseline Rd	0.20	W	231st Ave	14552	736	5%	40	43	17117	632	4%	40	43
207	Cornelius Pass Rd	0.14	N	Quatama Rd	19792	1528	8%	45	43	19536	1300	7%	45	45
208	Baseline Rd	0.20	E	231st Ave	16662	710	4%	40	47	18997	538	3%	40	46
209	Cornelius Pass Rd	0.10	S	Baseline Rd	21030	1772	8%	35	37	22212	1680	8%	35	40
210	Baseline Rd	0.20	E	Cornelius Pass Rd	17279	712	4%	45	46	18300	462	3%	45	43
211	197th Ave	0.10	S	Baseline Rd	5949	280	5%	35	42	5730	317	6%	35	41
212	Baseline Rd	0.20	W	185th Ave	21555	872	4%	45	47	21223	904	4%	45	47
213	Walker Rd	0.40	W	185th Ave	12268	320	3%	45	44	11981	212	2%	45	43
214	Cornell Rd	0.10	W	Stucki Ave	23461	786	3%	45	41	23066	1281	6%	45	43
215	185th Ave	0.10	N	Walker Rd	27869	1542	6%	45	36	30058	1766	6%	45	39
216	Walker Rd	0.20	E	185th Ave	15049	487	3%	45	42	14759	446	3%	45	44
217	Baseline Rd	0.20	E	185th Ave	22383	782	3%	45	48	20278	1578	8%	45	50
218	185th Ave	0.10	N	Johnson St	27010	1389	5%	45	44	25251	1581	6%	45	47
219	198th Ave	0.10	S	Johnson St	7745	403	5%	35	33	9086	439	5%	35	38
220	185th Ave	0.10	S	Johnson St	23348	1253	5%	45	44	22299	1298	6%	45	44
221	170th Ave	0.60	N	TV Highway	14624	755	5%	40	44	15724	813	5%	40	44
222	170th Ave	0.10	S	Baseline Rd	9953	409	4%	40	38	10100	483	5%	40	39
223	173rd Ave	0.10	N	Baseline Rd	9878	427	4%	35	38	2313	99	4%	35	38
224	Cornell Rd	0.20	E	185th Ave	24134	785	3%	45	43	16718	889	5%	45	44

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					ADT	Trucks	% trucks			ADT	Trucks	% trucks		
226	Cornell Rd	0.30	W	Bethany Blvd	21025	753	4%	45	39	23506	1595	7%	45	44
227	Walker Rd	0.30	W	158th Ave	18580	544	3%	45	44	16658	670	4%	45	48
229	158th Ave	0.10	S	Walker Rd	22214	1023	5%	40	39	20341	1051	5%	40	42
230	Jenkins Rd	0.10	E	Baseline Rd	16019	465	3%	45	47	15054	504	3%	45	48
231	158th Ave	0.10	S	Jenkins Rd	8576	982	11%	40	37	9151	960	10%	40	36
232	Jenkins Rd	0.10	E	158th Ave	20117	1142	6%	45	40	19683	1192	6%	45	42
233	Walker Rd	0.30	W	Murray Blvd	23301	772	3%	45	39	22103	1131	5%	45	44
234	Murray Blvd	0.10	N	Butner Rd	30189	1487	5%	45	45	27760	1764	6%	45	46
235	Murray Blvd	0.10	N	Jenkins Rd	26914	1449	5%	45	44	22428	1377	6%	45	44
236	Murray Blvd	0.10	N	TV Highway	25404	1486	6%	40	40	22099	1415	6%	40	39
237	Walker Rd	0.30	E	Murray Blvd	15178	506	3%	35	36	13560	422	3%	35	38
238	Cedar Hills Blvd	0.10	S	Butner Rd	20716	737	4%	35	43	19544	878	4%	35	43
239	Walker Rd	0.05	W	123rd Ave	21508	585	3%	35	36	18515	746	4%	35	38
240	Walker Rd	0.10	W	107th Ave	9405	266	3%	35	35	8708	233	3%	35	34
241	091st Ave	0.10	N	BH Highway	5311	155	3%	30	32	5133	144	3%	30	33
244	Scholls Ferry Rd	0.10	N	Hamilton St	18835	544	3%	30	42	16304	455	3%	30	42
245	185th Ave	0.10	N	Baseline Rd	28526	1651	6%	45	38	26350	1583	6%	45	40
246	Johnson St	0.10	E	198th Ave	4575	190	4%	25	31	3050	162	5%	25	33
247	Johnson St	0.10	E	Cornelius Pass Rd	4581	212	5%	25	31	4818	188	4%	25	32
249	Brookwood Ave	0.10	S	Baseline Rd	13431	679	5%	35	37	11057	716	6%	35	34
251	Rock Rd	0.10	E	Cornelius Pass Rd	1711	68	4%	25	28	1611	101	6%	25	28
252	Rock Rd	0.10	W	198th Ave	4376	138	3%	30	33	3726	125	3%	30	32
253	205th Ave	0.10	N	Baseline Rd	13110	450	3%	35	39	11226	345	3%	35	38
255	Evergreen Pkwy	0.10	E	Cornelius Pass Rd	16273	692	4%	45	40	14721	880	6%	45	40
256	209th Ave	0.10	N	TV Highway	5391	335	6%	25	31	6521	349	5%	25	31
257	Alexander St	0.10	W	198th Ave	2830	112	4%	25	27	2608	112	4%	25	29
258	Alexander St	0.10	W	185th Ave	1805	109	6%	25	28	1598	58	4%	25	28
259	Alexander St	0.10	E	185th Ave	3618	128	4%	25	28	2936	120	4%	25	27
260	Alexander St	0.10	W	170th Ave	4275	168	4%	25	31	3956	143	4%	25	29
261	Johnson St	0.10	E	185th Ave	2899	121	4%	25	31	2752	97	4%	25	31
262	Merlo Rd	0.10	E	170th Ave	7752	452	6%	40	39	8124	576	7%	40	42
263	Murray Blvd	0.20	S	Jenkins Rd	30392	1408	5%	45	49	26890	1436	5%	45	49
264	Jenkins Rd	0.30	E	Murray Blvd	17225	563	3%	40	42	15157	553	4%	40	41
265	Butner Rd	0.10	E	Murray Blvd	3765	124	3%	35	38	3866	156	4%	35	37
267	Park Way	0.10	E	Cedar Hills Blvd	5684	203	4%	35	32	4442	156	4%	35	34
269	185th Ave	0.06	N	Cornell Rd	24829	1725	7%	45	36	31071	1730	6%	45	39
270	Cedar Hills Blvd	0.10	S	Park Way	20080	750	4%	35	39	20124	765	4%	35	39
271	Evergreen Pkwy	0.10	W	188th Ave	17527	453	3%	40	43	16049	672	4%	40	43

Washington County TSP 2035 Existing Conditions and Future Needs Report

STATION COUNT COMPARISON DATA

STA #	ROAD NAME	DIST (miles)	DIR	LIMITS	2007			POSTED SPEED	85th % Speed	2012			POSTED SPEED	85th % Speed
					ADT	Trucks	% trucks			ADT	Trucks	% trucks		
272	Cornell Rd	0.10	N	Grant St	24835	1462	6%	35	38	23957	1590	7%	35	38
273	158th Ave	0.03	S	Cornell Rd	26031	1024	4%	40	39	24614	1257	5%	40	40
274	158th Ave	0.20	S	Blueridge Dr	25936	954	4%	40	43	27583	900	3%	40	42
275	Brookwood Pkwy	0.30	S	Cornell Rd	14867	763	5%	45	47	14862	806	5%	45	46
276	Cornell Rd	0.08	E	Brookwood Pkwy	28245	1296	5%	45	41	23719	1676	7%	45	44
277	Cornelius Pass Rd	0.10	N	Baseline Rd	21168	1731	8%	45	42	20263	1516	7%	45	42
278	Murray Blvd	0.10	S	Allen Blvd	28870	1882	7%	40	44	26786	1657	6%	40	46
279	Cornelius Pass Rd	0.20	N	Imbrie Dr				45		40265	1793	4%	45	39
280	Cornelius Pass Rd	0.20	N	TV Highway				45		14495	1322	9%	45	36
281	185th Ave	0.08	N	Evergreen Pkwy				45		47518	2386	5%	45	39
282	Murray Blvd	0.30	N	Walker Rd				45		26669	1741	7%	45	46
283	Meadow Dr	0.10	N	Trout Creek Ln				25		2419	92	4%	25	32
284	Park Way	0.10	N	Walker Rd				25		1766	69	4%	25	31
285	Roxbury Ave	0.10	N	Walker Rd				25		1502	53	4%	25	32
302	Oleson Rd	0.20	S	BH Highway				35		10950	432	4%	35	38
303	Oleson Rd	0.15	N	Garden Home Rd	10015	382	4%	35	34	12786	448	4%	35	34
304	Garden Home Rd	0.10	E	Oleson Rd	12624	504	4%	25	28	15498	563	4%	25	30
305	080th Ave	0.10	S	Oleson Rd	4297	186	4%	35	35	4456	118	3%	35	38
306	Taylor's Ferry Rd	0.15	E	080th Ave	5611	207	4%	35	39	5168	189	4%	35	39
307	080th Ave	0.10	S	Taylor's Ferry Rd	5016	198	4%	35	34	3982	143	4%	35	37
308	Oak St	0.10	W	080th Ave	2027	81	4%	25	34	1789	108	6%	25	37
309	Garden Home Rd	0.10	W	Oleson Rd	13655	489	4%	35	34	11987	392	3%	35	37
310	Witch Hazel Rd	0.10	W	Brookwood Ave	6590	446	7%	40	40	5584	402	7%	40	37
311	Greenburg Rd	0.10	S	Hall Blvd	11012	557	5%	35	38	10889	499	5%	35	38
313	092nd Ave	0.10	N	Garden Home Rd	13980	547	4%	35	38	11337	385	3%	35	34
314	Scholls Ferry Rd	0.30	E	Murray Blvd	29417	1472	5%	40	44	26890	1675	6%	40	47
315	Scholls Ferry Rd	0.10	W	Murray Blvd	20983	1331	6%	40	38	23802	1118	5%	40	38
316	Murray Blvd	0.10	N	Scholls Ferry Rd	23376	1124	5%	45	39	23192	1193	5%	45	41
317	Murray Blvd	0.10	N	Brockman St	27785	1294	5%	45	46	22308	1523	7%	45	49
318	Murray Blvd	0.10	S	Farmington Rd	31994	1434	4%	40	42	27663	1458	5%	40	43
319	Murray Blvd	0.10	N	Farmington Rd	29026	1480	5%	40	36	25264	1381	5%	40	35
320	160th Ave	0.10	N	Farmington Rd	6884	227	3%	35	38	6823	188	3%	35	34
321	160th Ave	0.10	S	Farmington Rd	4194	85	2%	25	34	4062	91	2%	25	33
322	170th Ave	0.10	N	Farmington Rd	14233	621	4%	35	41	14147	690	5%	35	42
323	170th Ave	0.15	N	Oak St	14953	648	4%	35	38	15733	714	5%	35	42
324	170th Ave	0.10	S	Oak St	15190	723	5%	35	40	14278	769	5%	35	41
325	Bany Rd	0.10	E	170th Ave	9078	410	5%	25	33	9152	397	4%	25	33
326	Rigert Rd	0.10	W	170th Ave	7420	446	6%	35	39	7352	343	5%	35	39

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STATION COUNT COMPARISON DATA

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					ADT	Trucks	% trucks			ADT	Trucks	% trucks		
327	175th Ave	0.10	N	Kemmer Rd	6763	372	6%	35	43	6333	287	5%	35	32
328	175th Ave	0.50	N	Scholls Ferry Rd	6574	392	6%	BR-55	57	8156	415	5%	BR-55	53
329	Tile Flat Rd	0.10	N	Scholls Ferry Rd	3995	288	7%	BR-55	52	3218	165	5%	BR-55	51
330	185th Ave	0.10	N	Gassner Rd	2552	152	6%	40	39	3251	140	4%	40	43
331	Bany Rd	0.10	E	185th Ave	3754	128	3%	25	34	3327	247	7%	25	32
332	185th Ave	0.10	S	Farmington Rd	9498	373	4%	35	39	10058	406	4%	35	39
333	185th Ave	0.10	S	Kinnaman Rd	11458	781	7%	35	36	11141	744	7%	35	39
334	185th Ave	0.30	S	TV Highway	16057	980	6%	35	36	15844	868	5%	35	40
335	198th Ave	0.10	S	TV Highway	17134	782	5%	35	34	15917	785	5%	35	35
336	198th Ave	0.02	S	Blanton St	12984	582	4%	35	38	12850	577	4%	35	39
337	198th Ave	0.10	N	Farmington Rd	5534	273	5%	35	38	5423	277	5%	35	39
338	209th Ave	0.10	S	Rosedale Rd	11088	1231	11%	45	48	10154	739	7%	45	48
339	209th Ave	0.10	N	Kinnaman Rd	11932	1063	9%	45	46	11719	709	6%	45	45
340	209th Ave	0.10	S	TV Highway	12738	971	8%	45	42	11861	785	7%	45	39
341	229th Ave	0.50	S	Alexander St	1921	160	8%	45	44	1756	84	5%	45	44
342	Rosedale Rd	0.50	W	209th Ave	4210	289	7%	45	50	3489	162	5%	45	52
343	Clark Hill Rd	0.10	S	Farmington Rd	3166	768	24%	50	43	2156	305	14%	50	44
344	River Rd	0.10	S	Rosedale Rd	6361	607	10%	BR-55	57	5878	516	9%	BR-55	59
345	River Rd	0.10	S	Witch Hazel Rd	9395	737	8%	45	45	7370	517	7%	45	47
346	Rood Bridge Rd	0.10	S	Tualatin River Bridge	1088	87	8%	45	54	825	52	6%	45	54
347	Minter Bridge Rd	0.30	S	Morgan Rd	3677	361	10%	45	47	3226	332	10%	45	49
348	Vermont St	0.10	E	Oleson Rd	7167	228	3%	35	37	7608	254	3%	35	35
349	160th Ave	0.10	S	TV Highway	6977	236	3%	35	36	9476	276	3%	35	34
350	Oak St	0.10	E	170th Ave	3702	120	3%	25	35	3921	143	4%	25	34
351	Kinnaman Rd	0.30	N	Farmington Rd	10623	484	5%	35	38	11024	466	4%	35	38
352	Kinnaman Rd	0.10	W	185th Ave	7821	354	5%	35	36	7437	318	4%	35	37
353	Kinnaman Rd	0.10	E	209th Ave	1401	89	6%	25	32	1141	97	9%	25	32
354	Rosa Rd	0.10	W	185th Ave	2962	116	4%	25	32	2740	153	6%	25	33
355	Rosa Rd	0.10	E	209th Ave	1196	46	4%	25	28	1152	92	8%	25	28
356	Grabhorn Rd	0.10	S	Farmington Rd	5268	374	7%	45	42	5533	301	5%	45	43
357	Gassner Rd	0.10	E	Grabhorn Rd	1955	112	6%	40	34	2343	106	5%	40	43
358	190th Ave	0.10	S	Gassner Rd	3358	208	6%	40	40	4462	260	6%	40	41
360	Grabhorn Rd	0.10	N	Tile Flat Rd	2640	207	8%	45	47	2757	150	5%	45	49
361	Clark Hill Rd	0.10	S	Tile Flat Rd	1980	360	18%	50	49	1889	213	11%	50	53
362	Clark Hill Rd	0.30	N	Tile Flat Rd	2442	424	17%	50	59	2178	249	11%	50	56
363	River Rd	0.30	S	Farmington Rd	7454	708	9%	BR-55	54	7540	818	11%	BR-55	57
364	Minter Bridge Rd	0.30	N	Grabel Rd	2936	313	11%	45	55	0			45	
365	Scholls Ferry Rd	0.10	W	Nimbus Ave	39087	1718	4%	40	42	37916	1742	5%	40	44

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					ADT	Trucks	% trucks			ADT	Trucks	% trucks		
366	Scholls Ferry Rd	0.10	N	Hall Blvd	14589	627	4%	35	38	11903	604	5%	35	39
367	Scholls Ferry Rd	0.10	N	Denney Rd	19729	894	5%	35	35	13862	579	4%	35	34
368	Scholls Ferry Rd	0.02	S	Stephen Ln	14942	578	4%	35	38	12535	586	5%	35	39
369	Farmington Rd	0.50	E	Hwy 219	4023	466	12%	BR-55	44	5562	493	9%	BR-55	57
371	Farmington Rd	0.20	E	Rood Bridge Rd	5498	618	11%	BR-55	59	6380	574	9%	BR-55	59
372	Farmington Rd	0.50	E	River Rd	3935	450	11%	BR-55	47	4192	413	10%	BR-55	62
373	Farmington Rd	0.05	E	Tile Flat Rd	3541	443	13%	BR-55	59	3840	373	10%	BR-55	62
374	Farmington Rd	0.17	W	Clark Hill Rd	4693	539	11%	BR-55	57	3980	324	8%	BR-55	57
375	Farmington Rd	0.10	E	Clark Hill Rd	7337	1003	14%	45	49	6236	786	13%	45	49
376	Farmington Rd	0.10	W	209th Ave	8496	1409	17%	40-45	48	7376	1045	14%	40-45	55
378	Farmington Rd	0.10	E	Grabhorn Rd	10510	947	9%	40	40	9903	807	8%	40	44
379	Farmington Rd	0.02	W	Miller Hill Rd	12875	1356	11%	40	37	11166	809	7%	40	42
380	Farmington Rd	0.10	E	198th Ave	15476	1159	7%	40	41	14973	947	6%	40	40
381	Farmington Rd	0.20	W	185th Ave	17407	1257	7%	40	41	17639	1147	7%	40	42
382	Farmington Rd	0.10	E	185th Ave	15462	1040	7%	40	37	16480	960	6%	40	42
383	Farmington Rd	0.03	E	Rosa Rd	15326	993	6%	40	38	18795	1013	5%	40	38
384	Farmington Rd	0.10	E	Kinnaman Rd	19727	1285	7%	40	38	25403	2169	9%	40	40
385	Farmington Rd	0.08	E	170th Ave	25772	1421	6%	40	43	24590	1415	6%	40	44
386	Farmington Rd	0.08	W	160th Ave	11635	1304	11%	40	43	23913	1442	6%	40	46
387	Farmington Rd	0.08	E	160th Ave	25264	1288	5%	40	43	23440	1483	6%	40	45
388	Farmington Rd	0.10	W	149th Ave	27579	1374	5%	40	44	25432	1437	6%	40	45
389	Burkhalter Rd	0.20	W	Rood Bridge Rd	1908	164	9%	BR-55	61	1464	120	8%	BR-55	58
390	River Rd	0.10	E	Thrush Ave	11427	762	7%	40	39	9612	617	6%	40	41
391	River Rd	0.15	W	Minter Bridge Rd	10158	681	7%	35	38	8880	574	6%	35	38
392	River Rd	0.60	W	Scholls Ferry Rd				BR-55		7589	658	9%	BR-55	60
393	Jamieson Rd	0.30	W	Scholls Ferry Rd				25		2060	117	6%	25	34
394	Kemmer Rd	0.10	E	175th Ave				25		2903	116	4%	25	39
395	179th Ave	0.10	N	Oak St						2542	106	4%		30
396	Locust St	0.10	E	Hall Blvd				30		3455	177	5%	30	36
397	Rosedale Rd	0.20	W	229th Ave				45		2574	121	5%	45	52
400	Scholls Ferry Rd	0.10	N	Hwy 219	6818	627	9%	45	51	6216	725	12%	45	56
402	Roy Rogers Rd	0.70	S	Scholls Ferry Rd	21410	1723	8%	BR-55	51	18372	1587	9%	BR-55	58
403	Bull Mountain Rd	0.10	E	150th Ave	5782	311	5%	40	42	5192	232	4%	40	43
404	Beef Bend Rd	0.02	E	Elsner Rd	5012	519	10%	45	51	3824	251	7%	45	51
406	Lower Boones Ferry Rd	0.10	E	Childs Rd	12839	794	6%	35	39	13390	781	6%	35	39
407	Cipole Rd	0.10	S	Hwy 99w	6022	873	14%	45	46	3589	474	13%	45	44
408	Scholls Ferry Rd	0.10	S	River Rd	5642	524	9%	45-55	52	5688	443	8%	45-55	51
409	Tualatin-Sherwood Rd	0.10	E	Teton Ave	34789	5836	17%	45	43	29418	3618	12%	45	44

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					ADT	Trucks	% trucks			ADT	Trucks	% trucks		
410	Scholls Ferry Rd	0.10	E	River Rd	9099	815	9%	BR-55	53	8882	744	8%	BR-55	49
411	Tualatin-Sherwood Rd	0.10	E	Boones Ferry Rd	33133	4366	13%	35	34	40591	4943	12%	35	35
412	Nyberg Rd	0.10	W	065th Ave				35		21351	599	3%	35	32
413	065th Ave	0.10	S	Nyberg Rd	15207	820	5%	35	40	18392	718	4%	35	39
414	065th Ave	0.02	N	Norwood Rd	4476	265	6%	45	49	4425	267	6%	45	54
415	Norwood Rd	0.10	W	076th Ave	1548	115	7%	45	48	1476	108	7%	45	47
416	065th Ave	0.10	N	Elligsen Rd	3647	218	6%	45	45	3402	185	5%	45	47
417	Scholls Ferry Rd	0.10	E	Clark Hill Rd	8254	985	12%	BR-55	60	7870	881	11%	BR-55	63
419	Grahams Ferry Rd	0.10	S	Cahalin St	3638	809	22%	45	43	3535	723	20%	45	47
420	Grahams Ferry Rd	0.10	N	Tonquin Rd	3231	521	16%	45	45	3206	322	10%	45	49
421	Tualatin-Sherwood Rd	0.10	E	Cipole Rd	26040	2449	9%	45	43	26290	3238	12%	45	46
422	Tonquin Rd	0.10	S	Oregon St	6544	1139	17%	BR-55	48	6041	739	12%	BR-55	44
423	Oregon St	0.10	S	Tualatin-Sherwood Rd	11730	1545	13%	35	38	10164	1259	12%	35	42
424	Tualatin-Sherwood Rd	0.10	E	Adams St	23876	2560	11%	45	43	23651	2421	10%	45	45
425	Scholls Ferry Rd	0.30	W	Tile Flat Rd	8319	995	12%	BR-55	53	8256	674	8%	BR-55	58
427	Scholls Ferry Rd	0.10	E	Tile Flat Rd	11898	1169	10%	BR-55	53	11254	851	8%	BR-55	55
430	Elwert Rd	0.10	S	Edy Rd	4919	336	7%	BR-55	48	5465	250	5%	BR-55	47
431	Edy Rd	0.10	E	Elwert Rd	2809	257	9%	40	44	2820	226	8%	40	40
432	Edy Rd	0.10	W	Elwert Rd	1692	224	13%	BR-55	49	1485	107	7%	BR-55	49
433	Roy Rogers Rd	0.10	S	Scholls-Sherwood Rd	17170	1650	10%	45	50	14973	1461	10%	45	54
434	Elsner Rd	0.10	S	Beef Bend Rd	384	21	5%	BR-55	48	0			BR-55	
435	Elwert Rd	0.10	S	Lebeau Rd	5112	361	7%	BR-55	49	5528	208	4%	BR-55	46
437	Scholls-Sherwood Rd	0.10	N	Swank Rd	4644	626	13%	BR-55	53	3914	325	8%	BR-55	51
439	150th Ave	0.10	N	Beef Bend Rd	1480	124	8%	40	39	1032	39	4%	40	44
440	Scholls Ferry Rd	0.10	E	Roy Rogers Rd	17357	1306	8%	40	45	16170	1153	7%	40	51
441	Tualatin-Sherwood Rd	0.50	W	Boones Ferry Rd	37229	5948	16%	45	44	30051	4085	14%	45	47
442	065th Ave	0.18	S	Sagert Rd	6915	400	6%	35	34	5328	338	6%	35	54
443	Norwood Rd	0.10	E	Boones Ferry Rd	2399	181	8%	45	42	2135	193	9%	45	44
445	Cipole Rd	0.10	N	Tualatin-Sherwood Rd	6723	1270	19%	45	41	3282	544	17%	45	37
446	Edy Rd	0.10	W	Terrapin Dr	4426	334	8%	40	44	5002	374	7%	40	44
448	Elligsen Rd	0.30	W	065th Ave	5568	364	7%	45	49	4955	441	9%	45	52
449	Barrows Rd (east)	0.10	S	Scholls Ferry Rd	10111	284	3%	40	44	3771	116	3%	40	39
450	Bridgeport Rd	0.06	W	Hazelfern Rd	12652	433	3%	40	30	9703	372	4%	40	32
451	072nd Ave	0.07	N	Bridgeport Rd	16987	1148	7%	35	29	14832	676	5%	35	27
452	Beef Bend Rd	0.10	E	119th Ave	8658	433	5%	35	39	8203	428	5%	35	40
453	Bull Mountain Rd	0.03	E	Hazeltree Ter	10289	541	5%	40	43	9639	355	4%	40	43
454	131st Ave	0.15	S	Beef Bend Rd	3558	279	8%	25	31	3395	255	8%	25	33
455	Roshak Rd	0.30	N	Bull Mountain Rd				25		1888	70	4%	25	32

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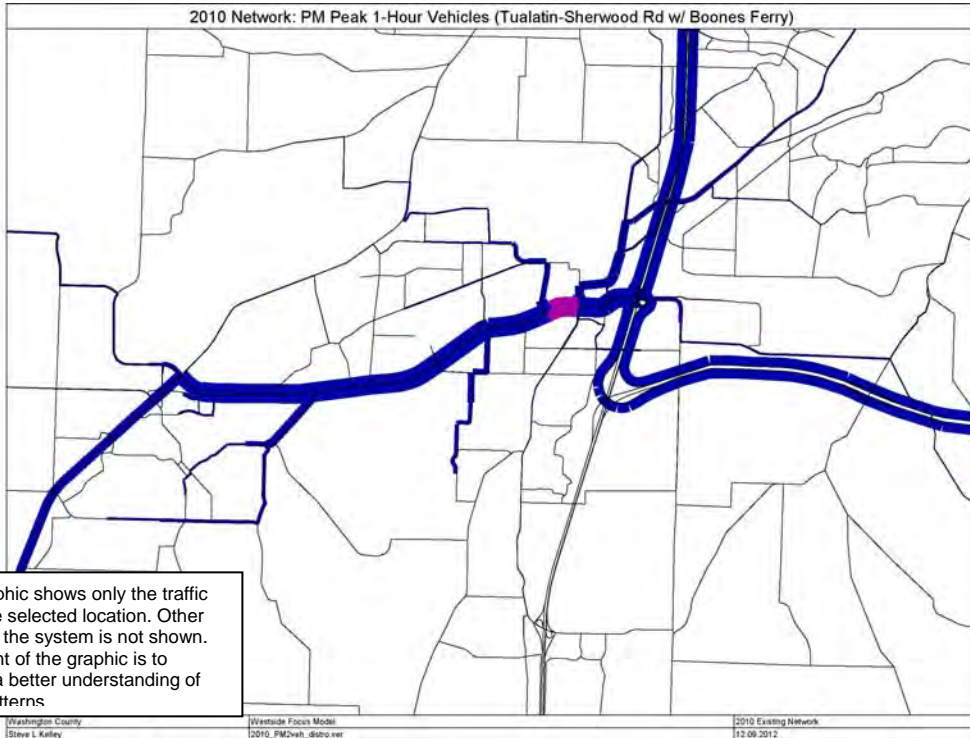
STATION COUNT COMPARISON DATA

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					ADT	Trucks	% trucks			ADT	Trucks	% trucks		
456	Scholls-Sherwood Rd	0.50	W	Roy Rogers Rd				BR-55		6588	415	6%	BR-55	43
457	Bull Mountain Rd	0.10	E	Roy Rogers Rd				40		2555	120	5%	40	44
458	Seiffert Rd	0.50	S	Hwy 219				BR-55		585	76	13%	BR-55	61
459	Brookman Rd	0.10	W	Old Hwy 99				35		1193	115	10%	35	34
460	Fischer Rd	0.10	W	Hwy 99w				25		6142	253	4%	25	30
522	Vanderschuere Rd	0.10	W	Hwy 219				BR-55		1640	154	9%	BR-55	43
601	Verboort Rd	0.10	E	Hwy 47	4474	334	7%	45	42	5252	127	2%	45	44
602	Cornelius-Schefflin Rd	0.70	N	Long Rd	3812	552	14%	BR-55	53	4013	487	12%	BR-55	50
603	Susbauer Rd	0.30	N	Long Rd	4628	303	7%	45	55	4458	190	4%	45	51
604	Hornecker Rd	0.10	E	Susbauer Rd	1771	203	11%	55	48	1778	165	9%	55	53
605	Evergreen Rd	0.10	E	Glencoe Rd	9864	793	8%	45	42	9722	748	8%	45	41
606	Evergreen Rd	0.10	E	Jackson School Rd e/leg	12557	771	6%	45	44	12594	805	6%	45	46
607	Shute Rd	0.10	S	Meek Rd	28409	1663	6%	BR-55	56	28562	2411	8%	BR-55	54
608	Meek Rd	0.10	E	Jackson School Rd	359	47	13%	BR-55	50	338	42	12%	BR-55	46
609	Scotch Church Rd	0.10	W	Jackson School Rd	3178	227	7%	BR-55	51	3866	218	6%	BR-55	52
610	Glencoe Rd	0.10	S	Scotch Church Rd	6319	786	12%	BR-55	50	4744	614	13%	BR-55	50
611	Susbauer Rd	0.10	S	Zion Church Rd	2685	197	7%	BR-55	44	2177	244	11%	BR-55	49
612	Cornelius-Schefflin Rd	0.10	S	Roy Rd	11833	1488	13%	BR-55	57	12526	1645	13%	BR-55	61
613	Roy Rd	0.10	N	Cornelius-Schefflin Rd	1306	288	22%	BR-55	39	1156	309	27%	BR-55	44
614	Glencoe Rd	0.10	S	Beach Rd	15302	1916	13%	BR-55	52	13658	1647	12%	BR-55	55
618	Sellers Rd	0.10	S	Hwy 26	811	141	17%	BR-55	51	724	112	15%	BR-55	50
619	Jackson School Rd	0.10	N	Evergreen Rd	8794	502	6%	BR-55	39	10462	646	6%	BR-55	48
621	Zion Church Rd	0.20	W	Glencoe Rd	13438	1585	12%	BR-55	58	13522	1773	13%	BR-55	61
622	Gordon Rd	0.10	S	Beach Rd	1057	118	11%	BR-55	59	982	148	15%	BR-55	59
623	Kerkman Rd	0.10	N	Zion Church Rd	416	61	15%	BR-55	47	358	48	13%	BR-55	43
625	Brookwood Pkwy	0.20	S	Dawson Creek Dr	18106	1013	6%	45	51	19235	738	4%	45	43
627	Evergreen Pkwy	0.10	W	Cornelius Pass Rd	12958	629	5%	45	44	13072	868	7%	45	41
628	Evergreen Pkwy	0.10	W	229th Ave	16117	904	6%	45	46	17153	1478	9%	45	46
629	001st Ave (Hillsboro)	0.10	N	Lincoln St	11783	1170	10%	25	29	12071	1145	9%	25	31
630	Evergreen Rd	0.30	E	264th Ave	19870	1025	5%	45	53	19597	1302	7%	45	53
631	Wren Rd	0.10	W	Glencoe Rd				BR-55		1742	101	6%	BR-55	52
632	Wren Rd	0.10	E	Cornelius Schefflin Rd				BR-55		1698	166	10%	BR-55	49
633	Glencoe Rd	0.15	S	Evergreen Rd				45		11758	1402	12%	45	43
716	Glencoe Rd	0.10	S	Pacific St	7904	1000	13%	35	34	6833	923	14%	35	36
718	Jackson Quarry Rd (3 yr)	0.40	N	West Union Rd				BR-55		612	77	13%	BR-55	42
720	Sell Rd	0.10	S	Green Mountain Rd				BR-55		413	60	15%	BR-55	46
815	Old Hwy 47 (3 yr)	0.20	N	Seghers Rd				BR-55		490	61	12%	BR-55	54
824	Ritchey Rd	0.50	W	Pacific Ave				BR-55		634	83	13%	BR-55	57

Appendix B – System Demand Patterns

2010 Tualatin-Sherwood Road - Traffic Distribution Patterns

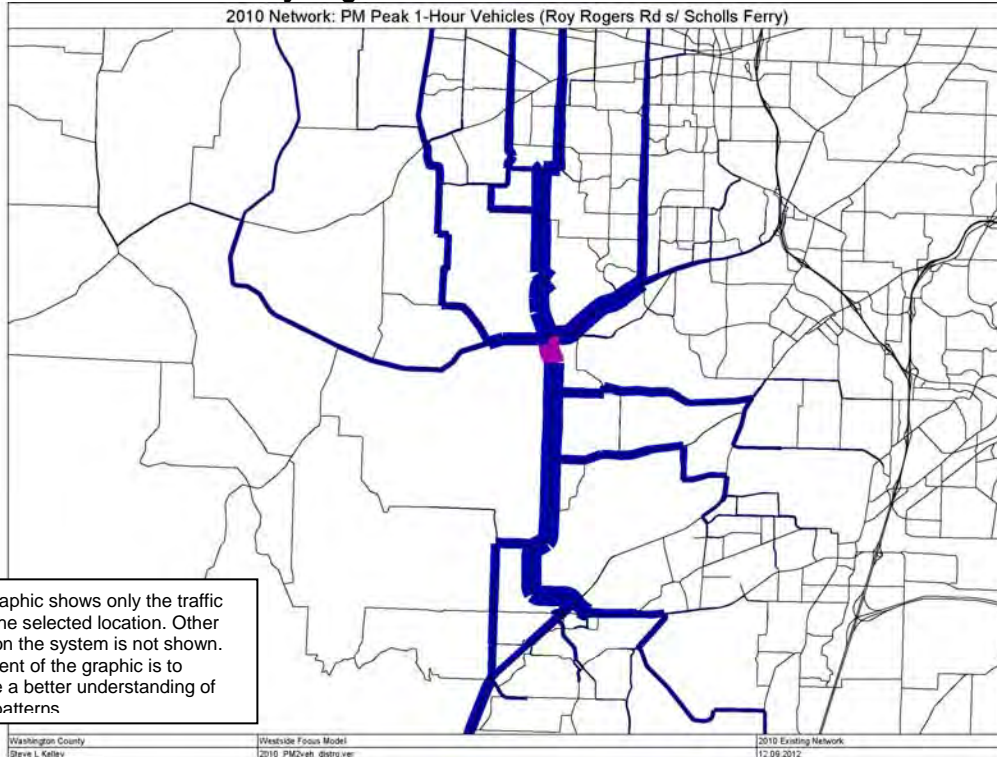
2010 Network: PM Peak 1-Hour Vehicles (Tualatin-Sherwood Rd w/ Boones Ferry)



This graphic shows only the traffic using the selected location. Other traffic on the system is not shown. The intent of the graphic is to provide a better understanding of travel patterns.

2010 Roy Rogers Road - Traffic Distribution Pattern

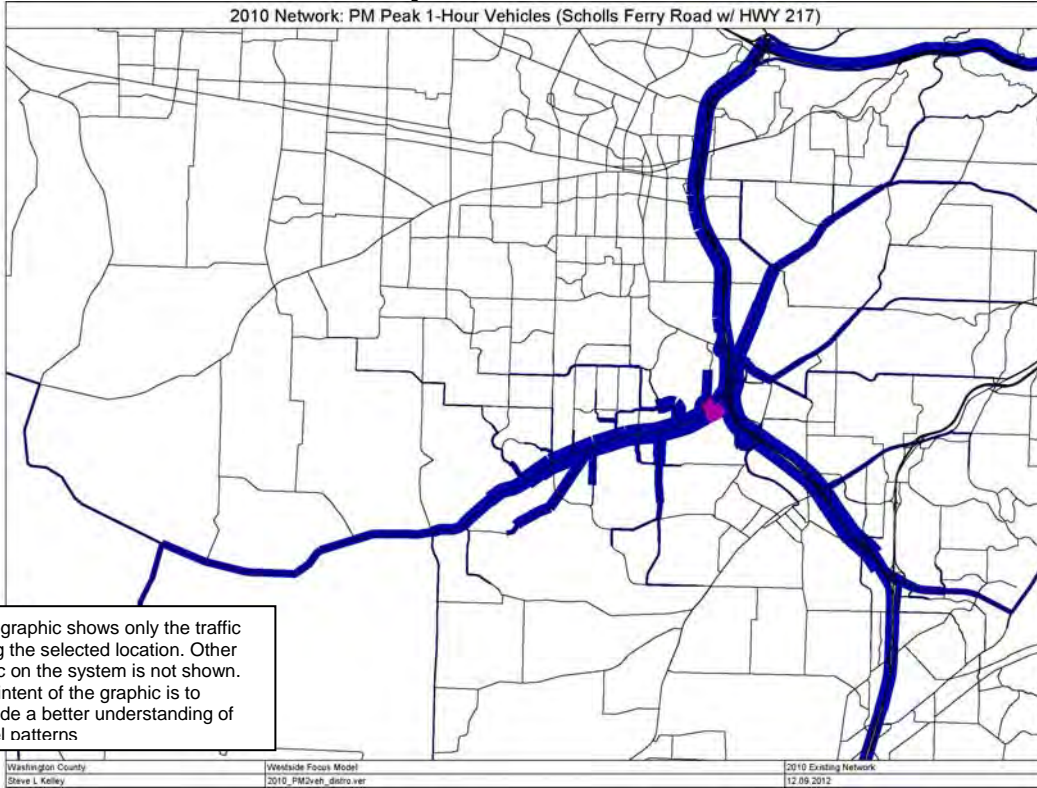
2010 Network: PM Peak 1-Hour Vehicles (Roy Rogers Rd s/ Scholls Ferry)



This graphic shows only the traffic using the selected location. Other traffic on the system is not shown. The intent of the graphic is to provide a better understanding of travel patterns.

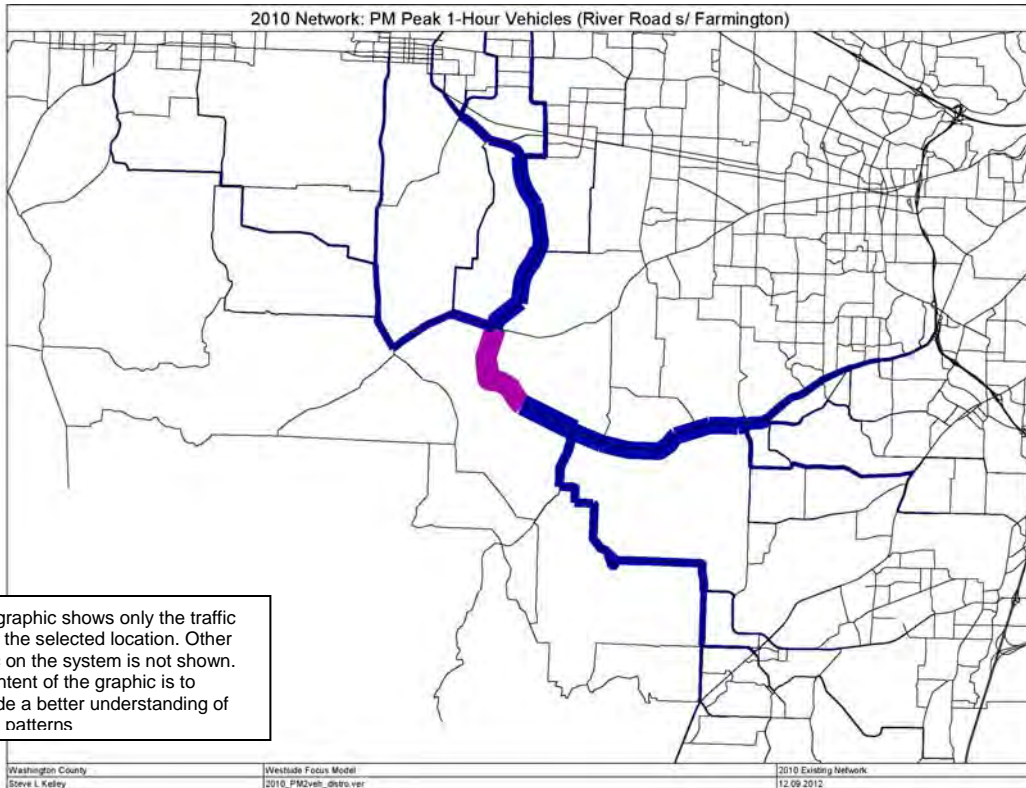
2010 Scholls Ferry Road - Traffic Distribution Pattern

2010 Network: PM Peak 1-Hour Vehicles (Scholls Ferry Road w/ HWY 217)



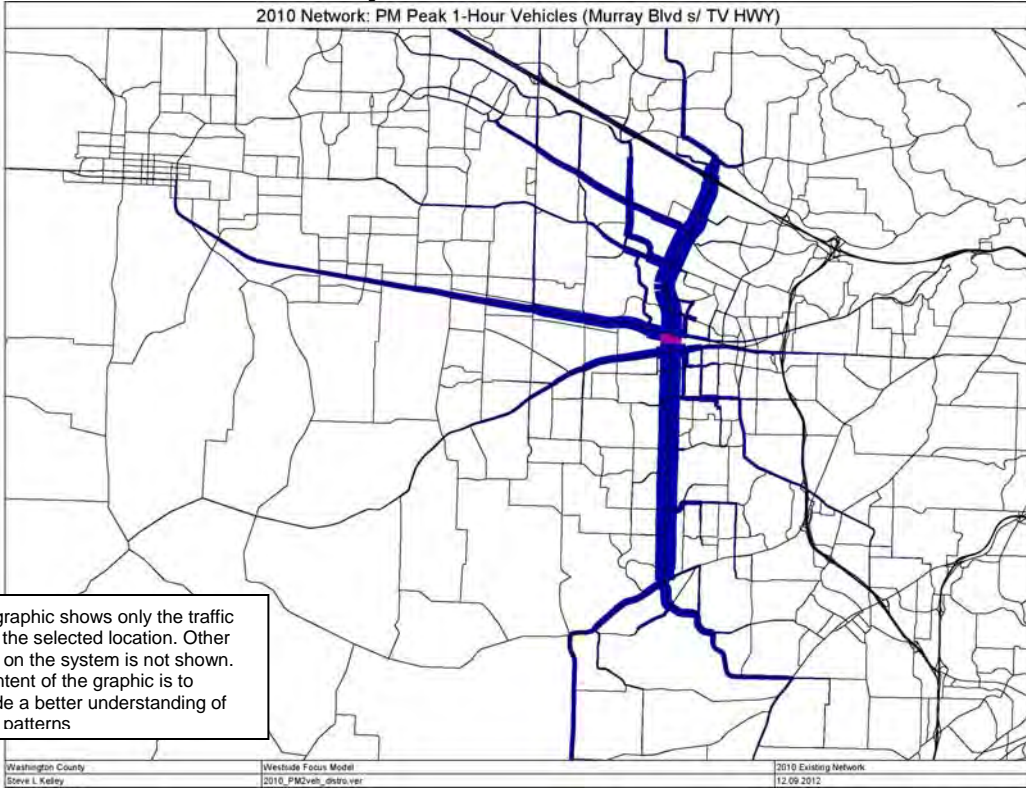
2010 River Road - Traffic Distribution Pattern

2010 Network: PM Peak 1-Hour Vehicles (River Road s/ Farmington)



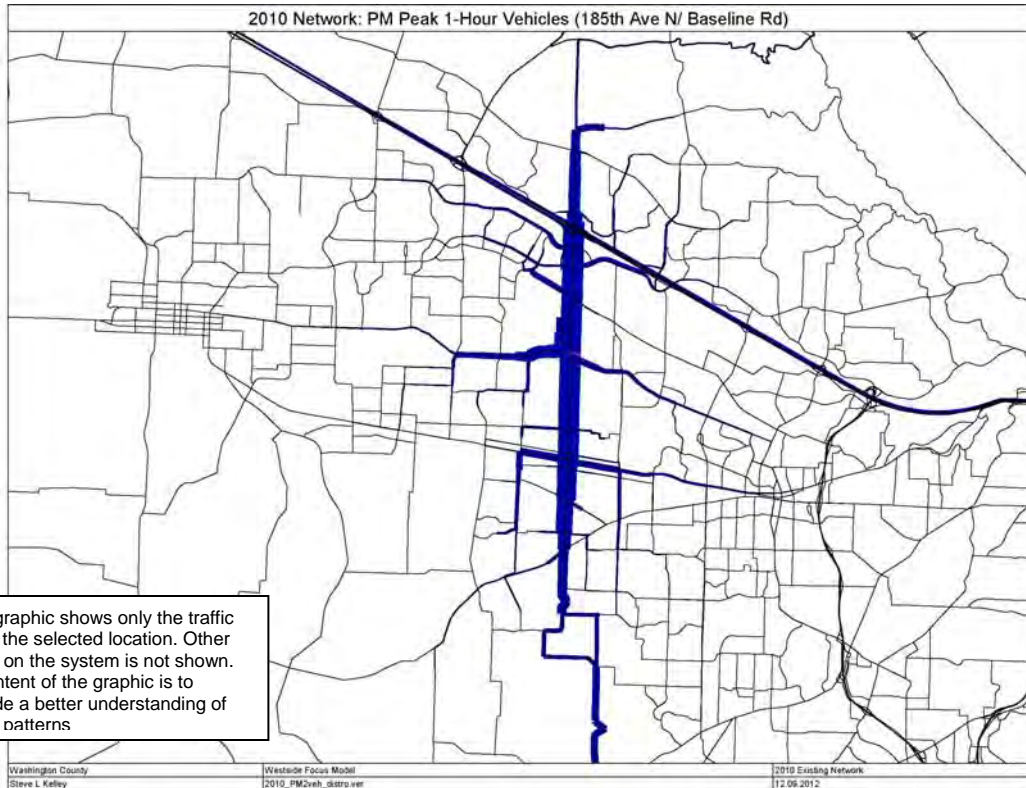
2010 Murray Blvd - Traffic Distribution Pattern

2010 Network: PM Peak 1-Hour Vehicles (Murray Blvd s/ TV HWY)



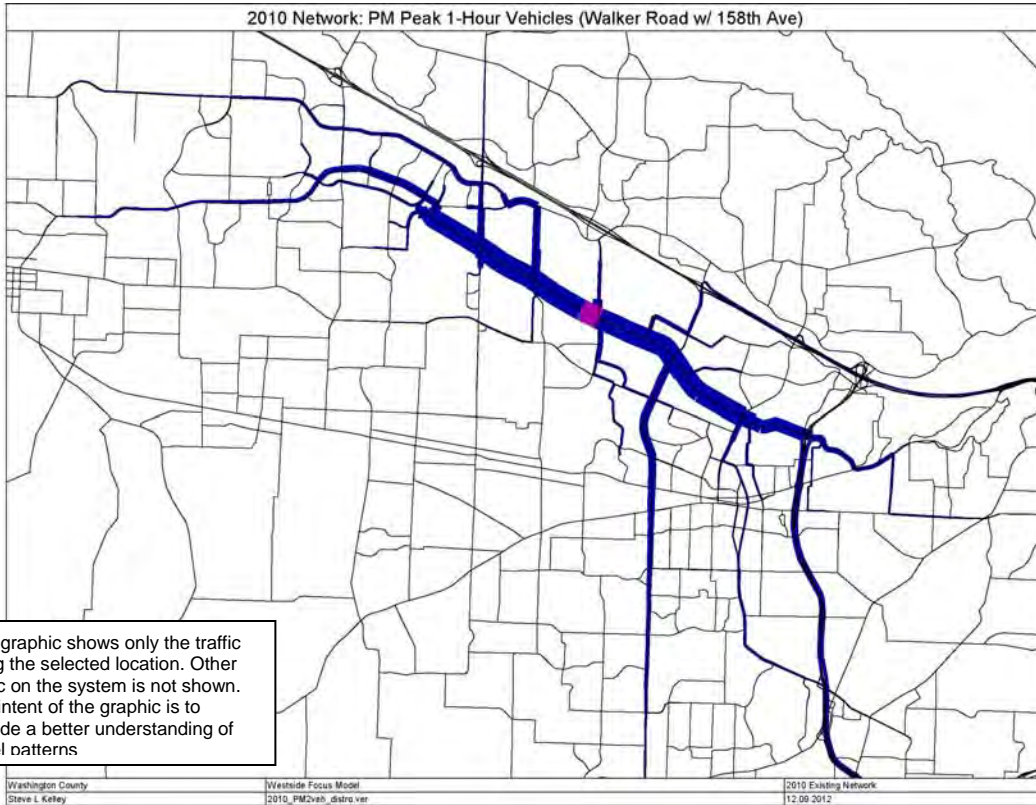
2010 185th Avenue - Traffic Distribution Pattern

2010 Network: PM Peak 1-Hour Vehicles (185th Ave N/ Baseline Rd)



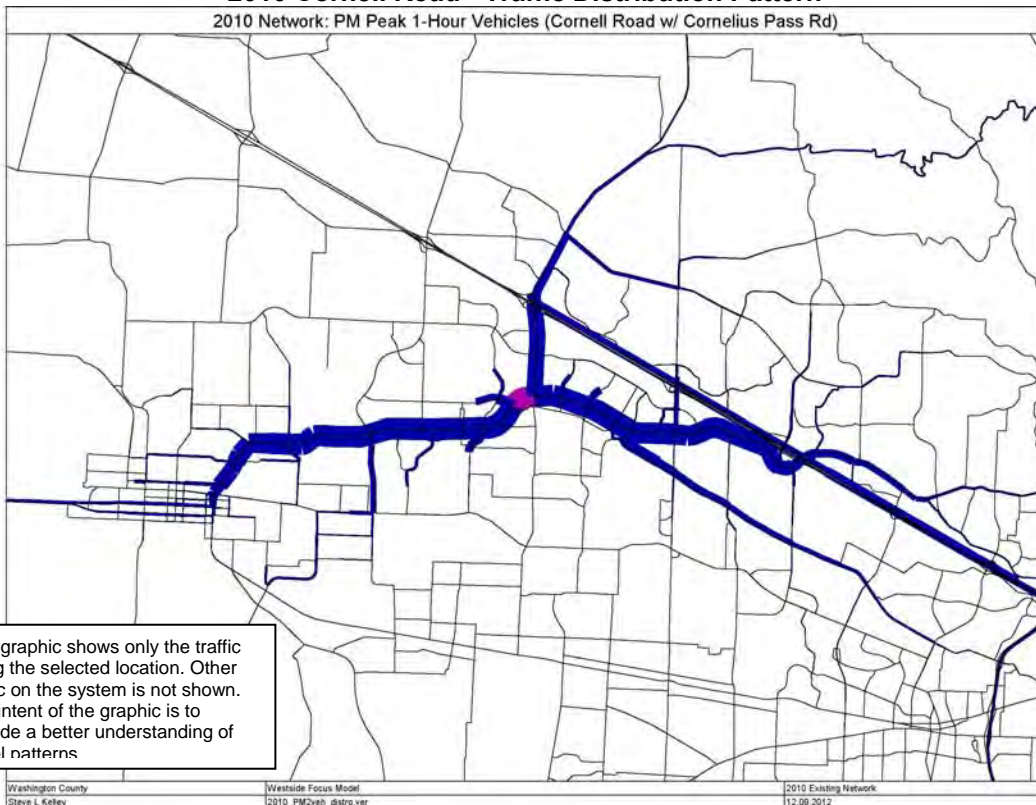
2010 Walker Road - Traffic Distribution Pattern

2010 Network: PM Peak 1-Hour Vehicles (Walker Road w/ 158th Ave)



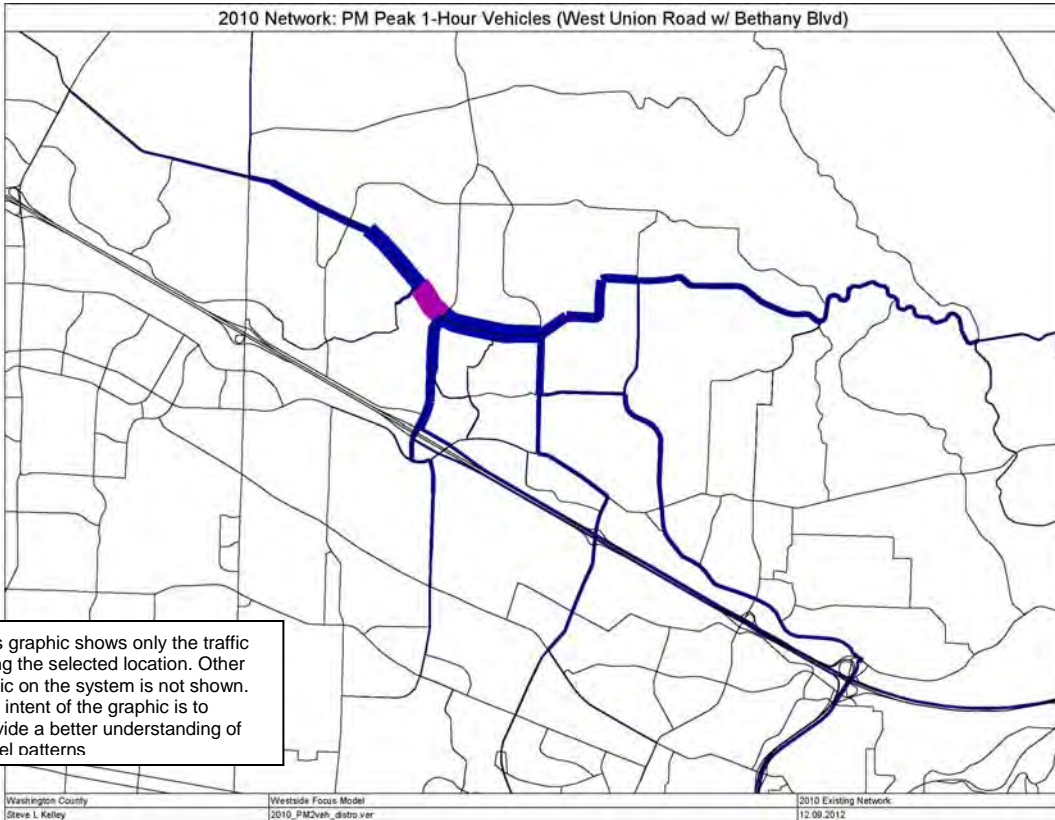
2010 Cornell Road - Traffic Distribution Pattern

2010 Network: PM Peak 1-Hour Vehicles (Cornell Road w/ Cornelius Pass Rd)



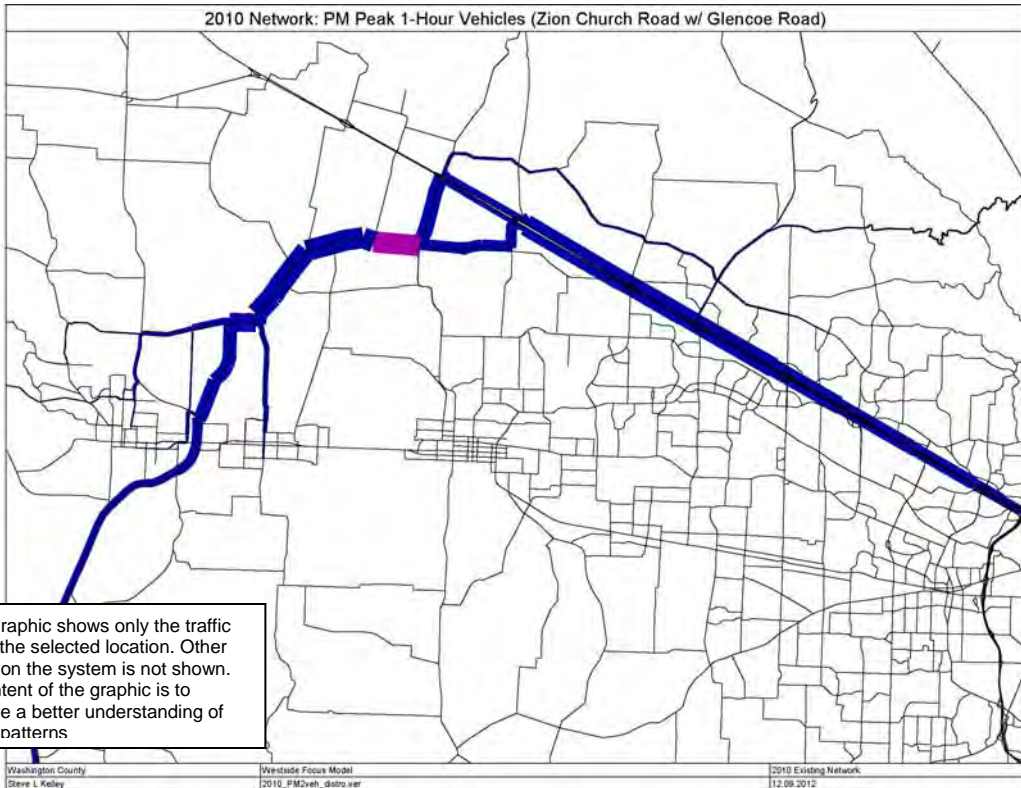
2010 West Union Road - Traffic Distribution Pattern

2010 Network: PM Peak 1-Hour Vehicles (West Union Road w/ Bethany Blvd)



2010 Zion Church Road - Traffic Distribution Pattern

2010 Network: PM Peak 1-Hour Vehicles (Zion Church Road w/ Glencoe Road)



Capital Project List

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

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

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

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

The Capital Project List does not include projects on city roadways or on trails wholly within cities, nor does it include all of the projects on the Regional Transportation Plan project list within Washington County.

The TSP Modal Element maps depict an ultimate complete system that will be implemented gradually through capital projects and private development. The county reserves the right to "condition" right-of-way dedications and half-street improvements during development review based on designations shown on the TSP Modal Element maps, regardless of whether a particular road segment is included in the Capital Project List.

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
10545	OR 10: Oleson Rd. Improvement Phase 1	Oleson Rd. south of OR10	Oleson Rd. at Scholls Ferry	Arterial	Address recurring safety issue.	Realign Oleson Rd. 500 feet to east and reconfigure Oleson intersections with OR10 and Scholls Ferry Rd.	\$34,200,000	Medium
10546	170th Ave. Improvements	Alexander St.	Merlo Rd.	Arterial	Provide congestion relief.	Widen roadway to 4 lanes with left turn lanes at major intersections, sidewalks, and bike lanes or cycle tracks.	\$15,277,000	Medium
10547	173rd/174th Under Crossing Improvement	Cornell Rd.	Bronson Rd.	Arterial	Provide congestion relief.	Construct four-lane road under Hwy. 26 with bike lanes and sidewalks.	\$58,640,000	Long
10548	174th Ave. Improvements	Bronson Rd.	Meadowgrass Ln.	Arterial	Address recurring safety issue.	Add turn lanes, bike lanes and sidewalks	\$16,230,000	Long
10549	Cornell @ 143rd Improvements	Science Park Dr.	143rd Ave.	Arterial	Address recurring safety issue.	Realign 143rd with Science Park Dr. @ Cornell as a 4-way signalized intersection.	\$12,400,000	Long
10550	185th Avenue Improvement	West Union Rd.	Springville Rd.	Arterial	Provide congestion relief.	Widen 185th Ave. from two to five lanes with bike lanes and sidewalks	\$5,400,000	Near
10552	Cornell/Cornelius Pass Interchange	N/A	N/A	Arterial	Provide congestion relief.	Grade separate Cornell at Cornelius Pass.	\$21,200,000	Long
10553	209th Improvements	T.V. Hwy.	Farmington Rd.	Arterial	Address recurring safety issue.	Widen roadway to 4 lanes with left turn lanes at major intersections, access management, sidewalks, and bike lanes or buffered bike lanes.	\$27,391,000	Near
10557	Murray/TV Hwy. Intersection	Farmington Rd.	TV Hwy.	Arterial	Provide congestion relief.	Intersection improvements at TV Hwy. and Farmington with Murray Blvd.	\$25,000,000	Long
10558	Cornell Rd. Improvements	113th Ave.	107th Ave.	Arterial	Provide congestion relief.	Widen from two to three lanes with bike lanes and sidewalks.	\$9,941,000	Near
10559	Cornell Improvements	Murray Blvd.	Hwy. 26	Arterial	Provide congestion relief.	Widen Cornell from three to five lanes with bike lanes and sidewalks.	\$40,620,000	Long
10560	Farmington Rd. Improvements	185th Ave.	Kinnaman Rd.	Arterial	Provide congestion relief.	Widen roadway from 2/3 lanes to 4 lanes with turn lanes at major intersections, bike lanes, sidewalks, access management, realignment of Rosa/179th intersection.	\$27,299,000	Medium

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
10561	Jenkins Rd. Improvements	158th Ave.	Murray	Arterial	Provide congestion relief.	Widen roadway from three to five lanes with bike lanes and sidewalks.	\$15,530,000	Near
10563	Kaiser/143rd Ave. Improvements	Bethany Blvd.	Cornell Rd.	Collector	Address recurring safety issue.	Widen from two to three lanes with bike lanes and sidewalks.	\$38,357,000	Long
10564	Kaiser Improvements	Springville Rd.	Bethany Blvd.	Arterial	Provide congestion relief.	Widen from two to three or five lanes with bike lanes and sidewalks.	\$6,100,000	Long
10565	Springville Rd. Improvements	185th Ave.	PCC Driveway	Arterial	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	\$11,100,000	Near
10566	Springville Rd. Improvements	PCC Driveway	Kaiser Rd.	Arterial	Address recurring safety issue.	Widen from two to three lanes with bike lanes and sidewalks.	\$3,600,000	Near
10567	Taylor's Ferry Extension	Oleson Rd.	Washington Dr.	Collector	Improve connectivity.	Construct new two lane extension with bike lanes and sidewalks.	\$4,390,000	Long
10568	Tualatin-Sherwood Rd. Improvements	Langer Farms Parkway	Teton Ave.	Arterial	Provide congestion relief.	Widen from three to five lanes with bike lanes and sidewalks.	\$49,150,000	Near
10569	Walker Rd. Improvements	Amberglen	185th Ave.	Arterial	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	\$17,611,000	Medium
10571	West Union Rd. Improvements	185th Ave.	143rd Ave.	Arterial	Address recurring safety issue.	Widen from two to three lanes with bike lanes and sidewalks.	\$34,870,000	Long
10572	Barnes Rd. Improvements	St. Vincent's Hosp. entrance	Leahy Rd.	Arterial	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	\$8,933,000	Near
10573	Barnes Rd. Improvements	Leahy Rd.	Multnomah Co. Line	Arterial	Address recurring safety issue.	Widen from two to three lanes with bike lanes and sidewalks.	\$17,326,000	Long
10575	West Union Rd.	Cornelius Pass Rd.	185th Ave.	Arterial	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	\$26,192,000	Near
10577	Scholls Ferry Improvements	Allen Blvd.	Beaverton-Hillsdale Hwy.	Arterial	Address recurring safety issue.	Widen roadway from two to three lanes with bike lanes and sidewalks.	\$22,587,000	Long
10578	Merlo/158th Improvements	170th Ave.	Walker Rd.	Arterial	Provide congestion relief.	Widen roadway to five lanes with bike lanes and sidewalks.	\$24,735,000	Medium
10579	Barnes Rd. Improvements	Cedar Hills Blvd..	118th Ave.	Arterial	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks. Add double turn lanes.	\$4,000,000	Medium
10580	Butner Rd. Improvements	Murray Blvd.	Cedar Hills Blvd.	Collector	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	\$18,515,000	Long
10582	185th Ave. Improvements	Blanton St.	Farmington Rd.	Arterial	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks	\$12,163,000	Long

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
10584	Alexander St. Improvements	192nd Ave.	178th Ave.	Collector	Economic development and address safety issues.	Add sidewalks, lighting, streetscape features, bike boulevard treatments, signal at 185th Ave, turn lanes at major intersections.	\$9,293,000	Medium
10585	Johnson St. Improvements	Cornelius Pass Rd.	185th Ave.	Collector	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	\$24,333,000	Long
10586	197th/198th Ave. Improvements	Baseline Rd.	T.V. Hwy.	Collector	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	\$19,297,000	Long
10587	Cornelius Pass Rd. Improvements	Frances St.	T.V. Hwy.	Arterial	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks.	\$11,307,000	Near
10588	Grahams Ferry Rd. Improvements	Helenius St.	Washington/ Clackamas County line	Collector	Provide freight access and capacity to link the Coffee Creek I RSIA and the industrial area north of Wilsonville Road as well as the I-5/Wilsonville Road Interchange.	Widen Grahams Ferry Rd. to three lanes, add bike/pedestrian connections to regional trail system and fix undersized railroad overcrossing.	\$28,000,000	Medium
10589	95th Ave. Ped/Bike Connection	Morrison St.	Sunset Transit Center	Trail	Improve connectivity.	Pedestrian/bicycle pathway, lighting, bridge over Johnson Creek, grade-separated crossing of Barnes Road.	\$11,546,000	Medium
10590	Tonquin Rd. Improvements	Grahams Ferry Rd.	Oregon St.	Arterial	Address recurring safety issue.	Realign and widen to three lanes with bike lanes and sidewalks and street lighting.	\$15,000,000	Medium
10591	Glencoe Rd. Improvements	Evergreen Rd.	Jackson Ave.	Arterial	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	\$26,016,000	Long
10592	205th Ave. Improvements	Quatama Rd.	Baseline Rd.	Collector	Provide congestion relief.	Widen road to five lanes with bike lanes and sidewalks. Widen bridge over Beaverton Creek to four lanes with bike lanes and sidewalks.	\$31,000,000	Medium
10593	Kinnaman Rd. Improvements	209th Ave.	Farmington Rd.	Collector	Address recurring safety issue.	Reconstruct with sidewalks, bike lanes and turn lanes at major intersections; consolidate offset intersection at 198th Ave.	\$26,810,000	Long
10594	Greenburg Rd. Improvements	Summit Dr.	Locust St.	Arterial	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks.	\$3,780,000	Long

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
10595A	Hall Blvd. in Washington Square Improvements	Scholls Ferry Rd.	Oleson Rd.	Arterial	Provide congestion relief.	Provide continuous five-lane cross-section with right turn lanes as needed, reconstruct bike lanes and sidewalks accordingly.	\$2,327,000	Long
10595B	Hall Blvd. in Metzger Improvements	Oleson Rd.	Pfaffle St.	Arterial	Address recurring safety issue.	Provide continuous three-lane cross section with bike lanes and sidewalks.	\$13,762,000	Long
10595C	Hall Blvd. in Tigard Improvements	Hwy. 99W	Durham Rd.	Arterial	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks.	\$42,500,000	Long
10596	Scholls Ferry Rd. Improvements	Hwy. 217	121st Ave.	Arterial	Provide congestion relief.	Widen to seven lanes with bike lanes and sidewalks.	\$19,749,000	Long
10598	I-5/99W Connector Southern Arterial	Hwy. 99W	I-5	Arterial	Provide congestion relief.	Purchase Right-of-Way.	\$53,000,000	Long
10599	Hwy. 217/72nd Ave. Interchange Improvements	N/A	N/A I-5	Freeway	Address recurring safety issue and improve pedestrian and bicycle facilities. Purchase ROW	Complete interchange reconstruction with additional ramps and bridge structure replacement	\$20,000,000	Near
10605	Hillsboro Area ITS	N/A	N/A		Provide congestion relief.	Install advanced traffic management systems including adaptive signals, communications, dynamic messaging signs, and surveillance and management equipment.	\$10,888,000	Near
10606	Washington Square Regional Center Pedestrian Improvements	Wash. Sq. Regional Center			Complete gap in pedestrian system.	Complete 7400 feet of sidewalk improvements.	\$8,954,000	Long
10607	Sunset TC Station Community Pedestrian Improvements	Sunset TC Station Community			Complete gap in pedestrian system.	Sidewalks, pedestrian crossings, accessways, ped/bike bridges over creeks.	\$6,006,000	Long

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
10608	Aloha-Reedville Pedestrian Improvements	Aloha-Reedville Study Area			Complete gap in pedestrian system.	Sidewalk infill, pedestrian crossings, accessways, ped/bike bridges over creeks, at-grade ped/bike crossings of Portland and Western Railroad.	\$27,045,000	Medium
10609	Science Park Dr. Bike	Murray Blvd.	Cornell Rd.	Collector	Complete gap in pedestrian system.	Complete 3600 feet of bike lanes in town center.	\$2,124,000	Long
10610	Saltzman Rd. Bike	Cornell Rd.	Barnes Rd.	Arterial	Complete gap in bike system.	Complete 950 feet of bike lanes in town center.	\$1,000,000	Near
10611	Locust Ave. Bike	Hall Blvd.	80th Ave.	Collector	Complete gap in bike system.	Complete 1650 feet of bike lanes in regional center.	\$3,417,000	Long
10612	Greenburg Rd. Bike	Hall Blvd.	Hwy. 217	Arterial	Complete gap in bike system.	Complete 3400 feet of bike lanes in regional center.	\$3,610,000	Long
10613	Cornell Rd. Bike	Saltzman Rd.	119th Ave.	Arterial	Complete gap in bike system.	Complete 1750 feet of bike lanes in town center.	\$1,036,000	Long
10614	Butner Rd. Bike	Cedar Hills Blvd.	Park Way	Collector	Complete gap in bike system.	Complete 7800 feet of bike lanes to transit corridor.	\$3,520,000	Long
10615	Bronson Rd. Bike	185th Ave.	Bethany Blvd.	Collector	Complete gap in bike system.	Complete 15000 feet of bike lanes to transit corridor.	\$5,490,000	Medium
10617	Farmington Rd.	Murray Blvd.	Hocken Ave.	Arterial	Safety (high crash location), fill gaps in bike/ped system, and congestion relief at intersections of Murray and Hocken.	Construct turn lanes and intersection improvements; signalize where warranted; add bike lanes and sidewalks in gaps. Includes multi-modal improvements to Murray: TV Hwy. to Farmington.	\$10,700,000	Near
10641	102nd/103rd 2 lane multimodal connection	Western Ave.	Walker Rd.	Neighborhood Route	Complete a gap.	Connect streets and construct bike lanes and sidewalks. Realign intersection at BH Hwy. and Western.	\$16,500,000	Long
10644	110th Ave. sidewalk gaps	Beaverton Hillsdale Hwy.	Canyon Rd.	Neighborhood Route	Complete a gap.	Construct sidewalks.	\$1,400,000	Near
10674	Oregon-Tonquin Roundabout	Oregon Street	at Tonquin	Arterial	Safety improvements. Congestion relief. Economic development for undeveloped industrial area.	Reconstruct and realign three leg intersection with a roundabout (partial two-lane) approx. 400 feet northeast of existing roundabout at SW Oregon St. & Murdock Rd. ROW, PE, construction.	\$2,300,000	Near

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
10680	Elwert-99W-Sunset Blvd. Improvements	99W	Kruger-Cedar Brook Way	Arterial	Safety improvements. Congestion relief.	Relocate Kruger Rd. intersection 600' northeast along Elwert Rd. Construct roundabout at Elwert-Kruger-Cedar Brook. Widen Sunset Blvd. approach. Reconstruct 99W intersection and replace signal. PE, construction.	\$4,000,000	Near
10708	Roy Rogers Rd. / Tualatin-Sherwood Road	Langer Farms Parkway	Borchers Dr.	Arterial	Economic development and address safety issues.	Construct road to five lane collector standard.	\$1,900,000	Near
10717	Cipole	ORE 99W	Tualatin-Sherwood Rd.	Collector	Economic development and freight movement.	Reconstruct/widen to three lanes from 99W to Tualatin-Sherwood Road and include multi-use path, includes signal at Cipole and Herman	\$20,030,000	Medium
10736	124th Ave. Extension	Tualatin-Sherwood Rd.	Grahams Ferry Rd.	Arterial	Economic Development.	New road to facilitate development of industrial lands, grade seperated rail crossing South of Tonquin.	\$31,000,000	Near
10749	Washington Square Regional Center Pedestrian Improvements	Various	Various		Sidewalk and trail infill to improve safety and access to transit.	Improve sidewalks, lighting, crossings, bus shelters, and benches at Washington Square.	\$3,900,000	Near
10809	Bronson Creek Trail (Community)	Bronson Creek Park Cornell Rd. (THPRD)	Laidlaw Rd.	Trail	Complete a community trail segment in THPRD's Trail Master Plan.	To design and construct a community trail segment in a greenway corridor, 8'-10' wide paved.	\$3,500,000	Medium
10810	Westside Trail (Regional)	Hwy 26	THPRD Nature Park	Trail	Complete a regional trail segment in THPRD's Trail Master Plan.	To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved.	\$4,000,000	Medium
10811	Beaverton Creek Trail (Regional)	SW 194th Ave.	Fanno Creek Trail	Trail	Complete a regional trail segment in THPRD's Trail Master Plan.	To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved.	\$7,000,000	Medium
10824	Cornell Rd.	Arrington	Main Street	Arterial	Provide congestion relief.	Improve to five lane with bike lanes and sidewalks.	\$9,248,000	Long
10836	Evergreen Rd. Bike Lanes	Glencoe Rd.	25th	Arterial	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks.	\$5,440,000	Medium
10844	Cornelius Pass Road	TV Hwy.	Rosedale Rd.	Arterial	Provide congestion relief.	Extend as a five lane facility with buffered bike lanes/sidewalks.	\$26,500,000	Medium

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
10873	US 26W: Widen highway to 6 lanes	185th Ave.	Cornelius Pass Road	Freeway	Increase capacity.	Widen highway to 6 lanes.	\$25,000,000	Near
10907	High Capacity Transit: Southwest Corridor (Portland to Tualatin via Tigard) - Project Development	N/A	N/A	Transit	To further develop and advance the Near Term corridor identified in the HCT System Plan through ROW acquisition to include in conformity modeling.	Project Development through ROW acquisition/early construction for High Capacity Transit project between Portland and Tualatin via Tigard. The project or a portion of the project is outside the designated urban growth boundary as of March 2014.	\$75,000,000	Near
11045	Baseline @ 185th Ave. Improvement	185th Ave.	Baseline	Arterial	Provide congestion relief. And improve transit operations.	Grade separate intersection and MAX.	\$24,700,000	Long
11089	92nd Ave. Ped.	Garden Home Blvd.	Allen Blvd.	Arterial	Complete gap in pedestrian system.	Complete 3800 feet of sidewalk improvements to transit corridor	\$3,922,000	Long
11090	Cornell Rd.	Arrington	25th Ave.	Arterial	Complete gap in bike system.	Complete 2100 feet of bike lanes in transit corridor	\$4,740,000	Long
11134	Westside Trail (Regional)	Bronson Creek Trail (Kaiser Ridge Park)	Rock Creek Trail (Kaiser Woods Park)	Trail	Complete a regional trail segment in THPRD's Trail Master Plan.	To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved.	\$2,675,000	Near
11140	Brookwood Parkway	Ihly Way	Cornell Rd.	Arterial	Improve capacity and safety.	Widen to five lanes with offstreet sidewalk and bikeway	\$9,000,000	Medium
11149	Helvetia Rd.	Schaaf Rd.	West Union Rd.	Arterial	Improve capacity and safety.	Construct three lane roadway with bike lanes on both sides and sidewalk on urban side.	\$4,000,000	Long
11158	206th Ave.	Baseline	Rock Rd.	Collector	Improve safety, bike/ped, school, transit access	Widen to provide bike lanes and sidewalks.	\$3,000,000	Medium
11211	Bridge crossing of Hwy. 26 by the Westside Trail			Trail	Allows for a more direct travel route	Would avoid out-of-direction bike/ped trips on a major regional trail	\$9,000,000	Medium
11233	Walker Rd. Improvements	185th Ave.	173rd Ave.	Arterial	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	\$13,570,000	Medium
11234	Walker Rd. Improvements	173rd Ave.	Murray Blvd.	Arterial	Provide congestion relief.	Widen from two to five lanes with bike lanes and sidewalks.	\$16,600,000	Near
11235	Walker Rd. Improvements	Murray Blvd.	Hwy. 217	Arterial	Provide congestion relief and enhance safety.	Widen from two to four lanes with turn lanes, intersection treatments, bike lanes, sidewalks and street lighting.	\$33,000,000	Near

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
11236	Cedar Hills Blvd. Improvements	Butner Rd.	Celeste Ln.	Arterial	Provide congestion relief, complete gap in bike system.	Widen to five lanes thru Barnes, turn lane improvements at US26, signalize US26 EB, continuous bike lanes and sidewalks through interchange area.	\$4,000,000	Medium
11238	Cedar Mill Local Street Connectivity	Cedar Mill Town Center		Local	Reduce arterial congestion through improved local street connectivity.	Connect local streets to reduce out of direction travel and use of arterial roads for local trips.	\$10,000,000	Medium
11239	Washington County Neighborhood Bikeways	N/A	N/A		Improve bicycle connectivity.	30 miles of neighborhood bikeways (bike boulevards) on low-traffic streets throughout unincorporated urban Washington County, including enhanced at-grade crossings of arterials.	\$16,000,000	Medium
11240	Murray Blvd. Bikelane & sidewalk	Farmington Rd.	TV Hwy.	Arterial	Improve bicycle connectivity.	Construct a six-foot wide bikelane on west side of Murray and replace existing asphalt path with six-foot wide concrete sidewalk and five-foot wide planting strip. Move railroad equipment.	\$2,900,000	Near
11241	Evergreen Rd. Bike Lanes	NW 215th Ave.	Cornelius Pass Rd.	Arterial	Improve bicycle connectivity.	Construct six-foot wide bike lanes east and westbound and correct vertical alignment.	\$2,000,000	Near
11279	US-26 at 185th/Stucki Interchange Capacity Improvements	N/A	N/A	Arterial	Improve capacity at US-26 and 185th interchange.	Refinement planning and construction of interchange improvements.	\$25,000,000	Long
11284	Farmington Rd.	185th Ave.	198th Ave.	Arterial	Improve capacity and safety, bike/ped and transit access	Widen to five lanes with bike lanes and sidewalks.	\$24,000,000	Long
11285	Farmington Rd.	198th Ave.	209th Ave.	Arterial	Improve capacity and safety, bike/ped and transit access	Widen to five lanes with bike lanes and sidewalks.	\$18,000,000	Long
11339	I-5/99W Connector Southern Arterial	Hwy. 99W	124th Ave. Extension	Arterial	Provide congestion relief.	Construct two/three lane arterial with bike lanes and sidewalks.	\$130,000,000	Long
11340	I-5/99W Connector Southern Arterial	Hwy. 99W	124th Ave. Extension	Arterial	Provide congestion relief.	Widen road to five lanes.	\$80,000,000	Long
11341	West Union Rd.	Helvetia Rd.	Cornelius Pass	Arterial	Improve capacity and safety	Construct three lane roadway with bike lanes and sidewalks	\$25,000,000	Long
11386	198th Ave. Improvements - South	TV Hwy.	Alexander St.	Arterial	Provide congestion relief	Widen to five lanes with bike lanes and sidewalks	\$3,000,000	Medium

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
11395	Baseline Rd. Improvements	231st Ave.	Brookwood Ave.	Arterial	Provide congestion relief.	Improve to five lanes with bike/ped facilities, storm drainage, street lighting	\$9,000,000	Near
11405	Westside Trail (Regional)	Highway 26	Bronson Creek	Trail	To complete remaining gaps in the trail	To design and construct multi-use regional trail segments 10'-12' wide paved.	\$5,000,000	Long
11422	Tualatin-Sherwood Road	Boones Ferry Road	124th Ave. Extension	Arterial	Provide congestion relief.	Add eastbound right turn lane on Tualatin-Sherwood at Boones Ferry Rd. and add right-turn lane on Tualatin-Sherwood to 124th Ave.	\$1,112,000	Near
11436	Basalt Creek East-West Arterial Overcrossing	Boones Ferry Rd.	East of I-5	Arterial	Provide congestion relief.	Extend new four-lane overcrossing over I-5 from Boones Ferry Rd. to 65th and Stafford Rd.	\$38,000,000	Long
11437	Oleson Rd. Bridge	North of Fanno Creek	South of Fanno Creek	Arterial	Address safety issue.	Bridge Replacement.	\$5,800,000	Near
11438	Tonquin / Grahams Ferry Intersection Improvements	N/A	N/A	Arterial	Economic development and address safety issues.	Raise intersection elevation, widen approaches to three lanes, provide sidewalks and bike lanes, install traffic signal.	\$3,353,000	Near
11439	Southbound Hwy. 217 Allen/Denny Split Diamond Interchange	Allen Blvd.	Denny Rd.	Arterial	Address recurring safety issue, provide congestion relief.	Consolidate Allen Blvd. and Denney Rd. SB interchanges with split diamond interchange and collector/distributor roads.	\$5,941,000	Near
11440	TV Hwy. (and Canyon Rd.) Corridor Safety and Access to Transit	209th Ave.	107th Ave.	Arterial	Access to transit.	Bus stop improvements, ADA improvements, sidewalk infill, enhanced pedestrian crossings, signal priority, queue jumps.	\$1,614,000	Near
11441	TV Highway in Aloha-Reedville Safety and Operational Improvements	19500 block	160th Ave.	Arterial	Address recurring safety issues, improve pedestrian and bicycle connectivity, access to transit.	Enhanced pedestrian crossings, sidewalk infill, bikelane infill, street lighting, bus stop enhancements, intersection safety and operational improvements.	\$11,667,500	Near
11442	Cornell/Evergreen/229th Ave. Corridor Safety and Access to Transit	Hillsboro TC	Sunset TC	Arterial	Access to transit.	Bus stop improvements, ADA improvements, sidewalk infill, enhanced pedestrian crossings, signal priority.	\$560,000	Near
11443	Walnut St.	116th Ave.	Tiedeman	Arterial	Provide congestion relief.	Widen from two to three lanes with bike lanes and sidewalks.	\$4,000,000	Near

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
11444	Joss Ave.	Shackelford Rd.	Existing terminus	Collector	Economic development.	Extend Joss Rd. to Shackel Rd. to serve development of North Bethany Area.	\$4,100,000	Near
11445	160th Ave	Brugger Rd.	Springville Rd.	Neighborhood Route	Economic development.	New two lane road with sidewalks, bike and street lighting.	\$2,300,000	Near
11446	Tigard/Tualatin/Sherwood Area ITS	N/A	N/A		Provide congestion relief.	Install advanced traffic management systems including adaptive signals, communications, dynamic messaging signs, and surveillance and management equipment.	\$2,853,000	Near
11447	Baseline Rd. Improvements	197th Ave.	Lisa Dr.	Arterial	Provide congestion relief.	Eastbound: Widen to five lanes with bike lanes and sidewalks.	\$4,600,000	Near
11448	198th Ave. Improvements - South	T.V. Hwy.	Farmington Rd.	Collector	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	\$27,900,000	Near
11449	TV Highway HCT Study	Forest Grove	Beaverton	Arterial	Increase transit mode share, help meet land use and economic development goals.	High capacity transit study, including alternatives analysis, to determine transit mode, alignment, station/stop locations, operational characteristics and phasing options for a high capacity transit service between Forest Grove and Beaverton TC.	\$1,000,000	Near
11451	Saltzman Rd	Laidlaw Rd.	Bayonne Ln.	Collector	Address recurring safety issue.	Realign and widen to three lanes with bike lanes and sidewalks.	\$11,100,000	Near
11452	Scholls Ferry Rd. Improvements	West of Tile Flat Rd.		Arterial	Address recurring safety issue.	Realign curves to improve safety.	\$4,300,000	Near
11453	Jackson School Road	Meek Rd.	Scotch Church Rd.	Arterial	Address recurring safety issue.	Realign intersection and construct a round-about.	\$1,000,000	Near
11454	Jackson School Road	US 26 and Jackson School Road		Arterial	Address recurring safety issue.	Signalize ramp intersections.	\$1,000,000	Near
11455	Brugger Rd.	Joss Ave.	Kaiser Rd.	Neighborhood Route	Economic Development	Widen from two to three lanes with sidewalks, bike lanes, street lighting, and community features.	\$3,200,000	Near

Washington County Capital Project List

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Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
11456	Shackelford Rd.	185th Ave.	Bridge	Collector	Provide congestion relief.	Build new three lane road with bike/ped facilities, storm drainage, street lighting to serve North Bethany.	\$12,000,000	Near
11457	Shackelford Rd. Bridge			Collector	Provide congestion relief.	Build new three lane road with bike/ped facilities, storm drainage, street lighting to serve North Bethany.	\$14,600,000	Near
11458	Shackelford Rd.	Bridge	Kaiser Rd.	Collector	Provide congestion relief.	Build new three lane road with bike/ped facilities, storm drainage, street lighting to serve North Bethany.	\$18,100,000	Near
11459	Shackelford Rd.	Kaiser Rd.	Springville Rd.	Collector	Provide congestion relief.	Build new three lane road with bike/ped facilities, storm drainage, street lighting to serve North Bethany.	\$9,900,000	Near
11460	OR 10: Oleson Rd. Improvement Phase 2	Beaverton-Hillsdale Hwy.	Oleson Rd. and Scholls Ferry	Arterial	Address recurring safety issue.	BHOS Phase 2 improvements to project 10545.	\$35,000,000	Medium
11461	Reedville Trail North Segment	Wilkins St.	T.V. Hwy.	Trail	Improve pedestrian and bicycle connectivity.	Multi-use trail following BPA Pearl-Keeler Powerline.	\$6,240,000	Medium
11462	Reedville Trail South Segment	T.V. Hwy.	Rosedale Rd.	Trail	Improve pedestrian and bicycle connectivity.	Multi-use trail following BPA Pearl-Keeler Powerline.	\$5,640,000	Medium
11463	Thompson Rd. Realignment	Saltzman Rd.	Circle A Dr.	Arterial	Address recurring safety issue.	Realign as three lane arterial, with sidewalks, bike and street lighting	\$9,000,000	Medium
11464	Jenkins Rd. Improvements	Murray Blvd.	Cedar Hills Blvd.	Arterial	Provide congestion relief.	Widen from three lanes to five lanes with bike lanes, sidewalks and street lighting	\$10,000,000	Medium
11465	Metzger Area Bike/Ped Improvements				Address recurring safety issue.	Metzger Area Bike / Ped Improvement program.	\$16,000,000	Medium
11466	Laidlaw Improvements	Skycrest	Lakeview	Collector	Address recurring safety issue.	Straighten curves, widen to three lanes with bike lanes and sidewalks.	\$10,000,000	Medium
11467	Fischer Rd. Interim Bike and Pedestrian Improvements	131st Ave	Pacific Hwy (99W)	Collector	Improve pedestrian and bicycle connectivity.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	\$4,580,000	Medium

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
11468	Washington County Pedestrian Arterial crossings	N/A	N/A	Arterial	Complete gap in pedestrian system.	Construct 12 enhanced at-grade pedestrian crossings of 170th Avenue, 185th Avenue, Baseline Road, Cornell Road and Walker Road.	\$3,585,000	Medium
11469	124th Ave. Improvements	Tualatin-Sherwood Rd.	Grahams Ferry Rd.	Arterial	Economic development.	Widen 124th from two lanes to five lanes with bike lanes and sidewalks.	\$14,000,000	Medium
11470	Basalt Creek East-West Arterial	Grahams Ferry Rd.	Boones Ferry Rd.	Arterial	Economic development.	Extend new five lane Arterial with bike lanes, sidewalks and street lighting.	\$57,900,000	Medium
11471	Laidlaw Improvements	Saltzman Rd.	Countyline	Collector	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	\$22,000,000	Medium
11472	160th Ave Improvements	TV Hwy.	Farmington Rd.	Collector	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	\$15,000,000	Medium
11473	111th Ave. / Rainmont Rd. / 113th Ave.	McDaniel Rd.	Cornell Rd.	Collector	Address recurring safety issue.	Construct sidewalks.	\$9,000,000	Medium
11474	113th Ave.	McDaniel Rd.	Rainmont Rd.	Collector	Complete cap in the system	Construct new two lane Collector Rd with sidewalks bikelanes and street lighting.	\$6,000,000	Medium
11475	Beaverton Area ITS	N/A	N/A	N/A	Provide congestion relief.	Install advanced traffic management systems including adaptive signals, communications, dynamic messaging signs, and surveillance and management equipment.	\$10,450,000	Medium
11476	Saltzman Rd.	Bayonne Ln.	Bauer Woods Dr.	Collector	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	\$8,000,000	Medium
11477	Kaiser Rd.	Shackelford Rd.	Springville Rd.	Arterial	Provide congestion relief.	Widen from two to three lanes with sidewalks, bike lanes, street lighting, and community features.	\$7,800,000	Medium
11478	185th Ave.	Springville Rd.	Shackelford Rd.	Arterial	Address recurring safety issue.	Widen from two lanes to five lanes with bike lanes and sidewalks.	\$57,000,000	Medium
11479	Council Creek Trail: East-West Segment	Hwy. 47 (Forest Grove)	1st Ave. (Hillsboro)	Trail	Improve pedestrian and bicycle connectivity.	Multi-use trail connecting Hillsboro, Cornelius, Forest Grove, unincorporated Washington County.	\$20,100,000	Medium

Washington County Capital Project List

Washington County
Transportation System Plan 2014

RTP Project ID	Project/Program Name	Project Start Location	Project End Location	Functional Classification	Project Purpose	Description	Estimated Cost (\$2014)	Time Period*
11481	Garden Home Rd. Improvements	92nd Ave.	Oleson Rd.	Arterial	Address recurring safety issue.	Improvements to enhance safety, and bike / ped accessibility.	\$9,000,000	Long
11483	Turf-to-Surf Trail: South Hillsboro / Reedville Segment	Century Blvd.	Shaw St.	Trail	Improve pedestrian and bicycle connectivity.	Multi-use trail along south side of Portland & Western Railroad.	\$5,600,000	Long
11484	Westside Trail: Segment 2	Tigard City Limit	Beef Bend Rd.	Trail	Improve pedestrian and bicycle connectivity.	Multi-use trail following BPA powerline.	\$4,300,000	Long
11485	North Hillsboro Active Transportation Connections	N/A	N/A	Trail	Improve pedestrian and bicycle connectivity.	Multi-use trails, cycletracks and grade separated bike/ped crossings connecting Intel Ronler Acres, Hillsboro Ballpark, Fred Meyer shopping center, Rock Creek Trail, Oregon Electric Railway Trail and Cornelius Pass Road.	\$12,000,000	Long
11486	Roy Rogers Rd.	Scholls Ferry Rd.	UGB	Arterial	Provide congestion relief.	Widen to five lanes with bike lanes and sidewalks	\$20,000,000	Long
11574	Cornell Road	107th Ave.	Countyline	Arterial	Address recurring safety issue.	Widen from two to three lanes with sidewalks, bike lanes, street lighting, and community features.	\$21,000,000	Long
11575	Leahy Rd.	Cornell Rd.	Barnes Rd.	Collector	Address recurring safety issue.	Construct sidewalks.	\$2,500,000	Long
11576	Bull Mountain Rd.	Roy Rogers Rd.	HWY 99W	Collector	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	\$34,000,000	Long
11577	Beef Bend Rd.	150th Ave.	HWY 99W	Arterial	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	\$30,000,000	Long
11578	80th Ave.	Oleson Rd.	Oak St.	Collector	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	\$13,000,000	Long
11579	119th Ave.	McDaniel Rd.	Cornell Rd.	Collector	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	\$12,000,000	Long
11580	McDaniel Rd.	119th Ave.	Countyline	Collector	Address recurring safety issue.	Add sidewalks, bike lanes, lighting, turn lanes at major intersections.	\$21,000,000	Long
11581	Thompson Rd. Realignment	Saltzman Rd.	Countyline	Arterial	Address recurring safety issue.	Widen to three lanes with bike lanes and sidewalks.	\$37,000,000	Long

*Time period definition:

Near within 10 years

Medium 10 to 20 years

Long more than 20 years

Capital Project Summary

Capital Revenue Summary (Millions) ¹

Source	Annual Average	Total by 2040 ²
MSTIP	\$26.25	\$682.5
TDT ³	\$9.45	\$245.7
North Bethany Roads	\$1.3	\$35
Federal and State	\$9.8	\$254.6
Total	\$46.8	\$1,217.8

¹ In 2014 dollars

² 2040 is the planning horizon for the 2014 Regional Transportation Plan, 26 years has been used for calculations

³ Assumes full phase-in of the TDT and includes credits

Capital Project Funding Shortfall (Millions) ¹

Available Revenue by 2040	\$1,217.8
Estimated Cost	\$2,448.0
Estimated Shortfall	\$1,230.2

¹ In 2014 dollars

Capital Project Needs Summary by Mode

Mode	Number of Projects
Bicycle	115
Pedestrian	111
Motor Vehicles	105

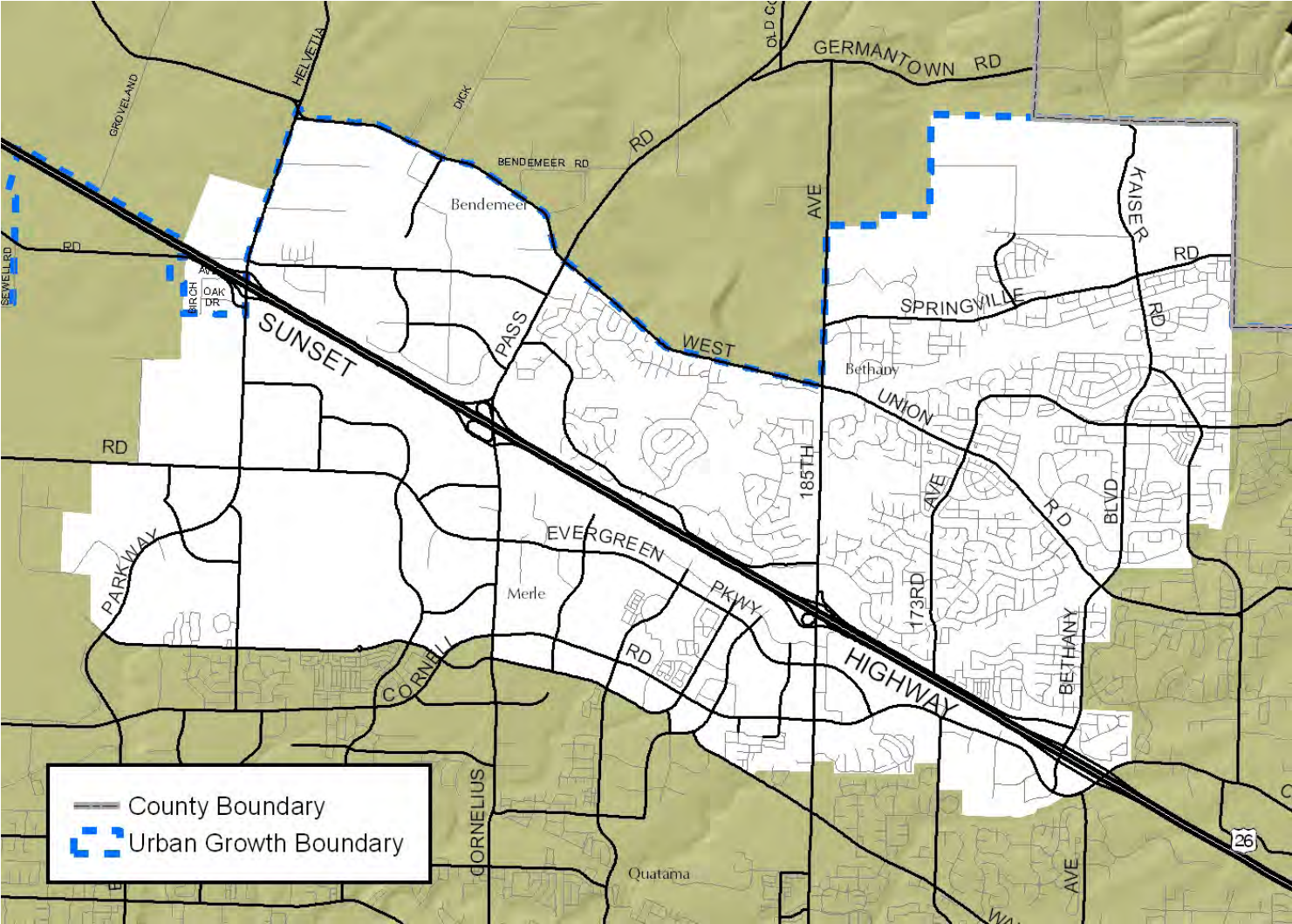
Please note that many projects benefit multiple or all modes.

Capital Project Costs by Mode (Millions) ¹

Bicycle	\$464.0	19%
Pedestrian	\$449.9	18%
Motor Vehicle / Freight	\$1,519.8	62%
Transit	\$14.3	1%
Total	\$2,448.0	100%

¹ In 2014 dollars

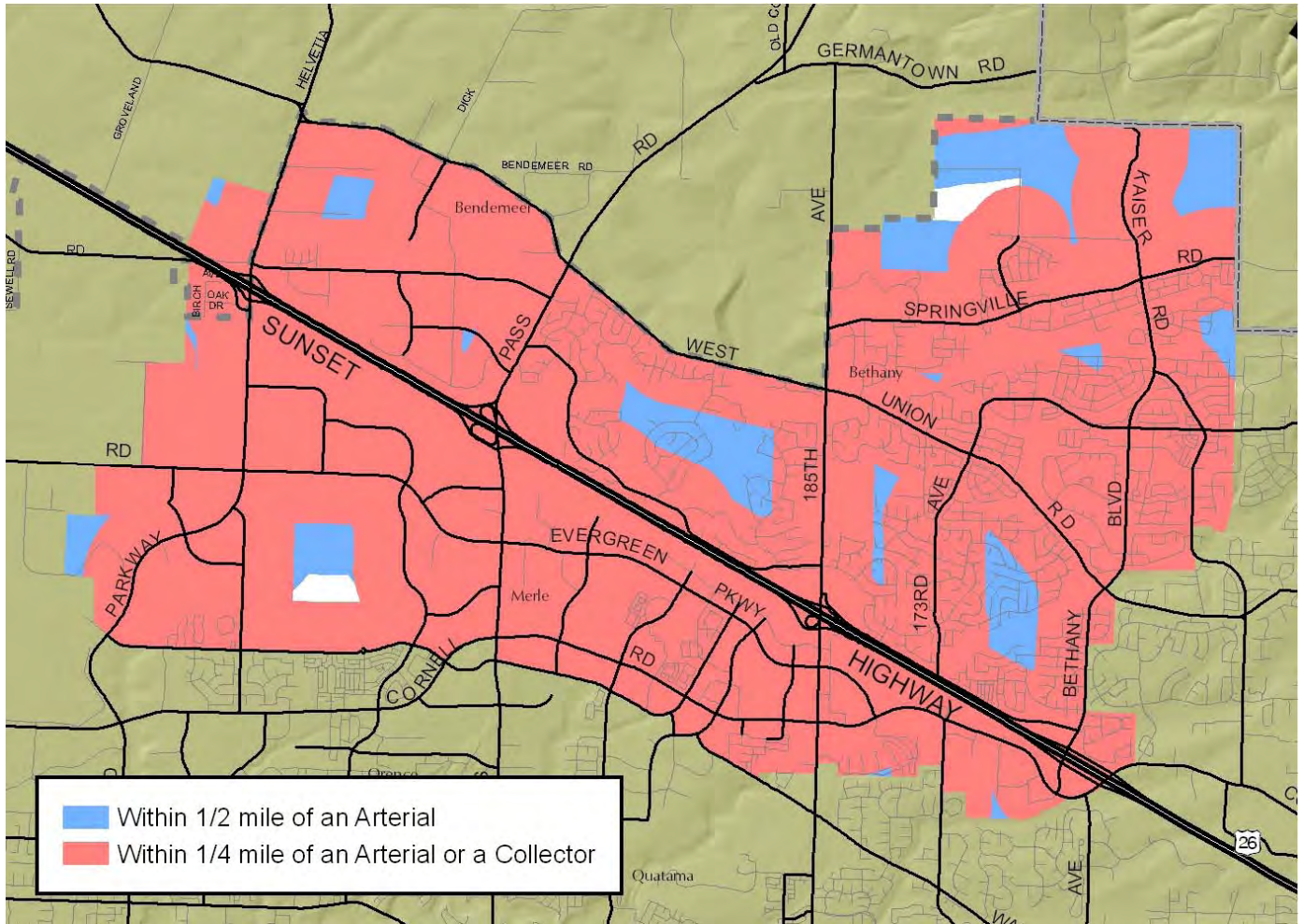
STUDY AREA #1 HILLSBORO-BETHANY



	2010	2035	Growth	Growth %
Households	17,614	21,339	3,725	21%
Employment	28,491	50,506	22,015	77%

Summary

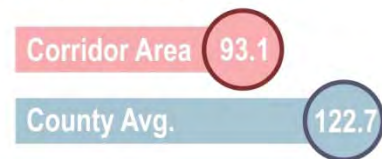
- About 75% of households are within ½ mile of regional destinations such as schools, shopping centers and major employers – slightly above county urban area average.
- Employment is expected to increase 77% by 2035, while households increase 21%.



Number of road miles per square mile



Intersections per square mile

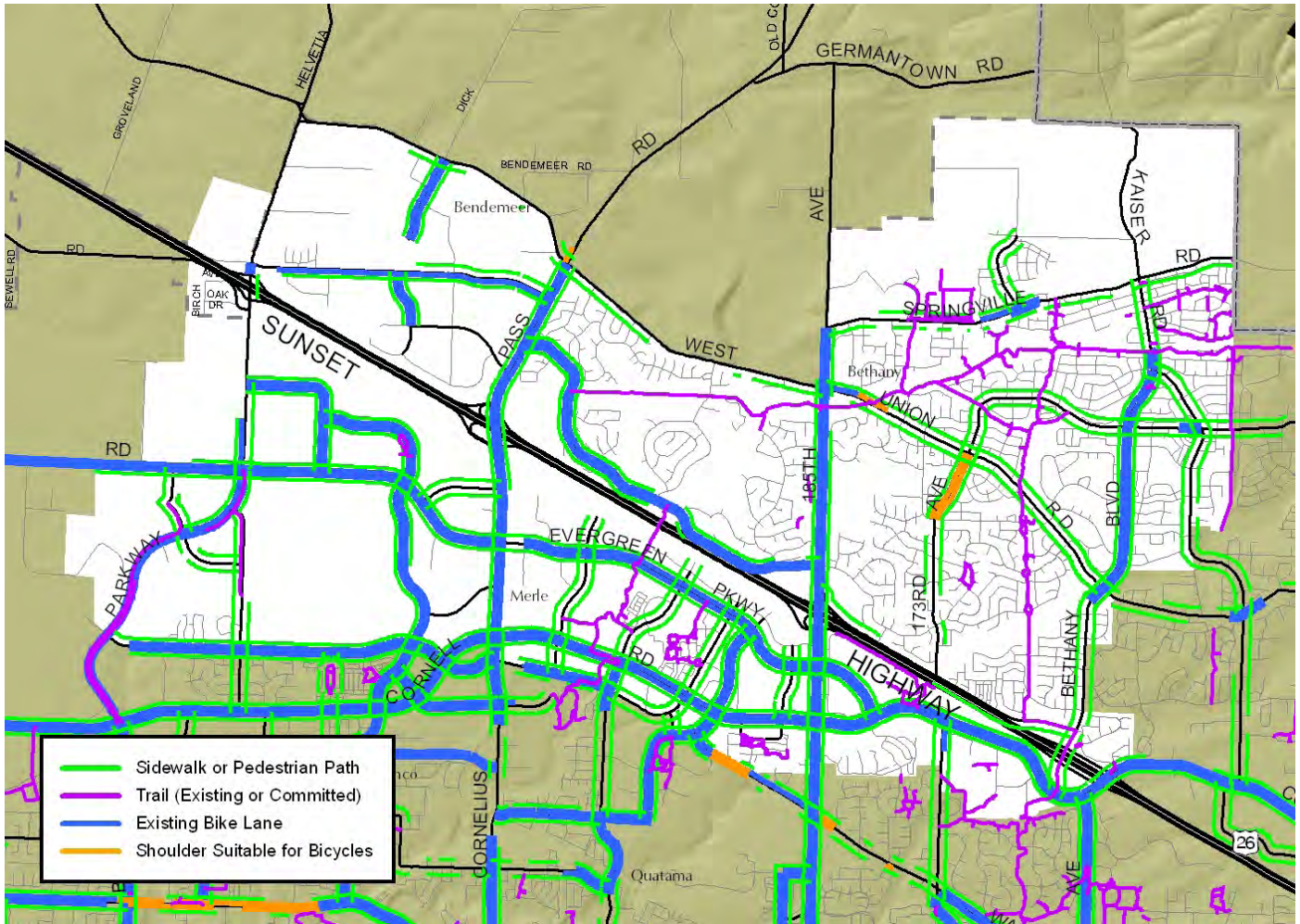


Network locations without dead ends



Findings

- Street network and intersection density is below county urban area average.
- Roads and intersections are generally far apart, due in part to large industrial properties in the study area.
- Roads have relatively few dead-ends or cul-de-sacs.



Sidewalk coverage on both sides of roadways?



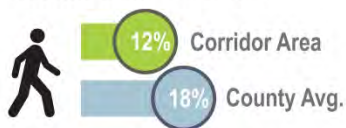
Bike lanes or shoulders on both sides of roadways?



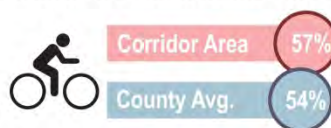
Multiuse trails per 10,000 population



No sidewalks on both sides?



No bike lanes or shoulders on roadways?



Crossing Spacing on Major Streets

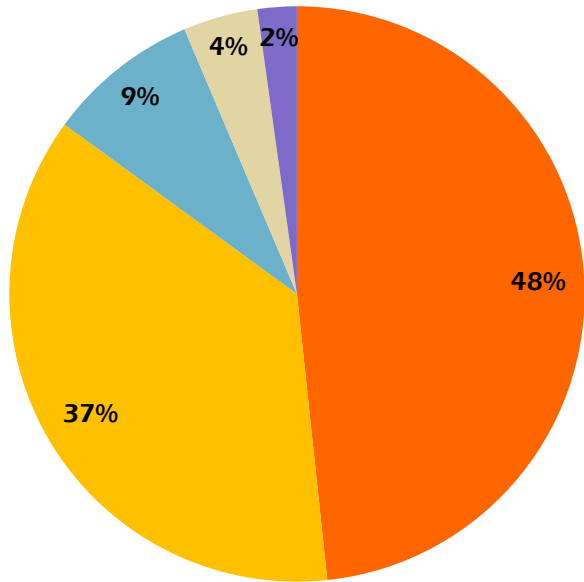
Average: 0.26 miles

Longest: 0.97 miles on Sunset Highway

Findings

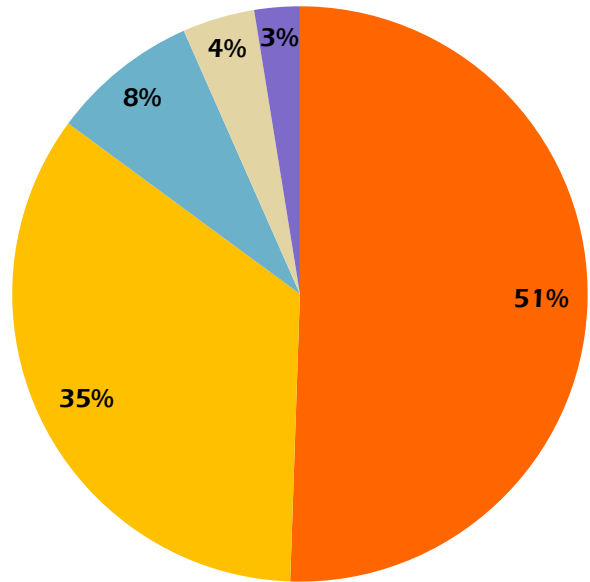
- Trail and Sidewalk coverage is better than county urban area average. However, critical gaps remain on Rock Creek and Waterhouse Trails.
- Bike facility coverage is slightly below county urban area average.
- Several arterials, including NW 185th Avenue and Cornell and Evergreen Roads, were improved to county standard in the past 15 years. However, several major gaps in the sidewalk and bike lane network remain, including West Union Road.
- Crossing spacing on Sunset Highway and Brookwood Parkway are well over typical (1/4 mile).

2010 Mode Share



■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

2035 Mode Share



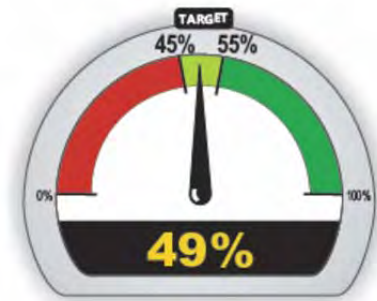
■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

Active and Transit Modes (Combined)
Change from 2010 to 2035



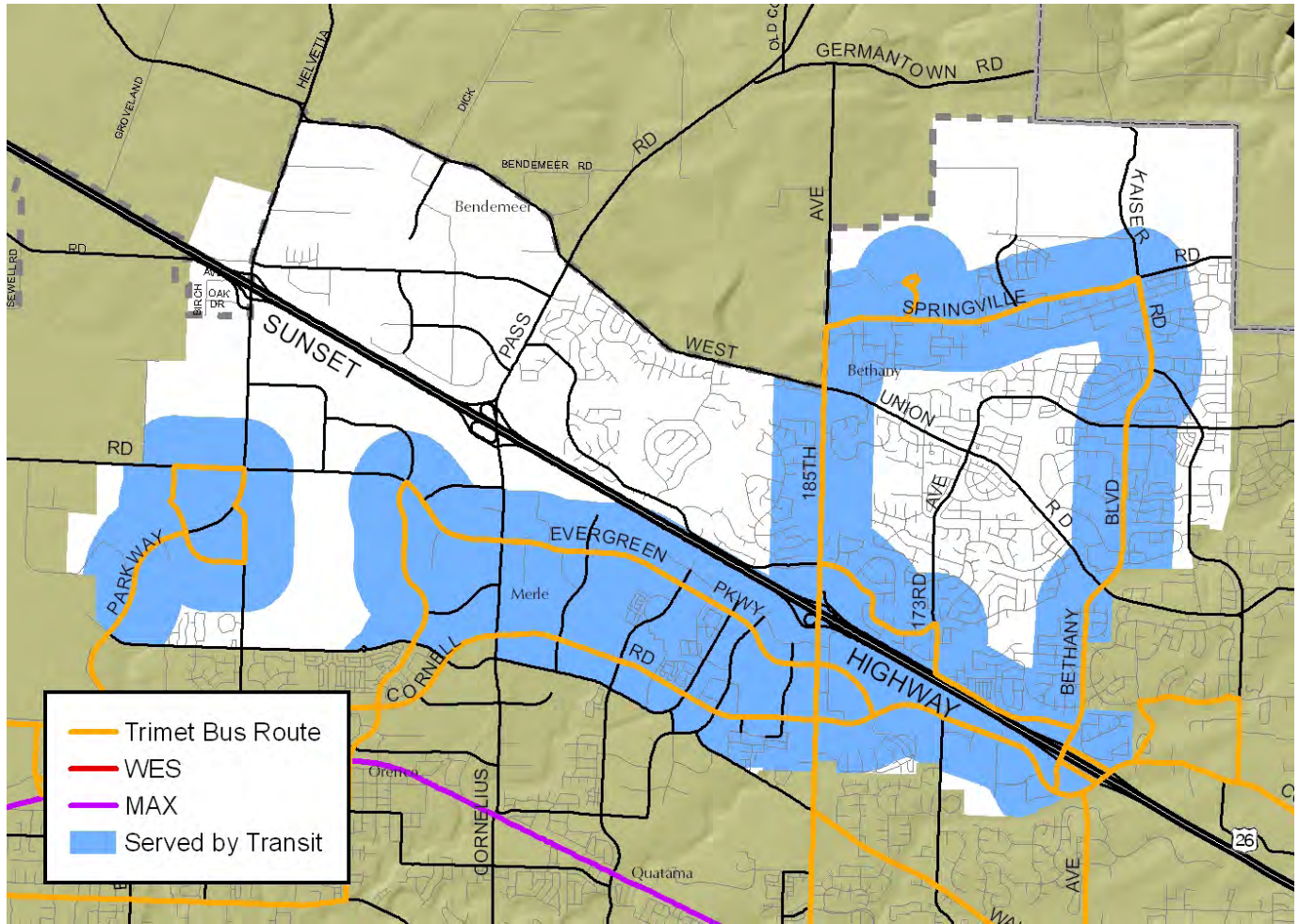
No
Significant
Change

Non-SOV Mode Share
Regional Target

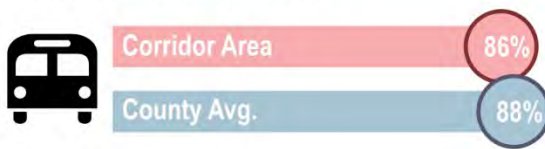


Findings

- Forecasted 2035 mode shares are relatively consistent with 2010.
- No significant increase identified for walk, bike, and transit modes.
- Non-SOV mode share is projected to fall within regional target range. However, SOV mode share is projected to increase relative to 2010 base.



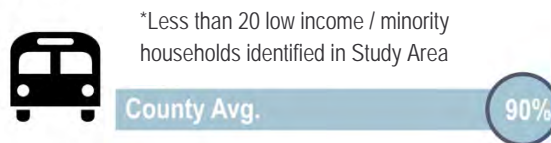
Employees with transit access



Households with transit access



Low income and minority household areas with access to transit

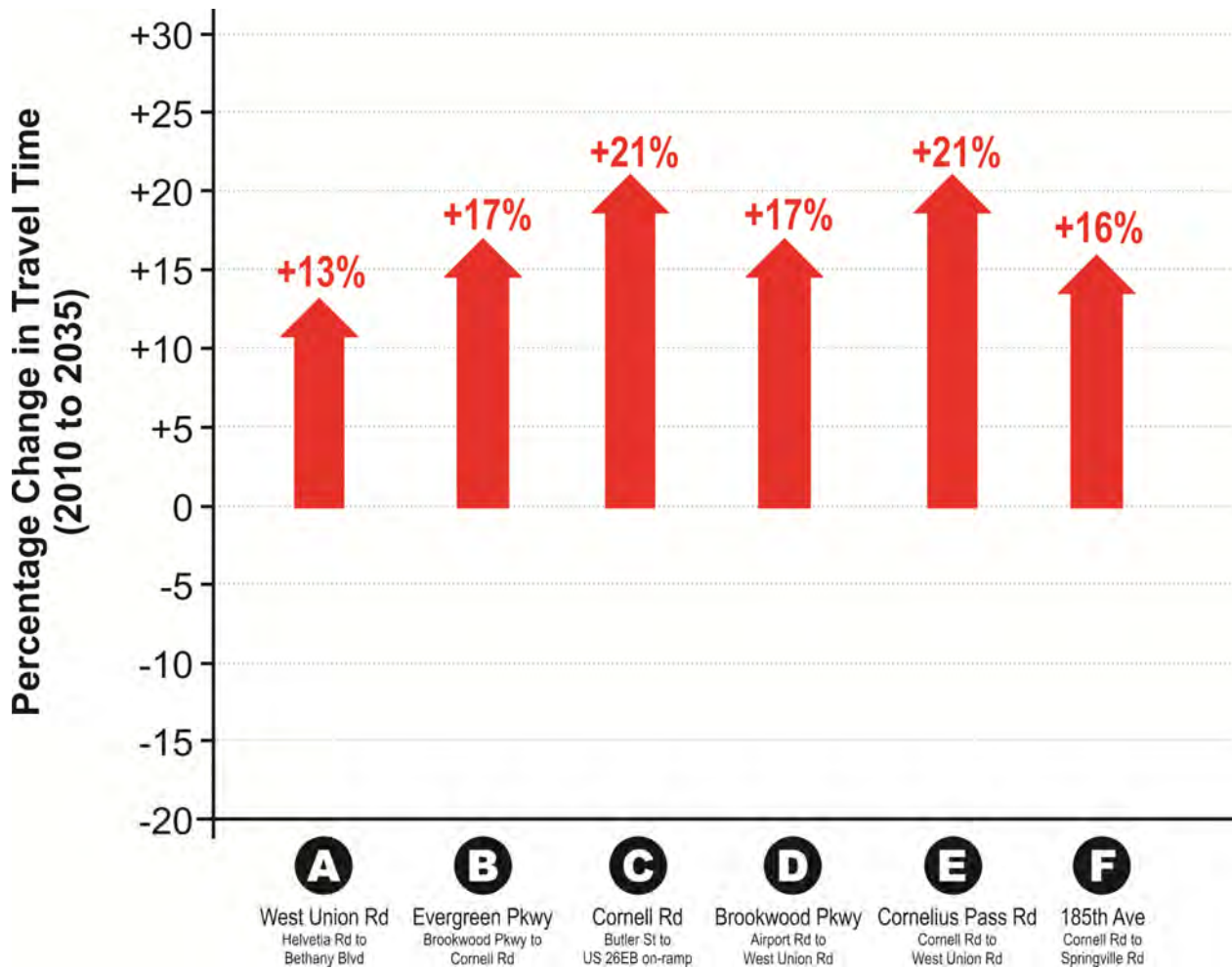
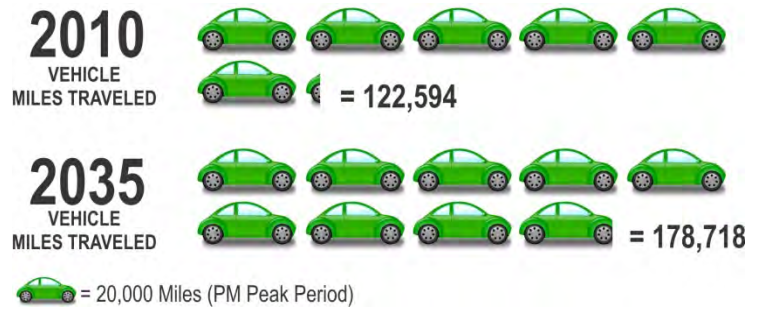
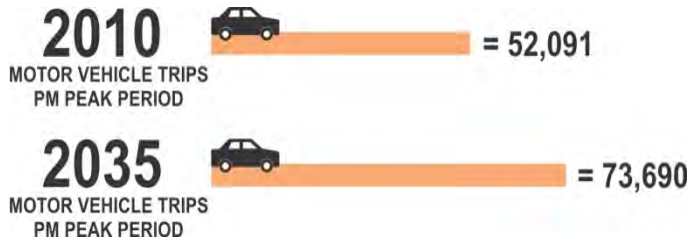


*Less than 20 low income / minority households identified in Study Area

Findings

- Transit access measures are below the county urban area average.
- Only one bus – the #48 Cornell – serves east-west travel seven days a week.
- A change to the #47 bus route effective September 1, 2013 will provide additional access to households north of Sunset Highway.

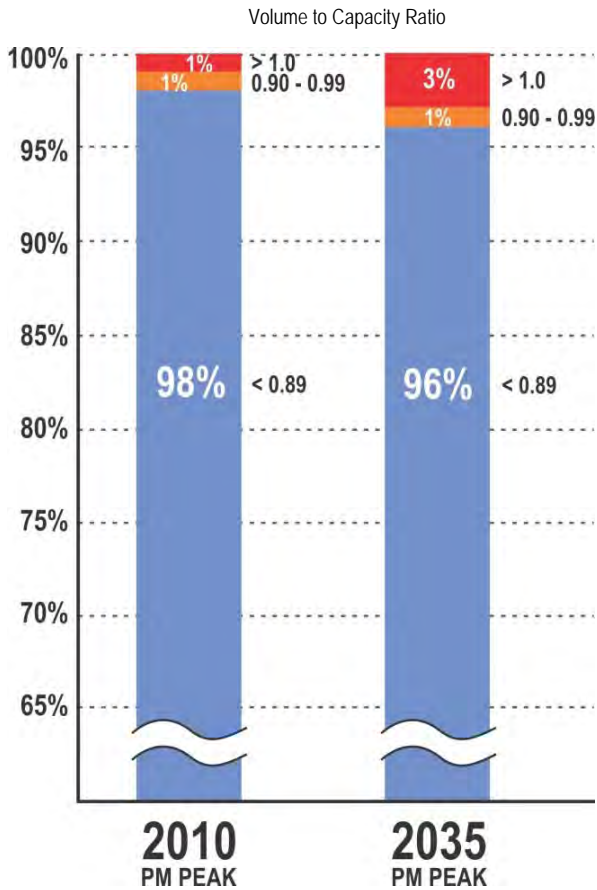
MOTOR VEHICLE DEMAND & TRAVEL TIME



Findings

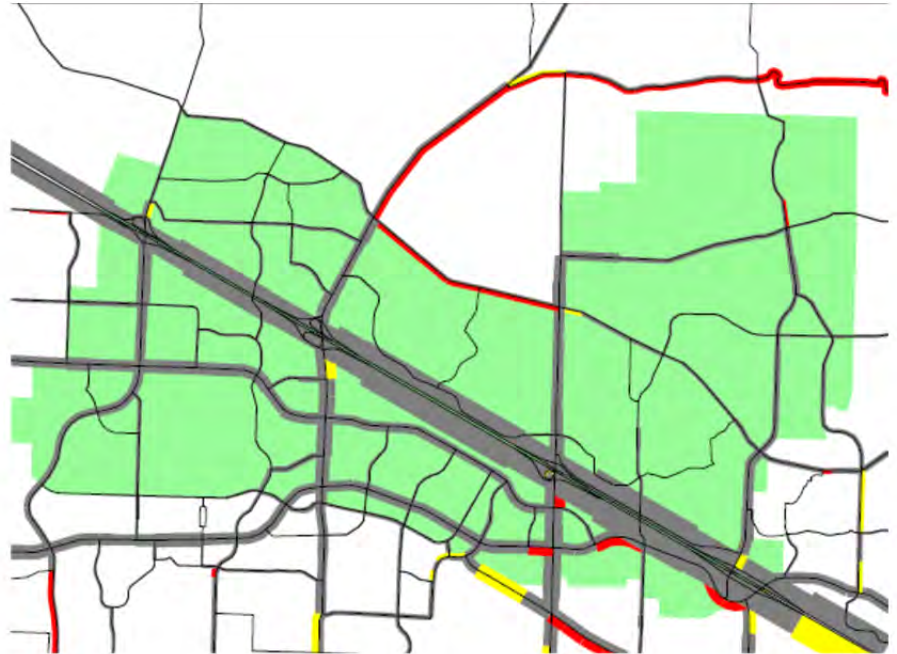
- Motor vehicle travel miles traveled in the study area are projected to increase 46% in 2035 relative to 2010 and VMT per capita is expected to increase by 20%.
- Significant increases in roadway travel times anticipated for 2035 PM peak on:
 - West Union Road (EB), Helvetia Road to Bethany Road (23% increase)
 - Evergreen Parkway (EB), Brookwood Parkway to Cornell Road (25% Increase)
 - Cornell Road (EB), Butler Street to US 26 Ramp (30% increase)
 - Brookwood Parkway (SB), West Union Road to Airport Road (22% increase)
 - Cornelius Pass Road (NB), Cornell Road to Springville Road (24% increase)

Congested Roadway Miles



Congested Roadways – 2035 PM Peak

Red = Demand Volume > Roadway Capacity
 Yellow = Demand Volume > 90% of Roadway Capacity
 Gray = Demand Volume < 90% of Roadway Capacity



2010
 VEHICLE HOURS DELAY = 822

2035
 VEHICLE HOURS DELAY = 1,695

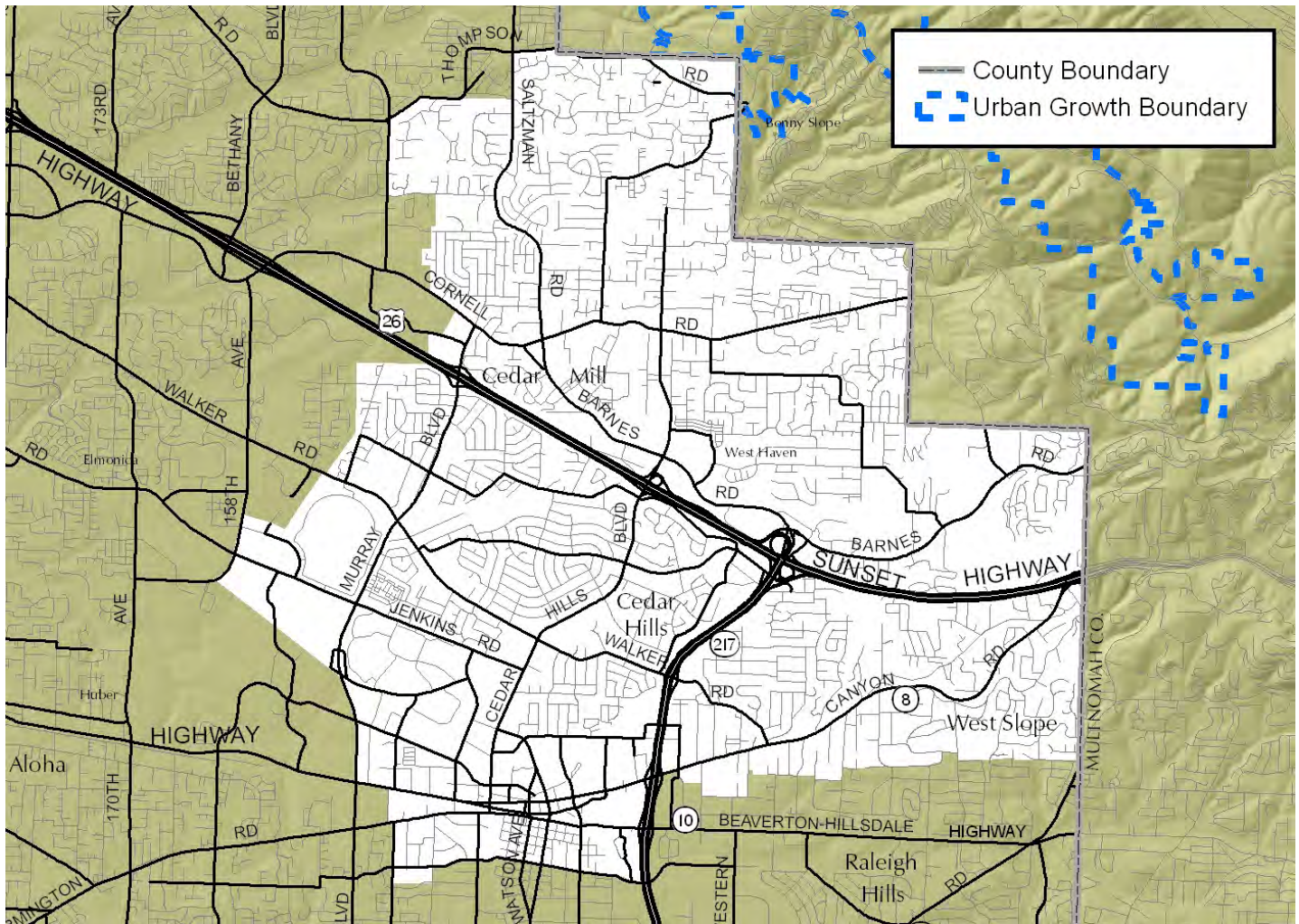
= 200 Hours (PM Peak Period)

Findings

- Significant increases in roadway congestion and delay are anticipated in 2035 relative to 2010.
- Mobility standard deficiencies identified during 2035 PM peak for:
 - West Union Road, between Cornelius Pass Road and 185th Avenue (Eastbound)
 - Cornell Road, between 188th Avenue and 158th Avenue (Eastbound), partial segments
 - 185th Avenue, between Evergreen Parkway and US 26 Interchange (Northbound)

STUDY AREA #2 BEAVERTON-CEDAR MILL

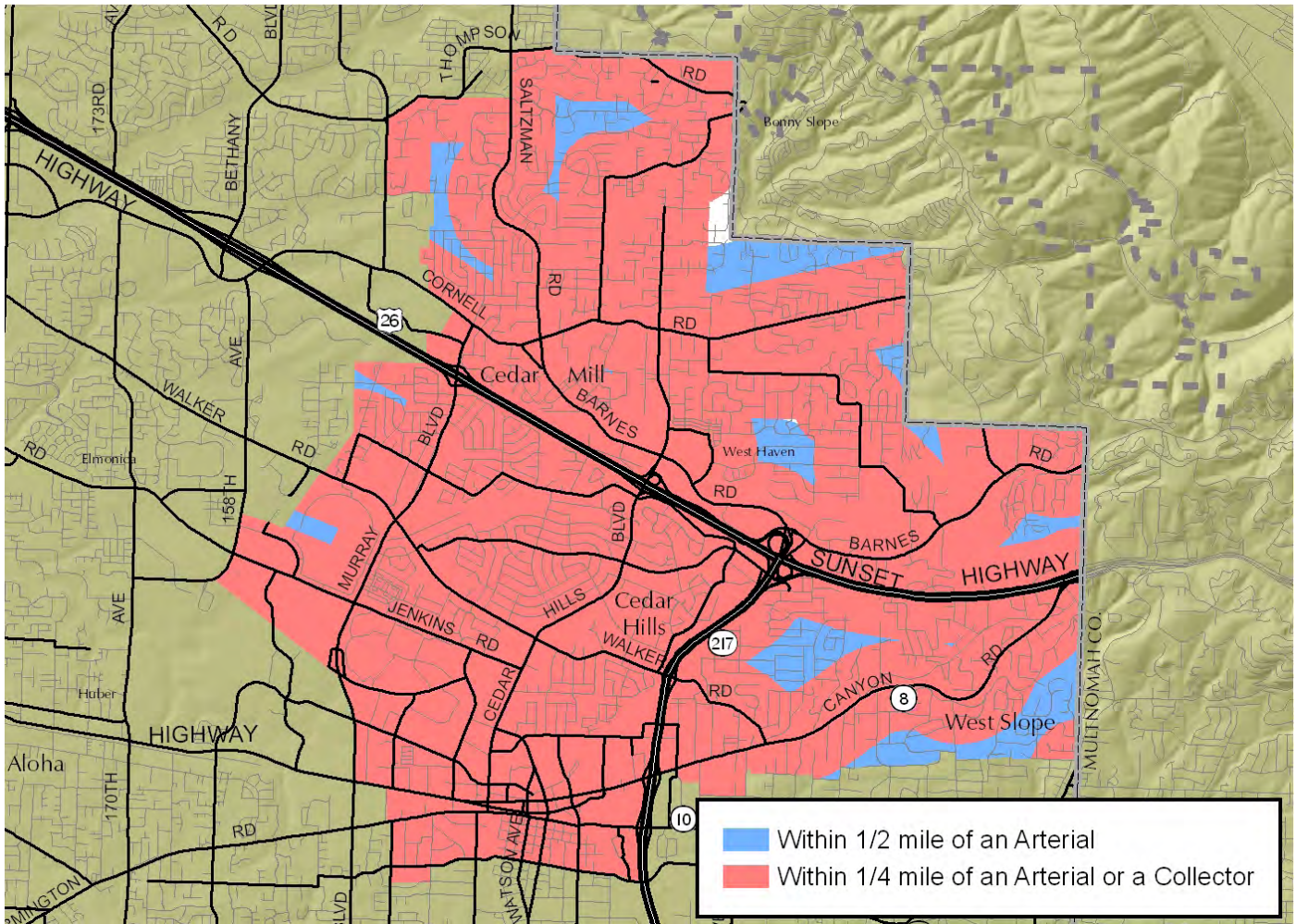
Overview



	2010	2035	Growth	Growth %
Households	21,666	32,735	11,069	51%
Employment	33,386	48,951	15,565	47%

Summary

- About 69% of households are within ½ mile of regional destinations such as schools, shopping centers and major employers – slightly below county urban area average.
- Several of the neighborhoods north of Sunset Highway have relatively few commercial services within walking distance of homes.
- Employment and households are expected to increase by approximately 50% by 2035.



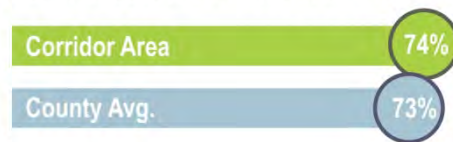
Number of road miles per square mile



Intersections per square mile

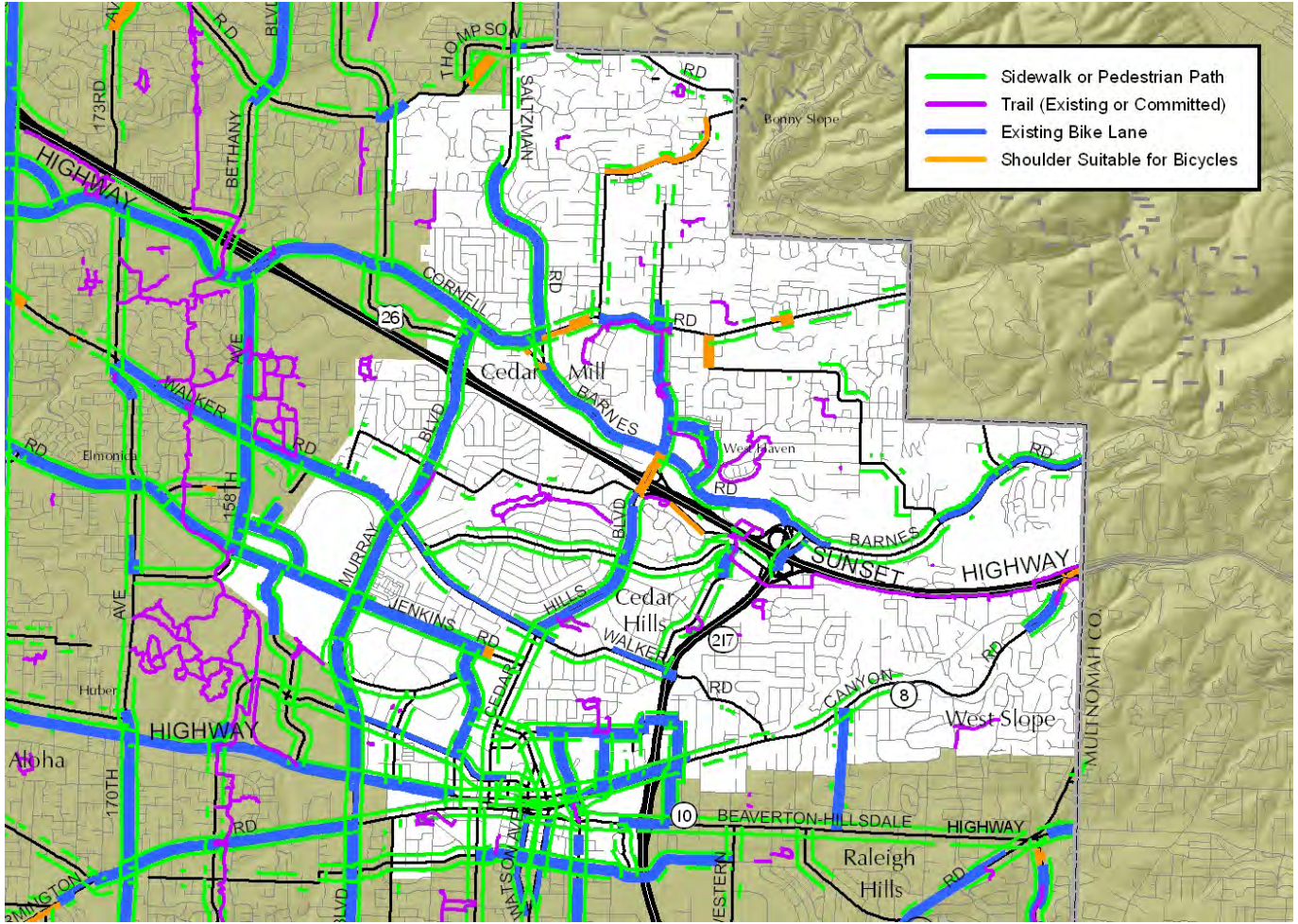


Network locations without dead ends

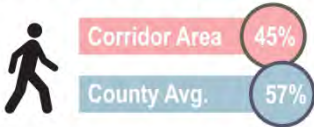


Findings

- Street network and intersection density are similar to county urban area average.
- Roads have relatively few dead-ends or cul-de-sacs.
- Older neighborhoods with grid or modified grid street networks help connectivity in this study area.
- Sunset Highway and creek corridors are the most impactful connectivity gaps.



Sidewalk coverage on both sides of roadways?



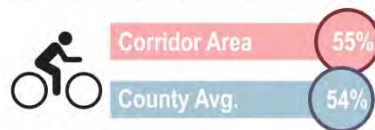
No sidewalks on both sides?



Bike lanes or shoulders on both sides of roadways?



No bike lanes or shoulders on roadways?



Multiuse trails per 10,000 population



Crossing Spacing on Major Streets

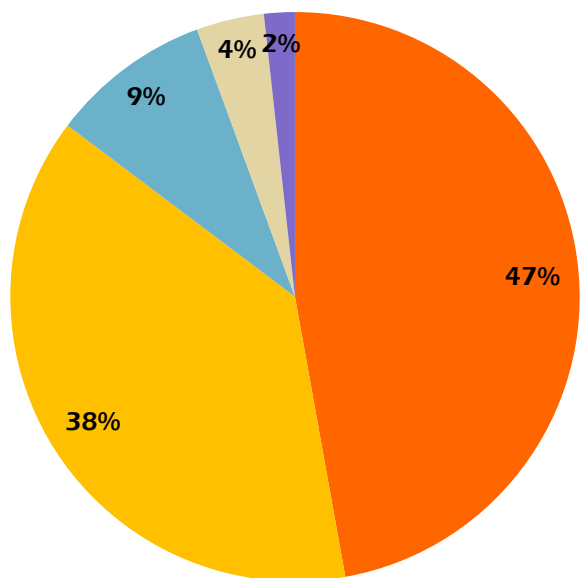
Average: 0.26 miles

Longest: 0.94 miles on Sunset Highway

Findings

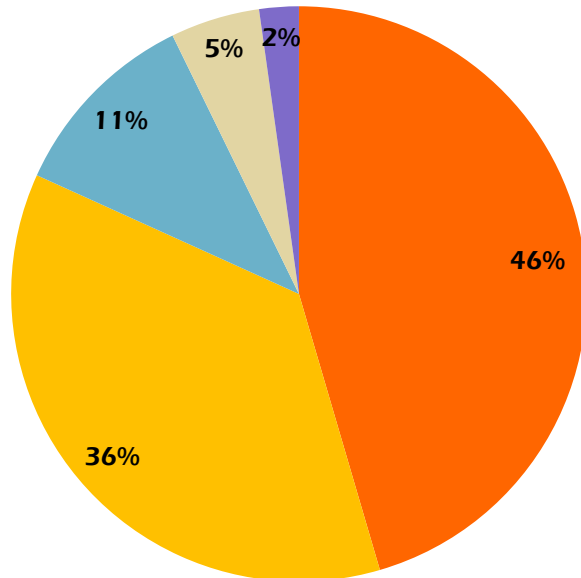
- Sidewalk, bike facility, and trail coverage is worse than county urban area average.
- Major gaps in active mode facility coverage include Cornell Road and Canyon Road.
- Crossing spacing on Sunset Highway is well over typical (1/4 mile). Other roadways with relatively long spacing between crossings include Highway 217, Murray Boulevard and Canyon Road.
- Multi-use trail coverage will improve as several planned trails are completed in the corridor, including the Beaverton Creek Trail / Crescent Connection.

2010 Mode Share



■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

2035 Mode Share

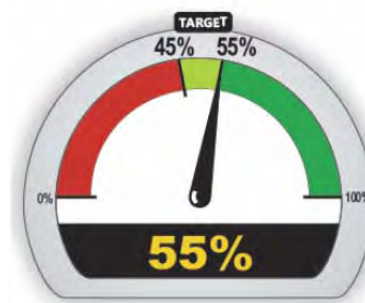


■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

Active and Transit Modes (Combined)
Change from 2010 to 2035

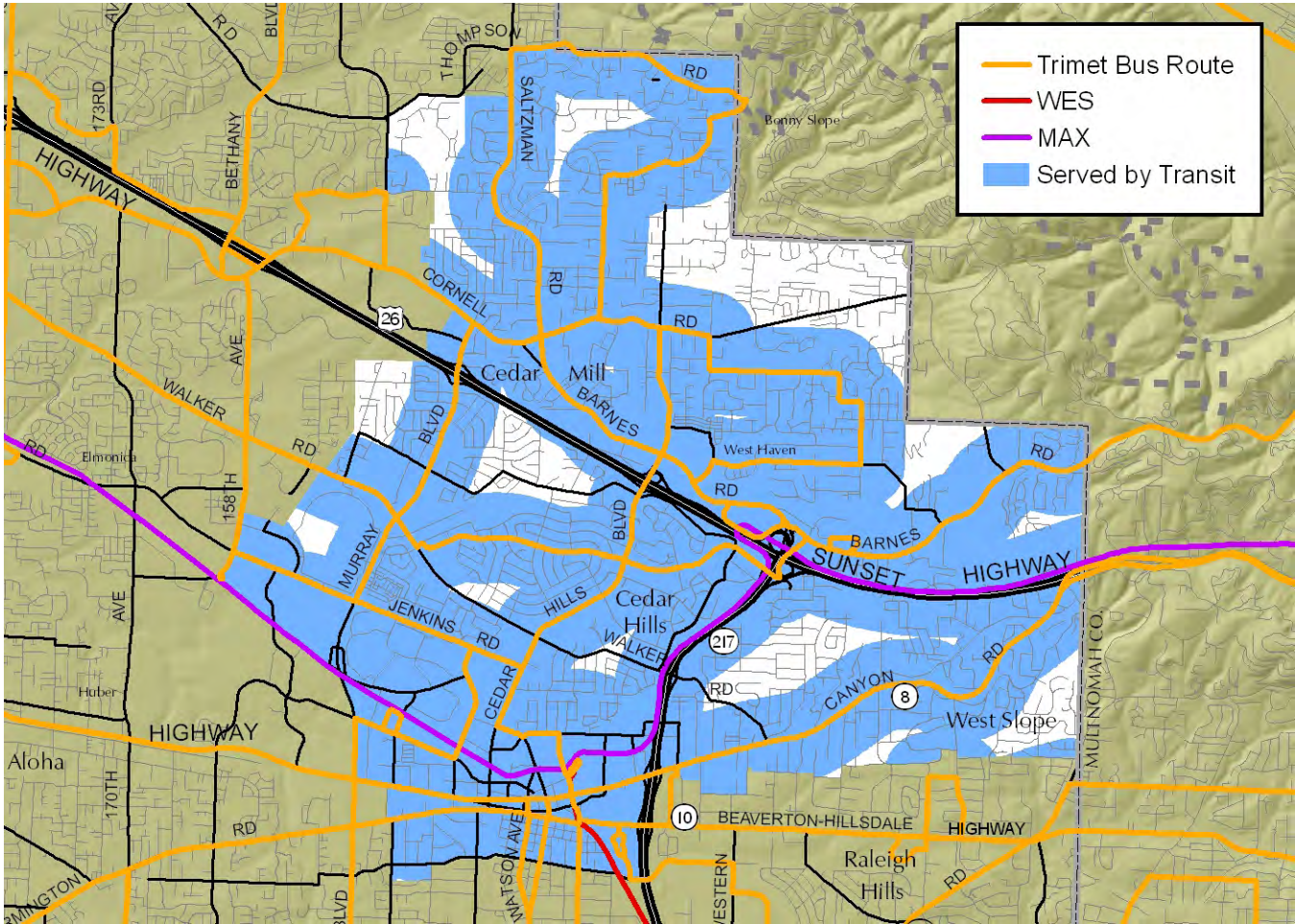


Non-SOV Mode Share
Regional Target



Findings

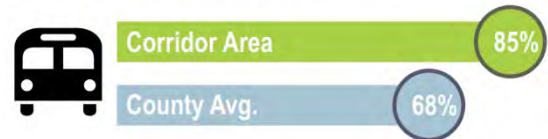
- Forecasted 2035 mode shares indicate a slight increase in non-SOV mode share.
- A 3-4% increase is identified for combined walk, bike, and transit mode shares.
- Non-SOV mode share is projected to fall within regional target range.



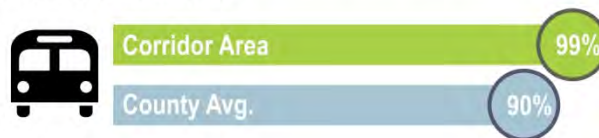
Employees with transit access



Households with transit access



Low income and minority household areas with access to transit

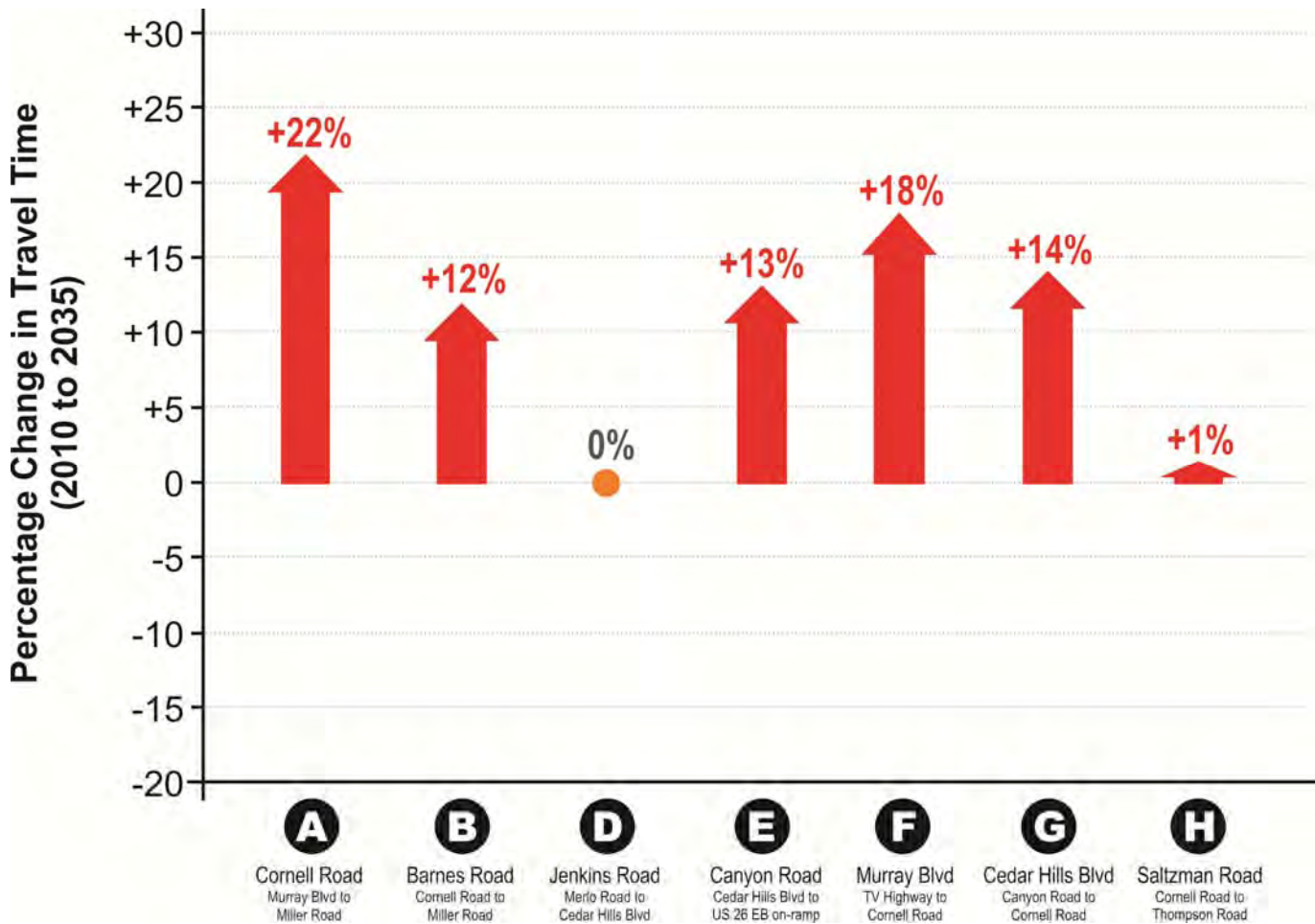
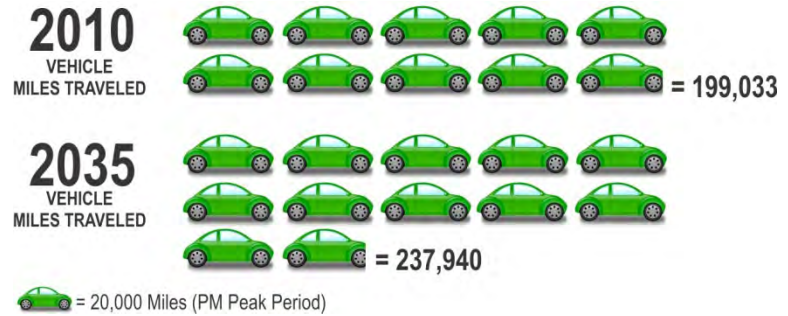


Findings

- Transit access measures are significantly above the county urban area average.
- The study area is served by more than ten bus lines and includes frequent light rail service.
- Beaverton and Sunset transit centers are the two busiest transit exchanges in Washington County.

MOTOR VEHICLE DEMAND & TRAVEL TIME

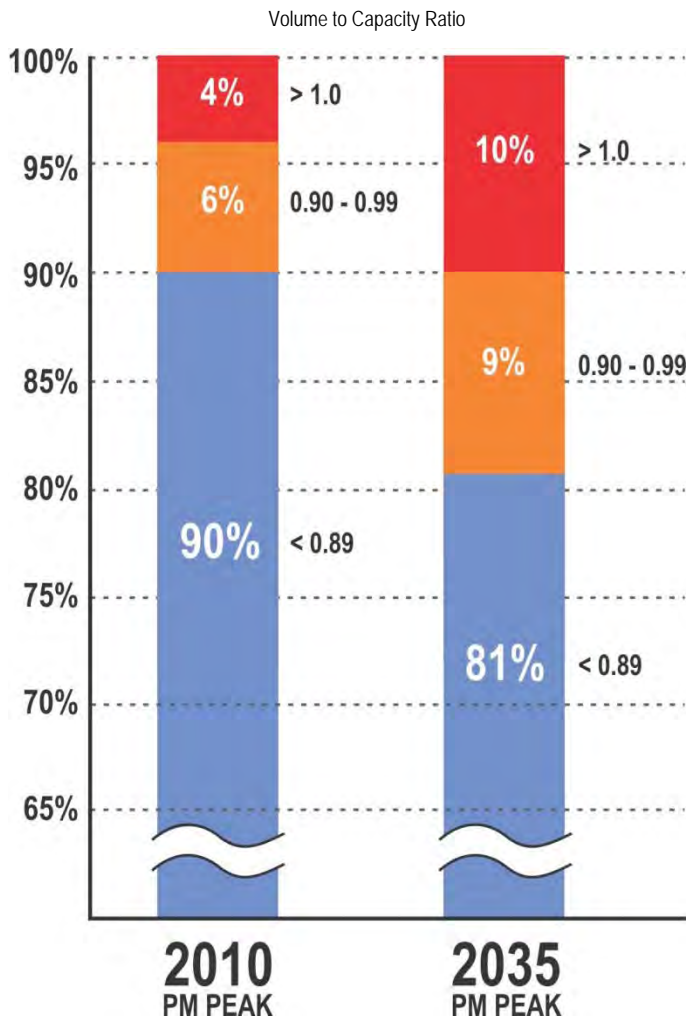
BEAVERTON-CEDAR MILL
Study Area #2



Findings

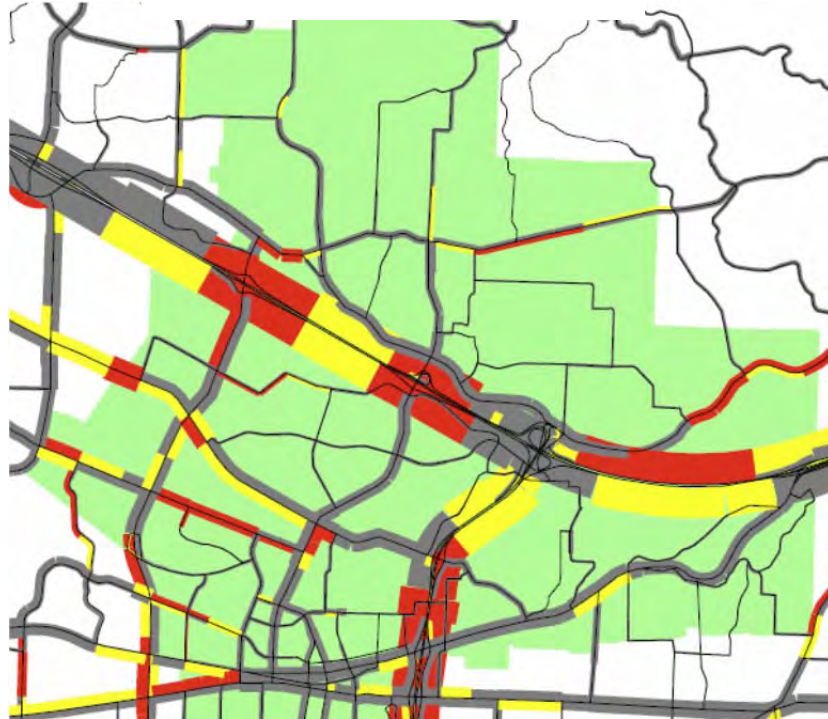
- Total motor vehicle travel miles traveled in the study area are projected to increase 20% in 2035 relative to 2010. However, VMT per capita is expected to decrease by approximately 21%.
- Significant increases in roadway travel times anticipated for 2035 PM peak on:
 - Cornell Road (EB), Murray Boulevard to Miller Road (25% increase)
 - Canyon Road (EB), Cedar Hills Boulevard to US 26 Ramp (23% increase)
 - Murray Boulevard (SB), Cornell Road to TV Highway (23% increase)

Congested Roadway Miles



Congested Roadways – 2035 PM Peak

Red = Demand Volume > Roadway Capacity
 Yellow = Demand Volume > 90% of Roadway Capacity
 Gray = Demand Volume < 90% of Roadway Capacity



2010
VEHICLE
HOURS DELAY



2035
VEHICLE
HOURS DELAY

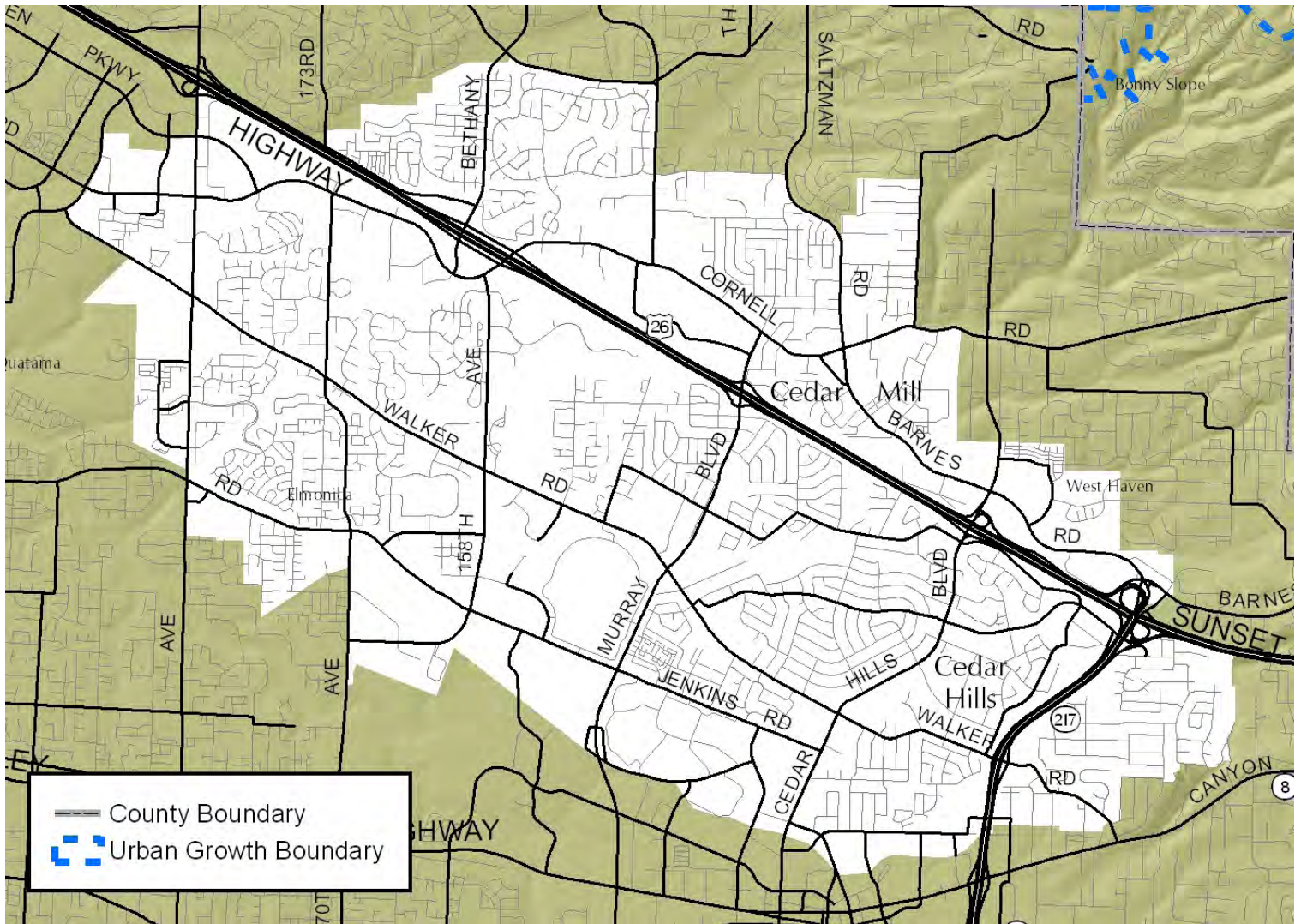


= 200 Hours (PM Peak Period)

Findings

- Significant increases in roadway congestion and delay are anticipated in 2035 relative to 2010.
- Mobility standard deficiencies identified during 2035 PM peak for:
 - Barnes Road, between Leahy Road and Skyline Boulevard
 - Murray Blvd, between Walker Road and Cornell Road, partial segments
 - Jenkins Road, between Merlo Road and Cedar Hills Boulevard, partial segments

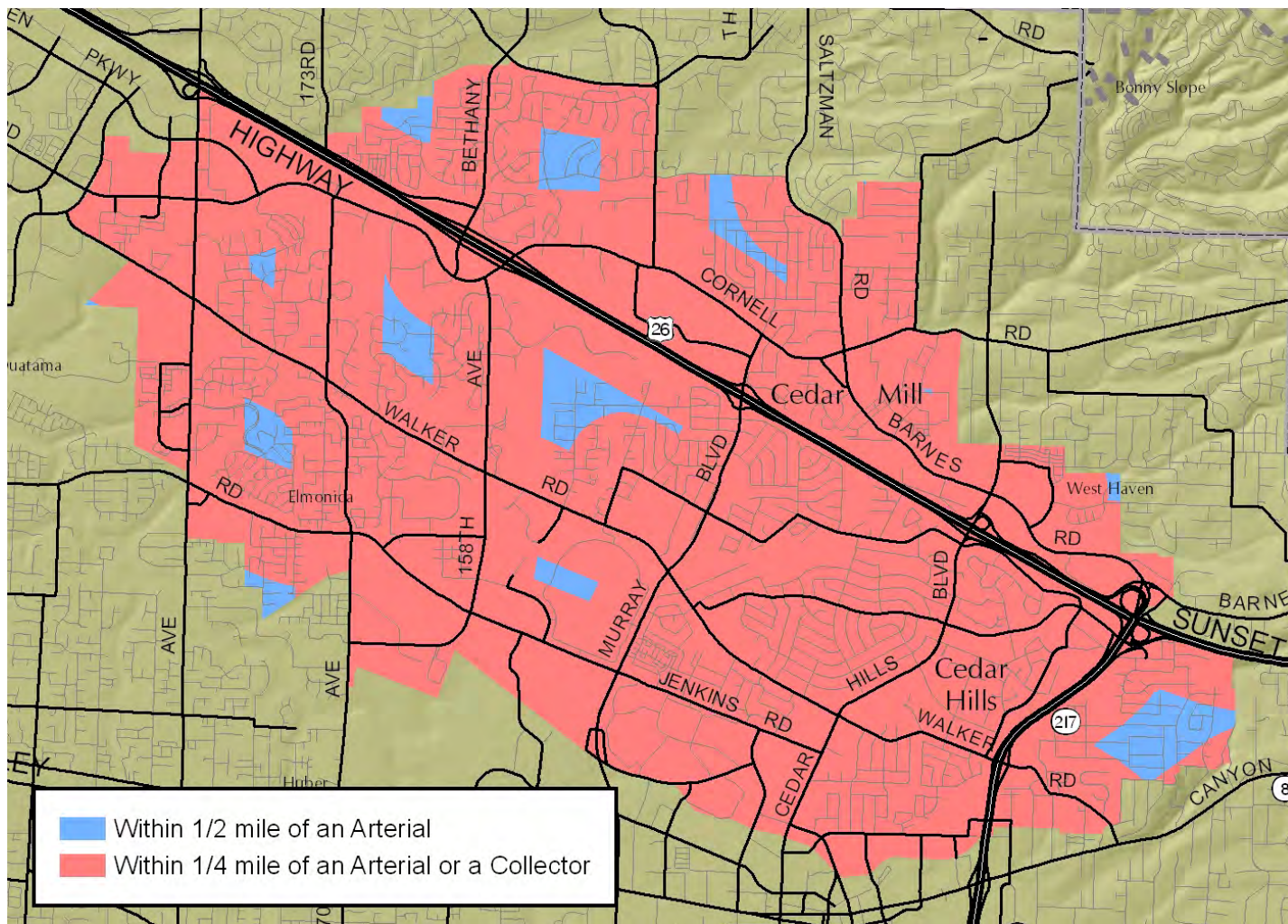
STUDY AREA #3 CORNELL/WALKER/JENKINS



	2010	2035	Growth	Growth %
Households	22,310	29,127	6,817	31%
Employment	36,641	50,578	13,937	38%

Summary

- About 84% of households are within ½ mile of regional destinations such as schools, shopping centers and major employers – significantly higher than the county urban area average.
- The study area contains portions of the Beaverton and Tanasbourne-Amberglen regional centers, which are rich in mixed uses.
- Employment and households are expected to increase by approximately 30-40% by 2035.



Number of road miles per square mile



Intersections per square mile

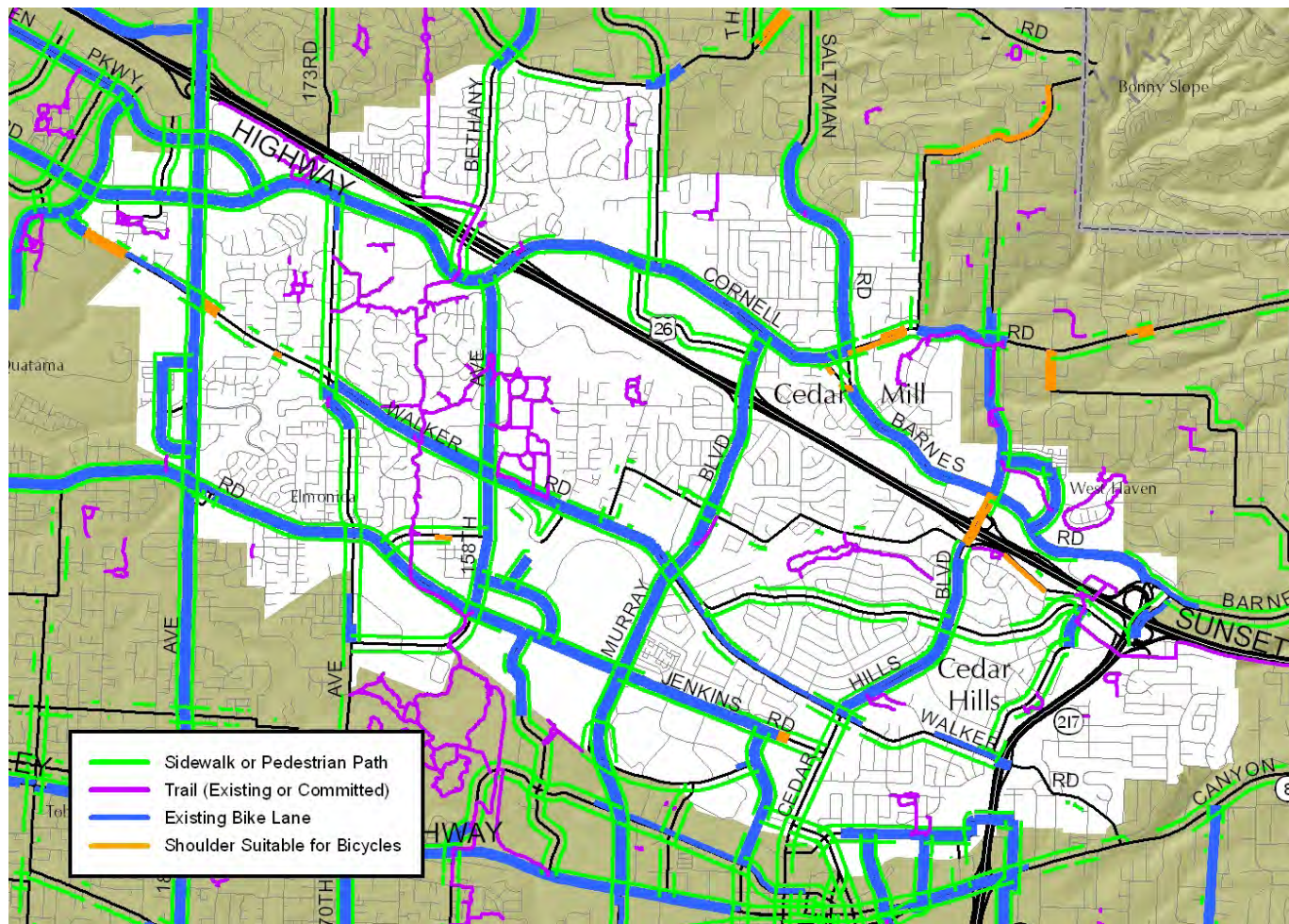


Network locations without dead ends



Findings

- Street network and intersection density are higher than county urban area average.
- The corridor is well developed and does not include many natural constraints.
- Roads have relatively few dead-ends or cul-de-sacs.



Sidewalk coverage on both sides of roadways?



Bike lanes or shoulders on both sides of roadways?



Multituse trails per 10,000 population



No sidewalks on both sides?



No bike lanes or shoulders on roadways?



Crossing Spacing on Major Streets

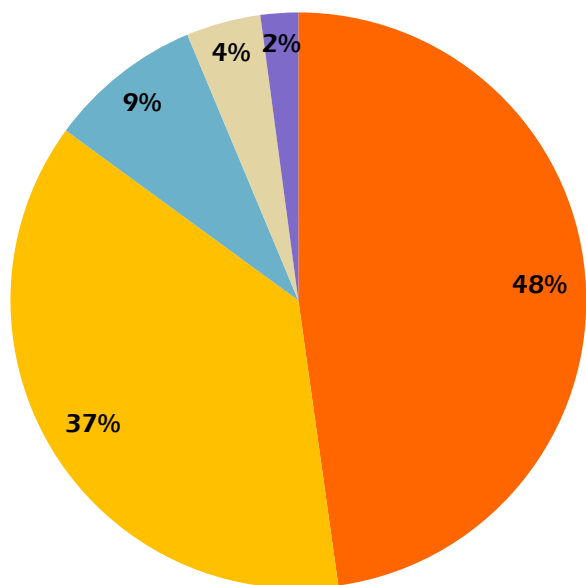
Average: 0.26 miles

Longest: 0.94 miles on Sunset Highway

Findings

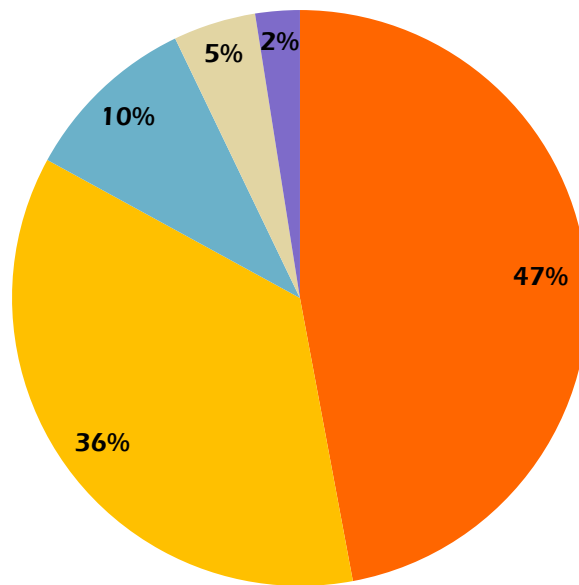
- Sidewalk, bike facility, and trail coverage are generally better than county urban area average, however major gaps exist on Walker Road and areas in the west side of the study area.
- The most significant barrier is the Sunset Highway, where average spacing between crossings is about 0.94 mile. Murray Blvd has the longest average distance between crossings on arterials – 0.38 miles.
- The study area contains a critical gap in the West Side Trail – an overcrossing of Sunset Highway.

2010 Mode Share



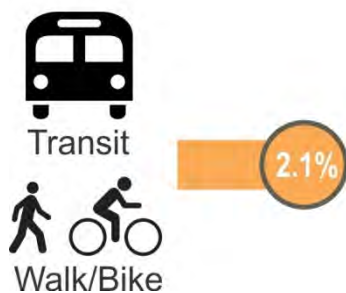
■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

2035 Mode Share

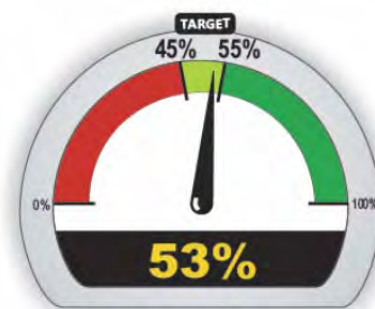


■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

Active and Transit Modes (Combined)
Change from 2010 to 2035

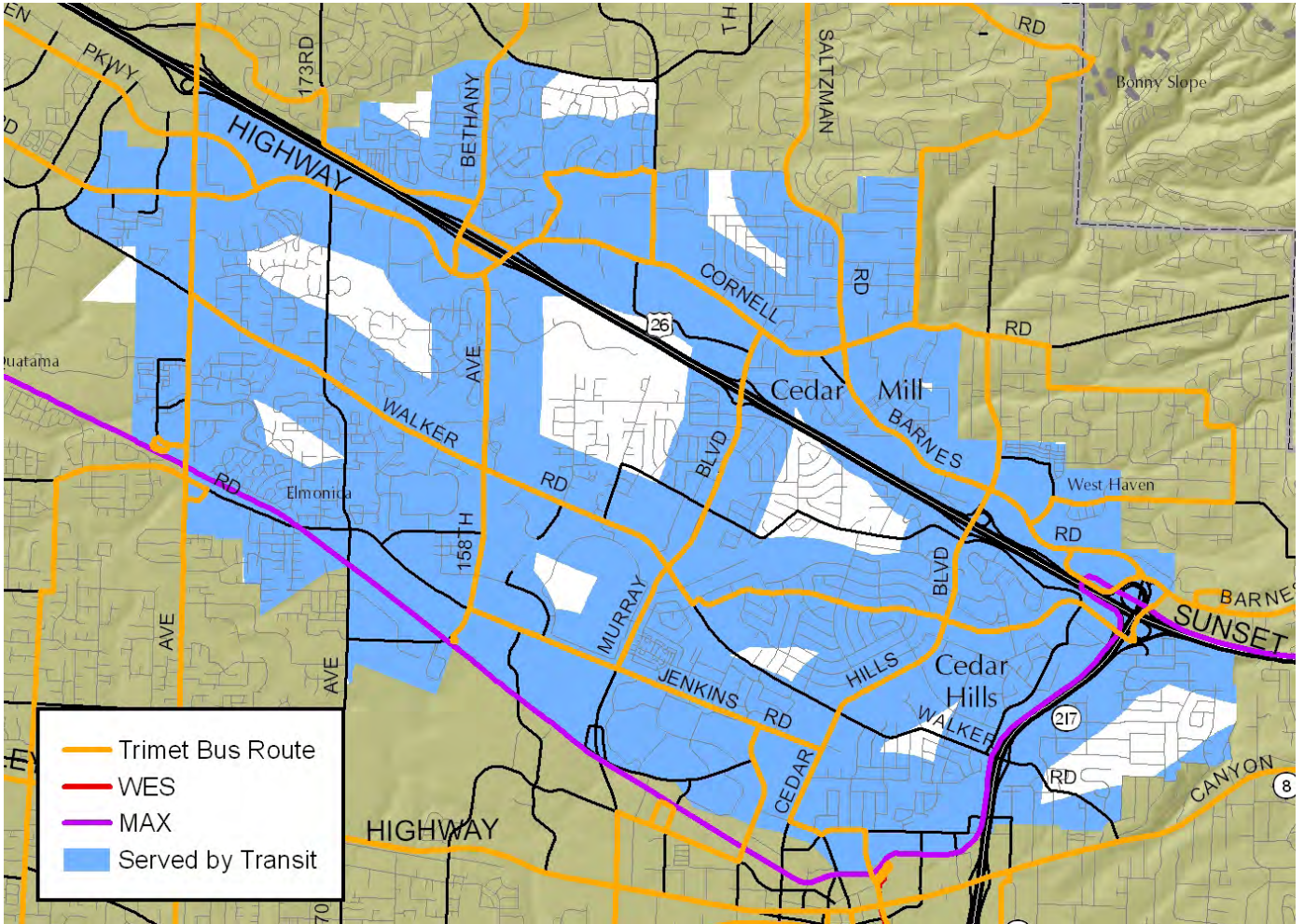


Non-SOV Mode Share
Regional Target

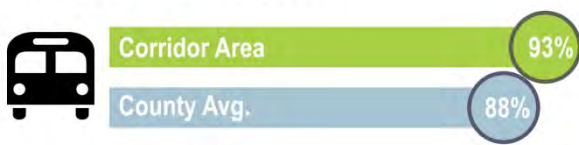


Findings

- Forecasted 2035 mode shares are consistent with 2010.
- A 2% increase is identified for combined walk, bike, and transit mode shares.
- Non-SOV mode share is projected to fall within regional target range.



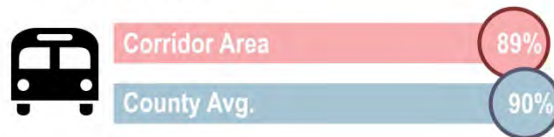
Employees with transit access



Households with transit access



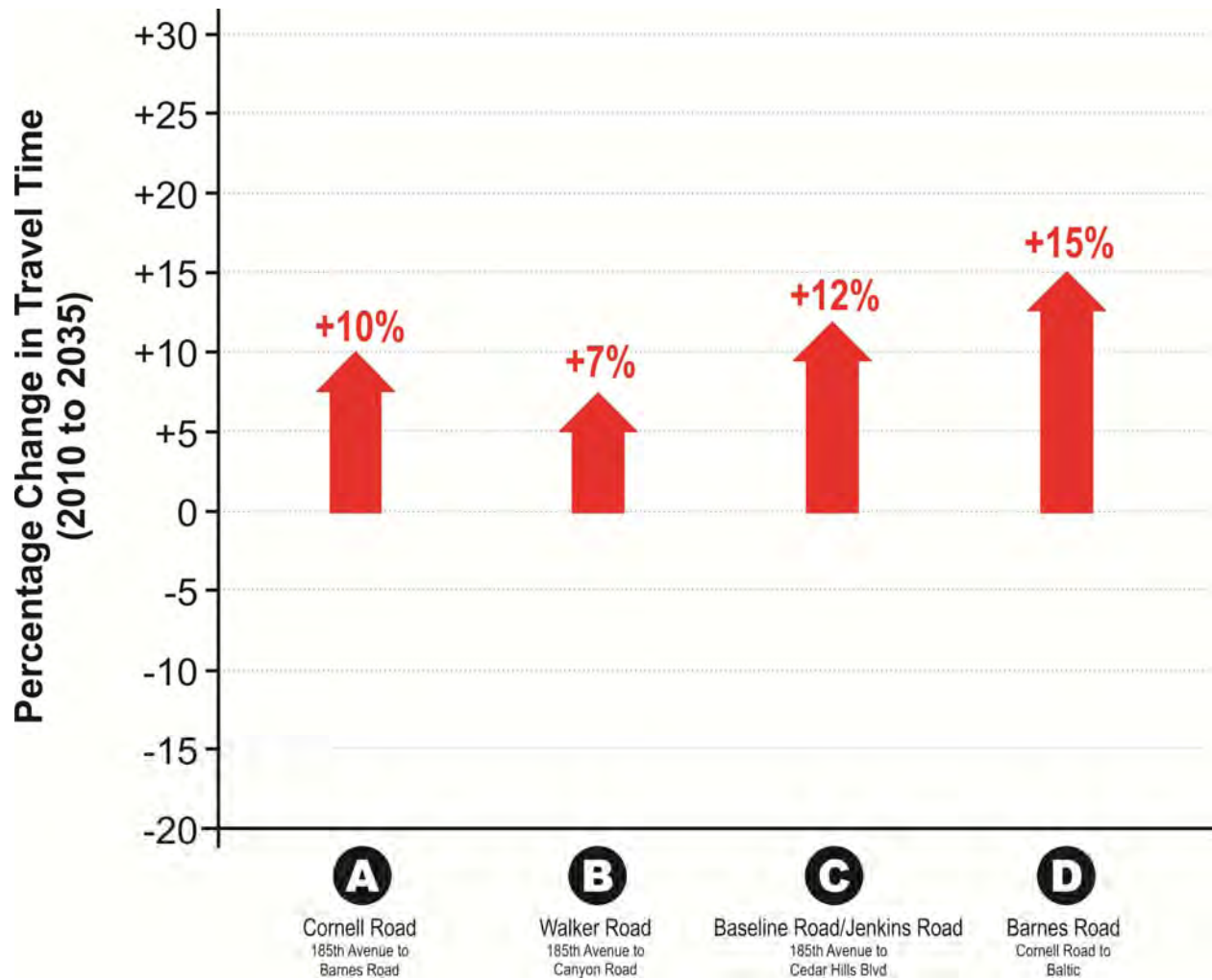
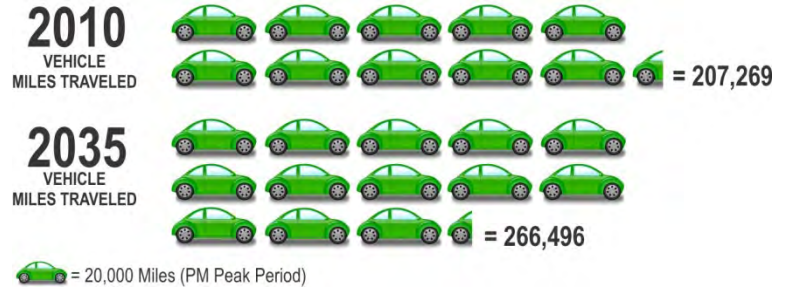
Low income and minority household areas with access to transit



Findings

- Transit access for households is significantly above the county urban area average, however service for low income and minority households is slightly below average.
- Transit access for employees is slightly above county urban area average.

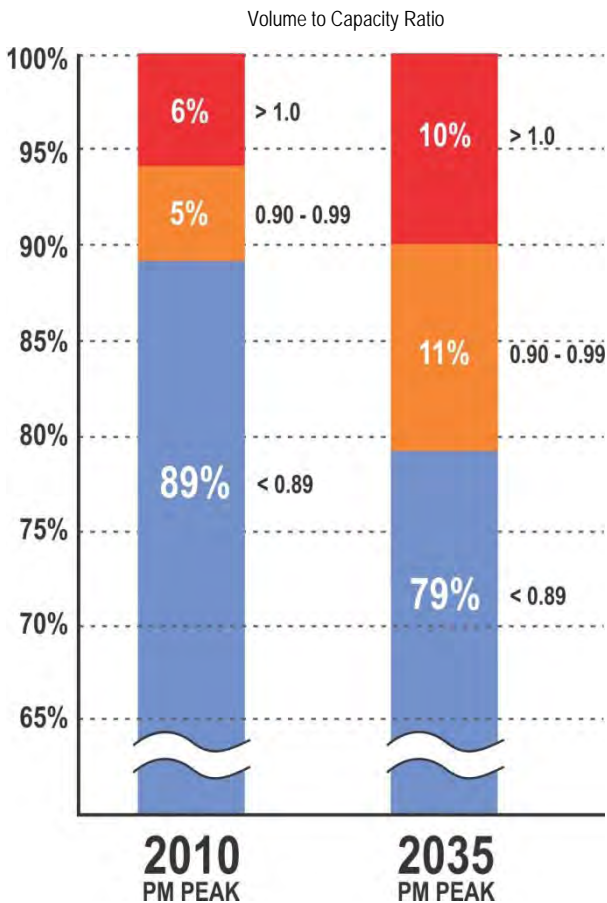
MOTOR VEHICLE DEMAND & TRAVEL TIME



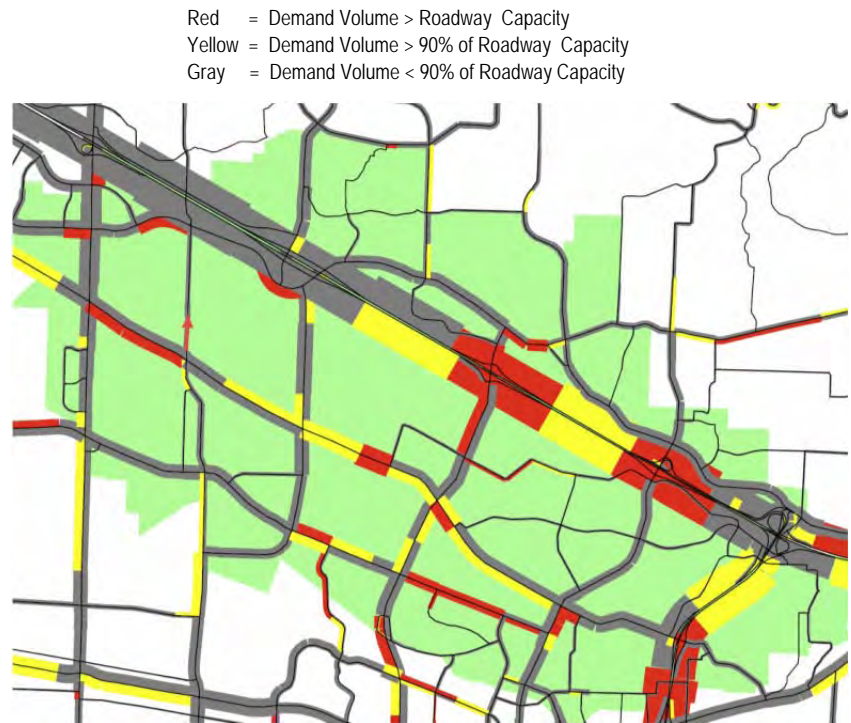
Findings

- Total motor vehicle travel miles traveled in the study area are projected to increase 29% in 2035 relative to 2010. However, VMT per capita is expected to decrease slightly by 2%.
- Increases in roadway travel times are anticipated for 2035 PM peak are expected to be less than 20% for key area roadways.

Congested Roadway Miles



Congested Roadways – 2035 PM Peak



2010
VEHICLE
HOURS DELAY



2035
VEHICLE
HOURS DELAY

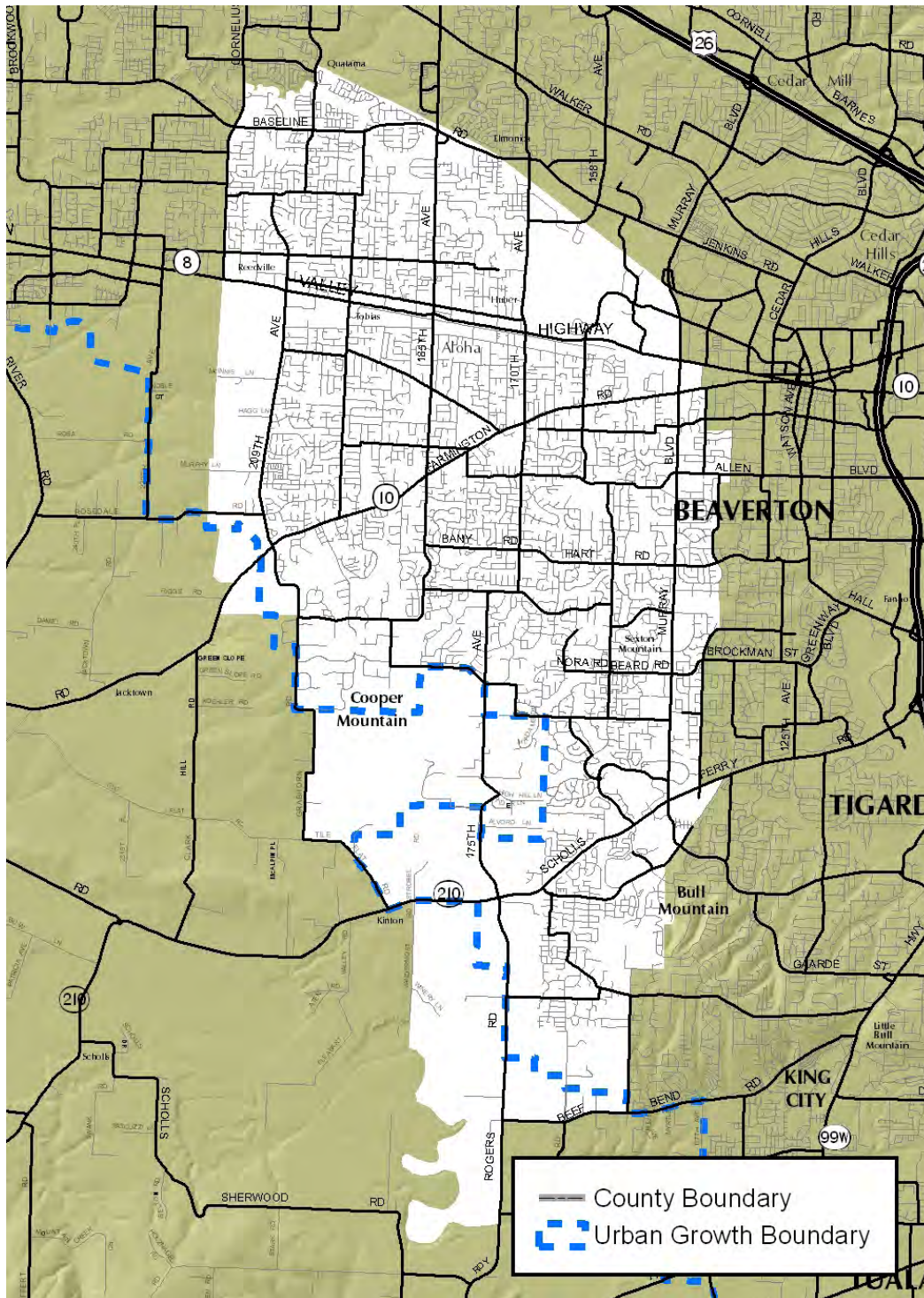


= 200 Hours (PM Peak Period)

Findings

- Significant increases in roadway congestion and delay are anticipated in 2035 relative to 2010.
- Mobility standard deficiencies identified during 2035 PM peak hour:
 - Cornell Road, 188th Avenue to Barnes Road (Eastbound), partial segments
 - 185th Avenue, Evergreen Parkway to US 26 Interchange (Northbound)
 - Walker Road, between 185th Avenue and 173rd Avenue
 - Jenkins Road, between Merlo Road and Cedar Hills Boulevard, partial segments
 - Murray Blvd, between Walker Road and Cornell Road, partial segments

STUDY AREA #4 ALOHA-COOPER MOUNTAIN

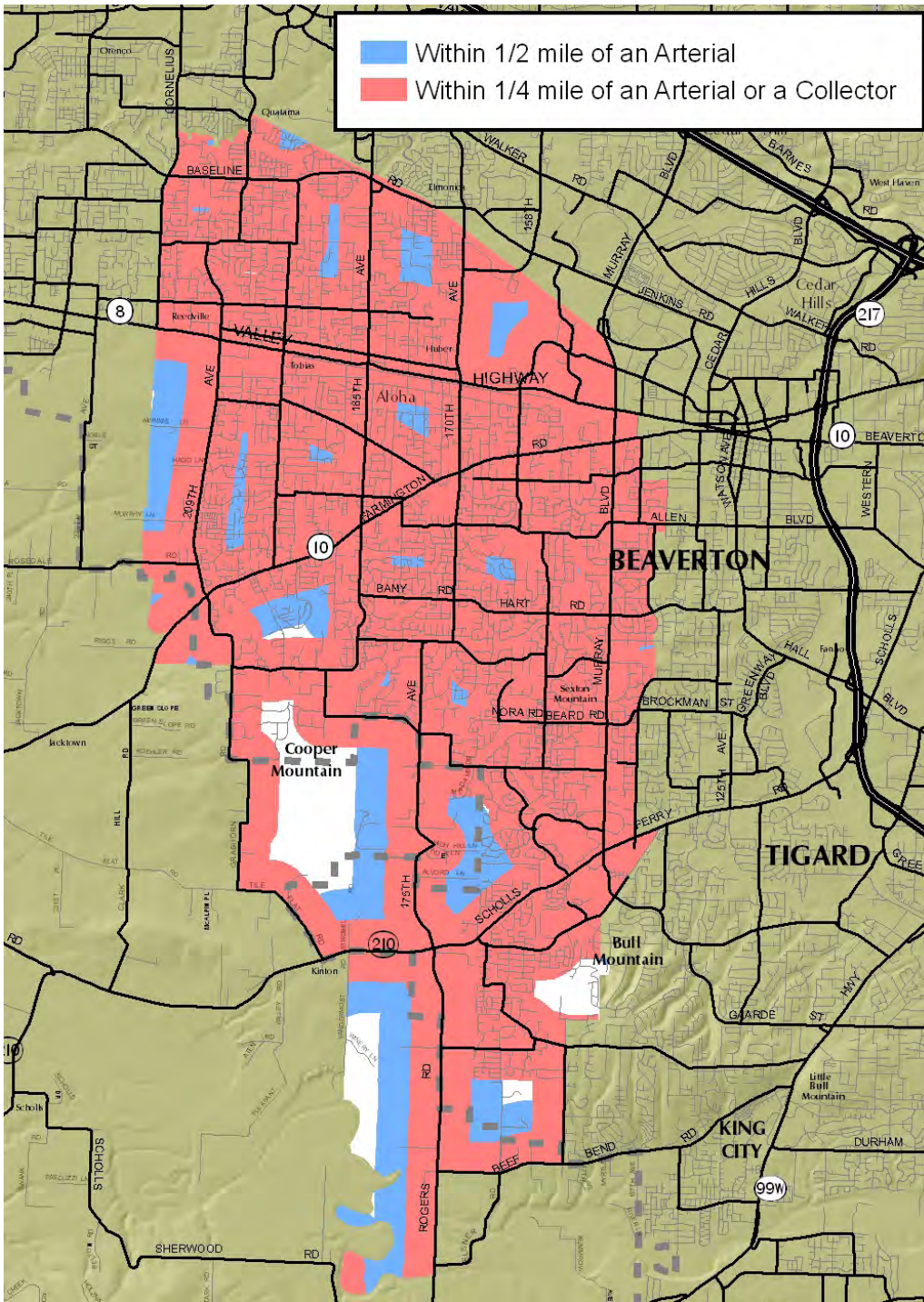


Households	
2010	40,997
2035	61,502
Growth	20,505
Growth %	50%

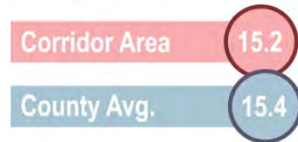
Employment	
2010	16,687
2035	24,371
Growth	7,684
Growth %	46%

Summary

- The corridor is predominantly residential, with limited commercial areas or major employers.
- About 66% of households are within ½ mile of regional destinations such as schools, shopping centers and major employers – well below the county urban area average.
- Employment and households are expected to increase by 45-50% by 2035



Number of road miles per square mile



Intersections per square mile

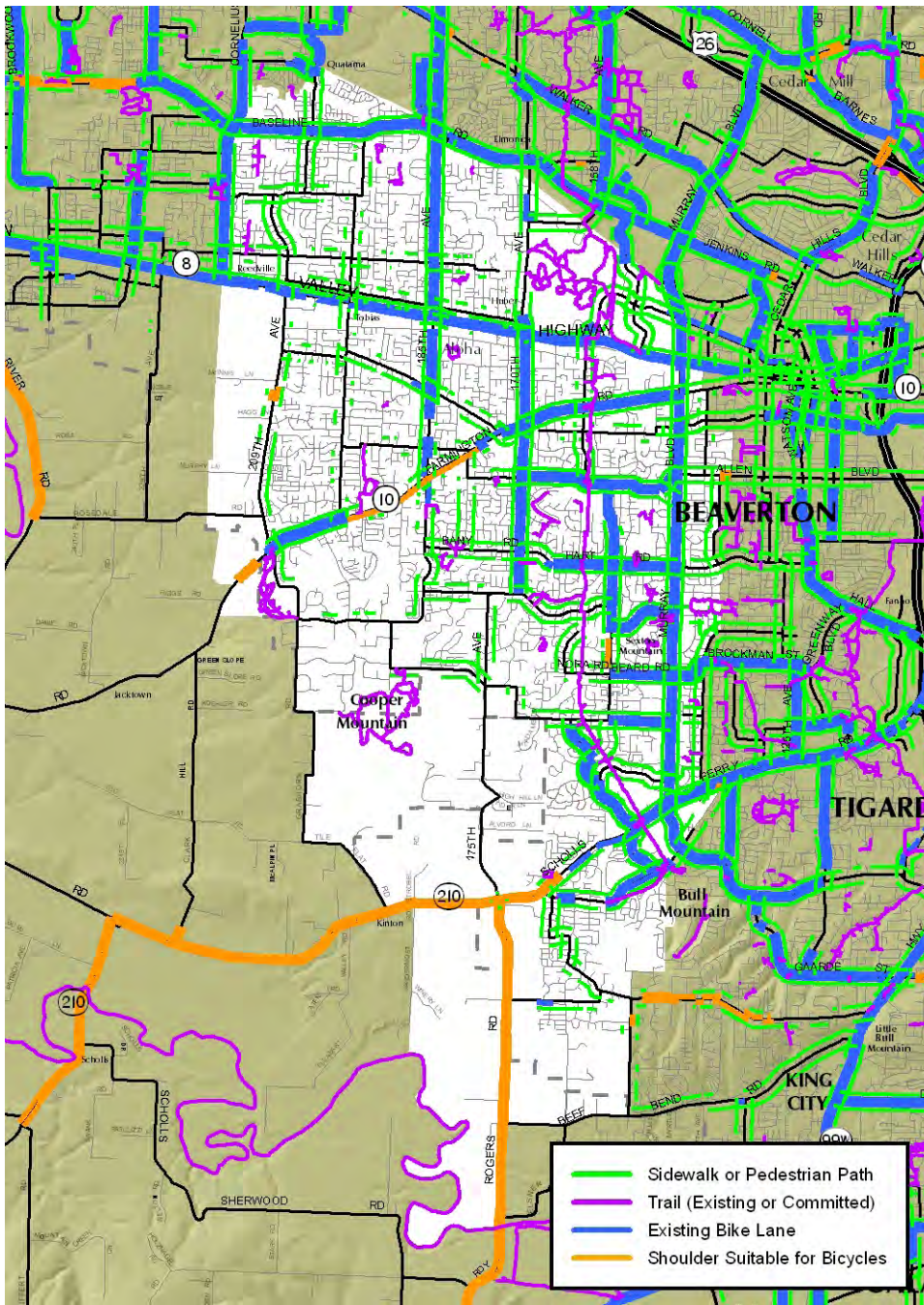


Network locations without dead ends



Findings

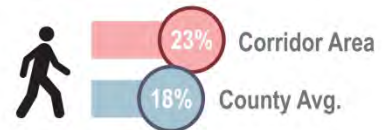
- Street network and intersection density are slightly below county urban area average.
- The study area has a relative abundance of dead-ends and cul-de-sacs. These features can be attributed to mid-century development and limited crossings at streams.



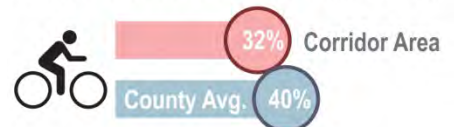
Sidewalk coverage on both sides of roadways?



No sidewalks on both sides?



Bike lanes or shoulders on both sides of roadways?



No bike lanes or shoulders on roadways?



Multituse trails per 10,000 population



Crossing Spacing on Major Streets

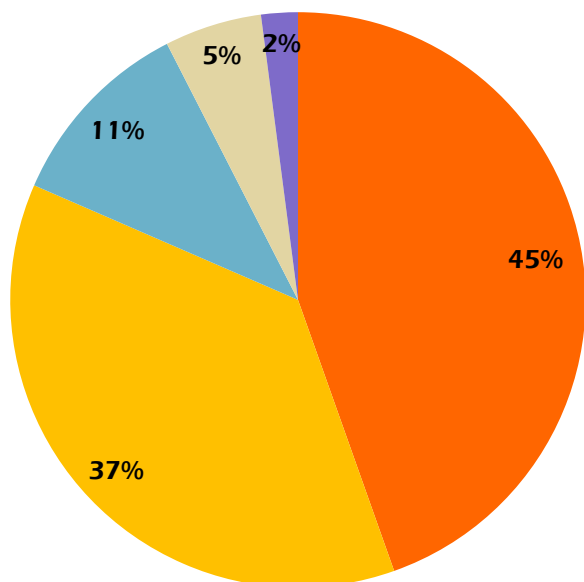
Average: 0.26 miles (County)

Average: 0.34 miles (Study Area #4)

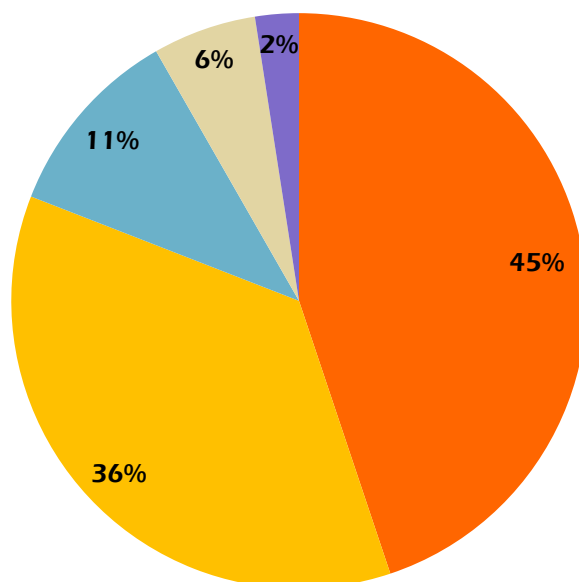
Findings

- Sidewalk coverage is similar to the county urban area average, although many gaps remain with no sidewalk facilities on either side of the roadway.
- Bicycle facility coverage is significantly lower than the county urban area average..
- The average distance between crossings is significantly higher than the county average. 185th Avenue, Millikan Way and TV Highway have the longest average distances between crossings. The Portland & Western Railroad is also a major barrier with few convenient or safe crossings for people walking and accessing transit.
- Trail coverage by population is below the county urban area average.

2010 Mode Share



2035 Mode Share



■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

Active and Transit Modes (Combined)
Change from 2010 to 2035



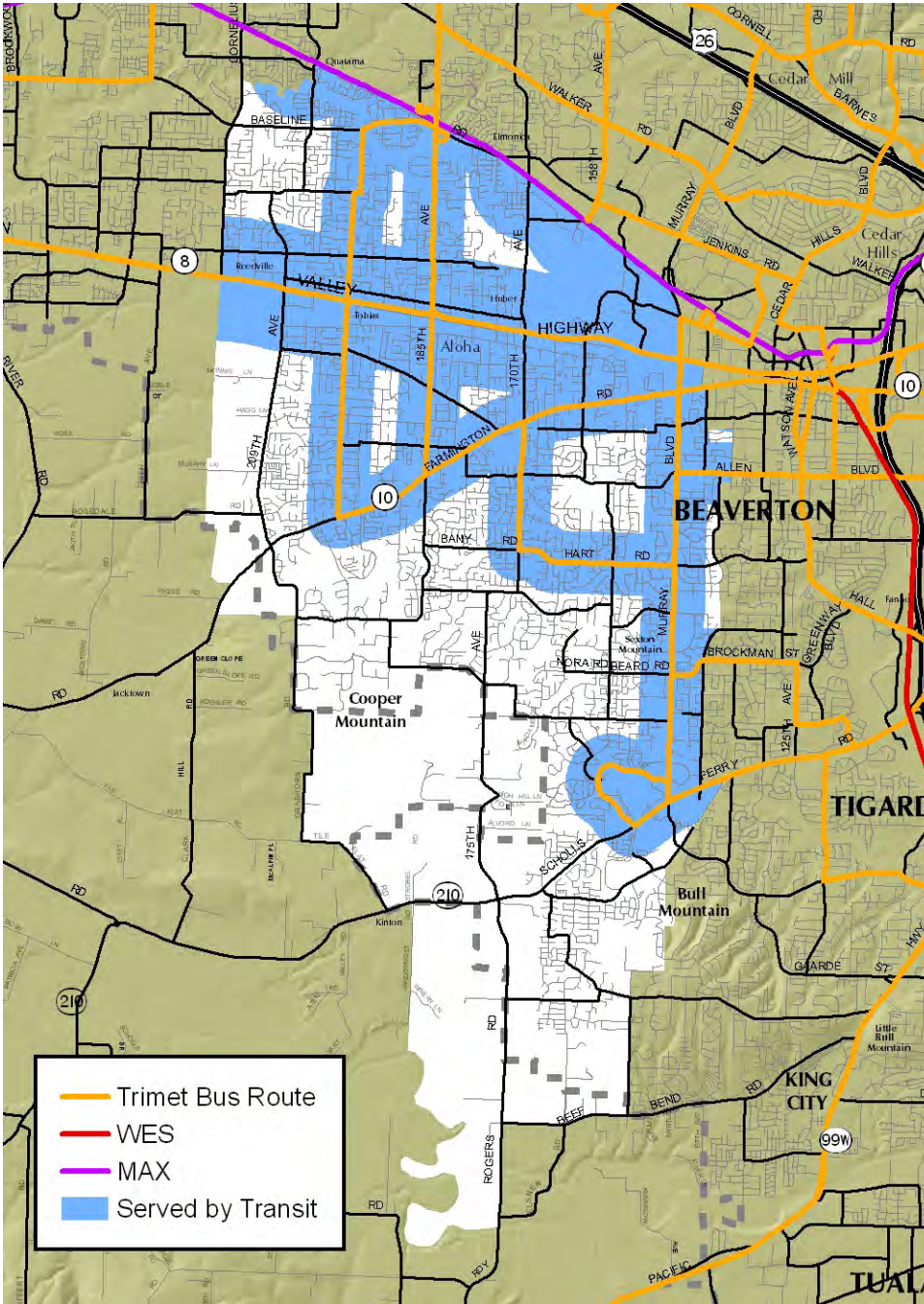
No
Significant
Change

Non-SOV Mode Share
Regional Target

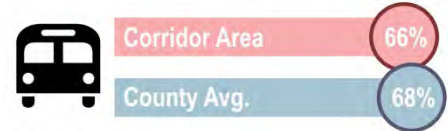


Findings

- Forecasted 2035 mode shares are relatively consistent with 2010.
- No significant increase is identified for combined walk, bike, and transit mode shares.
- Non-SOV mode share is projected to fall within regional target range.



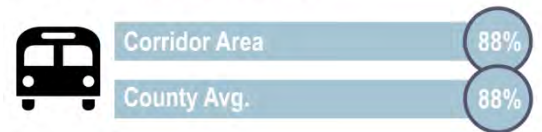
Households with transit access



Low income and minority household areas with access to transit



Employees with transit access



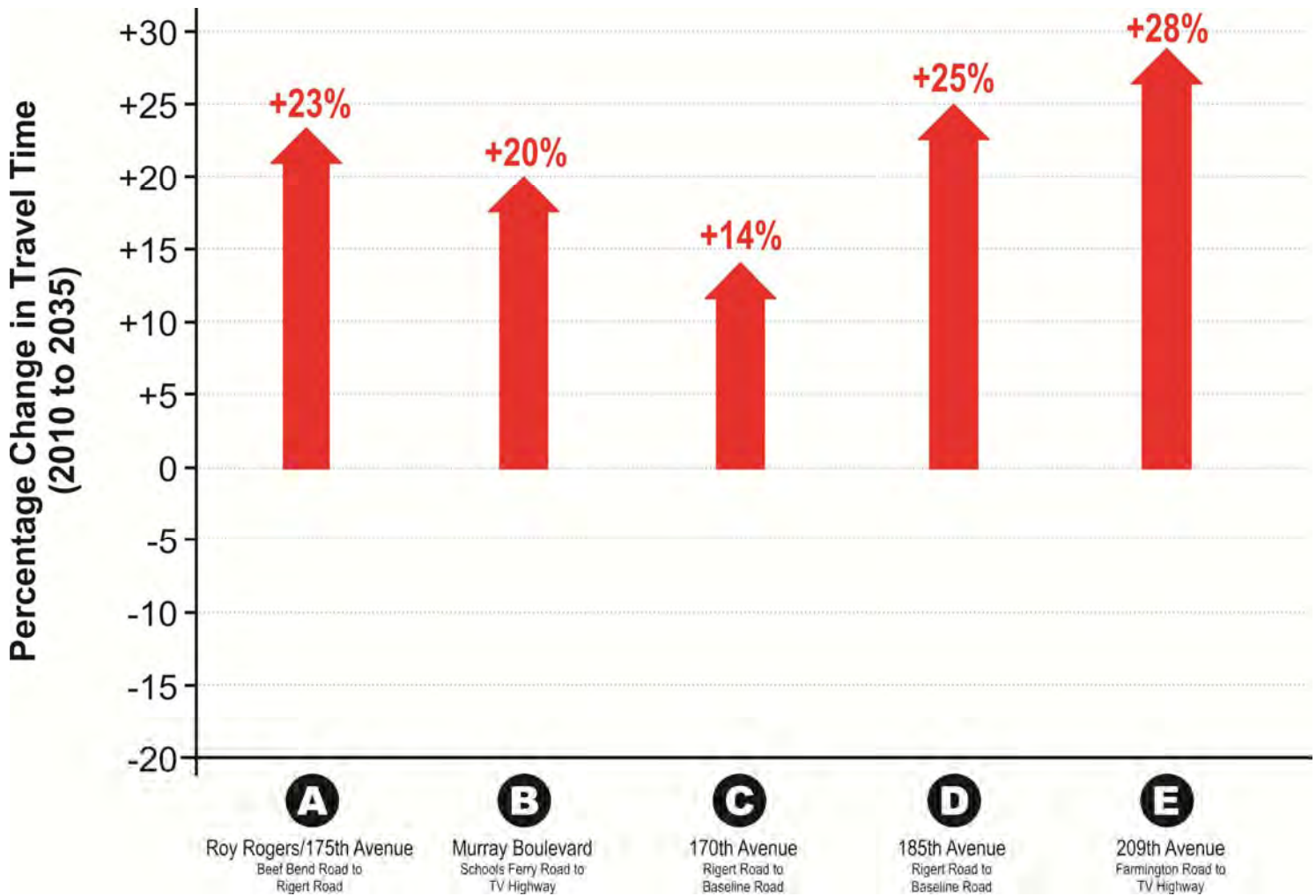
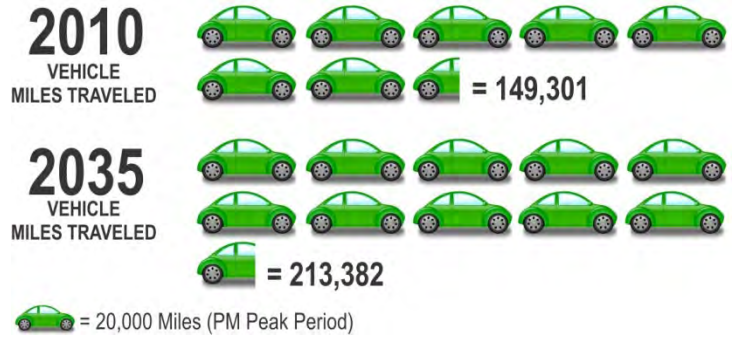
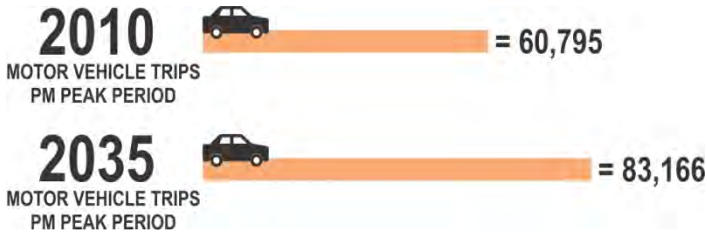
Findings

- Transit access for households and employment are similar to the county urban area average.
- Transit access to low income and minority household areas is better than county urban area average. Many of these households are served by the frequent service #57 bus, along TV Highway.
- Transit service is currently limited in the Cooper Mountain and South Hillsboro areas, where major development is beginning.

MOTOR VEHICLE DEMAND & TRAVEL TIME

ALOHA-COOPER MOUNTAIN

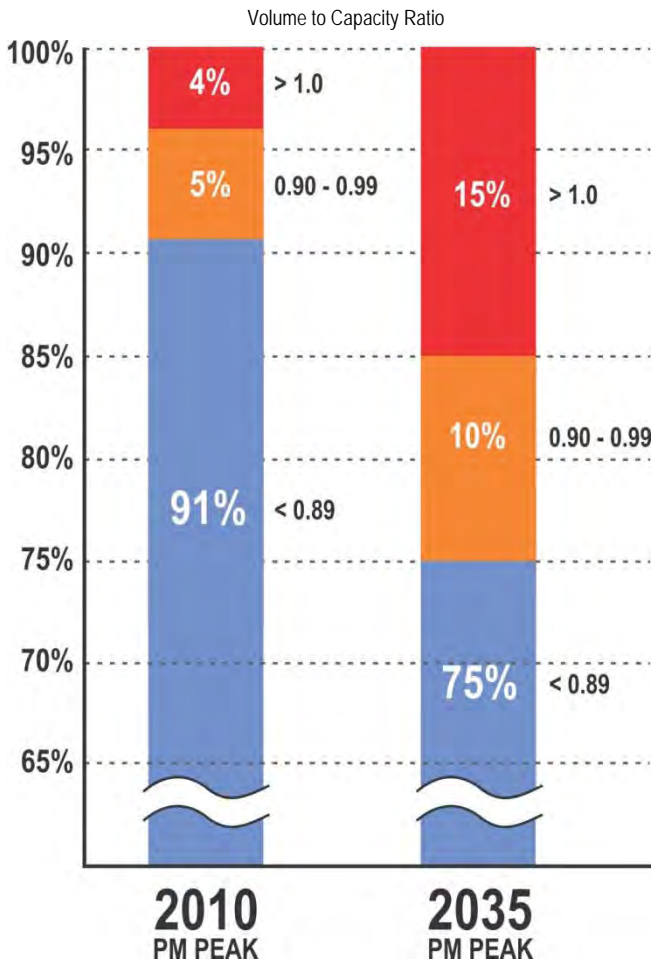
Study Area #4



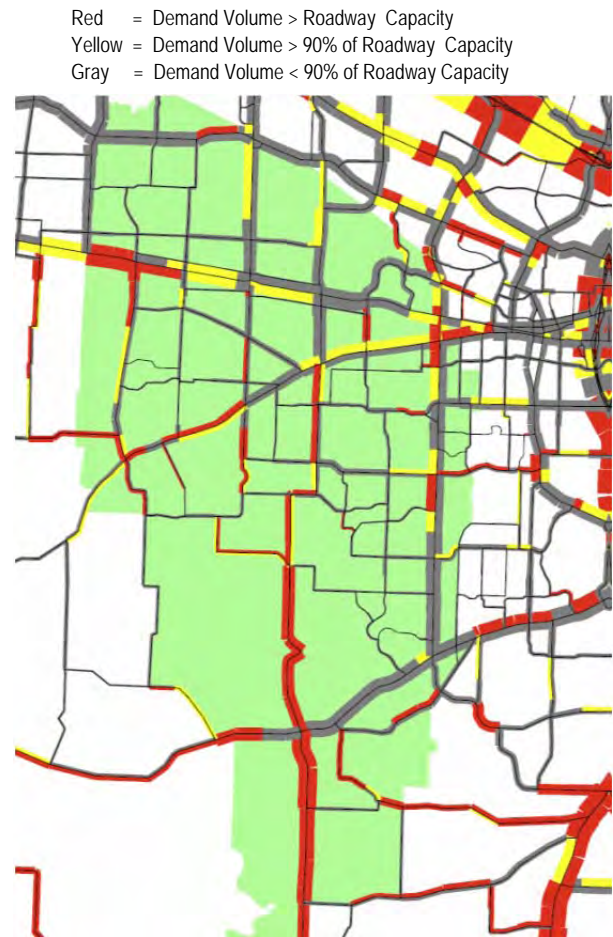
Findings

- Total motor vehicle travel miles traveled in the study area are projected to increase 43% in 2035 relative to 2010. However, VMT per capita is expected to decrease by 5%.
- Significant increases in roadway travel times anticipated for 2035 PM peak on:
 - Roy Rogers Road/175th Avenue, between Beef Bend Road and Rigert Road (24% NB, 22% SB)
 - Murray Boulevard (SB), TV Highway to Scholls Ferry Road (22% increase)
 - 185th Avenue, between Baseline Road and Rigert Road (20% NB, 28% SB)
 - 209th Avenue (SB), TV Highway to Farmington Road (39% increase)

Congested Roadway Miles



Congested Roadways – 2035 PM Peak



2010
VEHICLE HOURS DELAY = 1,429

2035
VEHICLE HOURS DELAY = 3,394

= 200 Hours (PM Peak Period)

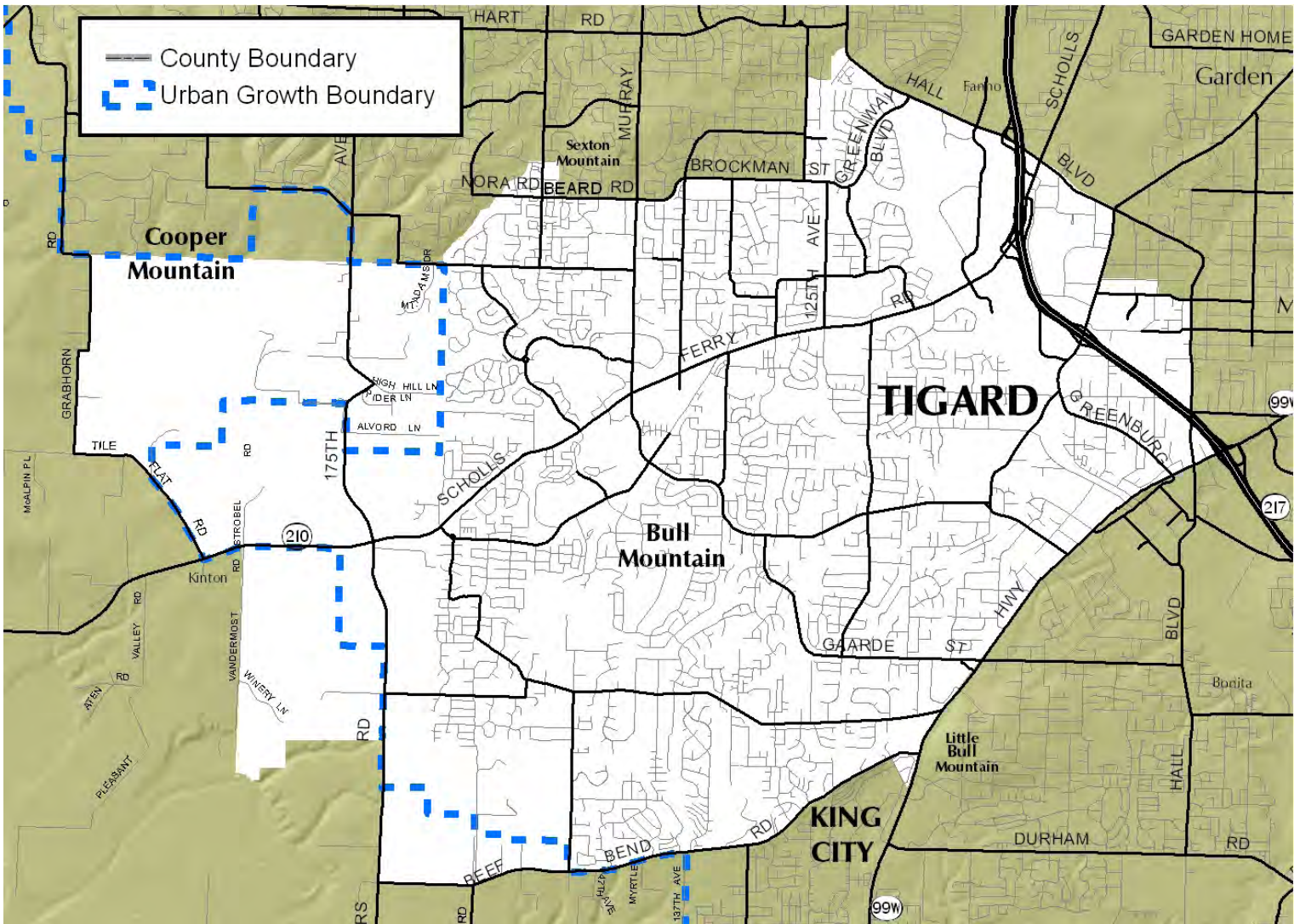
Findings

- Significant increases in roadway congestion and delay are anticipated in 2035 relative to 2010.
- Mobility standard deficiencies are identified during 2035 PM peak for many roadways in the study area including segments of Roy Rogers Road, 160th Avenue, 170th Avenue, 175th Avenue, 185th Avenue, 190th Avenue, 209th Avenue, Murray Road, Grabhorn Road, Kemmer Road, TV Highway, and Farmington Road.

STUDY AREA #5

BROCKMAN/SCHOLLS FERRY/WALNUT

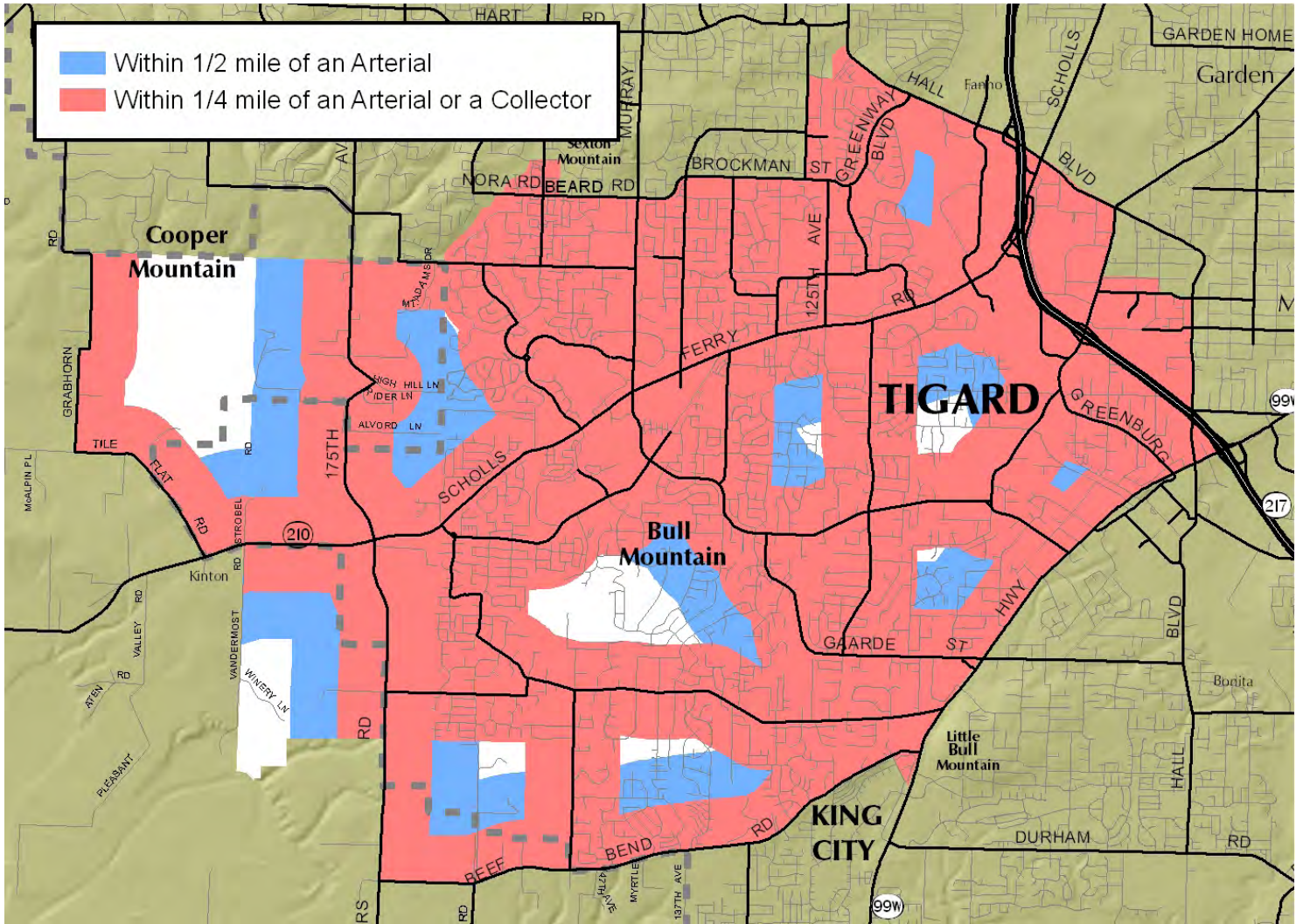
Overview



	2010	2035	Growth	Growth %
Households	24,302	38,844	14,542	60%
Employment	20,595	29,518	8,923	43%

Summary

- About 70% of households are within ½ mile of regional destinations such as schools, shopping centers and major employers – slightly below county urban area average.
- The study area has more mixed land uses closer to OR 217.
- Employment and households are expected to increase by approximately 43% and 60%, respectively by 2035.



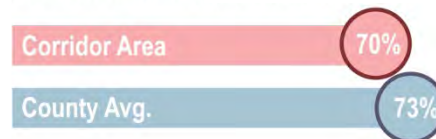
Number of road miles per square mile



Intersections per square mile

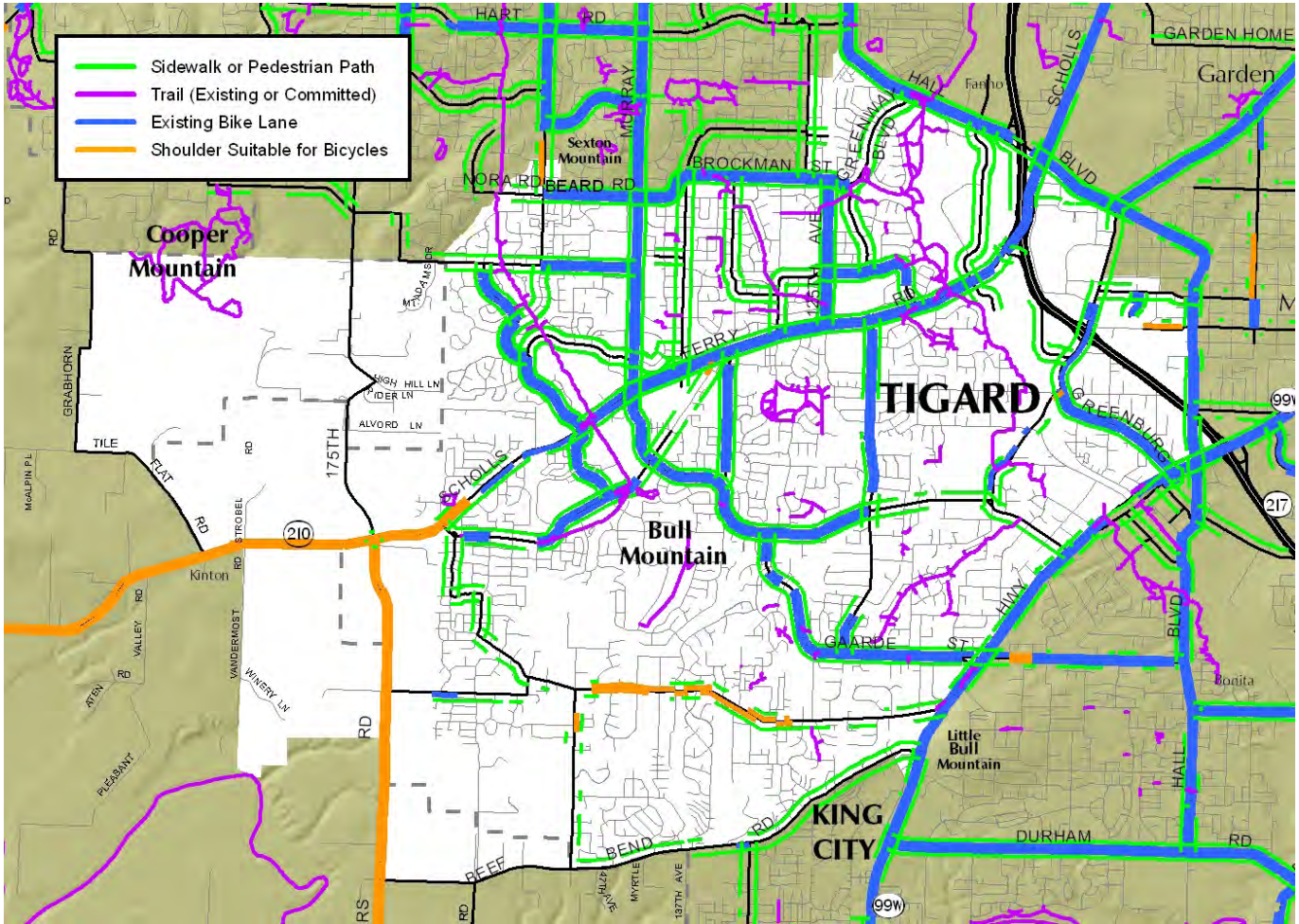


Network locations without dead ends



Findings

- Street network and intersection density are less than county urban area average.
- Roads have relatively frequent dead-ends or cul-de-sacs.



Sidewalk coverage on both sides of roadways?



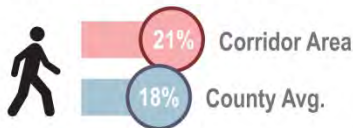
Bike lanes or shoulders on both sides of roadways?



Multiuse trails per 10,000 population



No sidewalks on both sides?



No bike lanes or shoulders on roadways?



Crossing Spacing on Major Streets

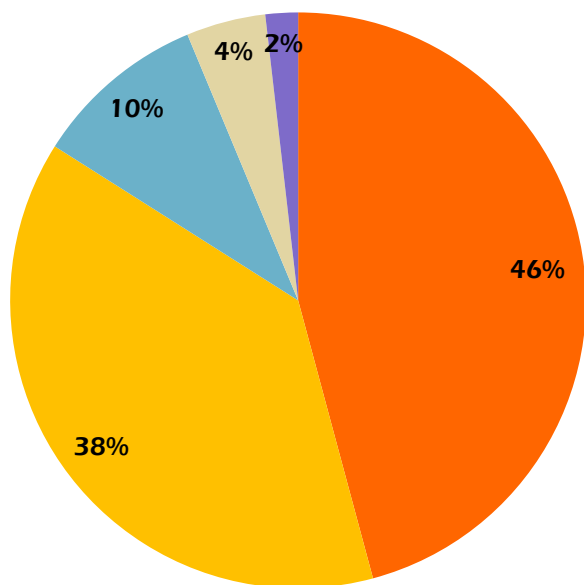
Average: 0.26 miles

Longest: 0.6 miles on OR 217

Findings

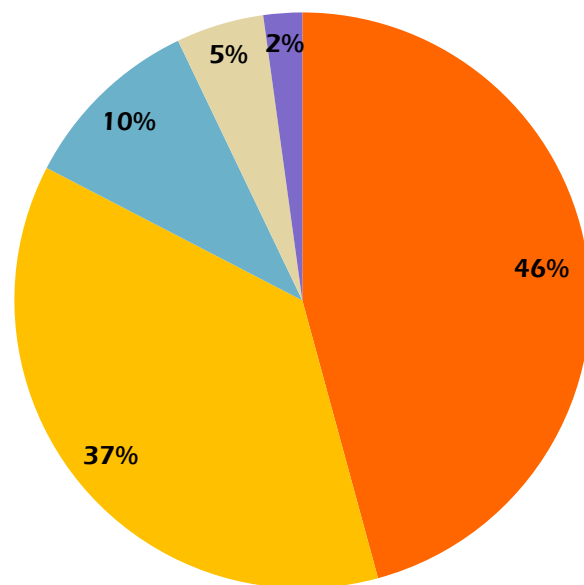
- Sidewalk and bike facility coverage are generally better than county urban area average, however the percent of roadways with no sidewalks is higher than county average.
- The most significant barrier is the Highway 217/WES corridor, where average spacing between crossings is about 0.6 mile.
- Multi-use trail coverage is equal to the county urban area average; however east-west trail connectivity is very limited.

2010 Mode Share



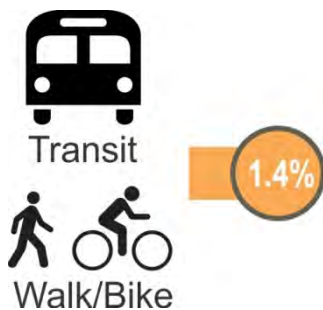
■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

2035 Mode Share



■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

Active and Transit Modes (Combined)
Change from 2010 to 2035

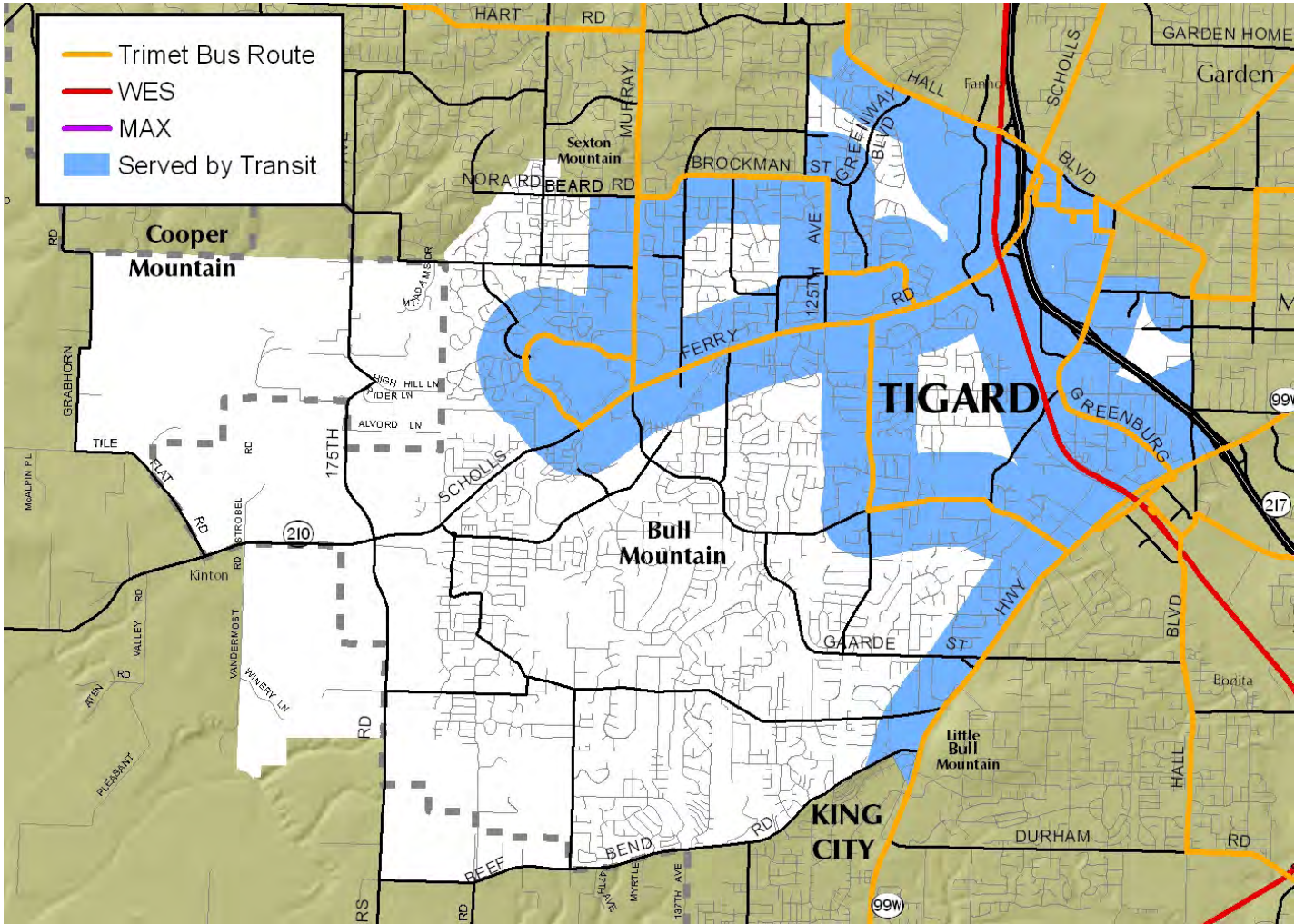


Non-SOV Mode Share
Regional Target

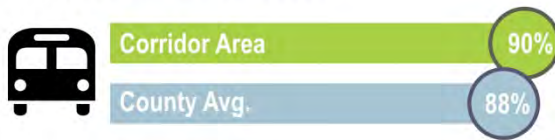


Findings

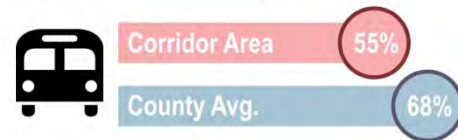
- Forecasted 2035 mode shares are consistent with 2010.
- A small increase is identified for combined walk, bike, and transit mode shares.
- Non-SOV mode share is projected to fall within regional target range.



Employees with transit access



Households with transit access



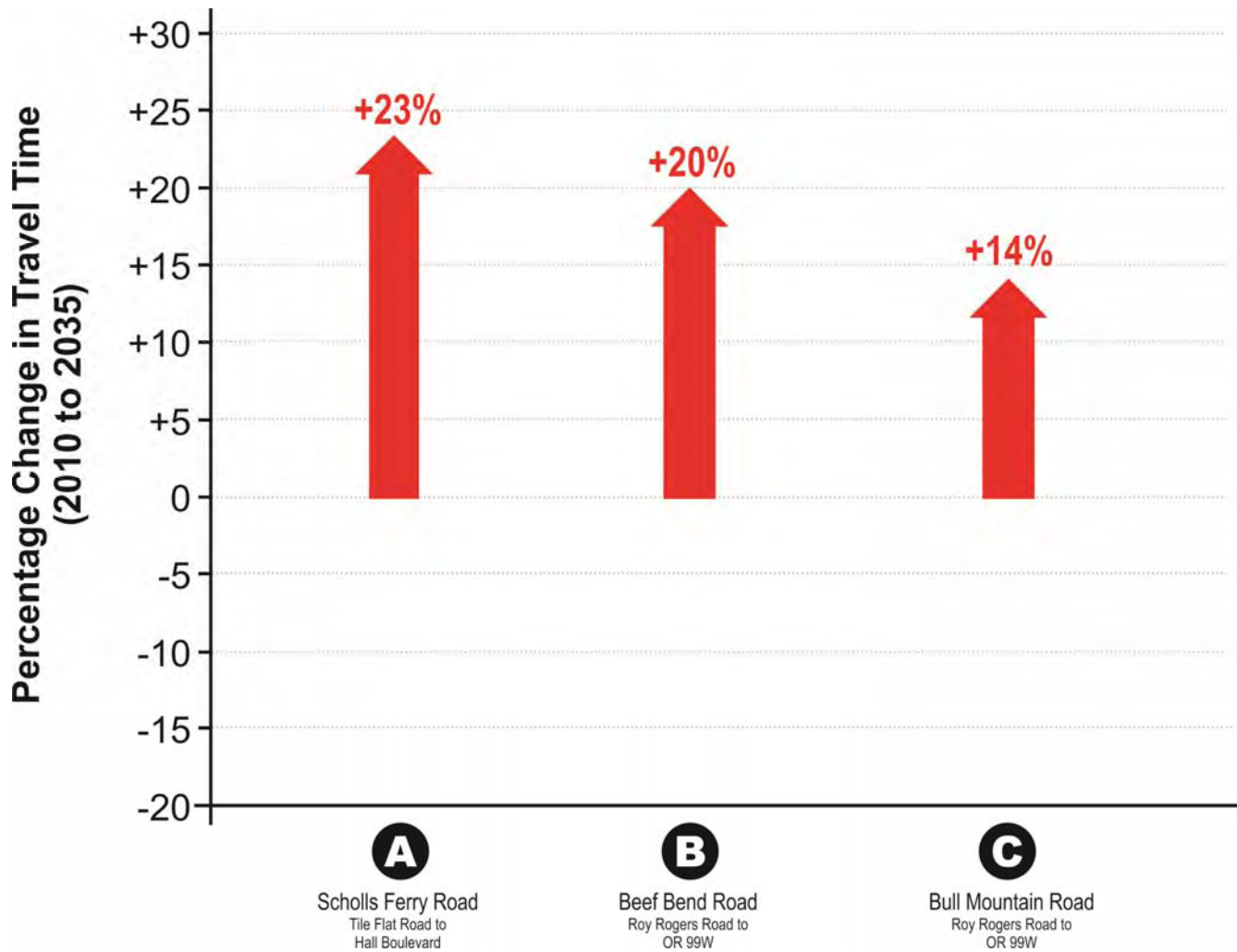
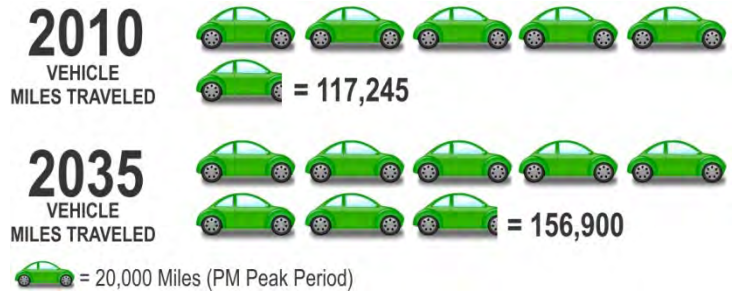
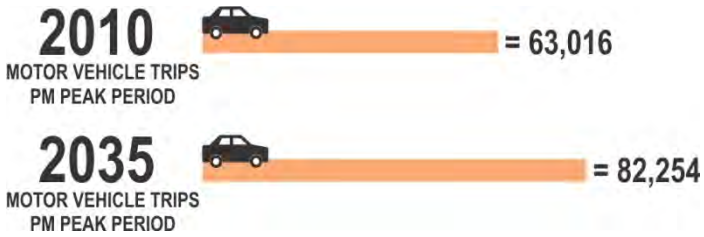
Low income and minority household areas with access to transit



Findings

- Transit access for employees and low income and minority households is slightly above the county urban area average. Transit access to Washington Square Regional Center and Tigard Town Center is fairly robust.
- Transit access for households is well below the county urban area average, with most neighborhoods west of Murray Boulevard not having any transit access.
- Development of River Terrace and South Cooper Mountain will increase demand for transit service.

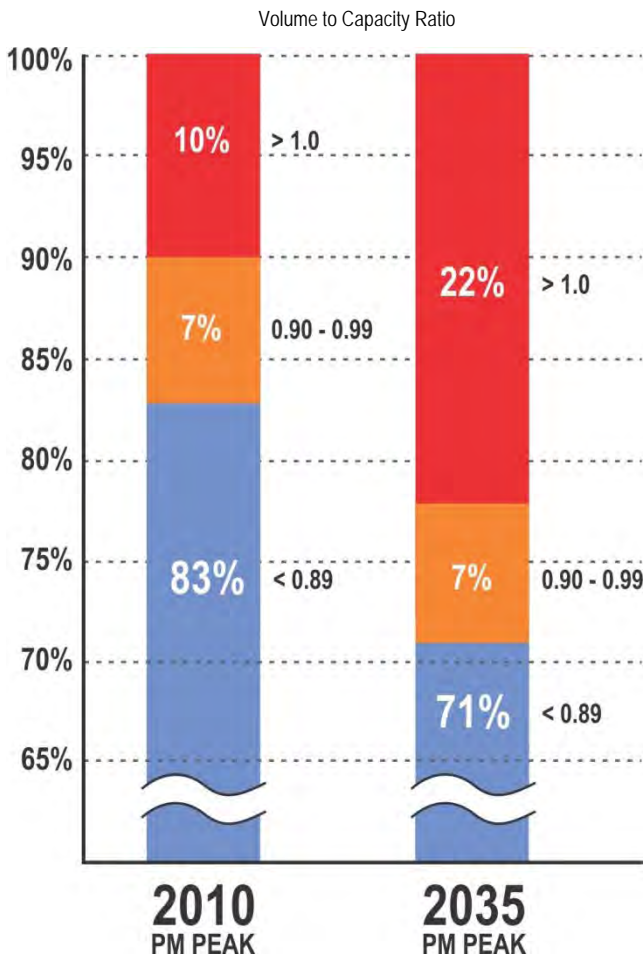
MOTOR VEHICLE DEMAND & TRAVEL TIME



Findings

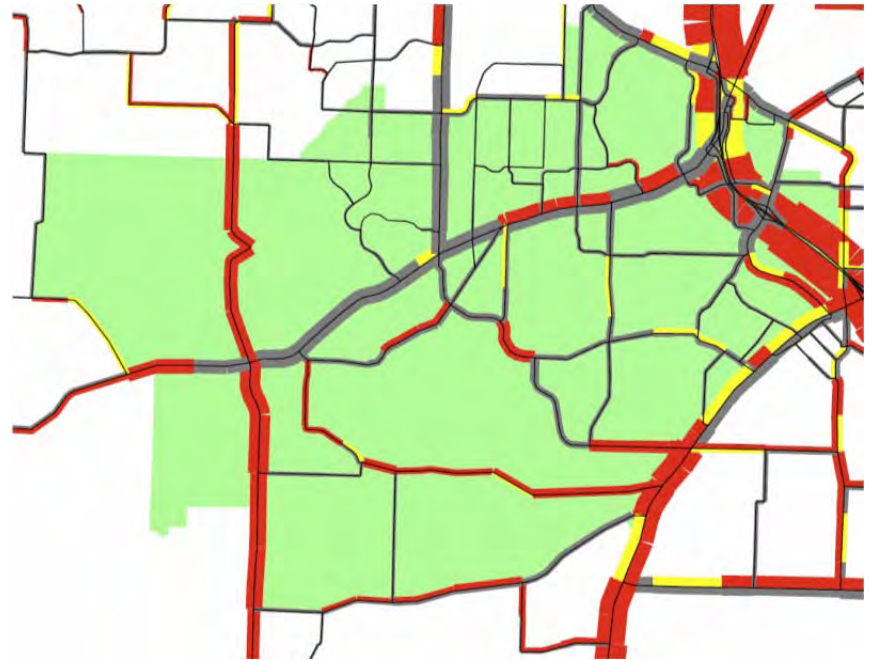
- Total motor vehicle travel miles traveled in the study area are projected to increase 34% in 2035 relative to 2010. However, VMT per capita is expected to decrease by approximately 16%.
- Significant increases in roadway travel times anticipated for 2035 PM peak on:
 - Beef Bend Road (WB), OR 99W to Roy Rogers Road (22% increase)
 - Bull Mountain Road (WB), OR 99W to Roy Rogers Road (23% increase)

Congested Roadway Miles



Congested Roadways – 2035 PM Peak

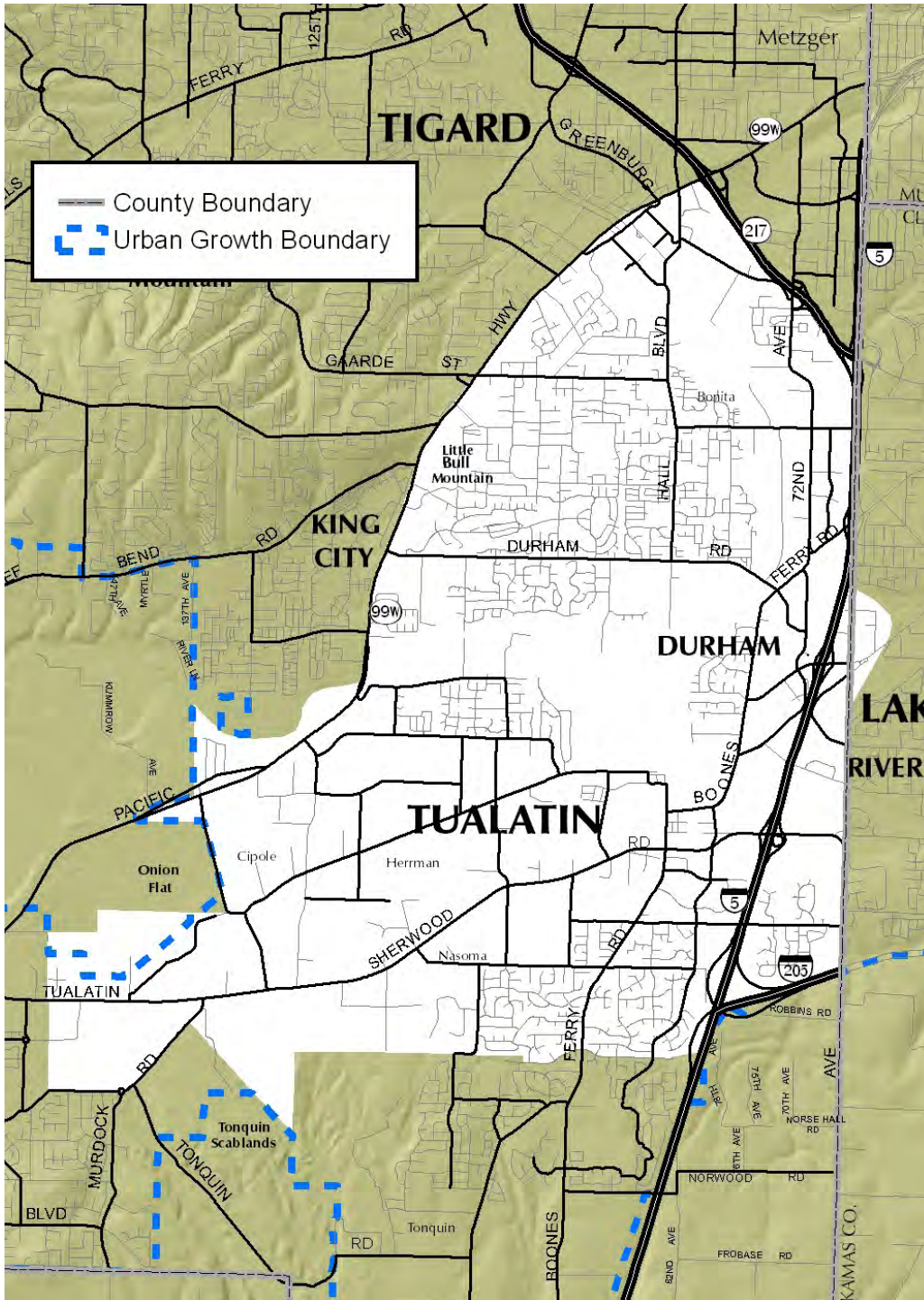
Red = Demand Volume > Roadway Capacity
 Yellow = Demand Volume > 90% of Roadway Capacity
 Gray = Demand Volume < 90% of Roadway Capacity



Findings

- Significant increases in roadway congestion and delay are anticipated in 2035 relative to 2010.
- Mobility standard deficiencies identified during 2035 PM peak are anticipated for portions of many study area roadways including Beef Bend Road, Roshak Road, Bull Mountain Road, Gaarde Road, Walnut Road, Barrows Road, Scholls Ferry Road, and Greenburg Road.

STUDY AREA #6 TUALATIN RIVER CROSSINGS

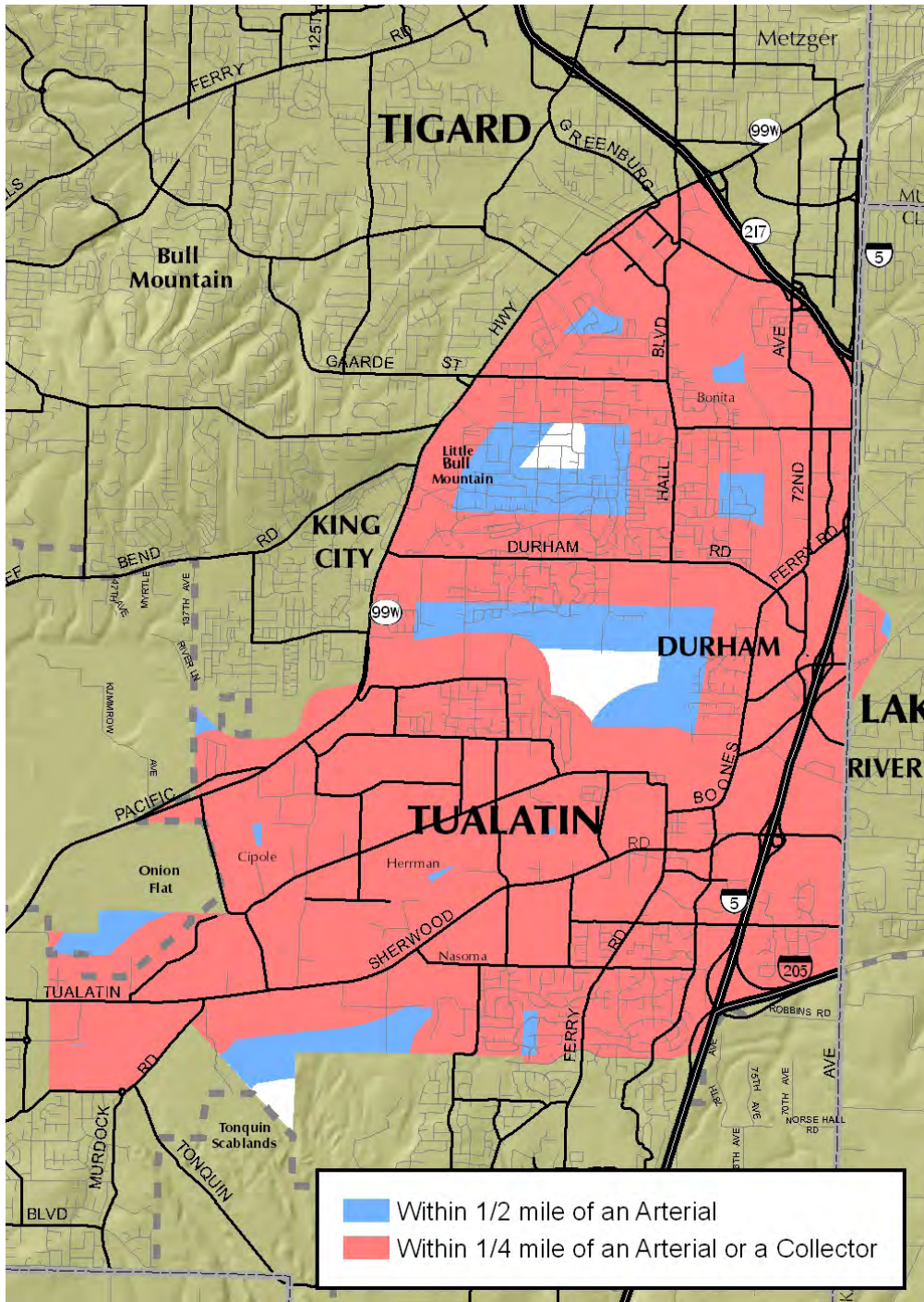


Households	
2010	16,005
2035	20,438
Growth	4,433
Growth %	28%

Employment	
2010	39,442
2035	59,215
Growth	19,773
Growth %	50%

Summary

- About 83% of households are within ½ mile of regional destinations such as schools, shopping centers and major employers – well above the county urban area average.
- Employment is expected to increase by approximately 50% by 2035 while households are expected to increase by 28%.



Number of road miles per square mile

Corridor Area 11.7

County Avg. 15.4

Intersections per square mile

Corridor Area 76.1

County Avg. 122.7

Network locations without dead ends

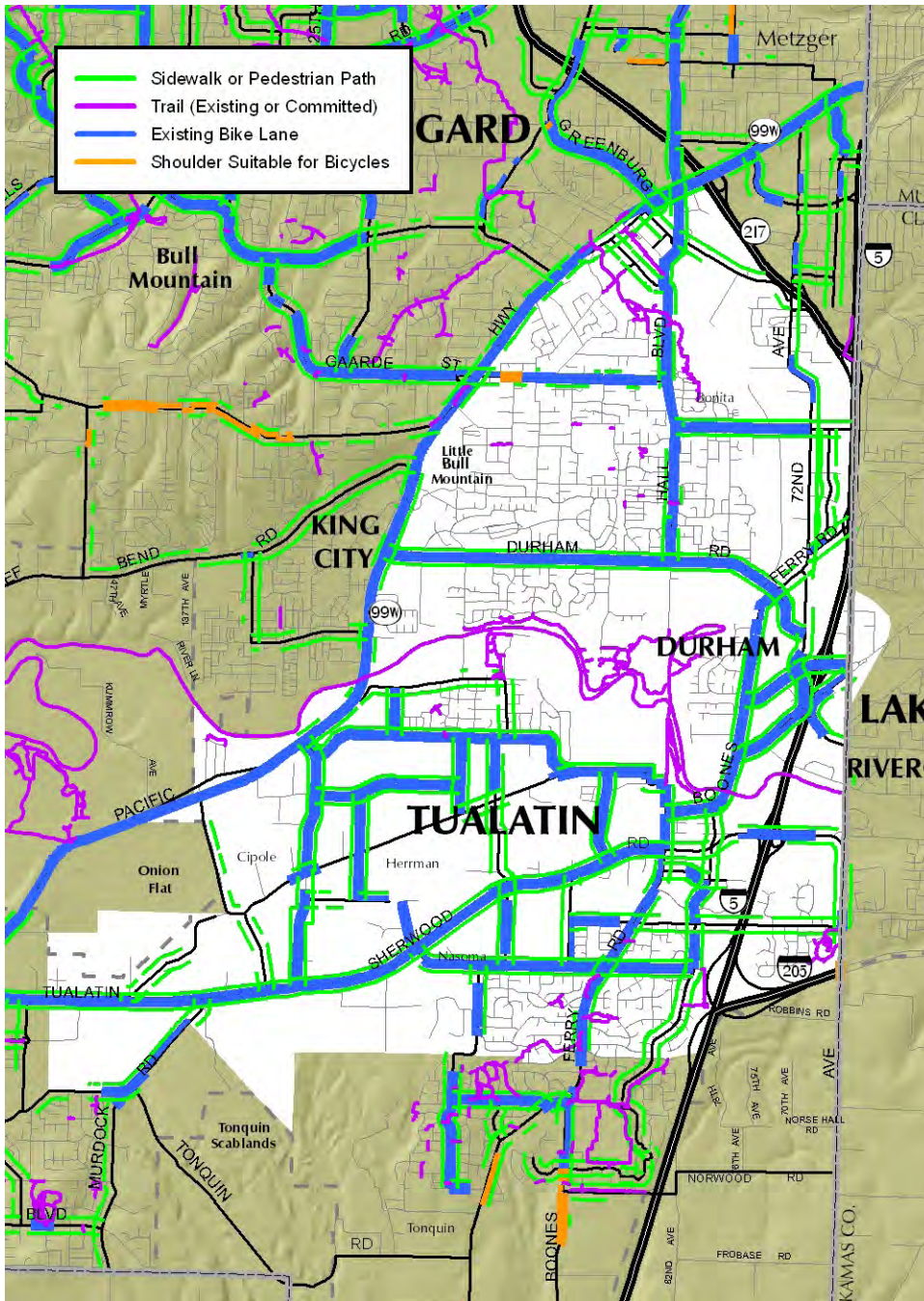
Corridor Area 70%

County Avg. 73%

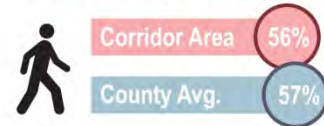
■ Within 1/2 mile of an Arterial
■ Within 1/4 mile of an Arterial or a Collector

Findings

- Street network and intersection density are significantly below county urban area average due in large part to large block sizes in the Tualatin-Sherwood industrial area.
- Connectivity is hindered by the Tualatin River, with nearly two miles between the Pacific Highway (OR 99W) bridge and the Ki-a-Kuts ped/bike bridge, and an additional half mile to the Boones Ferry Road bridge.



Sidewalk coverage on both sides of roadways?



No sidewalks on both sides?



Bike lanes or shoulders on both sides of roadways?



No bike lanes or shoulders on roadways?



Multiuse trails per 10,000 population



Crossing Spacing on Major Streets

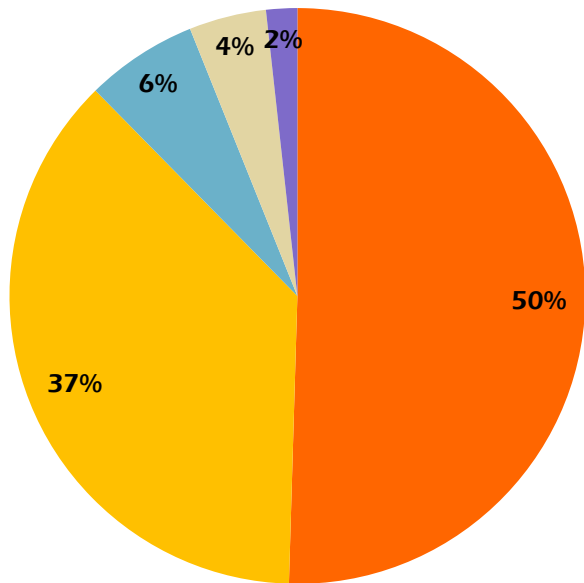
Average: 0.26 miles

Longest: 0.6 miles on I-5

Findings

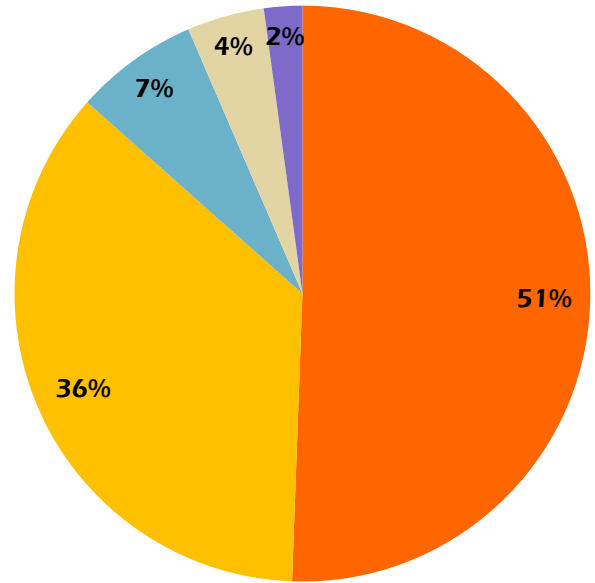
- Bicycle facility coverage is better than the county urban area average, as many arterials and collectors in the corridor were built or reconstructed in the past 20 years when bike lanes were required.
- Sidewalk coverage is similar to the county urban area average, although many sidewalk gaps exist on Pacific Highway (OR 99W) where there are also long gaps between pedestrian crossings or signals.
- The most significant crossing gap on major roadways in the study area is I-5.
- Trail coverage by population is slightly above the county urban area average. Existing trails include the southern end of the Fanno Creek Greenway Trail, the Ki-a-Kuts ped/bike bridge over the Tualatin River, and a trail alongside the Tualatin River.

2010 Mode Share



■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

2035 Mode Share

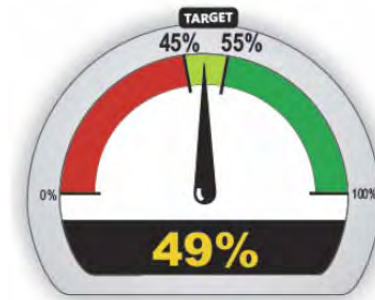


■ Drive Alone ■ Drive Share ■ Transit ■ Walk ■ Bike

Active and Transit Modes (Combined)
Change from 2010 to 2035

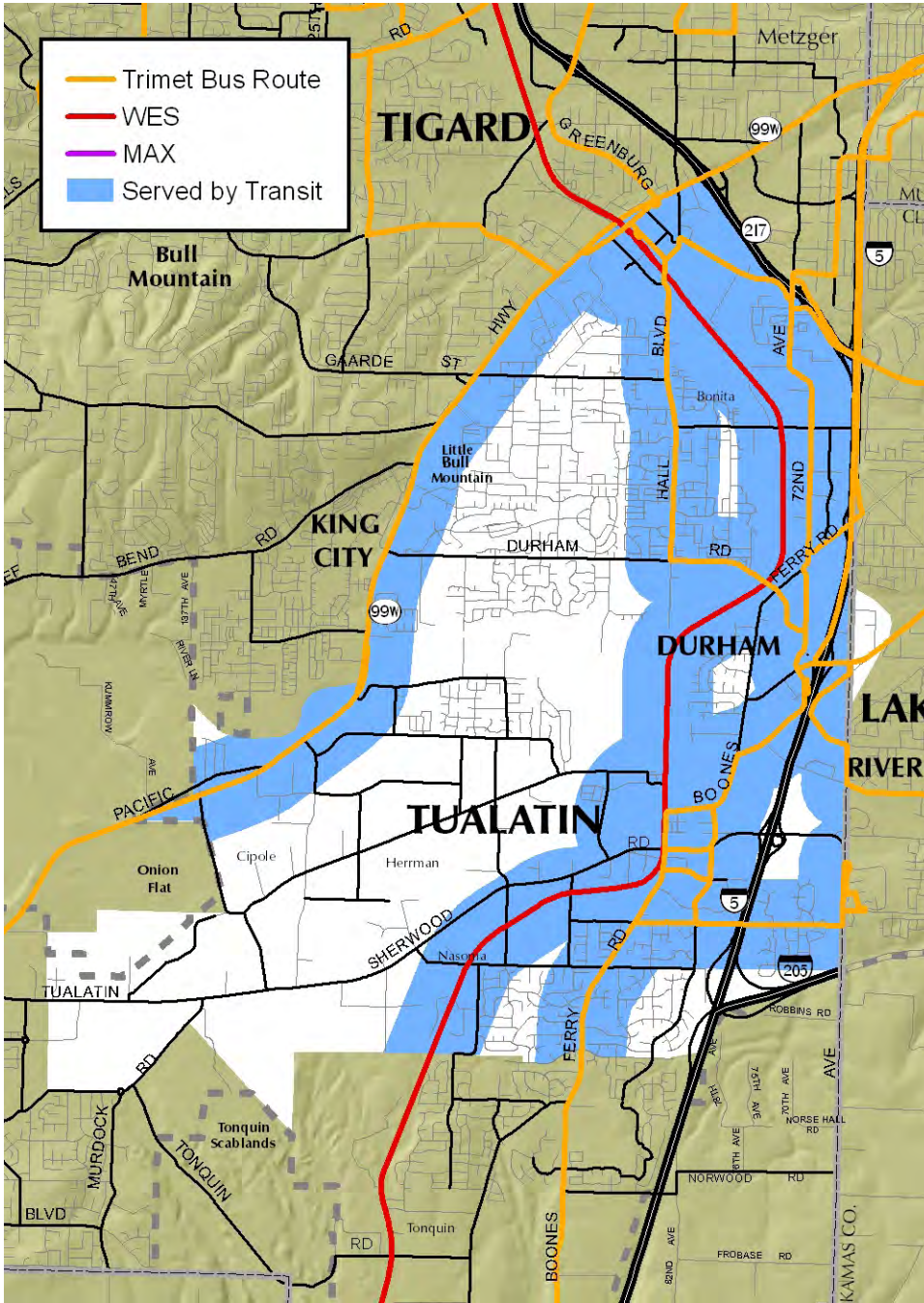


Non-SOV Mode Share
Regional Target



Findings

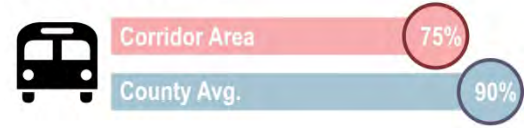
- Forecasted 2035 mode shares are relatively consistent with 2010.
- An approximate 1% increase is identified for combined walk, bike, and transit mode shares.
- Non-SOV mode share is projected to fall within regional target range.



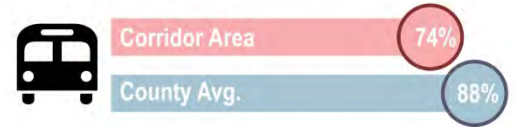
Households with transit access



Low income and minority household areas with access to transit



Employees with transit access



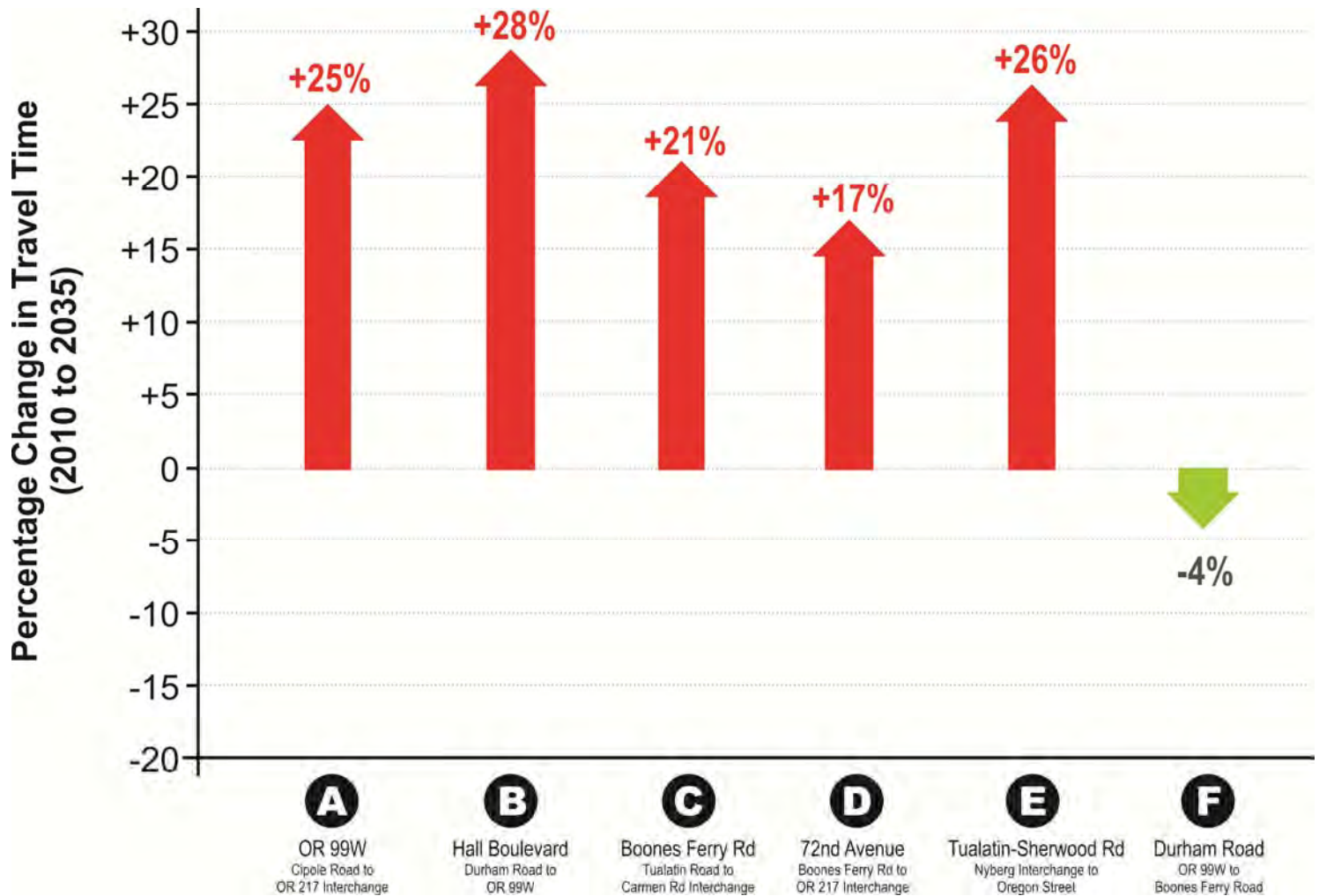
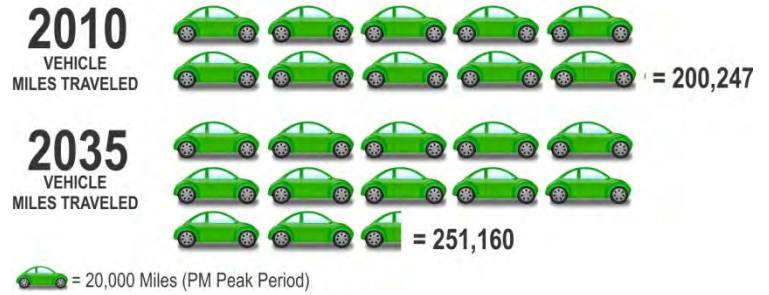
Findings

- Transit access measures are below the county urban area average.
- Transit access to employment is particularly poor, with no fixed-route service to the Tualatin-Sherwood industrial area.
- TriMet is developing a Southwest Service Enhancement Plan to supplement the larger regional process of planning a high capacity transit line between Portland and Tualatin.

MOTOR VEHICLE DEMAND & TRAVEL TIME

TUALATIN RIVER CROSSINGS

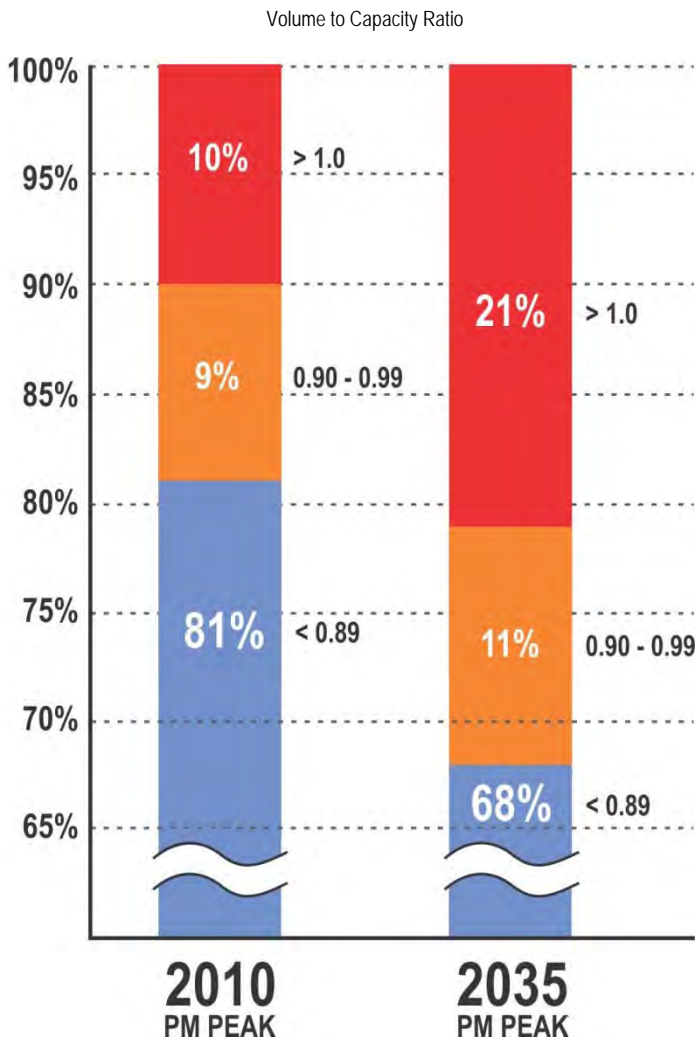
Study Area #6



Findings

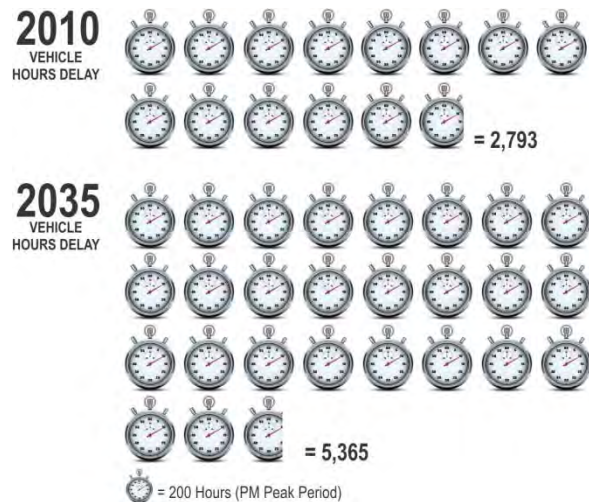
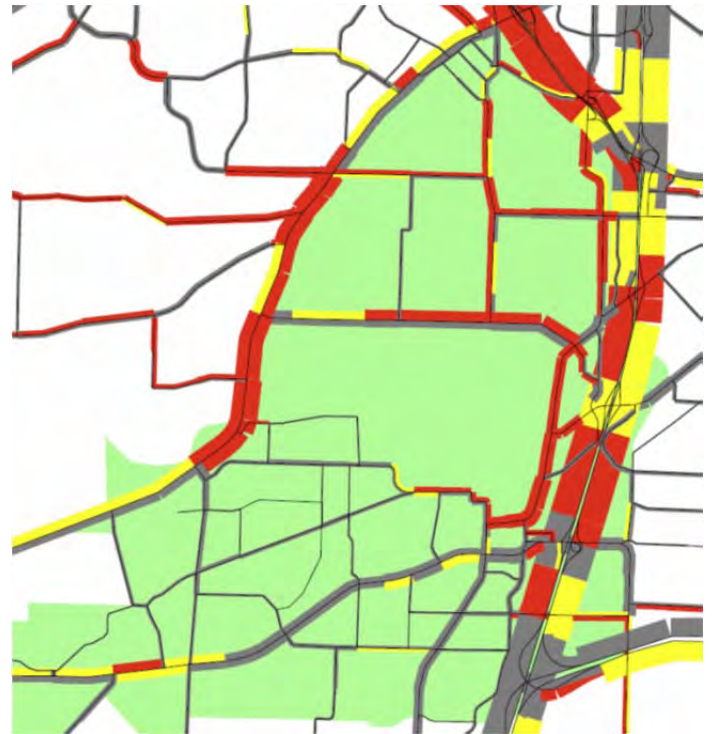
- Total motor vehicle travel miles traveled in the study area are projected to increase 25% in 2035 relative to 2010. However, VMT per capita is expected to decrease slightly by 2%.
- Significant increases in roadway travel times anticipated for 2035 PM peak on:
 - OR 99W, between OR 217 and Cipole Road (29% NB, 22% SB)
 - Hall Boulevard, between OR 99W and Durham Road (23% NB, 32% SB)
 - Boones Ferry Road (NB), Tualatin Road to Carmen Road Interchange (22% increase)
 - Tualatin-Sherwood Road, between Nyberg Interchange and Oregon Street (26% EB, 26% WB)

Congested Roadway Miles



Congested Roadways – 2035 PM Peak

Red = Demand Volume > Roadway Capacity
 Yellow = Demand Volume > 90% of Roadway Capacity
 Gray = Demand Volume < 90% of Roadway Capacity



Findings

- Significant increases in roadway congestion and delay are anticipated in 2035 relative to 2010.
- Mobility standard deficiencies are identified during 2035 PM peak for many roadways in the study area including segments of I-5, OR 99W, Hall Boulevard, 72nd Boulevard, Boones Ferry Road, Durham Road, McDonald Road, and Bonita Road.



720 SW Washington St.
Suite 500
Portland, OR 97205
503.243.3500
www.dksassociates.com

MEMORANDUM

DATE: March 14, 2014
TO: Washington County TSP Update Project Management Team
FROM: Carl Springer, Mat Dolata
SUBJECT: Transportation Plan Development - Motor Vehicle Performance Evaluation P11022-003

The following memorandum summarizes key findings of the motor vehicle system performance evaluation of the proposed project list for the Washington County Transportation System Plan (TSP) update. Performance criteria were applied at the system-level (the county-wide urbanized area) to evaluate the effectiveness of the proposed projects in improving transportation system performance. These performance measures demonstrate compliance or progress toward targets identified in Metro's Regional Transportation Plan (RTP) and Regional Transportation Functional Plan (RTFP).

REGULATORY CONTEXT

Overview

Metro's Regional Transportation Functional Plan¹ (RTFP) directs Washington County to implement the RTP through their TSP and other land use regulations. The RTFP codifies the requirements that TSP's 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 design guidance for various facilities, system planning, regional parking management and amendments to comprehensive plans. The following directives specifically pertain to updating TSP's:

- Include regional and state transportation needs identified in the 2035 RTP along with local needs
- Local needs must be consistent with RTP in terms of land use, system maps and non-SOV modal targets
- When developing solutions, local jurisdictions shall consider a variety of strategies, in the following order:
 - TSMO (Transportation System Management Operations)
 - Transit, bicycle and pedestrian improvements
 - Traffic calming

¹ Metro Regional Transportation Functional Plan: <http://www.oregonmetro.gov/index.cfm/go/by.web/id=274>



- Land use strategies in OAR 660-012-0035(2)²
- Connectivity, including pedestrian and bicycle facilities
- Motor vehicle capacity improvements
- Local jurisdictions can propose regional projects as part of the RTP process
- Local jurisdictions can propose alternate performance and mobility standards, however, changes must be consistent with regional and statewide planning goals
- Local parking regulations shall be consistent with the RTFP

The Washington County TSP identifies a variety of strategies and projects focused on developing the active transportation system, improving system connectivity, improving access to transit, and enhancing transportation system management and operations. The project list builds upon previous planning efforts including the RTP, previous TSP, the Washington County Intelligent Transportation System Plan, and the TSP update analysis of individual study areas. The following analysis is focused specifically on motor vehicle system performance and identifies how the roadway projects identified in the TSP are consistent with the RTFP targets.

Compliance with Regional Targets

The following section identifies each of the Metro regional targets identified in Table 2.3 of the RTP and how performance criteria will address them. Section 3.08.230 of the RTFP specifies that the county must include performance measures for safety, vehicle miles traveled per capita, freight reliability, congestion, bicycling, walking, and transit mode shares. Targets not identified in the RTFP are shown with an asterisk.

Table 1: System Performance Targets

2035 System Performance Target	Approach Used for County TSP Update
Safety Reduce the number of pedestrian, bicyclist, and motor vehicle occupant fatalities plus serious injuries each by 50% compared to 2005.	No methods for accurately predicting or forecasting safety outcomes at the system level have been accepted or adopted in the region. The RTP goal is addressed through plan monitoring and establishing a baseline by which to make future comparisons to.
Congestion Reduce VHD per person by 10 percent compared to 2005.	Congestion is addressed through estimates for VHD per capita and roadway miles where demand-to-capacity ratios exceed mobility targets for future scenarios. The measures were calculated through analysis of the regional travel demand model for the PM peak

² This section of the Transportation Planning Rule requires Metro area jurisdictions to evaluate land use designations, densities, and design standards to meet local and regional transportation needs.



2035 System Performance Target	Approach Used for County TSP Update
<p>Freight reliability</p> <p>Reduce VHD per truck trip by 10 percent compared to 2005.</p>	<p>The same performance measures used for congestion (based on VHD and demand-to-capacity ratios) are applied for freight reliability by including only the subset of roadways that are designated as Truck Routes</p>
<p>Climate change *</p> <p>Reduce transportation-related carbon dioxide emissions by 40 percent below 1990 levels.</p>	<p>Although emissions estimates were not made for the TSP, VMT per capita may be considered as an approximate indicator for the climate change goal.</p>
<p>Active transportation</p> <p>Triple walking, biking and transit mode share compared to 2005.</p>	<p>Facilities improvements for these modes may be measured through sidewalk and bikeway coverage on arterial/collector streets as well as the total trail miles in the transportation system. Note: Not covered in this memorandum.</p>
<p>Basic Infrastructure*</p> <p>Increase by 50 percent the number of essential destinations accessible within 30 minutes by trails, bicycling and public transit or within 15 minutes by sidewalks for all residents compared to 2005.</p>	<p>The measures described under active transportation (mode share and arterial/collector coverage) will be considered as approximate indicators of progress toward basic infrastructure access.</p>
<p>Clean Air*</p> <p>Ensure zero percent population exposure to at-risk levels of air pollution.</p>	<p>Although population exposure to pollution estimates will not be made for the TSP, VMT per capita may be considered as an approximate indicator for the clean air goal.</p>
<p>Travel</p> <p>Reduce VMT per person by 10 percent compared to 2005.</p>	<p>VMT is measured for future scenarios through analysis of the regional travel demand model.</p>
<p>Affordability*</p> <p>Reduce the average household combined cost of housing and transportation by 25 percent compared to 2000.</p>	<p>Although average household costs was not estimated in the TSP, the VMT measure and measures of sidewalk and bikeway coverage on arterial/collector streets as well as total trail miles in the transportation system will serve as indicators for affordability.</p>
<p>Access to daily needs*</p> <p>Increase by 50 percent the number of essential destinations accessible within 30 minutes by bicycling and public transit for low-income, minority, senior and disabled populations compared to 2005.</p>	<p>The measures described under active transportation will be considered as approximate indicators of progress toward access to daily needs.</p>
<p>Volume Capacity Ratio</p> <p>The interim Washington County Motor Vehicle Performance Measures represent the minimum performance level desired for motor vehicles.</p>	<p>Measures the ratio of traffic volume to planned vehicle capacity of a given facility. The measure is used to diagnose the extent of congestion.</p>



2035 System Performance Target	Approach Used for County TSP Update
<p>Non-drive alone modal targets</p> <p>The mode share targets are intended to be aspirations to work towards.</p>	<p>Measures the share of trips being made in single occupant motor vehicles.</p>

* No performance measure required by the RTFP.

In addition to these targets, the location of roadways that do not meet mobility targets will be mapped for each scenario, to address the targets identified in RTP Table 2.4.

Performance measures in rural areas of Washington County are limited by the availability of the travel demand model coverage area, which primarily covers urbanized areas of the county.

ROADWAY PROJECTS

The Capital Project List identifies the TSP roadway projects included in this motor vehicle system performance evaluation. The TSP project list is consistent with the projects identified in the RTP.

EVALUATING THE PROJECTS

Will the roadway projects identified in the TSP improve the performance of the Washington County transportation system? To answer this question, the plan projects were evaluated with performance measures to identify long-term trends through 2035. The results were identified for the future baseline (RTP) scenario as well as for the TSP scenario that includes the TSP roadway projects. The results are presented in the following sections.

System Performance Criteria

Motor vehicle system performance criteria used are for evaluation in the Washington County TSP update:

- Roadway miles with demand to capacity ratio deficiencies (all roads and truck routes)
- Vehicle hours of delay (VHD) per capita
- Vehicle miles traveled (VMT) per capita
- Mode Share

Study area and corridor performance criteria are used as supplemental measures to evaluate performance beyond the county-wide system level.



EVALUATION RESULTS

Progress is expected to be made towards meeting the Congestion Targets

To reduce congestion, Washington County has identified projects to improve driving, walking, biking and transit travel.

Vehicle hours of Delay³:

Because Washington County is an attractive place to live and operate a business, the population and employment are expected to increase significantly by 2035. This growth will result in increased demand on the roadway network and pose a significant challenge for meeting this performance measure. Although delay is expected to increase significantly by 2035, the TSP project list would result in approximately 6% less delay than the 2035 RTP project list.

Figure 1: Vehicle Hours of Delay

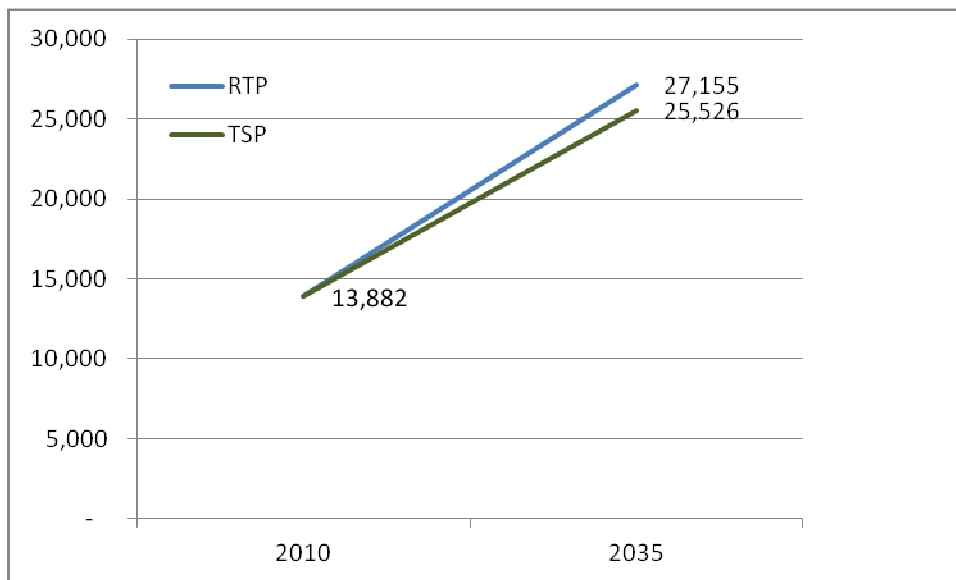


Table 2: Vehicle Hours of Delay

Measure	2010	2035 RTP	2035 TSP	TSP Impact
VHD	13,882	27,155	25,526	-6% from RTP +83% from 2010

³ Delay is defined as the difference between uncongested or “free-flow” travel time and congested travel time on roadways in Washington County, as measured by the Metro Regional Travel Demand Forecast Model for the PM peak period (4-6PM).



Figure 2: Vehicle Delay per Capita (average minutes of delay per person during the PM peak)⁴

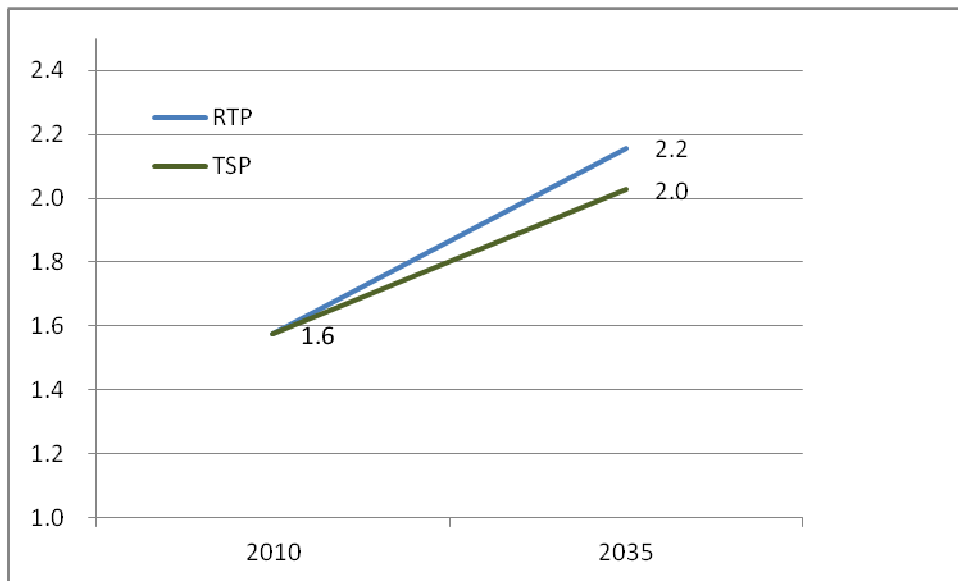


Table 3: Vehicle Delay per Capita

Measure	2010	2035 RTP	2035 TSP	TSP Impact
Delay per Capita	1.6	2.2	2.0	-9% from RTP +25% from 2010

Mobility Targets for Streets:

Metro’s regional travel demand model was used to estimate how streets in Washington County will handle the increased travel demand through 2035 assuming the TSP investments.⁵ Although congestion is expected to increase in 2035, the TSP project list would result in approximately 13% fewer miles of roadway at capacity than the 2035 RTP project list.

⁴ Capita is measured by all residents of Washington County, not only travelers.

⁵ The raw travel demand model for the evening peak periods were used to evaluate system wide congestion for this objective, but detailed link capacity analysis was not included in this measure.



Figure 3: Roadway Miles at Capacity during the PM Peak

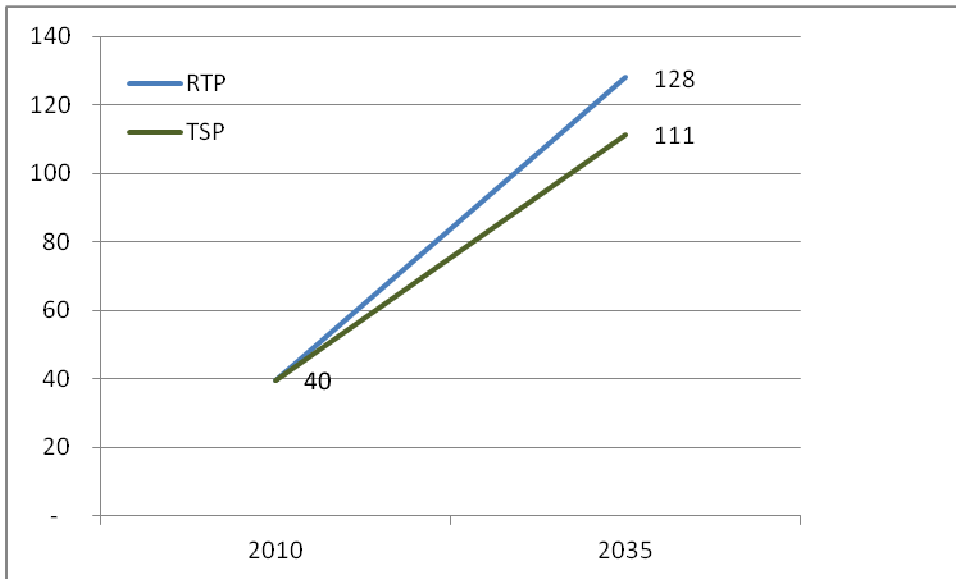
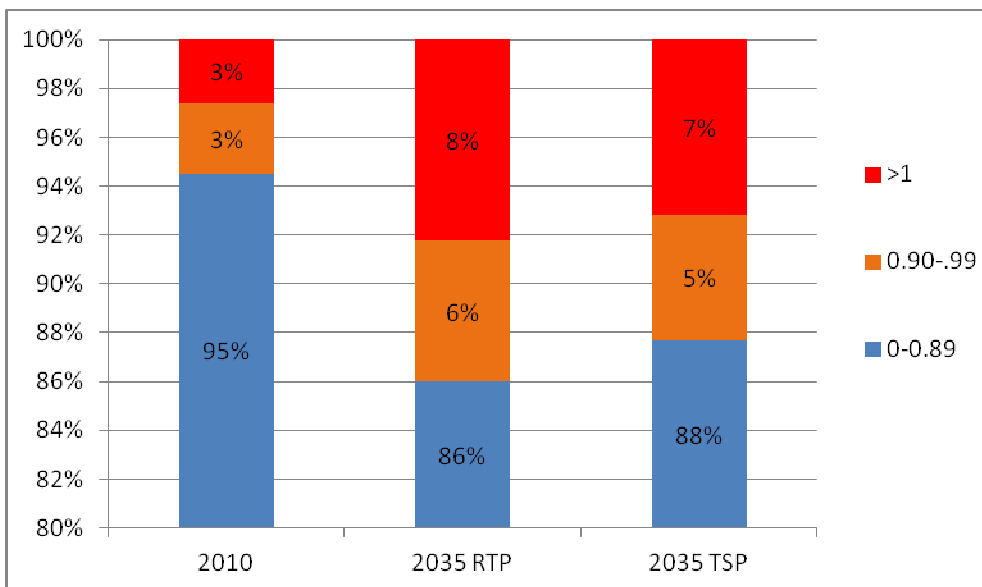


Table 4: Roadway Miles at Capacity during the PM Peak

Measure	2010	2035 RTP	2035 TSP	TSP Impact
Congested Roads	40	128	111	-13% from RTP +175% from 2010

Figure 4: Percent of Roadways by V/C Category (PM Peak Volume to Capacity)





Progress is expected to be made towards reducing Freight Delay

The trends for delay and congestion on County-designated Truck Routes closely match the overall countywide trend. Many of the more congested freeways and arterial roadways are designated for truck travel. The TSP project list would result in approximately 6% less delay on Truck Routes compared to the 2035 RTP project list and 7% fewer congested miles of truck routes.

Figure 5: Vehicle Hours of Delay on Truck Routes

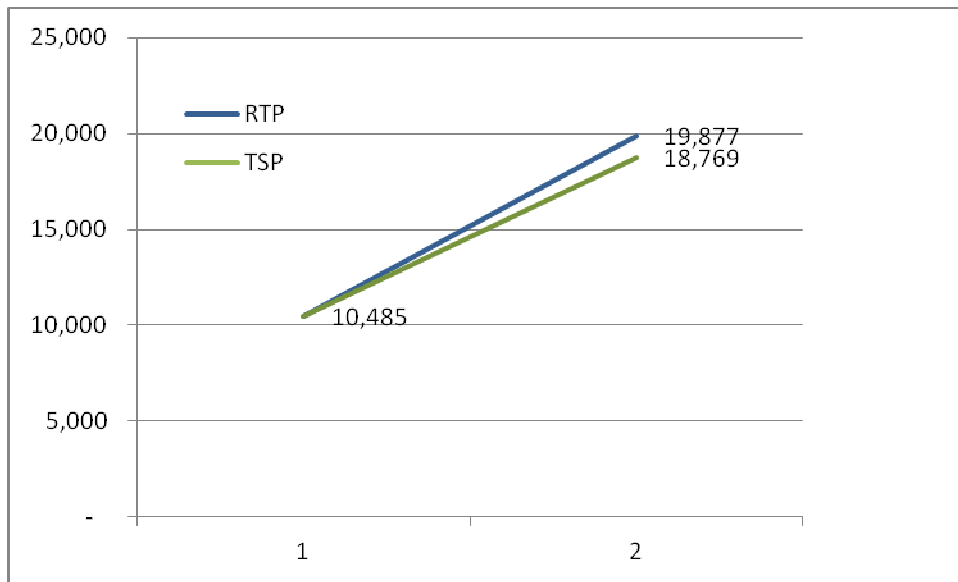


Table 5: Vehicle Hours of Delay on Truck Routes

Measure	2010	2035 RTP	2035 TSP	TSP Impact
VHD on Truck Routes	10,485	19,877	18,769	-5.6% from RTP +79% from 2010



Figure 6: Percent of Truck Routes at Capacity during the PM Peak

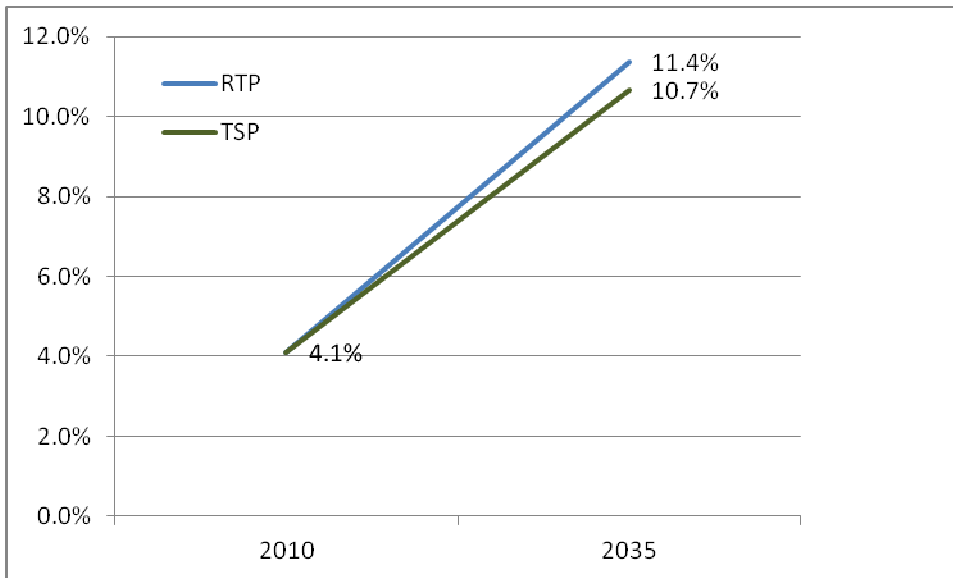


Table 6: Percent of Truck Routes at Capacity during the PM Peak

Measure	2010	2035 RTP	2035 TSP	TSP Impact
Percent Congested Truck Routes	4.1%	11.4%	10.7%	-7% from RTP +260% from 2010

Figure 7: Truck Route Miles at Capacity during the PM Peak

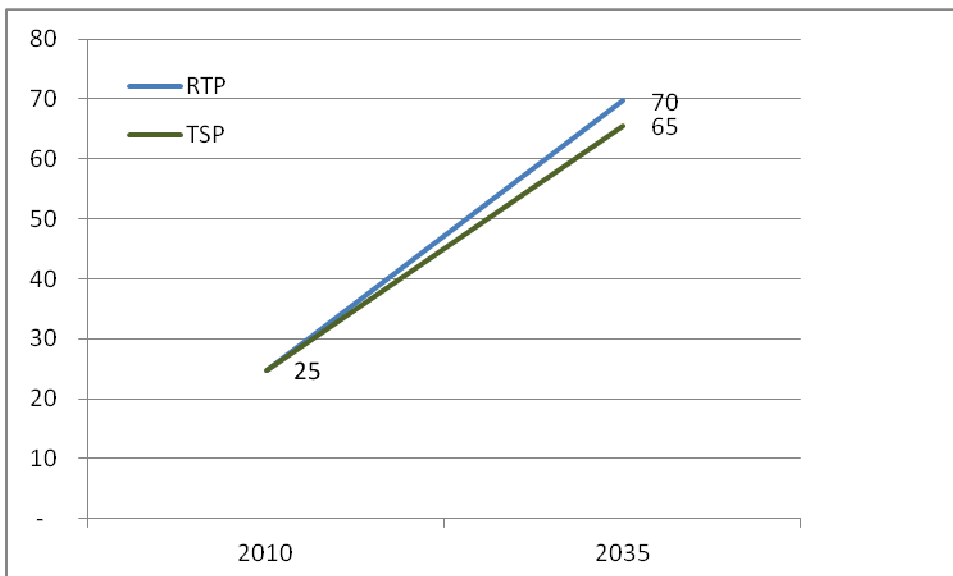


Table 7: Truck Route Miles at Capacity during the PM Peak

Measure	2010	2035 RTP	2035 TSP	TSP Impact
Congested Truck Routes	25	70	65	-7% from RTP +260% from 2010



An Increase in Active Transportation and Transit travel is expected

Targets to reduce regional travel by motor vehicles have been identified by Metro for non-single occupancy vehicles and for walking, biking, and transit mode shares.

Non-Single Occupancy Vehicle (SOV) Travel: Metro’s regional travel demand model was used to evaluate progress towards meeting transportation demand management (TDM) goals, specifically reducing reliance on the single occupancy vehicle.⁶ Washington County’s non-SOV mode shares (within urbanized areas) are expected to be above the target of 40 to 45 percent, with an estimated non-SOV mode share of 53 percent in 2010 and in 2035.

Table 8: Travel by Mode

Mode	2010	2035	Change
Drive Alone	47%	47%	-0.1%
Drive Shared	37%	36%	-1.4%
Transit	9%	10%	0.7%
Walk	4%	5%	0.4%
Bike	2%	2%	0.4%

The TSP defines a transportation system that is expected to further reduce the SOV mode share through investments that encourage multi-modal travel, including increased walking and bicycling facilities and transit stop access/amenity improvements.

Walking, Biking and Transit Mode Share:

The percent of travel by motor vehicles (single-occupancy or shared-ride) in Washington County is expected to decrease by 1.6% in 2035. This is the result of the combined share of transit, walk, and bike trips expected to increasing from 15.4% in 2010 to 17.0% in 2035.

Washington County has identified a substantial list of investments in walking, biking, transit or other active transportation projects in its TSP. The County has identified investments to complete walking and biking gaps along the major street system, and identified a network of trails off the major street system to further encourage walking and biking to key destinations throughout the County. These projects are expected to make progress toward tripling the walking, biking and transit mode share between 2010 and 2035.

⁶ The Metro RTP Financially Constrained Plan was utilized for the non-SOV mode share analysis; therefore, not all of the projects included in the TSP were captured in the analysis.



The Plan is expected to outperform the Climate Change Target

With healthy local and regional population and employment growth, PM peak vehicle miles traveled per capita in Washington County is expected to be reduced by approximately 5% in 2035. The TSP project list would slightly reduce VMT compared to the RTP projects (by less than 1% countywide).

Figure 8: VMT (PM Peak Vehicle Miles Traveled)

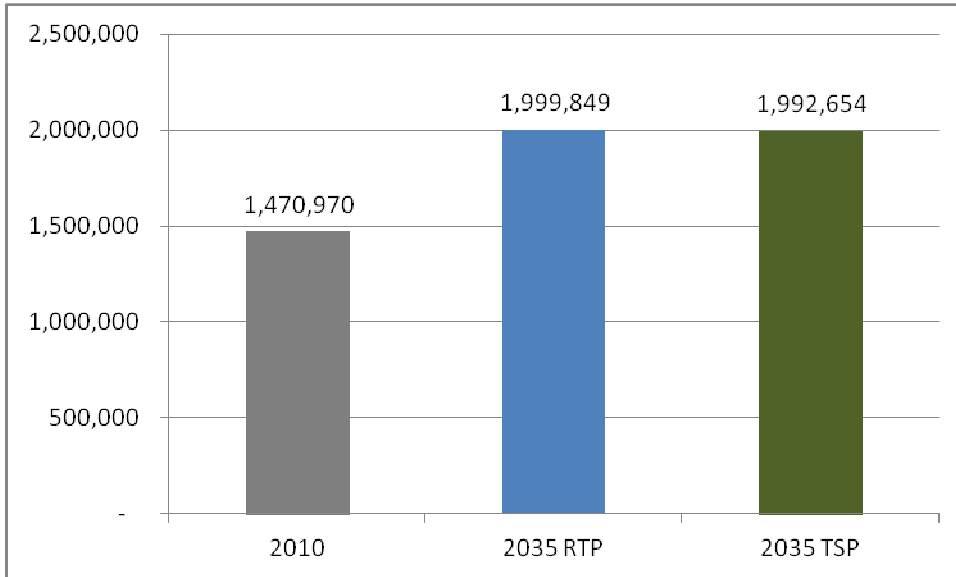
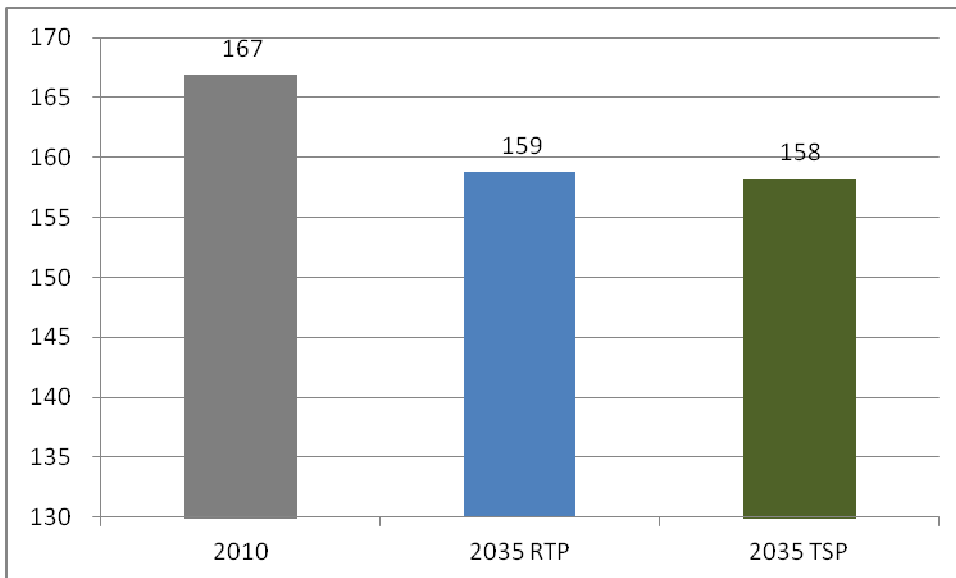


Figure 9: VMT per Capita (PM Peak Vehicle Miles Traveled)





What are the Impacts to Study Areas?

The motor vehicle performance measures show that the total vehicle delay, roadway congestion, and vehicle distance traveled will increase from 2010 to 2035 for each study area. The TSP projects will generally reduce delay, congestion, and distance traveled for most study areas compared to the 2035 RTP.

The following section identifies the estimated PM peak VHD (Vehicle Hours of Delay), VMT (Vehicle Miles of Travel), and Congested Roadways (percent of roadways where vehicle demand reaches capacity) for each study area. The performance measures are compared for 2010 and 2035 with the 2035 RTP projects assumed as well as 2035 with the TSP projects assumed.

Study Area #1: Hillsboro-Bethany

The TSP projects would reduce delay and congestion in the study area. Total vehicle distance traveled would not significantly change as a result of the TSP projects.

Table 9: Study Area #1

Measure	2010	2035 RTP	2035 TSP	TSP Impact
VHD	822	1,581	1,464	-7% from RTP +78% from 2010
VMT	122,594	175,301	174,973	0% from RTP +43% from 2010
Congested Roads	1%	2%	1%	-1% from RTP 0% from 2010

Study Area #2: Beaverton-Cedar Mill

The TSP projects would reduce delay and congestion in the study area. Total vehicle distance traveled would not significantly change as a result of the TSP projects.

Table 10: Study Area #2

Measure	2010	2035 RTP	2035 TSP	TSP Impact
VHD	2,546	4,236	4,093	-3% from RTP +61% from 2010
VMT	199,033	239,056	239,210	0% from RTP +20% from 2010
Congested Roads	4%	7%	6%	-1% from RTP +2% from 2010



Study Area #3: Cornell/Walker/Jenkins

The TSP projects would reduce delay, congestion in the study area. Total vehicle distance traveled would be slightly reduced as a result of the TSP projects.

Table 11: Study Area #3

Measure	2010	2035 RTP	2035 TSP	TSP Impact
VHD	2,292	4,113	3,892	-5% from RTP +70% from 2010
VMT	207,269	264,100	262,564	-1% from RTP +27% from 2010
Congested Roads	6%	8%	7%	-1% from RTP +1% from 2010

Study Area #4: Aloha-Cooper Mountain

The TSP projects would reduce delay and congestion in the study area. Total vehicle distance traveled would slightly increase change as a result of the TSP projects. The widening projects identified for 170th Avenue, 175th Avenue, and 209th Avenue would result in significant reductions to delay and congestion in the study area, but may induce additional travel within the boundaries of the study area.

Table 12: Study Area #4

Measure	2010	2035 RTP	2035 TSP	TSP Impact
VHD	1,429	3,099	2,807	-9% from RTP +96% from 2010
VMT	149,301	216,930	219,083	+1% from RTP +47% from 2010
Congested Roads	4%	14%	9%	-5% from RTP +5% from 2010



Study Area #5: Brockman/Scholls Ferry/Walnut

The TSP projects would reduce delay and congestion in the study area. Total vehicle distance traveled would not significantly change as a result of the TSP projects.

Table 13: Study Area #5

Measure	2010	2035 RTP	2035 TSP	TSP Impact
VHD	1,715	3,065	2,812	-8% from RTP +64% from 2010
VMT	117,245	156,204	155,906	0% from RTP +33% from 2010
Congested Roads	10%	18%	14%	-4% from RTP +4% from 2010

Study Area #6: Tualatin River Crossings

The TSP projects would reduce delay and congestion in the study area. Total vehicle distance traveled in the study area would also be improved as a result of the TSP projects.

Table 14: Study Area #6

Measure	2010	2035 RTP	2035 TSP	TSP Impact
VHD	2,793	5,514	5,143	-7% from RTP +84% from 2010
VMT	200,247	250,993	247,015	-2% from RTP +23% from 2010
Congested Roads	10%	21%	20%	-1% from RTP +10% from 2010

Countywide Motor Vehicle Deficiency Evaluation

The Washington County Roadway Deficiency List identifies a number of roadway segments where motor vehicle performance may not meet adopted standards. The roadway deficiency analysis has been based on regional model results for motor vehicles in 2035. Anticipated improvements to the network (identified in Appendix 2, Capital Project List) were included in this analysis. Given the TSP improvements, these segments do not perform within adopted motor vehicle performance standards. Intersection operational analysis and queue length assessment have not been conducted and may yield different results. For each roadway segment additional analysis is needed to determine the type, extent and/or severity of the deficiency. These potential Deficiency Locations may need additional improvements that cannot be assumed to be funded within anticipated revenue parameters. Alternatively a different performance standard might be used to assess the Deficiency Location, which could yield different results.

The roadway deficiency evaluation is required by the Oregon Highway Plan (OHP) for ODOT facilities within the planning area. The analysis has been expanded to include all Arterial and Collector facilities within Washington County. The Mobility Target indicated is the adopted interim motor vehicle mobility performance standard identified in Table 3 of A-Engrossed Ordinance No. 768. The Other Mobility Target is either the interim Metro regional mobility target or the ODOT Mobility Target from OHP policy 1F.

Washington County Roadway Deficiency List

Roadway Section Extent							
Roadway	Cross Street 1	Cross Street 2	Direction	Other Mobility		Mobility Target Details	Deficiency Severity
				Mobility Target	Target		
I-5	SW Nyberg St Interchange	Carmen Dr Interchange	NB	0.99	0.99	-	Low
I-5	OR-217 Interchange	I-205 Interchange	SB	0.99	0.99	-	Low
I-5 Ramp (SB Off)	I-5 SB (Off)	Elligsen Rd	SB	0.99	0.99	-	Low
I-5 Ramp (SB Off)	I-5 SB (Off)	I-205 NB (On)	SB	0.99	0.99	-	Low
I-5 Ramp (SB On)	SW Dartmouth St	I-5 SB (On)	SB	0.99	0.99	-	Low
Kruse Way	OR-217	I-5 Interchange	EB	0.99	0.99	-	Low
Laurel Hillsboro (OR 219)	SW Laurel Rd	SW Raynyard Rd/SW Midway Rd	SB	0.75	N/A	ODOT Designation (Outside of Metro)	Medium
Laurel Hillsboro (OR 219)	SW Raynyard Rd/SW Midway Rd	SW Scholls Ferry Rd	SB	0.75	N/A	ODOT Designation (Outside of Metro)	Medium
NW 113th Ave	NW Cornell Rd	NW Lost Park Dr/NW Anderson St	NB	0.99	0.99	-	Low
NW 143rd Ave	NW Cornell Rd	NW West Union St	NB	0.99	0.99	-	Low
NW Cornelius Pass Rd	NW West Union Rd	NW Germantown Rd	NB	0.9	N/A	Rural	Medium
NW Cornelius Schefflin Rd	NW Wren Rd	NW Verboort Rd	SB	0.9	N/A	Rural	Low
NW Cornell Rd	NW Murray Blvd	NW Barnes Rd	EB	0.99	1.1	Metro Designation	Medium
NW Cornell Rd	OR-26 Interchange	NW Cornell Dr	EB	0.99	0.99	-	Low
NW Cornell Rd	NW Murray Blvd	NW Barnes Rd	WB	0.99	1.1	Metro Designation	Low
NW Germantown Road	NW Cornelius Pass Rd	E County Boundary	EB	0.9	N/A	Rural	Medium
NW Germantown Road	NW Cornelius Pass Rd	NW 185th Ave	WB	0.9	N/A	Rural	Low
NW Glencoe Rd	OR-26 Interchange	NW Scotch Church Rd	NB	0.9	N/A	Rural	Low
NW Glencoe Rd	OR-26 Interchange	OR-26 Interchange	SB	0.9	N/A	Rural	High
NW Jackson School Rd	NW Meek Rd	OR-26 Interchange	NB	0.9	N/A	Rural	Medium
NW Jackson School Rd	NW Meek Rd	NW Evergreen Rd	SB	0.9	N/A	Rural	Low
NW Kaiser Rd	NW Springville Rd	NW Brugger Rd	NB	0.99	0.99	-	Medium
NW Murrary Blvd	OR-26 Interchange	SW Butner Rd	SB	0.99	0.99	-	Low
NW Scotch Church Rd	NW Glencoe Rd	NW Jackson School Rd	EB	0.9	N/A	Rural	Low
OR-217	SW 72nd Ave Interchange	SW Scholls Ferry Rd Interchange	NB	0.99	0.99	-	Low
OR-217	SW Allen Blvd Interchange	SW Scholls Ferry Rd Interchange	NB	0.99	0.99	-	Low
OR-217	SW Canyon Rd Interchange	SW Walker Rd Interchange	NB	0.99	0.99	-	Low
OR-217	OR-26 Interchange (Off)	SW Wilshire St Ramp (On)	SB	0.99	0.99	-	Low
OR-217	SW Allen Blvd Interchange	SW Scholls Ferry Rd Interchange	SB	0.99	0.99	-	Low
OR-217	SW Scholls Ferry Road Interchange	SW 72nd Ave Interchange	SB	0.99	0.99	-	Low
OR-217	SW Walker Rd Interchange	SW Beaverton Hillsdale Hwy Interchange	SB	0.99	0.99	-	Medium
OR-217 Ramp (SB Off)	OR-217 SB (Off)	I-5 SB (On)	SB	0.99	0.99	-	Medium
OR-217 Ramp (SB On)	OR-99W	I-217 SB (On)	SB	0.99	0.99	-	Low
OR-26	NW Murray Blvd Interchange (Off)	NW Murray Blvd Interchange (On)	EB	0.99	0.99	-	Medium
OR-26	SW Cedar Hills Interchange (Off)	SW Cedar Hills Interchange (On)	EB	0.99	0.99	-	Low
OR-26	NW Murray Blvd Interchange (Off)	NW Murray Blvd Interchange (On)	WB	0.99	0.99	-	Low
OR-26	OR-217	SW Cedar Hills Interchange	WB	0.99	0.99	-	Low
OR-26	SW Canyon Rd Interchange	OR-217 Interchange	WB	0.99	0.99	-	Low
OR-26 Ramp (EB On)	NW Cornell Rd	OR-26 (On)	EB	0.99	0.99	-	Low
OR-26 Ramp (EB On)	NW Helvetia Rd	OR-26 (On)	EB	0.99	0.99	-	Low
OR-26 Ramp (EB On)	NW Murry Blvd	OR-26 (On)	EB	0.99	0.99	-	Low
OR-26 Ramp (EB On)	SW Cedar Hills Blvd	OR-26 (On)	EB	0.99	0.99	-	Low
OR-26 Ramp (WB On)	OR 217 Ramp/ NW Barnes Rd Ramp Merge	OR-26 (On)	WB	0.99	0.99	-	Low
OR-99W	SW 124th Ave	SW Fischer Rd	NB	0.99	0.99	-	Medium
OR-99W	SW 72nd	I-5 Interchange	NB	0.99	1.1	Metro Designation	Low
OR-99W	SW Beef Bend Rd	SW Gaarde St / SW McDonald St	NB	0.99	0.99	-	Medium
OR-99W	SW Fischer Rd	SW Beef Bend Rd	NB	0.99	1.1	Metro Designation	Medium
OR-99W	SW 124th Ave	SW Fischer Rd	SB	0.99	0.99	-	Low
OR-99W	SW 72nd	I-5 Interchange	SB	0.99	1.1	Metro Designation	Low
OR-99W	SW Beef Bend Rd	SW Gaarde St / SW McDonald St	SB	0.99	0.99	-	Medium
OR-99W	SW Cipole	Sherwood City Limits (North)	SB	0.7	N/A	ODOT Designation (Outside of Metro)	Low

Washington County Roadway Deficiency List

Roadway Section Extent							
Roadway	Cross Street 1	Cross Street 2	Direction	Other Mobility		Mobility Target Details	Deficiency Severity
				Mobility Target	Target		
OR-99W	SW Fischer Rd	SW Durham Rd	SB	0.99	1.1	Metro Designation	Medium
OR-99W	SW Hall Blvd	SW Walnut St	SB	0.99	1.1	Metro Designation	Low
OR-99W	SW Walnut St	SW Gaarde St / SW McDonald St	SB	0.99	0.99	-	Low
S 1st Ave (OR 219)	SW Walnut St	SE Maple St	SB	0.99	1.1	Metro Designation	Low
SE Minter Bridge Rd	SW Tualatin Valley Hwy (OR-8)	SE River Rd	SB	0.99	0.99	-	Low
SW 131st Ave	SW Fischer Rd	SW Beef Bend Rd	NB	0.99	0.99	-	High
SW 131st Ave	SW Beef Bend Rd	SW Fischer Rd	SB	0.99	0.99	-	Low
SW 153rd Dr	SW Jenkins Rd	SW 154th Trc	SB	0.99	1.1	Metro Designation	Low
SW 160th Ave	SW Tualatin Valley Hwy (OR-8)	SW Ludwig St	SB	0.99	0.99	-	Low
SW 175th Ave	SW Scholls Ferry Rd	SW Kemmer Rd	NB	0.99	0.99	-	High
SW 175th Ave	SW Scholls Ferry Rd	SW Kemmer Rd	SB	0.99	0.99	-	High
SW 185th Ave	SW Rigert Rd	SW Bany Rd	NB	0.99	0.99	-	Low
SW 185th Ave	SW Farmington Rd	SW Rigert Rd	SB	0.99	0.99	-	Medium
SW 190th Ave	SW Kemmer Rd	SW Gassner Rd	NB	0.99	0.99	-	Low
SW 229th Ave	UGB (South of Hillsboro)	SW Tualatin Valley Rd (OR-8)	NB	0.99	0.99	-	Medium
SW 229th Ave	SW Tualatin Valley Rd (OR-8)	UGB (South of Hillsboro)	SB	0.99	0.99	-	High
SW 65th Ave	SW Elligsen Rd	SW Norwood Rd	NB	0.99	0.99	-	Medium
SW 65th Ave	SW Norwood Rd	SW Elligsen Rd	SB	0.99	0.99	-	Low
SW 72nd Ave	OR-217 Interchange	SW Uppper Bones Ferry Rd	NB	0.99	0.99	-	Medium
SW 72nd Ave	OR-217 Interchange	SW Uppper Bones Ferry Rd	SB	0.99	0.99	-	High
SW 92nd Ave	SW Allen Blvd	SW Garden Home Rd	NB	0.99	0.99	-	Low
SW 92nd Ave	SW Allen Blvd	SW Garden Home Rd	SB	0.99	0.99	-	High
SW Allen Blvd	SW Scholls Ferry Rd	SW 92nd Ave	EB	0.99	1.1	Metro Designation	High
SW Allen Blvd	SW Scholls Ferry Rd	SW 92nd Ave	WB	0.99	1.1	Metro Designation	Low
SW Barrows Rd	SW Walnut St/SW Murray Blvd	SW 154th St	WB	0.99	1.1	Metro Designation	Low
SW Beef Bend Rd	OR-99W	SW 116th Ave	WB	0.99	0.99	-	Low
SW Beef Bend Rd	SW 150th Ave	SW Elsnor Rd	WB	0.9	N/A	Rural	Low
SW Beef Bend Rd	SW Beef Bend Rd	SW 137th Ave	WB	0.99	0.99	-	Medium
SW Bonita Road	SW 72nd Ave Interchange	SW Hall Blvd	WB	0.99	0.99	-	Low
SW Boones Ferry Rd	I-5 Interchange	SW 65th Ave/SW McEwan Ave	EB	0.99	0.99	-	Medium
SW Boones Ferry Rd	SW Tualatin Rd	Tualatin River Bridge	EB	0.99	1.1	Metro Designation	Medium
SW Boones Ferry Rd	SW Durham Rd	Tualatin River Bridge	NB	0.99	0.99	-	High
SW Boones Ferry Rd	SW Durham Rd	Tualatin River Bridge	SB	0.99	0.99	-	High
SW Boones Ferry Rd	I-5 Interchange	SW 65th Ave/SW McEwan Ave	WB	0.99	0.99	-	Low
SW Boones Ferry Rd	SW Tualatin Rd	Tualatin River Bridge	WB	0.99	1.1	Metro Designation	High
SW Bridgeport Rd	SW Boones Ferry Rd	SW Hazel Fern Rd	WB	0.99	0.99	-	Medium
SW Bridgeport Rd	SW Boones Ferry Rd	SW Hazel Fern Rd	WB	0.99	0.99	-	Low
SW Bull Mountain Rd	OR-99W	SW 141st Ave	WB	0.99	0.99	-	Medium
SW Bull Mountain Rd	SW 150th Ave	SW Roshak Rd	WB	0.99	0.99	-	Low
SW Cedar Hills Blvd	SW Jenkins Rd	SW Walker Rd	NB	0.99	0.99	-	Low
SW Cedar Hills Blvd	SW Canyon Rd (OR 8)	SW Farmington Rd (OR 10)	SB	0.99	1.1	Metro Designation	Low
SW Conestoga Dr	SW Scholls Ferry Road	SW Downing Dr	NB	0.99	0.99	-	Low
SW Denny Rd	OR-217 Interchange	SW Lombard Ave	WB	0.99	0.99	-	Low
SW Durham Rd	SW Boones Ferry Rd	SW 108th Ave	WB	0.99	0.99	-	Low
SW Elwert Rd	SW Edy Rd	SW Scholls-Sherwood Rd	NB	0.9	N/A	Rural	Medium
SW Elwert Rd	SW Scholls-Sherwood Rd	SW Edy Rd	SB	0.9	N/A	Rural	High
SW Farmington Rd	SW Rood Bridge Rd	SW River Rd	EB	0.9	N/A	Rural	Low
SW Fischer Rd	OR-99W	SW 131st Ave	WB	0.99	0.99	-	High
SW Gaarde St	SW 110th Ave	OR-99W	EB	0.99	0.99	-	Low
SW Gaarde St	SW 121st Ave	SW 115th	EB	0.99	0.99	-	Low
SW Gaarde St	SW Hall Blvd	SW 121st Ave	WB	0.99	0.99	-	Medium

Washington County Roadway Deficiency List

Roadway Section Extent							
Roadway	Cross Street 1	Cross Street 2	Direction	Other Mobility		Mobility Target Details	Deficiency Severity
				Mobility Target	Target		
SW Garden Home Rd	SW 83d Ave	SW Multnomah Blvd	EB	0.99	1.1	Metro Designation	Medium
SW Garden Home Rd	SW Garden Home Rd	SW 83d Ave	EB	0.99	0.99	-	High
SW Garden Home Rd	SW 83d Ave	SW Multnomah Blvd	WB	0.99	1.1	Metro Designation	Low
SW Garden Home Rd	SW Garden Home Rd	SW 83d Ave	WB	0.99	0.99	-	Low
SW Grabhorn Rd	SW Farmington Rd	SW Gassner Rd	SB	0.99	0.99	-	Medium
SW Grahams Ferry Road	SW Day Rd	SW Tonquin Rd	NB	0.99	0.99	-	Low
SW Hall Blvd	SW Bonita St	SW McDonald St	NB	0.99	0.99	-	Medium
SW Hall Blvd	SW Burnham St	SW McDonald St	NB	0.99	0.99	-	Low
SW Hall Blvd	SW Greenway Blvd	SW Nimbus Ave	NB	0.99	0.99	-	Low
SW Hall Blvd	SW Spruce St	SW Oak St	NB	0.99	1.1	Metro Designation	Low
SW Hall Blvd	SW Burnham St	SW McDonald St	SB	0.99	0.99	-	Low
SW Hall Blvd	SW Denney Rd	SW Hart Rd	SB	0.99	0.99	-	Low
SW Hall Blvd	SW Durham Rd	SW McDonald St	SB	0.99	0.99	-	Medium
SW Hall Blvd	SW Hemlock St	SW Washington Dr	SB	0.99	1.1	Metro Designation	Low
SW Hall Blvd	SW Cedar Hills Blvd	SW Hocken Ave	WB	0.99	0.99	-	Low
SW Hart Rd	SW Murray Blvd	SW Murray Blvd	WB	0.99	0.99	-	Low
SW Hazelbrook Rd	SW 115th Ave	OR-99W	WB	0.99	0.99	-	Low
SW Hillsboro Hwy (OR 219)	SW Unger Rd	SW Burkhalter Rd	NB	0.75	N/A	ODOT Designation (Outside of Metro)	Low
SW Hillsboro Hwy (OR 219)	SW Bald Peak Rd	SW Laurel Rd	SB	0.75	N/A	ODOT Designation (Outside of Metro)	Low
SW Hillsboro Hwy (OR 219)	SW Unger Rd	SW Unger Rd	SB	0.75	N/A	ODOT Designation (Outside of Metro)	High
SW Hillsboro Hwy (OR 219)	UGB (South of Hillsboro)	SW Unger Rd	SB	0.75	N/A	ODOT Designation (Outside of Metro)	Medium
SW Hunziker St	SW Hall Blvd	SW 72nd Ave	WB	0.99	0.99	-	Low
SW Jenkins Rd	SW 158th Ave / SW Merlo Rd	SW 153rd Dr	EB	0.99	1.1	Metro Designation	Low
SW Jenkins Rd	SW 153rd Dr	SW 158th Ave / SW Merlo Rd	WB	0.99	1.1	Metro Designation	Low
SW Kemmer Rd	SW 175th Ave	SW 190th Ave	WB	0.99	0.99	-	Low
SW Lower Boones Ferry Rd	SW Bridgeport Rd/SW Boones Ferry Rd	SW Hazel Fern Rd	NB	0.99	0.99	-	Low
SW Meinecke Rd/Brook Way	OR-99W	SW Handley St	WB	0.99	0.99	-	Low
SW Mountain Home Rd	SW Seiffert Rd	SW Schmeltzer Rd	SB	0.9	N/A	Rural	Low
SW Murray Blvd	SW Farmington Rd (OR-10)	SW Tualatin Valley Rd (OR-8)	NB	0.99	0.99	-	Low
SW Murray Blvd	SW Farmington Rd (OR-10)	SW Tualatin Valley Rd (OR-8)	SB	0.99	0.99	-	Medium
SW Murray Blvd	SW Farmington Rd (OR-10)	SW 6th St	SB	0.99	0.99	-	Low
SW Murray Blvd	SW Hart Rd	SW Sexton Mountain Dr	SB	0.99	0.99	-	Low
SW Murray Blvd	US 26 Interchange	SW Downing St	SB	0.99	0.99	-	Low
SW Oleson Rd	SW Canby St	SW 80th Ave	NB	0.99	1.1	Metro Designation	High
SW Oleson Rd	SW Hall Blvd	SW 80th Ave	NB	0.99	0.99	-	Medium
SW Oleson Rd	SW Vermont St	SW Canby St	NB	0.99	0.99	-	Low
SW Oleson Rd	SW Canby St	SW 80th Ave	SB	0.99	1.1	Metro Designation	Medium
SW Oleson Rd	SW Hall Blvd	SW 80th Ave	SB	0.99	0.99	-	Low
SW Oleson Rd	SW Vermont St	SW Canby St	SB	0.99	0.99	-	Low
SW Park Way	SW Baltic Ave	OR 26 Ramp (On)	EB	0.99	0.99	-	Low
SW River Rd	SE Davis Rd	UGB (South of Hillsboro)	SB	0.99	0.99	-	Low
SW River Rd	SW Scholls Ferry Rd (OR-210)	UGB (South of Hillsboro)	SB	0.9	N/A	Rural	Medium
SW Rosedale Rd	SW 229th Ave	SW 290th Ave	EB	0.99	0.99	-	Low
SW Rosedale Rd	SW 290th Ave	SW 229th Ave	WB	0.99	0.99	-	Low
SW Roy Rodgers Rd	SW Bull Mountain Rd	SW Scholls Ferry Rd	NB	0.99	0.99	-	Low
SW Roy Rodgers Rd	UGB (North of Sherwood)	OR-99W	NB	0.99	0.99	-	High
SW Roy Rodgers Rd	UGB (North of Sherwood)	UGB (South of Beaverton)	NB	0.9	N/A	Rural	High
SW Roy Rodgers Rd	SW Bull Mountain Rd	SW Scholls Ferry Rd	SB	0.99	0.99	-	Low
SW Roy Rodgers Rd	UGB (North of Sherwood)	OR-99W	SB	0.99	0.99	-	Medium
SW Roy Rodgers Rd	UGB (South of Beaverton)	UGB (North of Sherwood)	SB	0.9	N/A	Rural	High
SW Sagert Rd	SW Martinazzi Ave	SW 65th Ave	EB	0.99	0.99	-	Low

Washington County Roadway Deficiency List

Roadway Section Extent							
Roadway	Cross Street 1	Cross Street 2	Direction	Other Mobility		Mobility Target Details	Deficiency
				Mobility Target	Target		Severity
SW Scholls Ferry Rd	River Rd	SW Clark Hill Rd	EB	0.9	N/A	Rural	Medium
SW Scholls Ferry Rd	SW Clark Hill Road	SW Tile Flat Rd	EB	0.9	N/A	Rural	Low
SW Scholls Ferry Rd	SW Rainbow Ln	SW Tile Flat Rd	EB	0.9	N/A	Rural	Medium
SW Scholls Ferry Rd	West of SW Roy Rodgers Rd/SW 175 Ave	SW Tile Flat Rd	EB	0.99	0.99	-	High
SW Scholls Ferry Rd	SW Denney Rd	SW Allen Blvd	NB	0.99	0.99	-	Medium
SW Scholls Ferry Rd	SW Hall Blvd	SW Denney Rd	NB	0.99	1.1	Metro Designation	Low
SW Scholls Ferry Rd	SW Hamilton St	E County Boundary	NB	0.99	0.99	-	Medium
SW Scholls Ferry Rd	SW Old Scholls Ferry Rd	SW Allen Blvd	NB	0.99	1.1	Metro Designation	Low
SW Scholls Ferry Rd	SW Scholls-Sherwood Rd	River Rd	NB	0.9	N/A	Rural	Low
SW Scholls Ferry Rd	SW Denney Rd	SW Allen Blvd	SB	0.99	0.99	-	Low
SW Scholls Ferry Rd	SW Hall Blvd	SW Denney Rd	SB	0.99	1.1	Metro Designation	Low
SW Scholls Ferry Rd	SW Hamilton St	E County Boundary	SB	0.99	0.99	-	Low
SW Scholls Ferry Rd	SW River Rd	SW Rainbow Ln	SB	0.9	N/A	Rural	Low
SW Scholls Ferry Rd	SW Scholls-Sherwood Rd	River Rd	SB	0.9	N/A	Rural	Low
SW Scholls Ferry Rd	River Rd	SW Clark Hill Rd	WB	0.9	N/A	Rural	Low
SW Scholls Ferry Rd	SW 121st Ave	SW Barrows Rd	WB	0.99	0.99	-	Low
SW Scholls Ferry Rd	SW Nimbus Ave	SW Conestoga Dr	WB	0.99	0.99	-	Low
SW Scholls Ferry Rd	West of SW Roy Rodgers Rd/SW 175 Ave	SW Tile Flat Rd	WB	0.99	0.99	-	Medium
SW Scholls-Sherwood Rd	SW Scholls Ferry Road	SW Roy Rodgers Rd	EB	0.9	N/A	Rural	Medium
SW Scholls-Sherwood Rd	SW Scholls Ferry Road	SW Roy Rodgers Rd	WB	0.9	N/A	Rural	Medium
SW Tiedman Ave	SW Greenburg Rd	SW North Dakota St	SB	0.99	0.99	-	Medium
SW Tile Flat Rd	SW Grabhorn Rd	SW Scholls Ferry Rd	EB	0.9	N/A	Rural	Medium
SW Tualatin Rd	SW Chinhook St	SW Boones Ferry Rd	WB	0.99	1.1	Metro Designation	Low
SW Tualatin Rd	SW Herman Rd	SW Chinhook St	WB	0.99	0.99	-	Low
SW Tualatin Valley Hwy (OR-8)	SW 153rd Ave	SW Murray Blvd	EB	0.99	0.99	-	Low
SW Tualatin Valley Hwy (OR-8)	SW 209th Ave	SW 187th Ave	EB	0.99	0.99	-	Medium
SW Tualatin Valley Hwy (OR-8)	SW 141st Ave	SW Murray Blvd	WB	0.99	0.99	-	Low
SW Tualatin Valley Hwy (OR-8)	SW 160th Ave / SW Milikan Way	SW 170th Ave	WB	0.99	0.99	-	Low
SW Tualatin Valley Hwy (OR-8)	SW Cornelius Pass Rd	SW 209th Ave	WB	0.99	0.99	-	Low
SW Walker Rd	OR-217 Interchange (NB)	OR-217 Interchange (SB)	EB	0.99	0.99	-	Low
SW Walker Rd	SW 150th Ave	SW Meadow Dr	EB	0.99	0.99	-	Low
SW Walker Rd	SW 185th	SW 173rd Ave	EB	0.99	0.99	-	Low
SW Walker Rd	SW Cedar Hills Blvd	SW 123rd Ave	EB	0.99	0.99	-	Low
SW Walker Rd	OR-217 Interchange (NB)	OR-217 Interchange (SB)	WB	0.99	0.99	-	High
SW Walker Rd	SW Meadow Dr	SW 150th Ave	WB	0.99	0.99	-	Low
SW Walnut St	SW Gaarde St	SW 135 St	WB	0.99	0.99	-	Medium
W Burnside Rd	E County Border	SW Miller Rd	EB	0.99	0.99	-	Low
W Burnside Rd	E County Border	SW Miller Rd	WB	0.99	0.99	-	Low

High = V/C more than 50% above target

Medium = VC more than 20% above target

Low = V/C less than 20% above target

All estimates based on regional 2035 travel demand model

Deficiency Severity to be evaluated on a case by case operational assessment

Southern Arterial Regional Conditions

1. **Future phasing plans for implementing Alternative 7 projects must take into consider the transportation, environmental, and economic impacts of advancing some improvements sooner than others.** The sequencing of affordable improvements should be done in a manner that does not create new transportation problems or liabilities for the vitality of affected jurisdictions.
2. **The timing and priority of an I-5 corridor study must be considered in the RTP adoption process for Alternative 7.** The connector project development process emphasized the need for a corridor study along I-5 from Portland to the Willamette River. The results of this study may affect the timing and designs of some improvements within Alternative 7.
3. **Access between I-5 and the southern arterial must be resolved.** Additional study is required to fully understand the impacts and trade offs between transportation solutions and land use, economic and environmental consequences of a new southern arterial. The impacts on rural lands are of particular importance and must be further evaluated before pursuing an exceptions process. The study area may need to be expanded to include connections to Stafford Road and additional areas along the OR 99W corridor that were not included in the alternatives analysis. The alternatives analysis process determined the general corridor location for the new southern arterial. However, additional preliminary engineering and planning work is needed to determine the optimal access option and configuration for connecting the southern arterial to I-5, OR 99W, and other arterials in the expanded study area. Construction of the southern arterial should be conditioned on defining the I-5 improvements needed to accommodate it and ensuring no negative impacts to I-5 and I-205 occur beyond the forecast No-Build condition as a result of Alternative 7. Options to be explored include modifying the I-5/North Wilsonville Interchange into a tight split-diamond interchange, or extending a new arterial connection crossing over I-5 and connecting to Stafford Road and/or Elligsen Road on the east side of I-5 for regional traffic benefits.
4. **Completion and construction of major project elements is subject to compliance with National Environment Policy Act (NEPA) and design refinement.** The Alternative 7 concept provides only the general locations and functional characteristics of new transportation facilities. A fully collaborative public/agency involvement and environmental analysis process must be conducted in developing the design details of any major construction element of Alternative 7. Subsequent project development work will need to define the actual alignments and designs of each of these facilities within the framework of these general parameters. On-going coordination with the Tualatin River National Wildlife Refuge must also occur to ensure optimum compatibility of Alternative 7 elements with refuge objectives.
5. **Land Use Concept Planning for UGB expansion areas should be coordinated with the refinement of these transportation recommendations.**

6. **The design of the southern arterial; must incorporate any conditions that may come out of land use goal exceptions processes (if required) by Metro, Washington County, and Clackamas County.** Portions of Alternative 7 may require exceptions under state land use goals that have not yet been studied or approved in order to be adopted in the RTP and to achieve needed federal and jurisdictional approvals. The extent of this issue may be affected by Metro's coming decisions on rural/urban land use reserves. Portions of proposed new transportation facilities are outside Metro's jurisdictional boundaries and will require coordination of actions between Metro and other affected jurisdictions. Possible design requirements may include forms of access management and land use control measures.
7. **State highway system routing and ODOT mobility standards must be key considerations in the design and future ownership of improvements within Alternative 7.** Current RTP assumptions are that a new limited-access connector would be built between I-5 and 99W, and that this roadway would become a new state route, possibly replacing OR 99W through Tigard. Alternative 7 does not result in a limited-access connector, which may result in OR 99W remaining the designated state highway route through Sherwood, King City and Tigard.
8. **Strategic protection of right-of-way should be considered by agencies for the Alternative 7 elements within the UGB and along potential alignments where land development could conflict with the future implementation of corridor improvements.** Protective measures could include property setbacks, dedication of right-of-way, specific acquisition(s), and/or right-of-way purchases within the UGB consistent with NEPA process.

Washington County TSP Active Transportation & Transit Performance Evaluation of Proposed Network

During the development of the TSP modal elements, 21 metrics were used to assess the existing active transportation and transit networks in the six study areas as compared with the Washington County urban area as a whole (incorporated and unincorporated). The findings of that assessment were summarized in a graphical “Findings Packet” presented to the TSP Community Advisory Committee and Interagency Coordinating Committee in September 2013.

This performance evaluation takes those findings a step further. Using geographic information systems (GIS), it models the proposed TSP Capital Project List and reruns three of the most critical active transportation and transit metrics for the urban area. It also develops target values for each of the three metrics, allowing for a comparison of the “planned network” with aspirational targets.

The metrics used in this performance evaluation are as follows:

Sidewalk Completeness is measured as the percentage of principal arterials, arterials and collectors (“major streets”) with sidewalks on both sides of the street. The county has baseline information available from the 2012 Washington County Bicycle and Pedestrian Improvement Prioritization Project funded by the US Department of Energy (the “DOE project”). This data was updated and quality-checked in March 2014. The future target of 84% is an interpretation of a draft 2014 Regional Transportation Plan (RTP) performance target that calls for a 50% increase in sidewalk mileage.¹ The 84% target represents a 50% increase in the mileage of major streets with sidewalks on both sides of the street.²

Bikeway Completeness is measured as the percentage of principal arterials, arterials and collectors with bi-directional bike lanes, buffered bike lanes or cycle tracks. Similar to sidewalk completeness, baseline information was updated from the DOE project, and the future target is based on the draft 2014 RTP. The 56% target represents a 50% increase in the mileage of major streets with bi-directional bike lanes.

Transit Access is measured as the percentage of households within ½ mile of a high-capacity transit station or a frequent service bus line, or within ¼ mile of other bus lines, measured using straight-line distance. The future target value of 100% is aspirational and reflects the desire to have transit service within reasonable walking distance of all residents of the urban area. The modeled future transit network consists of the following categories from the Transit Element:

- Frequent Bus Service
- Regular Bus Service
- Peak Period Bus Service
- Existing MAX Light Rail and WES Commuter Rail stations
- Southwest Corridor High Capacity Transit potential stations³
- TV Highway High Capacity Transit⁴
- AmberGlen – North Hillsboro High Capacity Transit potential stations⁵

¹ 2014 Regional Transportation Plan February review draft, Table 2.3.

² This target value calculation does not account for new arterials and collector mileage. However, the modeling of the planned network does account for new arterials and collectors.

³ For modeling purposes, stations are located at the “Key Places” shown on the map entitled *Southwest Corridor Refinement Phase Draft HCT Conceptual Design Options*, dated October 8, 2013.

⁴ No stations are modeled because a ½-mile buffer is already shown for the existing frequent service #57 bus.

Table 1 below uses the metrics to compare existing conditions, the TSP planned network as indicated in the Capital Project List and Transit Element, and future targets for the Washington County urban area. A discussion of findings follows the table.

Table 1
Active Transportation and Transit Performance Evaluation
Washington County Urban Area

Indicator	Metric	2012 Urban Area	TSP Planned Network	Future Target
Sidewalk Completeness	Percentage of major streets with sidewalks on both sides.	56%	70%	84%
Bikeway Completeness	Percentage of major streets with bi-directional bike lanes, buffered bike lanes or cycle tracks.	38%	53%	56%
Transit Access	Percentage of households within ½ mile of high-capacity transit or frequent service bus, or within ¼ mile of other bus lines.	69%	83%	100%

Findings

Sidewalk Completeness

Implementing the TSP Project List would result in 70% of major streets having sidewalks on both sides of the street in the urban area. The TSP Project List moves the county halfway toward the target of 84% and represents an additional 68 miles of major streets with complete sidewalks. Not accounted for are sidewalks provided through development frontage improvements.

Bikeway Completeness

Implementing the TSP Project List would result in 53% of major streets having bi-directional bike lanes, buffered bike lanes or cycle tracks in the urban area. The TSP Project List moves the county very close to the target of 56% and represents an additional 75 miles of major streets with complete bicycle facilities.

Transit Access

Implementing the recommended bus service enhancements and constructing high capacity transit in the Southwest Corridor, TV Highway Corridor and AmberGlen / North Hillsboro area would result in 83% of urban households being within walking distance of transit. This figure does not account for the Community Connector Service Areas shown on the Transit Element map.

⁵ For modeling purposes, stations are located at future 194th Avenue and Wilkins Street, future 194th Avenue and Walker Road, 194th Avenue and Evergreen Parkway, Evergreen Parkway and Rock Creek Trail, Evergreen Parkway and Cornelius Pass Road, and Evergreen Parkway and 229th Avenue. The first three station locations are based on Figure 3-2 in the City of Hillsboro’s AmberGlen Community Plan.