City *of* Tigard, Oregon

2035 TSP Technical Appendix

VOLUME 2 OF 3

March 2010

TIGARD

City of Tigard

2035 Transportation System Plan

Volume 2 of 3
Technical Appendix

Tigard, Oregon

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VOLUME 2 TECHNICAL APPENDIX

VOLUME 3 TECHNICAL APPENDIX (UNDER SEPARATE COVER)

Appendix A

TSP and Implementing Ordinance Compliance

Angelo planning group

LAND USE PLANNING • TRANSPORTATION PLANNING • PROJECT MANAGEMENT

Memorandum

Date: **February 10, 2010**

To: Project Management Team and Technical Advisory Committee

cc: Beth Wemple and Susie Wright, Kittelson & Associates

From: DJ Heffernan, Angelo Planning Group
Shayna Rehberg, Angelo Planning Group

Re: Tigard Transportation System Plan Update
Technical Memorandum 6.2 – Draft Implementation Measures

I. Introduction

This memorandum introduces draft measures to be approved by the City of Tigard in order to comply with applicable planning regulations and to effectively implement the planned improvements recommended in the Tigard Transportation System Plan (TSP) Update. The need to amend City regulations at this time is captured in the following provision of OAR 660-012, the Oregon Transportation Planning Rule (TPR):

> *Identify land use regulations and code amendments needed to implement the TSP and include these in the implementation/funding element of the TSP.* (OAR 660-012-0020(2)(h))

The draft implementation measures are based primarily on policy and code deficiencies that were identified in the Document Review and Issues Report (Issues Report), Technical Memorandum 2.2, which assessed the consistency of the existing Tigard TSP and Community Development Code with regulatory requirements. In particular, the Issues Report identified gaps in conformance with OAR 660-012, Sections –0020, –0045, and –0060. The draft implementation measures also reflect recommendations in the draft Transportation Systems Solutions Report (Solutions Report) as well as discussions with project team members.

Section II presents the implementation measures that address provisions of the TPR, and Section III presents measures that respond to recommendations made in the Solutions Report. Some recommendations overlap but are referenced separately to distinguish between regulatory compliance issues and system management issues. Section IV discusses other "housekeeping" implementation issues related to the TSP update. All of the measures presented in this memorandum are described in general terms; specific plan and code amendment language was not part of the project's scope. Specific implementing language, however, may be developed from the recommendations include herein.

II. Implementation Measures Based on the Transportation Planning Rule

The following implementation measures are recommended in order to comply with the Transportation Planning Rule (TPR). The measures address the needs of the transportation dependent and disadvantaged; system connectivity; ways of supporting and promoting walking, biking, and taking transit; and the treatment of transportation facilities in the land use planning and permitting process. Most of the measures involve changes to the Tigard Community Development Code (TCDC), or "code." Where a code reference is not specified, the measures may be implemented either in the code or by inserting policy language into the Comprehensive Plan or the TSP.

Implementation Measure	***Reference***
Elements of the TSP *OAR 660-012-0020*	
Identify the needs of the transportation dependent and disadvantaged in the city.	Pursuant to OAR 660-012-0020(2)(a) and (c)(A) and -0030(1)(b)
Use project lists and maps in the TSP as local connectivity plans and include them as approval criteria for land divisions and in the street improvement standards (TCDC 18.400 and 18.800).	Consistency and link between TSP and code; pursuant to OAR 660-012-0020(2)(b) and Metro Regional Framework Plan principles (Local Connectivity)
Implementation of the TSP *OAR 660-012-0045*	
Establish use regulations for transportation facilities, whether permitted outright or conditionally, for uses such as roads, modifications to roads, transit facilities, bicycle facilities, and pedestrian facilities in the City's land use districts, TCDC 18.510 (Residential Zoning Districts),18.520 (Commercial Zoning Districts), and 18.530 (Industrial Zoning Districts) and in Table 18.390.1, Summary of Permits by Type of Decision-Making Procedures. [1]	Pursuant to OAR 660-012-0045(1)(b)

[1] An example of use regulations for transportation facilities can be found in the Wasco County Land Use and Development Ordinance, Chapter 3, Basic Provisions (Zoning):
B. Uses Permitted Without Review
The following uses may be allowed on lands designated Exclusive Farm Use without review.
TRANSPORTATION FACILITIES
6. Climbing and passing lanes within a highway right of way existing as of July 1, 1987.
7. Reconstruction or modification of public roads and highways, including the placement of utility facilities overhead and in the subsurface of public roads and highways along the public right-of-way, but not including additional travel lanes, where no removal or displacement of buildings would occur and not resulting in any new land parcels.
8. Temporary public road and highway detours that will be abandoned and restored to original condition when no longer needed.

Implementation Measure	*Reference*
Establish procedures for transportation project permitting or consolidated review (TCDC 18.390, Decision-Making Procedures). Make explicit provisions for notice and coordinated review of land use applications with ODOT for properties that are adjacent to state road facilities, for Type II, III, and IV procedures (TCDC 18.390.040, .050, and .060).	Pursuant to OAR 660-012-0045(1)(c) and (2)(d)
Specify minimizing adverse impacts or protecting transportation facilities as development approval criteria for subdivision approval in TCDC 18.430.	Pursuant to OAR 660-012-0045(2)(e)
Articulate a connection between the findings of traffic studies required by TCDC 18.810.030(AC) and potential conditions of development approval.	Pursuant to OAR 660-012-0045(2)(e)
Remove maximum parking requirements for bicycle parking in Off-Street Parking and Loading Requirements, Table 18.765.2.	Pursuant to OAR 660-012-0045(3)(a) and Title 2 – Regional Parking Policy (Metro Code Sections 3.07.210 – 3.07.220)
Provide more detailed transit facility and amenity requirements, including but not limited to building proximity to transit stops, pedestrian plazas at stops, accessible landing pads, easements for shelters, and transit stop lighting.	Pursuant to OAR 660-012-0045(4)(b)
Plan and Land Use Regulation Amendments *OAR 660-012-0060*	
Integrate language from -0060(1)-(3) into criteria for review and approval of proposed amendments to the Comprehensive Plan, zoning, or any other land use regulation.	Pursuant to OAR 660-012-0060(1)-(3)
In order to support creating a list of "financially constrained" or "reasonably likely" projects, identify funding sources for projects in the funding element of the TSP.	Pursuant to OAR 660-012-0060(4)(D)

III. Implementation Measures Based on the Solutions Report

The following measures reflect strategies recommended in the Transportation System Plan. Some of the measures are based both on these recommendations and subsequent conversations with project

9. Minor betterment of existing public roads and highway related facilities such as maintenance yards, weigh stations and rest areas within right of way existing as of July 1, 1987, and contiguous public owned property utilized to support the operation and maintenance of public roads and highways.

teammates. They emphasize maximizing the capacity of existing and recommended facilities, and in particular encouraging modes other than driving alone. As the Solutions Report states:

> *Given the significant motor vehicle capacity deficiencies under forecast conditions an increase in transit, walk, and bike mode shares is essential to the future transportation system in Tigard, as much as adding roadway capacity for increased demand.* (p. 7)

These measures are more a mixture of potential amendments to the City's code or Comprehensive Plan, additional planning, and administration and programming to be coordinated by the City than the measures that are predominantly code amendments needed to comply with the TPR.

Implementation Measure	***Reference***
Use maximum single occupancy vehicle (SOV) mode share targets, including 49% citywide (2035), from the TSP to develop and assess proposed transportation improvements and land use plans.	p. 7 (Table 5-4)
Develop and implement land use measures to maximize transportation investments and support multi-modal transportation choices. In particular, develop and implement measures to allow for changes in land use designations and zoning in high capacity transportation corridors. The report identifies strategies such as: • allowing limited commercial uses in neighborhoods or designating neighborhood commercial nodes; • allowing and supporting mixed uses and higher densities; and • exploring alternative mobility standards in order to allow for land use designation and zoning changes.	pp. 9-11 and pursuant to OAR 660-012-0045(2)(g), (4)(g), and (5)
Create a connectivity inventory, evaluate existing street spacing standards, and ensure code and policies require new road or multi-modal connections in project mitigations.	p. 12-13
Implement the Highway 99W Improvement and Management Plan for access management on the highway and refer to it and Oregon Highway Plan (OHP) standards in the TSP as the regulatory documents for access on Highway 99W.	p. 14
Prepare transportation system management plans for Transportation System Management and Operations (TSMO) corridors in Tigard, as identified by Metro, including OR 217, OR 99W, Scholls Ferry Road, Hall Boulevard, 72nd Avenue, and Durham Road.	p. 15-17
Develop and implement a Transportation Demand Management (TDM) program that is guided by TSP mode share targets, and that includes but is not limited to:	pp. 17-20

Implementation Measure	*Reference*
• promoting development and implementation of pedestrian, transit and bicycle projects • tracking mode shares • evaluating code for provisions such as parking management, pedestrian and bicycle projects, end-of-trip facilities, and employer programs and transit subsidies.[2]	
Modify the City's Capital Improvement Program (CIP) to reflect the projects that are recommended and are not recommended in the TSP.	pp. 20-86
Reference bike facilities and treatments in the Street and Utility Improvement Standards code (TCDC 18.810) and street engineering standards to include but not be limited to: • shared roadway bikeways • shared roadway pavement markings • low-volume bikeways (i.e. "bike boulevards") • separated in-road facilities (e.g. bike lanes).	pp. 50-53
Reference pedestrian facilities and treatments in the Street and Utility Improvement Standards code (TCDC 18.810) and street engineering standards to include but not be limited to: • unmarked crossings • raised pedestrian refuges • marked crosswalks • rectangular rapid flashing beacons • pedestrian hybrid signal • signalized intersections • grade-separated crossings.	pp. 70-74
Develop guidelines or standards for multi-use path design.	p. 77-78

IV. Other Implementation Issues

There are matters of consistency that should be attended to in finalizing and adopting the updated Tigard TSP. For one, it was noted during the initial plan and policy review that there were potential inconsistencies between the street design standards and cross-sections presented in the 2002 TSP and those included in the City's Community Development Code (TCDC 18.810, Street and Utility Improvement Standards). Either the code should just reference the TSP or it should be

[2] The following are pedestrian-supportive projects, which focus on Washington Square Regional Center and Downtown Tigard:

- TDM projects (including TMA and individualized marketing), pedestrian projects (sidewalks, crossings, bridges), and multi-use paths for Washington Square, Tigard Triangle, Southeast Tigard;
- TDM project and pedestrian projects for Downtown Tigard and Highway 99W Corridor; and
- Pedestrian projects and multi-use paths for West Tigard.

ensured that what is included in the code is the same as the TSP. Similarly, access management standards in TCDC 18.705.030(H) of Access, Egress, and Circulation should either reference or be the same as the standards in the TSP.

Related to the evaluation and possible amendment of existing land use designations and zoning, the TSP needs to be coordinated with the outcomes of the high capacity transit (HCT) land use planning process being administered by Metro through a Transportation Growth Management (TGM) grant over the next one to two years. In developing recommendations for that project, it should be assessed whether those recommendations necessitate amendments to the TSP.

Appendix B
Neighborhood Trails Plan

Tigard Trails Project List

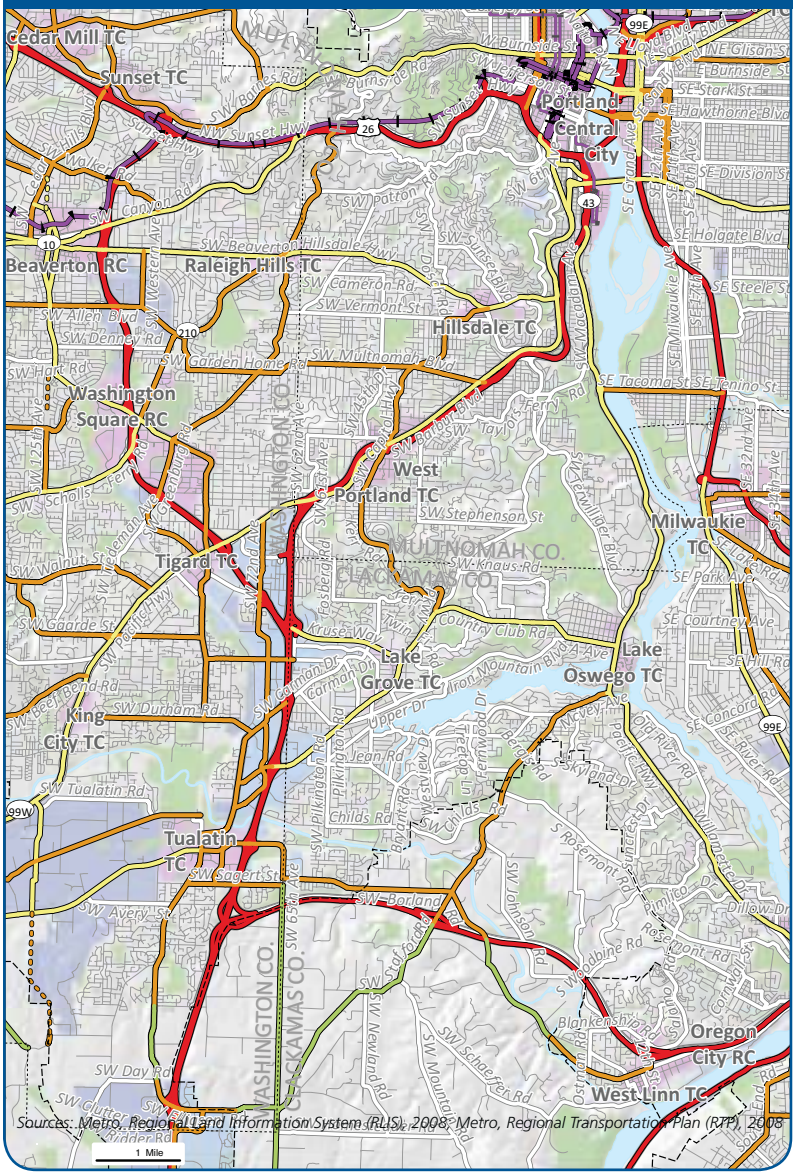
Tigard Trails Project #	Project/ Program Name	Total Cost	Tigard Trails Priority	Fully Funded?
1	106th Avenue to 103rd Avenue, on Murdock Road	$20,000	High	No
2	Gallo Avenue extension to 113th/Gallo Path	$14,000	High	No
3	Pathfinder Way to Pathfinder Genesis Trail	$5,000	High	No
4	116th Place to Howard Drive extension	$5,000	High	No
5	Scholls Ferry Road to Englewood Park Trail/ Apartment Complex to Scholls Ferry Road	$3,000	High	No
6	90th Avenue extension to Inez Street extension	$7,000	High	No
7	Greenfield extension; Ridgefield Drive to Chirp Street	$9,000	High	No
8	100th Avenue extension to Highland Drive	$14,000	High	No
9	Mistletoe Drive to Sunrise Lane	$9,000	High	No
10	Coral Street to Locust Street, 92nd/Lincoln Street extension	$10,000	High	No
11	Gaarde Street to Aerie Drive	$13,000	High	No
12	Fanno Creek Trail/Scholls Ferry to apartment complex	$11,000	High	No
13	Landau Street Extension to 72nd Avenue	$3,000	High	No
14	80th Place to Bonita Road	$6,000	High	No
15	Quail Hollow South Trail to 129th Avenue Trail	$4,000	Medium	No
16	129th Avenue	$3,000	Medium	No
17	Tigard Street to Fanno Creek	$5,000	Medium	No
18	Ventura Drive to 70th Place	$6,000	Medium	No
19	Broadmoor Place to Rockingham Drive	$7,000	Medium	No
20	Spruce Street extension at 80th Avenue	$38,000	Medium	No
21	Steve Street to 84th Avenue extension	$9,000	Medium	No
22	Hunsiker Street/77th Place to 72nd Avenue/ Highway 217 Overpass	$18,000	Medium	No
23	88th Avenue extension to 88th Avenue extension/ Pinebrook Court	$11,000	Medium	No
24	Highlands Trail to Mountain Highland Trail	$7,000	Medium	No
25	Twality Middle School to 92nd Avenue	$1,150	Medium	No
26	89th Avenue extension to 91st Avenue Cul-de-sac	$10,000	Medium	No
27	Waverly Drive extension; 88th Avenue to 85th Avenue	$18,000	Medium	No
28	Gallo Avenue extension; North Dakota Street to Suzanne Court	$4,000	Medium	No
29	132nd Avenue extension; Marion Street to Hollow Lane	$6,000	Medium	No
30	74th Avenue extension; Cherry Drive to Fir Street	$6,000	Medium	No

31	94th Avenue extension; Dakota Street to Greenburg Street	$9,000	Medium	No
32	92nd Avenue extension; Dakota Street to Greenburg Street	$5,000	Medium	No
33	Edgewood Street/Halcyon Terrace extension to Braydon Court	$336,000	Low	No
34	135th Avenue to 132nd Avenue (connects to Trail 12)	$29,000	Low	No
35	Rockingham Drive to Maplecrest Court	$33,000	Low	No
36A	Terrace Trails Drive to Pathfinder Genesis Trail	$6,000	Low	No
36B		$6,000	Low	No
37	116th Avenue extension to Katherine Street	$400,000	Low	No
39	77th Avenue extension to Spruce Street	$28,000	Low	No
40	Burnham Street to Commercial Parking Lot	$5,000	Low	No
41	Hall Boulevard to Matthew Park Street Extension	$16,000	Low	No
42	Murdock Road extension; 109th Avenue to Highway 99W	$12,000	Low	No
43	Schaffer Lane extension; Tigard High School to 85th Avenue	$9,000	Low	No

Appendix C
Tigard Metro Regional Mobility Corridors

Corridor 2

Portland Central City to Tualatin

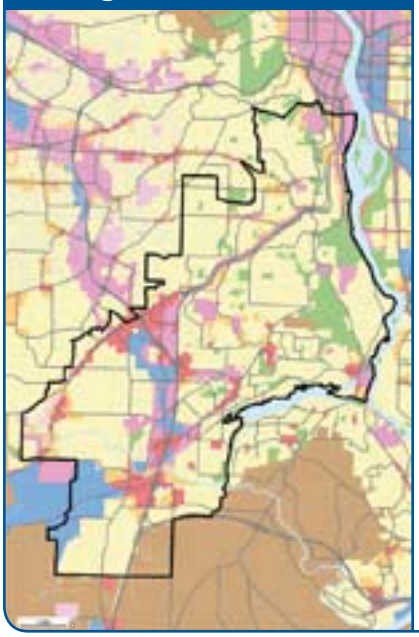


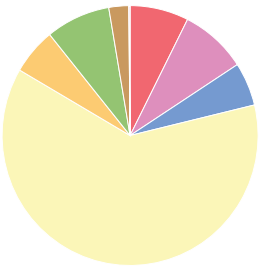
The Portland Central City to Tigard/Tualatin mobility corridor encompasses I-5, parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. I-5 supports interstate, interregional, and intraregional travel for people and goods. SW Barbur Blvd (99W), SW Boones Ferry Rd/SW Terwilliger/Taylors Ferry Rd and SW Macadam/Hwy 43 are key parallel streets. The arterial and collector street network tends to be winding and discontinuous as a result of the hilly topography. The area is predominantly single-family residential served by a patchwork of well-connected and discontinuous local streets.

Regional Transportation Plan Street and Throughway System

- Principal arterial
- Major arterial
- Minor arterial
- Rural arterial
- Light rail transit
- Streetcar
- Freight rail
- County line
- UGB
- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces

Zoning





- Corridor analysis zone (CAZ)
- 7% Commercial
- 8% Mixed-use commercial
- 5% Industrial
- 62% Single-family residential
- 6% Multi-family residential
- 8% Parks and open spaces
- 3% Rural
- <1% Public facilities

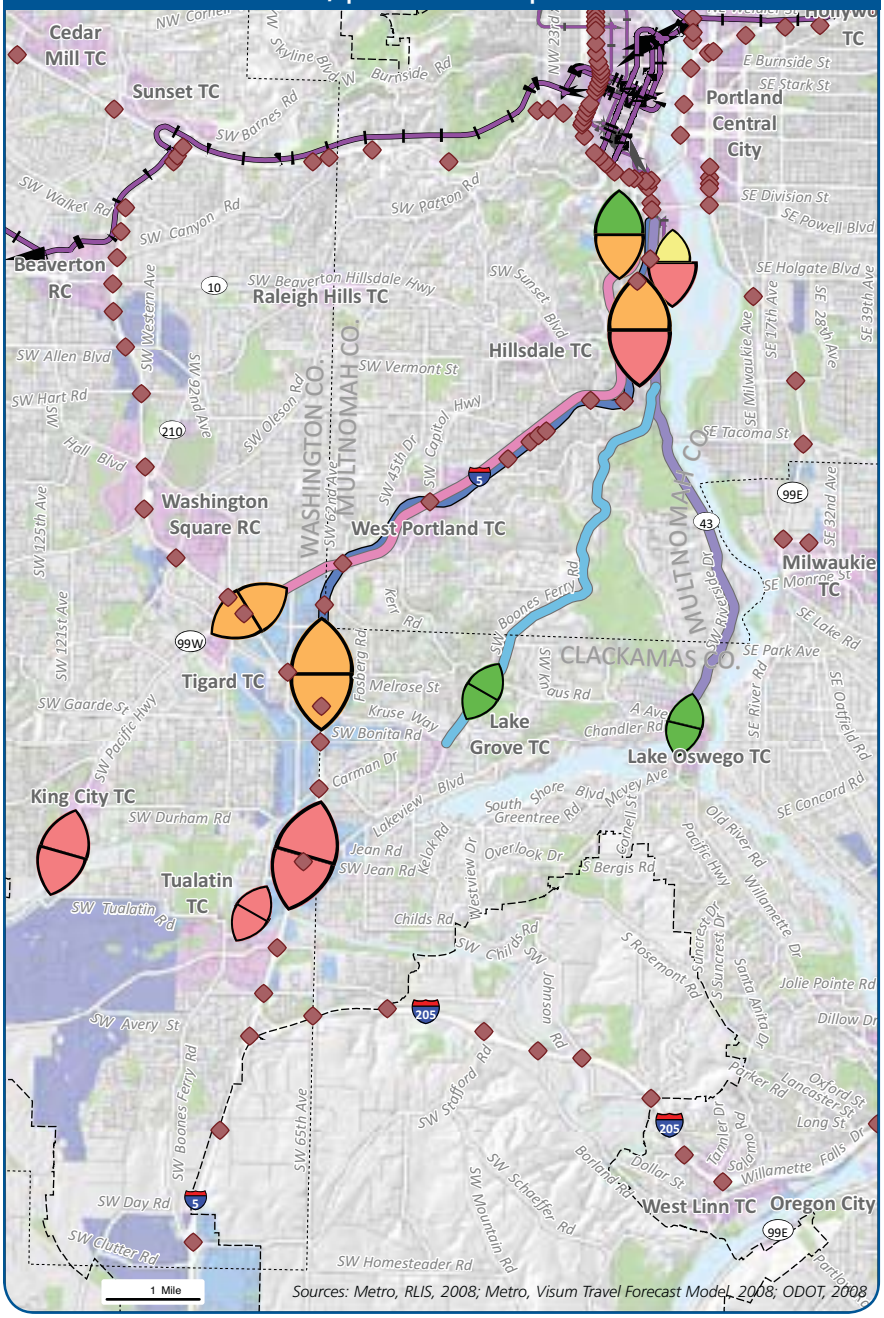
Source: Metro, RLIS, 2008

Quick facts

derived from Corridor Analysis Zone (CAZ)

40	**Area of CAZ in square miles**
139,247	**Population**
58,498	**Households**
27.9%	*Households covered by 15 minute transit service*
110,647	**Jobs** 72% Commercial, 28% Industrial
50.5%	*Jobs covered by 15 minute transit service*
50	**Bikeway network miles**
13	**Trail miles**
40.0%	**Sidewalks completed in RTP ped. districts**
640	**Total roadway miles**
21	*Miles of RTP freeways*
—	*Miles of RTP highways*
27	*Miles of RTP major arterials*
25	*Miles of RTP minor arterials*
14	*Miles of RTP collectors*
—	*Miles of RTP rural arterials (urban-to-urban)*
—	*Miles of RTP rural arterials (farm-to-market)*
553	*Miles of local streets*
—	**Major river overcrossings**
104	**Intersections per square mile**
2	**Freeway crossings per mile**

Motor vehicle travel, p.m. 2-hour peak



Volume and Capacity

PM Peak 2 hour auto volume (symbol size)	Volume to capacity ratio (symbol color)
6,001 - 15,000	0.9+
3,001 - 6,000	0.81 - 0.9
1,001 - 3,000	0.71 - 0.8
0 - 1,000	0 - 0.7

Land use

- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces
- Vehicle overcrossing
- Light Rail/Street Car

Motor Vehicle Facilities[1,2]

Main Throughway
Interstate 5

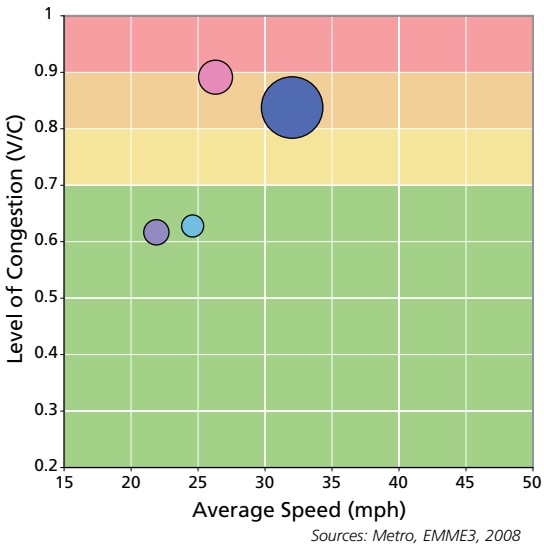
Parallel Arterials
- Highway 99W
- Boones Ferry Rd
- Highway 43

[1]The symbol size represents the PM Peak 2-hour outflow auto volume at the corridor's most congested location.

[2]The symbol colors match the colors of the motor vehicle facilities in the map and the chart.

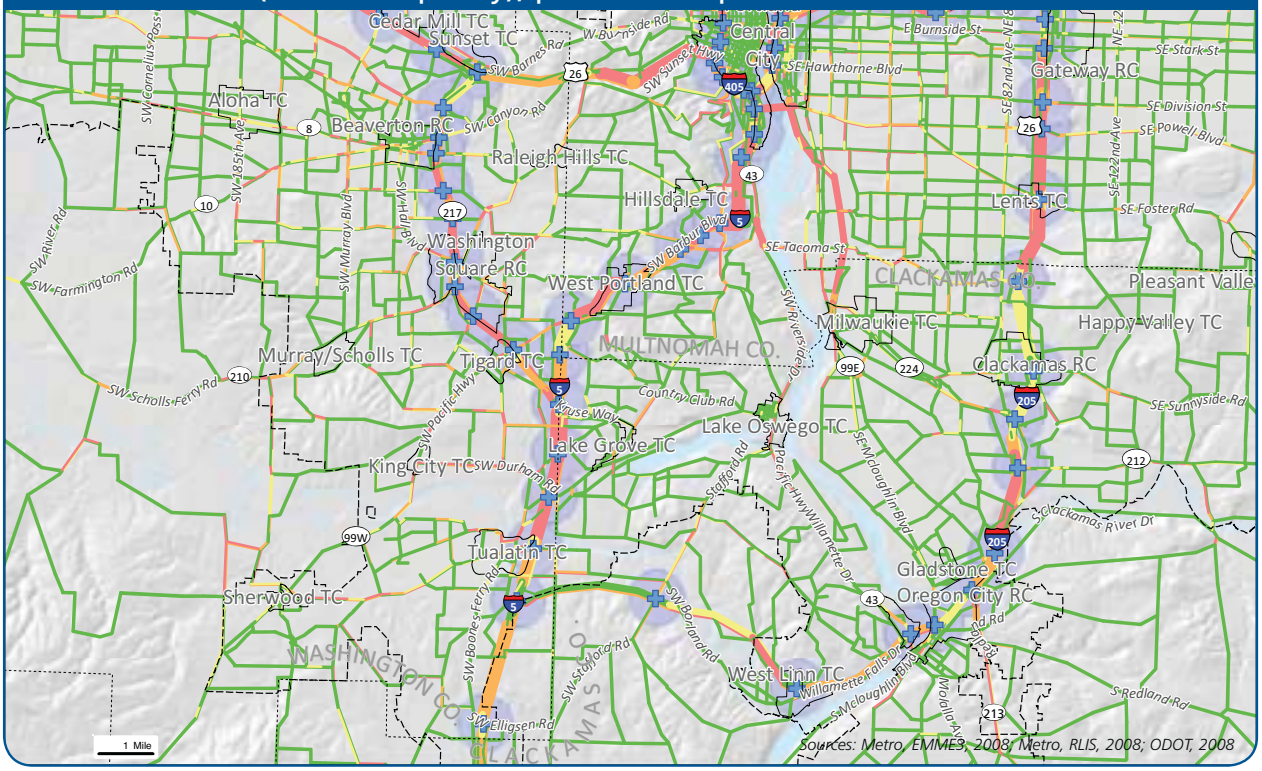
The ***motor vehicle travel map and chart*** compare traffic volumes and congestion on the main throughway and some of the parallel arterial streets in the 2-hour p.m. peak travel period. Both directions of I-5 carry high volumes of traffic in the peak travel period and experience moderate to heavy congestion. Average travel speeds fall under 35 mph, which is significantly slower than free flow speed. SW Barbur Blvd and SW Macadam also carry significant traffic volumes and experience moderate to heavy southbound traffic. Average travel speeds are at or below 25 mph on the parallel arterials, which is noticeably slower than free flow speed.

Motor vehicle facility performance



Sources: Metro, EMME3, 2008

Level of service (volume/capacity), p.m. 2-hour peak



Level of Service

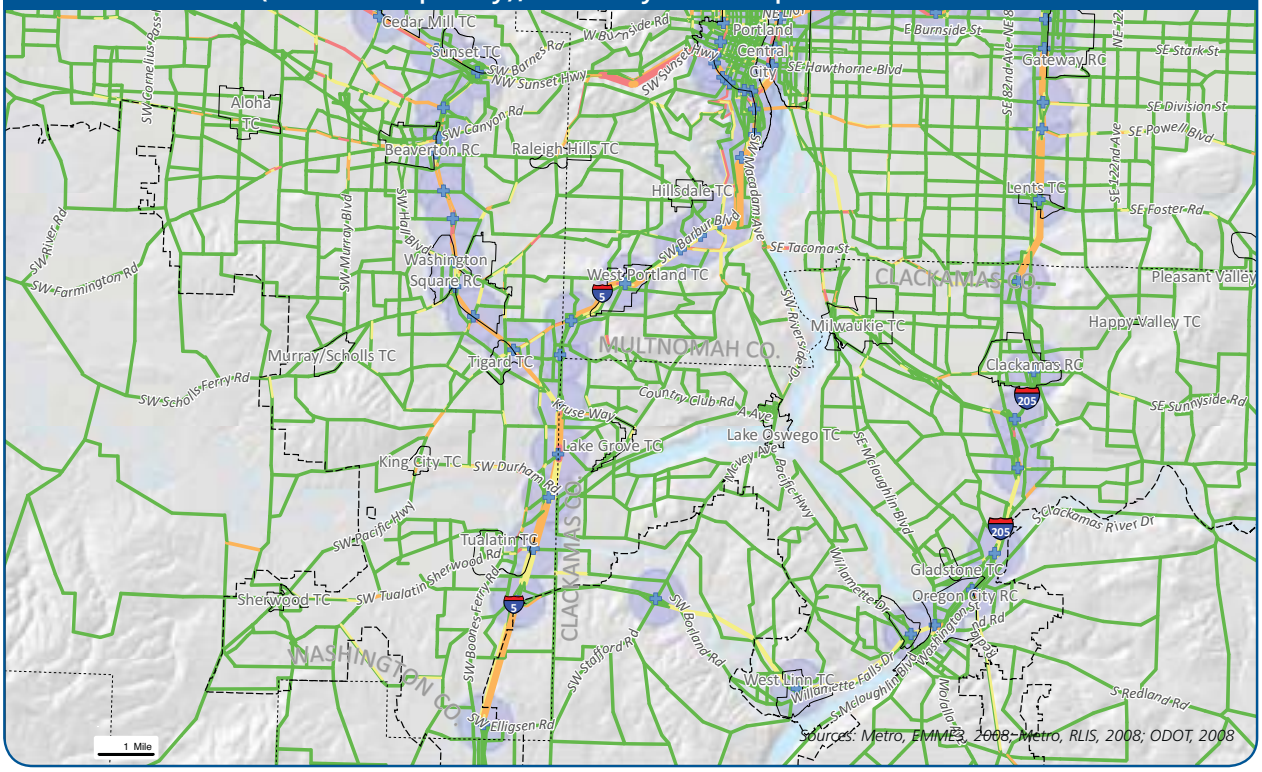
Volume (symbol size)	Level of Service (v/c) (symbol color)
15,000+	*LoS F (1.0+)*
10,001-15,000	*LoS E (0.90 - 1.00)*
5,001-10,000	*LoS D (0.80 - 0.90)*
0-5,000	*LoS C (0 - 0.80)*

Urban centers

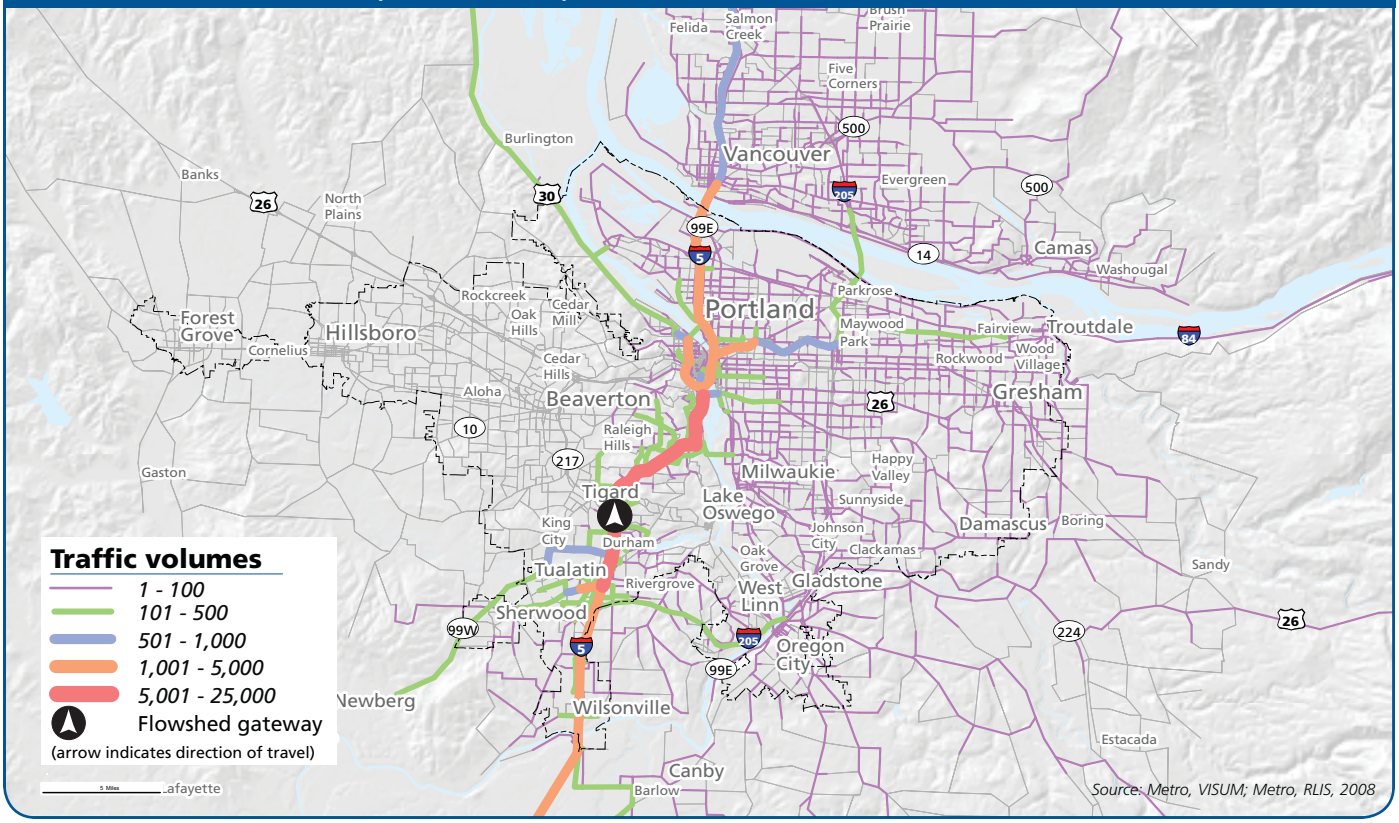
Interchanges with 1/2 mile buffer

The ***Level of service maps*** show the volume-to-capacity ratio on collector-level and above roads in the 2-hour p.m. and 1-hour mid-day peak travel periods. Both directions of I-5 reach or exceed RTP regional motor vehicle level of service operating standards in the mid-day and p.m. peak between Portland central city and I-205. Segments of SW Barbur, SW Boones Ferry, SW Macadam, and SW Terwilliger also exceed standards in the p.m. peak.

Level of service (volume/capacity), mid-day 1-hour peak

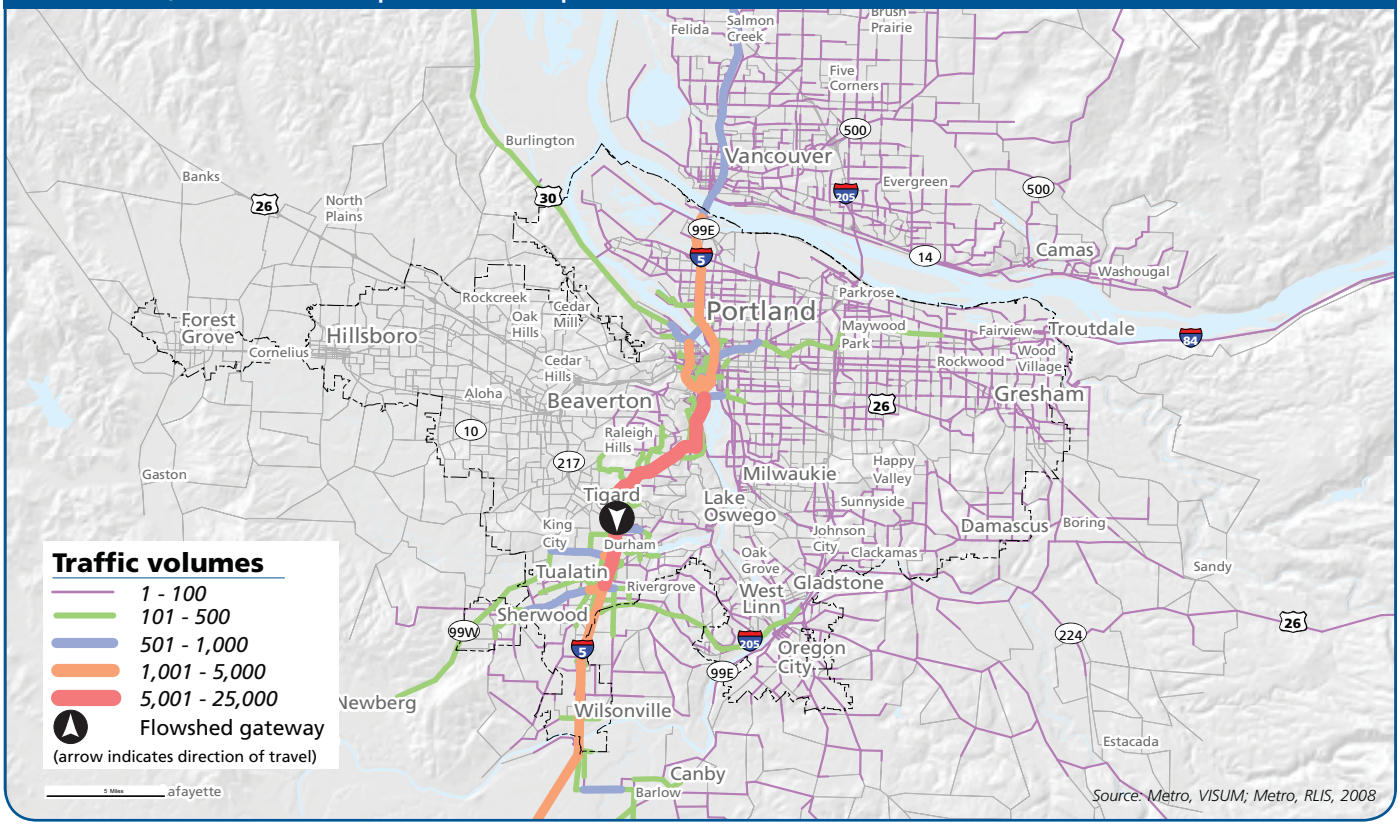


Flowshed, northbound p.m. 2-hour peak

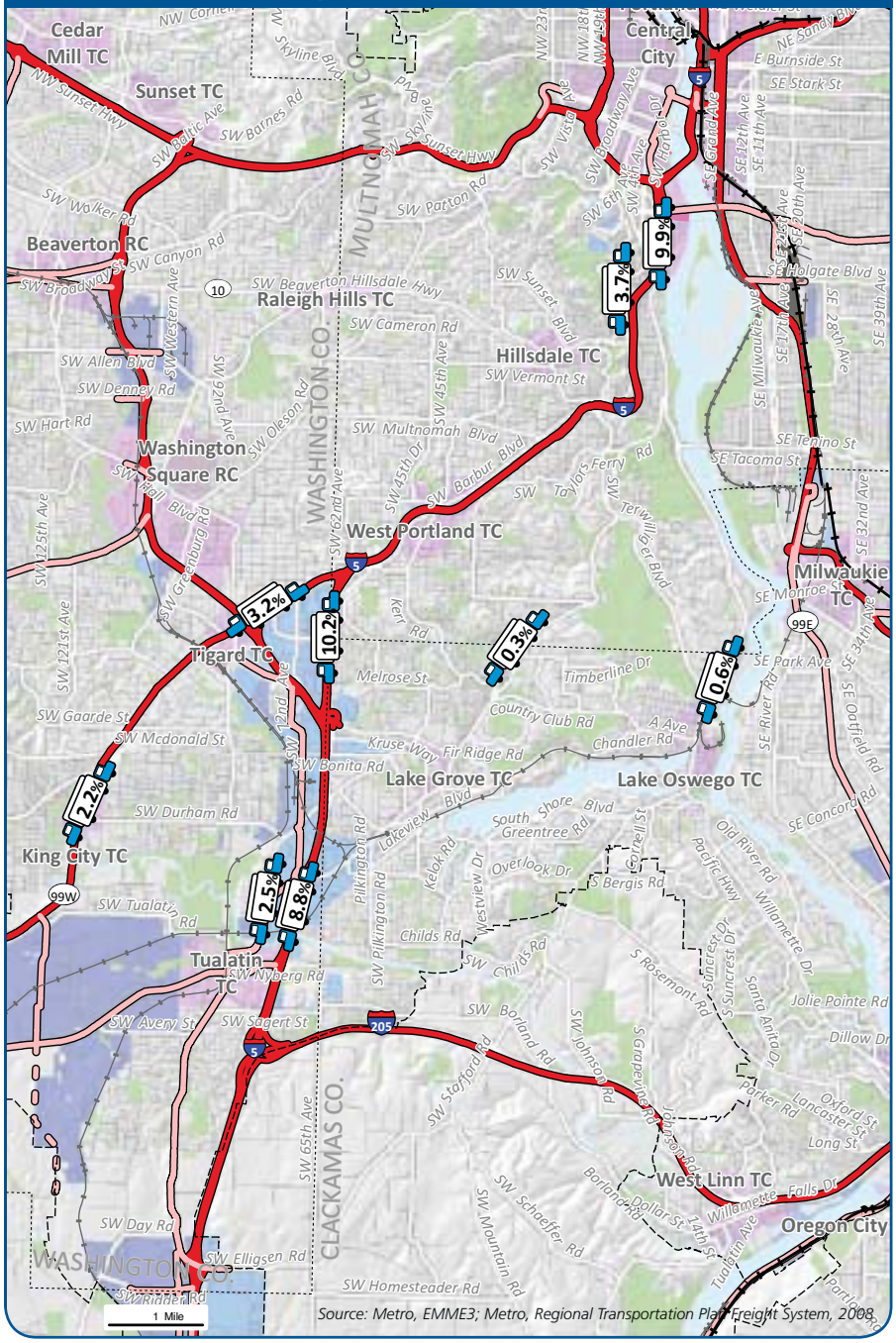


The *Flowshed maps* display the volume and flow of vehicles that pass the flowshed gateway of north- and southbound I-5 during the 2-hour p.m. peak travel period. This section of I-5 demonstrates its key role in interstate travel to Washington; interregional travel to the Willamette Valley; and intraregional travel between Portland, Tigard/Tualatin, Vancouver and

Flowshed, southbound p.m. 2-hour peak



Truck travel, mid-day 1-hour volume



The ***Truck travel map*** displays the percentage of truck volume to total volume on I-5 and key parallel arterial streets in the 1-hour mid-day travel period. Truck volumes make up a significant portion of the total traffic on I-5, the primary route for interstate trucking on the west coast. On the arterial streets, adjacent land uses dictate levels of truck activity. SW Barbur Blvd carries a slightly elevate percentage of truck traffic due to its function as a district highway and commercial strip for Southwest Portland . On the parallel arterials that serve primarily residential and local commercial uses, truck volumes fall at or below 1%.

The Portland & Western railroad operates short line rail service that connects between Southeast Portland and Tualatin.

Mid-day Truck Freight

0.0% % Truck volume

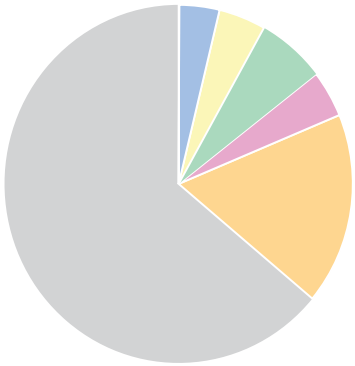
Freight Throughways

- Main roadway routes
- Road connectors
- Main railroad lines
- Branch railroad lines and spur tracks

Land use

- Rail yards
- Marine Facilities
- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces

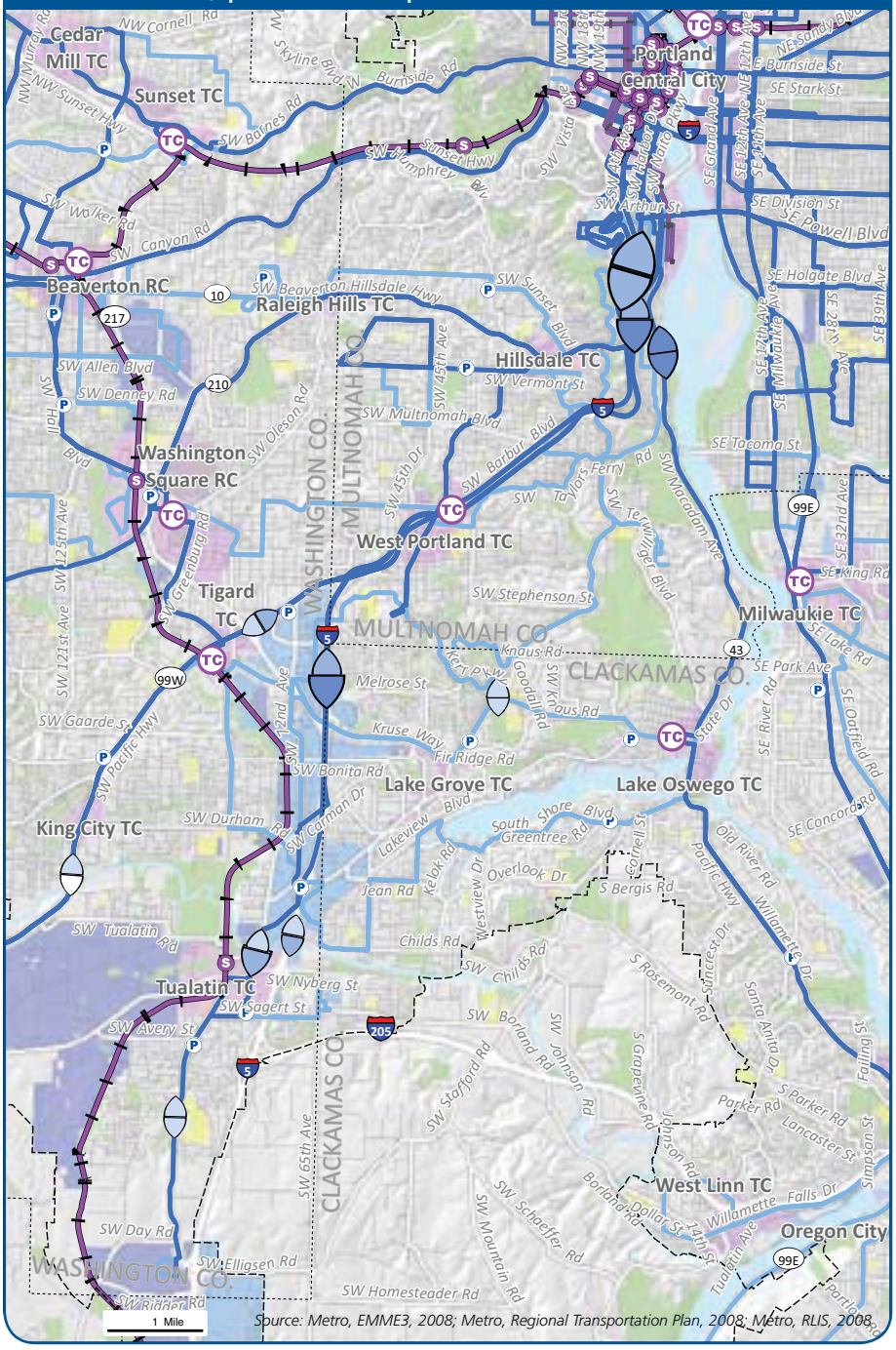
Freight Employment Types



4%	Transportation/Warehousing/Utils
4%	Construction
6%	Manufacturing
4%	Wholesale
17%	Retail-Services
64%	Non-freight employment
<1%	Natural resources

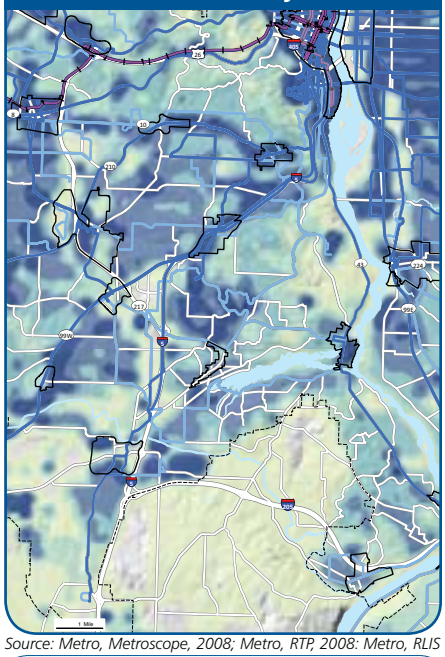
Source: ESRI, Business Analyst, Feb. 2009 - based on number of employees

Transit travel, p.m. 2-hour peak



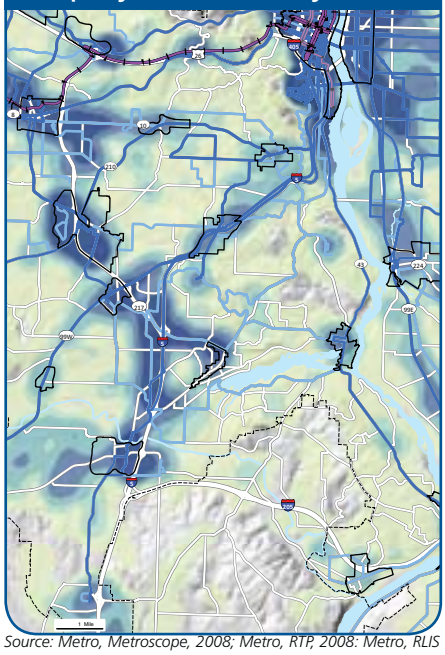
Source: Metro, EMME3, 2008; Metro, Regional Transportation Plan, 2008; Metro, RLIS, 2008.

Household density



Source: Metro, Metroscope, 2008; Metro, RTP, 2008: Metro, RLIS

Employment density



Source: Metro, Metroscope, 2008; Metro, RTP, 2008: Metro, RLIS

Transit Service

- Bus line - 15 minute or better service
- Bus line - 30 minute or better service
- Light rail transit
- Streetcar
- TC Transit centers
- S Rail transit stations
- P Park & Ride

Land use

- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces
- Schools

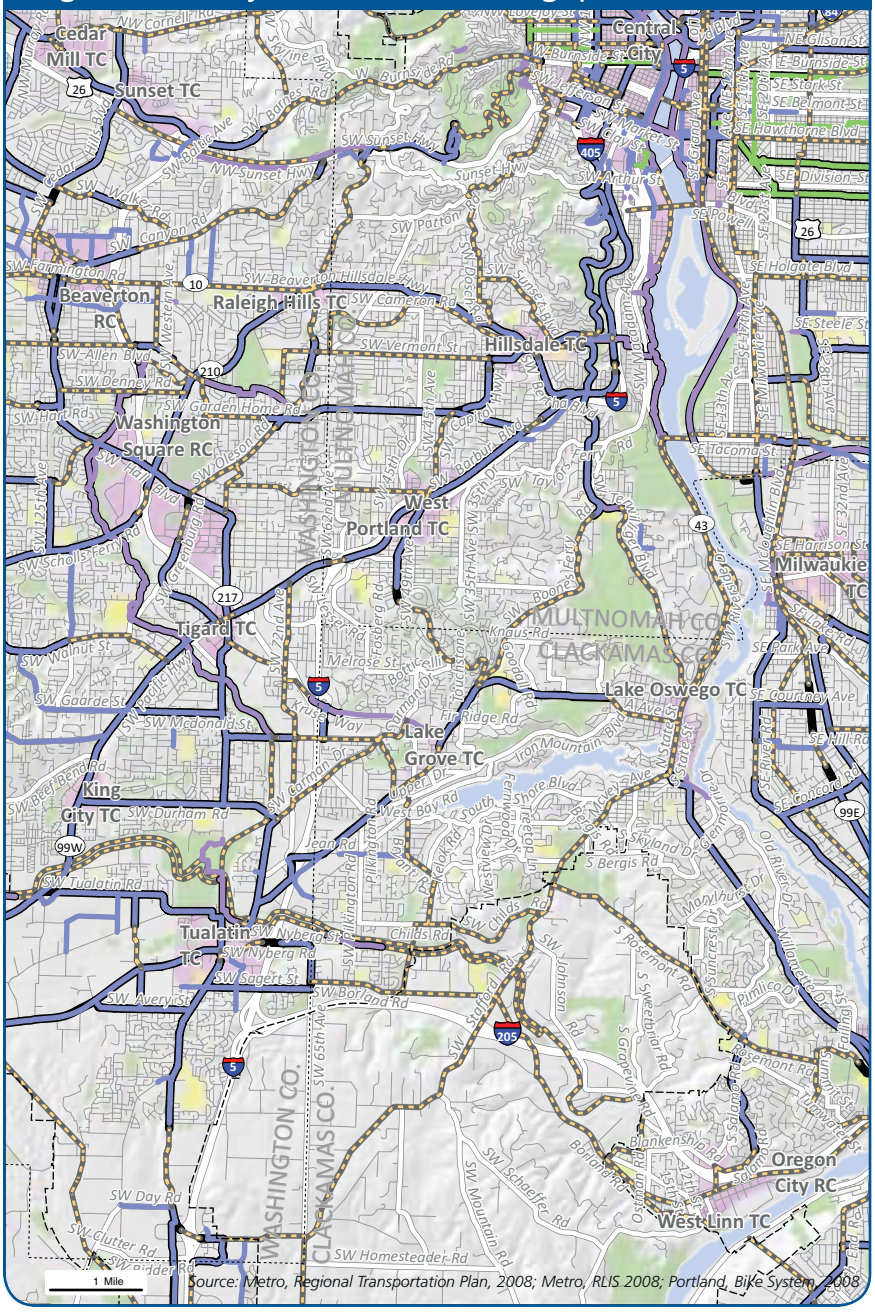
Ridership and Capacity

PM Peak 2 hour transit ridership (symbol size)	Ridership to capacity ratio (symbol color)
1000 +	*0.6 +*
500 - 1000	*0.3 - 0.6*
250 - 500	*0.1 - 0.3*
0 - 250	*0 - 0.1*

Quick facts

58,498	**Households**	**110,647**	**Jobs**
11.7%	*Households in 2040 regional and town centers*	*17.2%*	*Jobs in 2040 regional and town centers*
27.9%	*Households covered by peak premium transit*	*50.5%*	*Jobs covered by peak premium transit*

Regional bike system facilities and gaps



The Portland Central City to Tigard/Tualatin mobility corridor has several 30-minute or better bus routes serving the Hillsdale, Lake Oswego, Tigard, Tualatin and West Portland town centers. Transit centers are located along SW Barbur Blvd and Hwy 43. On many routes, ridership exceeds 60% of available capacity in the p.m. peak travel period. Planned rapid streetcar service will run parallel to Hwy 43 between Portland central city and Lake Oswego.

Bicycle System

- Bike Network Gaps[1]
- Bike Boulevards[2]
- Bike lane[2]
- Regional multi-use path[2]

Land use

- Urban centers
- Parks, open spaces
- Schools

[1] Areas in the network with insufficient data are indicated by black lines (▬).

[2] RTP Bike System facilities have black outlines.

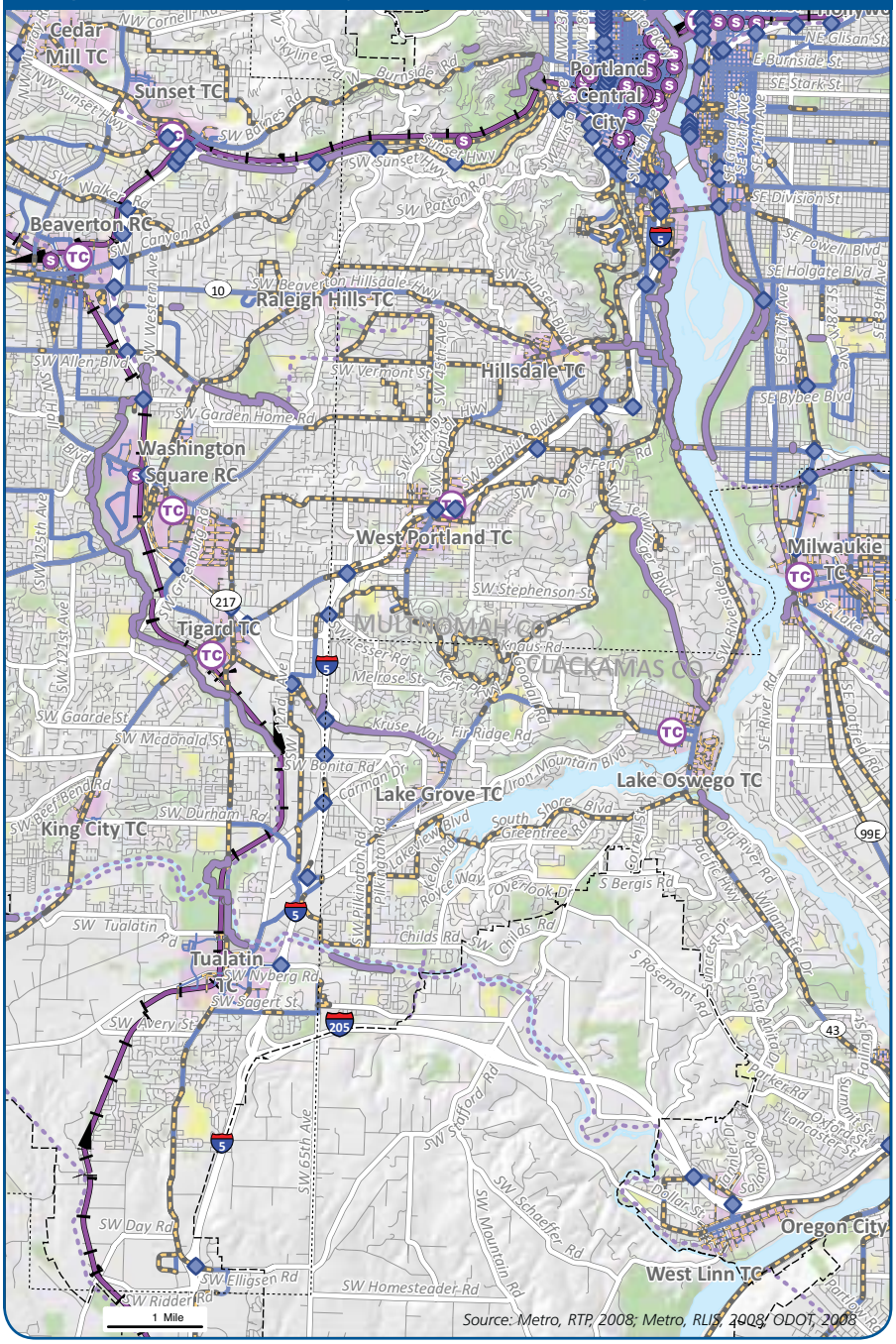
The ***Regional bike system facilities and gaps map*** compares the network of built bicycle facilities with the network envisioned in the RTP to identify service gaps. There are many gaps in the planned network that limit mobility by bicycle.

A primary function of the RTP bike system is to serve 2040 Target areas, such as the Portland central city and the Hillsdale, Lake Oswego, Tigard, Tualatin and West Portland town centers. Mobility to Portland central city from the northern end of the corridor is generally well-served but there are many gaps in the planned network to town centers.

Quick facts

50	**Bikeway network miles**
50	*Miles of bike lanes*
—	*Miles of bicycle boulevards*
13	**Trail miles**
8	*Regional trail miles*
5	*Local multi-use trails*

Regional pedestrian system facilities and gaps



Sidewalk System

- Exisiting sidewalk[1]
- Sidewalk gap[2]
- Regional multi-use path
- Proposed regional multi-use path

Inside Pedestrian Districts[3]

- Exisiting Sidewalk
- Sidewalk gap[2]

- Light rail transit
- Streetcar
- Transit centers
- Rail transit stations

Land use

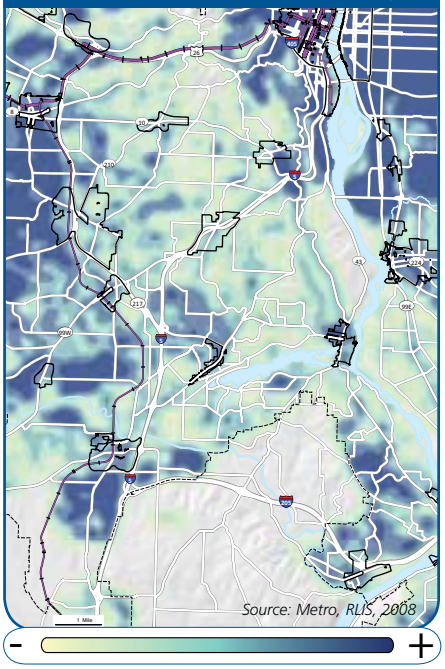
- RTP Pedestrian Districts
- Schools
- Parks, open spaces
- Pedestrian overcrossing

[1] Along 30-min. or better transit and RTP Pedestrian Corridors.

[2] Less than 100% on both sides

[3] Pedestrian Districts are 2040 centers and Station Communities.

Sidewalk and trail density



The ***Regional pedestrian system facilities and gaps map*** identifies missing sidewalks on designated RTP Transit/mixed use corridors and Pedestrian districts. Most of the arterials and collectors have significant sections of missing sidewalk.

The Sidewalk/trail density map demonstrates the completeness of the pedestrian network across the corridor. The corridor is largely deficient in sidewalks on local streets.

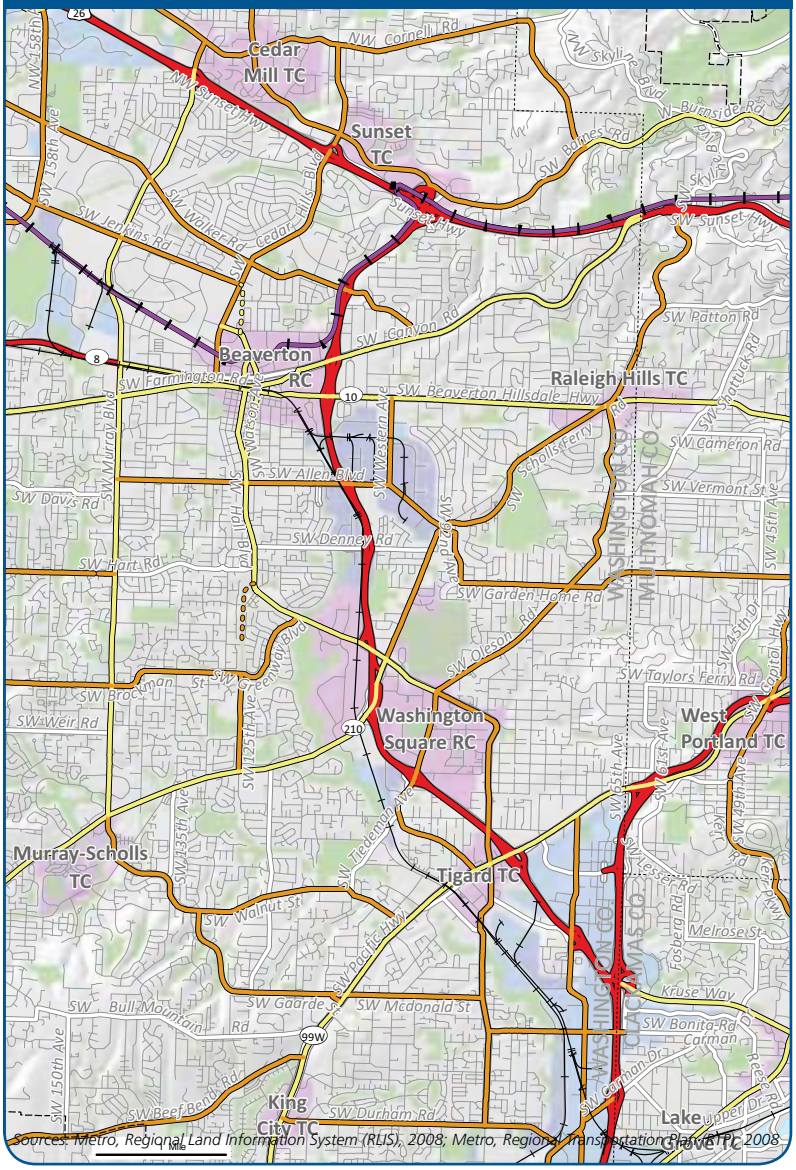
Quick facts

Sidewalks

40.0%	*Completed in RTP ped. districts*
46.2%	*Completed in RTP ped. corridors*
49.4%	*Completed along 30 minute or better bus service*

Corridor 19

Beaverton to Tigard



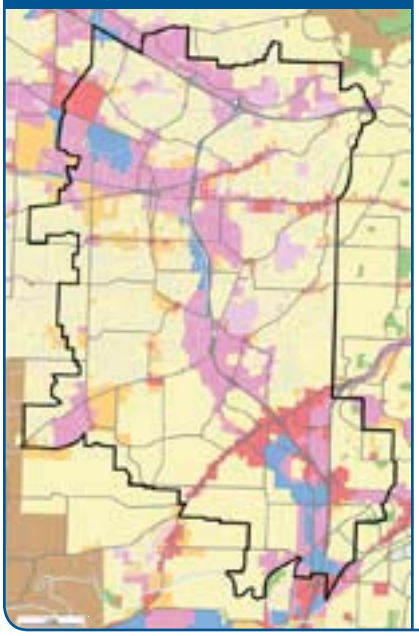
Sources: Metro, Regional Land Information System (RLIS), 2008; Metro, Regional Transportation Plan (RTP), 2008

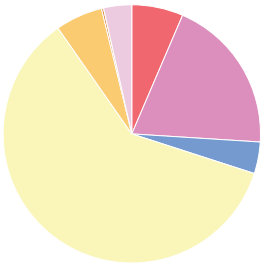
The Beaverton to Tigard mobility corridor encompasses Hwy 217, MAX light rail, Westside Express Service (WES) commuter rail, parallel arterial streets as well as transit service and bicycle routes that support movement in and through the corridor. Hwy 217 supports intraregional travel between Beaverton, Hillsboro, Portland, Tigard, Tualatin, and Wilsonville. SW Hall Blvd, SW Murray Blvd, SW Oleson Rd and SW Scholls Ferry Blvd are parallel streets in this corridor. There is a diversity of land uses including several commercial centers, employment and industrial areas. The local street network is a patchwork of well-connected and discontinuous streets.

Regional Transportation Plan Street and Throughway System

- Principal arterial
- Major arterial
- Minor arterial
- Rural arterial
- Light rail transit
- Streetcar
- Freight rail
- County line
- UGB
- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces

Zoning





- Corridor analysis zone (CAZ)
- 6% Commercial
- 20% Mixed-use commercial
- 4% Industrial
- 60% Single-family residential
- 6% Multi-family residential
- <1% Parks and open spaces
- — Rural
- 4% Public facilities

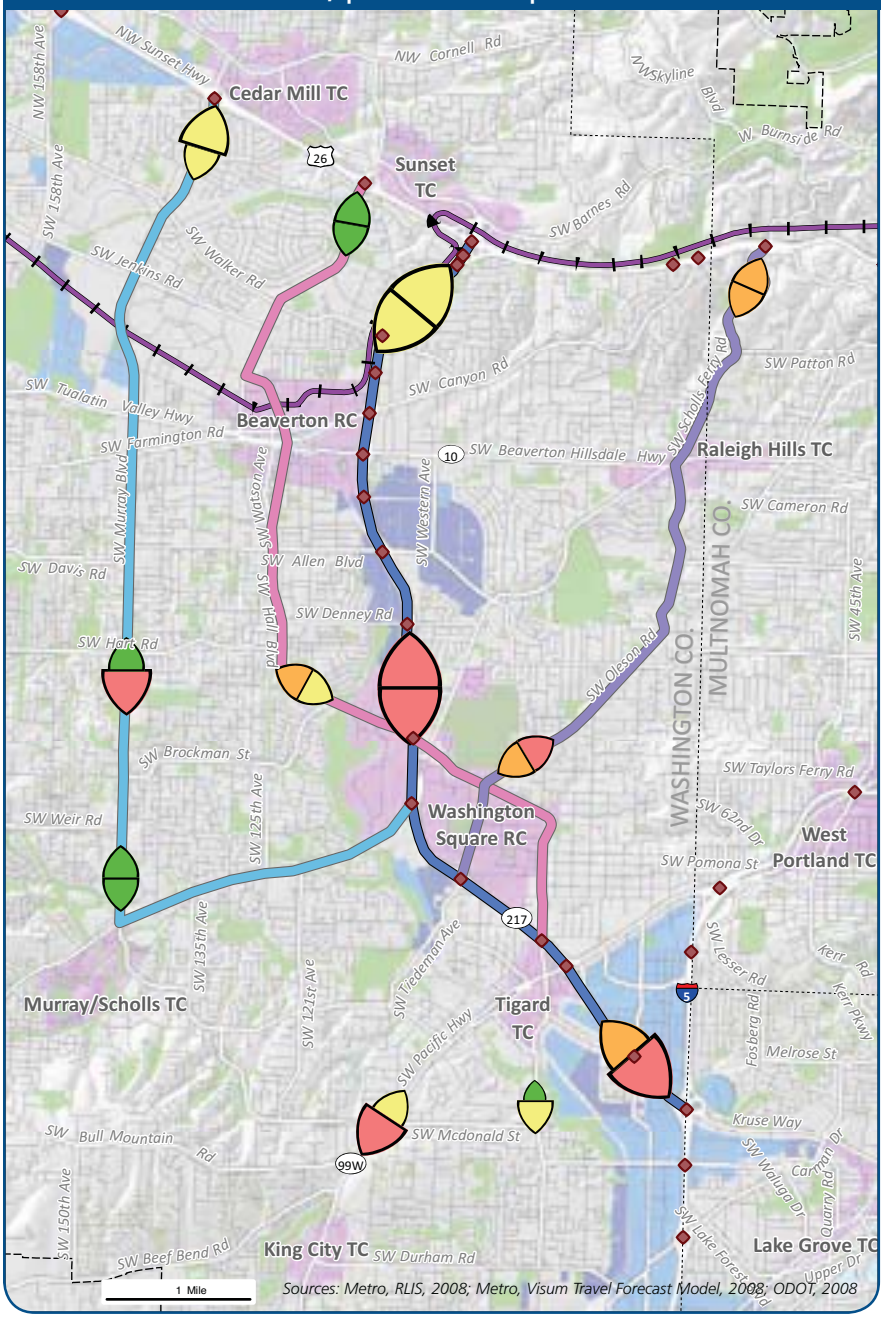
Source: Metro, RLIS, 2008

Quick facts

derived from Corridor Analysis Zone (CAZ)

36	**Area of CAZ in square miles**
161,399	**Population**
65,594	**Households**
33.0%	*Households covered by 15 minute transit service*
120,599	**Jobs** 72% Commercial, 28% Industrial
50.2%	*Jobs covered by 15 minute transit service*
57	**Bikeway network miles**
24	**Trail miles**
47.4%	**Sidewalks completed in RTP ped. districts**
603	**Total roadway miles**
6	*Miles of RTP freeways*
1	*Miles of RTP highways*
30	*Miles of RTP major arterials*
38	*Miles of RTP minor arterials*
9	*Miles of RTP collectors*
—	*Miles of RTP rural arterials (urban-to-urban)*
—	*Miles of RTP rural arterials (farm-to-market)*
519	*Miles of local streets*
—	**Major river crossings**
109	**Intersections per square mile**
2	**Freeway crossings per mile**

Motor vehicle travel, p.m. 2-hour peak



Sources: Metro, RLIS, 2008; Metro, Visum Travel Forecast Model, 2008; ODOT, 2008

Volume and Capacity

PM Peak 2 hour auto volume (symbol size)	Volume to capacity ratio (symbol color)
6,001 - 15,000	0.9+
3,001 - 6,000	0.81 - 0.9
1,001 - 3,000	0.71 - 0.8
0 - 1,000	0 - 0.7

Land use

- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces
- Vehicle overcrossing
- Light Rail/Street Car

Motor Vehicle Facilities[1,2]

Main Throughway
Hwy 217

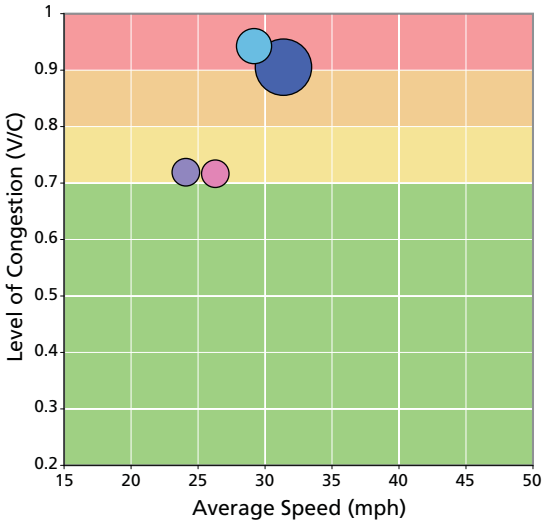
Parallel Arterials
- Murray Blvd
- Hall Blvd
- Scholls Ferry Rd/Oleson Rd

[1]The symbol size represents the PM Peak 2-hour outflow auto volume at the corridor's most congested location.

[2]The symbol colors match the colors of the motor vehicle facilities in the map and the chart.

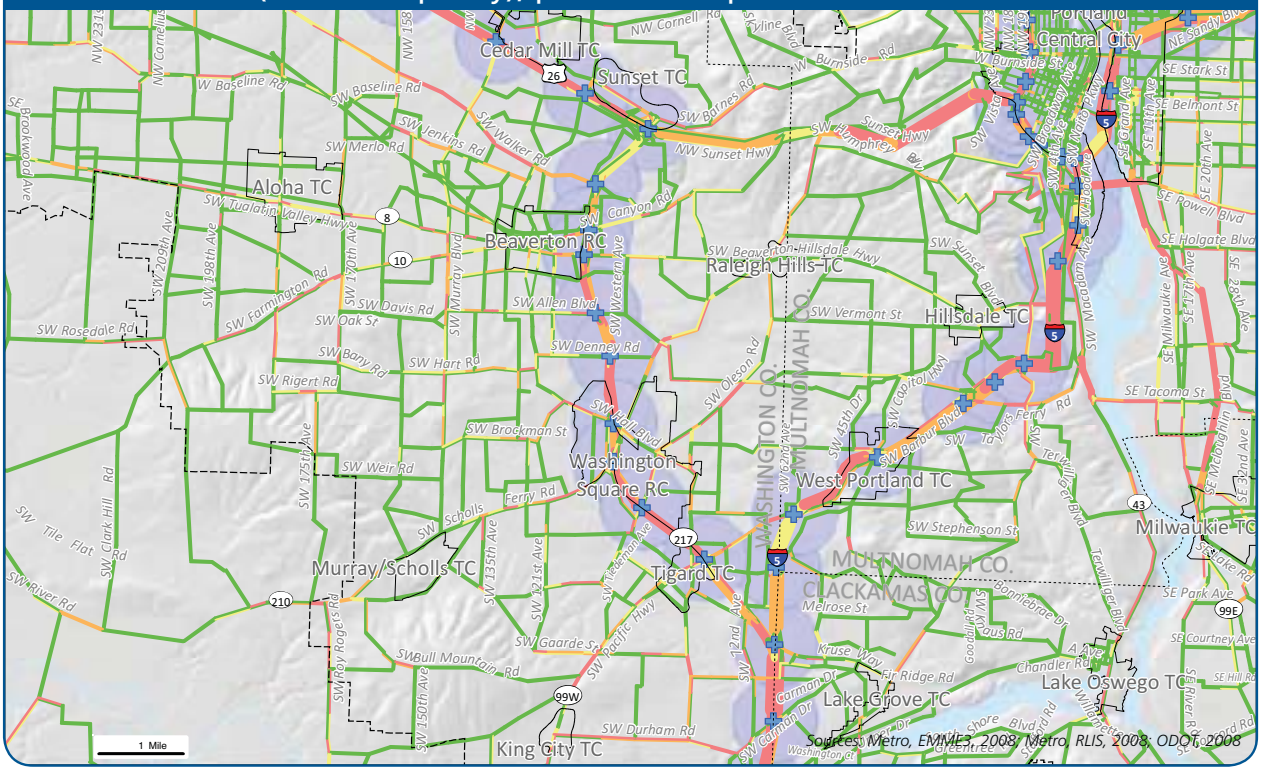
The ***Motor vehicle travel map and chart*** compare traffic volumes and congestion on the main throughway and some of the parallel arterial streets in the 2-hour p.m. peak travel period. Hwy 217 carries heavy volumes of traffic and experiences moderate to heavy congestion in both directions. The parallel arterials carry lower, similar volumes of traffic and have varying degrees of p.m. congestion. Average travel speed on the Hwy 217 falls below 35 mph, which is considerably slower than the free flow speed. Average travel speed on the parallel arterials is about 25 mph

Motor vehicle facility performance



Sources: Metro, EMME3, 2008

Level of service (volume/capacity), p.m. 2-hour peak



Level of Service

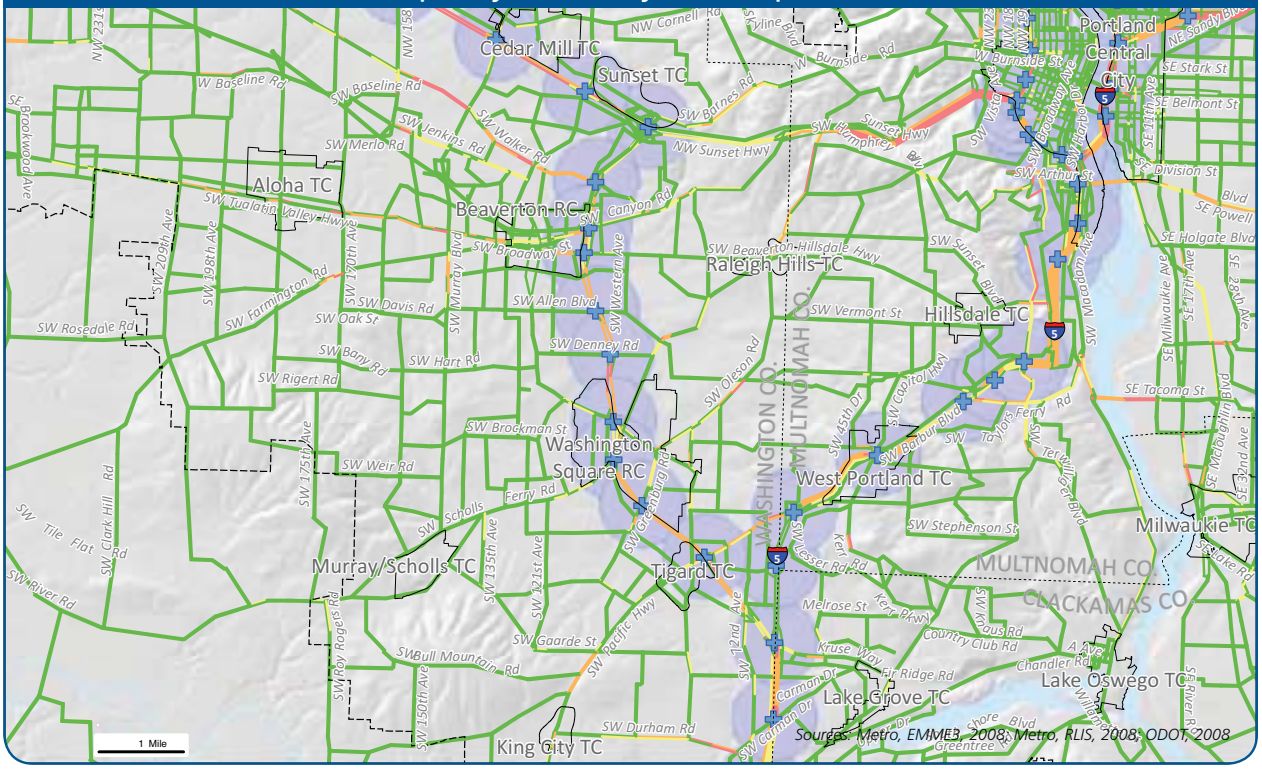
Volume (symbol size)	Level of Service (v/c) (symbol color)
15,000+	*LoS F (1.0+)*
10,001-15,000	*LoS E (0.90 - 1.00)*
5,001-10,000	*LoS D (0.80 - 0.90)*
0-5,000	*LoS C (0 - 0.80)*

Urban centers

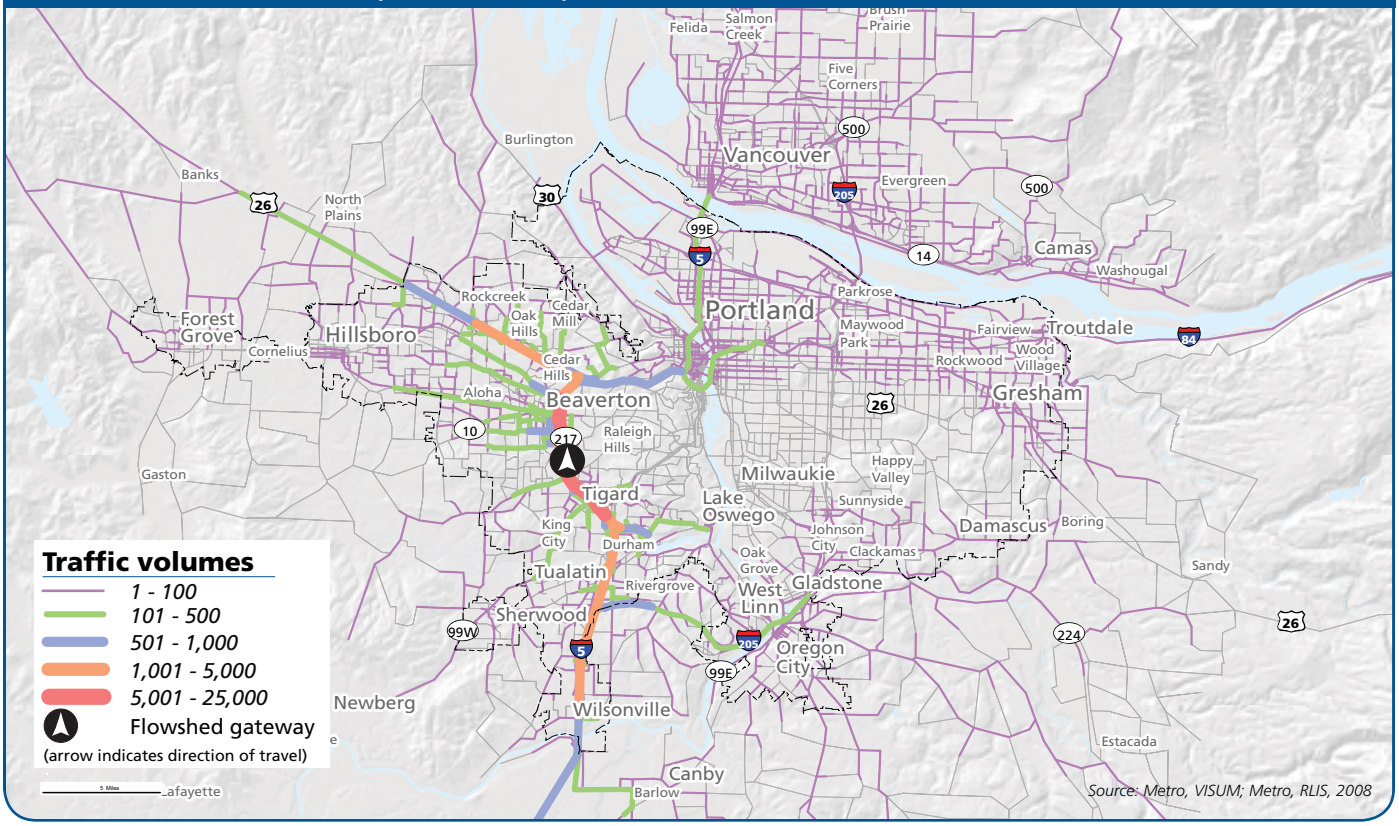
Interchanges with 1/2 mile buffer

The ***Level of service maps*** show the volume-to-capacity ratio on collector-level and above roads in the 2-hour p.m. and 1-hour mid-day peak travel periods. In both travel periods, Hwy 217 reaches or exceeds the RTP regional motor vehicle level of service (LOS) operating standards between US 26 and I-5. Some segments of the parallel arterials also exceed LOS operating standards in both travel periods, particularly SW Oleson Rd and SW Scholls Ferry Rd.

Level of service (volume/capacity), mid-day 1-hour peak

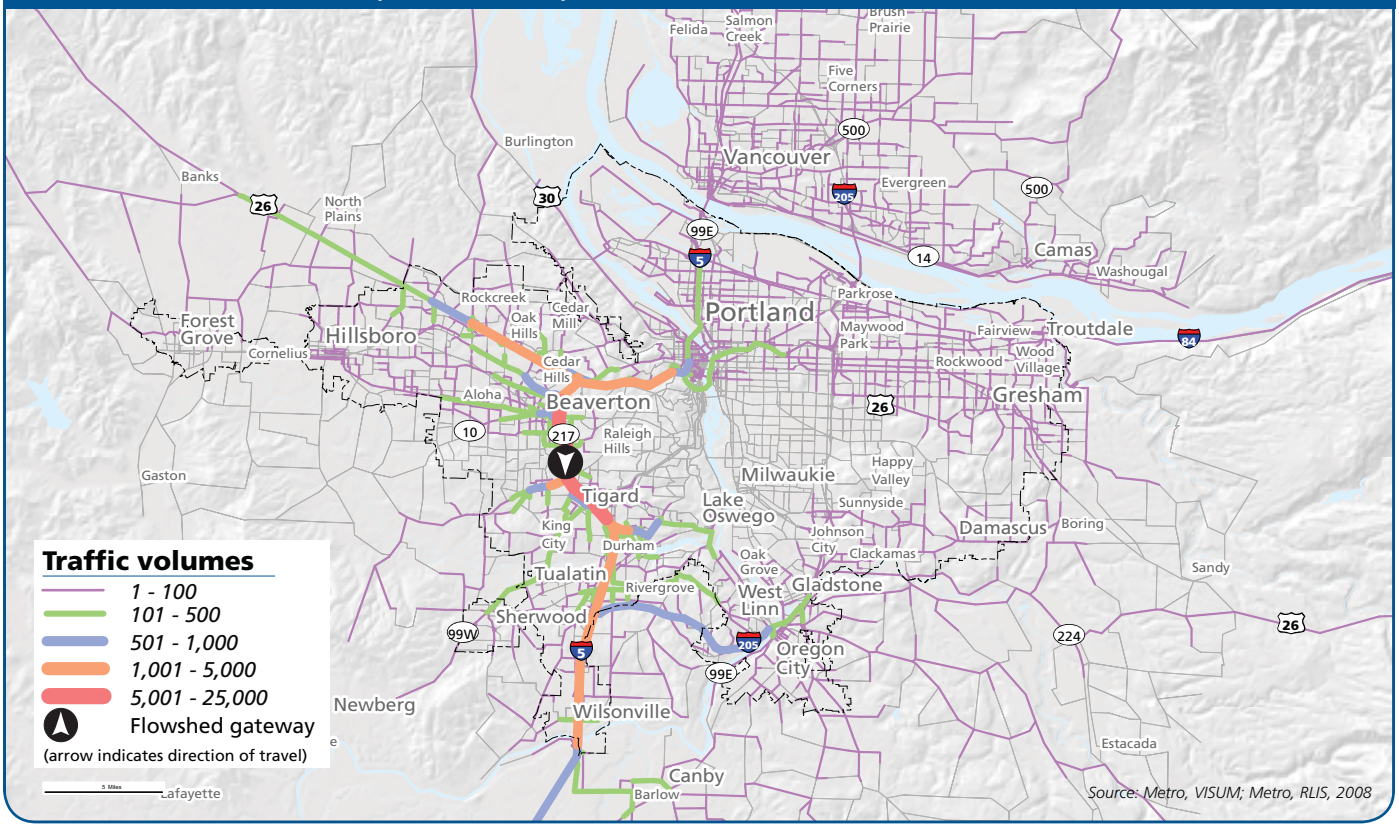


Flowshed, northbound p.m. 2-hour peak

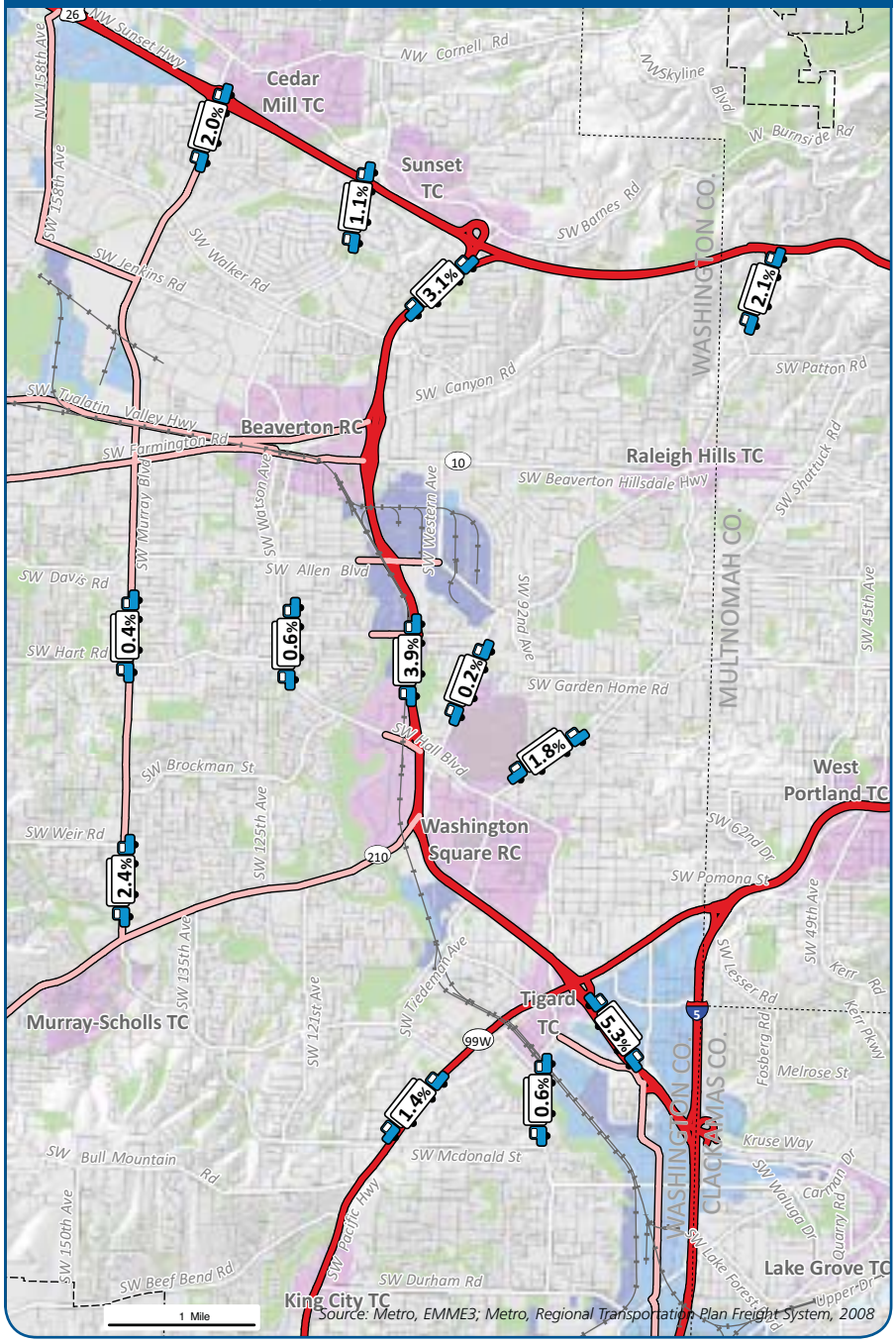


The ***Flowshed maps*** show the volume and flow of vehicles that pass the mid-point of north- and southbound Hwy 217 during the 2-hour p.m. peak travel period. Hwy 217 plays a key role in intraregional travel on the west side of the region.

Flowshed, southbound p.m. 2-hour peak



Truck travel, mid-day 1-hour volume



Source: Metro, EMME3; Metro, Regional Transportation Plan Freight System, 2008

Mid-day Truck Freight

0.0% % Truck volume

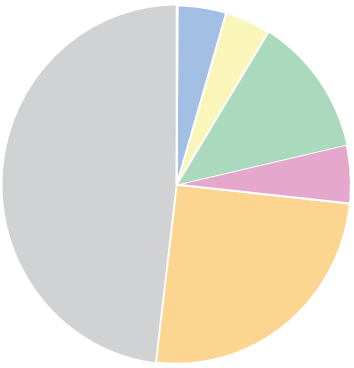
Freight Throughways

- Main roadway routes
- Road connectors
- Main railroad lines
- Branch railroad lines and spur tracks

Land use

- Rail yards
- Marine Facilities
- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces

Freight Employment Types



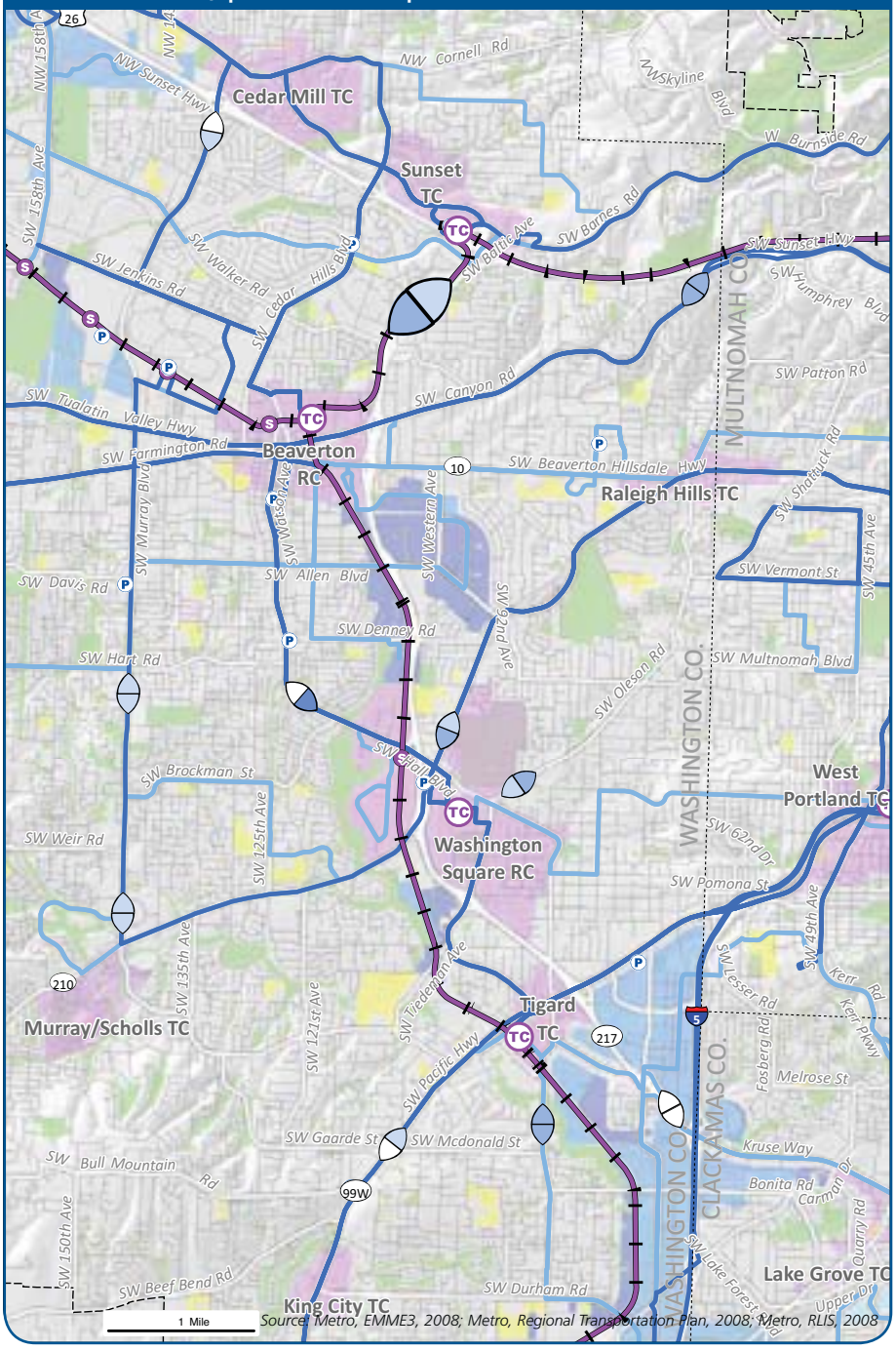
5%	Transportation/Warehousing/Utils
4%	Construction
13%	Manufacturing
3%	Wholesale
26%	Retail-Services
48%	Non-freight employment
<1%	Natural resources

Source: ESRI, Business Analyst, Feb. 2009 - based on number of employees

The ***Freight travel map*** displays the percentage of truck volume to total volume on Hwy 217 and key parallel arterial streets in the 1-hour mid-day travel period. Trucks make up a relatively small portion of the total traffic on Hwy 217, although it is an important route for Washington County commerce. On the arterial streets, adjacent land uses dictate levels of truck activity. A few locations near interchanges have truck volumes above 2% but in most locations trucks make up less than 1% of total volumes.

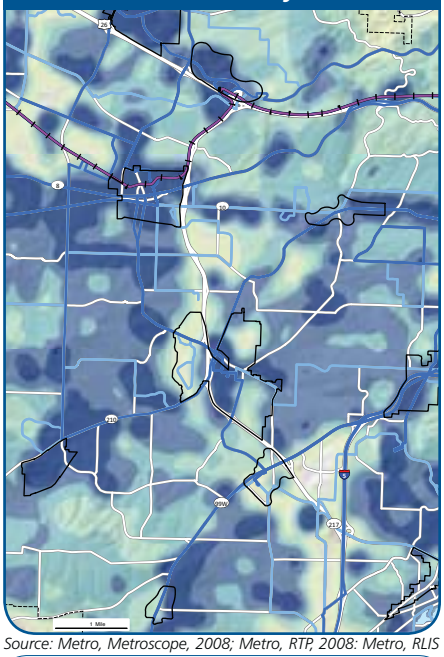
The Portland and Western railroad operates shortline service in the corridor. Approximately four freight trains a day travel on the line shared with WES commuter rail.

Transit travel, p.m. 2-hour peak



Source: Metro, EMME3, 2008; Metro, Regional Transportation Plan, 2008; Metro, RLIS, 2008

Household density



Source: Metro, Metroscope, 2008; Metro, RTP, 2008: Metro, RLIS

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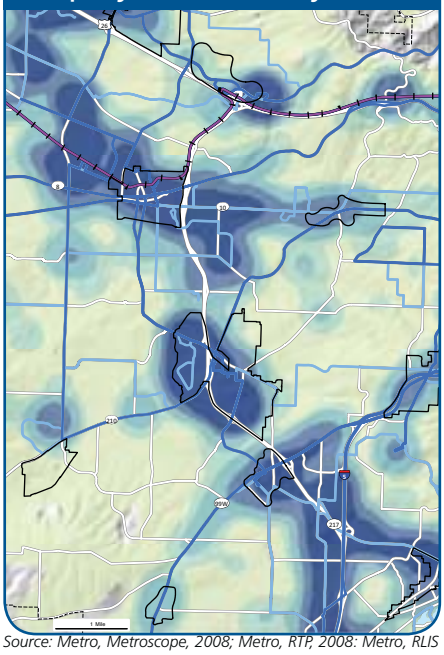
Employment density



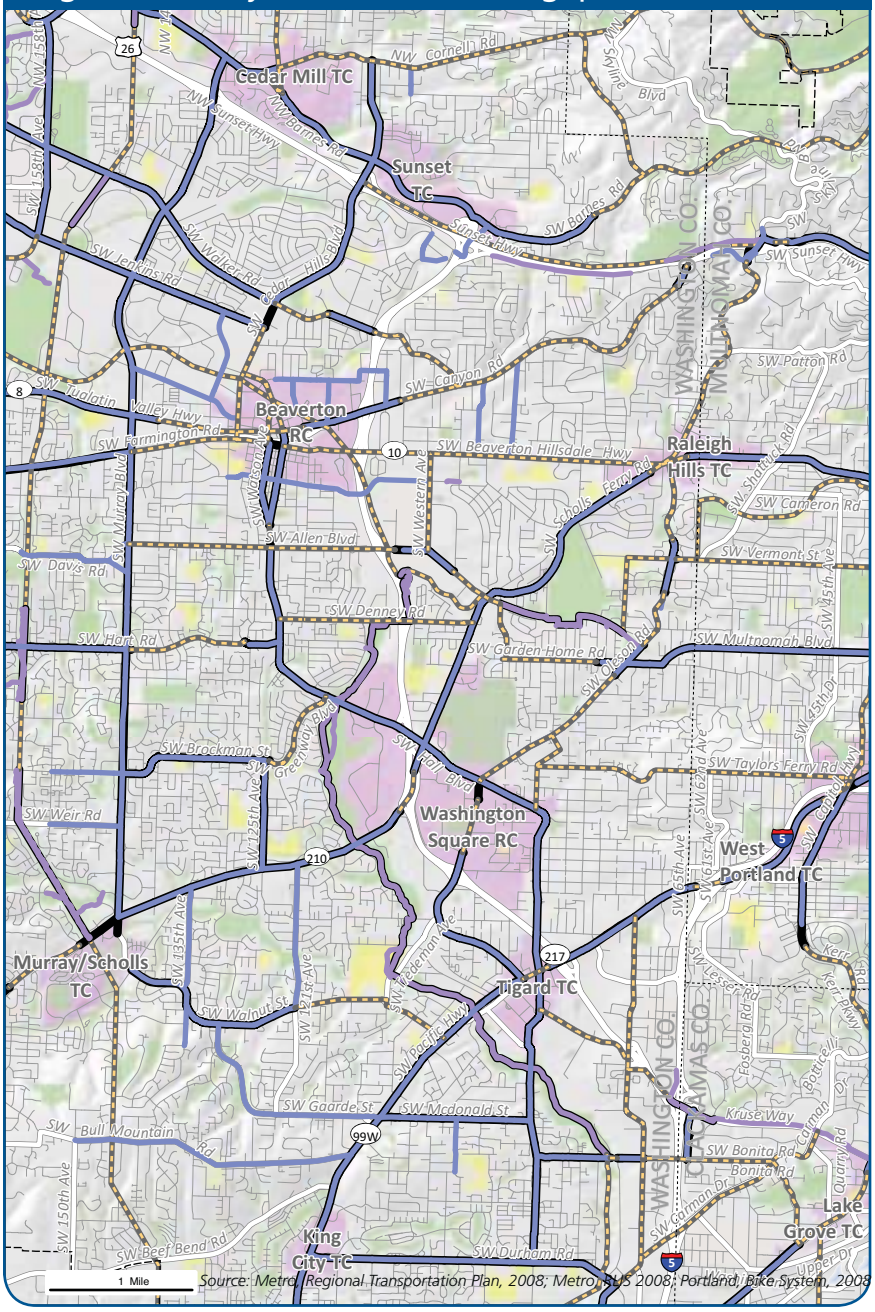
Source: Metro, Metroscope, 2008; Metro, RTP, 2008: Metro, RLIS

Transit Service	Land use	Ridership and Capacity	
Bus line - 15 minute or better service	Employment areas	PM Peak 2 hour transit ridership (symbol size)	Ridership to capacity ratio (symbol color)
Bus line - 30 minute or better service	Industrial areas	*1000 +*	*0.6 +*
Light rail transit	Urban centers	*500 - 1000*	*0.3 - 0.6*
Streetcar	Parks, open spaces	*250 - 500*	*0.1 - 0.3*
Transit centers	Schools	*0 - 250*	*0 - 0.1*
Rail transit stations			
Park & Ride			

Quick facts

65,594	**Households**	**120,599**	**Jobs**
14.1%	*Households in 2040 regional and town centers*	*29.3%*	*Jobs in 2040 regional and town centers*
33.0%	*Households covered by peak premium transit*	*50.2%*	*Jobs covered by peak premium transit*

Regional bike system facilities and gaps



The Beaverton to Tigard mobility corridor includes MAX light rail, WES commuter rail and a number of frequent bus routes. MAX Blue and Red light rail lines connect the Sunset and Beaverton transit centers. WES commuter rail provides a.m. and p.m. peak train service between Beaverton transit center and Wilsonville. WES shares track with Portland and Western railroad. Bus lines with 15- and 30-minute bus service run along SW Cedar Hills/Hall Blvd, SW Murray Blvd and SW Scholls Ferry Rd. These routes connect Beaverton and Washington Square regional centers and Cedar Mill, Murray/Scholls, Raleigh Hills, Sunset and Tigard town centers. On a few lines, transit ridership to service capacity exceeds 30% in the southbound direction.

Bicycle System

- Bike Network Gaps[1]
- Bike Boulevards[2]
- Bike lane[2]
- Regional multi-use path[2]

Land use

- Urban centers
- Parks, open spaces
- Schools

[1] Areas in the network with insufficient data are indicated by black lines (▬).

[2] RTP Bike System facilities have black outlines.

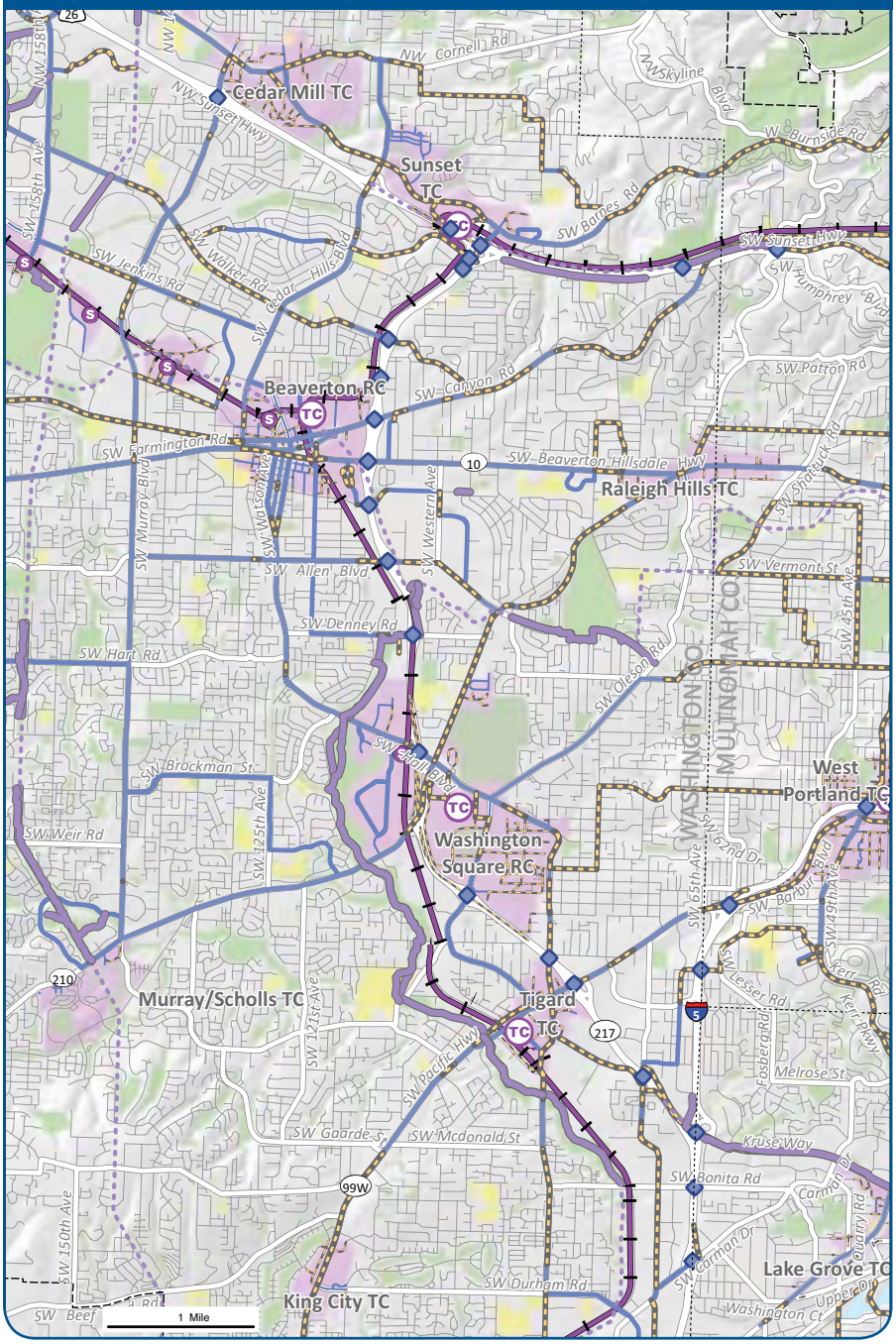
The ***Regional Bike System Facilities and Gaps map*** compares the network of built bicycle facilities with the network envisioned in the RTP to identify service gaps. Many of the arterials in this corridor have bike lanes, although some key gaps remain. The Fanno Creek multi-use path accommodates north-south bike travel from south of SW Allen Blvd to SW Bonita Rd.

A primary function of the RTP bike system is to serve 2040 Target areas, such as the Beaverton and Washington Square regional centers and the Cedar Mill, Murray/Scholls, Raleigh Hills, Sunset and Tigard town centers, which are moderately served by existing bicycle routes but still have key gaps.

Quick facts

57	**Bikeway network miles**
57	*Miles of bike lanes*
—	*Miles of bicycle boulevards*
24	**Trail miles**
10	*Regional trail miles*

Regional pedestrian system facilities and gaps



Source: Metro, RTP, 2008; Metro, RLIS, 2008; ODOT, 2008

Sidewalk System

- Exisiting sidewalk[1]
- Sidewalk gap[2]
- Regional multi-use path
- Proposed regional multi-use path

Inside Pedestrian Districts[3]

- Exisiting Sidewalk
- Sidewalk gap[2]

- Light rail transit
- Streetcar
- Transit centers
- Rail transit stations

Land use

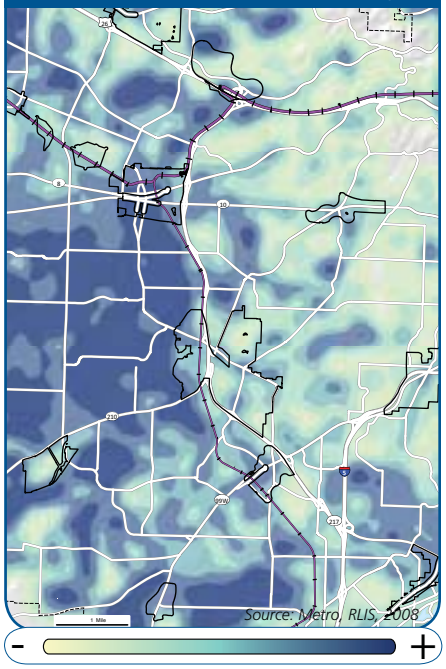
- RTP Pedestrian Districts
- Schools
- Parks, open spaces
- Pedestrian overcrossing

[1] Along 30-min. or better transit and RTP Pedestrian Corridors.

[2] Less than 100% on both sides

[3] Pedestrian Districts are 2040 centers and Station Communities.

Sidewalk and trail density



The ***Regional pedestrian system facilities and gaps map*** identifies missing sidewalks on RTP Transit/mixed use corridors and in Pedestrian districts. Sidewalks on the parallel arterials are largely complete, with the exception of SW Scholls Ferry Rd. Some fairly significant gaps in the regional and town center sidewalk networks remain. In some places, the discontinuous local street grid diminishes access to transit service and neighborhood destinations.

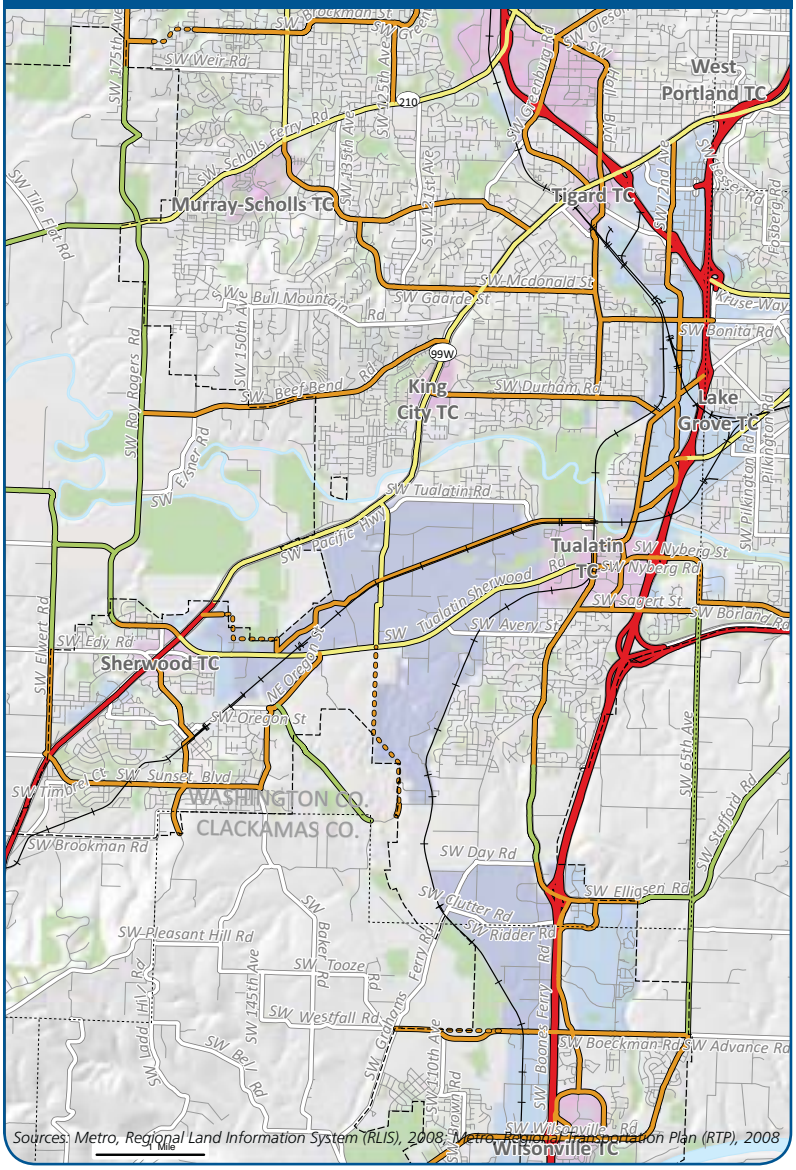
The ***Sidewalk and trail density map*** demonstrates the completeness of the pedestrian network across the corridor. This corridor demonstrates a largely fairly complete local sidewalk network west of Hwy 217 and an incomplete network to the east.

Quick facts

	Sidewalks
47.4%	*Completed in RTP ped. districts*
71.2%	*Completed in RTP ped. corridors*
72.6%	*Completed along 30 minute or better bus service*

Corridor 20

Tigard and Tualatin to Sherwood

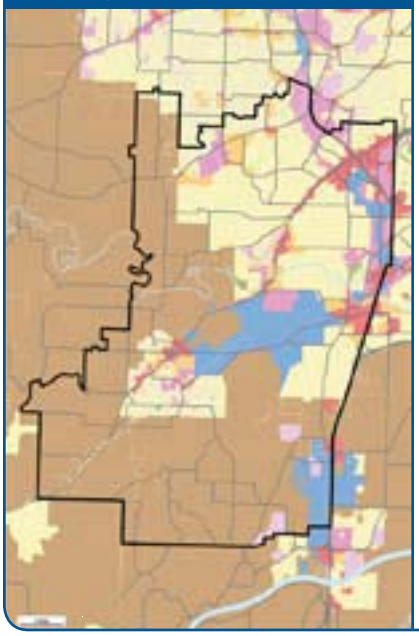


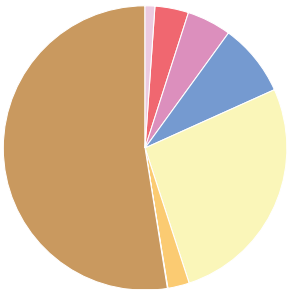
The Tualatin to Wilsonville mobility corridor encompasses 99W, parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. 99E supports inter- and intraregional travel inside the region and through the Willamette Valley. SW 72nd/Boones Ferry/ Tualatin-Sherwood Rd, SW Hall Blvd, and SW Scholls Ferry/Roy Rogers Rd are key parallel streets. Together, these facilities provide access to Washington Square regional center, five town centers, and significant industrial and employment areas. The arterial and collector street network has evolved from farm-to-market roads and lacks the continuous grid of more urbanized areas.

Regional Transportation Plan
Street and Throughway System

- Principal arterial
- Major arterial
- Minor arterial
- Rural arterial
- Light rail transit
- Streetcar
- Freight rail
- County line
- UGB
- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces

Zoning





	Corridor analysis zone (CAZ)
4%	**Commercial**
5%	**Mixed-use commercial**
8%	**Industrial**
27%	**Single-family residential**
2%	**Multi-family residential**
0%	**Parks and open spaces**
52%	**Rural**
1%	**Public facilities**

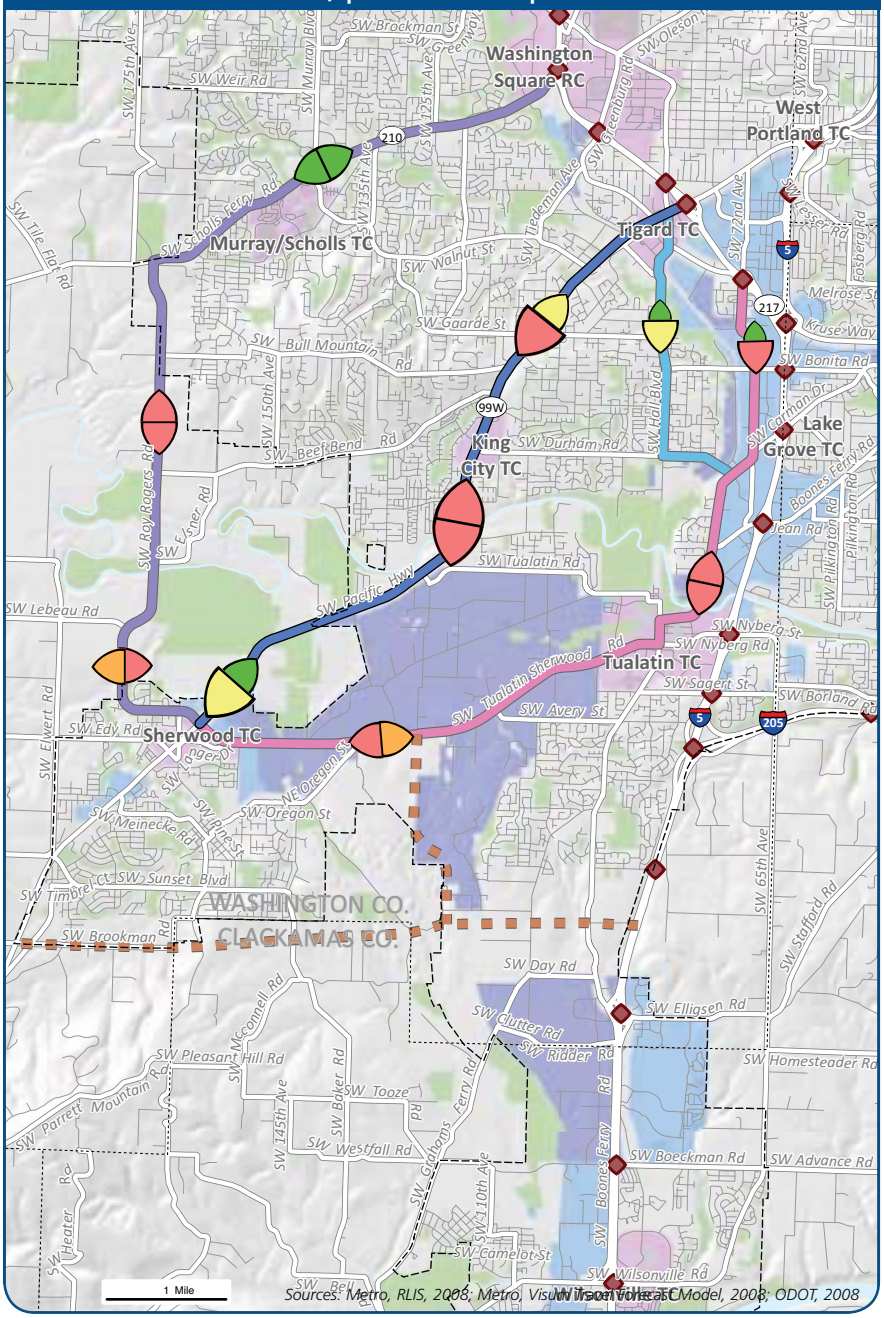
Source: Metro, RLIS, 2008

Quick facts

derived from Corridor Analysis Zone (CAZ)

61	**Area of CAZ in square miles**
117,269	**Population**
45,364	**Households**
13.3%	*Households covered by 15 minute transit service*
81,628	**Jobs** 55% Commercial, 45% Industrial
28.1%	*Jobs covered by 15 minute transit service*
58	**Bikeway network miles**
8	**Trail miles**
60.6%	**Sidewalks completed in RTP ped. districts**
528	**Total roadway miles**
14	*Miles of RTP freeways*
5	*Miles of RTP highways*
13	*Miles of RTP major arterials*
33	*Miles of RTP minor arterials*
6	*Miles of RTP collectors*
1	*Miles of RTP rural arterials (urban-to-urban)*
7	*Miles of RTP rural arterials (farm-to-market)*
449	*Miles of local streets*
0	**Major river crossings**
51	**Intersections per square mile**
1	**Freeway crossings per mile**

Motor vehicle travel, p.m. 2-hour peak



Volume and Capacity

PM Peak 2 hour auto volume (symbol size)	Volume to capacity ratio (symbol color)
6,001 - 15,000	0.9+
3,001 - 6,000	0.81 - 0.9
1,001 - 3,000	0.71 - 0.8
0 - 1,000	0 - 0.7

Land use

- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces
- Vehicle overcrossing
- Light Rail/Street Car

Motor Vehicle Facilities[1,2]

Main Throughway

- Hwy 99W

Parallel Arterials

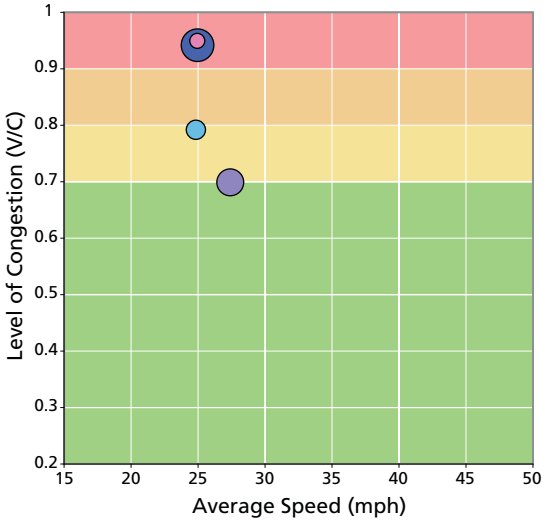
- Scholls Ferry Rd/Roy Rogers Rd
- SW Hall Blvd
- 72nd Ave/Boones Ferry Rd/ Tualatin Sherwood Rd
- I5-99W Connector (potential)

[1]The symbol size represents the PM Peak 2-hour outflow auto volume at the corridor's most congested location.

[2]The symbol colors match the colors of the motor vehicle facilities in the map and the chart.

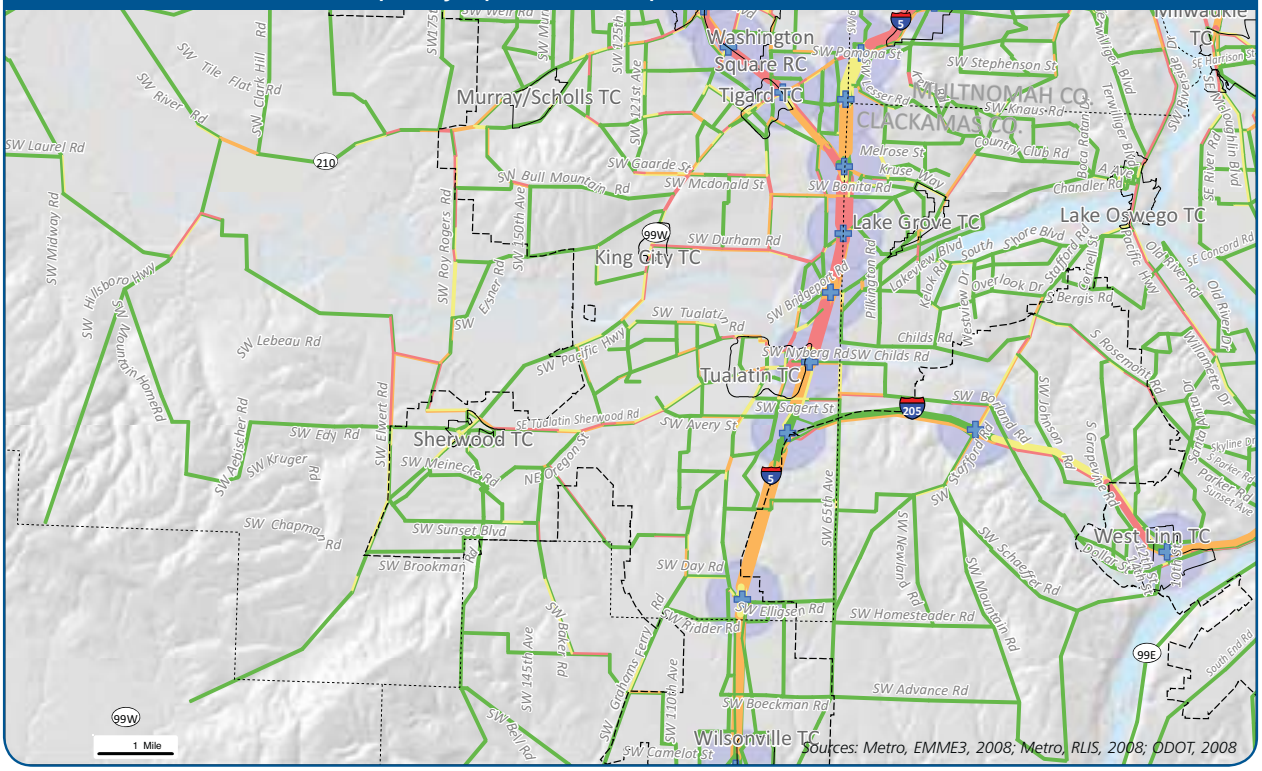
The ***Motor vehicle travel map and chart*** compare traffic volumes and congestion on the main highway and some of the parallel arterial streets in the 2-hour p.m. peak travel period. 99E experiences moderate to heavy congestion southbound between Hwy 217 and SW Tualatin Rd. Many of the arterial and collector streets also experience moderate to heavy congestion. Average travel speed on 99E falls below 25mph, which is noticeably slower than free flow speed.

Motor vehicle facility performance



Sources: Metro, EMME3, 2008

Level of service (volume/capacity), p.m. 2-hour peak



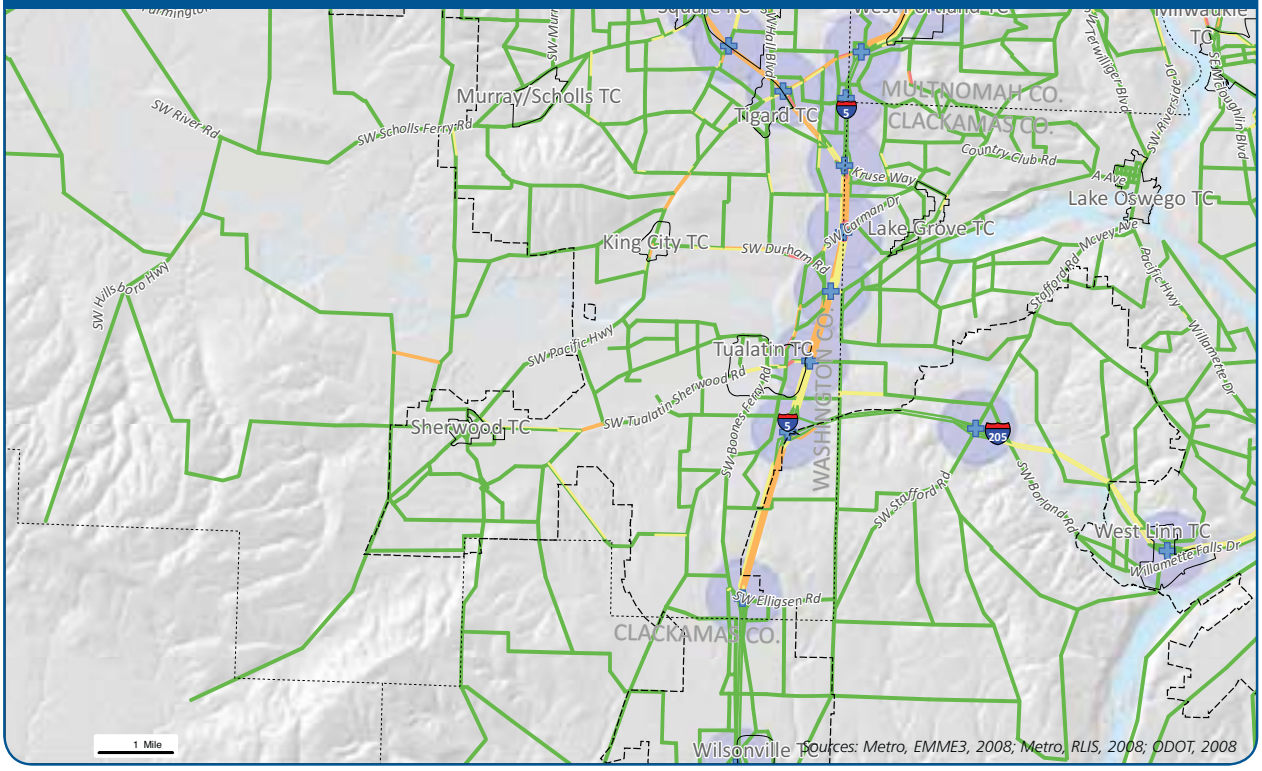
Level of Service

Volume (symbol size)	Level of Service (v/c) (symbol color)
15,000+	*LoS F (1.0+)*
10,001-15,000	*LoS E (0.90 - 1.00)*
5,001-10,000	*LoS D (0.80 - 0.90)*
0-5,000	*LoS C (0 - 0.80)*

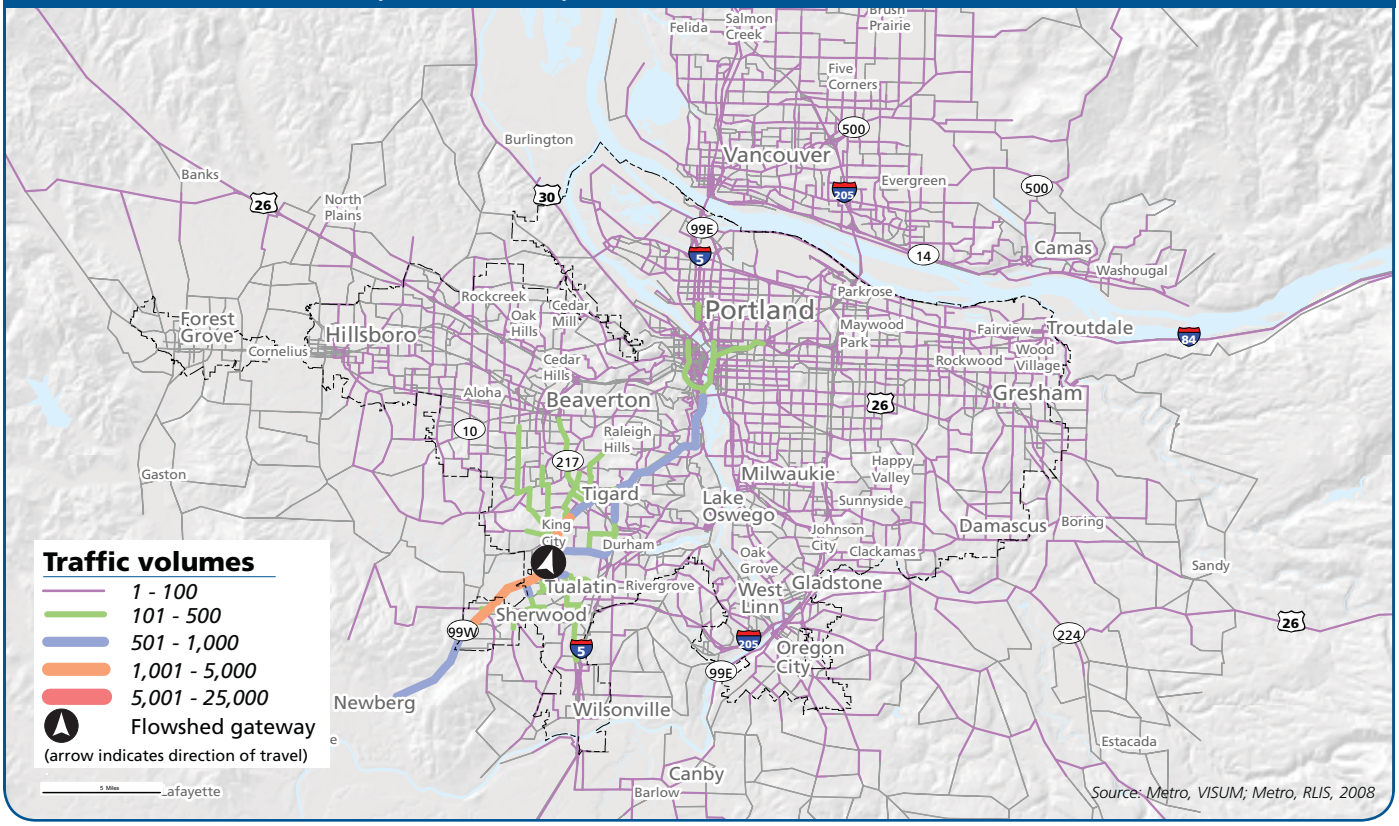
Urban centers

Interchanges with 1/2 mile buffer

Level of service (volume/capacity), mid-day 1-hour peak

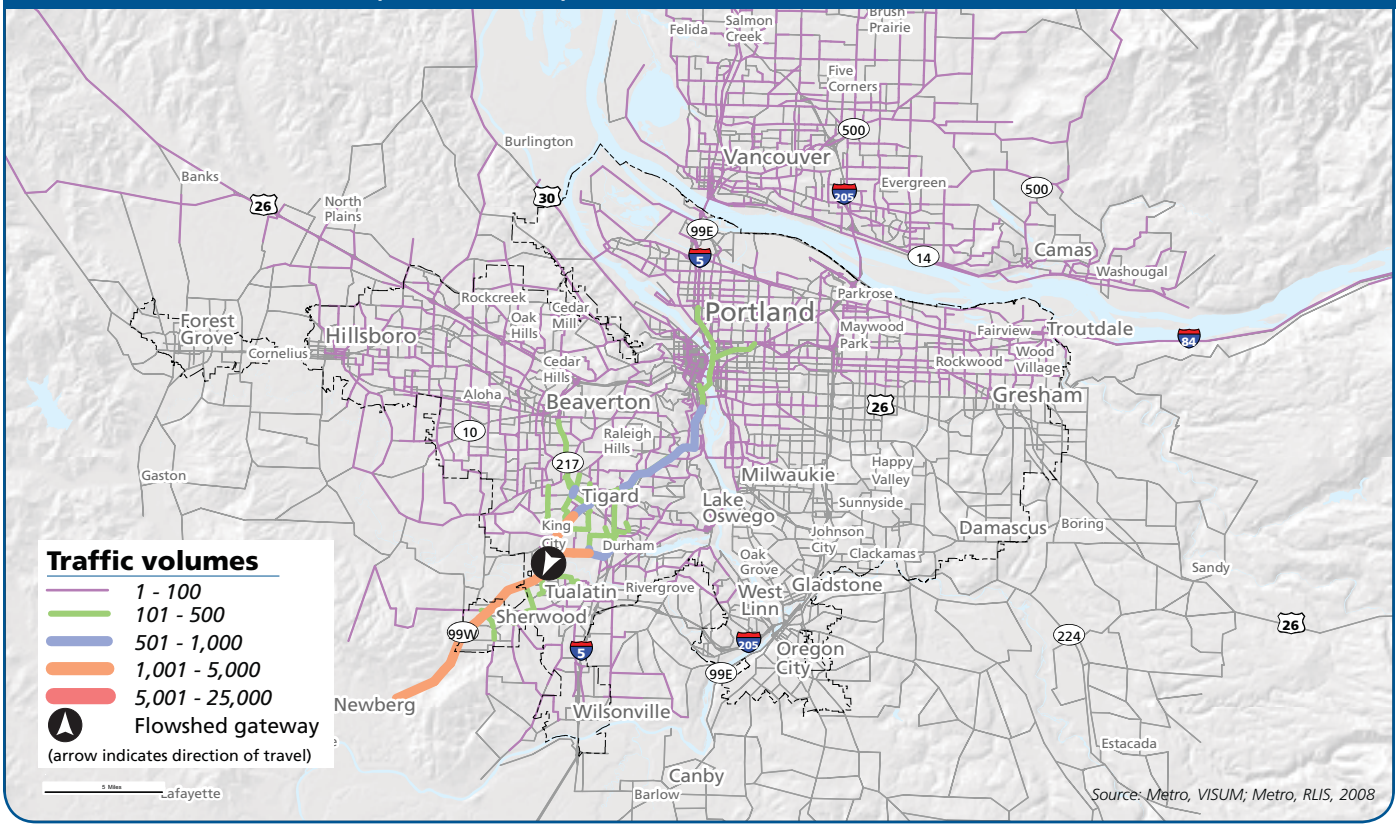


Flowshed, northbound p.m. 2-hour peak

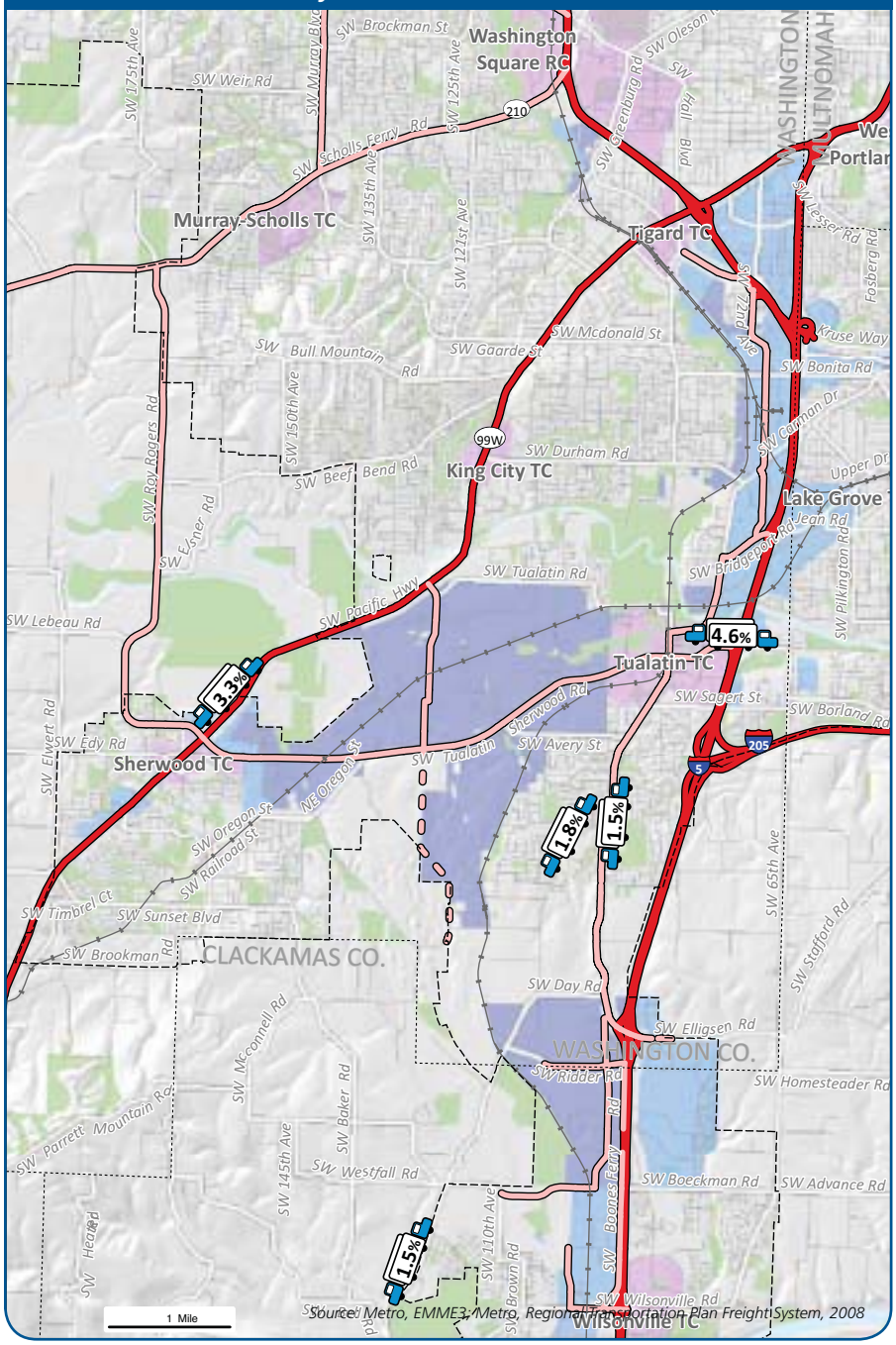


The ***Flowshed maps*** show the volume and flow of vehicles that pass the flowshed gateway of north- and southbound 99W during the 2-hour p.m. peak travel period. 99W plays a key role in travel between the southwest corner of the region and Portland central city and the Willamette Valley.

Flowshed, southbound p.m. 2-hour peak



Truck travel, mid-day 1-hour volume



Mid-day Truck Freight

0.0% % Truck volume

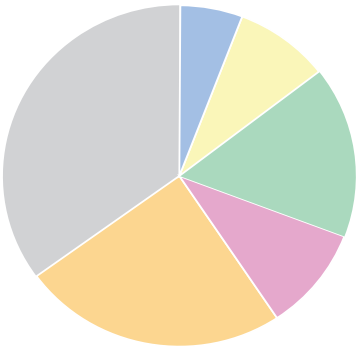
Freight Throughways

- Main roadway routes
- Road connectors
- Main railroad lines
- Branch railroad lines and spur tracks

Land use

- Rail yards
- Marine Facilities
- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces

Freight Employment Types



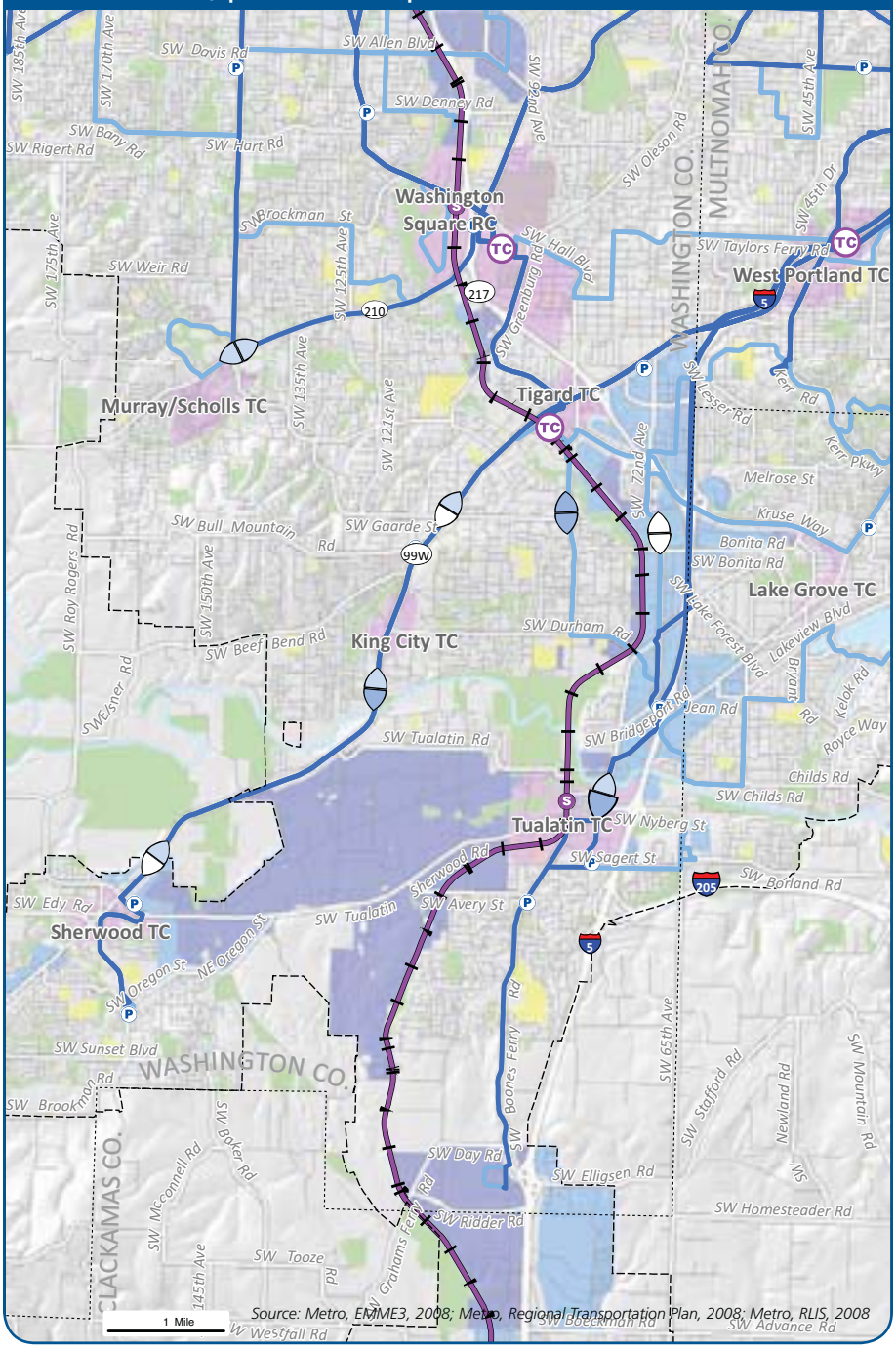
6%	Transportation/Warehousing/Utils
9%	Construction
16%	Manufacturing
10%	Wholesale
24%	Retail-Services
35%	Non-freight employment
<1%	Natural resources

Source: ESRI, Business Analyst, Feb. 2009 - based on number of employees

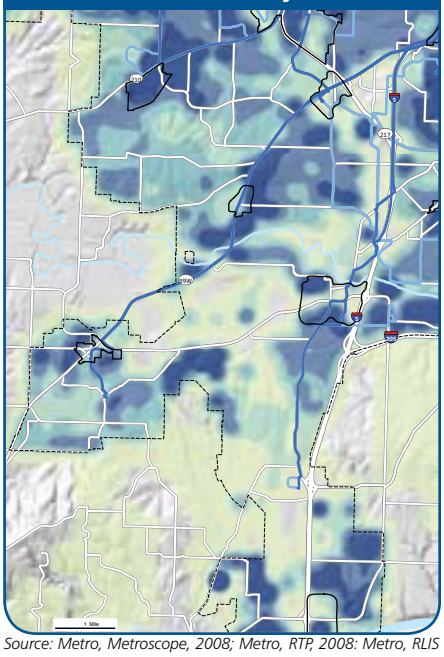
The ***Freight travel map*** displays the percentage of truck volume to total volume on 99W and key parallel arterial streets in the 1-hour mid-day travel period. Truck volumes make up a small percentage of the total traffic on 99W between Hwy 217 and Tualatin-Sherwood Rd. Truck traffic is much higher on Tualatin-Sherwood Rd, which serves the industrial and employment areas and provides quicker access between 99W and I-5. SW Scholls Ferry Rd/Rod Rogers Rd also carries a relatively high percent of truck traffic. On the parallel arterials that serve primarily residential and neighborhood commercial uses, truck volumes fall below 2%.

The Portland and Western railroad operates shortline service in the corridor. The rail line connects through the industrial and employment areas and offers the potential for rail service between the region's rail intermodal facilities and the Willamette Valley. There are many at-grade rail crossings of the rail line.

Transit travel, p.m. 2-hour peak

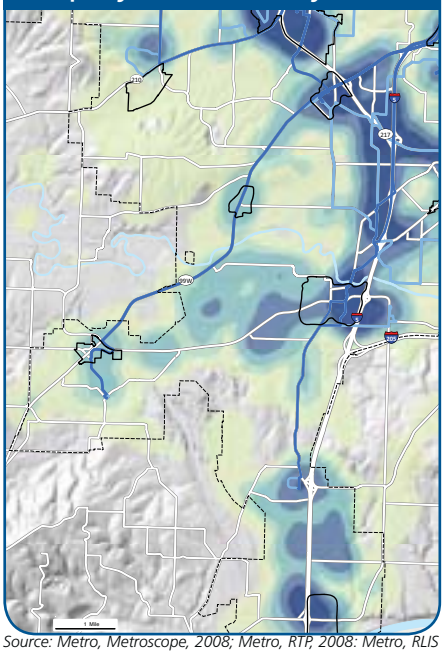


Household density



Source: Metro, Metroscope, 2008; Metro, RTP, 2008: Metro, RLIS

Employment density



Source: Metro, Metroscope, 2008; Metro, RTP, 2008: Metro, RLIS

Transit Service

- Bus line - 15 minute or better service
- Bus line - 30 minute or better service
- Light rail transit
- Streetcar
- TC Transit centers
- S Rail transit stations
- P Park & Ride

Land use

- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces
- Schools

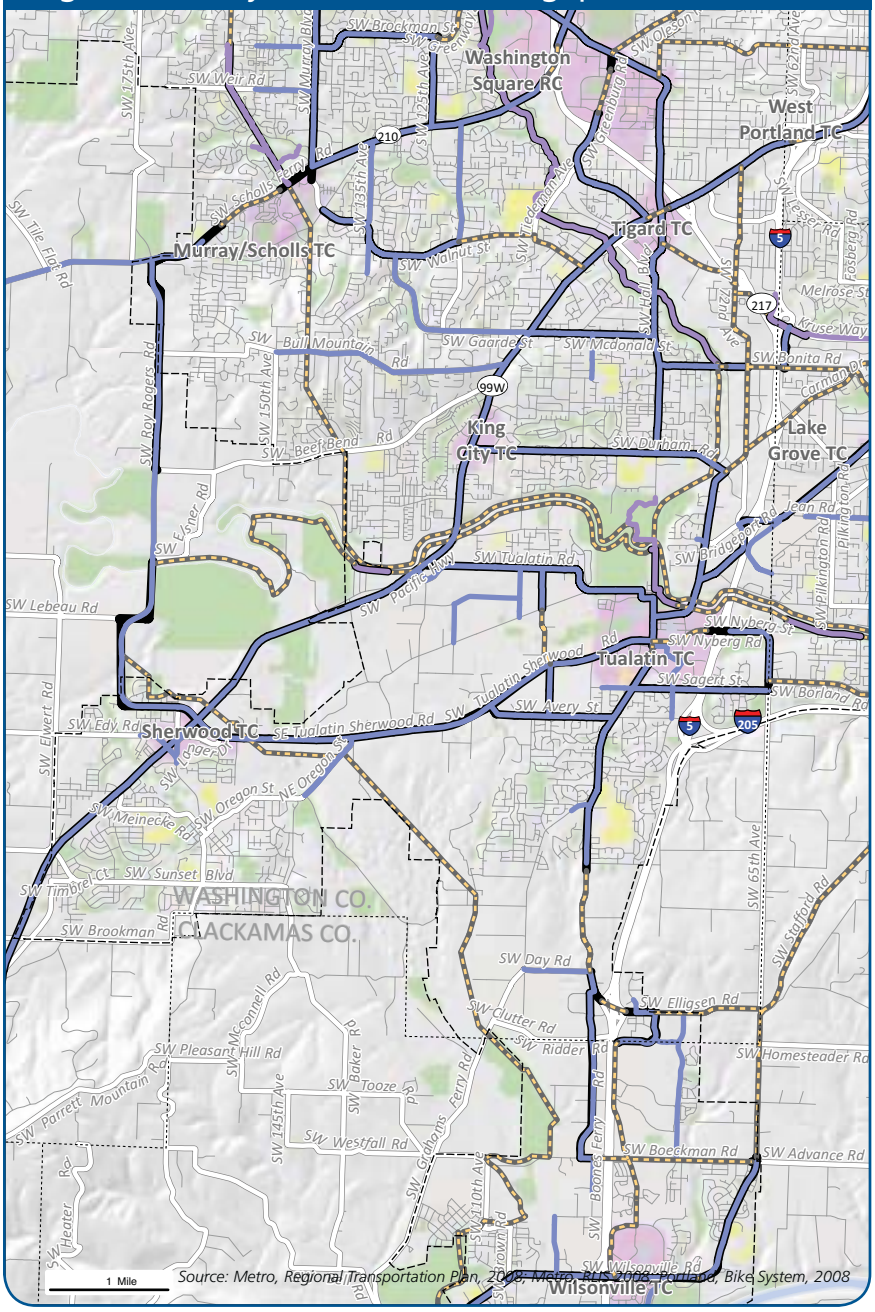
Ridership and Capacity

PM Peak 2 hour transit ridership (symbol size)	Ridership to capacity ratio (symbol color)
1000 +	*0.6 +*
500 - 1000	*0.3 - 0.6*
250 - 500	*0.1 - 0.3*
0 - 250	*0 - 0.1*

Quick facts

45,364	**Households**	**81,628**	**Jobs**
7.5%	*Households in 2040 regional and town centers*	*12.8%*	*Jobs in 2040 regional and town centers*
13.3%	*Households covered by peak premium transit*	*28.1%*	*Jobs covered by peak premium transit*

Regional bike system facilities and gaps



Bicycle System

- Bike Network Gaps[1]
- Bike Boulevards[2]
- Bike lane[2]
- Regional multi-use path[2]

Land use

- Urban centers
- Parks, open spaces
- Schools

[1] Areas in the network with insufficient data are indicated by black lines (▬).

[2] RTP Bike System facilities have black outlines.

The ***Regional bike system facilities and gaps map*** compares the network of built bicycle facilities with the network envisioned in the RTP to identify service gaps. 99W and most of the key parallel arterials have bike lanes in place. While much of the planned bicycle network is complete some significant gaps still remain. The lack of a continuous street grid in the corridor also impedes the ability to travel by bicycle across the corridor.

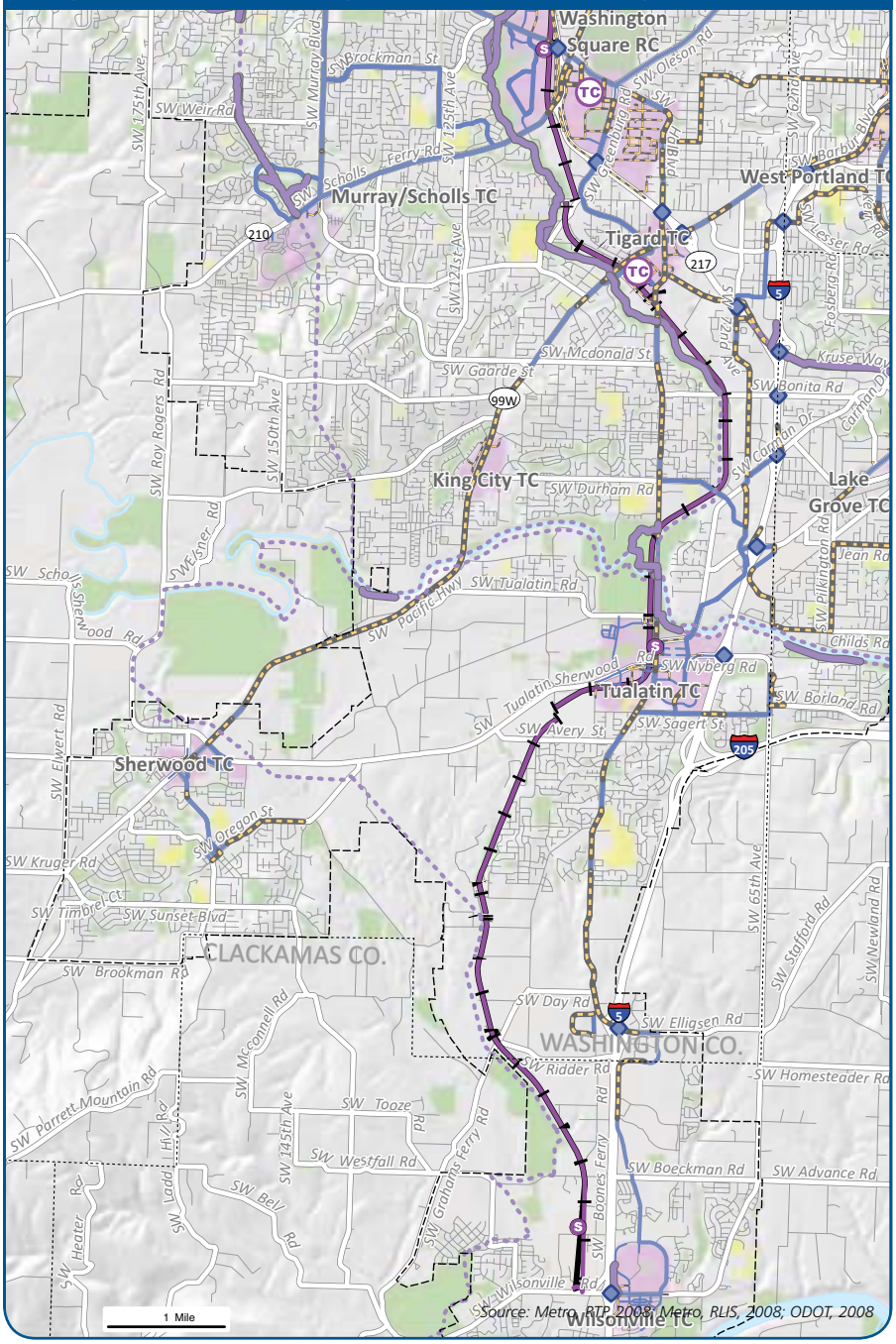
A primary function of the RTP bike system is to serve 2040 Target areas, such as the Washington Square regional center and the King City, Murray/Scholls, Sherwood, Tigard, Tualatin and Wilsonville town centers. The 2040 areas are moderately served by existing bicycle routes with key gaps in the planned network.

The Tigard/Tualatin to Sherwood mobility corridor has limited transit service. Frequent and weekday express bus service connects Sherwood town center and Portland central city. Frequent bus service on SW Scholls Ferry connects Washington Square regional center and the Murray/Scholls town center. There is no transit service between Sherwood and Tualatin town centers. Transit ridership is low to moderate relative to available capacity.

Quick facts

58	**Bikeway network miles**
58	*Miles of bike lanes*
—	*Miles of bicycle boulevards*
8	**Trail miles**
5	*Regional trail miles*
3	*Local multi-use trails*

Regional pedestrian system facilities and gaps



Sidewalk System

- Exisiting sidewalk[1]
- Sidewalk gap[2]
- Regional multi-use path
- Proposed regional multi-use path

Inside Pedestrian Districts[3]

- Exisiting Sidewalk
- Sidewalk gap[2]

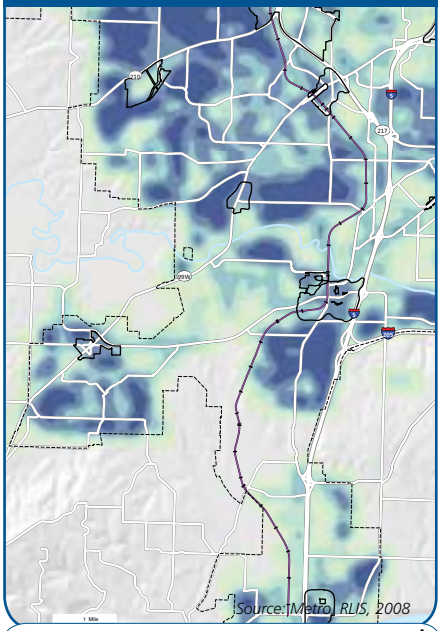
- Light rail transit
- Streetcar
- Transit centers
- Rail transit stations

Land use

- RTP Pedestrian Districts
- Schools
- Parks, open spaces
- Pedestrian overcrossing

[1] Along 30-min. or better transit and RTP Pedestrian Corridors.
[2] Less than 100% on both sides
[3] Pedestrian Districts are 2040 centers and Station Communities.

Sidewalk and trail density



The ***Regional pedestrian system facilities and gaps map*** identifies missing sidewalks on designated RTP Transit/mixed use corridors and Pedestrian districts. SW Scholls Ferry Rd and SW Tualatin-Sherwood Rd have sidewalks in place. But significant gaps remain on many arterial and collector streets, and on local streets in the centers. The discontinuous local street grid diminishes access to transit and neighborhood destinations.

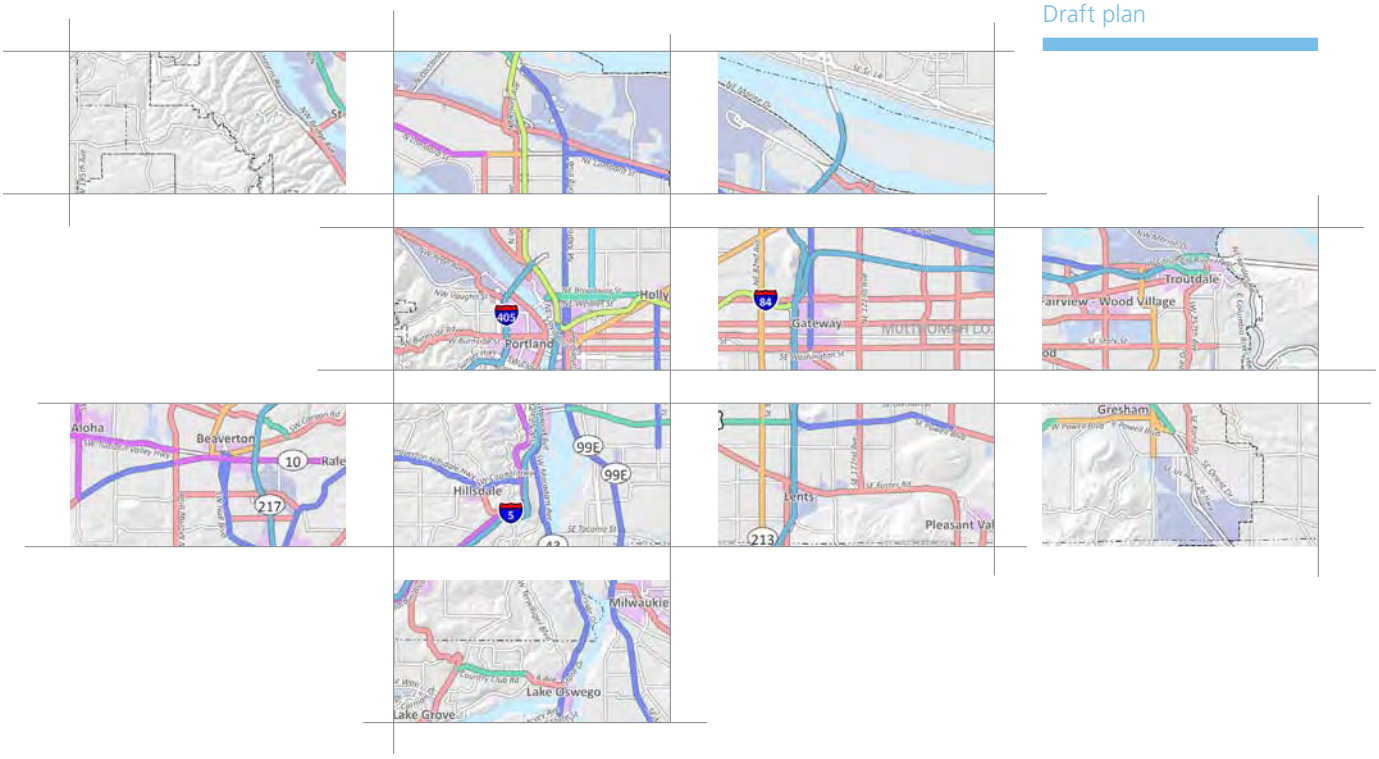
Quick facts

Sidewalks

60.6%	*Completed in RTP ped. districts*
58.8%	*Completed in RTP ped. corridors*
70.1%	*Completed along 30 minute or better bus service*

Appendix D

TSMO Projects on Tigard Regional Mobility Corridors



REGIONAL TRANSPORTATION
SYSTEM MANAGEMENT AND OPERATIONS

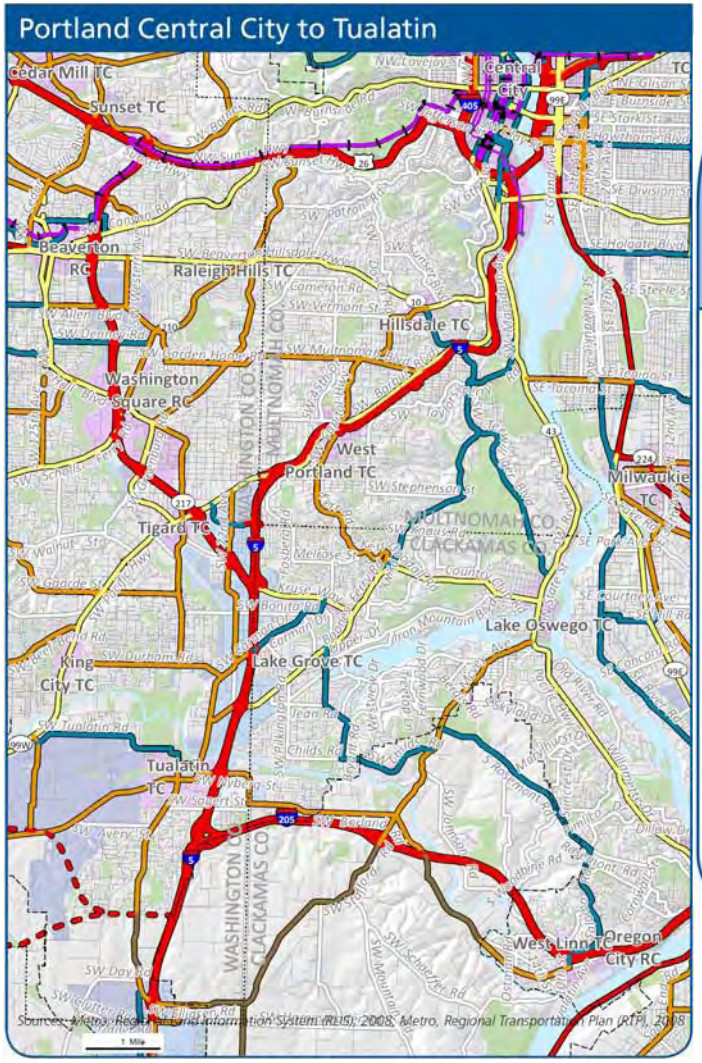
2010 – 2020

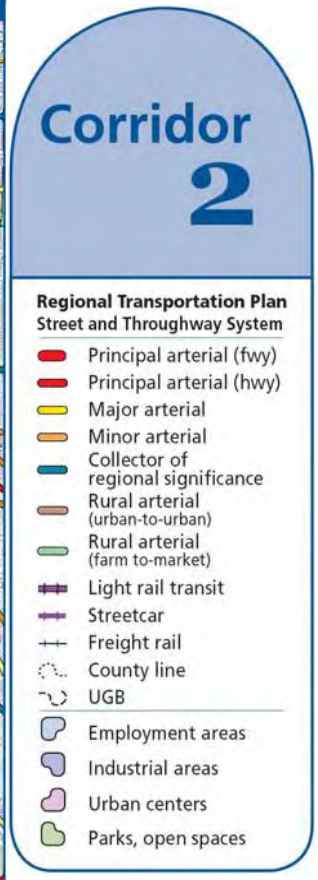
Draft plan

September 2009

Metro | *Joint Policy Advisory Committee on Transportation*

Mobility Corridor 2: Portland Central City to Tualatin





Corridor Summary

The Portland Central City to Tualatin mobility encompasses I-5 and parallel arterials, that support auto, truck, transit and bicycle movement in and through the corridor. I-5 is a principal arterial freeway that accommodates interstate and interregional travel. The key parallel arterials include **SW Barbur Blvd (99W), SW Boones Ferry Rd/SW Terwilliger Blvd, SW Taylors Ferry Rd,** and **SW Macadam Ave (Hwy 43)**. This corridor is largely single-family residential uses and neighborhood-serving commercial with a mix of parks and open spaces. The hilly topography in this corridor is hilly contributes to the winding and discontinuous street network.

Where Are We Now?

Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years. Transit signal priority is located at select traffic signals along SW Barbur Blvd. Communications infrastructure exists along SW Barbur; SW Barbur Blvd is also an incident management route equipped with cameras and vehicle detection. The segment of I-5 through this corridor is generally equipped with cameras, ramp meters, detection, and

communication equipment.

The Westside Transportation Alliance (WTA) works with employers in Tigard and Tualatin (in addition to other Washington County areas) and the Lloyd TMA works with employers in the Lloyd District. Both work to reduce employee drive-alone trips. Additionally, a study has been funded to assess the potential for a new TMA in Portland's South Waterfront. The City of Portland's Smart Trips Downtown program and the Lloyd TMA's Lloyd Links program offer individualized marketing to employees in these areas. There are also several bike-specific projects in the corridor including , a WTA program to install free bike racks for area businesses, and an update of the City of Tigard's 20-year old bike map.

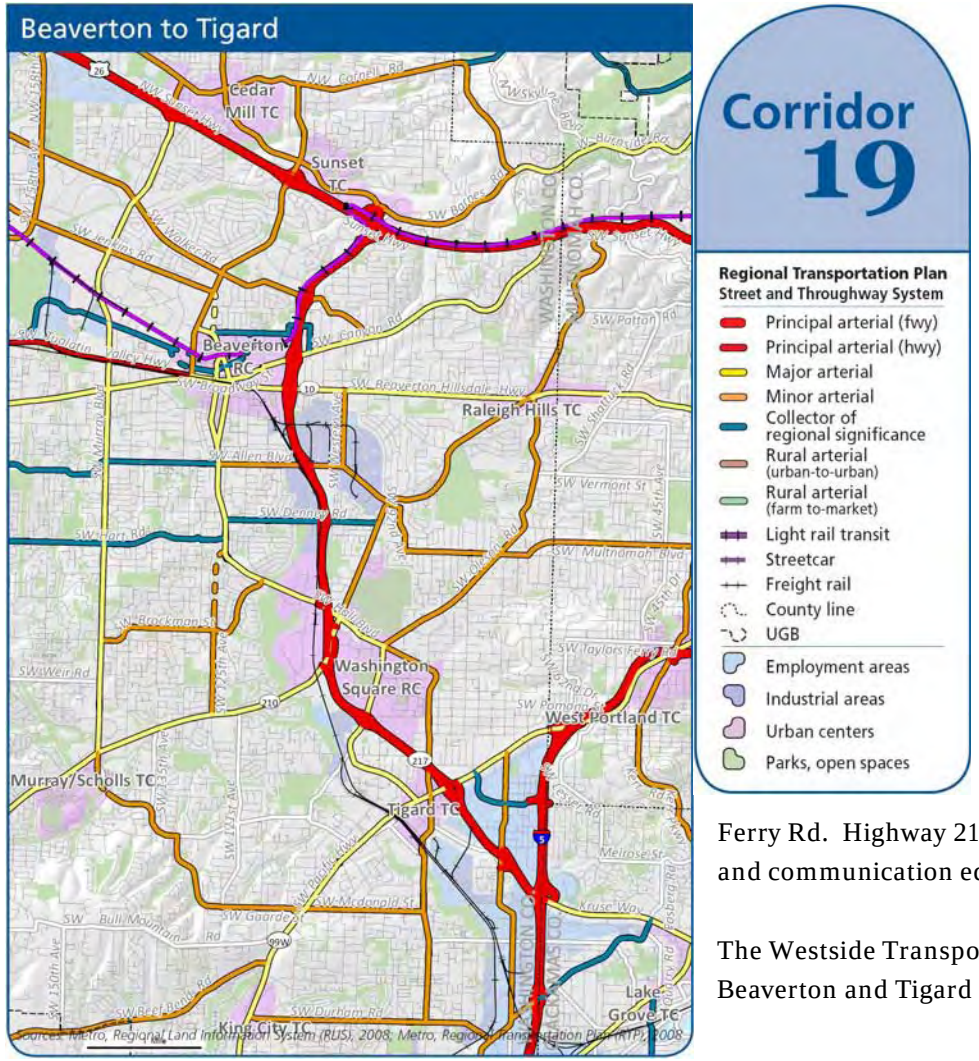
Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
Regional Multimodal Traffic Management							
	Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement.	Upper Boones Ferry Rd	Reliability & Traveler Information	1-5 yrs	$1,300,000	$25,000
			Boones Ferry Rd/Capital Hwy		6-10 yrs	$4,600,000	$90,000
			72nd Ave		11+ yrs	$1,600,000	$30,000
			Durham Rd		11+ yrs	$1,400,000	$30,000

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
	ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	Hwy 43 (Macadam Ave)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$3,700,000	$70,000
	ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transit priority treatment.	Hwy 99 (Barbur Blvd from Downtown Portland past Hwy 217)	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$3,400,000	$70,000
	Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-5	Reliability, Traveler Information, & Safety	6-10 yrs	$900,000	$18,000
Traveler Information							
	Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	Country Club Rd	Traveler Information	6-10 yrs	$700,000	$14,000
			Hwy 99, south of Tualatin		1-5 yrs	$1,100,000	$20,000
Transportation Demand Management							

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
	Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. (in support of Portland/Multnomah County Climate Change Action Plan)	Supports new transit/trail facility from Central City Portland to Lake Oswego TC	Quality of life	1-5 years	$0	$500,000
	Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. (in support of Portland/Multnomah County Climate Change Action Plan)	Tigard TC and adjacent neighborhoods	Quality of life	6-10 years	$0	$500,000
	Individualized Marketing	(same as above)	Tualatin TC and adjacent neighborhoods	Quality of life	6-10 years	$0	$500,000
	Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	I-5	Quality of life	1-5 years	$0	$50,000
	Rideshare incentives	(same as above)	I-5	Quality of life	6-10 years	$0	$50,000
	Rideshare Park&Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	I-5	Quality of life	1-5 years	$0	$4,800

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
	Rideshare Park&Ride	(same as above)	I-5	Quality of life	6-10 years	$0	$4,800
	Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
	Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
	Transportation Management Associations (TMA)	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance serves employers.	Tigard, Tualatin and other parts of Washington County	Quality of life	through 10 years	$0	(annual amount recorded in corridor 19)
	Transportation Management Associations (TMA)	Lower Macadam/Johns Landing TMA start-up.	Lower Macadam/Johns Landing	Quality of life	6-10 years	$0	$300,000
	Car-share operations	Support 3 or more carsharing vehicles in developing centers.	Lake Oswego Town Center	Quality of life	1-5 years	$0	$200,000

Mobility Corridor 19: Beaverton to Tigard



Corridor Summary

The Beaverton to Tigard corridor encompasses **Hwy 217,** MAX light rail, Westside Express Service (WES) commuter rail, parallel arterials as well as bus service and bicycle routes that support movement in and through the corridor. Hwy 217 supports intraregional travel between Beaverton, Hillsboro, Portland, Tigard, Tualatin, and Wilsonville. The key parallel arterials include **SW Hall Blvd, SW Murray Blvd, SW Oleson Rd** and **SW Scholls Ferry Blvd**. Land use in this corridor is diverse and includes several commercial centers, employment and industrial area. The local street network is a patchwork of well-connected and discontinuous streets.

Where Are We Now?

Currently three regional facilities in this corridor have coordinated signal timings updated within the last five years: SW Murray Blvd, SW Scholls Ferry Rd, and SW Hall Blvd (2 signals). There are no transit signal priority locations in this corridor. Communications infrastructure exists along SW Cedar Hills Blvd, SW Murray Blvd, SW Hall Blvd, and Scholls Ferry Rd. Highway 217 is generally equipped with cameras, ramp meters, detection, and communication equipment.

The Westside Transportation Alliance (WTA) works with employers and employees in Beaverton and Tigard (in addition to other Washington County areas) to reduce drive-

alone trips. There are also several bike-specific projects in the corridor including the WTA program to install free bike racks for area businesses, the City of Tigard's update of their 20-year old bike map, and TriMet installation of E-Access Bike Lockers at several transit facilities in the area.

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
Regional Multimodal Traffic Management							
	Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement.	SW Murray Blvd	Reliability & Traveler Information	6-10 yrs	$2,900,000	$60,000
			SW Oleson Rd		11+ yrs	$2,600,000	$50,000
	ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	Cedar Hills Blvd	Reliability & Traveler Information	6-10 yrs	$2,200,000	$45,000
	ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	SW Hall Blvd	Reliability, Traveler Information,	6-10 yrs	$3,700,000	$70,000

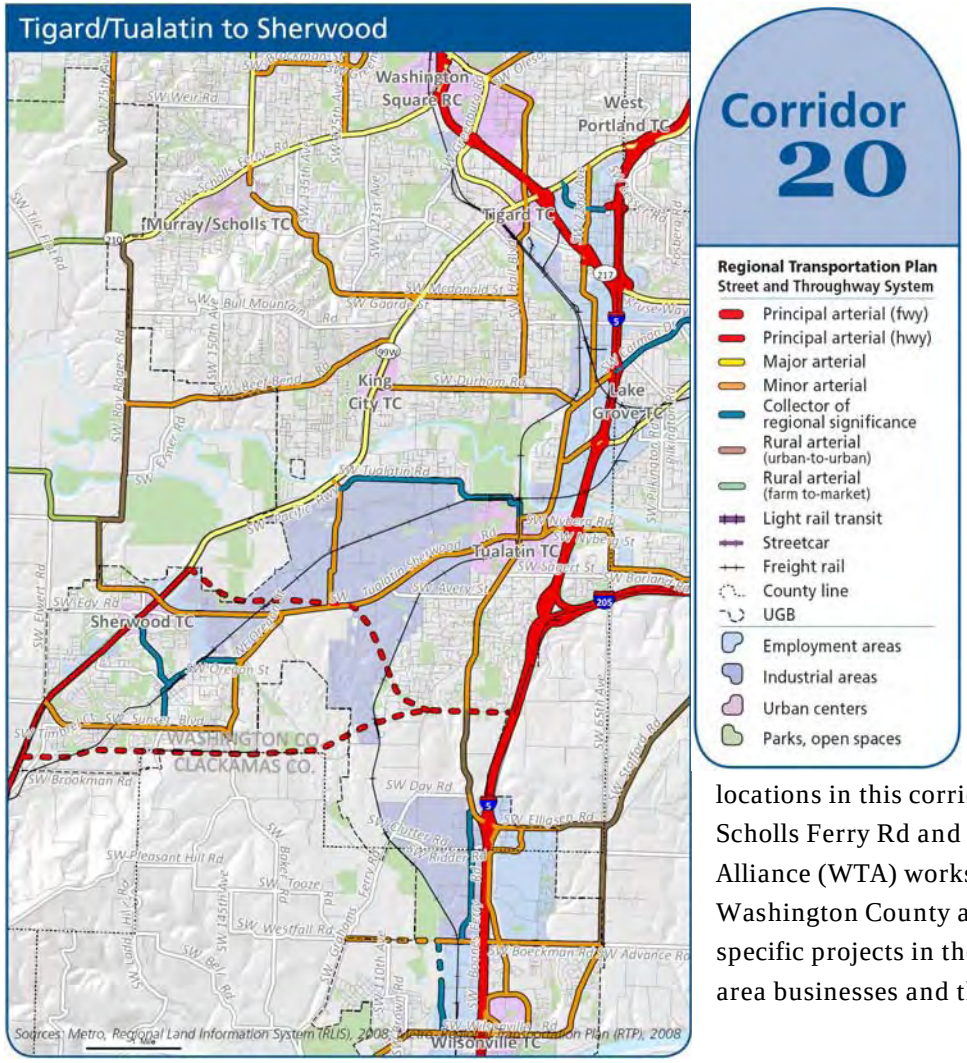
Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
			Scholls Ferry Rd (Hall to BH Hwy)	& Quality of Life	1-5 yrs	$1,700,000	$35,000
	Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	Hwy 217	Reliability, Traveler Information, & Safety	1-5 yrs	$600,000	$12,000
Traveler Information							
		No projects in this corridor					
Transportation Demand Management							
	Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Neighborhood served by frequent transit service, other travel options and near commercial zoning.	Quality of life	1-5 years	$0	$500,000
	Individualized Marketing	(same as above)	Neighborhood served by frequent transit service, other travel options and near commercial zoning.	Quality of life	6-10 years	$0	$500,000

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
	Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	For commuters on 217.	Quality of life	1-5 years	$0	$100,000
	Rideshare incentives	(same as above)	For commuters on 217.	Quality of life	6-10 years	$0	$100,000
	Employer outreach - additional resources	Leverage existing regional investment in employer services and TMAs to work with employers near corridor.	Employment sites near Highway 217		1-5 years		$200,000
	Employer outreach - additional resources	(same as above)	Employment sites near Highway 217		6-10 years		$200,000
	Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
	Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
	Transportation Management Associations (TMA)	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance (WTA) provides employer services in Washington County, including this corridor.	Beaverton, Washington Square, Tigard and other parts of Washington County	Quality of life	through 10 years	$0	$300,000

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
	Transportation Management Associations (TMA)	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance (WTA) provides employer services in Washington County, including this corridor.	Beaverton, Washington Square, Tigard and other parts of Washington County	Quality of life	through 10 years	$0	$75,000
	Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	Beaverton Regional Center	Quality of life	1-5 years	$0	$100,000
	Parking management	(same as above)	Beaverton Regional Center	Quality of life	6-10 years	$0	$100,000
	Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	Washington Square Regional Center	Quality of life	1-5 years	$0	$100,000
	Parking management	(same as above)	Washington Square Regional Center	Quality of life	6-10 years	$0	$100,000
	Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	Tigard Town Center	Quality of life	1-5 years	$0	$100,000
	Parking management	(same as above)	Tigard Town Center	Quality of life	6-10 years	$0	$100,000

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
	Bike Sharing	Provide funding to implement bikes for loan or rent.	Transit oriented developments, large employers, colleges, hotels and significant transit stops.	Quality of life	6-10 years	$100,000	$50,000

Mobility Corridor 20: Tigard/Tualatin to Sherwood



Corridor Summary

The Tualatin to Sherwood corridor encompasses **99W,** parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. 99E supports inter- and intraregional travel inside the region and through the Willamette Valley. The key parallel arterials include **SW 72nd Ave/Boones Ferry Rd/Tualatin-Sherwood Rd, SW Hall Blvd,** and **SW Scholls Ferry Rd/Roy Rogers Rd.** These facilities provide access to Washington Square regional center, five town centers, and significant industrial and employment areas. Originally the arterial and collector street network were built as farm-to-market roads. As the area developed the roadway network lacks the continuous grid of more urbanized areas.

Where Are We Now?

Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years; however, a section of Tualatin Sherwood Rd is equipped with adaptive signal timing. There are no transit signal priority locations in this corridor. Communications infrastructure exists along sections of Scholls Ferry Rd and SW Tualatin Sherwood Rd. The Westside Transportation Alliance (WTA) works with employers and employees in Tualatin (in addition to other Washington County areas) to reduce drive-alone trips. There are also several bike-specific projects in the corridor including a WTA program to install free bike racks for area businesses and the City of Tigard's update of their 20-year old bike map.

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
Regional Multimodal Traffic Management							
	Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement.	SW 72nd Ave	Reliability & Traveler Information	11+ yrs	$1,700,000	$35,000
			Upper Boones Ferry Rd		11+ yrs	$1,300,000	$25,000
			Durham Rd		11+ yrs	$1,500,000	$30,000
	ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	Tualatin Sherwood Rd	Reliability & Traveler Information	1-5 yrs	$1,500,000	$30,000
	ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	SW Hall Blvd	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$1,900,000	$40,000

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
	ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transity priority treatment.	SW Scholls Ferry Rd (River to Hall)	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$4,200,000	$80,000
			Hwy 99W (from 217 to 124th)		1-5 yrs	$4,200,000	$80,000
Traveler Information							
	Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	Hwy 99W (124th to Tualatin Sherwood Rd)	Traveler Information	1-5 yrs	$1,200,000	$25,000
Transportation Demand Management							
	Construction mitigation campaign	Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects.	99W construction to Newberg (per HB 2001 legislation)	Quality of life	1-5 years	$0	$100,000
	Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
	Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000

Proj No.	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
	Location-efficient living	Support programs and strategies that promote and advance location-efficient living strategies.	Tualatin industrial/employment area west of I-5 and housing west of I-5.	Quality of life	through 10 years	$0	$50,000