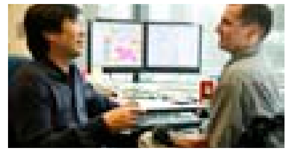
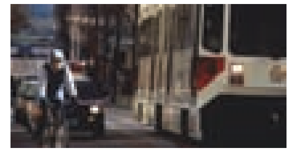
June 2010








# 2035
## REGIONAL TRANSPORTATION PLAN

June 2010

***As submitted to the Department of Land Conservation and Development Commission and U.S. Department of Transportation for Review***

Metro | *People places. Open spaces.*

**Metro is the federally mandated metropolitan planning organization** designated by the governor to develop an overall transportation plan and to allocate federal funds for the region.

The Joint Policy Advisory Committee on Transportation (JPACT) is a 17-member committee that provides a forum for elected officials and representatives of agencies involved in transportation to evaluate transportation needs in the region and to make recommendations to the Metro Council.

The established decision-making process assures a well-balanced regional transportation system and involves local elected officials directly in decisions that help the Metro Council develop regional transportation policies, including allocating transportation funds.

**Project web site:** www.oregonmetro.gov/rtp

*The preparation of this report was financed in part by the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration. The opinions, findings and conclusions expressed in this report are not necessarily those of the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration.*

2035

REGIONAL TRANSPORTATION PLAN

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## EXECUTIVE SUMMARY

Over the years, the diverse communities of the Portland metropolitan area have taken a collaborative approach to planning that has helped to make our region one of the most livable in the country. In the 1990s, regional policy discussions centered on how and where we should grow to protect to the things that make this region a great place to live, work and play. Those discussions led to adoption of the region's long-range plan, the 2040 Growth Concept. This plan reflects shared community values and desired outcomes that continue to resonate today.

We have set our region on a wise course and experienced many successes – but times are changing. Our region is growing and evolving, shaped by a global economy and economic recession, a warming planet, demographic changes, public health and safety concerns and changes in how we live and travel. Today it is time to revisit how we are implementing our vision, make some corrections and find new strategies and resources to create the future we want for our region.

### Setting a new course for transportation

This document is the latest update to the region's long-range transportation plan to confront the changes and challenges we face. Over the past four years, Metro worked with state and local government partners as well as residents, community groups, and businesses to develop the draft 2035 Regional Transportation Plan.

The plan sets a new course for future transportation decisions and implementation of the 2040 Growth Concept through 2035. The plan takes into account the changing circumstances and challenges we face and addresses them directly, adopting new approaches that distinguish this plan from past RTPs. In doing so, the 2035 RTP process embodies change - change in partners, change in goals and policies, change in strategies and change in analytic approach. Metro and our regional partners have fashioned a plan that responds to transportation needs and demands based on our shared community values and the outcomes we are trying to achieve as a region.

### Innovative approaches, policies and strategies to respond

The 2035 RTP recognizes the diversity of transportation needs throughout the Portland metropolitan region and integrates land-use, economic, environmental and transportation policies to accomplish desired outcomes for the region. The plan lays out the priorities for road, transit, freight, bicycle and pedestrian improvements, and a strategy to pay for them.

Through its policies, projects and strategies, the 2035 RTP aims to attract jobs and housing to downtowns, main streets and employment areas. It seeks to increase the use of public transit, improve the safety, convenience and appeal of bicycling and walking, and reduce miles traveled and emissions by cars and trucks in the metropolitan region. It also seeks to increase the safety, reliability and efficiency of the roadway and transit systems for all users.

Central to this plan is an overall emphasis on desired outcomes and measurable performance. The plan includes innovative policies to link investments to aspirations to support community revitalization and job creation. Growing congestion is addressed comprehensively through a multi-pronged strategy to make existing highways, roads and transit networks work as efficiently as possible, provide real options for walking, bicycling and riding transit and expand transit and roadways in a strategic manner.

The RTP proposes investing more than $20 billion in local, regional, state and federal funds during the next 25 years to improve safety, system reliability and travel choices for everyone, revitalize downtowns and main streets, create jobs and support the region's economy, and reduce our region's carbon output. It provides for record levels of investment in transit, system management, bicycle and pedestrian-oriented projects. Further, it establishes a new outcomes-based framework and sets ambitious targets for evaluating future transportation investments against regional targets for reducing greenhouse gas emissions and vehicle miles traveled; increasing safety, equity and active transportation; and improving the reliability of freight movement.

The pages ahead describe this updated blueprint and investment strategy for a more sustainable and equitable transportation system that links land use and transportation, protects the environment and supports the region's economic vitality.

"We must recognize that we are on the cusp of a new wave of transportation policy. The infrastructure challenge of President Eisenhower's 1950s was to build out our nation and connect within…in the 1980s and 1990s it was to modernize the program and better connect roads, transit, rail, air and other modes. Today, the challenge is to take transportation out of its box in order to ensure the health, vitality and sustainability of our metropolitan areas."

**ROBERT PUENTES,** *Brookings Institution, A Bridge to Somewhere: Rethinking American Transportation for the 21st Century*

# CHAPTER 1

# CHANGING TIMES:

# WHY A NEW APPROACH IS NEEDED FOR PLANNING AND INVESTMENT IN THE REGION'S TRANSPORTATION SYSTEM

## 1.0 INTRODUCTION

The Portland metropolitan region is an extraordinary place to live. Our region has vibrant communities with inviting neighborhoods. We have a diverse economy and a world-class transit system. The region features an exciting nightlife and cultural activities as well as beautiful scenery, parks, trails and wild places close to home.

Our region is growing and changing, shaped by a global economy, a warming planet, demographic changes, public health and safety concerns and changes in how we live and travel. Over the years, the diverse communities of the Portland Metropolitan area have taken a collaborative approach to planning that has helped to make our region one of the most livable in the country.

We have set our region on a wise course and experienced many successes – but times are changing. Our treasured region and the planet face formidable challenges. Shorter-term circumstances such as the current economic recession and longer-term concerns such as climate changedemand that we do things differently and make a new approach to our planning responsibilities all the more timely.

Transportation shapes our communities and daily lives in profound and lasting ways. This chapter describes the role of the Regional Transportation Plan and key trends and issues affecting the region to frame the challenges that lay before us and opportunities for how the region moves forward. How we respond to these challenges today will set the course for generations to come.

The chapter is organized into the following sections:

**1.1 Geographic setting:** This section describes the geographic context of the Portland-Vancouver metropolitan region and Metro's role in transportation planning. The region's unique landscape and natural features and role as a global gateway connecting the Pacific Northwest to North America and other Pacific Rim countries make this region a great place to live, work and play.

**1.2 Climate change:** This section describes the link between transportation and greenhouse gas emissions and more recent state and federal legislative actions that will direct current and future RTP updates. Climate change may be the defining challenge of the 21st century.

**1.3 Competing in a global economy:** This section describes employment trends in the Portland-Vancouver metropolitan region and expected growth in employment and the movement of freight and goods.

**1.4 Shifting demographics:** This section describes demographic trends in the Portland-Vancouver metropolitan region, including expected population growth and changes in the ethnic and cultural diversity of the region.

**1.5 Growing congestion:** This section describes how growth in travel is affecting the region's highways and streets and the region's strategy for addressing growing congestion.

**1.6 Changing travel behavior:** This section describes how travel behavior has been changing in the region, including more recent bicycle pedestrian and transit travel trends.

**1.7 Deteriorating infrastructure and declining revenues:** This section summarizes the state of transportation finance in the region, including the region's growing maintenance needs. Chapter 3 includes a more detailed discussion of transportation finance issues facing the region.

**1.8 Public health, environmental and safety concerns:** This section describes the link betweentransportation and public health and safety.

**1.9 What's next moving forward?** This section summarizes the steps needed to move forward to the address these issues.

More information about these trends can be found in a series of background reports in the Appendices or on Metro's website at www.oregonmetro.gov/rtp.

*The MAX serves as a reliable form of travel for residents in the Portland metro area.*

## 1.1 GEOGRAPHIC SETTING

The Portland-Vancouver metropolitan region is part of the broader Pacific Northwest region, also called Cascadia. Shown in **Figure 1.1**, the Pacific Northwest encompasses most of British Columbia, Washington, Oregon and adjoining parts of Alaska, Montana and California. Linked together by a rich and complex natural environment, abundant recreational opportunities and major metropolitan areas, the Pacific Northwest also serves as a global gateway for commerce and tourism, connecting to other Pacific Rim countries and the rest of the United States.

The Portland region is situated at the northern end of the Willamette Valley, a fertile river valley surrounded by dramatic natural features - the Coast Range to the west, the Cascade Range to the east, and the Columbia River to the north (including the Columbia River Gorge National Scenic area). Several snow-capped mountains are visible from different vantage points in the region – including Mt. Hood, Mt. St. Helens, Mt. Rainer and Mt. Adams. Within the region, rivers, streams, wetlands, buttes, forest lands, meadows and rolling to steep hillsides dominate the natural landscape. Outside the urban growth boundary, agricultural lands and other natural landscape features influence the sense of place for the greater region.

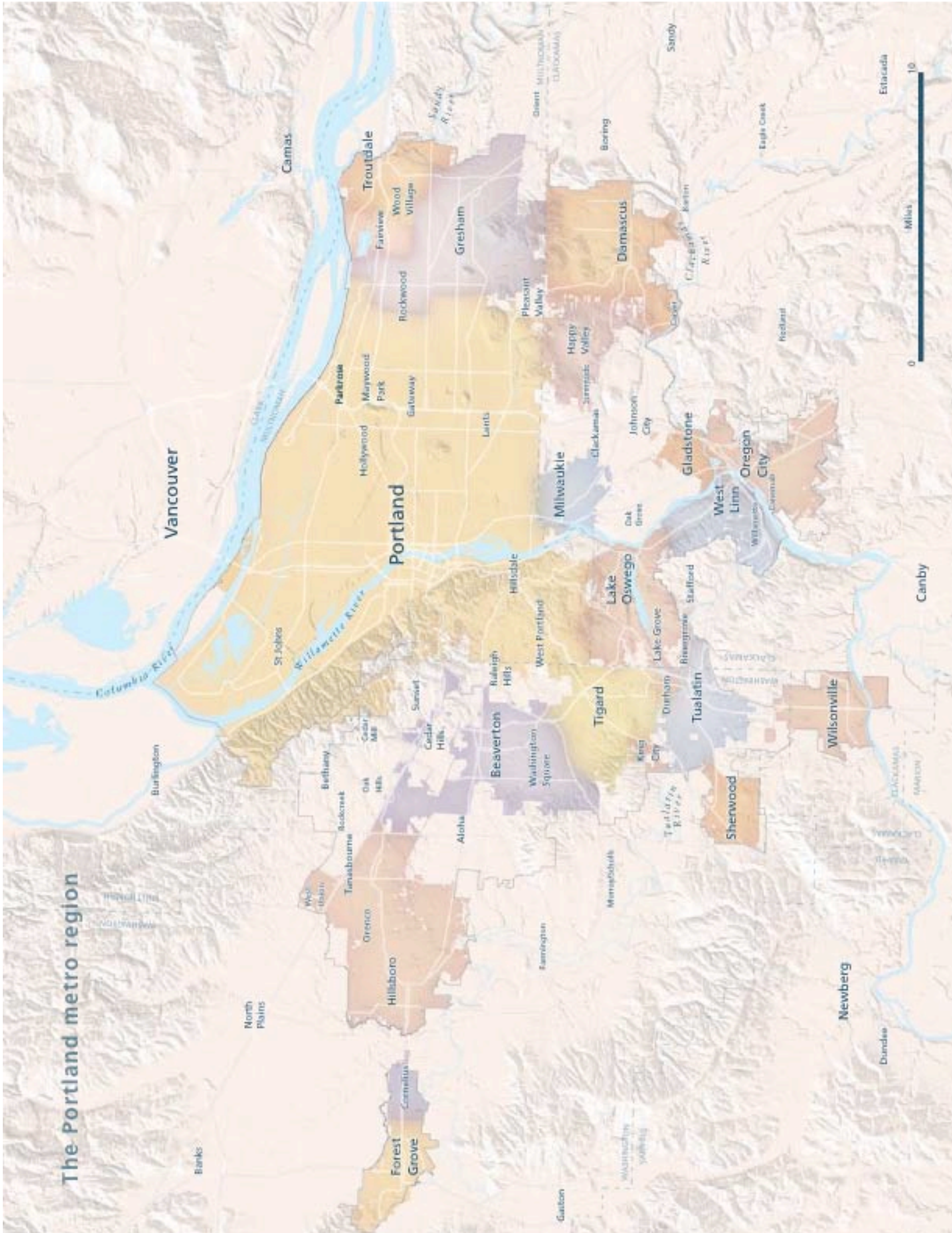
Although not the largest gateway on the U.S. West Coast, the Portland-Vancouver metropolitan region is one of four international gateways on the West Coast, including the Puget Sound, the San Francisco Bay area and Southern California. In this role, the region serves as a gateway to domestic and international markets for businesses located throughout the state of Oregon, Southwest Washington, the Mountain states and the Midwest. Clackamas, Multnomah and Washington counties also play a significant role in the state's agricultural production, representing nearly 17 percent of the state's total value of production and 60 percent of the Port of Portland's export tonnage.[1] The economy of our region and state partially depends on our ability to support the transportation needs of these industries and provide reliable access to gateway facilities.

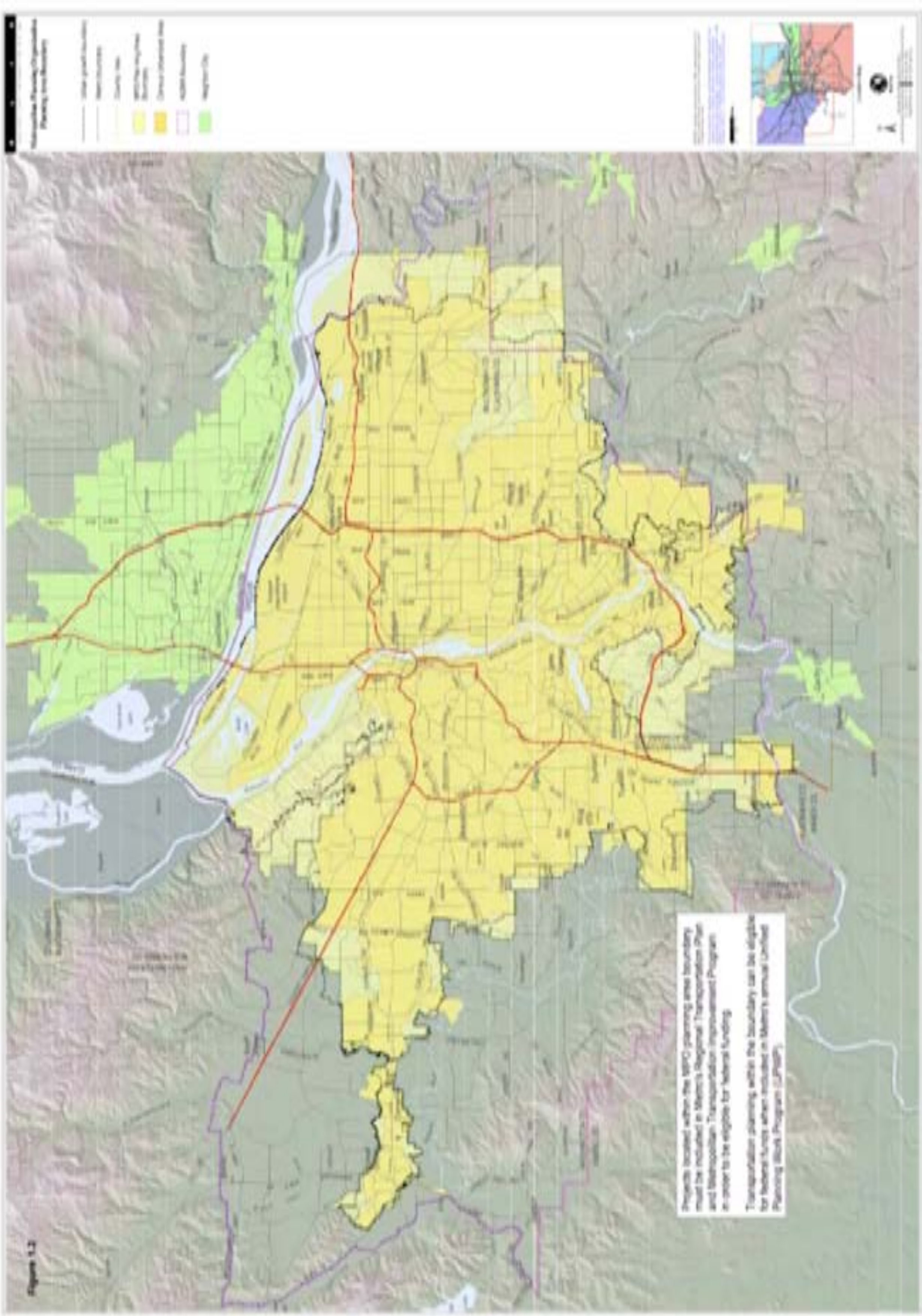
The Oregon portion of the Portland-Vancouver metropolitan region encompasses 25 cities and 3 counties as shown in **Figure 1.2**. Covering 463 square miles, Metro's jurisdictional boundary region makes up about 4.7 percent of the state's land area; however, with just under 1.4 million residents and nearly 800,000 jobs in 2005, it has 38.4 percent of the state's population and 50 percent of the state's jobs. Metro's urban growth boundary included 398 square miles and more than 1.3 million residents and just under 800,000 jobs in 2005, representing 37.7 percent of the state's population and nearly 48 percent of the state's jobs.[2]Metro's jurisdictional boundary is shown in **Figure 1.3**.

[1] *Identification and Assessment of the Long-Term Commercial Viability of Metro Region Agricultural Lands*, Oregon Department of Agriculture, January 2007, Pg. 4.
[2] Bureau of Labor Statistics and U.S. Census data as compiled by Metro.

**Figure 1.1**
**Portland-Vancouver Metropolitan Region Geographic Context**

**Figure 1.2**
**Cities and counties of the Portland-Vancouver metropolitan region**





## Metro's Role in Transportation Planning

Metro's transportation planning activities are guided by a federally mandated decision-making framework called the metropolitan transportation planning process. This planning process requires all urban areas with populations over 50,000 to have a designated Metropolitan Planning Organization (MPO) to coordinate transportation and air quality planning and programming of federal transportation dollars within their boundaries.

Metro is the designated MPO for the Portland tri-county area. As such, Metro is responsible for coordinating development of the RTP in cooperation with the region's transportation providers—the 25 cities and three counties in the Metro boundary, the Oregon Department of Transportation, Oregon Department of Environmental Quality, Port of Portland, TriMet, South Metro Area Rapid Transit (SMART), Southwest Washington Regional Transportation Council (RTC), Washington Department of Transportation and other Clark County governments. The process also includes opportunities for open, timely and meaningful involvement of the public and requires comprehensive consideration of the link between transportation and other regional goals for land use, the economy and the environment, including public health, safety, mobility, accessibility and equity.

The Metro Council adopted the first RTP in 1983. As a cornerstone of the metropolitan transportation planning process, the RTP provides a long-range blueprint for transportation in the Portland metropolitan region with a 20-year minimum time horizon. The RTP is updated every four years to reflect changing conditions in the region and respond to new federal and state regulatory developments.

State law establishes requirements for consistency of plans at the state, regional and local levels. The RTP serves as the region's regional transportation system plan (TSP), consistent with Oregon Transportation Planning Rule (TPR) requirements. The RTP must be consistent with the Oregon Transportation Plan, state modal and facility plans that implement the Oregon Transportation Plan, and the Oregon Transportation Planning Rule. Local plans must be consistent with the RTP. Projects and programs must be in the RTP's Financially Constrained System in order to be eligible for federal and state funding.

The appendix provides additional information on state and federal planning requirements.

### The region has several planning boundaries with different purposes

Federal and state law requires several metropolitan transportation planning boundaries be defined in the region for different purposes. These boundaries are shown in **Figure 1.3**.

First, Metro's jurisdictional boundary encompasses the urban portions of Multnomah, Washington and Clackamas counties. Second, under Oregon law, each city or metropolitan area in the state has an urban growth boundary that separates urban land from rural land.

Metro is responsible for managing the Portland metropolitan region's urban growth boundary.

Third, the Urbanized Area Boundary (UAB) is defined to delineate areas that are urban in nature distinct from those that are largely rural in nature. The Portland-Vancouver metropolitan region is somewhat unique in that it is a single urbanized area that is located in two states and served by two MPOs. The federal UAB for the Oregon-portion of the Portland-Vancouver metropolitan region is distinct from the Metro Urban Growth Boundary (UGB).

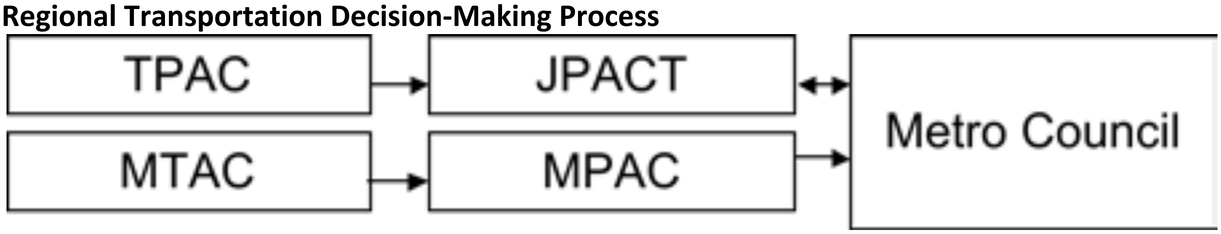
Fourth, MPO's are required to establish a Metropolitan Planning Area (MPA) Boundary, which marks the geographic area to be covered by MPO transportation planning activities. At a minimum, the MPA boundary must include the urbanized area, areas expected to be urbanized within the next twenty years and areas within the Air Quality Maintenance Area Boundary (AQMA) – a fifth boundary.

The federally-designated AQMA boundary includes areas located within attainment areas that are required to be subject to ozone regulations, although recent changes mean that air quality conformity no longer is required to be performed for ozone in this region. The region continues to complete air quality conformity for carbon monoxide for projects within the Metro jurisdictional boundary.

### Metro facilitates the metropolitan transportation planning process through Metro's advisory committees

Metro facilitates the metropolitan transportation planning process through four advisory committee bodies –the Joint Policy Advisory Committee on Transportation (JPACT), the Metro Policy Advisory Committee (MPAC), the Transportation Policy Alternatives Committee (TPAC) and the Metro Technical Advisory Committee (MTAC). In addition, the Metro Committee for Citizen Involvement (MCCI) advises the Metro Council on ways to engage residents in regional planning activities.  **Figure 1.4** displays the regional transportation decision-making process.

**Figure 1.4**
**Regional Transportation Decision-Making Process**




*Source: Metro*

All transportation-related actions (including federal MPO actions) are recommended by JPACT to the Metro Council. The Metro Council can approve the recommendations or refer them back to JPACT with a specific concern for reconsideration. Final approval of each item, therefore, requires the concurrence of both bodies. Under state law, the RTP serves as the region's transportation system plan (TSP). As a result, the Metro Policy Advisory Committee (MPAC) also has a role in approving the regional transportation plan as a land use action, consistent with statewide planning goals and the Metro Charter.

In addition, the Bi-State Coordination Committee advises the RTC, and JPACT/Metro on issues of bi-state significance. On issues of bi-state land use and economic significance the Committee advises the local and regional governments appropriate to the issue. Since formation in 1999, the committee has reviewed Federal transportation funding reauthorization, Columbia River Channel deepening and projects and studies focused on the I-5 Corridor.

Restructuring in 2004, expanded this role to include examining the connection between land use and transportation in the I-5 corridor and taking a multi-modal approach – including freight and transit – in considering the impacts of land use and transportation decisions within the context of economic development and environmental justice issues. JPACT and the RTC Board cannot take action on an issue of major bi-state transportation significance without first referring the issue to the Bi-State Coordination Committee for their consideration and recommendation.

*Metro facilitates the metropolitan transportation planning process through four advisory committee bodies and on-going coordination with the Bi-State Coordination Committee.*

## 1.2 CLIMATE CHANGE

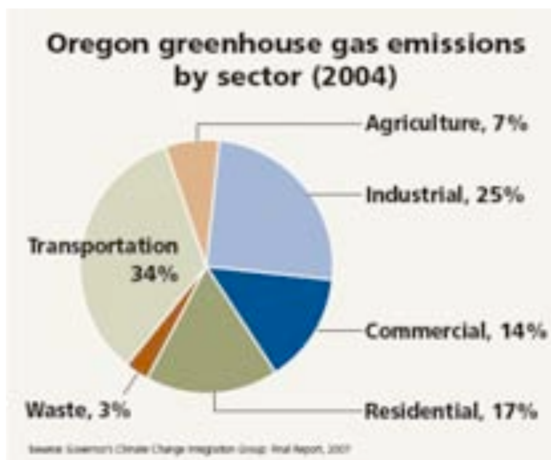

**Greenhouse gas goals adopted by the Oregon Legislature and Governor Kulongoski in HB 3543:**

- **Short-term:** by 2010, stop increases in greenhouse gas emissions
- **Medium-term:** by 2020, reduce greenhouse gas emissions to 10 percent below 1990 levels
- **Long-term:** by 2050, reduce greenhouse gas emissions to 75 percent below 1990 levels.

Climate change may be the defining challenge of the 21st century. Global climate change poses a growing threat to our environment and our economy, creating uncertainties for the agricultural, forestry and fishing industries as well as winter recreation. The planet is warming and we have less and less time to act. Documented effects include warmer temperatures and sea levels, shrinking glaciers, shifting rainfall patterns and changes to growing seasons and the distribution of plants and animals.

Warmer temperatures will affect the service life of transportation infrastructure, and the more severe storms that are predicted will increase the frequency of landslides and flooding. Consequent damage to roads and rail infrastructure will compromise system safety, disrupt mobility and hurt the region's economic competitiveness.

Our ability to respond will have unprecedented impacts on our lives and our survival. Since 2006, the state of Oregon has initiated a number of actions to respond. As one of five states participating in the Western Climate Initiative, Oregon has signaled a long-term commitment to significantly reduce greenhouse gas emissions. Transportation sources account for 34 percent of greenhouse gas emissions in Oregon, largely made up of carbon dioxide ($CO_2$).




In 2007, the Oregon Legislature passed House Bill 3543, which commits the state to reduce greenhouse gas emissions to 10 percent below 1990 levels by 2020 and 75 percent below 1990 levels by 2050. With the region expecting a million more people over the next 25 years, we are challenged to develop a transportation strategy to serve that growth and reduce $CO_2$emissions sufficient to meet state goals.

House Bill 3543 also created the Oregon Global Warming Commission, which is charged with recommending ways to achieve the emission reduction goals and prepare Oregon for the effects of global warming. The Commission is tasked with monitoring the economic, environmental, health and social impacts of global warming and reporting on Oregon's progress toward the emission reduction goals on a biennial basis.

House Bill 3543 also created the Oregon Climate Change Research Institute within the state's Department of Higher Education. The Institute will be administered by Oregon State University and will facilitate climate change research, serve as a clearinghouse for climate change information, provide technical assistance to local governments and support the Global Warming Commission.

In 2007, at Governor Kulongoski's request, the Oregon Department of Environmental Quality (ODEQ) with assistance from the Oregon Department of Energy (ODOE) and the Public Utility Commission (PUC) have started the task of developing the GHG mandatory emissions reporting rule.[3]

**Future RTPs Will More Fully Respond to State and Federal Climate Change Legislation**

In 2008-10, a number of requirements for integrating greenhouse gas considerations in the transportation planning process were proposed and debated at the state and federal level. In 2009, the Oregon Legislature passed House Bill 2001, which requires Metro to develop land use and transportation scenarios designed to reduce greenhouse gas emissions (GHGs). The 2009 Legislature also established the Metropolitan Planning Organization Greenhouse Gas Emissions Task Force through House Bill 2186. The task force's recommendations wereapproved by 2010 Legislature as part of Senate Bill 1059. Senate Bill 1059 provides further direction to greenhouse gas scenario planning in the other Oregon MPOs and the Metro region.[1] It also calls for a statewide GHG emission reduction strategy for the light-duty vehicle emissions sector; and calls for the state to develop a toolkit of emission reductions actions.This work is underway. Federal climate legislation, with targets and commensurate planning requirements to mitigate GHG emissions remain pending in Congress.

In anticipation of future requirements, this RTP includes specific CO2 reduction targets,policies and actions to reduce the need to drive and improve operations of the transportation system – two primary strategies that have been identified for the transportation sector. However, more work is needed. Preliminary scenarios modeling conducted in 2008 looked at how vehicle emissions might change over time with different investment choices to illustrate the region's ability to continue to meet current state and federal air quality requirements and state targets to reduce greenhouse gas emissions. None of the scenarios, including the reference scenario, achieve the state targets by 2035. The region's growing population will make it difficult to achieve the targets without other strategies. The region must identify the land use and transportation strategies needed to meet them. The region will also need to support new technology and conservation measures. The scenarios work in 2010 will evaluate a full array of land use and transportation strategies.

[3] IBID.

## 1.3 COMPETING IN A GLOBAL ECONOMY

Despite a growing "buy local" movement, most of the products we buy come from someplace else. And many of the goods we produce in Oregon move on to markets in other states and countries. The global economy is expanding rapidly, and our region's ability to move products to far-flung markets depends on an efficient transportation system. As a critical West Coast domestic hub and international gateway for commerce and tourism, the Portland area must maintain well-functioning river ports, rail connections and highways. The economic health of the region is also dependent on industries that have been attracted to the region because of our well-trained labor pool, relatively low cost of living and high quality of life.

### Job retention and creation

The region's economy has been marked by job growth, shifts in job types, and growth in traded sector businesses. Over the past 30 years, the area's job growth has doubled—from 500,000 jobs in 1975 to 1 million today.[4] About three-quarters of those jobs were added in non-traded sectors—businesses and organizations such as health care, beauty shops, retail stores and construction companies—that deliver goods and services locally. The remaining jobs were added in traded-sector industries—high technology, distribution and logistics, apparel manufacturers and other industries that distribute goods and services worldwide.[5]

**What is the "traded sector"?**

As defined in ORS 285A.010, (8), "traded sector" means industries in which member firms sell their goods or services into markets for which national or international competition exists. As a result of their exchange earnings, these industries increase spending power within their regional or state economies.

**Table 1.1** summarizes overall forecasted job growth for the four-county region.

**Table 1.1**
**Forecasted Growth in Employment by County**[6]

| County | 2005 | 2035 | Increase |
|---|---|---|---|
| Portland Central City and Neighborhoods | 440,825 | 637,064 | 196,239(45%) |
| East Multnomah County | 52,834 | 114,168 | 61,334(116%) |
| **Multnomah County** | 493,659 | 751,232 | 257,573(52%) |
| **Clackamas County** | 145,583 | 268,273 | 122,690(84%) |
| **Washington County** | 269,657 | 485,596 | 215,939(80%) |
| **Three-county sub-total** | 908,899 | 1,505,100 | 596,201 (66%) |
| **Clark County (Wash.)** | 123,352 | 294,143 | 170,791(138%) |
| **Four-county total** | **1,032,251** | **1,799,243** | **766,992(74%)** |

*Source: Metro*

[4] The Regional Business Plan, January 2006, p. 4.
[5] Ibid. p. 9
[6] The totals for each county include the area both inside and outside the urban growth boundary.

Although the traded-sector accounted for only one-quarter of area's new jobs between 1975 and 2005, all jobs—and the area's economy—depend on this sector's ability to bring new money into the area.[7] The region's continued ability to bring new money into the area and attract and retain jobs will depend on how well this sector's transportation needs are met.

### Attracting talented labor pool

A 2006ECONorthweststudy, Comprehensive Economic Development Strategy for the Portland-Vancouver Region, found that livability (which includes quality transportation options) is one of theregion's defining characteristics.[8] It states that most local economic development plans refer to livabilityas a key component to economic development. Furthermore, most CEOs interviewed for the study citedlivability as a key advantage of doing business in the region.

Livability is particularly consequential for attracting highly educated 25-34 year olds to the region.Research by local economist Joe Cortright has found that educated 25-34 year olds are key for growing aregion's economy, due to their familiarity with computers, up-to-date training and entrepreneurialtendencies. In recent years, Portland has successfully attracted more of this demographic than most otherU.S cities. Between 1990 and 2000 Portland ranked 8th out of the top 50 U.S metropolitan regions withits 12 percent increase in 25-34 year olds.[9]

### Portland as a global gateway

An international airport, river ports, rail connections and an interstate highway system move tourists, freight and goods to the region and beyond. The region's economy depends more heavily on transportation than many other regions of comparable size.[10] Businesses and households depend on an efficient, multi-modal transportation system that reliably moves freight, services, and people.

*As a critical west coast hub, Portland area must maintain well-functioning river ports, rail connections and highways.*

Freight transportation needs are expected to more than double the amount of goods that will travel to and through this region – in part due to growth in businesses and industry in

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[7] *Cost of Congestion to the Economy of the Region Study (2005)*

8 A Comprehensive Economic Development Strategy for the Portland-Vancouver region, http://www.econw.com/reports/economicdevelopment6899.pdf

[9] Cortright, Joe, Impresa Consulting. The Young and the Restless – How Portland Competes for Talent, http://www.restlessyoung.com/public/pdf/Portland.pdf

[10] Cost of Congestion Study

other parts of the state. The economy of our region and the rest of the state depend on providing reliable access to this gateway and hub.

The Portland region is a primary economic engine for Oregon. Due to the region's commerce-supporting infrastructure and globally focused businesses, much of the freight moved in the state has ties to the region. Tables 1.2 through 1.4 provide a statewide look at both the types of commodities moved in Oregon and how they are moved today and into the future.

**Statewide freight travel**

**Table 1.2** shows the top-tier commodities shipped to, from and within Oregon by weight and value. The mix of high-weight and value commodities demonstrate the diversity of Oregon's economy, which supports both resource-based commerce (logs, cereal grains, gravel), and technology and manufacturing (electronics, machinery, textiles/leather). The commodities mix also drives the choice of mode(s) for shipment.

**Table 1.2**
**Oregon Shipments for Top-Tier Commodities, by Weight and Value for 2002 and 2035**

| Tons (millions) | | | | | | Value ($ millions) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Within State | | From State | | To State | | Within State | | From State | | To State | |
| Gravel | 52 | Coal/ petroleum | 20 | Coal/ petroleum | 21 | Electronics | 6,968 | Electronics | 10,465 | Machinery | 10,515 |
| Logs | 18 | Wood products | 17 | Gravel | 17 | Machinery | 6,732 | Textiles/ leather | 7,637 | Electronics | 7,741 |
| Non-metal mineral products | 18 | Cereal grains | 3.5 | Wood products | 6.6 | Mixed freight | 6,592 | Wood products | 7,225 | Coal/ petroleum | 6,161 |
| Coal/ petroleum | 13 | Logs | 3.2 | Fuel oils | 5.4 | Motor vehicles/pa rts | 4,068 | Coal/ petroleum | 6,317 | Textiles/ leather | 5,373 |
| Wood products | 11 | Animal feed | 2.9 | Coal | 5.3 | Wood products | 3,369 | Mixed freight | 5,157 | Mixed freight | 5,338 |

*Source: Freight Analysis Framework (FAF[2.2]), Federal Highway Administration, 2006.*

Each freight mode provides a distinct function in the movement of freight, with different operating and cost characteristics that make them particularly suited to certain commodities and markets. While different freight modes can compete directly for business, more often they are connected, like links in a chain, supplying door-to-door transportation of shipments.

**Table 1.3 and 1.4** compare 2002 Oregon shipments by weight and value with those forecast for 2035, respectively. With regard to both weight and value, trucks are moving the bulk of Oregon shipments today and into the future. As reported on the federal websites, in addition to truck-only shipments, trucks are included as the highway modal link for air cargo, and for shipments combining rail and trucks. Also important to note are the forecasted changes for other modes. Large percentage increases in tons shipped from the state are forecasted for truck (278%), rail (101%), water (1750%), air (300%), rail/truck intermodal (283%), and pipeline (114%). Forecasted changes in the value of shipments reinforce the prediction of strong growth in freight movement with double and triple-digit increases for all freight modes.

*Currently freight rail is at or near capacity to handle more traffic without additional investment.*

**Table 1.3**
**Oregon Shipments by Weight for 2002 and 2035**(in millions of tons)

| Mode | 2002 | | | | | | 2035 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Within State | | From State | | To State | | Within State | | From State | | To State | |
| | Number | % | Number | % | Number | % | Number | % | Number | % | Number | % |
| Total | 165.6 | 100 | 72.1 | 100 | 95.5 | 100 | 383.7 | 100 | 221 | 100 | 174.2 | 100 |
| Truck | 154.1 | 93 | 36.7 | 51 | 34.4 | 36 | 353.9 | 92 | 138.6 | 63 | 67.1 | 38 |
| Rail | 2.1 | 1 | 14.4 | 20 | 20.6 | 22 | 9.5 | 2 | 28.9 | 13 | 34.9 | 20 |
| Water | 0.6 | <1 | 0.4 | <1 | 11.3 | 12 | 0.9 | <1 | 7.4 | 3 | 19.1 | 11 |
| Air, air and truck | <0.1 | <1 | 0.1 | <1 | <0.1 | <1 | <0.1 | <1 | 0.4 | <1 | 0.2 | <1 |
| Truck and rail | <0.1 | <1 | 0.6 | <1 | 0.4 | <1 | <0.1 | <1 | 2.3 | 1 | 0.8 | <1 |
| Other intermodal[1] | <0.1 | <1 | 0.8 | 1 | 0.2 | <1 | 0.1 | <1 | 2.7 | 1 | 0.8 | <1 |
| Pipeline/unknown[2] | 8.7 | 5 | 19 | 26 | 28.6 | 30 | 19.1 | 5 | 40.7 | 18 | 51.4 | 30 |

*Source: Freight Analysis Framework (FAF[2.2]), Federal Highway Administration, 2006.*

[1]*Other intermodal includes U.S. Postal Service and courier shipments and intermodal combinations except air and truck.*

[2] *Pipeline and unknown shipments are combined because data on region-to-region flows by pipeline are statistically uncertain. Note: Numbers may not add to totals due to rounding.*

**Table 1.4**
**Oregon Shipments by Value for 2002 and 2035** (in millions of dollars)

| Mode | 2002 | | | | | | 2035 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Within State | | From State | | To State | | Within State | | From State | | To State | |
| | Number | % | Number | % | Number | % | Number | % | Number | % | Number | % |
| **Total** | **63,996** | **100** | **71,217** | **100** | **70,216** | **100** | **222,757** | **100** | **254,678** | **100** | **236,104** | **100** |
| Truck | 57,214 | 89 | 45,188 | 63 | 45,706 | 65 | 188,903 | 85 | 173,345 | 68 | 155,063 | 66 |
| Rail | 154 | <1 | 5,037 | 7 | 3,162 | 5 | 757 | <1 | 10,429 | 4 | 5,450 | 2 |
| Water | 102 | <1 | 117 | <1 | 113 | <1 | 212 | <1 | 1,011 | <1 | 195 | <1 |
| Air, air and truck | 83 | <1 | 5,640 | 8 | 1,540 | 2 | 597 | <1 | 12,095 | 5 | 4,741 | 2 |
| Truck and rail | 8 | <1 | 412 | <1 | 1,802 | 3 | 12 | <1 | 1,754 | <1 | 3,141 | 1 |
| Other intermodal[1] | 1,463 | 2 | 8,004 | 11 | 8,446 | 12 | 6,723 | 3 | 36,657 | 14 | 48,621 | 21 |
| Pipeline/unknown[2] | 4,971 | 8 | 6,816 | 10 | 9,443 | 13 | 25,550 | 11 | 19,383 | 8 | 18,889 | 8 |

*Source: Freight Analysis Framework ($FAF^{2.2}$), Federal Highway Administration, 2006.*

[1] *Other intermodal includes U.S. Postal Service and courier shipments and intermodal combinations except air and truck.*

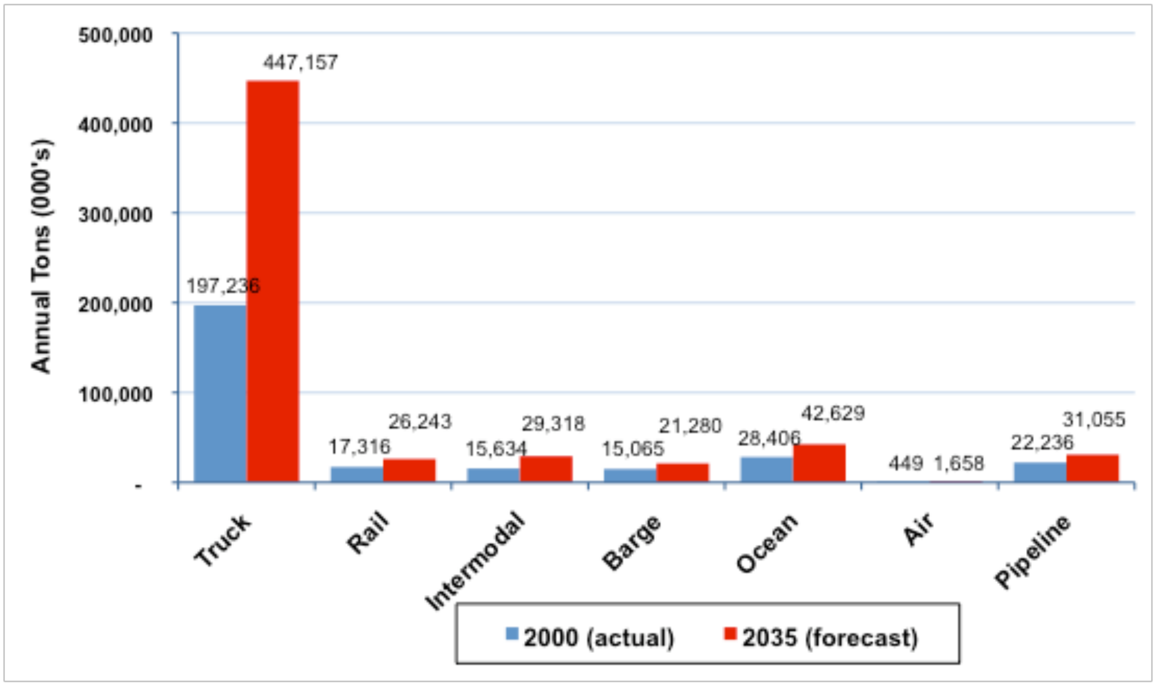
[2] *Pipeline and unknown shipments are combined because data on region-to-region flows by pipeline are statistically uncertain. Note: Numbers may not add to totals due to rounding.*

**Freight travel in the Portland region**

The Portland-Vancouver International and Domestic Trade Capacity Study and the Regional Freight Data Collection Study, both completed in 2006, provides the most recent data on freight movement in the region. Due to the inclusion of Vancouver, Washington in the analyses, the regional and state-level data are not directly comparable. However, the findings of both analyses are consistent. Freight moves into, out of and through the region by road, air, water, rail and pipeline.

**Figure 1.5** compares the tons of freight moved in the region by mode in 2005 with the 2035 forecast.

**Figure 1.5**
**2000- 2035 Portland Metropolitan Region Commodity Flows by Mode**[11]
(inthousands of tons)




*Source: Portland/Vancouver International and Domestic Trade Capacity Analysis, Port of Portland, 2006*

As a percentage of total tonnage in 2000, trucks carried 67 percent of the commodities, freight rail (and intermodal) accounted for 11 percent, marine freight (ocean and river barge) represented 15 percent, air cargo represented 0.1 percent, and pipelines carried 7 percent of the region's commodities. A significant trend that emphasizes the region's role in the national economy involves "pass through" traffic—freight and goods moving through the Portland-Vancouver metropolitan region, but not originating in the region or destined for it. For example, through 90 percent of total regional truck trips begin and/or end within our region, as much as 52 percent of the total truck traffic entering the region via the interstate system is through traffic, according to 4,159 roadside interceptsurveys.[12] This data is consistent with interstate truck shipments as a share of all Oregon-originating truck shipments in the Commodity Flow Survey database.[13]

[11] A 2005 – 2035 comparison of shipment value by mode for the region is unavailable at time of publication. However, the federal Bureau of Transportation Statistics is updating its Commodity Flow Survey, which forms the basis for the region's commodity flow data.
[12] Portland Freight Data Collection Phase II, Final Summary Report, March 2007)
[13] Table 21, Freight in America, 2006

### *Trucks*

Trucks will continue to be the dominant mode of transport in the freight transportation system, with West Coast truck volumes expected to more than double by 2035, with major implications for the region's highway network.[14]Even though the use of other modes will expand, trucks will maintain their preeminent status as the first and last links in delivering goods to the end user due to their flexibility.A trend toward lighter weight, higher value, increasingly time sensitive, producer to retailer shipments is expected to continue, again reinforcing the role of trucking in the freight transportation system hierarchy.

Truck access between port facilities, industrial sanctuaries and the National Highway System is critically important to shippers, carriers and distributors of freight. These connections are commonly referred to as "first mile/last mile" connections.Motor carriers identified correcting regional bottlenecks on the principal NHS roads as their first priority. Motor carriers also support implementation of Transportation System Management strategies such as incident management.[15]

### *Aviation*

Air cargo, although low in tonnage, carries high-value, time-sensitive goods—electronics, footwear and perishables—to international and domestic markets and is expected to increase its market share. Air cargo continues to require efficient access for these perishable and high-value goods and production-critical components.

Area industries producing goods shipped via air freight have had to adjust their production schedules repeatedly due to roadway congestion in order to meet air freight departure deadlines. In turn, this has led, firms to lose valuable production time and increase their production costs.


*Air cargo is expected to increase its market share.*

[14] Portland/Vancouver International and Domestic Trade Capacity Analysis, Port of Portland, 2006.

[15] See Section 2.5.7 for more information about the types of strategies recommended for this region.

### *Rail*

Rail service characteristics are changing. Class 1[16] railroadsin the Portland metropolitan area (BNSF Railway and Union Pacific Railroad), and even certain short line railroads, are moving towards a "hook (up) and haul" business model, where the railroad focuses on pulling assembled trains long distances between cities. In addition, freight rail is currently

*Class 1 railroads like the Union Pacific railyard in North Portland are experiencing capacity constraints.*

at or near capacity, and so has little room to handle more traffic without additional investment in rail mainline, yard and siding capacity.[17]These constraints will worsen as freight volumes at the region's ports and intermodal facilities increase.

Capacity chokepoints for the Class 1 railroads in the Portland metropolitan area have primarily centered on the Portland Triangle, located in the industrial/port areas of North Portland and Southwest Vancouver. Other Class 1 capacity constraints within the region include switch control at the Steel Bridge.

In response to projected increases in rail freight volumes, Class 1 railroads intend to haul heavier per car loads and employ longer trains. The former will require upgrading tracks throughout their systems, and the later will likely increase the need to grade separate more intersections over time. Outside the region, railcar clearances and increasing weights will need to be addressed, as the Class 1 railroads look to longer trains and heavier carloads to increase their operating efficiency and revenues.

### *Marine*

Modern commercial navigation of the Columbia River began in 1877, when Congress approved dredging a navigation channel between the Portland-Vancouver area and the mouth of the river in Astoria. Currently, more than 1,000 ocean-going vessels call on the Portland-Vancouver Harbor each year.

[16] Railroads are classified according to their revenue; following decades of decline and mergers, there are now seven Class 1 railroads—constituting largest companies--currently operating in the United States. Class II railroads are also known as regional railroads; Class III includes the short line railroads.
[17] Freight Rail and Oregon Economy: Final Report, 2004.

*The ports of Portland and Vancouver along the lower Columbia River, lead the nation in the shipment of grain*

Navigation channel depth on the Columbia River continues to be the limiting factor on the size, and therefore the number, of ships that call on the Portland-Vancouver Harbor. Channel deepening has been pursued for several decades, balanced by the need to protect various fish stocks migrating on the river.

The ports of Portland and Vancouver, as well as the other ports located along the lower Columbia River, lead the nation in the shipment of grain. They also ship large quantities of other bulk agricultural commodities from Oregon, Idaho and Washington to the rest of the world. The region's ports will still manage to grow by moving a wide range of marine cargoes, such as energy and transportation project related materials, manufactured goods, automobiles, agricultural and mining related products and fuel. The ports generate significant volumes of truck and rail traffic in the West Vancouver andRivergate areas. Vehicle congestion during peak hours adversely impacts these truck movements. Intermittent rail congestion from movements required as Class 1 and shortline railroads access the marine ports adds to both local fright and passenger congestion in the port intermodal areas.

Barge operators on the Columbia/Snake River system use equipment specifically constructed to operate in the locks on those rivers, adding significantly to their capital costs. In 2004, these barge operators moved 16,262 TEU's[18] and 9,779,000 tons of containers, bulk (wet and dry) and break bulk cargoes on the Columbia/Snake River system. Barges are also used to transport grain, fuel, steel and aggregate related products on the lower Willamette River. It should be noted, however, that most import and export shippers prefer to use truck and rail for any higher value products moving through the ports.The primary limiting factors to barge movement in the region are the BNSF rail and I-5 bridges crossing the Columbia River and maintenance of navigable locks on the Columbia and Snake rivers.

**Industrial land supply**

In the context of support for preserving and expanding, as appropriate, all industrial land in the region, industrial sanctuaries should continue to be considered a unique and protected land use. Preserving the region's existing industrial sanctuaries is essential to maintaining

[18] Standard container measurements, known as twenty-foot equivalent units.

economic growth. As industrial land in the region becomes increasingly scarce, active protection of the region's industrial sanctuaries will become critical.

Protection of industrial sanctuaries should include modernization of existing sites as needed, as long as the industrial nature of the land use is maintained.There will be an increased need for industrial waterfront lands to support growth in maritime trade. Industrial land uses are frequently incompatible with, and pressured by, residential development.

Extra care must also be taken when placing industrial land uses in close proximity to residential development, recreational or environmental resources.Industrial land users consider residential development incompatible with their operations, while residential property owners take issue with aspects of industrial development. Similarly, locating housing adjacent to primary truck routes or rail lines is also viewed as undesirable by carriers and residential property owners alike.Maintaining and improving multimodal freight access to the 2040 industrial sanctuaries is critically important to ensuring long-term viability of industry in the region.

## 1.4 GROWTH AND SHIFTING DEMOGRAPHICS

The world's population is growing, and here at home our population continues to grow as well. New forecasts show that within the next 25 years, the population of the Portland metropolitan region and adjacent cities will increase from 1.4 million people to about 2.4million. While this growth brings jobs and opportunity, it also creates new challenges. In an average week, the greater Portland area gains more than 500 new residents. About half of the new residents anticipated in the region during the next 20 years will be born here. More than 60 percent of households in the Portland region consist of just one or two people, according to the 2000 census.

Demographic trends influence the type, location and amount of demand on transportation facilities and services and pose potential equity considerations. Demographic trends in the greater Portland-Vancouver region have been marked by strong population growth, especially in Washington County and Clark County, an increase in ethnic and cultural diversity throughout the region and shifts in age distribution. Trends also indicate that higher numbers of low-income, culturally diverse populations are moving to areas of the region that have higher levels of transportation system gaps and barriers. This highlights the need for regional transportation planning to strive for equitable distribution of transportation resources by both population and geographic distribution.

**Table 1.5** shows population growth by county during the fast-growing decade between 1990 and 2000. Growth has slowed since then, but remains robust at about 1.58 percent per year.[19]

**Table 1.5**
**Growth in county population and households between 1990 and 2000**
(County percent of regional total shown in parentheses)

| County | 1990 | | 2000 | | Percent increase 1990–2000 | |
|---|---|---|---|---|---|---|
| | Population | Households | Population | Households | Population | Households |
| Multnomah | 583,887 (41%) | 242,140 (44%) | 660,486 (37%) | 272,098 (39%) | 13% | 12% |
| Clackamas | 278,850 (20%) | 103,530 (18%) | 338,391 (19%) | 128,201 (18%) | 21% | 24% |
| Washington | 311,554 (22%) | 118,997 (22%) | 445,342 (25%) | 169,162 (24%) | 43% | 42% |
| Clark (Wash.) | 238,053 (17%) | 88,440 (16%) | 345,238 (19%) | 127,208 (18%) | 45% | 44% |
| **Total** | **1,412,344** | **553,107** | **1,789,457** | **696,669** | **27%** | **26%** |

*Source: Census 2000, SF1, P1, P15; Census 1990, SF1, P001, P003 (percents have been rounded)*

**Table 1.6** shows Metro's growth forecast from 2005 to 2035. As the table shows, the Portland-Vancouver metropolitan region is expected to add approximately 1 million more people in the next 25 years[20]—the equivalent of adding two cities the size of Portland. A million more people means that more freight, goods and services will travel our waterways, rails, streets and throughways. More people will be using the region's transportation system to get to work, school, shopping and other daily activities

**Table 1.6**
**Forecasted Population Growth by County (2005-2035)**

| County | 2005 | 2035 | Increase |
|---|---|---|---|
| **Multnomah County** | | | |
| Portland Central City and Neighborhoods | 538,078 | 679,782 | 141,704(26%) |
| East Multnomah County | 144,722 | 199,918 | 55,196(38%) |
| **Clackamas County** | 373,400 | 743,000 | 369,600(99%) |
| **Washington County** | 501,400 | 756,300 | 254,900(51%) |
| Three-county sub-total | 1,557,600 | 2,379,000 | 821,400(53%) |
| **Clark County (Wash.)** | 403,504 | 718,402 | 314,898(78%) |
| **Four-county total** | **1,961,104** | **3,097,402** | **1,136,298(58%)** |

*Source: Metro*

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19 Metro 2000–2030 Regional Forecast http://www.oregonmetro.gov/library_docs/maps_data/2000_2030regionalforecasesept2002.pdf
20 Metro 2000–2030 Regional Forecast http://www.oregonmetro.gov/library_docs/maps_data/2000_2030regionalforecasesept2002.pdf

## Our region is becoming more culturally diverse

The Portland-Vancouver region minority population more than doubled between 1990 and 2000, growing from 140,000 to 307, 000 in that decade. Hispanic/latino populations grew the fastest, increasing 181 percent from 1990 to 2000. According to U.S. Census estimates for 2005, the hispanic/latino population increased by an additional 36 percent, to 195,000.

Asian americans comprised the second fastest-growing population in the region, posting an increase of 127 percent during that decade. Between 2000 and 2005, the region gained an additional 28,000 Asian americans, a 24 percent increase.[21] During the 1990s, the black/africanamerican population grew from about 38,000 to 44,000, a 16 percent increase, then to 56,000 by 2005, an 18 percent increase.[22]

*Minority populations in the Portland-Vancouver region have more than doubled in 10 years.*

International migration since the year 2000 accounted for about 30 percent of the population growth in the region. The largest share has come from the former USSR (18 percent) and Mexico (17 percent). Other major countries of origin include Vietnam (8 percent), China (7 percent), India (5 percent), Korea (3 percent), and the Philippines (3 percent). Future population growth due to immigration and migration will depend on national and international conditions that are difficult to predict. Regional research indicates that the areas with highest percentage of in-migration by low-income, culturally diverse populations are less served by transit, bicycle, and pedestrian facilities than higher income areas.[23] These factors highlight the need to address transportation equity for populations at all income levels and communities outside the central city.

Among the immigrants were highly-educated professionals in high-paying jobs, and a large number of workers with limited education in low-paying jobs. Both immigrant professional families and families with low-income have tended to settle in or move to suburban communities, where housing prices are lower than in the Portland central city.

[21] Hough, George C and Amy Koski, "Population Outlook for the Portland-Vancouver Metropolitan Region;" Portland State University, 2007
[22] Ibid.
[23] Regional Equity Atlas (2007). Coalition for a Livable Future in partnership with Portland State University.

However, in the suburbs and outlying areas,transportation choices are more limited. Transit service, bicycle facilities and sidewalks commonly have gaps or may be missing altogether. Furthermore, low density, single-use development and inadequate levelsstreet connectivity make it difficult to provide frequent, cost-effective transit service.In areas closer to the center of the region,residents can walk a shorter distance to access transit than neighborhoods in the outlying parts of the region.[24]

*The percentage of people over 65 is expected to increase after 2011.*

## Our region is getting older

Age distributions are influenced by birth rates, death rates and migrations. The average age in the greater Portland-Vancouver region has dropped since the 2000 census, reflecting an influx of young adult workers and ethnic populations with high birth rates. The effect of this influx is expected to continue until about 2011, after which the proportion of people over 65 is expected to increase in both the absolute numbers and percentage of the total population.[25]

*Transportation facilities need to be designed to ensure safe and convenient access for people of all ages and abilities.*

In 2000, about 10.5 percent of the population in the Portland-Vancouver area was over 65; by 2030, that number is forecasted to be 17 percent.[26] An aging population requires transportation facilities equitably designed to serve people with a range of physical abilities.

As our population grows more diverse, as the Baby Boom generation ages and as we live and work longer, employment patterns, lifestyles and housing needs are expected to change. Increasing numbers of single-parent, childless and multifamily households have joined traditional nuclear families in our communities.

As a result, the nature, location and pricing of housing needs to evolve to

[24] Regional Equity Atlas (2007). Coalition for a Livable Future in partnership with Portland State University
[25] Hough, George C and Amy Koski, "Population Outlook for the Portland-Vancouver Metropolitan Region;" Portland State University, 2007
[26] Portland State University, "Age-Related Shifts in Housing and Transportation Demand", pgs. 6,8.

provide a broader range of affordable housing options.

## 1.5 DETERIORATING INFRASTRUCTURE AND INADEQUATE FUNDING MECHANISMS

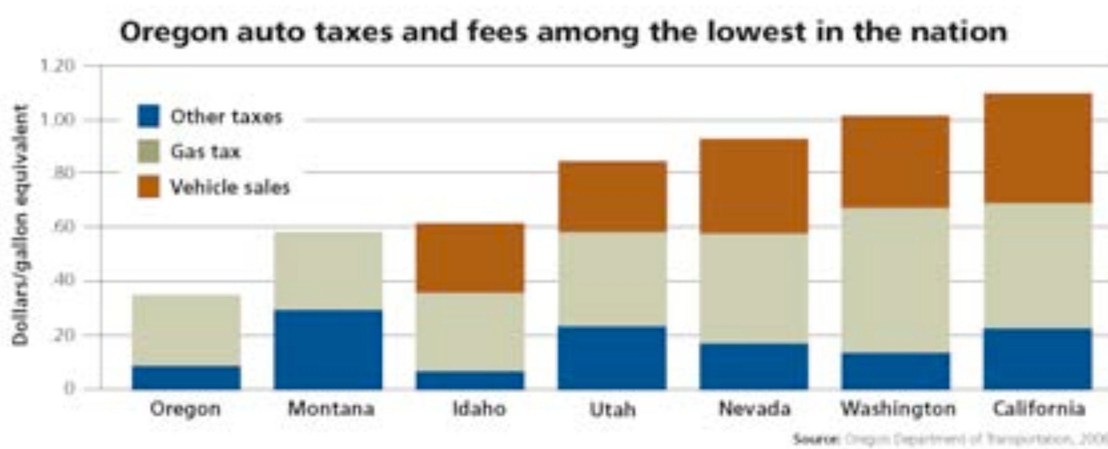
Today the federal government is investing less in infrastructure than ever before. While budgets are shrinking, aging roads and bridges are operating beyond capacity, and our transit systems lack funding to expand. Traditional approaches to financing transportation projects are not only failing to maintain existing infrastructure, they are wholly inadequate to build new systems to accommodate growth and keep our economy moving.

### Federal and state transportation sources are not keeping up with growing needs

Federal and state funding sources are at their lowest levels since the 1960s. Since 1965, government spending on transportation, sewers and water systems has declined from 39 cents to 25 cents for every dollar spent on private residential construction. Oregon relies heavily on weight-mile fees for heavy trucks and a gas tax (24 cents per gallon). Until the recent passage of House Bill 2001 that will increase the state gas tax by six cents, the state gas tax had not increased since 1993. Purchasing power of this source is further eroded because the state gas tax is not indexed to inflation.

Oregon ranks last compared with other western states (California, Idaho, Montana, Nevada, Washington and Utah) in total auto taxes and fees collected as shown in **Figure 1.6**[27]. Reduced purchasing power leads to increased competition for transportation funds and reduced capability to maintain and expand the existing system. Meanwhile, the region's transportation infrastructure continues to age and require more maintenance.

**Figure 1.6**
**Oregon ranks last compared to other western states in auto taxes and fees collected**




Purchasing power is further eroded by rising material costs.

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[27] Data in Figure 1.6 does not include House Bill 2001 gas tax increase.

Over the next two decades, the gap is expected to grow between the revenues we have and the investments we need just to keep our bridges, roads and transit systems in their current condition, to say nothing of addressing new needs. Current sources of transit funding are not enough to support the system expansions needed to serve its rapidly growing ridership.

### Growingstreets and throughways maintenance backlogs

The region's aging infrastructure is deteriorating and requires more maintenance than ever before. The Oregon Department of Transportation (ODOT), cities, and counties devote nearly all existing state and federal gas tax revenues to operation and maintenance of the existing road system. Although maintenance consumes most funds, a backlog of projects is growing.

According to the American Society of Civil Engineers, 38 percent of Oregon's major roads are in poor or mediocre condition. Comprehensive data of the Portland metropolitan region is not currently available. The City of Portland has documented a $422 million backlog of unmet maintenance needs for existing transportation facilities. Without new revenue, that backlog is expected to continue growing at a rate of $9 million per year. Increased traffic volume also increases the maintenance needs of regional streets and throughways.

Maintenance needs of regional streets and throughways are compounded by the current age of most regional facilities. Compounding all of this, maintenance costs often compete with funding available for new or expanded facilities.[28]

### Aging regional bridges

All ten Willamette River bridges provide critical regional connections across the Willamette River. ODOT is responsible for maintenance and operations of the St. Johns, Ross Island, Marquam and Fremont bridges. Union Pacific Railroad owns the Steel Bridge, which also serves as a critical connection for the region's high capacity transit system and intercity passenger rail service.

**Bridges**
Hawthorne Bridge (1910)
Steel Bridge (1912)
Broadway Bridge (1913)
Sellwood Bridge (1925)
Burnside Bridge (1926)
Ross Island Bridge (1926)
St. Johns Bridge (1931)
Interstate Bridge (1958)
Morrison Bridge (1958)
Glen Jackson Bridge (1964)
Marquam Bridge (1966)
Fremont Bridge (1973)

Multnomah County is responsible for the remaining five bridges. Within 20 years, four of Multnomah County's five Willamette River Bridges will be 100 years old. The county's capital program for these bridges is estimated to cost $450 million, yet only $144 million in federal, state and county revenues have been identified for the plan period. All the region's bridges face maintenance challenges that come from age and use.

[28] *Metro*, A Profile of Regional Roadway System in the Portland Metropolitan Region, 2007, pgs. 2-3.

The Marquam Bridge, a double deck cantilever truss bridge built in 1966, was ranked as the safest due to restraining devices that connect the decks to piers, which reduce the chance of the decks' collapsing.

The Sellwood Bridge, a four-span continuous deck truss built in 1925, was ranked as the least safe bridge and received a sufficiency rating of 2 out of 100. Many parts of the Sellwood Bridge structure are in an advanced state of deterioration. Upon discovery of cracks in both concrete approaches in January 2004, the weight limit on the Sellwood Bridge was lowered from 32 tons to 10 tons, which has forced heavier loads—including TriMet buses and heavy trucks—off of the bridge for the time being.

*The Sellwood Bridge over the Willamette River is ranked as the least safe bridge in Multnomah County with a sufficiency rating of 2 out of 100.*

A planning effort is underway to develop a long-term solution for the Sellwood Bridge. In 2009, the study recommended replacement of the existing bridge with a new bridge that would be two lanes with bike lanes and sidewalks.[29]

**Some investments have been made**

Despite limited resources, maintenance of the region's bridges is a high priority, and as a result many bridges have all seen considerable investments in recent years. The MarquamBridge was the first Portland bridge to undergo a seismic retrofit in 1995. The Hawthorne Bridge is the oldest regional bridge in Portland. From 1998-99, the bridge went through a $21 million restoration, which included replacing the steel grated deck, removal of lead-based paint and repainting and widening the sidewalks to enhance pedestrian and bicycle travel. In 2001, the sidewalks were connected to the Eastbank Esplanade.

The Steel Bridge is currently owned by Union Pacific Railroad with the upper deck leased to Oregon Department of Transportation, and subleased to TriMet. The City of Portland is responsible for ramp approaches to the bridge. Between 1984 and 1986 the Steel Bridge underwent a $10 million rehabilitation including MAX construction. In 2001, a cantilevered walkway was installed on the southern side of the bridge's lower deck as part of the Eastbank Esplanade (there are also sidewalks on the upper deck). The average daily traffic in 2000 was 23,100 vehicles (including many TriMet buses), 200 MAX trains, 40 freight and Amtrak trains, 500 bicycles and a significant number of pedestrians.[30]

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[29] Baker, Eric, Cowden, Steve, Mode, Michael, The Oregonian. Friday, August 3, 2007, p. A4. "Bridge Collapse".
[30] http://www.answers.com/topic/steel-bridge?cat=technology. Retrieved on 11/09/07.

In 1997, Multnomah County replaced the lift-span sidewalk and installed guardrails on the Broadway Bridge. Sidewalks and lighting were replaced on the Broadway Bridge in 2001. From 2003-2005 additional bridge rehabilitation work included the replacement of steel grating and some painting.

In 2002, the Burnside Bridge went through a seismic retrofit, making it the first bridge operated by Multnomah County to receive earthquake protection. The bridge is currently under construction in order to replace the deck. This project is scheduled to be complete in late 2007.


*The St. Johns Bridge, built in 1931, underwent a major rehabilitation from 2003 to 2006.*

The Ross Island Bridge underwent a $12.2 million renovation in 2000-2001. The bridge deck, sidewalk and lighting were replaced, the railings were upgraded, and the drainage system was improved. During this renovation, lead paint was discovered and removed.

From 2003 to 2006, ODOT completed a major rehabilitation of the St. John's bridge, including the replacement of the deck, repainting of the towers, water-proofing the main cables, replacing nearly half of the 210 vertical suspender cables, lighting upgrades, and improving access for bicycle and pedestrian travel.

The region's first toll bridge, the Interstate Bridge (I-5/Columbia River Crossing) is actually made up of two side-by-side bridges. The northbound bridge was built in 1917 and the southbound bridge in 1958. Today, the Interstate Bridge carries 135,000 vehicles per day. Because congestion is so heavy in the morning and evening commute hours, bridge lifts for river traffic have been restricted during the weekday rush hour. Narrow lanes, short on-ramps, and a lack of safety shoulders on the bridge contribute to crashes. In addition, the existing bridge is at risk if a significant earthquake occurred in the region.

A study is underway to determine how best to address current and future needs of this bridge. The estimated costs of bridge improvements range from $2 to $6 billion to fund bike, pedestrian, bridge, highway and transit improvements in the study area. The Columbia River Crossing project will seek federal, state and local funding. In addition, tolling will bestudied as a method to help finance the project. Tolls paid for the construction of the existing I-5 bridges in 1917 and 1958.[31]

*The Columbia River Crossing Project is studying how to replace the I-5 bridge that connects Portland to Vancouver.*

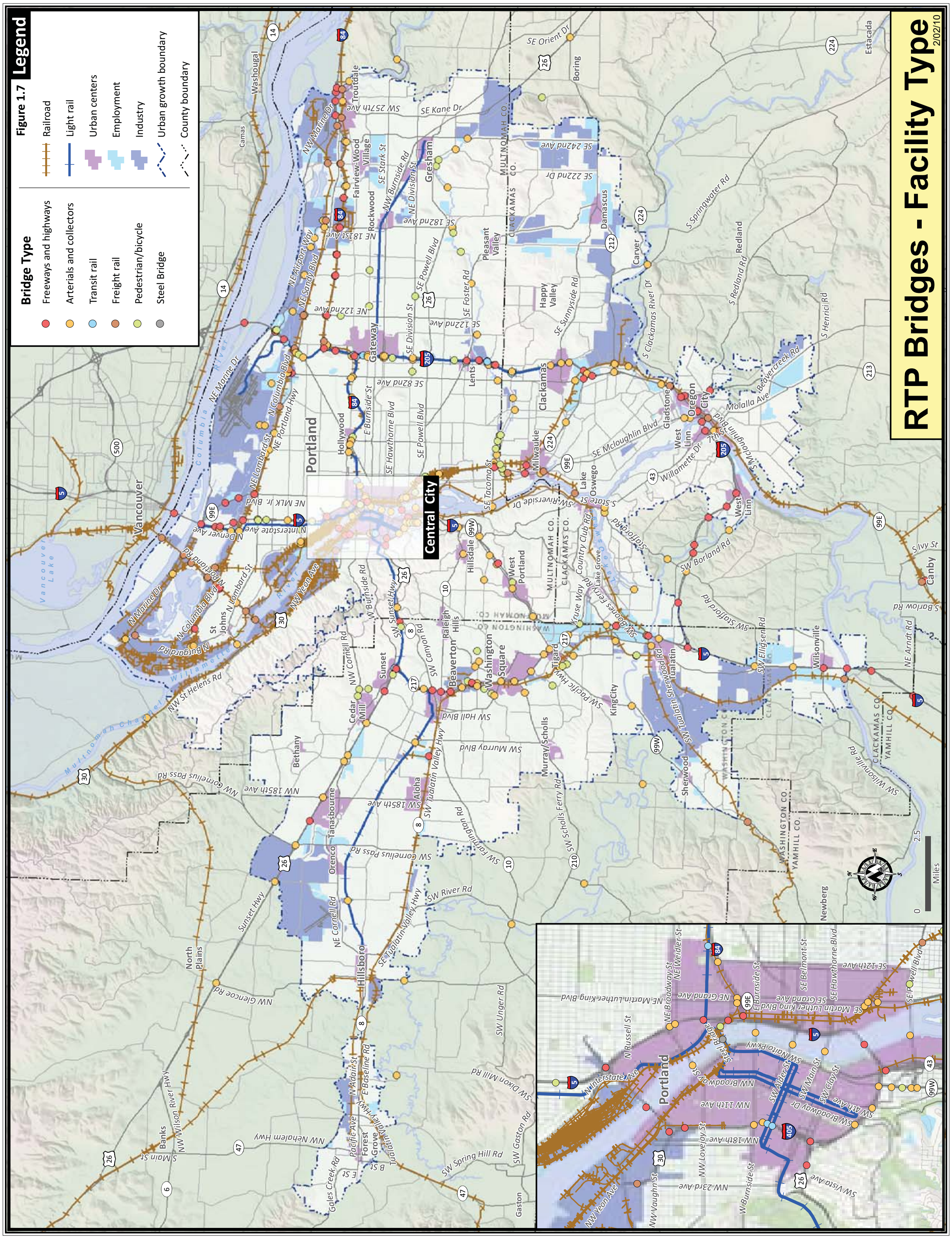
An inventory of these and other regional bridges is shown in **Figure 1.7**.[32]

A long-term strategy is needed to ensure all of the region's bridges are adequately maintained.

[31] It cost travelers 5 cents to cross in 1917. In 1960, tolls of 20 cents for cars, 40 cents for light trucks, and 60 cents for heavy trucks and buses were collected until 1966 to pay off the construction bonds for the second bridge.

[32] The RTP Bridge Inventory was compiled as a means to catalog all of the regionally significant bridges in the Portland metro area. It was compiled using visual identification through aerial photos and the ODOT overpasses shapefile. The ODOT overpasses file was too comprehensive for the inventory intended, but also missed many of the pedestrian facilities that we wanted to capture. Only overcrossings where the type of the facility making the overcrossing matched one of our categories were inventoried. In instances where an interchange had many crossing ramps, the interchange was counted as one "bridge", rather than calling out each individual ramp (or overcrossing). Also, bridges that are actually composed of multiple separate spans (i.e. I5 Columbia Crossing) are counted as one single bridge. Pedestrian/Bicycle bridges include any bridges on a Regional Trail and all pedestrian-specific overcrossings.

**Figure 1.7 – Regional Bridges Inventory**



## Transit demand outpacing funding

In addition, 30 percent of TriMet's bus fleet is older than standard replacement age of 15 years. The cost of replacing these buses is estimated to be $75 million. On average, TriMet needs to replace 41 buses per year, at an annual cost of $16.4 million. This is expected to significantly grow by 2035.

*Operating funds for the regional transit system are declining, making it difficult to maintain existing service levels and replace older bus fleets.*

The purchase power of operating funds for the regional transit system are also declining, as they are affected by inflation and by the cost of expanding paratransit services to serve the fast-growing elderly population and people with disabilities. The cost of LIFT service is expected to be $145 million for the plan period, assuming a 4.5 percent increase per year.

## Moving forward to adequately fund the region's transportation needs

Diminished resources mean increased competition for transportation funds and reduced ability to expand, improve and maintain existing transportation infrastructure. New funding strategies, enhanced public and private collaboration and stronger public support for new revenue sources must be developed to pay for major system investments, such as added roadway capacity and new bridges. Meanwhile, the following interim steps are crucial.

- Maximize operational efficiency of the current system, using new tools and management strategies.
- Prioritize less-expensive, short-term improvements that yield the maximum benefit in relation to the outcomes that they achieve – safety, congestion relief, community development, freight reliability, etc.
- Avoid the higher costs of deferred maintenance by making maintenance of existing infrastructure a priority.

Chapter 3 of this RTP presents more details about the current and future transportation needs and expected resources to pay for those needs.

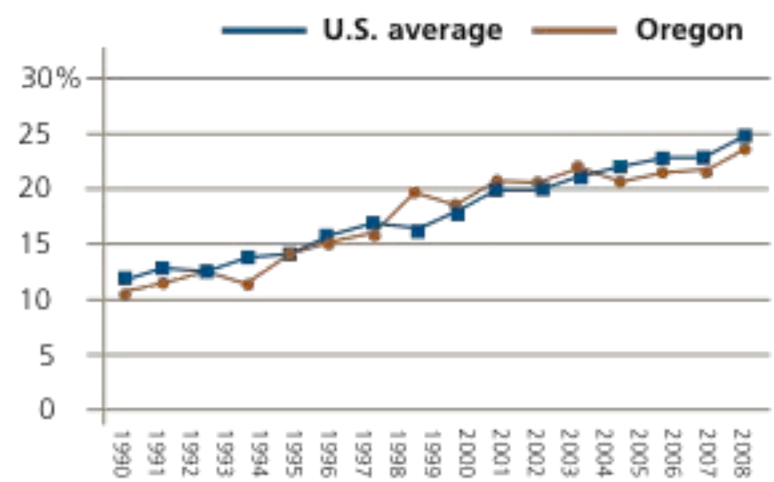
## 1.6 PUBLIC HEALTH, ENVIRONMENTAL AND SAFETY CONCERNS

Inactive lifestyles are fueling an alarming increase in obesity in U.S. adults and children, and health experts are warning us about the resulting long-term health implications. At the same time, population growth puts added pressure on our air and water quality, which directly impact public health.

### Public health and obesity

Interest in the connection between urban planning and active living grew in the 1990s, an outcome of a growing interest in “smart growth,” a movement to integrate land use, transportation and public health planning. Studies since then report positive effects on human health in neighborhoods built to encourage walking and biking.[33] In addition, transportation systems impact chronic diseases such as asthma that are related to air quality and vehicle emissions. While the Portland region has long embraced such policies, based on land use and transportation benefits, the introduction of health goals and objectives in transportation planning and the RTP is a new realm for the region.

Percentage of adults who obese, Oregon and U.S. 1990-2008
Source: Oregon Department of Human Services




We face a trend of rapidly rising rates of chronic disease associated with obesity, being overweight and sedentary lifestyles, conditions that public health officials now describe as epidemic. There is ample evidence that transportation and community design are critical factors in determining whether residents are able to be physically active enough to ensure their health. The region's transportation system is incomplete from the perspective of enabling sufficient physical activity.

[33] LD Frank, PO Engelke - Journal of Planning Literature, The Built Environment and Human Activity Patterns: Exploring the Impacts of Urban Form on Public Health Journal of Planning Literature, Vol. 16, No. 2, 202-218 (2001) DOI: 10.1177/08854120122093339, Sage Publications.

Built environments that promote active living include compact mixed-use developments and street designs that feature well-lit sidewalks and safe cycling facilities.[34] Efforts in the region to promote active living include the City of Portland's Office of Transportation "Safe Routes to School" program and the grant-funded "Active Living by Design" program administered by the Community Health Partnership: Oregon's Public Health Institute.[35]

Active Living by Design is a multi-disciplinary approach to promoting community health. The program works with both neighborhoods projects and policy initiatives to promote healthy eating and physical activity in daily living. The RTP includes active living, human health and improved air quality as goals of the plan. However, more work is needed to expand the region's analytical capability.  Additional resources will be required to analyze transportation investments in terms of their public health and environmental benefits. The use of health impact assessments and other evaluation tools will be considered moving forward.

## Air and water quality and healthy ecosystems

Emissions from vehicle exhaust introduce particulates, irritants and toxins to the air; road runoff contributes to erosion and introduces oil and other chemicals into streams and groundwater. Roads can interrupt wildlife corridors and fish passageways. Although roads cover only about one percent of the country's land, they affect a disproportionate 15 to 20 percent of adjacent habitat.[36]

Some measures of air quality have improved dramatically, others indicate more work is needed. Regional air quality has met the Environmental Protection Agency's air quality standards for six pollutants, sufficient to achieve "maintenance" status. In the 1960s, the region averaged 180 days of air quality violations every year for ozone and carbon monoxide, but today we average zero.

*Active living, enhancing human health and improving air quality are goals of the RTP that will guide investments in the region's transportation system.*

[34] "Four Model Ordinances to help Create Physically Active Communities. https://www.planning.org/smartgrowthcodes accessed 9/13/07

[35] Active Living By Design Website (Research Page, viewed on Oct. 5, 2006) www.activelivingbydesign.org.

[36] Forman, R.T.T. and Deblinger, R.D. The Ecological Road-Effect Zone for Transportation Planning and Massachusetts Highway Example. Proceedings of the International Conference on Wildlife Ecology and Transportation. (Florida Department of Transportation Publication FL-ER-69-98) 1998

More work is needed, though. The I-5 corridor and the Pacific Northwest have unacceptable levels of benzene and other air toxics. For example, levels of toxic emissions near downtown Portland—most notably benzene—have been measured at more than 8.5 times the federal standard. [37] Diesel particulate matter is another air toxin of concern, and diesel emission levels in parts of the region exceed healthy levels. This air toxin comes primarily from diesel engines that are widely used in marine vessels, heavy-duty trucks and construction equipment. Regulatory monitoring of these air toxics and carbon emissions is not currently required, yet they pose threats to human health, the environment and the region's economy.

Several Metro-initiated activities are aimed at restoring habitat or mitigating the effects of the transportation system on air quality and the natural environment, including:

*Metro has initiated several activities aimed at restoring habitat and mitigating the effects of the transportation system on air, water and other natural resources.*

- The Livable Streets and Green Streets programs to encourage environmentally sensitive street design and minimize storm water runoff.
- Air quality conformity of transportation projects and programs and on-going monitoring activities with the Oregon Department of Environmental Quality.
- An inventory of regionally significant fish and wildlife habitat to identify and map ecologically sensitive areas.
- Development of a "Wildlife Crossings" handbook to minimize impacts of roadways on wildlife populations.
- A 2002 inventory of culverts in the region that needed repair or replacement to accommodate endangered or threatened fish species, and uses the inventory with rankings of applications for flexible funds to retrofit culverts.
- Metro is currently working with the Oregon Department of Fish and Wildlife to establish a statewide database of culverts that are barriers to fish passage.

[37] Oregon Department of Environmental Quality *Fact Sheet*, 11/15/06

## Transportation Safety

Traffic safety affects the Metro region on multiple levels. Safety fears prevent many from choosing to walk or bike. Crashes cause personal tragedy, lost productivity, rising insurance costs, congestion and delay to the movement of people and goods. Increasing awareness of safety issues is a first step to improving safety in the region.

*Improving transportation safety is a critical priority for the residents of the region.*

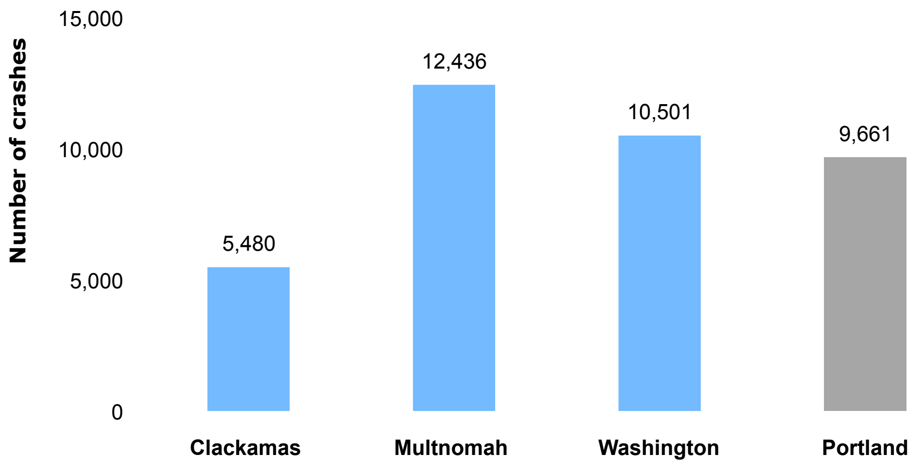
Injuries and loss of life are just one method by which to gauge the impact of crashes. Economic measures provide an added perspective. According to National Safety Council figures, each vehicle fatality corresponds to $5.2 million in economic costs, which includes medical costs, lost wages, lost productivity, property damage and administrative costs.[38]

Efforts to improve transportation safety are a critical priority for the residents of this region. It generally centers on preventing traffic crashes that cause congestion and delays, property damage, personal injury or death.

**Figure 1.8** below shows the number of crashes that occurred in 2005 in Multnomah (excluding Portland), Clackamas and Washington counties, and the City of Portland.

[38] Page 50. Cascadia Scorecard 2006: Seven Key Trends Shaping the Northwest, Sightline Institute (2006).

**Figure 1.8**
**2005 crashes in the region's counties and the City of Portland**
(Multnomah County numbers do not include the City of Portland)



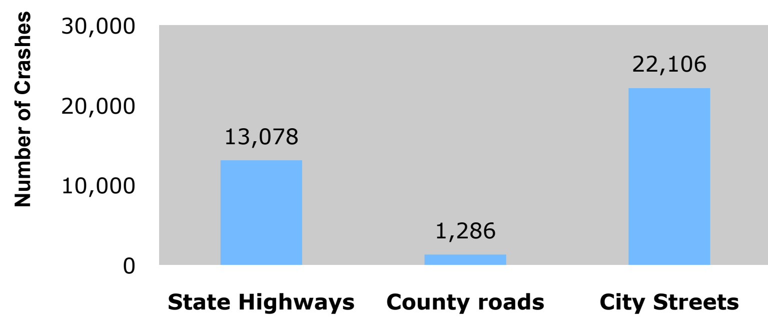

*Source: Oregon Department of Transportation's Crash Analysis Reporting Unit*

Although fatalities were involved in less than 1 percent of those crashes, about a third resulted in non-fatal injuries. Crash prevention measures in the region include road improvements, stepped up enforcement and public education. Local and collector streets designed with street trees and on-street parking have been shown to calm traffic and encourage drivers to proceed with caution, improving safety for other drivers, cyclists and pedestrians.[39]

Speeding has also been estimated to be a contributing factor in approximately one-third of all fatal crashes, representing a cost of more than $40 billion nationwide. Speeding is a complex safety problem that involves numerous factors like public attitudes, driver behavior, vehicle performance, roadway design, posted speed and enforcement strategies. Federal research shows speed-related fatality rates are highest on local and collector streets. **Figure 1.9** shows crash data for 2005 by road type in the Metro region.

[39] For more information on specific livable street improvements see Metro's "Creating Livable Streets: Street design guidelines for 2040." June 2002.

**Figure 1.9**
**2005 crash location by road type (Metro region)**




*Source: Oregon Department of Transportation's Crash Analysis Reporting Unit*

The RTP includes a number of investments and actions aimed at further improving safety in the region, including:

- Investments targeted to address known safety deficiencies and high-crash locations.
- Completing gaps in regional bicycle and pedestrian systems.
- Retrofits of existing streets in downtowns and along main streets to include on-street parking, street trees, marked street crossings and other designs to encourage traffic to follow posted speed limits.
- Intersection changes and ITS strategies, including signal timing and real-time traveler information on road conditions and hazards.
- Expanding safety education, awareness and multi-modal data collection efforts at all levels of government.

The best, most comprehensive source of crash data is collected and maintained by ODOT's Crash Analysis Unit. The data is distributed to local governments to conduct safety analysis. ODOT is currently working to improve the usability of this data. A better system for centralized crash data for all modes of travel is needed to allow for more consistent monitoring over time. To further improve safety in the region, more detailed data are needed on crash location, cause of crashes and crashes that involve less than the $1,500 reporting threshold.

Metro provides ongoing safety planning support topromote collaboration and commitment among regional partners to consider, evaluate and implement regional multi-disciplinary safety solutions (i.e. environment, engineering, education, enforcement, and emergency services) through sharing of innovations, best practices, and case studies in transportation safety. Work is underway to aggregate and analyze ODOT safety data specific to the Metro region for all modes of travel and to develop safety performance measures to track on a regular basis through the Congestion Management Process and possibly an eventual State of Safety in the Region report. The report will recommend actions at local, regional and state levels. The measures will influence investment criteria for projects at the regional level.

### Security and Emergency Management

The terrorist event of September 11, 2001 and Hurricane Katrina in 2005 provide good illustrations of the challenges facing metropolitan areas in preparing for and responding to unexpected security incidents or natural disasters. Terrorist attacks are sudden and without notice. Natural disasters such as the Mt. St. Helens volcanic eruption, Hurricane Katrina or earthquakes often, but not always, have some early warning.

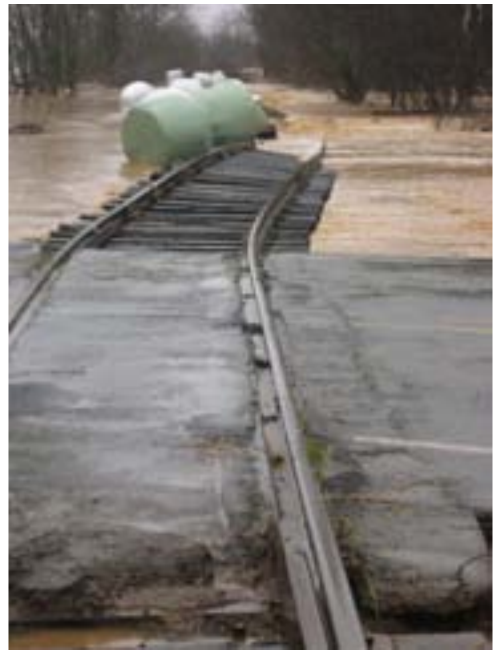
One lesson from past events is paramount—effective coordination and communication among the many different operating agencies in a region and across the nation is absolutely essential.[40]

*Effective coordination and communication between many different agencies in the region is critical in the event a natural disaster. The RTP calls for implementing investments to increase system monitoring for operations, management and security of the regional mobility corridor system.*

Such coordination is needed to allow enforcement/security/safety responses to occur in an expeditious manner, while at the same time still permitting the transportation system to handle the possibly overwhelming public response to the security incident or natural disaster.

[40] The Role of the Metropolitan Planning Organization (MPO) In Preparing for Security Incidents and Transportation System Response, Michael D. Meyer, Ph.D., P.E. Georgia Institute of Technology. Accessed November 10, 2007 at http://www.planning.dot.gov/Documents/Securitypaper.htm.

Complementary to this is the need to make sure the public has clear and concise information about the situation and what actions they should take. Most studies of sudden disruptions to the transportation network, either from natural or human-made causes, have concluded that the redundancies in a metropolitan area's transportation system provides a rerouting capability that allows the flow of people and vehicles around disrupted network links.



*Founded in 1993, The Regional Emergency Management Group focuses on coordinating regional agencies to prepare for emergencies.*

Security efforts in the region focus on emergency preparedness and management, security of the transit system, security of both marine and air port facilities, and safe movement of hazardous material through the region. The Regional Emergency Management Group (REMG) focuses on coordinating regional agencies to prepare for emergencies. This group, formed in 1993, is made up of emergency management professionals and elected officials in the region. The group's major efforts include creating Emergency Transportation Routes (ETRs) in case of an earthquake or other emergency and doing a Critical Infrastructure Analysis of the region, which will determine how the transportation and other infrastructure will hold up in the case of different disaster scenarios.

Portland has centralized the city's emergency management services into the Portland Office of Emergency Management (POEM), under supervision of the Mayor's office. POEM is responsible for emergency prevention, mitigation and recovery, and is also charged with addressing Community Preparedness, Homeland Security, Planning, Mitigation, Response, Recovery and Inter-bureau and Regional Collaboration for the city.[41] TriMet, the Port of Portland and ODOT each focus on transportation-related security measures for facilities under their management.

The RTP calls for implementing investments to increase system monitoring for operations, management and security of the regional mobility corridor system. These types of investments would enhance existing coordination and communication efforts in the region, and recognize these facilities would serve as the primary transportation network in the event of an evacuation of the region.

The plan also directs Metro to work with local, state and regional agencies to identify critical infrastructure in the region, assess security vulnerabilities and develop coordinated

[41] Emergency Management, http://www.portlandonline.com/oem/

emergency response and evacuation plans. Finally, transportation providers are directed to monitor the regional transportation and minimize security risks at airports, transit facilities, marine terminals and other critical infrastructure. Future RTP updates will consider expanding Metro's role, as the MPO, to increase existing coordination and planning efforts in the region and funding of initiatives to address these issues.

Another security issue relevant to the RTP is the increasing uncertainty of the supply and price of oil. The U.S economy's reliance on foreign oil is mainly due to transportation. The transportation sector's share of U.S petroleum use has been increasing and now consumes 66% of the oil supplied to the US economy.[42]This dependence on oil is an issue for the RTP, considering the uncertainty surrounding oil's supply and price. Uncertainty is defined as a measure of the decreasing confidence that supply and price of oil will not be much different next year compared to today's figures[43]

Future oil supply uncertaintyis generally approached from either a security angle("Energy Security") or scarcity angle ("Peak Oil"). The "energy security" view focuses on the risk to U.S. interests posed by external forces, whether unfriendly governments or naturaldisasters, that may affect the supply and price of oil. The "peak oil" view focuses on a theorized imminent (within the next 30 years) decline of worldwide oil production. The views are not non-complementary, and both agree that we are entering a period of uncertainty in oil supply and price. Both views have been supported by established petroleumgeologists, as well as by mainstream political figures.[44]

[42] Bureau of Transportation Statistics, Pocket Guide to Transportation, 2005. http://www.bts.gov/publications/the_changing_face_of_transportation/chapter_05.html, accessed 1/4/07.

[43] Lerch, Daniel. "White Paper: Future Oil Supply Uncertainty and Metro." April 2006. http://library.oregonmetro.gov/files/whitepaper_oilsupplyuncertainty.pdf

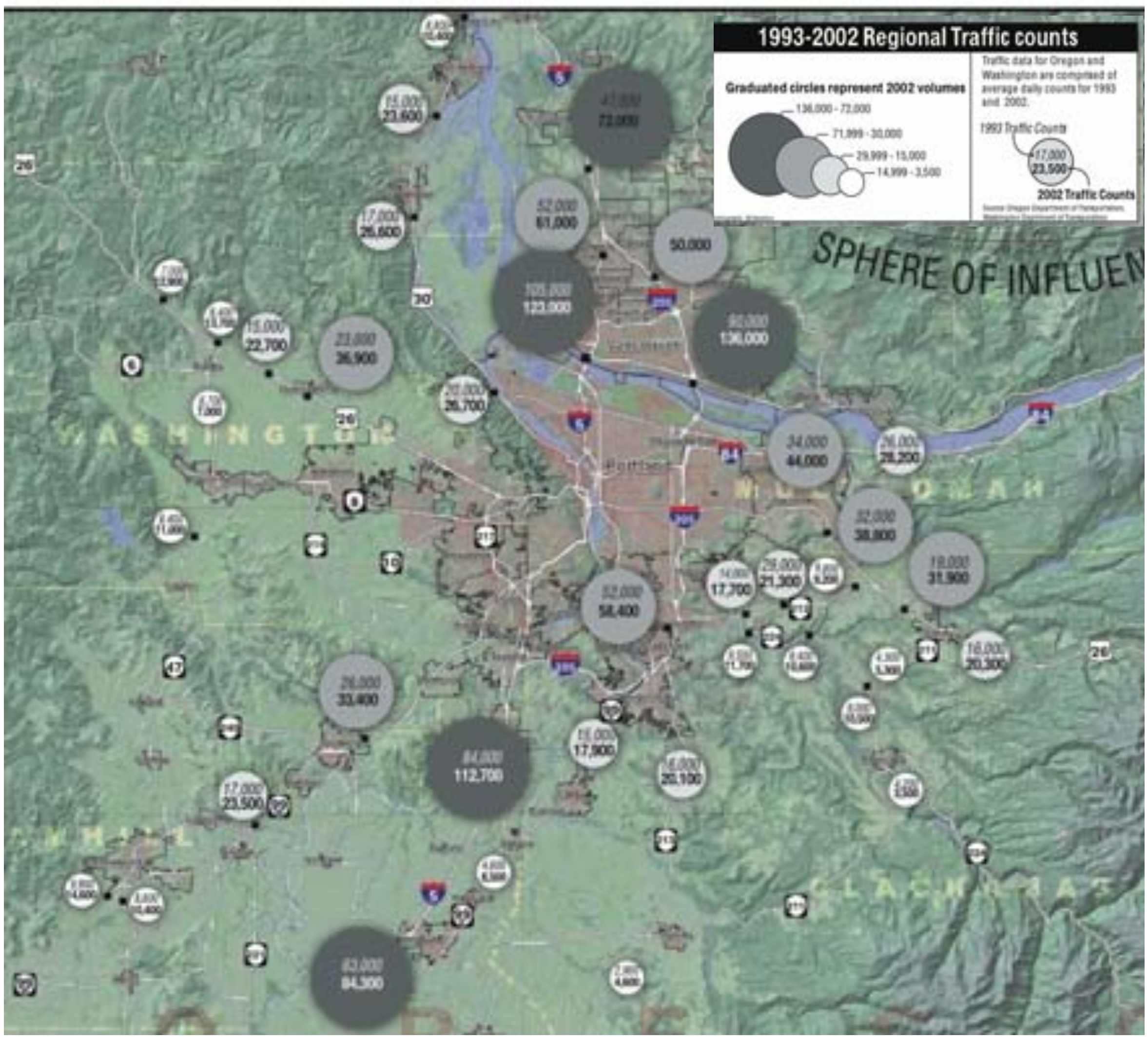
[44] Lerch, Daniel. "White Paper: Future Oil Supply Uncertainty and Metro." April 2006. http://library.oregonmetro.gov/files/whitepaper_oilsupplyuncertainty.pdf

## 1.7 GROWING CONGESTION

Congestion is growing. Freeway congestion increased 20 percent between 2000 and 2005, despite increased transit use and reductions in driving. Delays caused by freeway congestion pose significant economic challenges for freight transportation and commuters, affecting our region's economic competitiveness, environment and quality of life.

The region's streets and throughways reflect the effects of increasing traffic and changing travel patterns. Traffic volumes in the Portland-Vancouver region increased between 1993 and 2002 in several key transportation corridors as shown in **Figure 1.10**, reflecting population and job growth within and outside the urban growth boundary, longer commute distances and changing commute patterns with more suburban-to-suburban travel.

**Figure 1.10**
**Traffic Volume Increases in Key Corridors: 1993 to 2002**



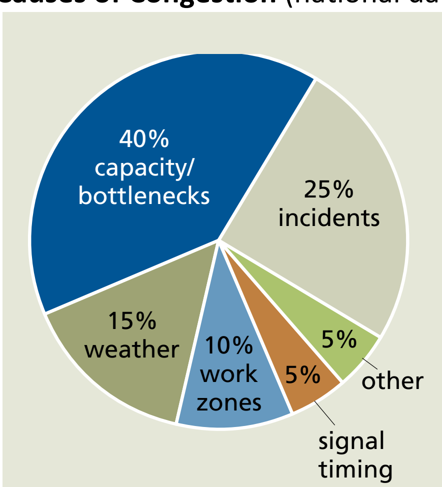

*Source: Metro*

### Causes of congestion

Congestion plagues all growing urban areas. Congestion growth manifests as greater severity, peak traffic periods that last longer and peak conditions that extend over a larger area. Congestion that arises from peak-hour volumes, known bottlenecks, and problematic interchanges are predictable. Although commute times due to predictable congestion may be long and frustrating, they are reliable. Congestion that arises from non-recurring incidents, such as crashes, breakdowns, construction, natural disasters and inclement weather, are unpredictable and negatively affect travel time reliability.[45] Travel time reliability is of growing interest to transportation practitioners as an important measure of mobility.

**Figure 1.11** presents national data on the causes of congestion. As the figure shows, more than half of all congestion is caused by non-recurring incidents. In 2005, the region's freeway system averaged 1,000 such incidents a month (808 breakdowns and 249 crashes).

**Figure 1.11**
**Causes of Congestion** (national data)[46]




*Source: Federal Highway Administration*

The 2005 study, *Cost of Congestion to the Economy of the Portland Region,* estimated potential losses in the region of $844 million annually by 2025 from increased freight costs and lost worker productivity as a result of increases in travel time due to congestion.[47]Historically, roadway congestion has been described in terms of volume-to-capacity (v/c) ratio and level of service (LOS) using Metro's travel demand model. More recently congestion has been assessed using average travel speeds and travel times drawing

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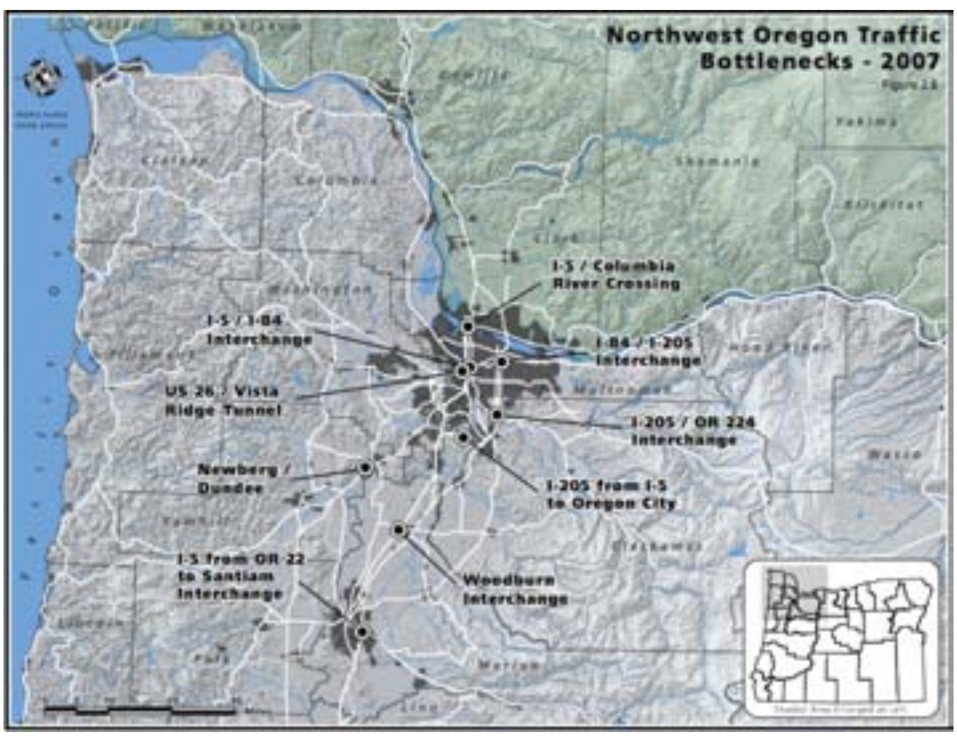
[45] FHWA, 2006. Travel Time Reliability: Making it there on time, every time.
[46] Traffic Congestion and Reliability: Linking Solutions to Problems, prepared for the Federal Highway Administration by Cambridge Systematics, Inc., and the Texas Traffic Institute, 2004, accessed at www.ops.fhwa.dot.gov
[47] Metro. *Cost of Congestion to the Economy of the Portland Region* (2005).

from an archive of real-time traffic monitors generated by the Oregon Department of Transportation (ODOT) and maintained by Portland State University (PSU). Currently these data are available only for the region's limited-access freeways. Efforts are underway to expand current data collection to include the regional arterial network. Research found that congestion is greatest on the freeways and interstate highway system.[48] PSU data from 2006 confirms—and drivers know—that the significant throughway system bottlenecks in the region include:

- I-5 Interstate Bridge Influence Area/Columbia River Crossing
- I-84/I-5 interchange
- US 26/Vista Ridge tunnel
- I-84/I-205 interchange
- I-205/OR 224 interchange
- I-205 from I-5 to Oregon City

**Figure 1.12** shows the locations of these significant bottlenecks on a map of the region. In 2007, ODOT identified six other significant bottlenecks in other parts of the state.

**Figure 1.12**
**Northwest Oregon Traffic Bottlenecks (2007)**




[48] Ibid, p. 12-13.

## A comprehensive strategy to address growing congestion

Metro maintains a Congestion Management Process (CMP) for the Portland metropolitan region as required by federal law. The CMP includes a performance management system that informs needed capital investments, such as new or improved transit and road capacity as well as demand and system management strategies to improve performance of the existing infrastructure.In addition to traditional congestion management strategies, the region has developed non-traditional approaches to managing congestion to reduce the number of vehicles on roads and highways, improve traffic flow and improve travel-time reliability.

*The region has developed non-traditional approaches to manage growing congestion and improve freight reliability, including the use of ITS, building transit-oriented development near transit stations and implementation of programs to increase walking, biking and*

Among the most cost-effective approaches to managing congestions and improving travel time reliability involves applications of Intelligent Transportation Systems (ITS). Examples of ITS include traffic signal synchronization, ramp meters, weigh-in motion transponders for commercial truck traffic, real-time road condition data, and global positioning systems that coordinate signal timing for commercial traffic and transit vehicles.[49]ITS alone cannot solve congestion problems, but they can provide relatively low-cost support to other management strategies and strategic road and transit capacity investments.[50]

**Figure 1.13** shows were some of these strategies are currently being applied in the region.

Other strategies and actions the region is pursuing to address congestion include:

- Implementation of a high-occupancy vehicle (HOV) lane on one section of I-5 northbound. During the evening rush hour, when the HOV rule is in effect, drivers eligible to use that travel lane are able to travel significant faster (45 mph) than drivers traveling in the general-purpose lanes (20-25 mph). The effects of this HOV lane are limited by bottlenecks at either end of the HOV lane section – most notably the Columbia River Crossing Bridge on the north end.

- Improved incident detection and clearance times on highways and arterials. Instituting best practices, including "move over" laws, quick clearance techniques, real-time traveler information, and scene safety measures.

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[49] *Metro*, A Profile of Regional Roadway System in the Portland Metropolitan Region, 2007, p. 2.
[50] Ibid, p. 4.

- Building transit-oriented development (TOD)—mixed-use, higher density developments near transit stations to encourage transit use.

- Regional Travel Options (RTO) program to reduce drive-alone travel. Over the past 10 years, the RTO program has worked with large employers in the region to help them comply with the Employee Commute Options (ECO) rule by implementing transportation demand management (TDM) strategies. The RTO program also provided technical assistance to Transportation Management Associations (TMAs) in the region, including the Lloyd District TMA, Westside Transportation Alliance and Swan Island TMA; operated the Metro VanPool program, and operated Carpool MatchNW. **Figure 1.14** shows where demand management efforts are occurring in the region.



- Employer Outreach programs to encourage large employers to promote transit use in their workforce.

- Public education efforts to promote trip reduction. For example, in February 2006 the Oregon Department of Transportation (ODOT), Metro, TriMet, City of Vancouver and other public and private partners launched the Drive Less/Save More Campaign, to reduce drive-alone car trips that are not related to work. Such trips constitute more than two-thirds of drive-alone travel.[51]

- Consideration of peak-period pricing as a tool for managing congestion in the region's busiest travel corridors. The Traffic Relief Options Study (1999) led to new region policy in 2000 that requires that new highway capacity projects be evaluated for potential benefits of peak-period pricing as a tool for managing long-term mobility.

- Adoption of local parking management plans in centers and station communities and developing tools at the regional level to assist with their development.

- Promotion of walking bicycling and transit use. Many cities in the region are helping residents learn about their choices. The City of Portland is currently running an individualized marketing project, "Smart Trips."Safe Routes to School Program activities in the region. This federally-funded program provides funding for engineering, safety education, enforcement and encouragement strategies to increase the number of students walking or bicycling to school. These strategies help reduce congestion,

[51] http://www.drivelesssavemore.com

particularly around schools, and increase physical activity. The National Highway Transportation Administration estimates between 20-25 percent of morning rush hour traffic is due to parents driving their children to school.[52]

### RTP scenarios results point to an integrated solution for managing congestion

The transportation system plays a crucial role in sustaining economic health of the region and the state of Oregon. Unmitigated congestion and delay will compromise the economy in the future. As a global trade gateway and domestic hub for commerce and tourism, the region must expand current efforts to address growing congestion, particularly on the region's mobility corridors.Business and consumer needs are expected to double the amount of goods moved on the region's waterways, runways, railways, and roadways over the next 30 years. The continued economic health of our region and state depends on effectively serving growing transportation needs of business by providing reliable highway and arterial access to gateway and hub facilities as well as on preserving the beauty and livability of the region that attracts industry and a high-quality labor pool.

The results of the scenarios analysis support a growing body of research that suggest adding road capacity alone is not a sustainable solution to congestion. Rather, a coordinated strategy that links land use and transportation decisions, provides targeted road and highway improvements along with high quality transit service, better transportation options, and system management shows greater promise in mitigating congestion and delay into the future.

The region must pinpoint the most critical locations to mitigate roadway congestion and delay to enhance freight mobility and access to industrial areas and intermodal facilities. These strategic investments must allow us to move goods and people in ways that support our livability, economy, and environment. The region must also expand current system and demand management efforts to help preserve highway capacity for longer distance goods movement and person trips. Potential new strategies include congestion pricing, high-occupancy vehicle lanes, managed travel lanes and freight-only lanes. More evaluation of these strategies is needed to better understand their effect on the region's parallel arterials, low-income households and land use patterns to ensure any unintended consequences are identified and addressed in design and implementation.

Finally, land-use planning and environmental considerations must be integrated into transportation decisions to ensure that needed highway projects solve existing problems rather than inducing demand from outside the region and generating a new set of problems.

[52] http://www.saferoutesinfo.org/ask_a_question/answer.cfm?id=435. Accessed December 10, 2007.

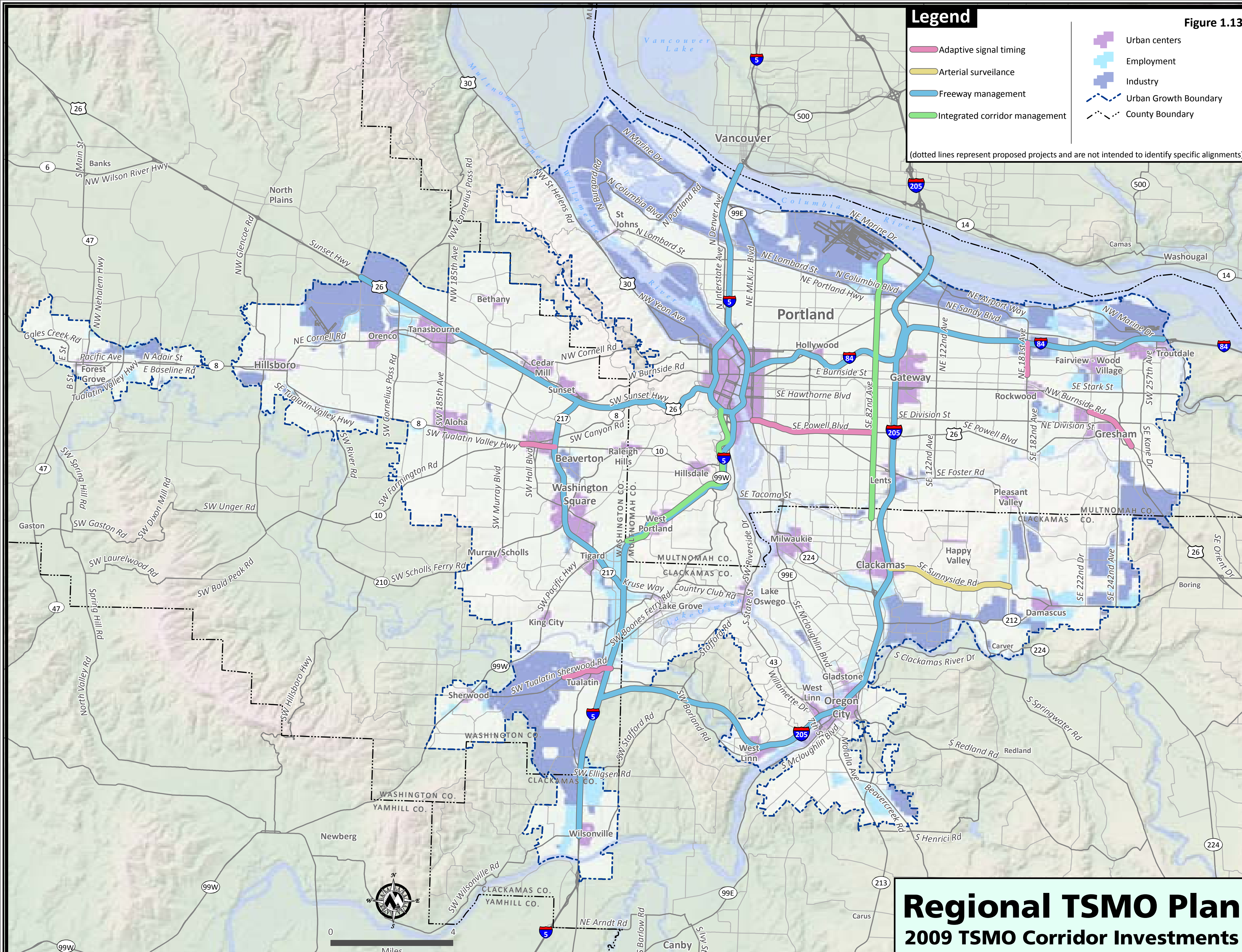
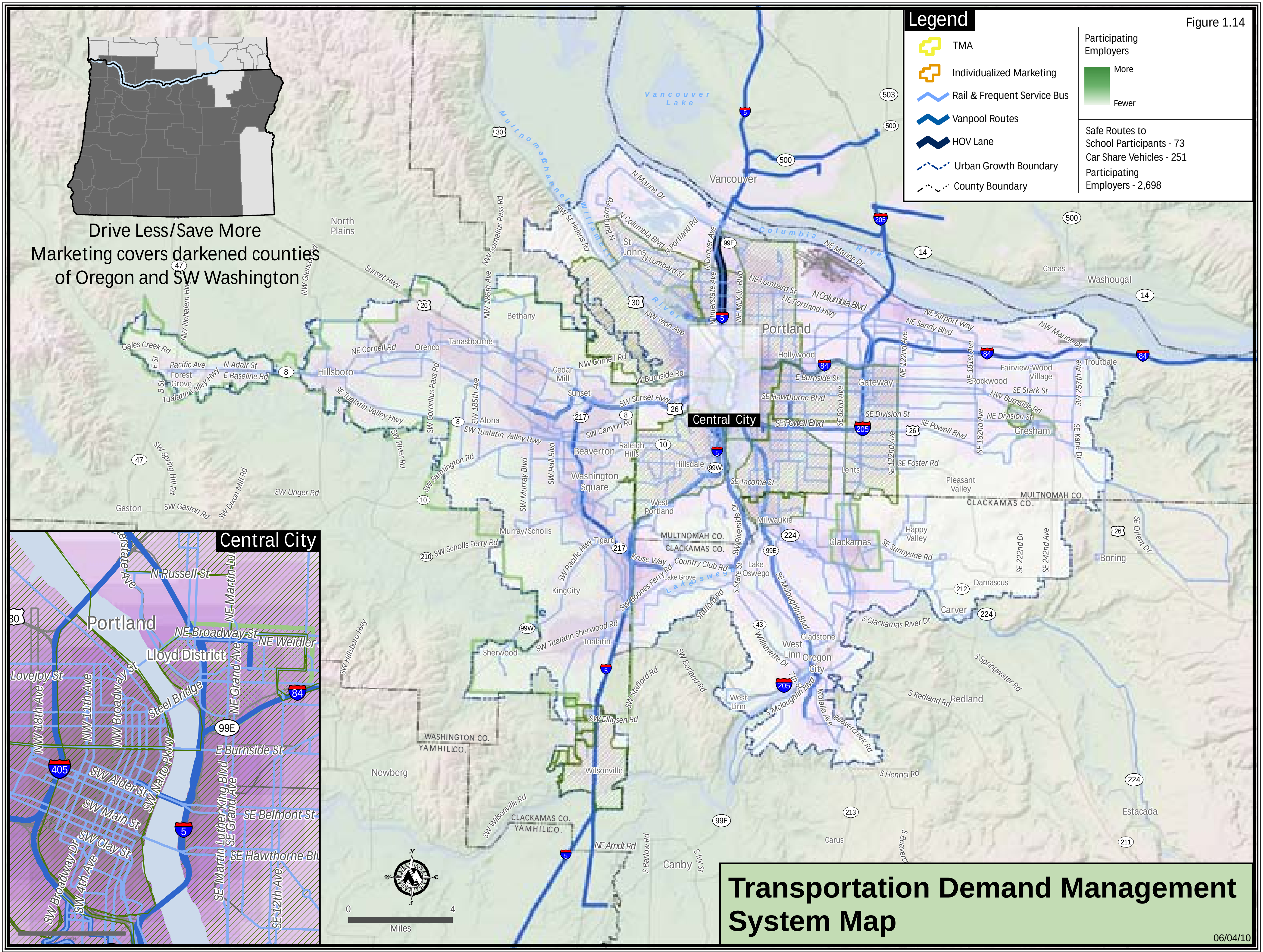


Figure 1.13
Legend
Adaptive signal timing
Arterial surveilance
Freeway management
Integrated corridor management
Urban centers
Employment
Industry
Urban Growth Boundary
County Boundary
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Regional TSMO Plan
2009 TSMO Corridor Investments
Portland
Vancouver
Hillsboro
Beaverton
Gresham
Gateway
Hollywood
Lents
Clackamas
Milwaukie
Tigard
Tualatin
Sherwood
Wilsonville
Oregon City
West Linn
Lake Oswego
Lake Grove
Gladstone
Happy Valley
Damascus
Troutdale
Fairview - Wood Village
Rockwood
Pleasant Valley
Washington Square
Murray/Scholls
King City
West Portland
Hillsdale
Raleigh Hills
Cedar Mill
Sunset
Aloha
Tanasbourne
Orenco
Bethany
Forest Grove
North Plains
Banks
Gaston
Newberg
Canby
Camas
Washougal
Boring
Carver
Carus
Redland
St Johns
MULTNOMAH CO.
CLACKAMAS CO.
WASHINGTON CO.
YAMHILL CO.
0
4
Miles


Transportation Demand Management System Map
Figure 1.14
Legend
TMA
Individualized Marketing
Rail & Frequent Service Bus
Vanpool Routes
HOV Lane
Urban Growth Boundary
County Boundary
Participating Employers
More
Fewer
Safe Routes to School Participants - 73
Car Share Vehicles - 251
Participating Employers - 2,698
Drive Less/Save More Marketing covers darkened counties of Oregon and SW Washington
Central City
Portland
Lloyd District
Vancouver
Beaverton
Hillsboro
Gresham
Gateway
Washington Square
Lake Oswego
Oregon City
West Linn
Wilsonville
Tualatin
Sherwood
Canby
Milwaukie
Clackamas
Troutdale
Washougal
Camas
Newberg
Boring
Estacada
Damascus
Happy Valley
Carver
Redland
Gaston
Forest Grove
North Plains
0
4
Miles
06/04/10

## 1.8 CHANGING TRAVEL BEHAVIOR

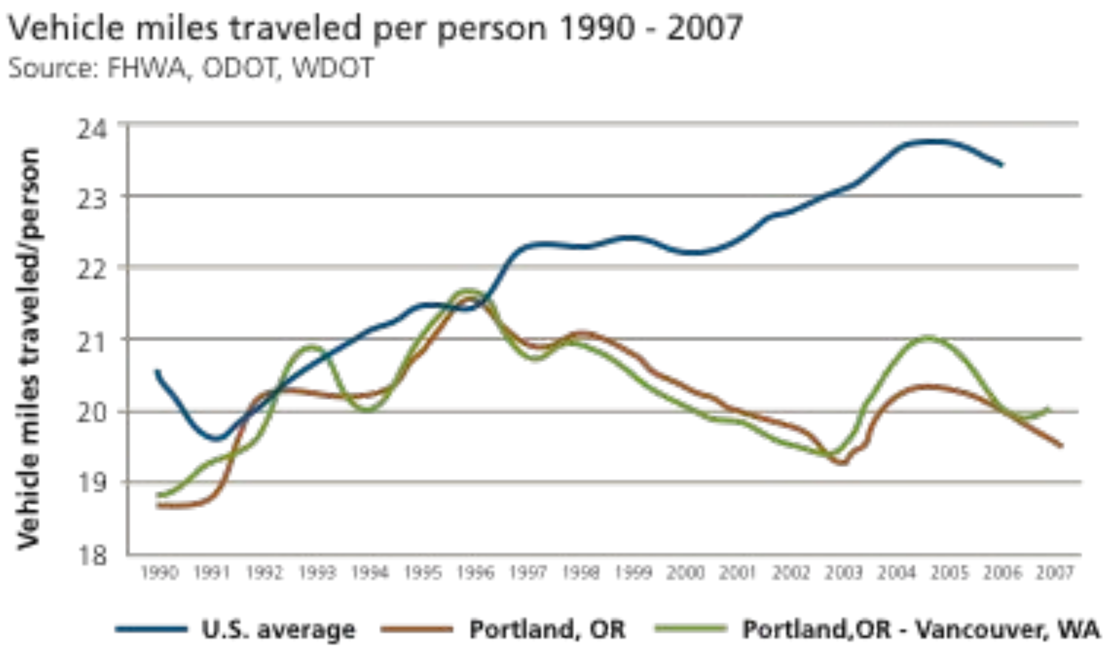
Travel behavior—mode choice, commuting patterns, trip length and frequency—is influenced by a number of factors, including demographics, land use, community design, cost, access, the economy, job locations as well as social and environmental values.

### Our region is driving less per person than other similar sized regions

Between 1990 and 1995, daily vehicle miles traveled (VMT) per capita increased significantly nationally as well as in the Portland metropolitan region. During the past 15 years, implementation of the region's integrated transportation and land use planning strategy—the 2040 Growth Concept—has resulted in 20 percent fewer miles driven per capita and less time spent commuting than the national average. As a result, $2.5 billion is circulating in our economy every year that would otherwise have left the region. Between 1996 and 2007, daily VMT per capita declined in the region. In contrast, motor vehicle miles traveled per person are increasing nationally, increasing by 8 percent during the same period. The Portland region has shown it is possible to counter this trend by providing transportation options and more compact growth.

In addition, implementation of this strategy also reduced vehicle miles traveled on a per capita basis with associated reductions in greenhouse gas emissions. More recent research by ODOT and the Texas Transportation Institute also found that despite increases in congestion in the region, residents here spend less time commuting than in other metropolitan areas of comparable size. The region has added three light rail lines to the high capacity transit system and frequent service bus lines connecting the Central City to several Regional and Town Centers. Between July 2007 and July 2008, the number of daily riders on transit increased by more than 13 percent. **Figure 1.15** compares the increase in daily VMT per person in Portland-Vancouver with the other urban areas with similar populations.

**Figure 1.15**
**Portland region per capita vehicle miles traveled (1990-2007)**




## Residents are commuting longer, but less than the national average

Time spent commuting increased in the Portland-Vancouver region between 1990 and 2000. Although most commuters (68 percent) spent less than 30 minutes commuting to work, the share of people in the region who commute for more than 30 minutes one way increased, reflecting changes in congestion and/or changes in residence location compared with that of job or school.[53] However, the average commute time in the region grew by only six minutes between 1990 and 2000, increasing from 19 minutes to 25 minutes.[54] Nationally, the average commute time grew from 22 minutes to 26 minutes during this same period.

By 2006, Multnomah County residents had the shortest commutes in the region by a small margin. Clackamas County residents had the longest commutes in 2006, more than two minutes longer than Multnomah and Washington counties. This suggests that integrated transportation and land use decisions supporting a compact urban form and focusing on connections to centers and other employment areas are making an impact on slowing the growth of the average commute time.

[53] Census 1990: SF3, P050 and Census 2000: SF3, P31
[54] U.S. Census Bureau, which stated one minute of the increase in travel time is due to a change in methodology.

Furthermore, as seen in **Table 1.7**, not all counties have the same share of residents who commute to another county for work. Clackamas and Clark County saw a 1 to 2 percent decrease in the share of residents commuting to another county. Washington County saw an even greater decline. Multnomah County was the only county to have an increased number of residents commuting to another county. Three of the four counties saw a decrease in the share of its residents leaving the county for work, suggesting an improved jobs/housing balance.

**Table 1.7**
**Share of Residents Commuting to another County for Work: 1990 and 2000**

| County | 1990 | 2000 |
|---|---|---|
| Clackamas County | 53% | 51% |
| Clark County | 36% | 35% |
| Multnomah County | 19% | 22% |
| Washington County | 39% | 32% |

### Personal travel is growing faster than work travel

Travel to work has typically been the focus of transportation planning, especially given its prominence in the morning and evening peak periods. Nevertheless, nationwide travel for non-work purposes, such as shopping, errands and recreation is growing faster than work travel.

The National Household Travel Survey found that in 2001, a majority of peak period person trips in vehicles are not related to work. Looking at an average weekday, non-work travel comprises 56 percent of trips during the morning rush hour period and 69 percent of trips during the evening rush hour period.[55]

As of 2001, the average American was taking approximately four more trips a week for non-work purposes compared to 1990.[56] This trend has been acknowledged at Metro through the Regional Travel Options (RTO) program, which promotes and supports the transportation choices available in the region to reduce the number of drive alone trips. The RTO program made a shift in its 2003 strategic plan to also target non-commute trips during rush hour and throughout the day as a key strategy to congestion and air quality issues.

[55] *Congestion: Non-Work Trips in Peak Travel Times*, USDOT, April 2007.
[56] Congestion: Who is Traveling in the Peak?, USDOT, August 2007.

## Residents are choosing active transportation options with increased frequency

**Bicycle travel**

This region is known for its bicycle culture. Bicycles play an important and growing role in the regional transportation system and the region's economy. While this has traditionally been limited to close-in neighborhoods in the City of Portland, interest in bicycling has expanded across the region in recent years, adding to the growing demand for improved bicycle facilities.

Bicycles are cost-effective and a low-cost travel mode that provide access to all age groups and income types. Bicycle activity also supports efficient urban form because more bicycles can be driven and stored in a smaller location, decreasing the total cost and land area dedicated to parking. Bicycle facilities boost economic activity by attracting bicycle-focused businesses and active tourism, and by providing a venue suitable for large events.

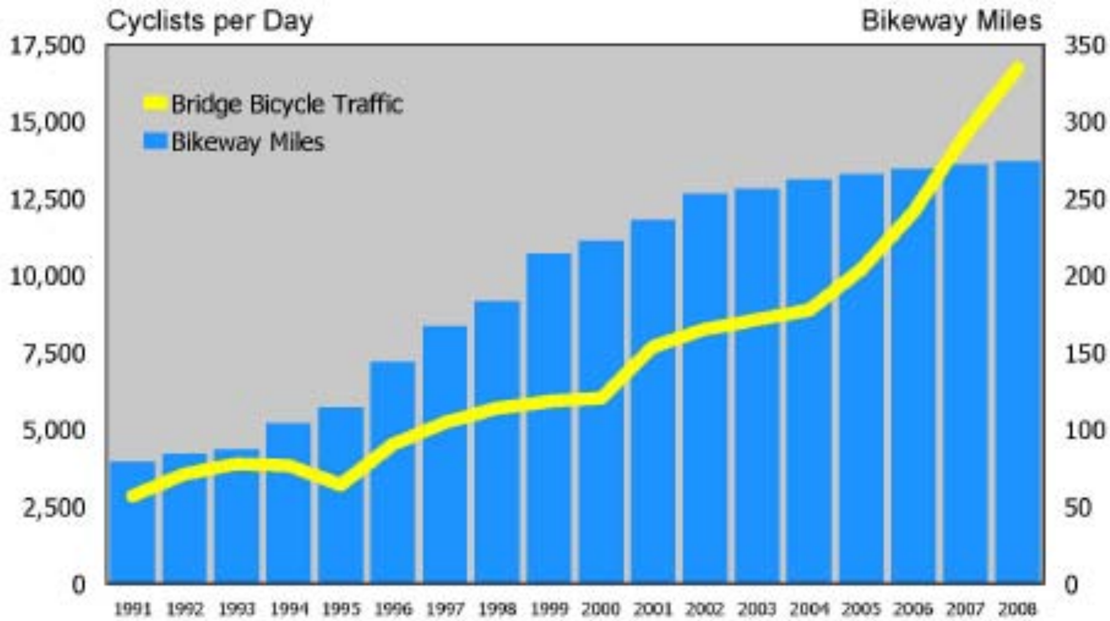
A study by the North Carolina Department of Transportation found that the availability of good bicycle facilities played an important role in tourist decisions, and that investments in bicycle facilities yielded an estimated nine-to-one return on investment in tourist dollar.[57] The bicycle-related industry in Portland is currently valued at approximately $90 million and includes retail, rental, repair, tours, races, rides, events, distribution and manufacturing, and professional services.[58]

Between 1991 and 2004, the City of Portland invested $12 million in the city's developed bikeway network, increasing the mileage from 78 to 256.[59] The network includes bike lanes and designated "bike boulevards"—low-traffic city streets suitable for bicycling. Bicycle counts released for 2006 show significant increases in bicycle traffic across the city, with bicycle traffic constituting 10 percent of the total trips across the bridges.[60]

Counts taken across four central city bridges reported 12,000 daily trips—an 18 percent increase over 2005. Bicycle count data is currently limited to Portland, but anecdotal evidence suggests that bicycle ridership has increased throughout the region. Increased ridership is due in part to improved bicycle infrastructure as well as increased recognition of the health benefits of bicycling.**Figure 1.16** shows growth in bicycle travel on the Willamette River bridges between 1991 and 2008.

[57] *Pathways to Prosperity*, North Carolina Department of Transportation, 5/11/04
[58] Alta Planning, Value of the Bicycling-Related Industry in Portland, 2008.
[59] Birk, Mia and Geller, Roger. Bridging the Gaps: How the Quality and Quantity of a Connected Bikeway Network Correlates with Increasing Bicycle Use, 2005, p. 14
[60] Portland Office of transportation, Bicycle Count Report, 2008.

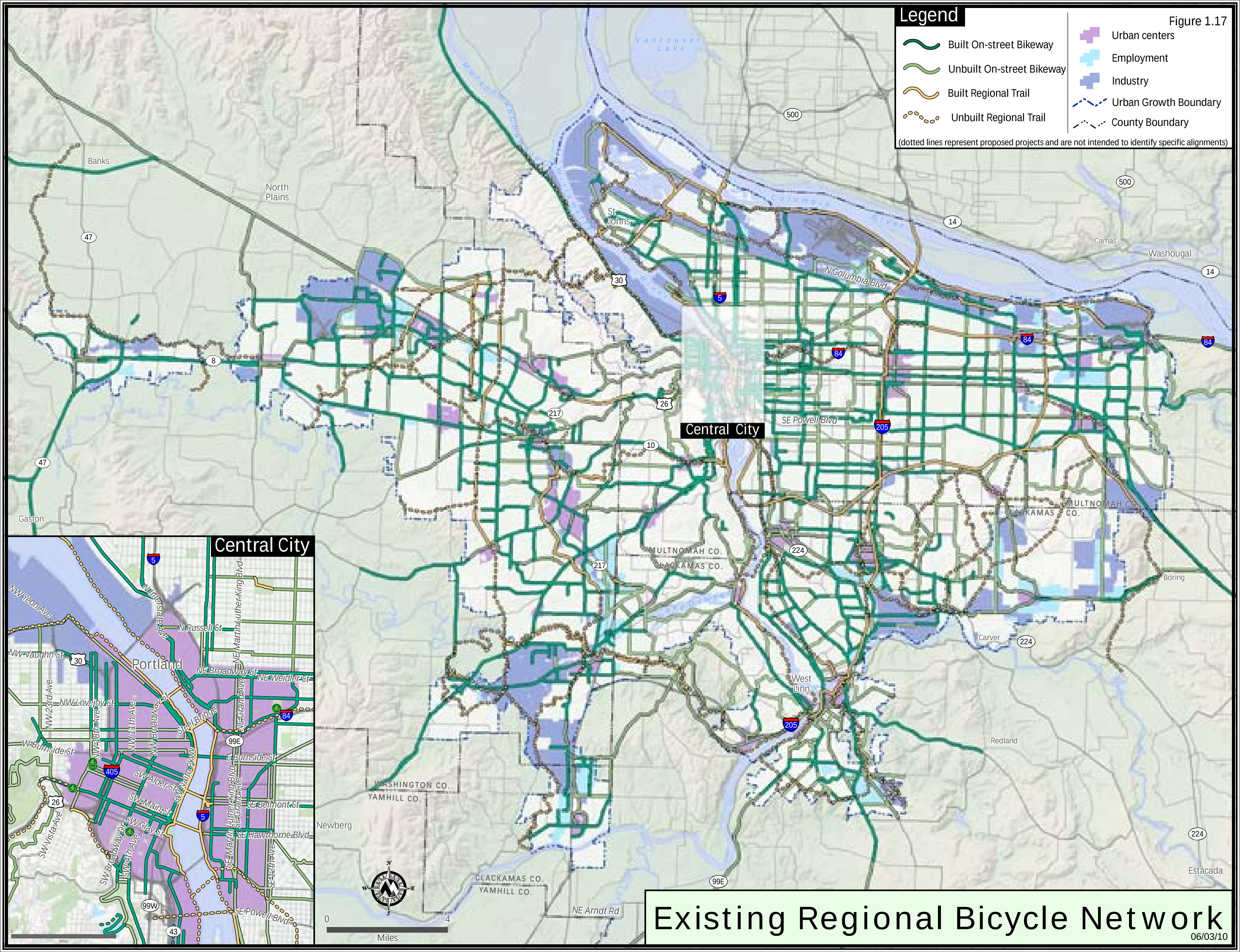
**Figure 1.16**
**Bicycle Traffic on Willamette River Bridges and Miles of Bikeways Constructed 1991-2008**




Bicycle safety has improved with increased ridership. Despite increasing numbers of people bicycling in Portland, the number of bicycle crashes has held constant for a reduced crash rate. [61] However, the increase in bicycling has also brought new riders to the system whoare not always aware of safety laws and practices, creating conflicts with motor vehicles and pedestrians. This highlights a need for an improved bicycle safety education strategy in the community that keeps pace with the growth in bicycling.

**Figure 1.17** shows the existing regional bicycle network. **Figure 1.18** shows regional trails and greenways network. **Figure 1.18** provides context for the regional trails included in the Regional Bicycle and Pedestrian Network and to better link the RTP to regional parks and greenspaces implementation efforts.

[61] 2006 City of Portland Bicycle Count Report – Significant Findings & Analysis.


Legend
Figure 1.17
Built On-street Bikeway
Unbuilt On-street Bikeway
Built Regional Trail
Unbuilt Regional Trail
Urban centers
Employment
Industry
Urban Growth Boundary
County Boundary
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Existing Regional Bicycle Network
06/03/10
Central City
Vancouver Lake
Multnomah Channel
Willamette River
Columbia River
N Columbia Blvd
SE Powell Blvd
Banks
North Plains
St Johns
Camas
Washougal
Gaston
Carver
West Linn
Boring
Redland
Estacada
Newberg
NE Arndt Rd
MULTNOMAH CO.
CLACKAMAS CO.
WASHINGTON CO.
YAMHILL CO.
Lake Oswego
Miles
0
4
Portland
NW Yeon Ave
NW Vaughn St
NW Lovejoy St
W Burnside St
N Russell St
N Interstate Ave
NE Broadway St
NE Weidler St
NE Martin Luther King Blvd
NE Grand Ave
Steel Bridge
E Burnside St
SE Belmont St
SE Hawthorne Blvd
SE Powell Blvd
SE 12th Ave
SE Martin Luther King Blvd
SE Grand Ave
NW 23rd Ave
NW 18th Ave
NW 11th Ave
NW Broadway
SW Alder St
SW Main St
SW Clay St
SW Naito Pkwy
SW Broadway Dr
SW 6th Ave
SW Vista Ave

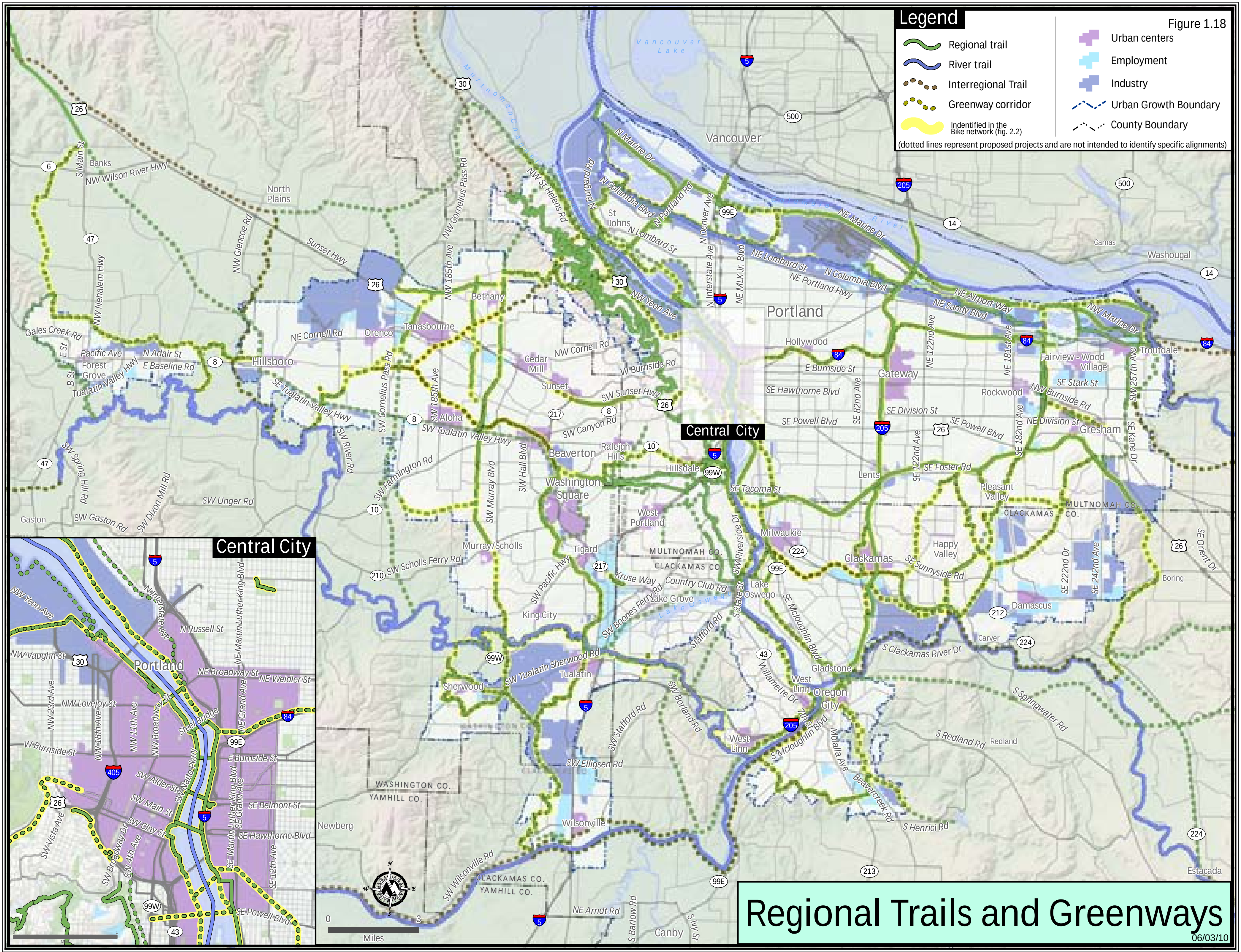



Figure 1.18

Regional Trails and Greenways

**Walking**

Walking is the most widespread and primary form of transportation. Whether an entire trip is done on foot (or using a wheelchair or similar mobility device), people must walk for at least part of every trip, even when the rest of the trip takes place on transit, in a vehicle or on a bicycle. People are walking more in part due to a recognition that walking on a regular basis provides significant health benefits. Therefore it is critical that our transportation system supports and encourages walking for short trips.

*Pedestrian activity thrives in places where sidewalks and intersections are well connected, safe and attractive.*

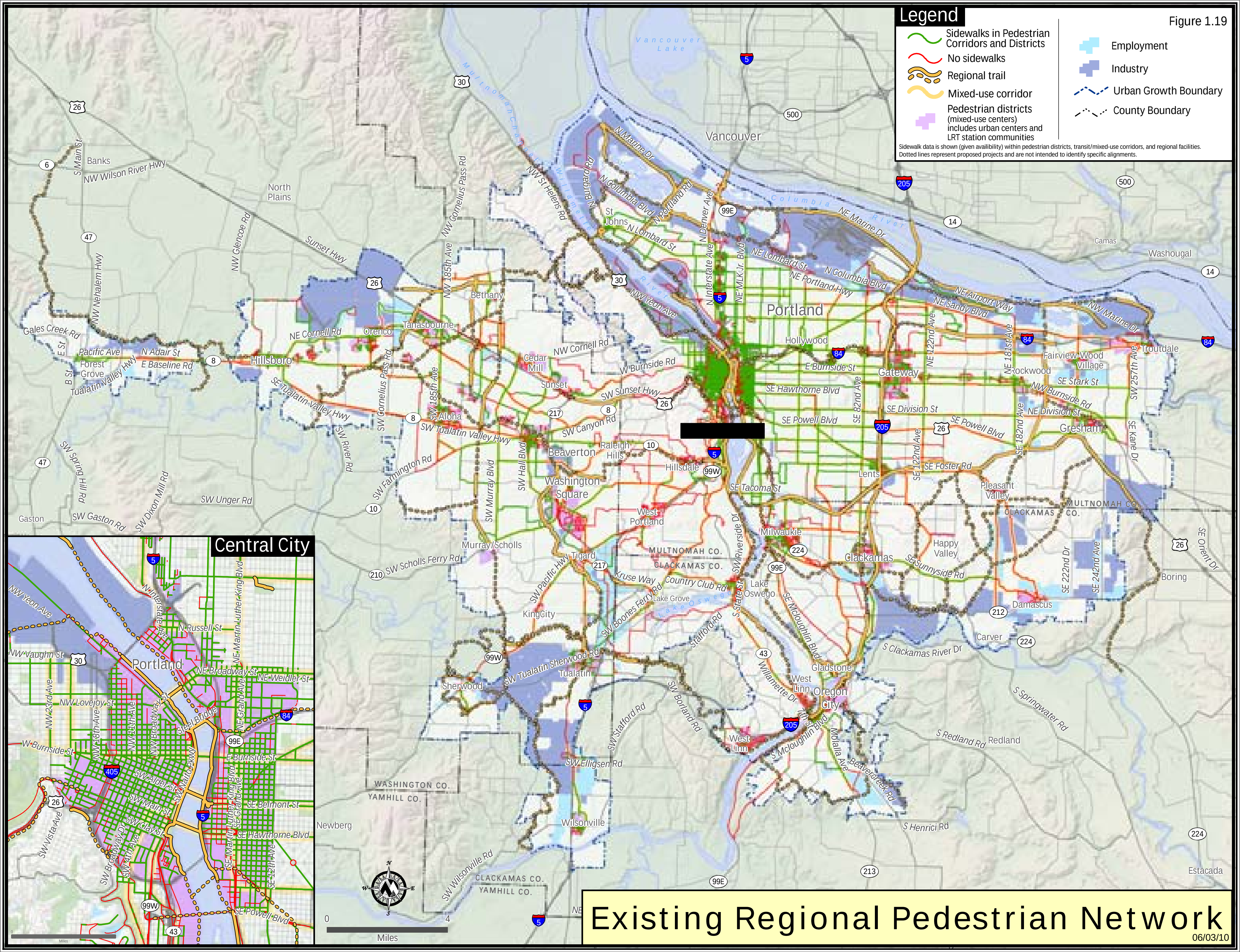
Pedestrian activity indicates vitality in residential, commercial and mixed-use areas. Pedestrian activity thrives where the physical facilities are well connected, safe and attractive—well lit, free of debris and in good repair—and where intersections have crosswalks or signal lights. Audible signals at crosswalks and curb ramps at intersections improve the utility of pedestrian facilities for people with physical challenges.

Many parts of the region have well-connected pedestrian facilities. Based on data collected by TriMet and Metro in 2001, the region had 1,230 miles of potential pedestrian facilities in transit/mixed use corridors and pedestrian districts. However, only 821 miles of those 1,230 potential miles had sidewalks, for a pedestrian system that was only 66 percent complete.[62] **Figure 1.19** shows gaps on the regional pedestrian system.

Even though 90 percent of the region's population lives within a half-mile of a bus stop or light rail platform, sidewalks connect to only about 69 percent of the stops. TriMet is working with local jurisdictions to improve pedestrian access to transit, to not only support increased ridership, but also to enable more people to use fixed-route transit who would otherwise need door-to-door service.[63]

[62] Metro. *A Profile of the Regional Pedestrian System in the Portland Metropolitan Region*, 2007, pg. 12.
[63] TriMet, *2007 Transit Investment Plan*. p. 10.

Figure 1.19


Legend
Sidewalks in Pedestrian Corridors and Districts
No sidewalks
Regional trail
Mixed-use corridor
Pedestrian districts (mixed-use centers) includes urban centers and LRT station communities
Employment
Industry
Urban Growth Boundary
County Boundary
Sidewalk data is shown (given availibility) within pedestrian districts, transit/mixed-use corridors, and regional facilities.
Dotted lines represent proposed projects and are not intended to identify specific alignments.
Central City
Vancouver
Vancouver Lake
Portland
Hillsboro
Beaverton
Gresham
Troutdale
Tigard
Tualatin
Wilsonville
Lake Oswego
Oregon City
West Linn
Milwaukie
Clackamas
Happy Valley
Damascus
Sherwood
King City
Forest Grove
Banks
North Plains
Cornelius
Gaston
Bethany
Tanasbourne
Orenco
Cedar Mill
Sunset
Aloha
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray/Scholls
Gateway
Hollywood
Lents
Rockwood
Fairview-Wood Village
Pleasant Valley
Gladstone
Carver
Boring
Redland
Camas
Washougal
Newberg
Estacada
St Johns
MULTNOMAH CO.
CLACKAMAS CO.
WASHINGTON CO.
YAMHILL CO.
[redacted]
0
4
Miles
Existing Regional Pedestrian Network
06/03/10

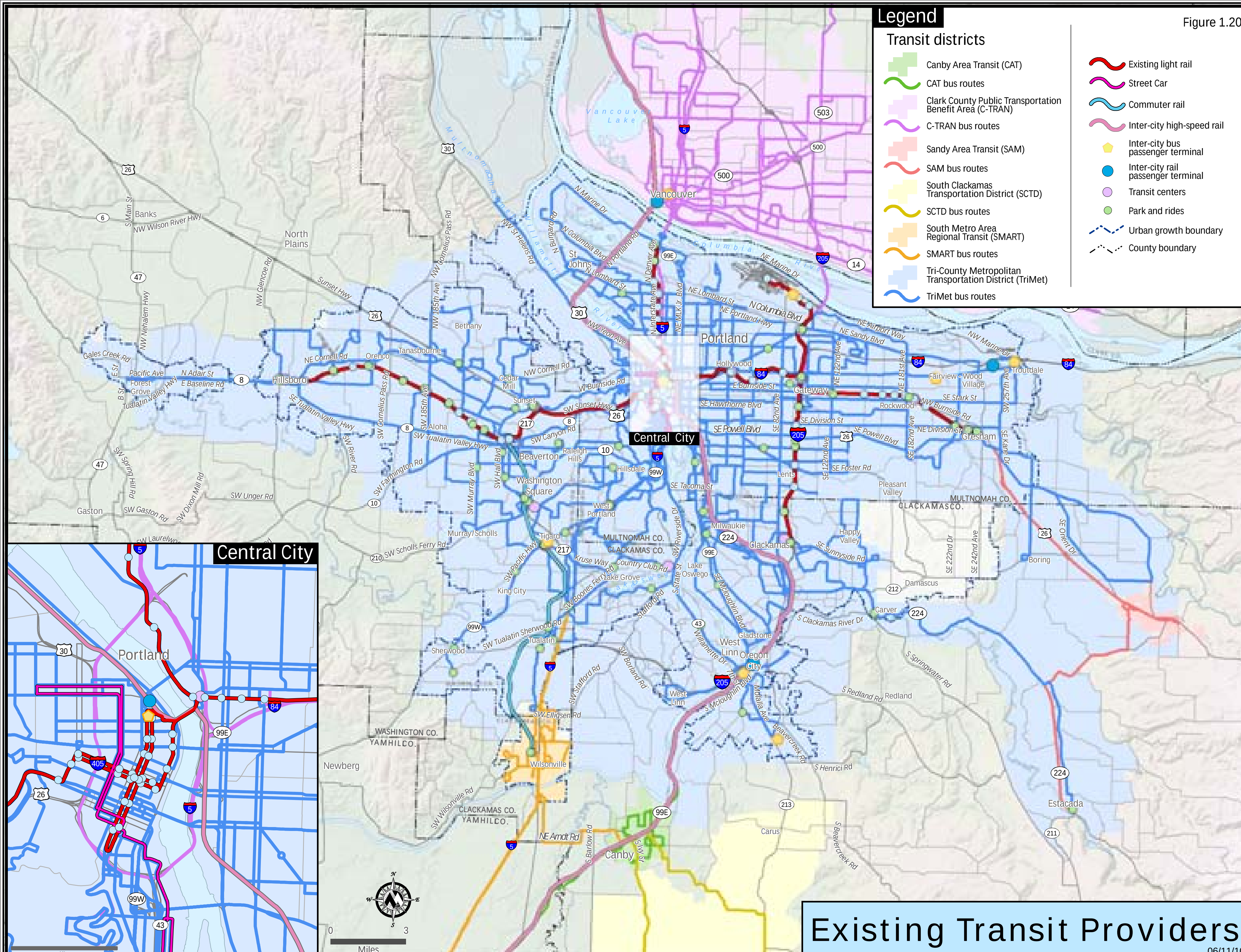


Figure 1.20
Existing Transit Providers
06/11/10

Pedestrians will be increasingly affected by the growth in motor vehicle and bicycle traffic on the major street systems. If trends continue as they have, the expected growth in motor vehicles on our roads will inhibit the region's goal to become more walkable and bikable. We must begin to provide more and better pedestrian and bike facilities to encourage walking and biking. The expected growth in bicycling will increase the need to educate both cyclists and pedestrians on the safe use of sidewalks, bikeways and shared multi-purposes routes that are designed to serve both cyclists and pedestrians.

**Transit**

Light rail, commuter rail, bus, and streetcars and supporting infrastructure make up the current regional transit system. Ridership on bus and light-rail lines in the region increased by 45 percent between 1997 and 2007, nearly twice the percentage growth rate in population, which grew by 20 percent.

Forty-two miles of MAX light rail lines operated by TriMet currently run through Portland, connecting the Portland Expo center with downtown Portland, the Portland International Airport with downtown Beaverton, and downtown Gresham with downtown Hillsboro. The MAX Green Line from Clackamas Town Center to Portland State University in downtown Portland opened in September 2009. Engineering and design is underway for a light rail line from downtown Portland to downtown Milwaukie with construction expected to start in 2011. Engineering and design is also underway for a light rail line from downtown Portland to Vancouver, Washington. Planning is underway for additional high capacity connections from downtown Portland to downtown Lake Oswego and from downtown Portland to Tigard and Sherwood in the Southwest portion of the region.


*The Portland Streetcar is one part of the transit system in the region, along with light rail, commuter rail and buses. Ridership on the streetcar has increased by an average of 17.4 percent since 2001.*

Commuter rail service between Wilsonville and Beaverton in Washington County began operation in 2008. Potential commuter rail connections have been identified for future study to connect the Portland metropolitan region to Salem and other neighboring communities.

Regional bus service is provided by TriMet and the South Metropolitan Area Rapid Transit (SMART), with connections to a number of other transit providers, as shown in **Figure 1.20**. TriMet bus service includes 93 routes covering 892 miles, with 12 frequent bus routes that offer riders fifteen minute or better service seven days per week. SMART bus service in Wilsonville operates seven fixed-route buses five days a week, with two of the routes also operating on Saturday. SMART buses serve Wilsonville and also connect with bus services in Portland, Tualatin, Canby and Salem.

Streetcar lines currently serve only the west side, but a line is under construction in the Lloyd district and eastside (MLK Blvd-Grand Blvd). Planning is underway for Portland to Lake Oswego. Streetcar service is managed by a non-profit that was organized by the City of Portland, but is operated by TriMet personnel through an agreement with the City. Both the City of Portland and TriMet share operating costs. Ridership has increased by an average of 17.4 percent since 2001.[64]

The population of seniors is growing, particularly at the edges of the Metro region, and there are numerous human service transportation providers in the region, each offering similar transportation options. Providers range from transit agencies like TriMet and SMART to non-profit providers like Ride Connection, Inc. Each provides demand response services for seniors and people with disabilities.

TriMet meets the needs of seniors and people with disabilities with the LIFT and Medical Transportation programs. TriMet operates 225 LIFT vehicles that provide door-to-door service, providing 958,000 million rides annually to seniors and people with disabilities.[65] LIFT ridership has averaged 7.1 percent annually for the last five years with the cost per one-way trip climbing to $22. Operating costs are increasing $1.5 million annually.[66]

*Regional research shows that more housing for seniors and people with disabilities should be located along transit corridors in order to reduce barriers to transit access.*

[64] Metro. *A Profile of the Regional Transit System in the Portland Metropolitan Region*, 2007, pg. 16.
[65] TriMet, Transit Investment Plan. 2007. Pg. 4.
[66] Metro. *A Profile of the Regional Transit System in the Portland Metropolitan Region*, 2007, pg. 16.

Regional research shows that between 35 percent and 59 percent of LIFT riders could potentially walk and use existing fixed route transit. However, barriers exist like discontinuous sidewalk segments and a lack of transit stops/destinations within a quarter of a mile of where the elderly and disabled reside. The research suggests that a focus should be put on providing housing for the elderly and disabled along transit corridors and addressing issues of sidewalk connectivity near existing bus stops and MAX light rail stations. However, current zoning often precludes locating housing for the elderly or disabled in transit corridors. Finally, with multiple providers and overlapping services within a region, there is a need for more coordination of services.

## 1.9 WHAT'S NEXT MOVING FORWARD?

The Portland metropolitan region pioneered approaches to land use and transportation planning in the past, and is uniquely positioned to address these trends – mainly because the region has solid, well-integrated transportation and land-use systems in place and a history of working together to address complex challenges at a regional scale.

In the 1990s, regional policy discussions centered on how and where the region should grow to protect the things that make this region a great place to live, work and play. Those discussions led to the adoption of the region's long-range plan, the 2040 Growth Concept. This plan reflects shared community values and desired outcomes that continue to resonate today. Today it is time to revisit how we are implementing our vision, make some corrections and find new strategies and resources to create the future we want for our region. The rest of this plan represents a new step forward to respond to thechanges and challenges we face and set a new course for future transportation decisions and implementation of the 2040 Growth Concept.

The pages ahead provide an updated blueprint and investment strategy for a more sustainable transportation system that links land use and transportation, protects the environment and supports the region's economy. Translating our vision into a reality will not be a simple task – and it will take time.  More work is needed, as this plan does not achieve all the goals we've defined. It represents a new step forward for our region.

*This RTP provides an updated blueprint and investment strategy for a more sustainable transportation system for everyone, linking land use and transportation, protecting the environment and supporting the region's economy.*

# CHAPTER 2

# VISION: WHAT IS OUR VISION FOR THE TRANSPORTATION SYSTEM?

## 2.0 INTRODUCTION

Transportation shapes our communities and our daily lives, allowing us to reach our jobs and recreational opportunities, access goods and services, and meet daily needs. This chapter presents a shared, long-term vision and blueprint for the transportation system serving the Portland metropolitan region midway into the 21st century. The vision reflects the continued evolution of transportation planning from a project-driven endeavor to one that is framed by a broader set of outcomes that affect people's everyday lives.

The vision and supporting policies are aimed at better integrating transportation and land use efforts to sustain the region's economic competitiveness and prosperity, protect farms and natural areas, promote vibrant, compact communities, provide safe and reliable travel choices, reduce global warming and enhance our quality of life. The plan will be implemented through a variety of strategies and actions at the local, regional, state and federal levels. The various jurisdictions in the region are expected to pursue policies and projects that contribute to specific elements of the vision.

The chapter is organized into the following sections:

**2.1 Outcomes-based framework to guide planning and decision-making:** The section describes the outcomes-based approach to which the RTP must respond, linking transportation to a broader set of desired outcomes for vibrant communities, a healthy economy, equity and the environment.

**2.2 Integrated land use and transportation vision:** This section describes the 2040 Growth Concept vision and establishes the primary mission of the plan as a key tool for implementing the 2040 Growth Concept and supporting local aspirations for growth.

**2.3 Goals, objectives and targets for a 21st century transportation system:** This section lays out ten broad goals, supporting objectives and performance targets for the regional transportation system. The goals, objectives and targets establish policy and investment priorities that will guide future planning, investment decisions and monitoring.

**2.4 Regional system definition:** This section defines and illustrates the regional transportation system components.

**2.5 Regional system concepts and policies:** This section describes system concepts to guide the development and implementation of different parts of the system. The system concepts establish a vision and supporting policies for street design and all types of travel – motor vehicles, transit, walking and bicycling – as well as the movement of goods and freight by road, air, water and rail.

## 2.1 OUTCOMES-BASED FRAMEWORK TO GUIDE PLANNING AND DECISION-MAKING

In 2006, the RTP update began with the recognition that transportation planning is not just an exercise in analyzing numbers and defining projects. Shorter-term circumstances such as the current economic recession and longer-term concerns such as climate change demand that we do things differently and make a new approach to our planning responsibilities all the more timely.

This was further affirmed in 2008 when the Metro Council, with guidance from the Metro Policy Advisory Committee (MPAC), agreed that our planning efforts should start with defining the desired outcomes that the residents of this region have consistently expressed when asked. To that end, the Metro Council and our regional partners adopted six desired outcomes to guide regional planning for the future.[1]

Planning creates opportunities for individuals and communities to define and articulate their collective desires and aspirations for enhancing the quality of life in our region and their communities. It allows citizens and their elected leaders to take stock of the successes that have been achieved in their communities through years of hard work. It also requires us to think carefully about and to be accountable for our choices, ensuring we get the greatest possible return on public investments.

**WHAT OUTCOMES ARE WE TRYING TO ACCOMPLISH?**

**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.

*As adopted by the Metro Council and MPAC in 2008 by Resolution No. 08-3940.*

The RTP must also respond to the six desired outcomes in order for the region to be a responsible steward of public investment and the social, built and natural environments that shape our communities. This means local, regional and state governments must partner with the private sector to preserve and enhance the quality of life, our economy and the

[1] Metro Resolution No. 08-3940 expressed the intent of Metro and its regional partners to use a performance-based approach to guide policy and investment decisions in the region. The resolution (1) affirmed a definition of a successful region, which have become known as the "six desired outcomes" and (2) directed staff to work with regional partners to identify the performance indicators, targets, actions and decision-making process necessary to create successful communities.

environment now and for future generations.  It also means making transportation investment decisions based on achieving the multiple outcomes we are seeking rather than a single focus on addressing traffic congestion.

To this end, the RTP will use a new outcomes-based framework to inform transportation planning and investment decisions based on three balanced objectives:

1. **Equity –** Responsibility of the plan to the people of the region.

The plan calls for an interconnected and multi-modal transportation system that provides safe and affordable travel choices for everyone, equal access to work, education and nature for the region's residents. The plan must also ensure that the benefits and impacts of transportation decisions are fairly distributed to all people, regardless of race, national origin, or income, and that they have access to meaningful participation.

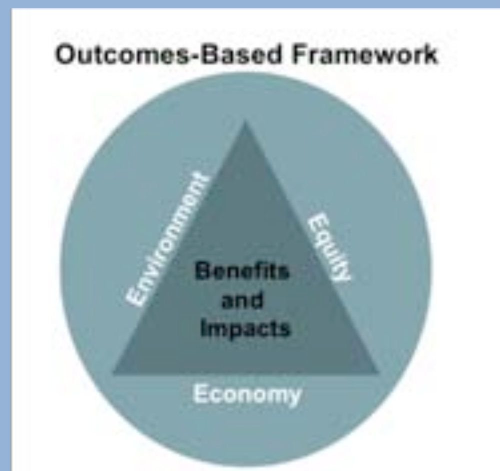
2. **Environment** - Responsibility of the plan to the landscape of the region.

The plan should ensure that the multi-modal transportation system protects and enhances the region's unique setting and natural environment, planned urban form and cultural legacy.

3. **Economy** - Responsibility of the plan to the economic prosperity of the region.

The plan should provide a multi-modal transportation system that supports a healthy regional economy and helps the region's businesses and industry remain competitive. Moving forward, the region must sharpen its efforts to quantify, assess and consider economic return on public investments in transportation infrastructure, in order to spend public funds wisely in support of the regional economy.

*This framework calls for economic, social, and environmental objectives to guide planning and investment decisions.*




*Applying this framework to transportation planning and decision-making sends a message that financial, cost-benefit, and economic considerations are not the sole drivers of transportation projects. Instead, it reflects a more balanced approach that embraces the concept that the economy, equity, and the environment must all be considered on a level playing field.*

The outcomes-based planning and decision-making framework forms the foundation for the rest of the plan to ensure transportation decisions support this larger set of responsibilities and the six desired outcomes.

## 2.2 INTEGRATED LAND USE AND TRANSPORTATION VISION

In 1995, the Portland region adopted the 2040 Growth Concept, the long-range plan for managing growth that merges land use and transportation planning to reinforce the objectives of both. The unifying theme of the 2040 Growth Concept is to preserve the region's economic health and livability and plan for growth in the region in an equitable, environmentally-sound and fiscally-responsible manner.

The 2040 Growth Concept includes land-use and transportation building blocks as shown in Figure 2.1. It concentrates mixed-use and higher-density development in 38 "centers"; 33 "light-rail station communities;" and "main streets" that are located within many of the corridors that connect the centers. The Growth Concept then plans high-capacity transit to connect the Portland central city and seven regional centers. Frequent bus service, often at 15-minute intervals, is envisioned to connect 30 "town centers" with the central city and regional centers.

**Figure 2.1**
**Region 2040 Growth Concept – an integrated land use and transportation vision**

The 2040 Growth Concept acknowledges population growth as a fact of life, but expresses the region's aspiration to incorporate growth within existing urban areas as much as possible and expand the urban growth boundary only when necessary. Implicit in the plan is the understanding that compact development is more sustainable, more livable and more fiscally responsible than low-density sprawl, and it will help reduce the region's carbon footprint.

The RTP responds to the 2040 Growth Concept with an approach that views transportation as an integrated and interconnected system that must be completed over time. The plan shifts the emphasis from moving vehicles to moving people and goods and connecting people and places. This integrated system provides for the movement of people by private vehicle, public transit, ridesharing, walking and biking as well as the movement of freight by roads, air, water and rail.

The RTP recognizes that new transit and road capacity are needed to achieve the 2040 Growth Concept vision and support the region's economic vitality. The plan considers transportation and the economy as inextricably linked, and recognizes investments that serve certain land uses or transportation facilities may have a greater economic return than others. The plan also recognizes that focusing transportation investments and other strategies to support the gateway function of our transportation system is the primary way in which to strengthen that gateway role for the region and the rest of the state. This means ensuring reliable and efficient connections between intermodal facilities and destinations within and outside the region to promote the region's function as a gateway for trade and tourism.

### 2040 Land-use Design Types

The 2040 Growth Concept land uses, called 2040 Design Types, are arranged in a hierarchy. The primary and secondary land uses, referred to as 2040 Target Areas, are the focus of RTP investments. The hierarchy also serves as a framework for prioritizing RTP investments. Table 2.1 lists the 2040 design types based on this hierarchy.[2]

**Table 2.1**
**2040 Growth Concept land-use design types**

| 2040 Target Areas | | |
|---|---|---|
| **Primary land-uses** | **Secondary land-uses** | **Other urban land-uses** |
| • Portland central city<br>• Regional centers<br>• Industrial areas<br>• Freight and passenger intermodal facilities | • Employment areas<br>• Town centers<br>• Station communities<br>• Corridors<br>• Main streets | • Inner neighborhoods<br>• Outer neighborhoods |

[2] More detailed descriptions of the land use and transportation elements of each 2040 Design Type can be found in the Regional Urban Growth Goals and Objectives and Regional Framework Plan.

The hierarchy applies to developed and developing areas inside the urban growth boundary (UGB) and to undeveloped areas added to the UGB as of 2007, with a recognition that different parts of the region are at different stages of implementing the 2040 Growth Concept. As a result, different areas may have different transportation investment needs and priorities that will require substantial public and private investment over the long-term.[3] Table 2.2 summarizes infrastructure investment strategies for each stage of 2040 implementation.

**Table 2.2**
**Priority infrastructure investment strategies**

| | Developed Areas | Developing Areas | Undeveloped Areas |
|---|---|---|---|
| **Stage of Development** | Built-out areas with most new housing and jobs accommodated through infill, redevelopment and brownfields development. | Redevelopable and developable areas, with most new housing and jobs being accommodated through infill, redevelopment, and greenfield development. | More recent additions to the urban growth boundary, with most new housing and jobs accommodated through greenfield development. |
| **Infrastructure Investment Strategies** | Operations, maintenance and preservation of existing transportation assets.<br><br>Managing the existing transportation system to optimize performance for all modes of travel.<br><br>Leveraging infill, redevelopment and use of brownfields.<br><br>Addressing bottlenecks and improving system connectivity to address barriers and safety deficiencies.<br><br>Providing a multi-modal urban transportation system.<br><br>Completing local street connections needed to complement the arterial street system. | Operations, maintenance and preservation of existing transportation assets.<br><br>Preserving right-of-way for future transportation system.<br><br>Managing the existing transportation system to optimize performance for all modes of travel.<br><br>Leveraging infill, redevelopment and use of brownfields<br><br>Providing a multi-modal urban transportation system.<br><br>Focusing on bottlenecks and improving system connectivity to address barriers and safety deficiencies.<br><br>Completing local street connections needed to complement the arterial system. | Operations, maintenance and preservation of existing transportation assets.<br><br>Preserving right-of-way for future transportation system.<br><br>Providing a multi-modal urban transportation system.<br><br>Managing new transportation system investments to optimize performance for all modes of travel.<br><br>Focusing on bottlenecks and improving system connectivity to address barriers and safety deficiencies.<br><br>Completing local street connections needed to complement the arterial street system. |

[3] The Making the Greatest Place effort may refine these priorities as it moves forward. Refinements will be addressed during future updates to the RTP.

## 2.3 GOALS, OBJECTIVES AND TARGETS FOR A 21ST CENTURY TRANSPORTATION SYSTEM

Transportation planning and investment decisions and the region's desired land use, economic and environmental outcomes are so interconnected that success of the 2040 Growth Concept hinges significantly on achieving the plan's goals and objectives.

This vision statement reflects the public's desired outcomes for the region's transportation system and reinforces the shared regional land use and transportation vision for the Portland metropolitan region – the 2040 Growth Concept. This vision is further described through the ten broad goals and supporting objectives presented in this section.

*The vision for the RTP is to ensure that the Portland region remains prosperous and vibrant by improving safety, expanding transportation choices for everyone, enhancing human health and protecting the natural environment.*

The overarching vision for the RTP, which reflects the public's desired outcomes, is to ensure that:

> *In the 21st Century, the Portland metropolitan region remains a vibrant and extraordinary region, with a world-class transportation system that is well-maintained and provides efficient movement of people and goods.*
>
> *This system sustains the region's economic competitiveness and prosperity, protects the region's environment, enhances human health and operates in an attractive and safe setting--it is a system that serves everyone.*
>
> *The system is fiscally sustainable and leverages community aspirations for revitalization and growth in downtowns, centers, main streets, and employment areas.*
>
> *The system manages both demand and capacity, employs the best technology, and joins rail, highway, street, bus, air, water, pedestrian and bicycle facilities into a seamless and fully interconnected network.*

## Goal 1: Foster Vibrant Communities and Efficient Urban Form

Land use and transportation decisions are linked to optimize public investments and support active transportation options and jobs, schools, shopping, services, recreational opportunities and housing proximity.


- **Objective 1.1 Compact Urban Form and Design** - Use transportation investments to reinforce growth in and multi-modal access to 2040 Target Areas and ensure that development in 2040 Target Areas is consistent with and supports the transportation investments.
- **Objective 1.2 Parking Management** – Minimize the amount and promote the efficient use of land dedicated to vehicle parking.
- **Objective 1.3 Affordable Housing** – Support the preservation and production of affordable housing in the region.

## Goal 2: Sustain Economic Competitiveness and Prosperity

Multi-modal transportation infrastructure and services support the region's well-being and a diverse, innovative, sustainable and growing regional and state economy.

- **Objective 2.1 Reliable and Efficient Travel and Market Area Access** - Provide for reliable and efficient multi-modal regional, interstate and intrastate travel and market area access through a seamless and well-connected system of throughways, arterial streets, freight services, transit services and bicycle and pedestrian facilities.
- **Objective 2.2 Regional Passenger Connectivity** – Ensure reliable and efficient connections between passenger intermodal facilities and destinations in and beyond the region to improve non-auto access to and from the region and promote the region's function as a gateway for tourism.
- **Objective 2.3 Metropolitan Mobility** - Maintain sufficient total person-trip and freight capacity among the various modes operating in the Regional Mobility Corridors to allow reasonable and reliable travel times through those corridors.
- **Objective 2.4 Freight Reliability** –Maintain reasonable and reliable travel times and access through the region as well as between freight intermodal facilities and destinations within and beyond the region to promote the region's function as a gateway for commerce.
- **Objective 2.5 – Job Retention and Creation** – Attract new businesses and family-wage jobs and retain those that are already located in the region.

## Goal 3: Expand Transportation Choices

Multi-modal transportation infrastructure and services provide all residents of the region with affordable and equitable options for accessing housing, jobs, services, shopping, educational, cultural and recreational opportunities, and facilitate competitive choices for goods movement for all businesses in the region.

- **Objective 3.1 Travel Choices** - Achieve modal targets for increased walking, bicycling, use of transit and shared ride and reduced reliance on the automobile and drive alone trips.
- **Objective 3.2 Vehicle Miles of Travel** - Reduce vehicle miles traveled per capita.
- **Objective 3.3 Equitable Access and Barrier Free Transportation** - 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.
- **Objective 3.4 Shipping Choices** – Support multi-modal freight transportation system that includes air cargo, pipeline, trucking, rail, and marine services to facilitate competitive choices for goods movement for businesses in the region.

## Goal 4: Emphasize Effective and Efficient Management of the Transportation System

Existing and future multi-modal transportation infrastructure and services are well-managed to optimize capacity, improve travel conditions and address air quality goals.


- **Objective 4.1 Traffic Management –** Apply technology solutions to actively manage the transportation system.
- **Objective 4.2 Traveler Information –** Provide comprehensive real-time traveler information to people and businesses in the region.
- **Objective 4.3 Incident Management –** Improve traffic incident detection and clearance times on the region’s transit, arterial and throughways networks.
- **Objective 4.4 Demand Management –** Implement services, incentives and supportive infrastructure to increase telecommuting, walking, biking, taking transit, and carpooling, and shift travel to off-peak periods.
- **Objective 4.5 Value Pricing –** Consider a wide range of value pricing strategies and techniques as a management tool, including but not limited to parking management to encourage walking, biking and transit ridership and selectively promote short-term and long-term strategies as appropriate.

## Goal 5: Enhance Safety and Security

Multi-modal transportation infrastructure and services are safe and secure for the public and goods movement.

- **Objective 5.1 Operational and Public Safety** - Reduce fatalities, serious injuries and crashes per capita for all modes of travel.
- **Objective 5.2 Crime -** Reduce vulnerability of the public, goods movement and critical transportation infrastructure to crime.
- **Objective 5.3 Terrorism, Natural Disasters and Hazardous Material Incidents** - Reduce vulnerability of the public, goods movement and critical transportation infrastructure to acts of terrorism, natural disasters, hazardous material spills or other hazardous incidents.

## Goal 6: Promote Environmental Stewardship

Promote responsible stewardship of the region's natural, community, and cultural resources.

- **Objective 6.1 Natural Environment** – Avoid or minimize undesirable impacts on fish and wildlife habitat conservation areas, wildlife corridors, significant flora and open spaces.
- **Objective 6.2 Clean Air** – Reduce transportation-related vehicle emissions to improve air quality so that as growth occurs, the view of the Cascades and the Coast Range from within the region are maintained.
- **Objective 6.3 Water Quality and Quantity** – Protect the region's water quality and natural stream flows.
- **Objective 6.4 Energy and Land Consumption** - Reduce transportation-related energy and land consumption and the region's dependence on unstable energy sources.
- **Objective 6.5 Climate Change** – Reduce transportation-related greenhouse gas emissions.

## Goal 7: Enhance Human Health

Multi-modal transportation infrastructure and services provide safe, comfortable and convenient options that support active living and physical activity, and minimize transportation-related pollution that negatively impacts human health.

- **Objective 7.1 Active Living** – Provide safe, comfortable and convenient transportation options that support active living and physical activity to meet daily needs and access services.
- **Objective 7.2 Pollution Impacts** – Minimize noise, impervious surface and other transportation-related pollution impacts on residents in the region to reduce negative health effects.

## Goal 8: Ensure Equity

The benefits and adverse impacts of regional transportation planning, programs and investment decisions are equitably distributed among population demographics and geography, considering different parts of the region and census block groups with different incomes, races and ethnicities.

- **Objective 8.1 Environmental Justice** – Ensure benefits and impacts of investments are equitably distributed by population demographics and geography.
- **Objective 8.2 Coordinated Human Services Transportation Needs** - Ensure investments in the transportation system provide a full range of affordable options for people with low income, elders and people with disabilities consistent with the Tri-County Coordinated Human Services Transportation Plan (CHSTP).
- **Objective 8.3 Housing Diversity** - Use transportation investments to achieve greater diversity of housing opportunities by linking investments to measures taken by the local governments to increase housing diversity.
- **Objective 8.4 Transportation and Housing Costs**– Reduce the share of households in the region spending more than 50 percent of household income on housing and transportation combined.

## Goal 9: Ensure Fiscal Stewardship

Regional transportation planning and investment decisions ensure the best return on public investments in infrastructure and programs.

- **Objective 9.1 Asset Management–** Adequately repair and maintain transportation facilities and services to preserve their function, maintain their useful life and eliminate maintenance backlogs.
- **Objective 9.2 Maximize Return on Public Investment** - Make transportation investment decisions that use public resources effectively and efficiently, using performance-based planning.
- **Objective 9.3 Stable and Innovative Funding** – Stabilize existing transportation revenue while securing new and innovative long-term sources of funding adequate to build, operate and maintain the regional transportation system for all modes of travel at the federal, state, regional and local level.

## Goal 10: Deliver Accountability

The region's government, business, institutional and community leaders work together in an open and transparent manner so the public has meaningful opportunities for input on transportation decisions and experiences an integrated, comprehensive system of transportation facilities and services that bridge governance, institutional and fiscal barriers.

- **Objective 10.1 Meaningful Input Opportunities -** Provide meaningful input opportunities for interested and affected stakeholders, including people who have traditionally been underrepresented, resource agencies, business, institutional and community stakeholders, and local, regional and state jurisdictions that own and operate the region's transportation system in plan development and review.
- **Objective 10.2 Coordination and Cooperation** - Ensure representation in regional transportation decision-making is equitable from among all affected jurisdictions and stakeholders and improve coordination and cooperation among the public and private owners and operators of the region's transportation system so the system can function in a coordinated manner and better provide for state and regional transportation needs.

### 2.3.1 Performance targets

While goals and objectives are a vital component of the plan, equally important are quantifiable performance targets and indicators to track the region's progress. Investments that work together toward achieving a set of performance targets is critical for the region to be successful in realizing a truly integrated, multi-modal transportation system that achieves the goals and objectives of this plan.

Raising the bar from past RTPs, the plan includes a set of interim transportation performance targets, listed in **Table 2.3,** that support the outcomes-based framework and the plan's goals and objectives. The interim targets provided policy direction for developing the investment strategy recommended in Chapter 3 and for updating local transportation system plans. Table 2.3 includes findings on how well the plan performs in relation to the targets. The supporting data is found in Appendix 1.7.

**Table 2.3**
**Regional Transportation Performance Targets**

| Target | Performance | Finding |
|---|---|---|
| | **ECONOMY** | |
| **Safety –**By 2035, reduce the number of pedestrian, bicyclist, and motor vehicle occupant fatalities plus serious injuries each by 50% compared to 2005. | Between 2003 - 2005:<br><br>There were an estimated:<br><br>55 pedestrian fatalities and serious injuries<br><br>27 bike fatalities and serious injuries<br><br>392 motor vehicle fatalities and serious injuries | The region has established a baseline to track progress toward achieving the target over time. |
| **Congestion** – By 2035, reduce vehicle hours of delay (VHD) per person by 10 percent compared to 2005. | By 2035:<br><br>VHD per person increases by 193% in 2 hour pm peak travel period<br><br>VHD per person increases by 255% in the 1 hour mid-day travel period | The region does not meet the target. The data shows that VHD per person increases dramatically from 2005 based on the planned level and mix of investments. |
| **Freight reliability** – By 2035, reduce vehicle hours of delay truck trip by 10 percent compared to 2005. | By 2035:<br><br>VHD per truck trip increases by 180% in 2 hour pm peak travel period<br><br>VHD per truck trip increases by 235% in the 1 hour mid-day travel period | The region does not meet the target. The data shows that VHD per truck trip increases dramatically from 2005 based on the planned level and mix of investments. |

| Target | Performance | Finding |
| --- | --- | --- |
| **ENVIRONMENT** | | |
| **Climate change** – By 2035, reduce transportation-related carbon dioxide emissions by 40 percent below 1990 levels. | By 2035:<br>Carbon dioxide emissions increase by 50% above 2005 levels | The State is developing a 1990 baseline and developing targets for light duty vehicles pursuant to House Bill 2001.The data shows that carbon dioxide increases from 2005 based on the planned level and mix of investments. |
| **Active transportation** – By 2035, triple walking, biking and transit mode share compared to 2005. | By 2035:<br>Transit mode share increases by 4% compared to the 10% target<br>Walking increases by 7% compared to the 19% target<br>Biking increases by 1% compared to the 3% target | The region does not meet the target. However, the data shows that the region is making progress toward achieving the target. |
| **Basic infrastructure** – By 2035, increase by 50 percent the number of essential destinations[4] accessible within 30 minutes by trails, bicycling and public transit or within 15 minutes by sidewalks for all residents compared to 2005. | Data under development | The methodology for establishing a base line for this target is being developed. |
| **Clean air** – By 2035, ensure zero percent population exposure to at-risk levels of air pollution. | In 2035:<br>Carbon monoxide is estimated at 836,484 lbs/day, 29% below the regional motor vehicle emissions budget for 2035<br>Hydrocarbons (VOC) is estimated at 17 tons/day, 58% below the regional motor vehicle emissions budget for 2035 | The region meets the target for carbon monoxide and ozone (VOC and NOX) exposure from transportation sources.<br>A regional standard for air toxics is under development. |

[4] Consistent with the evaluation methodology used for the High Capacity Transit plan, essential destinations are defined as: hospitals and medical centers, major retail sites, grocery stores, elementary, middle and high schools, pharmacies, parks/open spaces, major social service centers (with more than 200 monthly LIFT pick-up counts), colleges and universities, employers with greater than 1,500 employees, sports and attraction sites and major government sites.

| Target | Performance | Finding |
|---|---|---|
| | Nitrogen oxide (NOX) is estimated at 16 tons/day, 73% below the regional motor vehicle emissions budget for 2035 | |
| **Travel –** By 2035, reduce vehicle miles traveled per person by 10 percent compared to 2005. | In 2035:<br><br>Vehicle miles traveled per person decline 4% below 2005 levels. | The region does not meet the target. However, the data shows that the region is making progress toward achieving the target. |
| **EQUITY** | | |
| **Affordability –** By 2035, reduce the average household combined cost of housing and transportation by 25 percent compared to 2000. | In 2005, the average household in the Portland region spend about 44 percent of its income on housing and transportation. | The region will track progress toward this target. |
| **Access to daily needs –** By 2035, 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. | Data under development | The methodology for establishing a base line for this target is being developed. |

The interim performance targets are numerical benchmarks to assess the region's progress in carrying out the RTP vision. These targets draw from federal and state legislation. They are aspirational and begin moving the region towards outcomes-based decision making. It is expected that as evaluation methods and tools are enhanced the targets will be further refined during the next RTP update.

A broader set of performance targets that include land use as well as equity, economic and environmental measures will also be developed as part of the *Making the Greatest Place*. Monitoring of all the performance targets will provide accountability for achieving the goals of the plan. Decision-makers can use this information to adapt policies and investment strategies based on what is learned.

### 2.3.2 Interim Performance Measures

The RTP must demonstrate that it defines an adequate transportation system to serve planned land uses to meet state planning requirements. The interim targets in the previous section, the indicators in this section and additional performance indicators described in Chapter 4 will serve as the basis for determining whether the proposed transportation system adequately addresses the ten RTP goals and planned land uses during the plan period.[5]

**Interim Regional Mobility Policy**

The motor vehicle performance indicators in **Table 2.4** represent the minimum performance level desired for transportation facilities and services within the region. Originally adopted in 2000, and amended into the Oregon Highway Plan in 2002, the indicators reflect a level of performance the region and the Oregon Transportation Commission (OTC) deemed tolerable at the time of their adoption, but also recognized as an incremental step toward a more comprehensive set of measures after considering system performance as well as financial, environmental and community impacts. The OTC has indicated a desire for Metro to advance beyond the traditional mobility performance measure use to guide investment decisions. Over the next several years, in advance of the next RTP update, Metro, ODOT and other regional partners will work together to update the current regional mobility policy to better align with RTP outcomes.

The measures in Table 2.4 describe operational conditions that are used to evaluate the quality of service of the transportation system, using the ratio of traffic volume to planned capacity (volume/capacity ratio) of a given facility. The measures are used to diagnose the extent of congestion during different times of the day to identify deficient transportation facilities and services in the plan.

This evaluation helps the region develop strategies to address congestion in a more strategic manner given limited transportation funding and potential environmental and community impacts. The system analysis described in Chapter 4 finds that the region cannot achieve the mobility policy listed in Table 2.4 within current funding levels or with the mix of investments included in the analysis.

[5] The Oregon Transportation Planning Rule, subsection 0060, requires the RTP to include performance measures that ensure the transportation system is adequate to serve planned land uses.

**Table 2.4**
**Interim Regional Mobility Policy**
Deficiency Thresholds and Operating Standards

| Location | Standard: Mid-Day One-Hour Peak [A] | Standard: PM 2-Hour Peak [A] 1st Hour | Standard: PM 2-Hour Peak [A] 2nd Hour |
|---|---|---|---|
| Central City<br>Regional Centers<br>Town Centers<br>Main Streets<br>Station Communities | .99 | 1.1 | .99 |
| Corridors<br>Industrial Areas<br>Intermodal Facilities<br>Employment Areas<br>Inner Neighborhoods<br>Outer Neighborhoods | .90 | .99 | .99 |
| I-84 *(from I-5 to I-205)* | .99 | 1.1 | .99 |
| I-5 North *(from Marquam Bridge to Interstate Bridge)* | .99 | 1.1 | .99 |
| OR 99E *(from Lincoln Street to OR 224 interchange)* | .99 | 1.1 | .99 |
| US 26 *(from I-405 to Sylvan interchange)* | .99 | 1.1 | .99 |
| I-405 [B] *(I-5 South to I-5 North)* | .99 | 1.1 | .99 |
| Other Principal Arterial Routes<br>I-205 [B]<br>I-84 (east of I-205)<br>I-5 (Marquam Bridge to Wilsonville) [B]<br>OR 217<br>US 26 (west of Sylvan)<br>US 30<br>OR 8 (Murray Boulevard to Brookwood Avenue) [B]<br>OR 212<br>OR 224<br>OR 47<br>OR 213 | .90 | .99 | .99 |

A. The demand-to-capacity ratios in the table are for the highest two consecutive hours of weekday traffic volumes. The mid-day peak hour as the highest 60-minute period between the hours of 9 a.m. and 3 p.m. The 2nd hour is defined as the single 60-minute period either before or after the peak 60-minute period, whichever is highest.

B. A corridor refinement plan is required in Chapter 6 of the RTP, and will include a recommended mobility policy for each corridor.

## Regional Modal Targets

Regional mode share targets established in **Table 2.5** are intended to be goals for cities and counties to work toward as they implement the 2040 Growth Concept at the local level. Increases in walking, bicycling, ridesharing and transit mode shares will be used to demonstrate compliance with per capita travel reductions required by the state Transportation Planning Rule. The most urbanized areas of the region will achieve higher non-drive alone modal shares than less developed areas closer to the urban growth boundary.

**Table 2.5**
**Regional Modal Targets**

| 2040 Design Type | Non-drive alone modal target |
|---|---|
| Portland central city | 60-70% |
| Regional centers<br>Town centers<br>Main streets<br>Station communities<br>Corridors<br>Passenger intermodal facilities | 45-55% |
| Industrial areas<br>Freight intermodal facilities<br>Employment areas<br>Inner neighborhoods<br>Outer neighborhoods | 40-45% |

Note: *The targets apply to trips to and within each 2040 design type. The targets reflect conditions needed in the year 2040 to comply with Oregon Transportation Planning Rule objectives to reduce reliance on single-occupancy vehicles.*

## 2.4 REGIONAL SYSTEM DEFINITION

Multi-modal regional transportation facilities and services are defined both functionally and geographically. Specific facilities or services are included in the RTP based on their function within the regional transportation system rather than their geometric design, ownership or physical characteristics.

A facility or service is part of the regional transportation system if it provides access to any activities crucial to the social or economic health of the Portland metropolitan region, including connecting the region to other parts of the state and Pacific Northwest, and providing access to and within 2040 Target areas, as described below.

Facilities that connect different parts of the region together by crossing county or city boundaries are crucial to the regional transportation system. Any link that provides access to or within a major regional activity center such as an airport or 2040 target area is also a crucial element of the regional transportation system.

**Regional Transportation System Components**

Regional multi-modal transportation facilities and services include the following eight components:

1. Regional Throughway and Street Network, which includes the National Highway System (NHS) and State highways
2. Regional Transit Network
3. Regional Bicycle Network
4. Regional Pedestrian Network
5. Regional Freight Network
6. Regional Design System
7. System Management
8. Demand Management

As a result, the regional transportation system is defined as:

1. All state transportation facilities (including interstate, statewide, regional and district highways and their bridges, overcrossings and ramps).
2. All arterial facilities and their bridges.
3. Transportation facilities within designated 2040 centers, corridors, industrial areas, employment areas, main streets and station communities.
4. All high capacity transit and regional transit systems and their bridges.
5. All regional bicycle and pedestrian facilities and their bridges, including regional trails with a transportation function.
6. All bridges that cross the Willamette, Columbia, Clackamas, Tualatin or Sandy rivers.
7. All freight and passenger intermodal facilities, airports, rail facilities and marine transportation facilities and their bridges.

8. Any other transportation facility, service or strategy that is determined by JPACT and the Metro Council to be of regional interest because it has a regional need or impact (e.g. transit-oriented development, transportation system management and demand management strategies, local street connectivity, and culverts that serve as barriers to fish passage).

Together, these facilities, services and strategies constitute an integrated and interconnected system that supports desired land use as well as all modes of travel for people and goods movement to achieve the goals of the RTP.

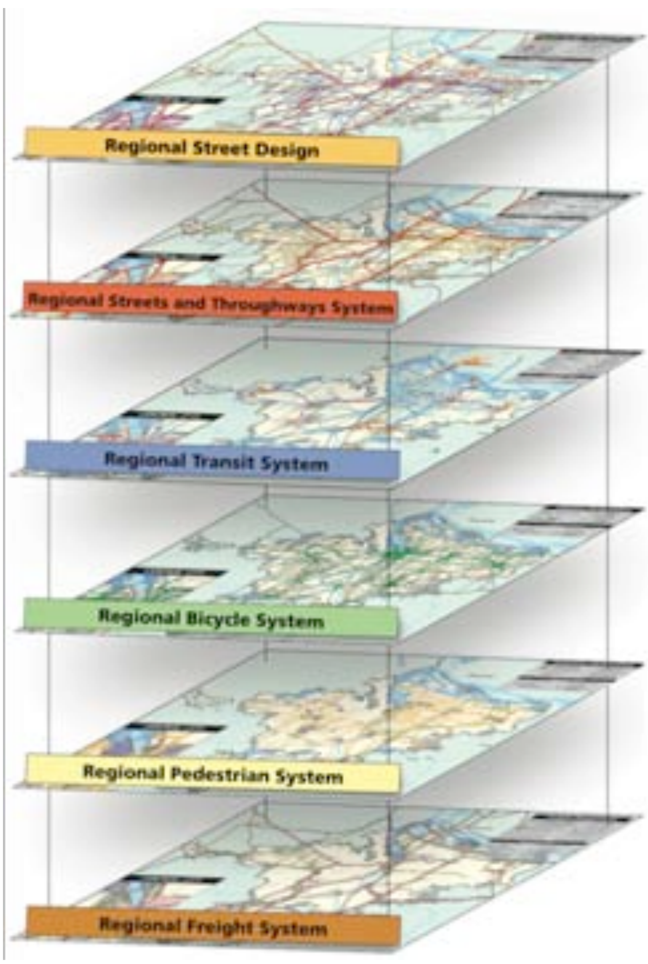
A detailed system concept vision and supporting policies are described for each component in the next section.

## 2.5 REGIONAL SYSTEM CONCEPTS AND POLICIES

This section establishes a system concept and policies for each component of the regional transportation system. The system concepts represent a network vision for what constitutes a complete urban transportation system that meets the plan goals and supports local aspirations for growth.

The concepts and policies provide for travel through a seamless and well-connected system of regional throughways and streets, local streets, freight systems, transit services and bicycle and pedestrian facilities. The concepts and policies emphasize safety, access, mobility and reliability for people and goods and the community-building and placemaking role of transportation.

The system concepts and policies will guide the development, design and management of different components of the regional transportation system. Deviations may be needed during implementation due to environmental or community impacts.




**Regional Transportation System Components**

## Community Building Concept

Planning transportation for community building outcomes will help protect our region's natural and cultural legacy and serve as an economic catalyst for businesses and jobs in these places. The community building concept recognizes the important role of transportation in placemaking to achieve the 2040 Growth Concept vision for a strong economy, a healthy environment and communities that serve the needs of all. The concept calls for cultivating great communities by investing in the community assets essential to making downtowns, main streets and employment areas better places to live and work. Typically, these are investments that help revitalize downtowns and main streets or provide critical access to industrial lands and freight intermodal facilities.

*The community building concept recognizes the important role of transportation in placemaking to achieve a strong economy, a healthy environment and communities that serve the needs of everyone.*

### Centers and mainstreets

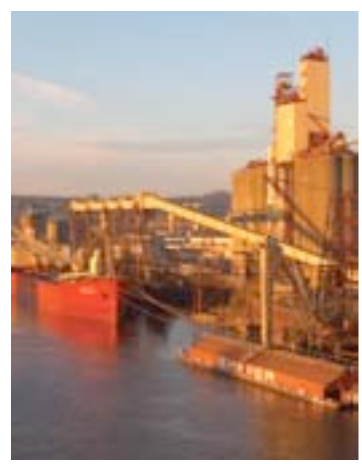
A diverse, walkable community depends on transportation infrastructure that provides a variety of ways to get around - serving pedestrians, bicyclists and transit-riders as well as drivers.

The concept emphasizes streetscape retrofits, street connectivity, transit, sidewalks, bicycle and trail connections in downtowns and along main streets to leverage higher density mixed-use development and transit investments such as frequent bus, street car or high capacity transit. Centers and main streets should be optimized for pedestrians, bicycles and transit users.

For example, an attractive, tree-lined main street, complete with wide sidewalks and "street furniture" – benches, bus shelters, trash cans – is a source of community pride and a magnet for walkers, shoppers and tourists. High quality transit service in these areas further supports placemaking objectives and provides important access and circulation.

### Industrial and employment areas

In industrial and employment areas, the concept emphasizes providing critical freight access to the interstate highway system and protecting interchange capacity to help the region's businesses and industry in these areas remain competitive. This means strategically adding road capacity to arterials and building new street connections in these areas in addition to providing access to support commercial delivery activities and upgrading main line and rail yard infrastructure.



*Providing freight access to the interstate highway system in industrial and employments areas helps the region's industry remain competitive.*

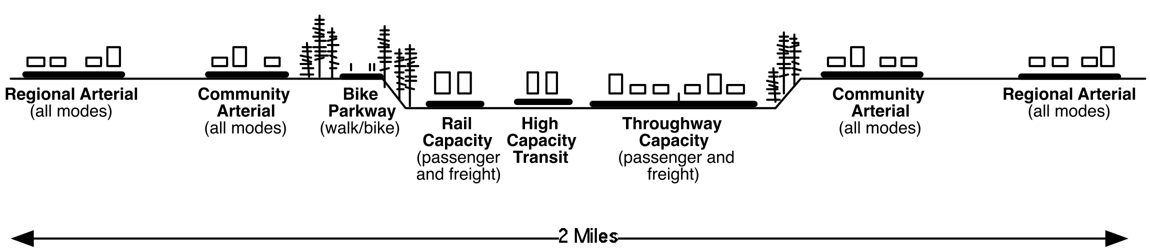
Using public transportation investments to leverage community aspirations, desired growth and private investment in 2040 centers, corridors and employment areas contributes to the quality of life and economic vitality of the region.

## Regional Mobility Corridor Concept

Since the 1980s, regional mobility corridors have had throughway travel supplemented by high capacity transit service that provides an important passenger alternative. Parallel arterial streets, heavy rail, bicycle parkways and pedestrian/bicycle connections to high capacity transit also provide additional capacity in the regional mobility corridors. Regional mobility corridor facilities should be considered in conjunction with the parallel throughways for system evaluation and monitoring, system and demand management and phasing of physical investments in the individual facilities. Bicycle and pedestrian travel and access to transit is also important as we plan and invest in regional throughways and arterial streets. New throughway and arterial facilities, such as freeway interchanges or widened arterial streets, should be designed and constructed in such a manner as to support bicycling, walking and access to transit.

The regional mobility corridor concept integrates arterial streets, throughways, high capacity transit, frequent bus routes, freight/passenger rail, and bicycle parkways into subareas of the region that work together to provide for regional, statewide and interstate travel.[6] The function of this network of integrated transportation corridors is metropolitan mobility – moving people and goods between different parts of the region and, in some corridors, connecting the region with the rest of the state and beyond. These transportation corridors also have a significant influence on the development and function of the land uses they serve. The regional mobility corridor concept calls for consideration of multiple facilities, modes and land use when identifying needs and most effective mix of land use and transportation solutions to improve mobility within a specific corridor area. The concept of a regional mobility corridor is shown in **Figure 2.7**.

**Figure 2.7**
**Regional Mobility Corridor Concept**

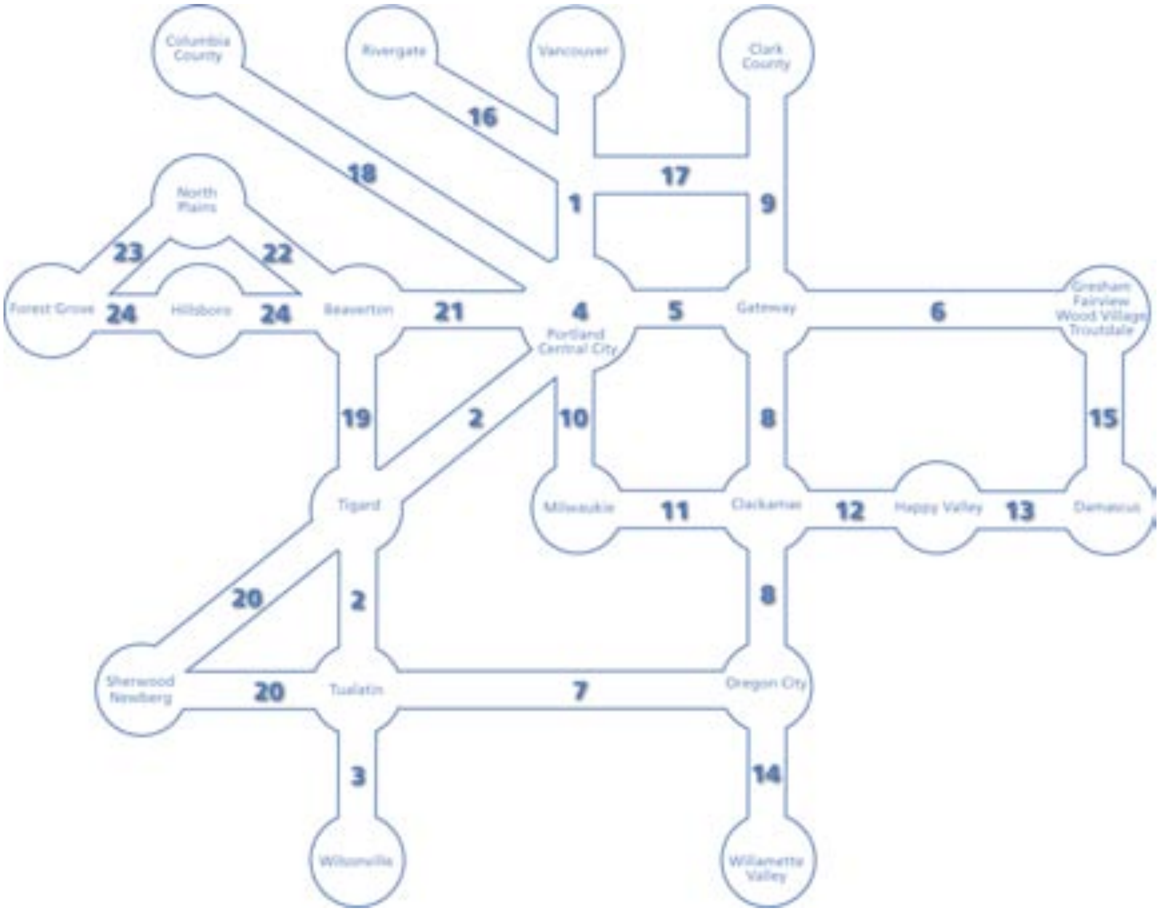



*Note: Idealized concept for illustrative purposes showing recommended range of system analysis for the evaluation, monitoring, management and phasing of investments to throughways, arterial streets and transit service in the broader corridor. The illustration is modeled after I-84 between 12th and 60th avenues in Northeast Portland.*

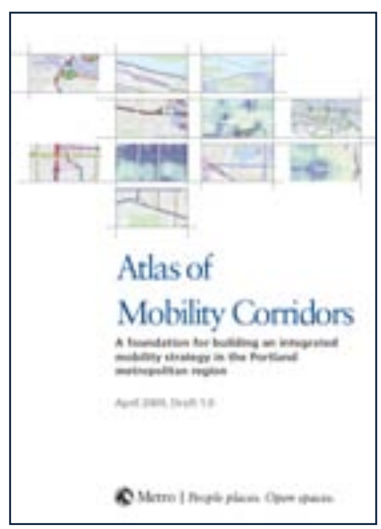
[6] See 2.4.2.4 Regional Bicycle System for more information about the bicycle parkway concept.

**Figure 2.8** shows the general location of mobility corridors in the region.

**Figure 2.8**
**Mobility Corridors in the Portland Metropolitan Region**




## Atlas of Mobility Corridors




The first of its kind created for this region, the Atlas of Mobility Corridors was conceived as a way to visually present current land use and multi-modal transportation data for each of the region's major travel corridors. The Atlas provides a general overview that includes location in the region, primary transportation facilities and land use patterns, and an assessment of gaps and deficiencies by travel mode for each mobility corridor.

The Atlas enhances the region's ability to analyze and compare data between corridors. This information will be used to help identify the most cost-effective strategies and investment priorities for each corridor and serve as a framework for monitoring how well different strategies are working in each corridor over time.

## 2.5.1 Regional System Design and Placemaking Concept

Regional street and throughway system design concepts address federal, state and regional transportation planning mandates with design concepts intended that support regional and local implementation of the 2040 Growth Concept. This concept establishes guidelines for the physical design of the regional transportation system to foster livable communities throughout the region and encourage walking, bicycling and use of transit.

Land use planning determines where homes, schools, work, shopping, and other activities are located and can profoundly affect the way in which we move around the region and within our communities. The design concepts reflect that streets perform many, often conflicting functions. Conflicts among travel modes need to be reconciled for the safety of all modes of travel. The design concepts promote community livability and mobility by balancing all modes of travel and addressing the function and character of surrounding land uses. Linking land use and the physical design of transportation facilities is crucial to achieving state goals to limit reliance on any one mode of travel and to encourage walking, bicycling, carpooling, vanpooling and use of transit.

The designs are based on Metro's Livable Streets Handbooks, shown in **Figure 2.9**, and vary depending on intended function of the street or throughway and the land uses the roadway serves. Consideration is given to various arterial designs, designs for pedestrians, bicyclists and transit and the link between street design and stormwater management. The handbooks will be updated in 2010 to better address freight considerations. A new handbook on wildlife crossings is also under development.

**Figure 2.9**
**Metro's Livable Streets Handbooks**


**Table 2.6** summarizes throughway and arterial classifications, design elements and recommended functions, illustrating how multi-modal design elements can be integrated. The idealized cross sections in the table are illustrative only. **Figure 2.10** applies the design concepts to the regional street and throughway system network.

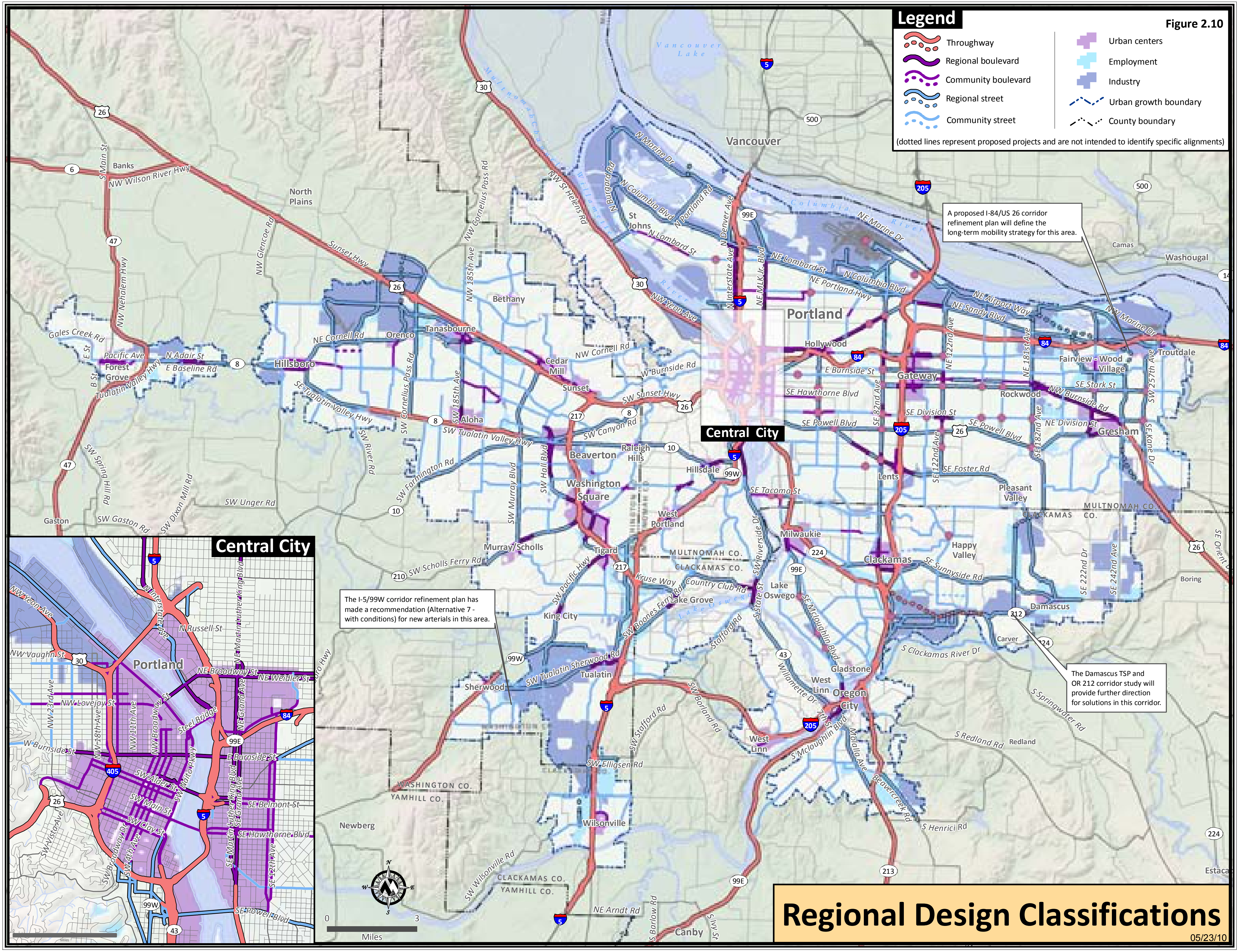
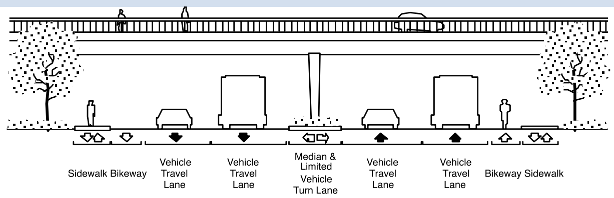
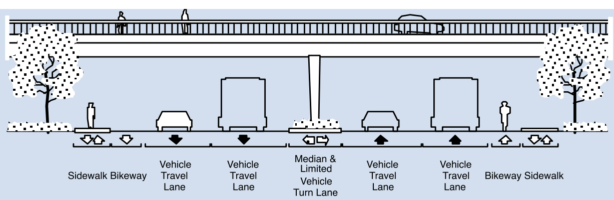
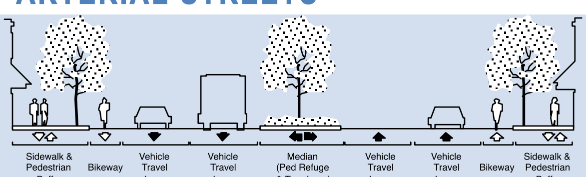
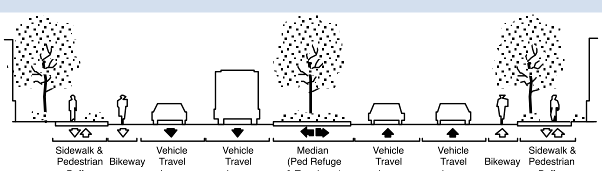

Legend
Figure 2.10
Throughway
Regional boulevard
Community boulevard
Regional street
Community street
Urban centers
Employment
Industry
Urban growth boundary
County boundary
(dotted lines represent proposed projects and are not intended to identify specific alignments)
A proposed I-84/US 26 corridor refinement plan will define the long-term mobility strategy for this area.
The I-5/99W corridor refinement plan has made a recommendation (Alternative 7 - with conditions) for new arterials in this area.
The Damascus TSP and OR 212 corridor study will provide further direction for solutions in this corridor.
Central City
Portland
Vancouver
Hillsboro
Forest Grove
Banks
North Plains
Bethany
Tanasbourne
Orenco
Cedar Mill
Sunset
Aloha
Beaverton
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray/Scholls
Tigard
King City
Sherwood
Tualatin
Wilsonville
Lake Oswego
Lake Grove
Milwaukie
Clackamas
Happy Valley
Pleasant Valley
Damascus
Gladstone
Oregon City
West Linn
Lents
Gateway
Hollywood
Rockwood
Gresham
Fairview - Wood Village
Troutdale
St Johns
Camas
Washougal
Newberg
Canby
Gaston
Carver
Boring
Redland
Estacada
MULTNOMAH CO.
CLACKAMAS CO.
WASHINGTON CO.
YAMHILL CO.
0
3
Miles
Regional Design Classifications
05/23/10

**Table 2.6**
**Arterial and Throughway Design Concepts**

| Trip Type | 2040 Design Concept | Network Function | Illustrative Design Concept | Typical number of planned travel lanes[7] |
|---|---|---|---|---|
| | | | **THROUGHWAYS** | |
| **Interstate/ regional** | **Throughway** (Freeway) | Principal arterial |  | 6 through lanes (plus auxiliary lanes) with grade separated interchanges |
| **Interstate/ regional** | **Throughway** (Highway) | Principal arterial |  | 6 through lanes (plus auxiliary lanes) with grade separated intersections/ interchanges |
| **Interstate/ regional** | **Throughway** (Parkway) | Principal arterial |  | 6 through lanes (plus auxiliary lanes) with grade separated intersections/ interchanges |
| | | | **ARTERIAL STREETS** | |
| **Regional / City** | **Regional Boulevard** *2040 centers Station communities Main streets* | Major Arterial |  | 4 through lanes with turn lanes |
| **Regional / City** | **Regional Street** *Industrial areas Employment areas Corridors Intermodal facilities* | Major Arterial |  | 4 through lanes with turn lanes |

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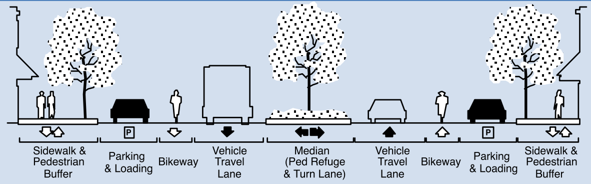
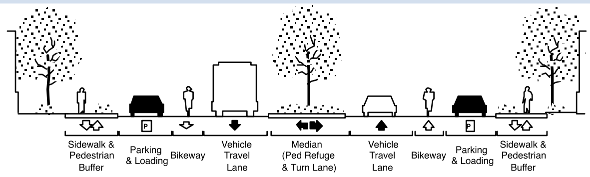
[7] The number of through lanes may vary based on right-of-way constraints or other factors. Some places in the region may require additional lanes due to a lack of connectivity. Major and minor arterial streets can either be 2 or 4 lanes with turn lanes as appropriate.

| | | | | |
|---|---|---|---|---|
| **City** | **Community Boulevard**<br>*2040 centers*<br>*Station communities*<br>*Main streets* | Minor Arterial |  | 2 through lanes with turn lanes |
| **City** | **Community Street**<br>*Industrial areas*<br>*Employment areas*<br>*Corridors*<br>*Intermodal facilities* | Minor Arterial |  | 2 through lanes with turn lanes |

Source: Metro

## Designs for pedestrians, bicyclists and transit users

Street designs have a significant impact on people's ability to walk, bike and access transit. Sidewalks and bikeways provide a route for non-motorized traffic and encourage walking and bicycling. Where appropriate, traffic calming measures such as narrower travel lanes, compact intersections and on-street parking can slow vehicle traffic and reduce traffic accidents for pedestrians, bicyclists, motorcyclists and motorists. Painted crosswalks, appropriate use of signs and signals and median islands make it easier for pedestrians and bicyclists to cross roads.

In addition, curb designs, ramps and crossing signals designed for the hearing- and sight-impaired facilitate safe travel for people of all ages and abilities. Facilities and infrastructure such as street lighting, benches, telephones, waste containers for public use, landscaped buffers that include trees, planters, lampposts and kiosks make the environment more attractive and create a sense of community and safety that encourages walking, bicycling and the use of transit.


*Well-designed sidewalks, benches, lighting, street trees and other urban design elements encourage more walking and provide for safe travel for people of all ages and abilities.*

### Designs for stormwater management and natural resource protection

The effect the public right-of-way has on the health of the natural environment, particularly urban waterways, is well documented. Streets, parking lots and driveways combined form the largest impervious surfaces in the urban landscape, accounting for up to 65 percent of the total impervious surface area. A particular challenge is how to address conflicts between transportation facilities and wildlife and riparian corridors, and how transportation improvements can be located, designed and constructed with regard for riparian corridor and upland habitat protection plans.

Impervious surface coverage has been linked to changes in the shape of streams, water quality, water temperature and the biological health of waterways. The regional Green Streets program seeks to mitigate these effects through a combination of retrofits to existing streets and design guidelines for new streets and throughways.

*Green retrofits can help intercept rainwater thereby minimizing the negative impacts to streams and other waterways.*

As arterial streets and throughways and other types of transportation infrastructure cut across the landscape, they form barriers to wildlife movement, disrupting migration patterns and population dynamics. These disruptions can be minimized through engineered solutions, such as wildlife-crossing devices and structures and through incorporating wildlife corridor acquisition/restoration needs into transportation project development.

Infrastructure planning and design should first seek to avoid fish and wildlife habitat conservation areas. If that is not practicable, they should identify opportunities to mitigate the effects of transportation infrastructure and services through the application of "green" design treatments. For example, street trees, vegetated swales and other green street treatments can intercept rainwater and convey stormwater in the public right-of-way adjacent to the region's throughways and arterial streets. Refer to Metro's Green Streets: Innovative Solutions for Stormwater and Stream Crossings handbook for more information on these designs.

### 2.5.2 Arterial and Throughway Network Vision

Though our region has changed dramatically over the past century, the shape of the major street network serving our region has changed little. Most of our regional streets were once farm-to-market roads, many established along Donation Land Claim boundaries at half-mile or mile spacing. The region's throughway system evolved from the mid-1930s, when the first highway was built from Portland to Milwaukie, to the completion of I-205 in the early 1980s. Most of the throughway system was built along the same donation land claim grid that shapes the regional street system, with most throughways following older farm-to-market routes or replacing major streets.


*Freeways allow people and goods to connect to major destinations across the region.*

This inherited network design has proven to be an adequate match for accommodating the changing travel demands of our growing region. The regional street and throughway system concept seeks to apply this proven network design to developing and undeveloped areas in the region, while seeking opportunities to bring existing urban areas closer to this ideal when possible.

#### Arterial and Throughway Network Concept

The regional street and throughway system concept contains policy and strategy provisions to develop a complete and well-connected roadway system that provides adequate capacity and supports all modes of travel. Rather than relying principally on levels of congestion to direct how and where to address motor vehicle capacity needs, the concept calls for implementing a well-connected network design that is tailored to fit local geography, respect existing communities and future development and protect the natural environment.

**Three policies form the foundation of this vision:**

1. **Build a well-connected network of "complete" streets that prioritize safe and convenient pedestrian and bicycle access**
2. **Improve local and collector street connectivity**
3. **Maximize system operations by implementing management strategies prior to building new motor vehicle capacity, where appropriate**

## Build a well-connected network of complete streets that prioritize pedestrian and bicycle access

A well-connected network of complete streets is critical to achieving the 2040 Growth Concept vision. In general, the roadway network should be designed to provide for trips through or across the region on throughways, shorter trips through portions of the region on arterial streets and the shortest trips on collector and local streets. Traffic speeds, access and level of street connectivity vary depending on the function of the street. The design of transportation facilities should consider the facility's traffic function, all modes of travel, and community development goals.

"Complete" streets are defined as roadways that are designed and operated with all users in mind – including bicyclists, transit vehicles and users, freight delivery vehicles and pedestrians of all ages and abilities.

This approach results in a traffic hierarchy of:

- throughways (for example, limited-access facilities such as I-84, US 26, I-5, I-205 and I-405)
- arterial streets (for example, Cornell Road in Washington County, Halsey Street in the City of Portland and Sunnyside Road in Clackamas County).
- collector streets
- local streets

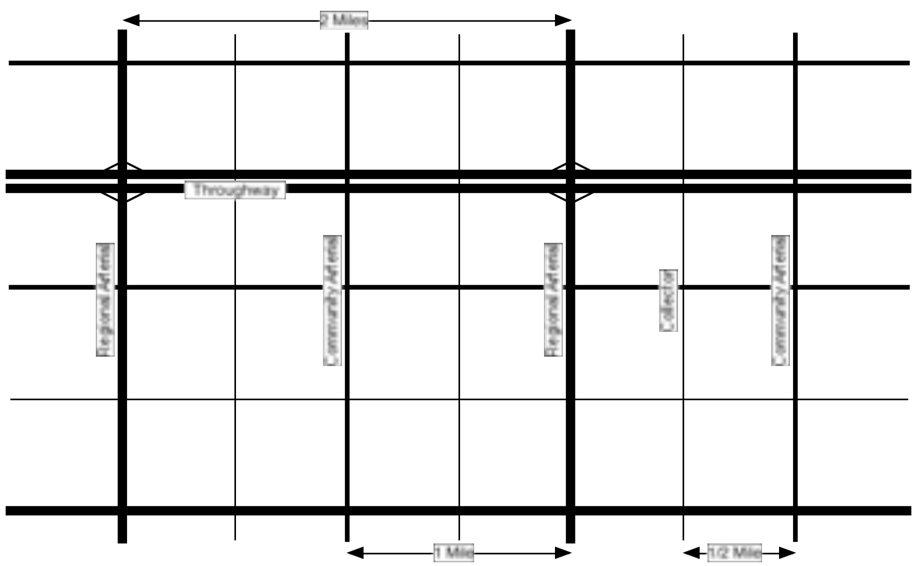
The traditional traffic classifications for throughways, arterial streets and other streets are a good starting point for distributing traffic in communities to avoid bottlenecks on overburdened routes or avoid the need to build overly wide streets as a community grows. Throughways serve only as mobility routes, with little or no property access, and an emphasis on connecting major destinations across the region. Arterial streets provide both mobility, moving traffic, goods, and people within the region, and access to property along the street. The degree to which one of these regional street purposes predominates over the other is determined by the functional classification.

The RTP presumes that building a regional street and throughway system to accommodate all motor vehicle traffic during peak travel periods is not practical nor would it be desirable considering potential environment and community impacts. As a result, the regional street and throughway network concept calls for one-mile spacing of major arterial streets, with minor arterial streets or collector streets at half-mile spacing, recognizing that existing development, streams and other natural features may limit the provision of these connections.  Major and minor arterial streets can be either 2 or 4 lanes with turn lanes as appropriate.

Shown in **Figure 2.11**, the illustrative arterial street network is complemented by a well-connected system of collector and local streets. This system of regional and local streets is multi-modal in design, serving automobiles, motorcycles, trucks, transit, bicycles and pedestrians. The 4-lane regional arterial street design reflects an optimal compromise for all of these modes, accommodating urban levels of traffic, while also allowing for safe and convenient bicycle and pedestrian travel and crossings at major intersections.

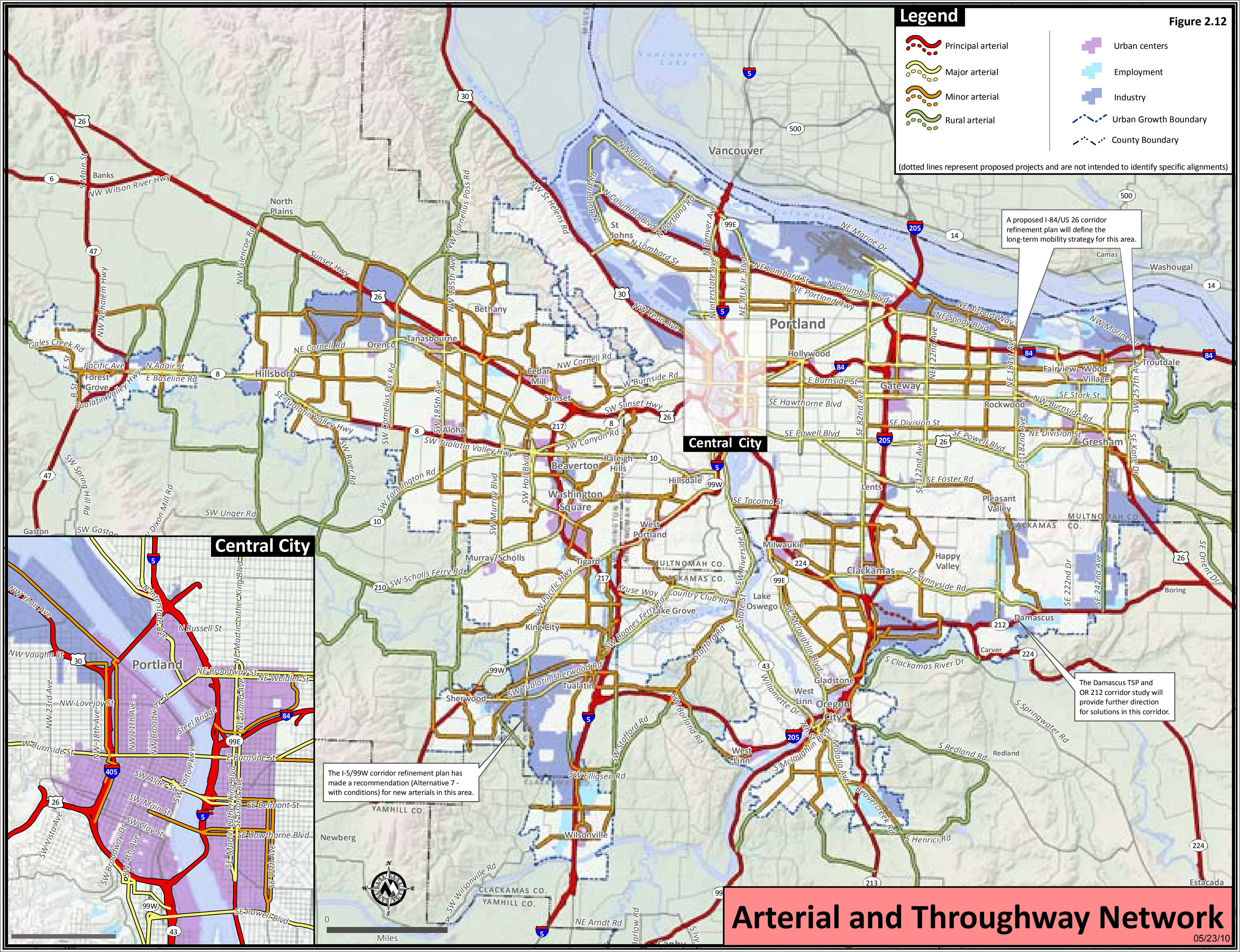
Research and experience have shown that there are optimal street designs for various types of roadways. Local streets and collectors are planned to consist of 2-lanes with turn lanes, major arterials are planned to consist of 4-lanes with turn lanes, throughways are planned to consist of 6-lanes plus auxiliary lanes with grade separated interchanges or intersections. Therefore, before adding additional through lanes beyond the planned system, plans and studies must demonstrate that the additional lanes beyond the planned system do not compromise the function of the roadway for all modes and that the planned system of through lanes, transit service, bike, pedestrian and other parallel arterial, operational, system and demand management solutions do not adequately address transportation needs first, prior to considering widening beyond the planned system to address capacity concerns.

**Figure 2.11**
**Regional Arterial and Throughway Network Concept**




*Note: Conceptual model, illustrating multi-modal transportation corridors and showing ideal spacing of arterial streets. Most of the region's travel occurs off the throughway system, on a network of multi-modal arterial streets. The RTP policy places a new emphasis on ensuring that arterial networks are fully developed as the region grows, providing both local circulation and preserving highway capacity for regional and statewide travel.*

The Regional Street and Throughway Network is shown in **Figure 2.12**.


Legend
Figure 2.12
Principal arterial
Major arterial
Minor arterial
Rural arterial
Urban centers
Employment
Industry
Urban Growth Boundary
County Boundary
(dotted lines represent proposed projects and are not intended to identify specific alignments)
A proposed I-84/US 26 corridor refinement plan will define the long-term mobility strategy for this area.
The Damascus TSP and OR 212 corridor study will provide further direction for solutions in this corridor.
The I-5/99W corridor refinement plan has made a recommendation (Alternative 7 - with conditions) for new arterials in this area.
Central City
Portland
Vancouver
Hillsboro
Beaverton
Gresham
Oregon City
Miles
Arterial and Throughway Network
05/23/10

**Throughways**

Throughways generally span several jurisdictions and often are of statewide importance linking the Metro area with neighboring cities, other parts of the state, other states and Canada. Throughways are planned to consist of six through lanes plus auxiliary lanes, with grade –separated interchanges or intersections, and serve as the workhorse for regional, statewide and interstate travel. Additional lanes may be required in some places based on the importance of a facility to regional and state economic performance, excessive demand, and limitations or constraints that prevent creation of a well-connected street network due to topography, existing neighborhoods, or natural resource areas. Chapter 5 explores where such conditions may exist and defines the parameters for future corridor refinement planning work specific to each regional mobility corridor.

Throughways currently carry between 50,000 to 100,000 vehicles per day, providing for high-speed travel on longer motor vehicle trips and serving as the primary freight routes, with an emphasis on mobility. Throughways help serve the need to move both trucks and autos through the region. Throughways connect major activity centers within the region, including the central city, regional centers, industrial areas and intermodal facilities.

The Throughway design classification implements the Principal Arterial vehicular functional classification. There are three types of Throughways as described in Table 2.6: Freeways - which are limited-access and completely grade separated, Highways and Parkways, which include a mix of separate and at-grade access points. Throughway interchanges are spaced no less than two miles apart.


*Throughways accommodate longer-distance regional and state-wide travel and provide important access to the region's major activity centers, such as downtown Portland, and freight access to industrial areas and freight intermodal facilities.*

**Arterial streets**

Arterial streets are intended to provide general mobility for travel within the region and provide important connections to the throughway system. Arterial streets connect major commercial, residential, industrial and institutional centers with each other and link these areas to the throughway system. Arterial streets are usually spaced about one mile apart and are designed to accommodate motor vehicle, truck, bicycle, pedestrian, and transit travel.

Arterial streets usually carry between 10,000 and 40,000 vehicles per day and allow higher speeds than collector and local streets. Major arterial streets accommodate longer-distance through trips and serve more of a regional traffic function. Minor arterial streets serve shorter trips that are localized within a community. As a result, major arterial streets usually carry more traffic than minor arterial streets. The arterial functional classification is implemented through the Boulevard and Street design classifications described in Table 2.6 and in the glossary.

*Major arterial streets accommodate longer-distance through trips, while minor arterials serve shorter trips within a community.*

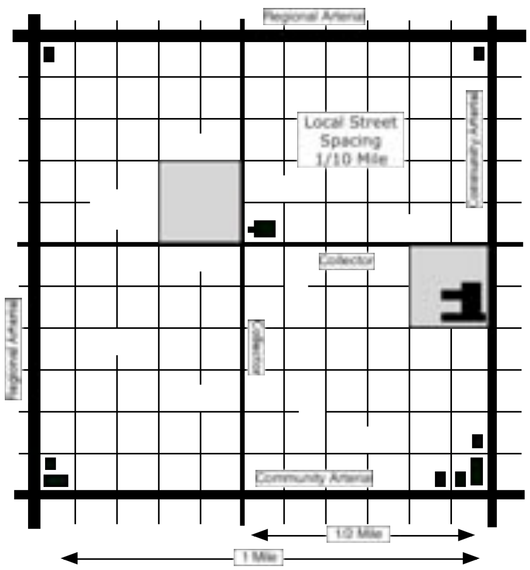
## Improve local and collector street connectivity

Collector and local streets are general access facilities that provide for community and neighborhood circulation. Although they are not part of the regional transportation system (except when located within designated 2040 areas as described in Section 2.4), they play an important supporting role to the design and optimization of the regional transportation system. When local travel is restricted by a lack of connecting routes, local trips are forced onto the arterial and/or throughway networks, in some cases causing congestion on the regional system.

Local jurisdictions are responsible for defining the network of local and collector streets within the mile-spacing grid of arterial streets. The Regional Transportation Functional Plan requires local street spacing of no more than 530 feet in new residential and mixed-use areas, and cul-de-sacs are limited to 200 feet in length to distribute vehicle movements and provide direct bicycle and pedestrian routes. More frequent bike and pedestrian connections are required where collector and local streets cannot be constructed due to existing development or other topographic or environmental constraints.

A goal of the requirements is to encourage local traffic to use local and collector streets to minimize local traffic on regional arterial streets. Local street connectivity also benefits emergency response. Designs should retain the neighborhood character and livability along these local routes. Shown in **Figure 2.13**, the collector and local street network concept provides for bicycle and pedestrian travel and provides for direct access from local street systems to community destinations and transit on regional arterial streets.

**Figure 2.13**
**Collector and Local Streets Network Concept**




*Note: Idealized concept for illustrative purposes showing desired spacing in residential and mixed-use areas to serve local circulation, walking and bicycling. The illustration is modeled after neighborhoods in Southeast Portland.*

### Collector Streets

Collector streets provide both access and circulation. As such, collectors tend to carry fewer motor vehicles at lower travel speeds than arterial streets. Collectors may serve as freight access routes, providing connections from industrial or commercial areas to the arterial network. Collector streets serve neighborhood traffic and commercial/industrial areas. Collectors provide local circulation alternatives to arterial streets. Collectors provide both circulation and access within residential and commercial areas, helping to disperse traffic that might otherwise use the arterial system for local travel. Collectors may also serve as local bike, pedestrian and freight access routes, providing connections to the arterial and transit network. Collectors usually carry between 1,000 and 10,000 vehicles per day, with volumes varying by jurisdiction. Collector streets are ideally spaced at half-mile intervals, or midway between arterial streets. Speeds and volumes on collector streets are moderate.

### Local Streets

Local streets primary provide direct access to adjacent land uses, and usually carry fewer than 1,000 vehicles per day, with volumes varying by jurisdiction. Vehicle speeds on local streets are relatively low, which makes them good candidates for bicyclists and walkers traveling within and between centers.

*Local streets have lower vehicle speeds and less vehicle traffic, serving an important role of supporting bicycle and pedestrian travel in the region.*

While local streets are not intended to serve through traffic, the local street network serves an important role for supporting bicycle and pedestrian travel. As a result, regional local street connectivity policies require communities to develop a connected network of local streets to increase access to designated centers and the regional transit network by non-motorized travelers.

#### Maximize system operations

The RTP calls for maximizing system operations by implementing management strategies prior to building new motor vehicle capacity, consistent with the Federal Congestion Management Process (CMP) and Oregon Transportation Plan policies. In some parts of the Portland metropolitan region, the transportation system is generally complete, while in other parts of the region, especially those where new development is planned, significant amounts of infrastructure will be added. In both contexts, management strategies have great value. Where the system is already built out, such strategies may be the only ways to manage congestion and achieve other objectives. Where growth is occurring, system and demand management strategies can be integrated before and during development to efficiently balance capacity with demand. More information on management strategies can be found Section 2.5.7.

### 2.5.3 REGIONAL TRANSIT NETWORK VISION

Transit is required to implement the 2040 Growth Concept, which calls for focusing future growth in regional and town centers, station communities, and 2040 corridors. A regional transit system, coupled with transit-supportive development patterns and policies that support taking transit, biking, and walking, will help the region:

- be less dependent on automobiles
- lead healthier lives
- reduce overall transportation and housing costs
- reduce greenhouse gas emissions

The regional street system has carried public transit for more than a century, beginning with the streetcars of the late 1800s and evolving into a combination of vans, buses, streetcars and light rail trains today. The Tri-County Metropolitan Transportation District of Oregon (TriMet) is the primary public transportation provider for the metropolitan region. TriMet implements the transit service component of the RTP as described in annual updates and expansions to their five-year service plan, called the Transit Investment Plan (TIP). The South Metro Area Rapid Transit (SMART) district in Wilsonville also provides regional transit service, connecting Wilsonville to downtown Portland. Just outside of the Metro region, Sandy Area Metro and Canby Area Transit provide transit service for Sandy and Canby. Bus service in other surrounding areas, all with connections to TriMet, is also provided by C-TRAN (Clark County, WA), Cherriots (Salem, OR), Tillamook County Transportation District (Tillamook, OR), and Yamhill County Transit Area (Yamhill County, OR).

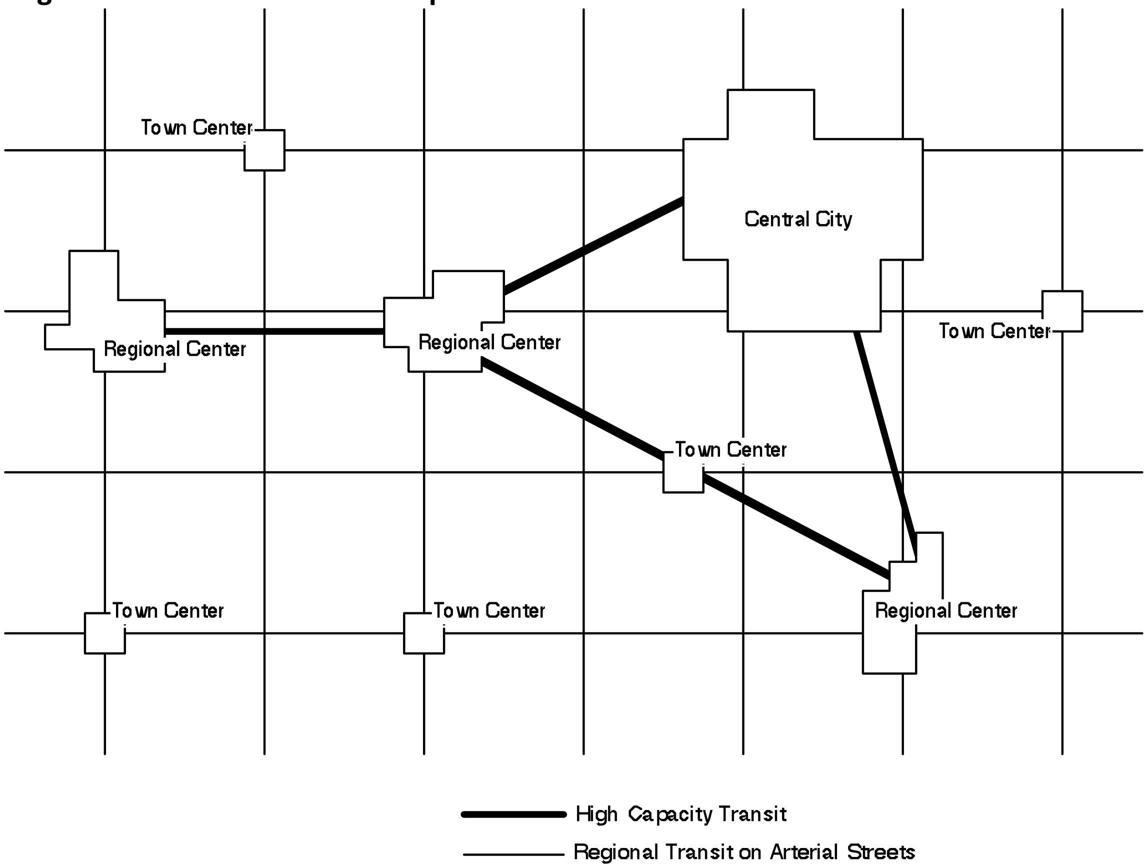

*TriMet implements the majority of the transit service component of the RTP in what is called the Transit Investment Plan (TIP). The SMART district and other transit providers complement TriMet's service.*

**Five policies form the foundation of this vision:**

- **Build the total system and transit-supportive land uses to leverage investments**
- **Expand high capacity transit**
- **Expand frequent service transit**
- **Improve local service transit**
- **Support expanded commuter rail and intercity transit service**

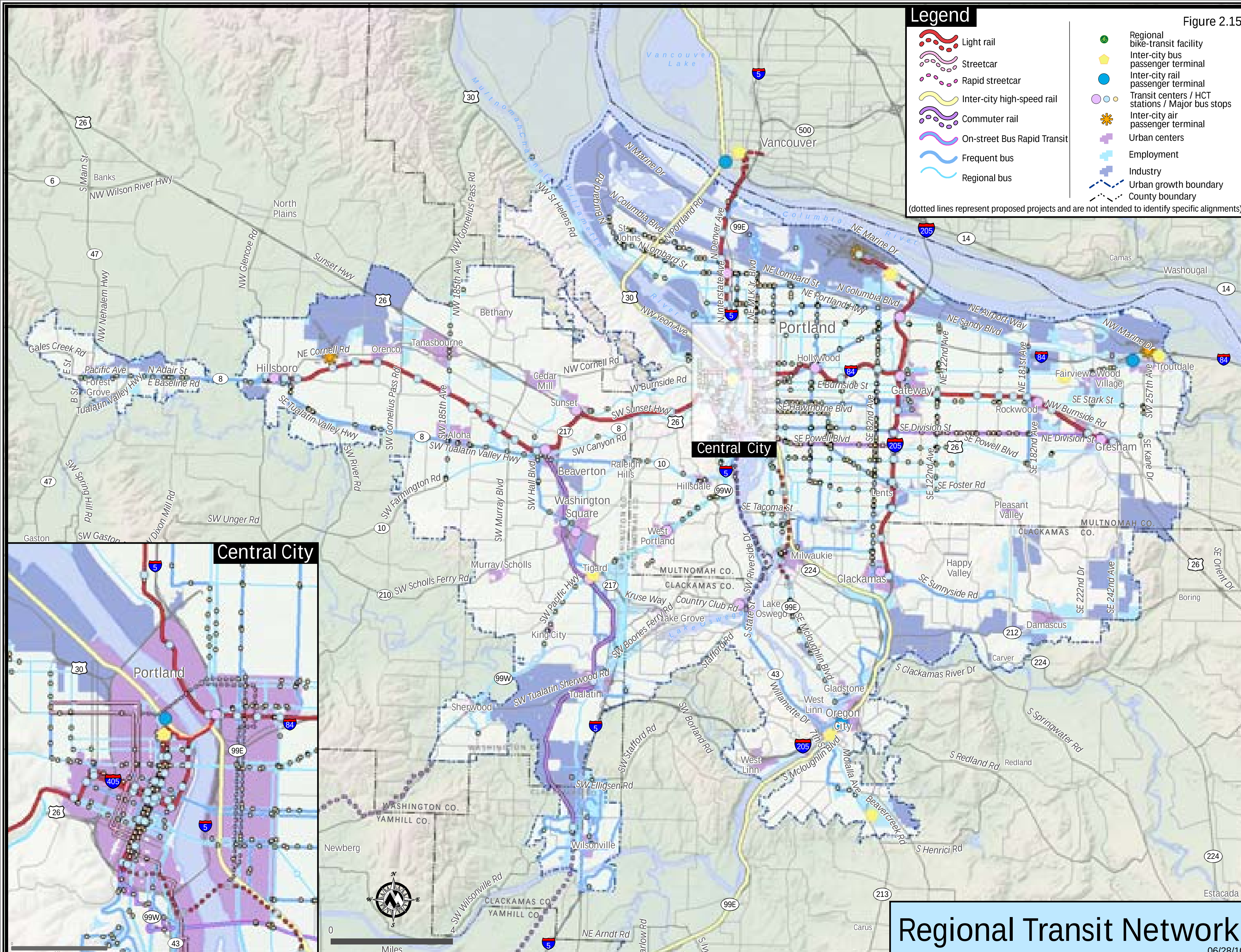
The TriMet TIP is consistent with these policies. The policies aim to provide transit as an attractive and accessible travel option for all people in the Metro region, optimize existing transit system operations and ensure transit-supportive land uses are implemented to leverage the region's current and future transit investments. Figure 2.14 shows how the regional transit system concept would connect the 2040 centers.

**Figure 2.14**
**Regional Transit Network Concept**




*The 2040 Growth Concept sets forth a vision for connecting the central city to regional centers like Gresham, Clackamas and Hillsboro with high capacity transit. The RTP expands this vision to include a complete network of regional transit along most arterial streets to better serve suburban communities. Existing land use mixes and future transit-oriented development potential should be considered and incorporated into service and station location decisions.*

The Regional Transit Network is shown in **Figure 2.15**.



Legend
Figure 2.15
Light rail
Streetcar
Rapid streetcar
Inter-city high-speed rail
Commuter rail
On-street Bus Rapid Transit
Frequent bus
Regional bus
Regional bike-transit facility
Inter-city bus passenger terminal
Inter-city rail passenger terminal
Transit centers / HCT stations / Major bus stops
Inter-city air passenger terminal
Urban centers
Employment
Industry
Urban growth boundary
County boundary
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Central City
Portland
Vancouver
Vancouver Lake
Hillsboro
Forest Grove
Banks
North Plains
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
Aloha
Beaverton
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray/Scholls
Tigard
King City
Tualatin
Sherwood
Wilsonville
Lake Oswego
Lake Grove
Milwaukie
Clackamas
Happy Valley
Gladstone
West Linn
Oregon City
Lents
Gateway
Hollywood
Rockwood
Gresham
Fairview - Wood Village
Troutdale
Pleasant Valley
Damascus
Carver
Boring
Redland
Estacada
Canby
Camas
Washougal
Gaston
Newberg
St Johns
MULTNOMAH CO.
CLACKAMAS CO.
WASHINGTON CO.
YAMHILL CO.
Miles
Regional Transit Network
06/28/10

## Build the total transit system and transit-supportive land uses to leverage investments

Building the total transit system is based on providing frequent, reliable bus and rail service during all times of the day, every day of the week. However, it goes far beyond this, requiring actions on behalf of the region and all jurisdictions, not just the transit agency. All transit trips begin and end with different modes of access even if stations are mere steps from origins and destinations. Riders access transit via walking, bicycling, bus, rail, carpools and private automobiles.

At some point in their trip, all transit riders are pedestrians. The environment where people walk to and from transit facilities is a significant part of the overall transit experience. An unattractive or unsafe walking environment discourages people from using transit, while a safer and more appealing pedestrian environment may increase ridership. Likewise, high quality local and regional bicycle infrastructure extends the reach of the transit system, allowing more people to access transit from longer distances. Table 2.16 depicts the Metro region's priorities for providing multi-modal access to the region's transit service. It prioritizes walking and biking to transit and deemphasizes driving to transit.

**Figure 2.16**
**Regional Transit Access Priorities**


It is important to invest in making the whole trip more convenient and attractive: clear customer information; easy access to stops (including safe access to stations and secure bicycle parking[8]), comfortable places to wait for transit; and modern, well-maintained vehicles.

[8] See Section 2.4.2.4 for policy guidance on the bicycle-transit connections.

It is also important to ensure land uses are transit-supportive to leverage and protect transit investments. Adjacent land uses, block size, street connectivity, and parking management affect the success of transit service. Policies and investments that make transit work and not work are outlined in **Table 2.7**.

**Table 2.7**
**What Works and Doesn't Work to Support Direct Transit Service**

| Characteristic | Works | Doesn't Work |
|---|---|---|
| **Density** | High | Low |
| **Street layout** | Small blocks<br>Grid system | Long, winding streets<br>Cul-de-sacs, dead-end streets |
| **Mix of uses** | Mixed use (e.g., commercial, residential, and office uses) | Single use (e.g., all residential, all industrial) |
| **Pedestrian environment** | Wide sidewalks<br>Slow moving traffic<br>Street amenities (e.g., benches, street trees, pedestrian-scale lighting)<br>Well-marked intersections with signalized crossings | Narrow or no sidewalks<br>Fast moving traffic<br>Poor lighting<br>No intersection markings and long pedestrian wait times |
| **Site design** | Buildings front the street and entrances | Buildings set back from the street and surrounded by surface parking |
| **Parking** | Limited<br>Fee-based parking | Abundant<br>Free |

*Source: TriMet*

Transit-supportive development patterns include:

*Development oriented transit promotes the seamless integration of land use and transit*

- An urban form and densities that generate a high number of transit riders.
- A mix of uses, and a balance of jobs and housing, that creates a place where activity occurs at least 18 hours a day.
- Well-designed streets and buildings that encourage pedestrian movement.
- Streets that can accommodate 40-foot buses.
- Safe, direct and convenient pedestrian and bicycle access, within communities and to transit stops.

- Street connectivity with good pedestrian and bike paths to extend the effective coverage of bus and rail service.
- Limited and managed auto parking.

Areas with low population and/or employment densities, abundant free parking, and with difficult access to transit stops generate fewer riders than areas with transit-supportive development. When fewer riders are generated, it costs more per ride to provide transit service than it does in transit-supportive areas. Ridership productivity is a key criterion in assessing the benefits of service improvements and new transit investments.

### Expand high capacity transit

As part of the RTP update, the region undertook a comprehensive assessment of the existing and potential future high capacity transit network. The results of this effort are captured in the High Capacity Transit (HCT) System Plan and incorporated into this section.


*Investing in HCT helps the region concentrate growth and development in its centers and corridors. This in turn minimizes the need to expand the urban growth boundary and supports the region's efforts to reduce greenhouse gas emissions.*

HCT investments help the region concentrate development and growth in its centers and corridors. The regional transit system concept calls for fast and reliable HCT service between the central city and regional centers. HCT service carries high volumes of passengers quickly and efficiently, and serves a regional travel market with relatively long trip lengths to provide a viable alternative to the automobile in terms of convenience and travel time.

High capacity transit provides the backbone of the transit network connecting the Portland central city, regional centers, and passenger intermodal facilities. It operates on a fixed guideway or within an exclusive right-of-way, to the extent possible. High capacity transit strives for frequencies of 10 minutes or better during the day and 15 minutes on weekends.

Passenger infrastructure at HCT stations and within station communities often include enhanced amenities, such as real-time schedule information, ticket machines, special lighting, benches, shelters, bicycle parking[9], civic art and commercial services. Using transit signal priority at at-grade crossings and/or intersections preserves speed and schedule reliability.

In select suburban locations, park-and-ride facilities provide vehicular access to the high capacity transit network. These services require a pedestrian and bicycle system that provides access from adjacent streets and land uses to the regional transit network, especially for areas that cannot be well-served by local transit due to topography, street configuration, or lack of density.

To optimize and leverage transit supportive land uses, the RTP calls for alignments and station locations be oriented towards existing and future high density, mixed-use development. To this end, urban form and connectivity, redevelopment potential, market readiness, public incentives and infrastructure financing should all be considered during the corridor refinement and alternatives analysis phases of project development. High capacity transit investments are informed and prioritized by the System Expansion Policy.

Types of high capacity transit facilities and services include:

- Light Rail Transit (MAX)
- Rapid Streetcar (Streetcars running in mostly exclusive right-of-way so that they are able to travel faster safely)
- Bus Rapid Transit (limited stop, all day bus service with significant portions of the line running in transit-only right-of-way).
- On-Street Bus Rapid Transit (limited stop, all day bus service mostly operating in mixed traffic with focused transit priority treatments such as queue jump lanes). Due to its flexibility, On-Street Bus Rapid Transit can have attributes that are more like High Capacity Transit of like Frequent Service Bus and may be considered as a mode in either depending on circumstances.
- Commuter Rail (WES)
- Interurban Passenger Rail (e.g., Amtrak or regional rail systems in other regions)
- Intermodal Passenger Facilities (e.g., Union Station and Greyhound)
- Bicycle stations/parking
- Park-and-ride lots
- Transit Centers
- Transit Stations

[9] See section 2.4.2.4 for description of TriMet Bicycle Parking Design Guidelines.

*The RTP calls for HCT alignments and station locations to be oriented towards existing and future high density, mixed-use development.*

***HCT Plan and Priority Tiers***

In June and July 2009, the Joint Policy Advisory Committee on Transportation and the Metro Council adopted the Regional High Capacity Transit (HCT) System Plan. The HCT Plan identifies corridors where new HCT is desired over the next 30 years. It prioritizes corridors for implementation, based on a set of evaluation criteria, and sets a framework to advance future corridors, consistent with the goals of the Regional Transportation Plan (RTP) and the region's 2040 Growth Concept.

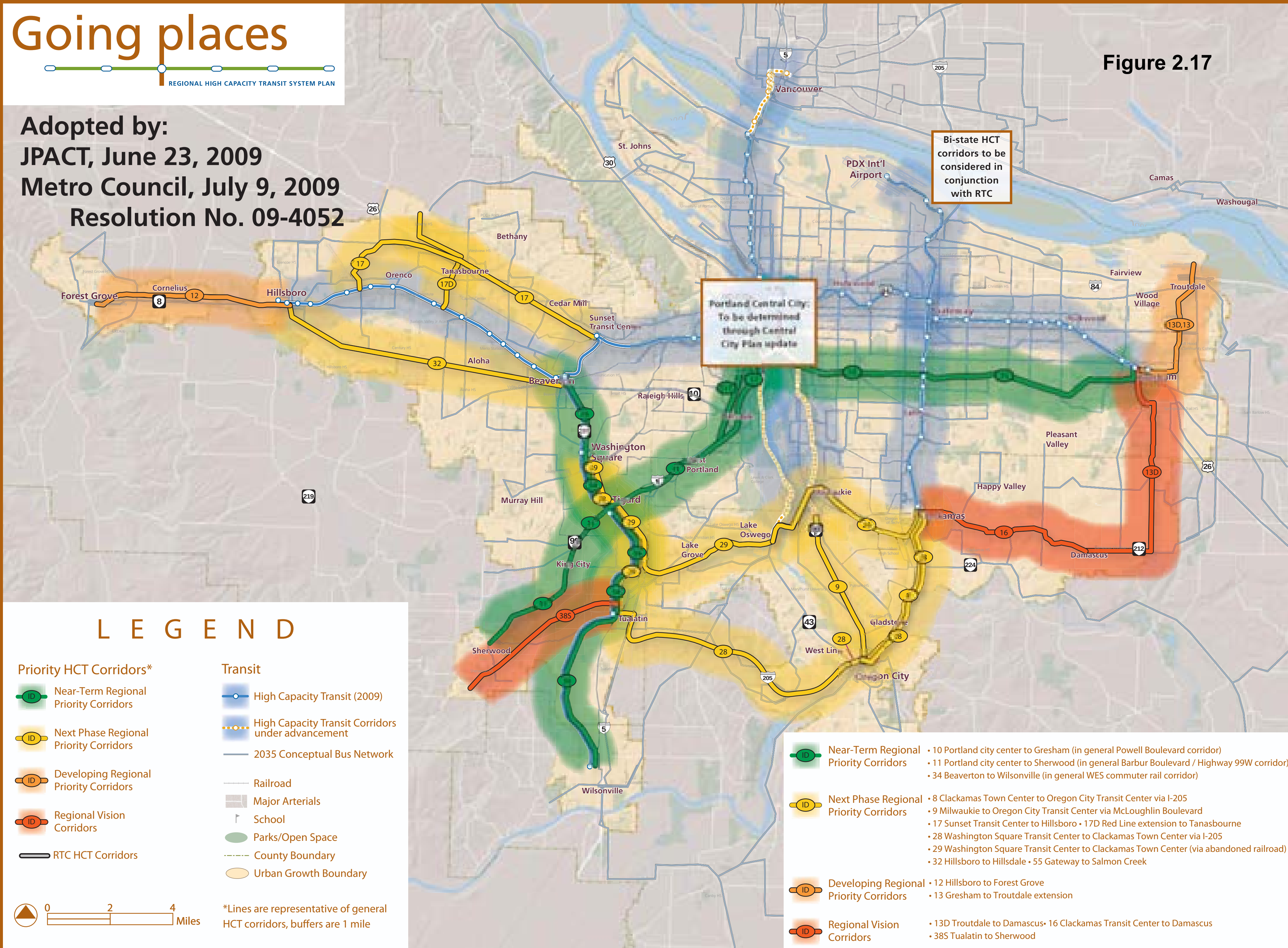
The HCT system plan provides the framework for HCT system investments to be implemented as part of a broad corridor strategy that includes supportive land use and transit-oriented development (TOD), comprehensive parking programs, access systems for pedestrians and cyclists, park and rides and feeder bus networks. It identifies near- and long-term regional HCT priorities and creates a System Expansion Policy that will serve as a framework to advance future regional HCT corridors by setting targets and defining regional and local actions. The HCT Plan conducted much of its analysis using light rail as the representative HCT mode, but the corridors could be developed in a number of modes including light rail, bus rapid transit (on-street or exclusive), commuter rail, and rapid streetcar. The HCT plan report and technical evaluation results are included in the Appendix.

As described above, regional HCT system corridors are grouped into one of four priority tiers, along with specific targets and various steps local jurisdictions could follow to advance a project to a higher tier. The four tiers are based on an HCT corridor's readiness and regional capacity to study and implement HCT projects. Tiers would be reassessed as part of each RTP update or by RTP amendment. These tiers would remain static and contain a similar number of projects over time.

The four tiers are:

- Near-term regional priority corridors: Corridors most viable for implementation in next four years.
- Next phase regional priority corridors: Corridors where future HCT investment may be viable if recommended planning and policy actions are implemented.
- 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 based on political aspirations to create HCT supportive land uses.
- Regional vision corridors: Corridors where projected 2035 land use and commensurate ridership potential are not supportive of HCT implementation.

The HCT System Plan corridors are shown in **Figure 2.17.**



Going places
REGIONAL HIGH CAPACITY TRANSIT SYSTEM PLAN
Figure 2.17
Adopted by:
JPACT, June 23, 2009
Metro Council, July 9, 2009
Resolution No. 09-4052
Bi-state HCT corridors to be considered in conjunction with RTC
Portland Central City: To be determined through Central City Plan update
Vancouver
St. Johns
PDX Int'l Airport
Camas
Washougal
Bethany
Orenco
Tanasbourne
Cedar Mill
Sunset Transit Center
Forest Grove
Cornelius
Hillsboro
Aloha
Raleigh Hills
Washington Square
Murray Hill
King City
Sherwood
Tualatin
Wilsonville
Lake Oswego
Lake Grove
West Linn
Oregon City
Happy Valley
Pleasant Valley
Damascus
Fairview
Wood Village
Troutdale
LEGEND
Priority HCT Corridors*
Near-Term Regional Priority Corridors
Next Phase Regional Priority Corridors
Developing Regional Priority Corridors
Regional Vision Corridors
RTC HCT Corridors
Transit
High Capacity Transit (2009)
High Capacity Transit Corridors under advancement
2035 Conceptual Bus Network
Railroad
Major Arterials
School
Parks/Open Space
County Boundary
Urban Growth Boundary
0 2 4 Miles
*Lines are representative of general HCT corridors, buffers are 1 mile
Near-Term Regional Priority Corridors
• 10 Portland city center to Gresham (in general Powell Boulevard corridor)
• 11 Portland city center to Sherwood (in general Barbur Boulevard / Highway 99W corridor)
• 34 Beaverton to Wilsonville (in general WES commuter rail corridor)
Next Phase Regional Priority Corridors
• 8 Clackamas Town Center to Oregon City Transit Center via I-205
• 9 Milwaukie to Oregon City Transit Center via McLoughlin Boulevard
• 17 Sunset Transit Center to Hillsboro • 17D Red Line extension to Tanasbourne
• 28 Washington Square Transit Center to Clackamas Town Center via I-205
• 29 Washington Square Transit Center to Clackamas Town Center (via abandoned railroad)
• 32 Hillsboro to Hillsdale • 55 Gateway to Salmon Creek
Developing Regional Priority Corridors
• 12 Hillsboro to Forest Grove
• 13 Gresham to Troutdale extension
Regional Vision Corridors
• 13D Troutdale to Damascus• 16 Clackamas Transit Center to Damascus
• 38S Tualatin to Sherwood

***System Expansion Policy***

Light rail and other high capacity transit services have become popular in this and other regions over the past two decades. The ability of this region to grow toward the 2040 Growth Concept vision hinges upon the ability to develop and sustain high capacity transit. However, the number of additional high capacity transit corridors that can be implemented in this region are limited by several factors, including, though not limited to:

- Local funding and community support.
- Competition with other regions for scarce federal funding.
- Institutional and financial capacity to develop, build and operate additional high capacity corridors.

Because this region cannot implement all of the desired high capacity corridors in a short time, it is necessary to prioritize which corridors are completed first. To date, this process has hinged on regional decision-making, system needs, financial and political feasibility, and opportunity. The HCT Plan, as a component of the RTP, evaluated potential HCT corridors and ranked them based on a range of measures - many of which ultimately hinge on ridership potential.

The System Expansion Policy (SEP) seeks to extend the work of the HCT Plan and allow for refinement with each RTP update (or through mid-term RTP amendments if needed). The SEP is intended to provide policy direction on the range of factors that should be considered when determining the next high capacity transit corridor to pursue, including:

*Pedestrian oriented design and blocks help bring people (density) and activities (diversity) to the transit system*

- Community factors that center on local land use aspirations, transit-supportive land uses, building-orientation and block sizes, transportation infrastructure (e.g., sidewalks, bicycle facilities and street connectivity) parking and demand management policies, and design factors that will leverage HCT investments and increase ridership potential within a particular corridor. Generally, these factors are under the control of local governments and are implemented through local land use and transportation plans. If successfully implemented, these factors would bring a given HCT corridor and the communities connected by that corridor closer to the 2040 Growth Concept vision.
- Readiness factors such as political commitment, community support and partnerships needed to pursue the long and sometimes difficult process that even the most popular transportation investments must work through.

- Regional factors such as financial capacity and regional consensus on the appropriate next corridor.

The final decision on which corridor to pursue at any given point must rest on all of the factors. To aid this decision-making, the HCT Plan focuses on the technical factors. It will be updated with each RTP update, though the specific measures and methodologies are expected to evolve over time through a collaborative regional decision-making process. Potential HCT corridors can move closer to implementation, advancing from one tier to the next through a set of coordinated TriMet, Metro, ODOT and local jurisdiction actions that address the remaining factors. HCT corridors will be analyzed for a wide range of performance characteristics, including ridership and potential to compete for funding, before they are designated as the current priority for HCT development.

Chapter 5 of the RTP and the Regional Transportation Functional Plan will include guidance to help local jurisdictions, Metro and TriMet work together to achieve the community, readiness and regional factors listed above. This can include Memorandum of Understandings (MOUs) and eventually Intergovernmental Agreements (IGAs) that harness the synergy between community aspirations, the ability to develop high capacity transit to further those aspirations and other needed local, regional and state actions. It will also include specific targets to measure corridor readiness and contribution to regional goals.

The factors are complex and stem from the interactions of private individuals and businesses, local jurisdictions, and regional agencies. The intention of the guidance is that those jurisdictions which are achieving positive outcomes in these factors and/or have the aspiration to create the most improvement on these factors are simultaneously improving their own communities, creating more transit-friendly environments, and also may be able to pursue a near-term high capacity transit project along with the other jurisdictions in the corridor.

*The RTP vision is to complete a network of regional transit along most arterial streets in the region to better serve suburban communities. Allowing mixed-use development and providing sidewalk and bicycle connections to bus stops and transit stations are important local strategies that leverage transit.*

### Expand regional and local frequent transit service

Frequent service transit has service running every 15 minutes or better from the early morning to late in the evening, seven days a week. Its elements include additional service, reliability improvements, distinctive branding, improved passenger facilities at bus stops, enhanced pedestrian access and modern low-floor buses. Frequency is especially important for attracting riders who take short, local trips, because the time riders spend waiting for a bus to take a short trip is a proportionately larger component of the total travel time than it is for longer trips (that is, a ten minute wait for a five-minute ride is less attractive than a ten-minute wait for a sixty-minute ride).

*Frequent transit service is important for attracting riders who take short and local trips.*

In parts of the region where development focuses on regional and town centers and station communities, the RTP recommends providing radial frequent transit service to serve these centers. In 2040 corridors, main streets and centers, the RTP recommends supporting transit by providing transit-supportive development and well-connected street systems to allow convenient bicycle and pedestrian access.

Frequent bus service is appropriate when high ridership demand is demonstrated or projected, the streets are pedestrian-friendly, there are high proportions of transit-dependent residents, the lines connect to existing or proposed HCT corridors, and/or it serves multiple centers and major employers. Exhibiting many of the same service characteristics as frequent bus, streetcar service functions primarily as a connection within and between 2040 centers and corridors.

Preferential treatments, such as transit signal priority, covered bus shelters, curb extensions, special lighting, enhanced sidewalks, protected crosswalks and bikeways, are all fundamental to making the frequent service bus and streetcars elements of the transit system function at its highest level. In select suburban locations, park-and-ride facilities may provide vehicular access to the frequent service network, especially for areas that cannot be well-served by local transit due to topography, street configuration, or lack of density.

Types of frequent transit services and facilities include:

- Frequent bus
- On-Street Bus Rapid Transit
- Streetcar (Local)
- Regional transit centers and stops
- Bicycle stations/parking
- Park-and-ride facilities

### Improve local transit service

The local transit network provides basic service and access to local destinations and the frequent and high capacity transit network. Service span and frequencies vary based on the level demand for the service. The local transit network ensures that the majority of the region's population has transit service available to them.

Local transit service is appropriate where there is some demand for transit service, but not enough to support frequent service. Local transit is designed to provide full transit service coverage to the region. Transit preferential treatments and passenger facilities are appropriate at high ridership locations. Sidewalk connectivity, protected crosswalks and bikeways are all fundamental to making the frequent service bus and streetcars elements of the transit system function at its highest level.

Types of local transit services include:

- Local Bus
- Para-Transit
- Tram
- Employer Shuttle Service

*The aerial tram is one type of local transit service that connects the Oregon Health Sciences University to Portland's South Waterfront district.*

### Right-of-Way Needs

The components of the regional transit system have different right-of-way needs. The regional transit system has a functional hierarchy similar to that of the regional street and throughway network. **Table 2.8** shows the regional transit service types and right-of-way treatments.

**Table 2.8**
**Regional transit service types and right-of-way treatment**

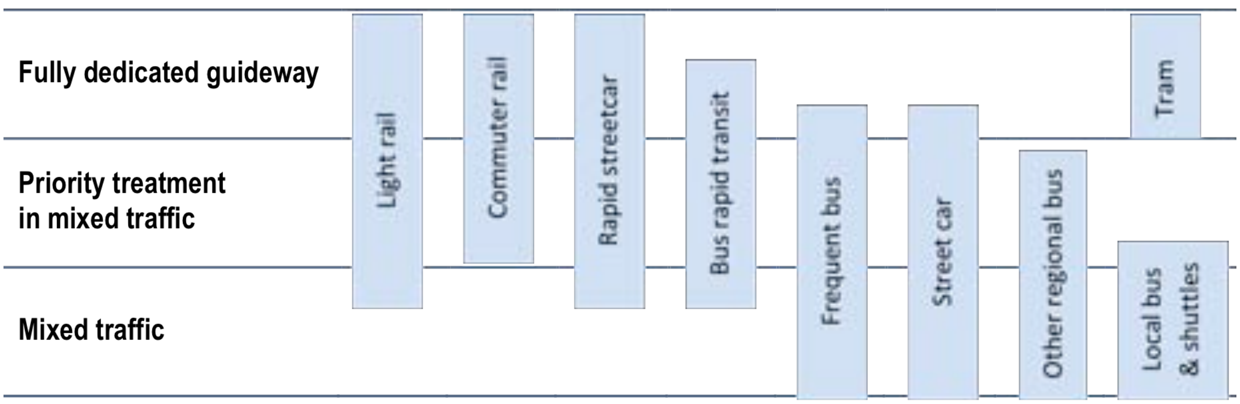



Table Notes:

- Commuter rail operates in ROW separated from street traffic, but in some cases may share ROW with main and branch railroad lines.
- Light rail transit, bus rapid transit and rapid street car modes generally operate in ROW separated from street traffic, but in some cases may share ROW with arterial, collector and local streets.
- Decisions about which modes are accommodated and which mode gets priority treatment within a particular roadway or rail ROW segment are made during the Corridor Refinement Plan or Alternative Analysis phase, and must consider the motor vehicle, freight, bicycle, and pedestrian functions/designations of the underlying roadway or rail line, and are subject to approval by the owner/operator of the underlying roadway or rail line.
- Refer to the glossary for detailed definitions of each mode.
- Bus rapid transit as shown in this table can include exclusive Bus Rapid Transit, as treated in the HCT Plan, and in fully or mostly dedicated right-of-way, as well as On-Street Bus Rapid Transit, which is mostly in mixed traffic.

## Support expanded commuter rail and intercity transit service to neighboring communities

Intercity passenger rail and bus service to communities outside of the region provides an important connection to the regional transit network. A high level assessment of potential demand for commuter rail outside of the Portland urban growth boundary was conducted as part of the HCT System Plan.

The demand estimates of ridership potential are highly conceptual and were developed only to determine the order of magnitude differences between corridors, not as actual predictions of ridership. The estimates are not based on detailed alignment, station location or service concepts. Rather, they estimate the potential to attract riders based on comparable commuter rail services in operation in the United States and the overall demand for work travel between the major corridor markets.

Key findings from this analysis are summarized below:[10]

- **Nonviable corridors.** Hood River, Scappoose and Sandy are not viable commuter rail markets given current and projected conditions. Even considering a very low capital cost to construct these corridors, any metric of cost per passenger served would be very high.

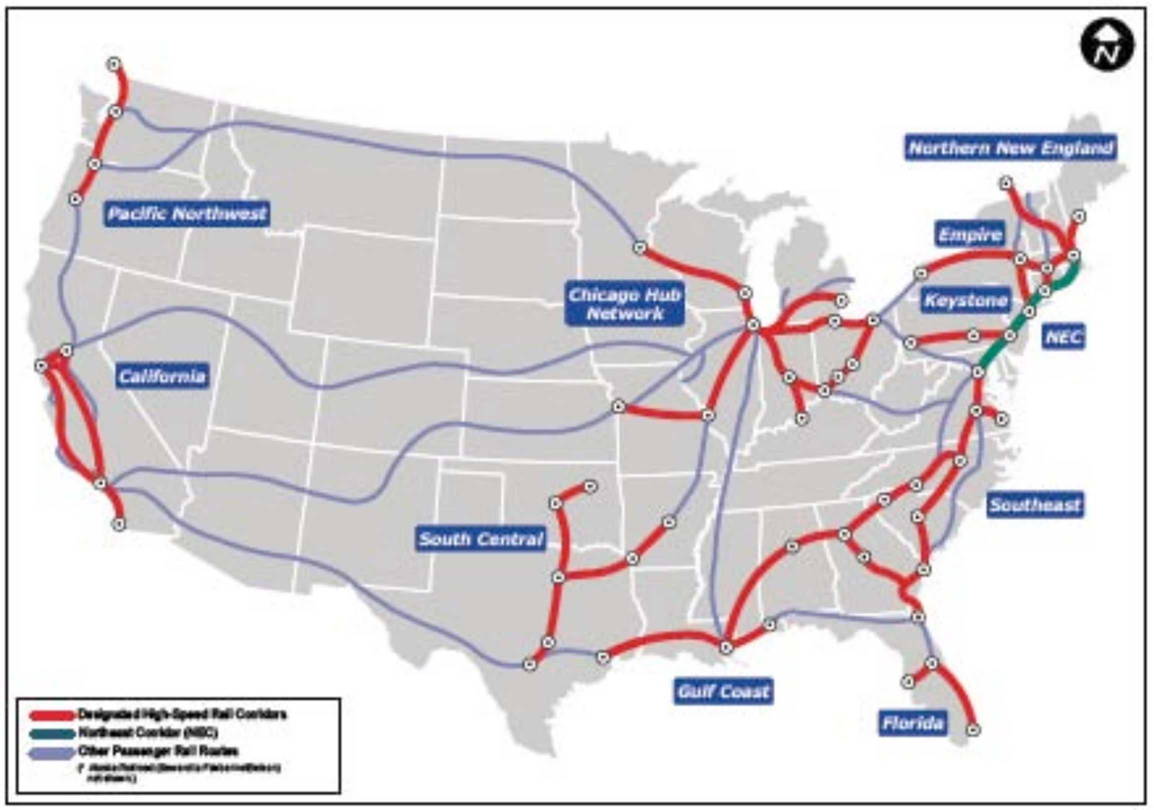
- **Potential corridor.** A potential future commuter rail line to Newberg may be feasible in the long term. Even though the riders per mile analysis looks favorable due to the relatively short distance of the line, the overall population in the rail shed is very low compared to other corridors, and overall ridership is relatively low. Metro, regional partners and corridor communities should consider right of way preservation planning for this corridor and consider land use planning activities that focus on transit supportive development around potential future commuter rail station areas.

- **Promising corridor**. Salem/Kaiser is the most promising of the corridors evaluated. In addition to the highest market potential, this corridor has a number of favorable aspects: there is existing Amtrak passenger rail service in the corridor, this is a lightly used freight corridor that was evaluated in the 2001 Oregon Rail study as a potential commuter rail corridor, and an alignment could easily tie into the WES commuter rail service now operating to Wilsonville. If the region or state chose to focus on the development of inter-regional rail service, this alignment should take priority. After coming to a similar conclusion about this corridor, the Oregon State Legislature recently passed House Bill 2408, which directs ODOT to study the possible extension of commuter rail service from Wilsonville to Salem.

[10] More detailed information on ridership potential can be found in the HCT System Plan Summary Report.

In addition, the Pacific Northwest Corridor is one of ten corridors identified for potential high-speed rail investments to better connect communities across America. Shown in **Figure 2.18**, this corridor provides an important intercity rail connection between Eugene, Oregon and Vancouver, British Columbia. More work is needed to determine what partnerships, infrastructure investments and finance strategies are needed to support this level of service.

**Figure 2.18**
**U.S. Intercity Passenger Rail Network**




*Source: U.S. Department of Transportation, Vision For High-Speed Rail in America (April 2009)*

## 2.5.4 Regional Freight Network Vision

The Portland –Vancouver region is a globally competitive international gateway and domestic hub for commerce. The multimodal freight transportation network is a foundation for the region's economic activities and we must strategically maintain, operate and expand it in a timely manner to ensure a vital and healthy economy.

### Regional Freight Network Concept

The Regional Freight Plan relies on a coordinated, integrated, multimodal and collaborative approach to integrating freight considerations into the multi-purpose transportation system and the larger land use issues in the region. It addresses the needs for freight through-traffic as well as regional movements, and access to employment and industrial areas, and commercial districts.

The Regional Freight Network Concept contains policy and strategy provisions to develop and implement a coordinated and integrated freight network that helps the region's businesses attract new jobs and remain competitive in the global economy.

**Trade-dependent state economies**

*Oregon is ninth and Washington is first in the United States**

**Exports: In** 2007 Oregon state exports totaled $16.5 billion. In 2007, Portland/Vancouver regional exports totaled $15.8 billion.

**Businesses:** Oregon companies depend on Portland's marine, rail, air and road facilities for access to resources and markets: onions, apples, hazelnuts, grass seed, seafood, wood products, Les Schwab, Fred Meyer, Intel, Nike, Columbia Sportswear, etc.

**Jobs:** One of five statewide jobs relies on an effective transportation network to move goods**.** In 2008, 14,800 direct jobs and $530 million in direct income were tied to marine and air terminals owned by the Port of Portland. Sharing the same regional and national transportation network, the Port of Vancouver (2005) generated nearly 2,300 direct marine and industrial jobs.

**Local revenue:** $182 million in local/state taxes generated by the Port of Portland (2008).

Sources: U.S. Department of Commerce Industry Trade Data and Analysis; EDRG White Paper (2008); Port of Portland (2009); Port of Vancouver (2009); Martin & Associates (2006, 2009).
* "Trade-dependency" rankings are based on value of state exports as a percentage of gross state product.

**The Regional Freight and Goods Movement Task Force identified the following policies to serve as the foundation of this vision:**

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

## Use a systems approach to plan for and manage the freight network

A comprehensive, multi-modal systems approach is central to planning and managing the region's multimodal freight transportation infrastructure. This approach provides a strong foundation for addressing core throughway system bottlenecks, recognizing and coordinating both regional and local decisions to maintain seamless flow and access for freight movement that benefits all.

The transport and distribution of freight occurs via a combination of interconnected publicly- and privately-owned networks and terminal facilities. Rivers, mainline rail, pipeline, air routes, and arterial streets and throughways connect our region to international and domestic markets and suppliers beyond our boundaries.

Inside our region, throughways and arterial streets distribute freight moved by truck to air, marine, and pipeline terminal facilities, rail yards, industrial areas, and commercial centers. Rail branch lines connect industrial areas, marine terminals, and pipeline terminals to rail yards. Pipelines transport petroleum products to and from terminal facilities.

**Better integrate freight issues in regional and local planning and communication**
Potential freight impacts should be considered in all modal planning and funding, policy and project development and implementation and monitoring. This also means better informing the region's residents and decision makers about the importance of freight movement on our daily lives and economic well-being. Metro will work with its transportation partners to improve the level of freight information available decision-makers, the business community and the public.

**Figure 2.19** shows the components of the regional freight network and their relationships.

**Figure 2.19**
**Regional Freight Network Concept**

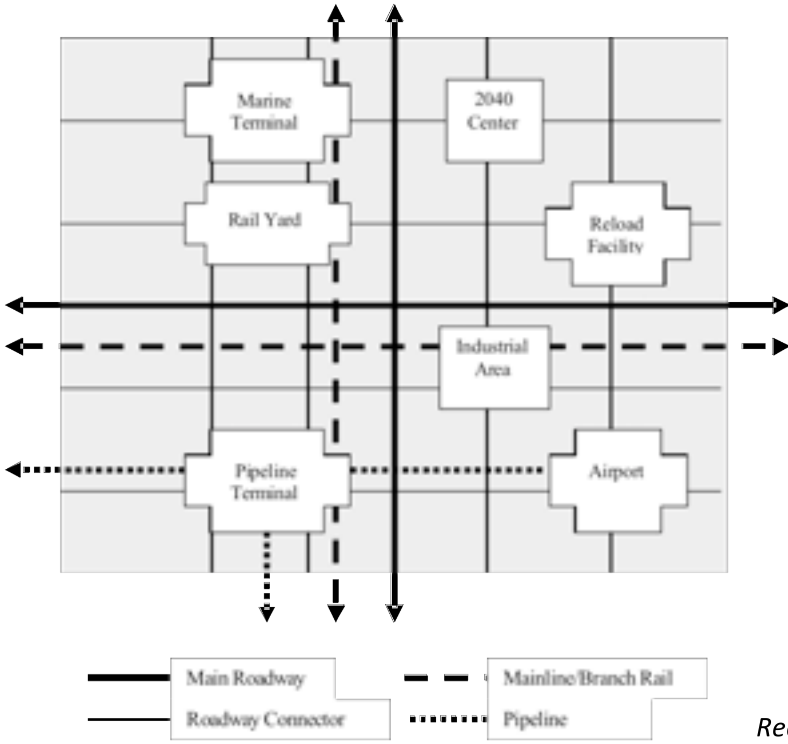


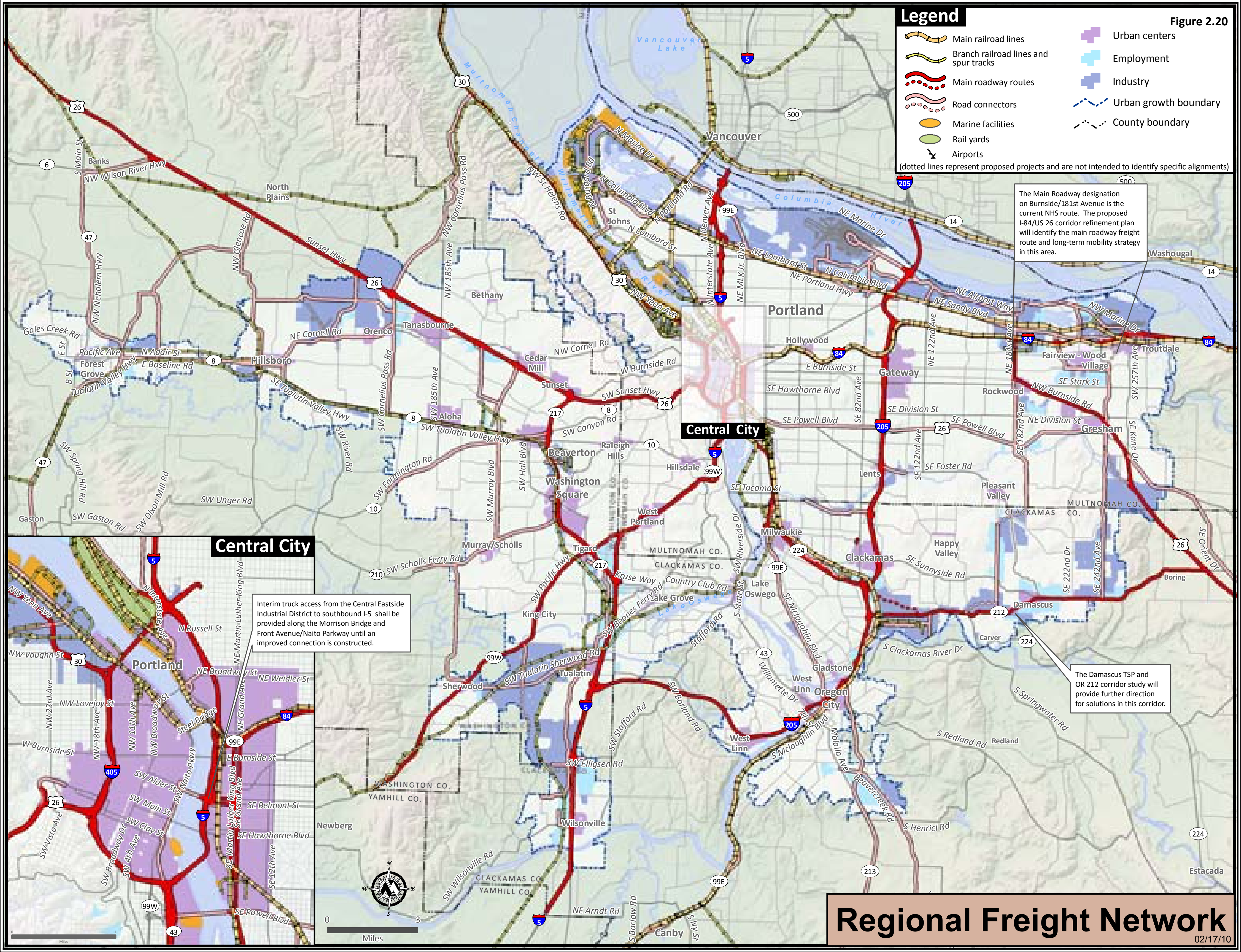

**Figure 2.20** applies the regional freight network concept on the ground to identify the transportation networks and facilities that serve our region and state's freight mobility needs.

*Reducing delay and increasingly reliability of the freight network is critical for the health our regional economy.*

## Reduce delay and increase reliability

The 2005 Cost of Congestion to the Economy of the Portland Region Study reported that our region has a higher than average dependency on traded sector industries, particularly computer/electronic products, wholesale distribution services, metals, forestry/wood/paper products, and publishing; business sectors that serve broader regional, national, and international markets and bring outside dollars into the region's economy.

These industries depend on a well-integrated and well-functioning international and domestic transportation system to stay competitive in a global economy.


Legend
Figure 2.20
Main railroad lines
Branch railroad lines and spur tracks
Main roadway routes
Road connectors
Marine facilities
Rail yards
Airports
Urban centers
Employment
Industry
Urban growth boundary
County boundary
(dotted lines represent proposed projects and are not intended to identify specific alignments)
The Main Roadway designation on Burnside/181st Avenue is the current NHS route. The proposed I-84/US 26 corridor refinement plan will identify the main roadway freight route and long-term mobility strategy in this area.
The Damascus TSP and OR 212 corridor study will provide further direction for solutions in this corridor.
Interim truck access from the Central Eastside Industrial District to southbound I-5 shall be provided along the Morrison Bridge and Front Avenue/Naito Parkway until an improved connection is constructed.
Central City
Portland
Vancouver
Central City
Hillsboro
Beaverton
Washington Square
Tigard
Tualatin
Sherwood
Wilsonville
King City
Lake Oswego
Milwaukie
Clackamas
Oregon City
West Linn
Gladstone
Gresham
Gateway
Troutdale
Fairview - Wood Village
Rockwood
Happy Valley
Damascus
Hollywood
Lents
Pleasant Valley
Tanasbourne
Orenco
Bethany
Cedar Mill
Sunset
Raleigh Hills
Hillsdale
West Portland
Murray/Scholls
Lake Grove
Forest Grove
Banks
North Plains
Gaston
Newberg
Canby
Carver
Boring
Redland
Estacada
Washougal
St Johns
Aloha
0 3 Miles
Regional Freight Network
02/17/10

As an international gateway and domestic freight hub, the region is particularly influenced by the dynamic trends affecting distribution and logistics. As a result of these global trends, U.S. international and domestic trade volumes are expected to grow at an accelerated rate. Trade volumes in Portland are expected to double by 2035, to 600 million tons annually.[11] The region's forecasted population and job growth – an additional 1.13 million residents and 767,000 jobs by 2035[12] – along with the associated boost in the consumption of goods and services are significant drivers of projected increases in local freight volume.

It is critical to maximize system operations and create first-rate multimodal freight networks that reduce delay, increase reliability, maintain and improve safety and provide cost-effective choices to shippers. In industrial and employment areas, the policy emphasizes providing critical freight access to the interstate highway system to help the region's businesses and industry in these areas remain competitive. Providing access and new street connections to support industrial area access and commercial delivery activities and upgrading main line and rail yard infrastructure in these areas are also emphasized.

**Ensure adequate investment in freight capacity**
In order to carry out an overall policy of reducing delay and increasing reliability, it will be necessary to expand the types of programs and amounts of funding for freight transportation infrastructure to adequately fund and sustain investment in our multimodal freight transportation system in order to ensure that the region and its businesses stay economically competitive. This includes a more rigorous analysis of the return-on-investment of all transportation projects (a practice which may result in prioritizing freight projects in some cases) and exploration of possible expansion of public-private partnerships to fund transportation system expansion. It also requires more analysis to understand appropriate public investment in private (freight) facilities when improvements in those facilities result in public benefits.

### Protect industrial lands and freight transportation investments

It is important to integrate freight mobility and access needs in land use decisions to ensure the efficient use of prime industrial lands, protection of critical freight corridors and access for commercial delivery activities. This includes improving and protecting the throughway interchanges that provide access to major industrial areas, as well as the last-mile arterial connections to both current and emerging industrial areas and terminals.

[11] Metro, ODOT, PDC, Port of Portland, Port of Vancouver, Portland and Vancouver International and Domestic Trade Capacity Analysis, 2006.

[12] 2035 Regional Transportation Plan (January 2008, Chapter 2, Tables 2.2 and 2.3).Population and employment forecasts include Multnomah, Clackamas, Washington counties in Oregon, and Clark County in southwest Washington. The percentage increases from 2005 are 58% (population) and 74% (employment).

### Look beyond the roadway network to address critical marine and rail needs

It is important to look beyond the roadway network to address needs of the multi-modal and intermodal system that supports our regional economy. As described in Chapter 1, freight rail is currently at or near capacity, and so has little room to handle more traffic without additional investment in rail mainline, yard and siding capacity.[13] Whenever right-of-way is considered for multiple uses such as freight rail, passenger rail and trails, analysis must include long-term needs for existing freight and freight rail expansion to ensure that necessary future capacity is not compromised.

In addition, navigation channel depth on the Columbia River continues to be the limiting factor on the size, and therefore the number, of ships that call on the Portland-Vancouver Harbor. Channel deepening has been pursued for several decades, balanced by the need to protect various fish stocks migrating on the river.

### Pursue clean, green and smart technologies and practices

It is important to ensure that the multimodal freight transportation system supports the health of the economy and the environment by pursuing clean, green and smart technologies and practices. Details of the most promising technologies and practices will be developed as part of the Regional Freight Plan's elaboration of a freight action plan, as identified in Chapter 10 of that plan; however examples could include support for Cascade Sierra Solutions to provide diesel emission reduction technologies in the region.

*The Columbia River serves as a critical international marine gateway to the region's system of multi-modal freight networks.*

[13] Freight Rail and Oregon Economy: Final Report, 2004.

## 2.5.5 Regional Bicycle Network Vision

Residents in the Portland metropolitan region have long recognized bicycling as an important form of transportation. The RTP elevates the importance of and the need to support bicycle travel to support regional goals for mobility, the economy, the environment, public health, transportation and land-use.

The RTP recognizes that sidewalks, trails, bike lanes, bike boulevards, cycle tracks and transit cannot achieve their full potential if they are treated as stand-alone facilities. In addition, the RTP recognizes the importance of an interconnected network of transit, bicycle and pedestrian facilities to achieve 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.

*Bicycle travel is an important mode that supports regional goals for mobility, public health and the environment.*

This section describes the policy framework to guide development of a region-wide network of on-street and off-street bikeways integrated with transit and supported by research, innovative design and educational programs to make bicycling safe, direct and enjoyable.

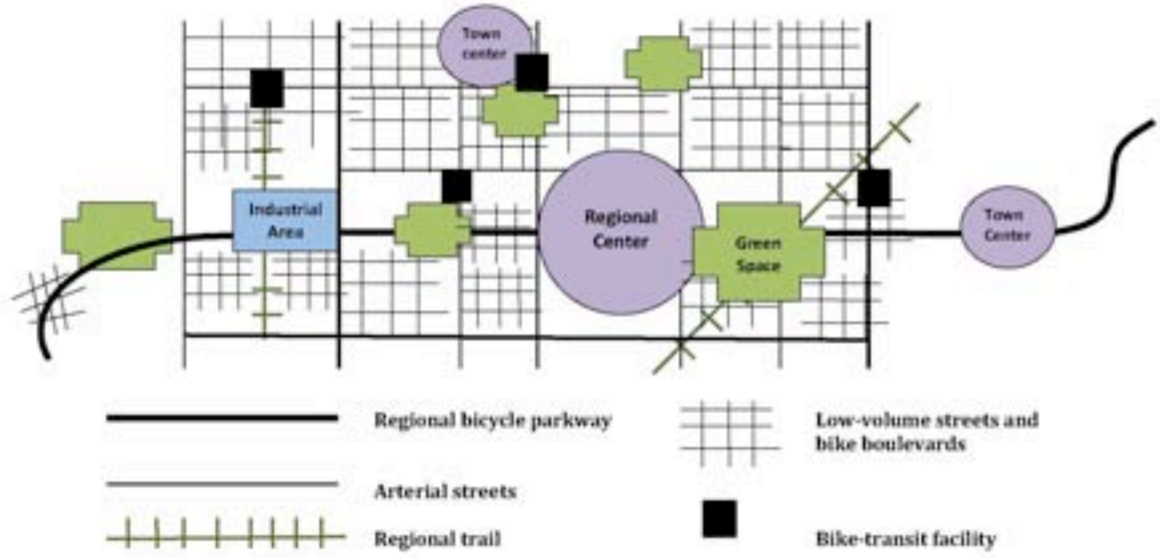
**Three policies form the foundation of this vision:**

1. **Build an interconnected network of bicycle facilities that provides seamless access to 2040 target areas**
2. **Improve bike-transit connections**
3. **Build a green ribbon of bicycle parkways as part of the region's integrated mobility strategy**

### Build a seamless and interconnected network of bicycle facilities

Typically, bicycle travel occurs in four types of environments: arterial streets, low-volume streets, off-street trails and public transit. Cyclists often make use of more than one type of facility on any given trip. Given how different people travel in various environments, this section defines the elements of the regional bicycle system. This network is composed of on-street and off-street bikeways that serve the central city, regional centers and town centers, and other 2040 Target Areas, providing a continuous network that spans jurisdictional boundaries. **Figure 2.21** shows the components of the regional bicycle network and their relationship to adjacent land uses. A region-wide bicycle network would be made up of on-street and off-street routes with connections to transit.

**Figure 2.21**
**Regional Bicycle Network Concept**




*The Region 2040 plan sets forth a vision for making bicycling safe, convenient and enjoyable to support bicycling as a legitimate travel choice for all people in the region. The RTP supports this vision with a region-wide network of on-street and off-street bikeways integrated with transit.*

**Figure 2.22** serves as a functional map to illustrate how different routes work together to form a comprehensive network that would allow people to bike to transit, schools, employment centers, parks, natural areas and shopping. The regional bicycle network has a functional hierarchy similar to that of the regional street and throughway network. Figure 2.22 provides a vision for a future bicycle network; for a map of current bicycle facilities in the region, please see Metro's Bike There! map.

*The region's bicycle network supports a variety of facilities to make bicycling safe, direct and enjoyable.*

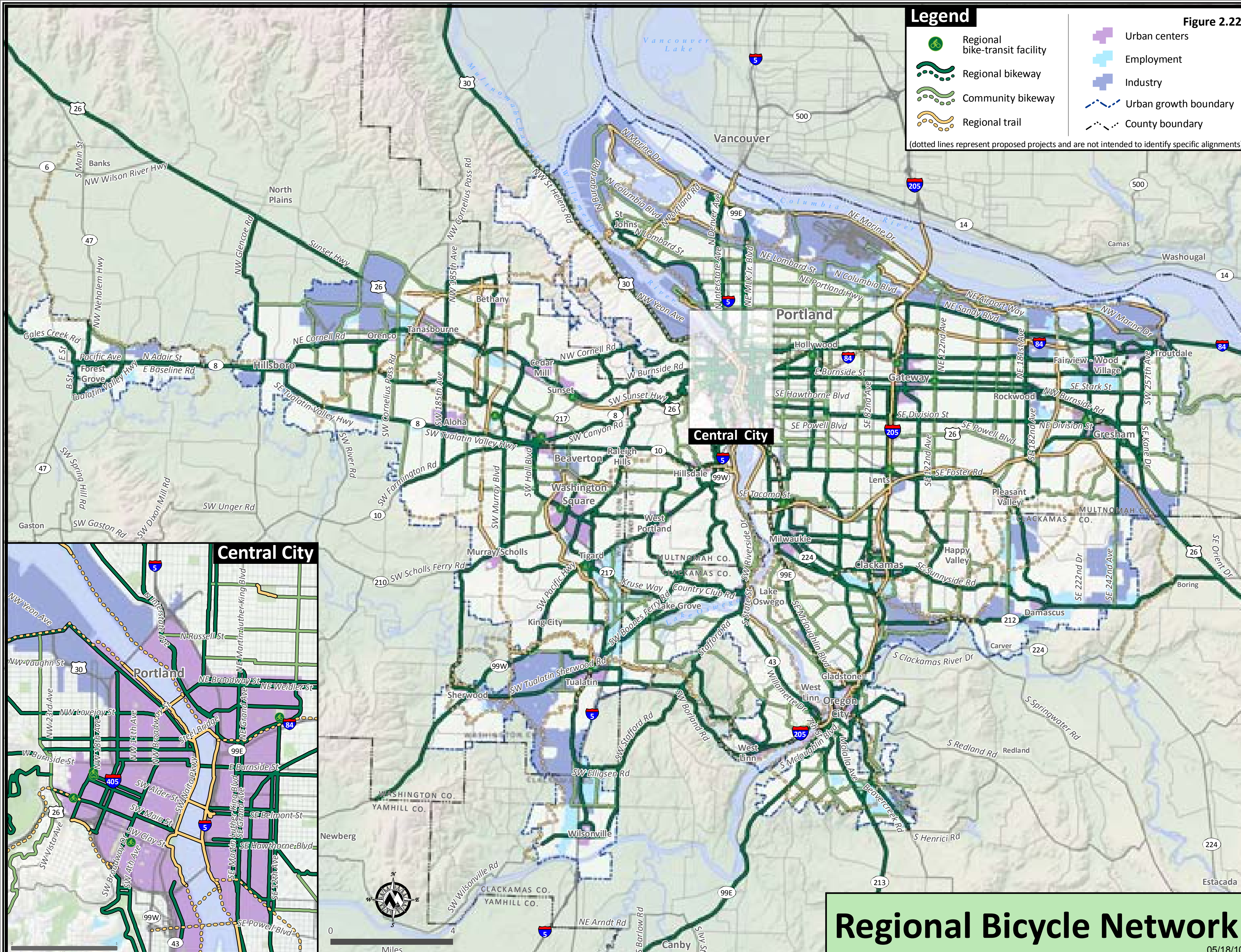


Figure 2.22
Legend
Regional bike-transit facility
Regional bikeway
Community bikeway
Regional trail
Urban centers
Employment
Industry
Urban growth boundary
County boundary
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Regional Bicycle Network
05/18/10
Central City
Vancouver
Vancouver Lake
Portland
Hillsboro
Beaverton
Gresham
Troutdale
Fairview - Wood Village
Gateway
Hollywood
Rockwood
Lents
Milwaukie
Clackamas
Happy Valley
Pleasant Valley
Damascus
Lake Oswego
Lake Grove
Tigard
Tualatin
Sherwood
King City
Wilsonville
West Linn
Oregon City
Gladstone
Washington Square
Raleigh Hills
Hillsdale
West Portland
Murray/Scholls
Aloha
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
St Johns
Forest Grove
Banks
North Plains
Gaston
Camas
Washougal
Boring
Carver
Redland
Estacada
Newberg
Canby
MULTNOMAH CO.
CLACKAMAS CO.
WASHINGTON CO.
YAMHILL CO.
Columbia River
Willamette River
Sunset Hwy
NW Wilson River Hwy
Tualatin Valley Hwy
SW Tualatin Valley Hwy
NE Cornell Rd
NW Cornell Rd
W Burnside Rd
E Burnside St
SE Hawthorne Blvd
SE Division St
SE Powell Blvd
SE Foster Rd
SE Sunnyside Rd
NE Sandy Blvd
NE Airport Way
NE Marine Dr
NE Lombard St
NE Columbia Blvd
NE Portland Hwy
N Marine Dr
N Columbia Blvd
N Lombard St
N Portland Rd
N Interstate Ave
N Denver Ave
NE MLK Jr. Blvd
NW Yeon Ave
NW St Helens Rd
SW Canyon Rd
SW Farmington Rd
SW Scholls Ferry Rd
SW Pacific Hwy
SW Tualatin Sherwood Rd
SW Boones Ferry Rd
Kruse Way
Country Club Rd
SW Stafford Rd
SW Borland Rd
SW Elligsen Rd
SW Wilsonville Rd
NE Arndt Rd
S Clackamas River Dr
S Springwater Rd
S Redland Rd
S Henrici Rd
Beavercreek Rd
Molalla Ave
SE McLoughlin Blvd
Willamette Dr
SW Riverside Dr
SE Tacoma St
SE 82nd Ave
SE 122nd Ave
NE 122nd Ave
NE 181st Ave
SE 182nd Ave
SE 222nd Dr
SE 242nd Ave
SW 257th Ave
SE Kane Dr
SE Orient Dr
NW Burnside Rd
SE Stark St
SW 185th Ave
NW 185th Ave
SW Murray Blvd
SW Hall Blvd
SW Cornelius Pass Rd
NW Cornelius Pass Rd
NW Glencoe Rd
SW River Rd
SW Unger Rd
SW Gaston Rd
SW Dixon Mill Rd
SW Spring Hill Rd
NW Nehalem Hwy
Gales Creek Rd
Pacific Ave
N Adair St
E Baseline Rd
S Main St
SW Sunset Hwy
Stafford Rd
S Barlow Rd
S Ivy St
Miles
0
4
Portland
NW Yeon Ave
N Russell St
NW Vaughn St
NE Broadway St
NE Weidler St
NW Lovejoy St
Steel Bridge
W Burnside St
E Burnside St
SW Alder St
SW Main St
SW Clay St
SE Belmont St
SE Hawthorne Blvd
SE Powell Blvd
SW Naito Pkwy
NW Broadway
NW 23rd Ave
NW 18th Ave
NW 11th Ave
SW Vista Ave
SW Broadway Dr
SW 4th Ave
NE Martin Luther King Blvd
NE Grand Ave
SE 12th Ave

The different functional elements of the regional bicycle network are:

- **Regional Bicycle Parkways**[14] form the backbone of the regional bicycle network, providing for direct and efficient travel with minimal delays in different urban environments and to destinations outside the region.

- **Regional Bikeways** provide for travel to and within the Central City, Regional Centers, and Town Centers.

- **Community Bikeways** provide for travel to and within other 2040 Target Areas. These routes also provide access to regional attractions such as schools and parks and connect neighborhoods to the rest of the regional bicycle network.

- **Regional Trails** are paved off-street facilities serving bicyclists and other non-motorized users. They typically serve as longer distance routes connecting neighborhoods to 2040 target areas, often providing access to parks, schools, and natural areas.

- **Bike-Transit Facilities** provide connections between modes, i.e. large-scale bike parking facility at a transit station.

*The Eastbank Esplanade, along the Willamette River, is an example of how regional trails serve recreational and commuter travel needs.*

Regional and Community Bikeways typically follow arterial streets but may also be located on low-volume streets. These on-street bikeways should be designed using a flexible "toolbox" of bikeway designs, including bike lanes, cycle tracks (physically separated bicycle lanes) shoulder bikeways, shared roadway/wide outside lanes and bicycle priority treatments (e.g. bicycle boulevards).

The appropriateness of each design is based on adjacent motor vehicle speeds and volumes. It may be difficult on many arterial routes at present to provide a comfortable facility. The RTP expects that these routes will eventually improve for bicycling, through better designs and lower auto speeds accompanying a more compact urban form. In the short-term the

[14] Regional Bicycle Parkways are not currently shown in Figure 2.22. A future Regional Active Transportation Action Plan following the RTP update is recommended to further develop the bicycle parkway concept, including desired parkway spacing, designation of routes, and prioritization for implementation. The parkways will likely be composed of routes currently designated as Regional Bikeway, Community Bikeway and Regional Trails. During the development of the action plan, Metro will recommend amending RTP policy to consider "trails" a design type rather than a functional classification.

RTP recognizes the need to build ridership through providing low-volume routes for bicycle travel in the region.

Arterial streets provide direct routes that connect to 2040 Target Areas. Cyclists tend to travel on arterial streets when they want to minimize travel time or access destinations along them. Oregon State statutes and administrative rules establish that bicycle facilities are required on all collector and higher classification arterial streets when those roads are constructed or reconstructed.

Low-volume streets often provide access to 2040 Target Areas as well as residential neighborhoods, complementing and sometimes supplanting bicycle facilities located on arterial streets. Though these routes are often less direct than arterials, attributes such as slower speeds and less noise, exhaust and interaction with vehicles, including trucks and buses, make them more comfortable and appealing to many cyclists. Recent research suggests that providing facilities on low-volume streets may be a particularly effective strategy for encouraging new bicyclists, which helps increase bicycle mode share in the region.

Off-street facilities such as regional trails typically provide an environment removed from vehicle traffic and function as an important part of the larger park and open space system in a community and in the region. Trails often take advantage of opportunities for users to experience natural features such as creeks, rivers, forests, open spaces and wildlife habitats as well as historic and cultural features, with viewpoints and interpretive opportunities. In high use areas, regional trails should be designed to provide separation between bicyclists and pedestrians.

*Higher use trails can be designed to provide separation between bicyclists and pedestrians in order to avoid conflicts. Some trails that have been designed to minimum width requirements will need retrofits as more people use them.*

Off-street facilities also complement on-street bikeways, providing access to 2040 Target Areas while providing a travel environment with fewer intersecting streets than on-street bikeways, thereby allowing for faster travel times. This makes off-street facilities especially attractive for serving long distance bicycle trips. Similar to low-volume streets, off-street facilities provide an environment more removed from vehicle traffic, which is appealing to families and new or less confident cyclists.

### Improve bicycle-transit connections

Public transit complements on-street bikeways and off-street trails by providing motorized regional connections to 2040 Target Areas. Effectively linking bicycling with transit increases the reach of both modes. It allows longer trips to be made without driving and reduces the need to provide auto park-and-ride lots at transit stations.

Transit provides a fast and comfortable travel environment between regional destinations that overcomes barriers to bicycling (hills, distance, and streets without bikeways), while bicycling provides access from the front door to a transit station faster than walking and without waiting to make a transfer between transit vehicles.

Bike-Transit facilities provide connections between modes by creating a "bicycle park and ride." A key component of the bike-transit connection is bicycle parking at transit stations. TriMet, with input from regional stakeholders, has developed Bicycle Parking Guidelines. The guidelines consider station context and regional travel patterns, and are focused on three major factors for parking: location, amount and design. The guidelines will help TriMet and local jurisdictions determine the appropriate location, size and design of large-scale bike-parking facilities, including Bike-Transit Facilities designated in Figure 2.22.

### Complete a green ribbon of bicycle parkways as part of the region's mobility strategy

Regional bicycle parkways form the backbone of the regional bicycle system. This concept emerged from work by the Metro Blue Ribbon Committee for Trails as part of the broader Connecting Green Initiative. A bicycle parkway serves as a green ribbon connecting 2040 activity centers, downtowns, institutions and greenspaces within the urban area while providing an opportunity for bicyclists to travel efficiently with minimal delays.

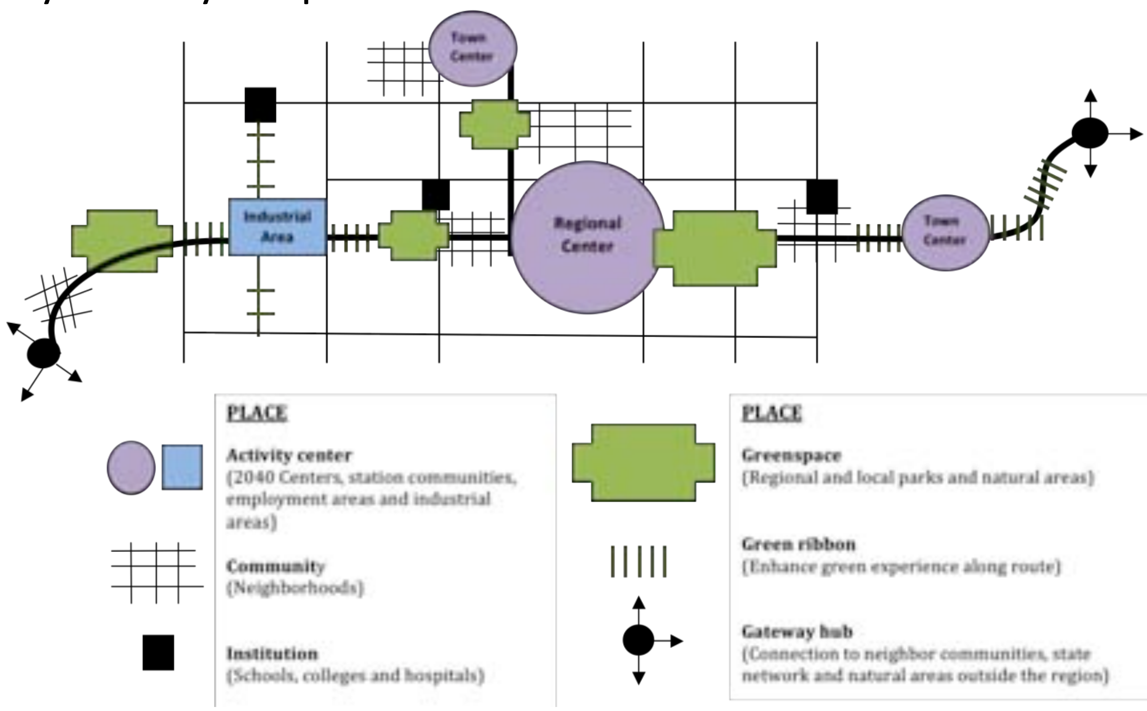
The bicycle parkway also connects the region to neighboring communities, other statewide trails and natural destinations such as Mt Hood, the Columbia River Gorge, and the Pacific Ocean. In effect, the bicycle parkway concept mainstreams bicycle travel as an important part of the region's integrated mobility strategy.

Key experiential aspects that bike parkways embody:

- A green environment (some will already be green, while others will be made greener as part of bike parkway development)
- Comfort and safety provided by protection from motorized traffic
- Large volumes of cyclists traveling efficiently with minimal delays

Figure 2.23 illustrates this policy concept in the context of the regional bicycle parkway concept. The development of a regional active transportation action plan following the RTP update should be used to further develop the bike parkway concept, and may include defining the ideal spacing of these routes within the regional bicycle system, identifying specific routes, as well as prioritizing which routes should be developed first.

**Figure 2.23**
**Bicycle Parkway Concept**




*A bicycle parkway serves as a green ribbon connecting 2040 activity centers, downtowns, institutions and greenspaces within the urban area. This new concept emerged from work by the Metro Blue Ribbon Committee for Trails as part of the broader Connecting Green Initiative.*

The experience of the cyclist will be optimized to such a high level that people will clearly know when they are riding on a bicycle parkway. The specific design of a bike parkway will vary depending on the land use context within which it passes through. The facility could be designed as an off-street trail along a stream or rail corridor, a cycle track along a main street or town center, or a bicycle boulevard through a residential neighborhood. Priority treatments will be given to cyclists (e.g., signal timing) using the bike parkway when they intersect other transportation facilities, and connections to/from other types of bicycle routes will be intuitive.

The most appropriate bikeway design for arterials is defined in the regional street design concepts and in Creating Livable Streets: Street Design Guidelines for 2040. Bicycle lanes are currently the preferred bikeway design for Throughway (highway), Boulevard and Street design classification concepts described in Table 2.6. Future updates to these guidelines will include designs for low-volume bicycle boulevards, alternate designs for high volume arterial streets (e.g. cycle tracks), as well as regional trails. The guidelines will address the added design elements that are needed when these facilities serve as a bicycle parkway route, e.g. bicycle priority treatments and strategies for avoiding bike/ped conflicts.

## 2.5.6 Regional Pedestrian Network Vision

Successful communities across America are increasingly defined by their walkability. Everyone is a pedestrian[15], but too often walking is not a safe and convenient option for getting to work or school or meeting daily travel needs. Walking, however, contributes to a healthy lifestyle for young and old alike and walking supports vibrant local economies. This travel mode is the common denominator for all other modes of travel as each trip begins or ends with at least a short walk. Transit trips in particular are based on walk access to transit stops and stations.


*Pedestrians play an important role in economic development by supporting commercial activity in centers. The RTP considers walking and bicycling as equals with other transportation modes.*

As a primary mode of travel that serves short trips and supports other modes the pedestrian system should be complete, direct, safe and enjoyable to use. It must be accessible to everyone regardless of one's ability to walk unassisted. Walking for short distances is an attractive option for most people when safe and convenient pedestrian facilities are available. The combination of well maintained and illuminated sidewalks of appropriate width, curb ramps, well marked and protected street crossings, and streetscape amenities that might include benches, landscaping and wide planting strips make walking an attractive, convenient and safe mode of travel. On-street facilities might be supplemented with trails and separate sidewalk connections that provide direct and pleasant connections for the pedestrian.

**Four policies form the foundation of this vision:**

1. **Promote walking as primary mode for short trips**
2. **Build a well-connected network of pedestrian facilities that serves all ages and abilities**
3. **Create walkable downtowns, centers, main streets and station communities**
4. **Improve pedestrian access to transit**

[15] Given that everyone is a pedestrian, some advocates are choosing to simply use the term "people" instead of "pedestrians."

Walking as used in this network vision, includes getting around using wheelchairs and other forms of mobility assistance. Safe and ADA-compliant routes may be particularly critical for persons who are unable to drive. It is important to remember that sidewalks and pedestrian crossings serve the needs of all mobility levels and should include design elements that help make travel as safe and convenient as possible. Many children, seniors and people with disabilities rely on transit and other elements of the regional pedestrian network.

Pedestrian activities also play a role in economic development by supporting places where people like to visit and live. Walking helps support commercial activity in neighborhoods and centers. The pedestrian network when fully developed helps people get around by safely providing links between destinations such as schools, parks, and employment sites, offers opportunities for active living, helps contribute to environmental health, supports other modes like transit, makes communities more inviting and provides a travel option that is inexpensive and accessible to most people. The region's investment in public transit is only realized to the extent that persons can safely access those transit services. This section describes the policy framework to guide development of a region-wide network of on-street and off-street walking facilities.

### Promote walking as primary mode for short trips

As our communities seek to emphasize moving people rather than cars, it is important to exploit all travel options including the most basic mode of travel. One in four trips made in America are a mile or less in length, yet only 21 percent of those trips are made on foot. [16] In addition to being the oldest and cleanest form of transportation, walking is often the quickest and most convenient way to accomplish short trips in urban areas and neighborhoods surrounding community centers. Several characteristics of short auto trips make them especially attractive to replace with walking. In urban areas, short trips greatly contribute to arterial congestion, as well as a disproportionate amount of air pollution (due to cold starts) and crashes.[17]

In a society where over two-thirds of adults are obese or overweight[18] walking can improve both physical and mental health. A one-mile trip is a twenty-minute walk, which is two-thirds of the daily exercise regimen recommended by the U.S. Surgeon General.

Promoting walking as the preferred mode for short trips will help the region achieve the RTP performance target of tripling the share of walking trips by the year 2035. This includes constructing new sidewalks, filling in sidewalk gaps, providing safe crosswalks at regular intervals, completing ADA-compliant curb ramps and developing a pedestrian infrastructure in a connected, systematic way. Regional partners must take many actions to create conditions necessary to achieve this target. The four policy areas that follow describe actions relating to pedestrian facilities, land use development and connections to transit.

[16] National Household Travel Survery, 2001, http://nhts.ornl.gov/
[17] Oregon Bicycle and Pedestrian Plan, 1995, http://www.oregon.gov/ODOT/HWY/BIKEPED/planproc.shtml
[18] Center for Disease Control and Prevention, 2008, http://www.cdc.gov/nchs/fastats/overwt.htm

### Build a well-connected network of pedestrian facilities

A well-connected high-quality pedestrian environment facilitates walking trips by providing safe and convenient access to pedestrian destinations within a short distance. Key elements of the urban pedestrian system include on-street sidewalks, off-street trails, safe street crossings at regular intervals, illumination and streetscape amenities that foster pedestrian travel. By providing dedicated space for those on foot or using mobility devices, pedestrian facilities facilitate and support walking as a mode of travel.

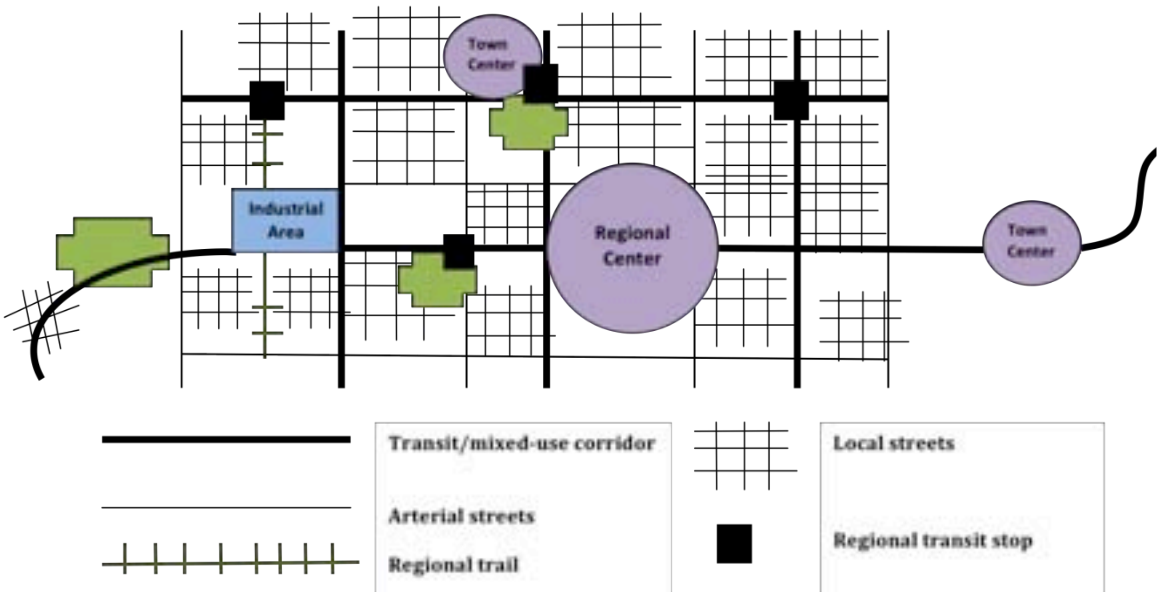
Public transportation use is fully realized only with safe and convenient pedestrian connections, especially those facilities that connect stations or bus stops to surrounding areas or that provide safe and attractive waiting areas. Improving walkway connections between office and commercial districts and surrounding neighborhoods provides opportunities for residents to walk to work, shopping or to run personal errands. Buildings need to be oriented to the street and be well connected to sidewalks. Safe routes across parking lots need to be provided. This reduces the need to bring an automobile to work and enhances public transportation and carpooling as commute options.

Regional trails are generally located near or in residential areas or near mixed-use centers, and are likely to be used by people walking to work or school, to access transit or to travel to a store or library. Trails that support purely recreational uses are not considered part of this transportation network, although they are important components of the regional parks and greenspaces system. Recreational trails complement a healthy life-style that includes walking and cycling. Pedestrian/bicycle-only bridges also are included in this designation. In high use areas, regional trails should be designed to provide safe separation between bicyclists and pedestrians.

Children need a safe pedestrian environment, especially for walking to and from school and parks.

**Figure 2.24** shows the components of the regional pedestrian network and their relationship to adjacent land uses.

**Figure 2.24**
**Regional Pedestrian Network Concept**




*The Region 2040 plan sets forth a vision for making walking safe, convenient and enjoyable to support walking as a legitimate travel choice for all people in the region. The RTP supports this vision with a region-wide network of on-street and off-street pedestrian facilities integrated with transit.*

**Figure 2.25** applies the regional pedestrian network concept on the ground, illustrating how different regional pedestrian facilities work together to form a comprehensive network that would allow people to walk to transit, schools, employment centers, parks, natural areas and shopping.

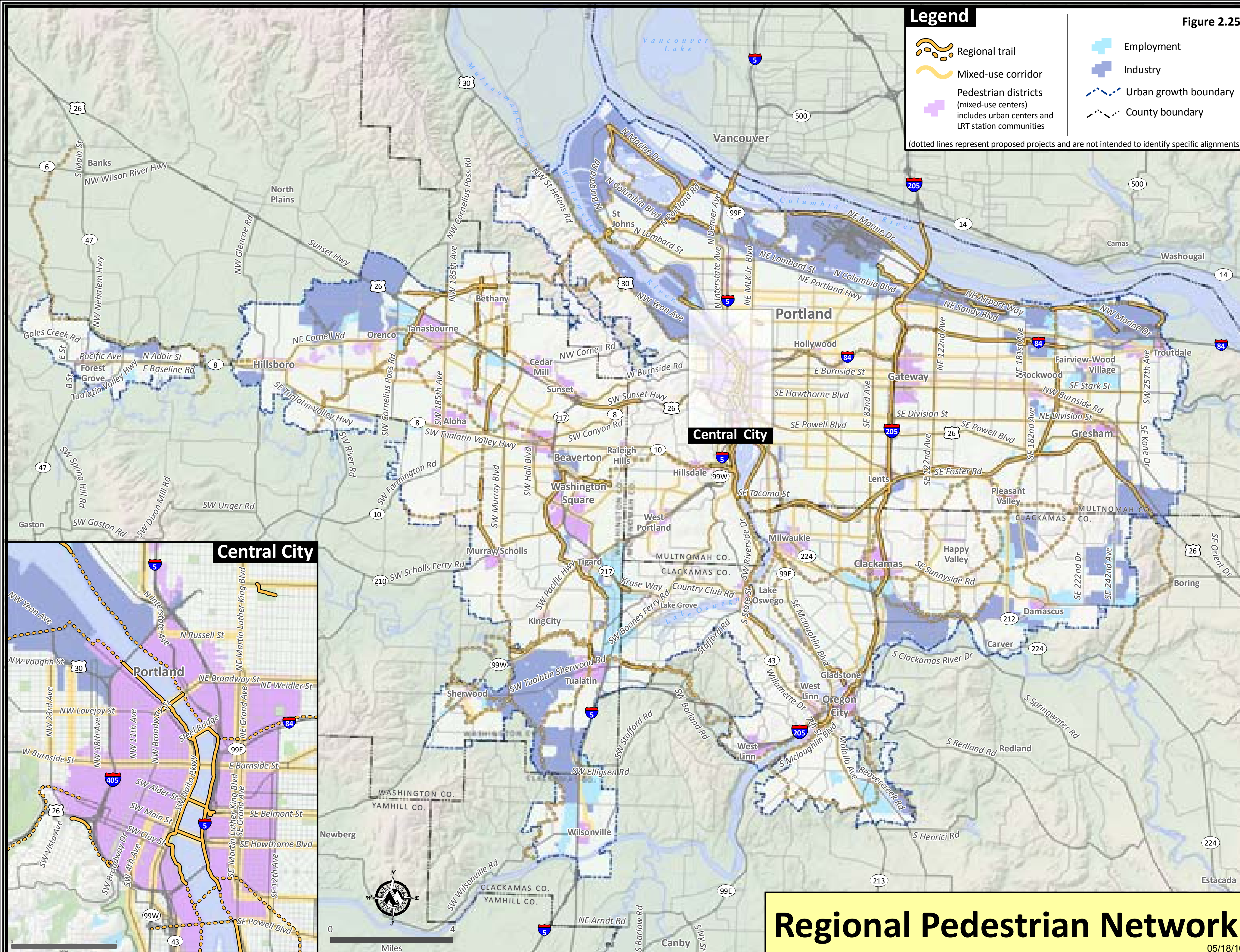



Figure 2.25

# Regional Pedestrian Network

## Create walkable downtowns, centers, main streets and station communities

Pedestrian districts are areas of high, or potentially high, pedestrian activity where the region places priority on creating a walkable environment. These include the central city, regional and town centers and light rail station communities where sidewalks, plazas and other public spaces are integrated with civic, commercial and residential development. These districts can take many forms from traditional main streets to life-style shopping centers. They are often characterized by compact mixed-use development served by transit. These areas are defined as pedestrian districts in the RTP.

Pedestrian districts should be designed to reflect an urban development and design pattern where walking is a safe, convenient and enjoyable travel mode. These areas will be characterized by buildings oriented to the street and boulevard-type street design features such as wide sidewalks with buffering from adjacent motor vehicle traffic, marked street crossings at all intersections with special crossing amenities at some locations, special lighting, benches, bus shelters, awnings and street trees.

*NW 23rd in Portland is an example of a lively pedestrian district.*

All streets within pedestrian districts are important pedestrian connections.

## Improve pedestrian access to transit

Transit/mixed-use corridors (referred to only as corridors in the 2040 Growth Concept) are priority areas for pedestrian improvements. They are located along good-quality transit lines and will be redeveloped at densities that are somewhat higher than today. These corridors will generate substantial pedestrian traffic near neighborhood-oriented retail development, schools, parks and bus stops.

These corridors should be designed to promote pedestrian travel with such features as wide sidewalks with buffering from adjacent motor vehicle traffic, street crossings at a minimum of 530 feet – though an ideal spacing is 200 to 400 feet where possible (unless there are no intersections, bus stops or other pedestrian attractions), special crossing amenities at some locations, special lighting, benches, bus shelters, awnings and street trees. This designation includes multi-modal bridges.

**Summary**

Currently the regional pedestrian network is incomplete and unsafe; the sidewalk network accessing transit in particular has gaps in continuity and quality. A complete pedestrian system provides a basic building block for economic vitality in centers and other commercially-oriented areas, but when incomplete fails to maximize the connection between transportation and land use that helps contribute to vibrant communities. The existence of gaps prevents the basic system from functioning uniformly throughout the region by inhibiting access to transit, limiting access to centers and other community-level destinations such as parks and schools. It is important for local jurisdictions to pursue sidewalks on every street (except expressways), even if they are not defined as part of the regional pedestrian network (transit mixed-use corridors, mixed-use centers, station communities and regional trails.)

Planning for pedestrian system improvements requires the same level of planning and analysis as might be applied to roadway planning. Investment programs should set priorities for sidewalk improvements to and along major transit routes and communities where physically or economically disadvantaged populations are resident. Emphasis should be given to filling gaps and providing safe crossings of the busiest streets. Access to schools, parks and community centers that are active parts of the local community is important for influencing a healthy lifestyle that includes walking.

Oregon State statutes and administrative rules establish that pedestrian facilities are required on all collector and higher classification streets when those roads are built or reconstructed. Exceptions are provided where cost is excessively disproportionate to need or where there is an absence of need due to sparse population or other factors.

## 2.5.7 TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS (TSMO) VISION

The overarching theme of the region's Transportation System Management and Operations (TSMO) concept is that the transportation system represents a significant public investment in assets that must be protected and well-managed. Concerns over the social, environmental and financial cost of traditional solutions lend support for an integrated approach to the provision of transportation infrastructure and services where better management of the system has a prominent role.

TSMO is a set of integrated transportation solutions intended to improve the performance of existing and new transportation infrastructure. Through a combination of transportation system management (TSM) and transportation demand management (TDM) systems, services and projects, TSMO addresses transportation goals such as mobility, reliability, safety and accessibility, which have traditionally been achieved via larger scale, expensive infrastructure investments.


*Metro also operates the region's demand management programs, which include an educational component to increase awareness of travel choices in the region.*

The TSM component typically incorporates advanced technologies to improve traffic operations. TDM promotes travel options and ongoing programs that result in reduced demand for drive alone trips. Together these two transportation management techniques optimize the existing transportation infrastructure.

**Four policies form the foundation of this vision:**

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

The Regional TSMO plan is guided by the following vision, goals and guiding principles:

**Vision**: The Portland metropolitan region will collaboratively and proactively manage its multimodal transportation system to ensure safe, reliable, efficient, and equitable mobility for people and goods. The region will strive to be a nationally recognized leader for innovative management and operations of its system.

**Goal 1: Reliability** – Provide reliable travel times for people and goods movement.

**Goal 2: Safety and Security** – Enhance transportation safety and security for all modes

**Goal 3: Quality of Life** – Enhance the environment and quality of life by supporting state and regional greenhouse gas and air quality goals

**Goal 4: Traveler Information** – Provide comprehensive multimodal traveler information to people and businesses.

**Guiding Principle 1: Regional Partnerships** – Enhance regional partnerships that support collaborative investment and implementation of management and operations strategies that benefit the region.

**Guiding Principle 2: System Performance** – Monitor transportation system performance and evaluate system management strategies to aid equitable policy and sustainable investment decisions.

**Guiding Principle 3: Investment in Ongoing Operations** – Provide on-going maintenance and operations to support the transportation network.

When compared to traditional capital investments such as new transit service, roads or additional lanes, TSMO solutions offer high returns for a comparatively low cost, and can delay or remove the need for additional capital-intensive infrastructure. In addition to replacing expensive capital projects, TSMO solutions can also complement them with education and marketing. The City of Portland has found that coupling capital investments in biking, walking and transit infrastructure with programs that encourage and help people to use them can maximize return on investment. TSMO strategies support many regional transportation goals including:

- Improve travel time reliability
- Improve transit on-time arrival
- Improve safety
- Reduce travel delay
- Decrease vehicle miles traveled and drive alone trips
- Reduce fuel use and corresponding air pollution and greenhouse gas emissions

**Table 2.9** provides examples of TSMO strategies for each of the investment areas.

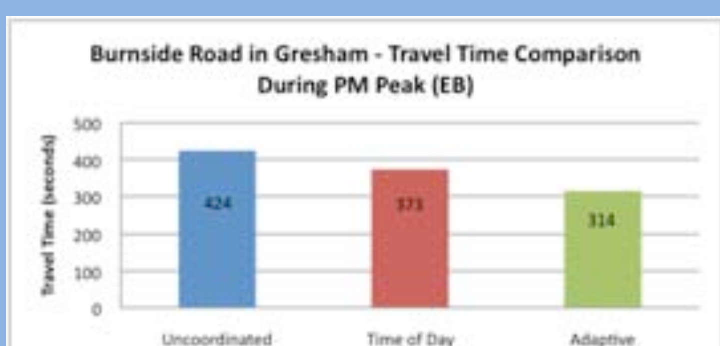
**Table 2.9**
**Examples of TSMO strategies by investment area**

| Multimodal Traffic Management | Traffic Incident Management |
|---|---|
| • Traffic signal coordination<br>• Transit signal priority treatment<br>• Detection and countdown timers for bicycles and pedestrians | • Improve surveillance<br>• Expand incident management teams and training |
| **Traveler Information** | **Transportation Demand Management** |
| • Real-time traveler information for freeways and arterials<br>• Enhance traveler information tools | • Ridesharing<br>• Collaborative marketing (e.g., Drive Less Save more campaign)<br>• Individualized marketing (e.g. SmartTrips program)<br>• Transportation Management Associations<br>• Employer outreach |

### Use advanced technologies, pricing strategies and other tools

Multimodal traffic management strategies improve metropolitan mobility by applying technology solutions to actively manage the transportation network. Projects in this area improve arterial traffic management (e.g., traffic signal timings, data collection and performance monitoring), expand transit priority treatments, pursue congestion pricing options, develop access management strategies, and implement active traffic management techniques.

The city of Gresham upgraded traffic signals along East Burnside Road to adaptive signal timing, which adjusts to real-time traffic flow. Average travel time along the corridor decreased by 15 percent as a result, benefiting automobiles, trucks and buses.



Other tools include parking management strategies, which aim to use parking resources more efficiently. Parking management strategies can include parking pricing, shared parking that serves multiple users or destinations, preferential parking or price discounts for carpools and/or short-term parking.

*Parking management strategies can include shared parking that serves multiple businesses, timed parking and parking pricing.*

When appropriately applied, parking management can reduce the number of parking spaces required in some situations. Implementation of parking management may require changing current development, zoning and design practices, broadening how parking problems and solutions are addressed and activities to improve enforcement and addressing potential spillover impacts.  A regional parking management strategy would assist local jurisdictions efforts to implement parking management.

Value pricing—sometimes called congestion pricing —involves the application of market pricing (through variable tolls, variable priced lanes, area-wide charges or cordon charges) to the use of roadways at different times of day. While this tool has been successfully applied in other parts of the U.S. and internationally, it has not been applied in the Portland metropolitan region to date. In 2008, the Oregon Department of Transportation (ODOT) researched the potential effects of tolling/pricing to determine if and how tolling could be applied in Oregon.[19]  ODOT will research the application of this tool in the Portland metropolitan region and identify a pilot project to further test this strategy in response to House Bill 2001, which was adopted by the 2009 Legislature.

[19] A series of white papers are available that summarize this research at www.oregon.gov/ODOT/TD/TP/Tolling_Background.shtml

As applied elsewhere, this strategy manages peak use on limited roadway infrastructure by providing an incentive for drivers to select other modes, routes, destinations or times of day for their travels. Reducing discretionary peak hour travel helps the system operate more efficiently improving mobility and reliability of the transportation system while limiting vehicle miles traveled and congestion-related auto emissions. In addition, those drivers who choose to pay tolls can benefit from significant savings in time. Similar variable charges have been utilized for pricing airline tickets, telephone rates and electricity rates to allocate resources during peak usage. In addition, value pricing may generate revenues to help with needed transportation improvements. More work is needed to gain public support for this tool.

### Provide comprehensive real-time traveler information to people and businesses



*In 2008, TripCheck.com received more than 23 million visits. Surveys show that information influenced travel decisions for 60 percent of site visitors.*

Real-time traveler information provides travelers accurate and comprehensive information for their route, mode, and time of day choices. Providing centralized real-time and forecasted traveler information is one of the main goals of the TSMO concept. By providing accurate traveler information, system users can make informed travel decisions.

Ideally, this leads to optimal roadway usage, less unnecessary traveler delay, more walking, biking, transit and carpool trips, reduction in vehicle miles traveled and an improved traveler experience. All modes of travel benefit from improved traveler information. Drivers and freight traffic are able to make alternate route choices and avoid congestion; transit users can plan their transit trip with more certainty; and the information shows travelers walking or biking routes that meet their preferences.

Traveler information projects expand traveler information to arterial roadways, centralize all real-time data, further expand travel option marketing, improve multimodal traveler data and tools, and enhance data collection capabilities. The information can reach travelers through a variety of interfaces including internet, radio, cell phone, in-vehicle navigation devices, or variable message signs.

Currently, real-time traveler information in the Portland Metro area is provided for most freeways and is distributed via variable message signs, radio, traffic surveillance cameras, Tripcheck.com, TriMet trip planning tools and PORTAL. TriMet provides their schedule and real-time transit data to the public. This open source policy has led to the creation of many beneficial applications by third party developers.

For example, TriMet's Transit Tracker data, which predicts next arrival times for vehicles, can now be accessed through a variety of different mobile device applications. Traveler information is one area where public private partnerships can flourish and benefit from transportation system uses.

### Improve traffic incident detection and clearance times on the region's transit, arterial and throughway networks


Efficient incident management is critical to reducing incident related congestion and restoring capacity as quickly as possible after an incident. Incident management strategies enhance incident management capabilities, increase surveillance for faster incident detection, improve inter-agency communications, and implement active traffic management. Incident management responds to vehicle accidents and breakdowns, as well as weather related issues, to improve traffic operations and restore traffic flow.

Past studies show:

- 20% of all incidents are secondary crashes
- For every 1 minute a primary incident continues to be a hazard, the likelihood of a secondary crash increases by almost 3%.

Active traffic management can:

- reduce primary crashes by 3% to 30%
- reduce secondary crashes by 40% to 50%
- reduce  crash severity

Incident management targets safety and reliability. By clearing incidents quickly, the chance of secondary incidents decreases which improves safety. The primary modes that benefit from incident management strategies are automobiles, buses and trucks. Activities that also benefit from these strategies include disaster response, evacuation and security planning efforts.

Incidents that block travel lanes decrease capacity and lead to unreliable travel times as shown in Table 2.10. When lanes are blocked due to an incident capacity decreases significantly (even when the incident is on the shoulder) and travelers experience delays.

**Table 2.10**
**Detecting and clearing incidents quickly restores lost capacity**

| Number of Hwy Lanes | % Facility Capacity Lost by Blockage Type | | | |
|---|---|---|---|---|
| | Shoulder | 1 Lane | 2 Lanes | 3 Lanes |
| 2 | 19% | 65% | 100% | N/A |
| 3 | 17% | 51% | 83% | 100% |
| 4 | 15% | 42% | 75% | 87% |

Source: TRB[20]

When implemented with active traffic management techniques, such as variable speed limits and lane management signs, the number and severity of crashes can be reduced.[21]

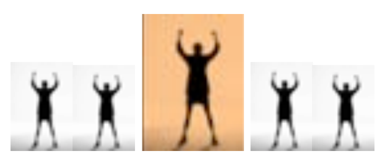
## Implement market-based incentives and programs to increase awareness and use of travel options

TSMO also manages transportation from the demand side to help residents and employees of the region increase their awareness and use of travel options and reduce their trips made driving alone. Transportation demand management (TDM) strategies increase the share of trips that have a lower impact on the transportation system. TDM projects support rideshare and employer commuter services, expand collaborative marketing campaigns for travel options, and incorporate employer and youth transit pass programs.

*Carpooling is one strategy to reduce drive alone trips, supporting the region's efforts to improve mobility throughout the region.*

All modes benefit from TDM projects. TDM projects raise general awareness about walking, bicycling and transit use, which increases safety for all users. TDM projects encourage travelers with flexibility to use non-drive alone options, such as walking, biking or vanpooling, or travel during off-peak hours.

**Drive less. Save more.** 1 out of 5 Portland residents reduced car trips due to the campaign.



Source: Moore Information, Inc, January 2009

By providing travel information and option incentives like employer or youth passes, this will provide incentives for people to adjust their travel behavior from driving to walking, bicycling, and taking transit. Benefits

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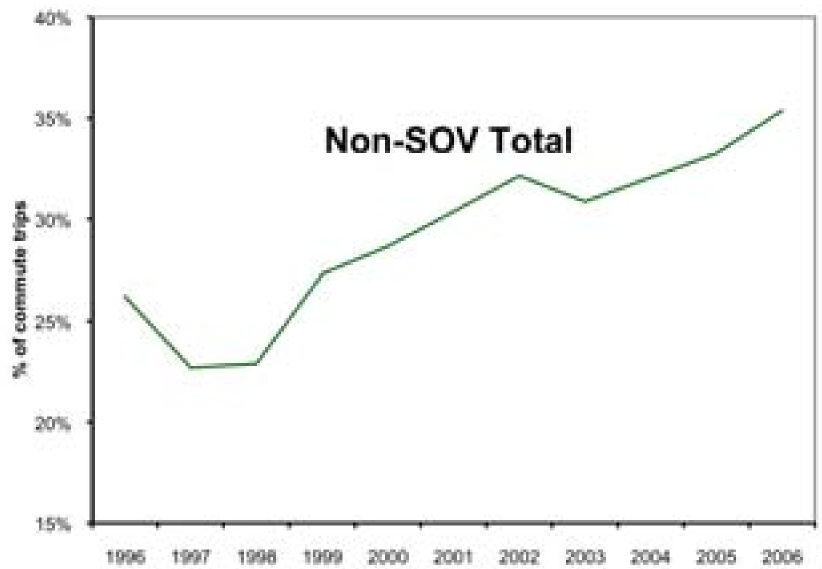
[20] Highway Capacity Manual 2000. *Transportation Research Board, National Research Council, Washington, D.C., 2000.*
[21] Research and Innovative Technology Administration (RITA) Intelligent Transportation Systems Benefits Database. Website: http://www.benefitcost.its.dot.gov/its/benecost.nsf/BenefitsHome (June 2009)

from this change in travel behavior include healthier people, reduced personal transportation costs, reduced air pollutants, and improved travel times and for other roadway users.

As an example, RTO partners provide services to over one thousand employers throughout the Portland region. Employers may implement travel option programs such as buying transit passes for their employees. Over the last decade, employee commute trips that used non-drive alone modes (transit, bicycling, walking, carpooling/vanpooling, and telecommuting) rose from 22 percent to over 35 percent among participating employers.

**Figure 2.26 Effectiveness of Employer-Based Commuter Programs**




*Employer-based commuter programs have resulted in significant increases walking, biking and use of transit.*

Source: Portland State University Center for Urban Studies, July 2007

TDM projects support the 2040 growth concept by encouraging people to make choices that reduce their dependence on cars. As a result, vehicle trips are reduced saving energy and reducing GHG emissions.

## 2.5.8 TRANSLATING THE VISION INTO REALITY

Implementation of the concepts and policies in this chapter will result in a complete and interconnected transportation system that supports all modes of travel and implementation of the 2040 Growth Concept. These idealized system concepts along with performance measures in Chapter 5 formed the basis for identifying system needs and deficiencies in Chapter 4 and the investment priorities in Chapter 3. The policies in this chapter recognize that each element of the transportation system may perform multiple functions, and that each will need to be tailored to fit local geography, respect existing communities and development patterns and protect the natural environment.

The plan will be implemented through a variety of strategies and actions at the local, regional, state and federal levels. The various jurisdictions in the region are expected to pursue policies and projects that contribute to specific elements of the vision.

*Implementation of the RTP will result in a safe, reliable and interconnected transportation system for all modes of travel.*

# CHAPTER 3

# INVESTMENT STRATEGY:

# WHAT IS OUR STRATEGY FOR ACHIEVING OUR VISION?

## 3.1 INTRODUCTION

Federal government spending on public infrastructure has remained relatively flat over the last 30 years. State and local infrastructureneeds have been increasing over that same time period.[1] While budgets are shrinking, aging roads and bridges are operating beyond capacity, and our transit systems lack funding to expand.

Traditional approaches to financing transportation projects are not only failing to maintain existing infrastructure, they are wholly inadequate to build new systems to accommodate growth and keep our economy moving.

Long-range transportation plans like the 2035 RTP are required to include estimates of available revenue to support the system of investments recommended in the plan. Predicting the financial future is an uncertain exercise, especially giventhe economic recession affecting our region and state. The RTP is an expression of the region's desire to make investments in the transportation system with limited public revenues.

Two levels of investment were developed for the 2035 RTP. The first level, the 2035 RTP Federal Priorities (also known as the Financially Constrained System), will represent the most critical transportation investments for

**WHAT OUTCOMES ARE WE TRYING TO ACCOMPLISH?**

**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.

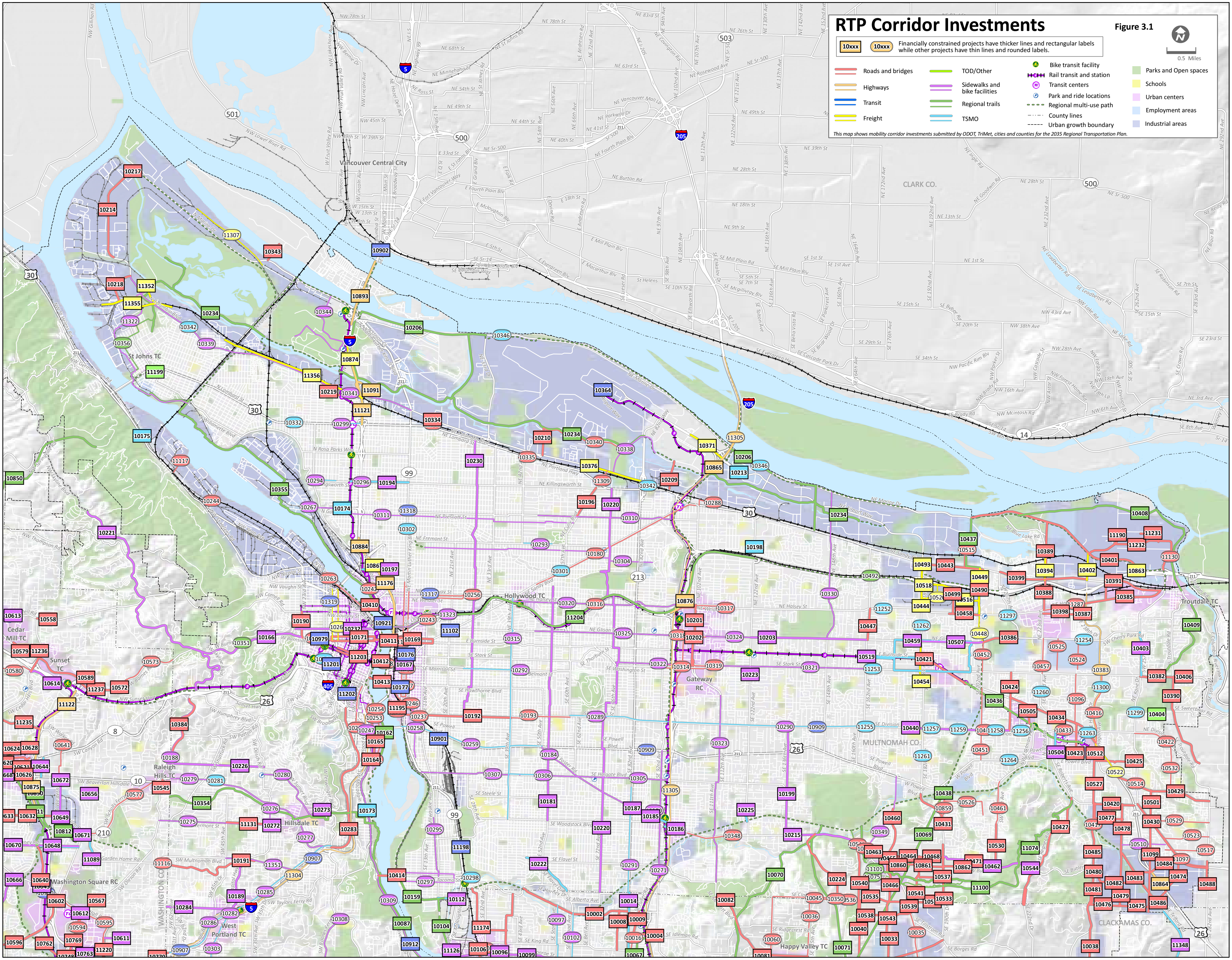
*As adopted by the Metro Council and MPAC in 2008.*

[1] U.S. General Accounting Office. *U.S. Infrastructure: Funding Trends and Federal Agencies' Investment Estimates*, AIMD-00-35. Washington, DC: General Accounting Office, 2001. http://www.gao.gov (accessed February 18, 2010).

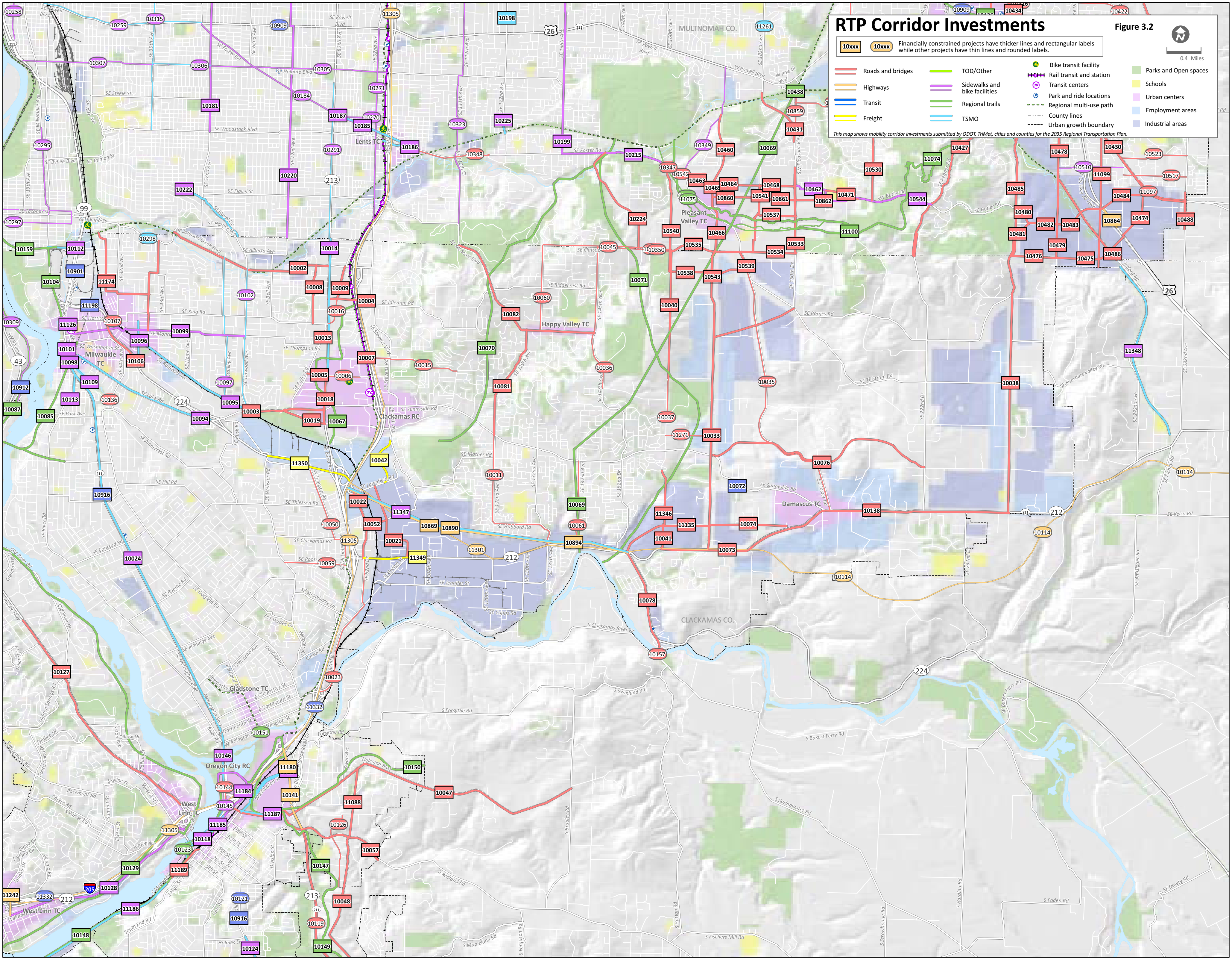
the plan period.[2]The second level, the "state" 2035 RTP Investment Strategy, will represent additional priority investments that would be considered for funding if assumed new or expanded revenue sources are secured.[3]

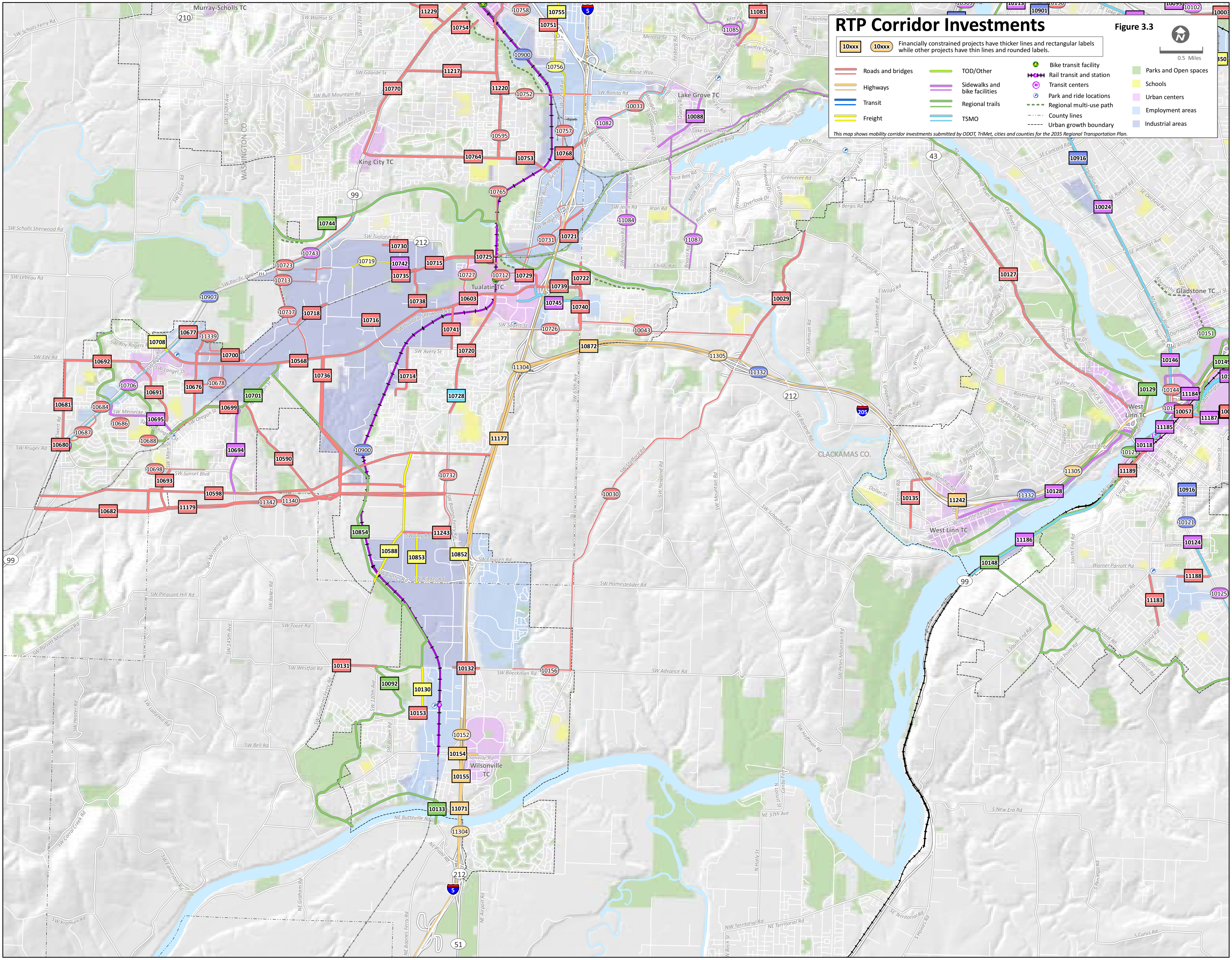
Ultimately, for both the federal and state RTP systems of investments, given a finite amount of financial resources, the question is how to spend these limited resources to best accomplish desired outcomes for the region.This chapter discusses the region's investment priorities and details the revenue assumed for the plan period. The goals and draft performance targets described in Chapter 2 provided policy direction for developing the RTP Federal Priorities and RTP Investment Strategy recommended in Appendix 1 and displayed Figures 3.1 through 3.4.

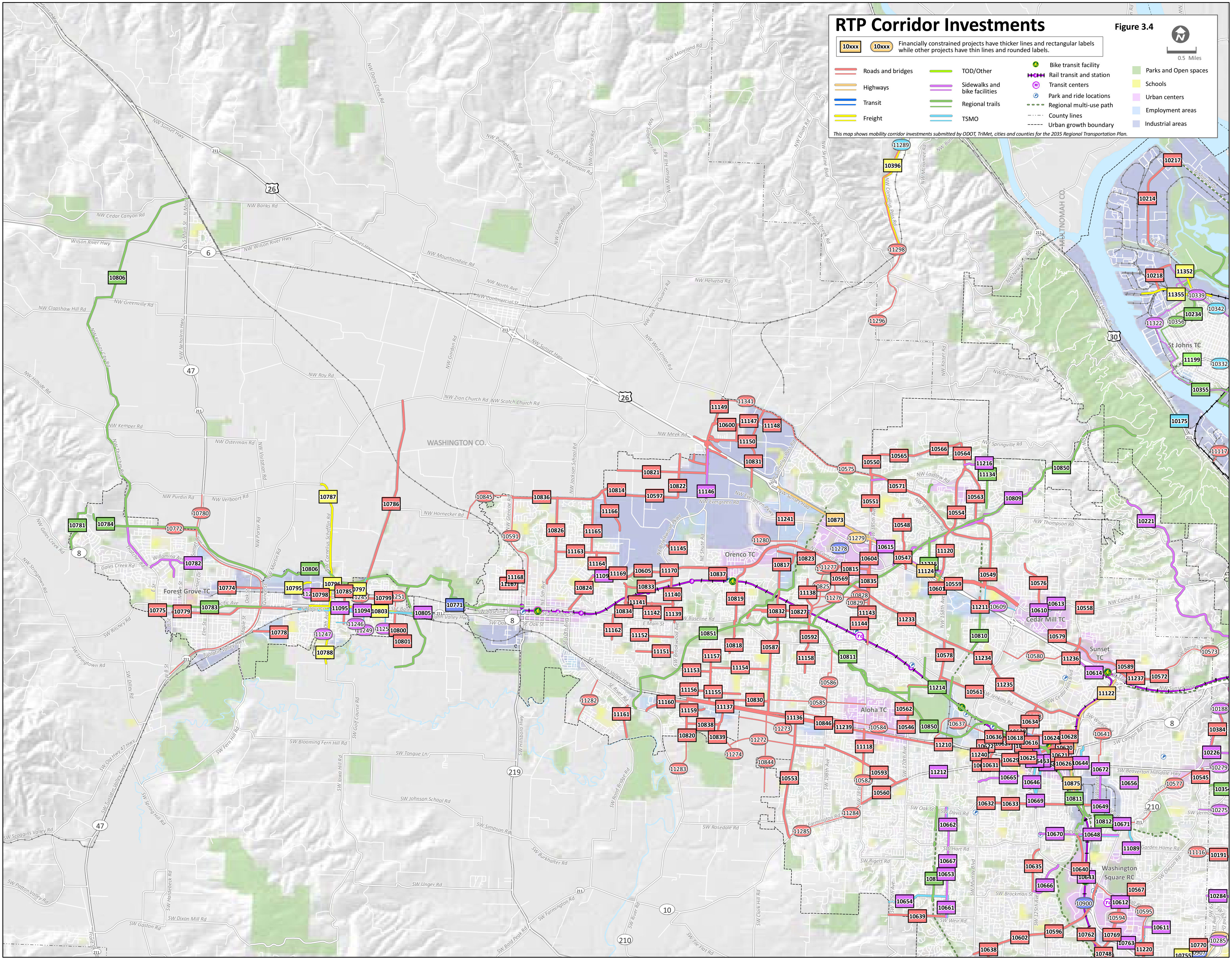
[2] The 2035 RTP Federal Priorities will be the basis for findings of consistency with federal metropolitan transportation planning factors, the Clean Air Act and other planning provisions identified in SAFETEA-LU.
[3] The 2035 "state" RTP Investment Strategy will be the basis for findings of consistency with the Statewide Planning Goal 12, the Oregon Transportation Planning Rule and the Oregon Transportation Plan and its components.



RTP Corridor Investments
Figure 3.1
0.5 Miles
10xxx 10xxx Financially constrained projects have thicker lines and rectangular labels while other projects have thin lines and rounded labels.
Roads and bridges
Highways
Transit
Freight
TOD/Other
Sidewalks and bike facilities
Regional trails
TSMO
Bike transit facility
Rail transit and station
Transit centers
Park and ride locations
Regional multi-use path
County lines
Urban growth boundary
Parks and Open spaces
Schools
Urban centers
Employment areas
Industrial areas
This map shows mobility corridor investments submitted by ODOT, TriMet, cities and counties for the 2035 Regional Transportation Plan.
Vancouver Central City
CLARK CO.
MULTNOMAH CO.
CLACKAMAS CO.
WASHINGTON CO.
St Johns TC
Hollywood TC
Gateway RC
Troutdale TC
Cedar Mill TC
Sunset TC
Raleigh Hills TC
Hillsdale TC
Washington Square RC
West Portland TC
Happy Valley TC


RTP Corridor Investments
Figure 3.2
10xxx 10xxx Financially constrained projects have thicker lines and rectangular labels while other projects have thin lines and rounded labels.
0.4 Miles
Roads and bridges
Highways
Transit
Freight
TOD/Other
Sidewalks and bike facilities
Regional trails
TSMO
Bike transit facility
Rail transit and station
Transit centers
Park and ride locations
Regional multi-use path
County lines
Urban growth boundary
Parks and Open spaces
Schools
Urban centers
Employment areas
Industrial areas
This map shows mobility corridor investments submitted by ODOT, TriMet, cities and counties for the 2035 Regional Transportation Plan.
MULTNOMAH CO.
CLACKAMAS CO.
Lents TC
Pleasant Valley TC
Happy Valley TC
Milwaukie TC
Clackamas RC
Damascus TC
Gladstone TC
Oregon City RC
West Linn TC


RTP Corridor Investments
Figure 3.3
0.5 Miles
10xxx 10xxx Financially constrained projects have thicker lines and rectangular labels while other projects have thin lines and rounded labels.
Roads and bridges
Highways
Transit
Freight
TOD/Other
Sidewalks and bike facilities
Regional trails
TSMO
Bike transit facility
Rail transit and station
Transit centers
Park and ride locations
Regional multi-use path
County lines
Urban growth boundary
Parks and Open spaces
Schools
Urban centers
Employment areas
Industrial areas
This map shows mobility corridor investments submitted by ODOT, TriMet, cities and counties for the 2035 Regional Transportation Plan.
Murray-Scholls TC
King City TC
Lake Grove TC
Tualatin TC
Gladstone TC
West Linn TC
Wilsonville TC
WASHINGTON CO.
CLACKAMAS CO.

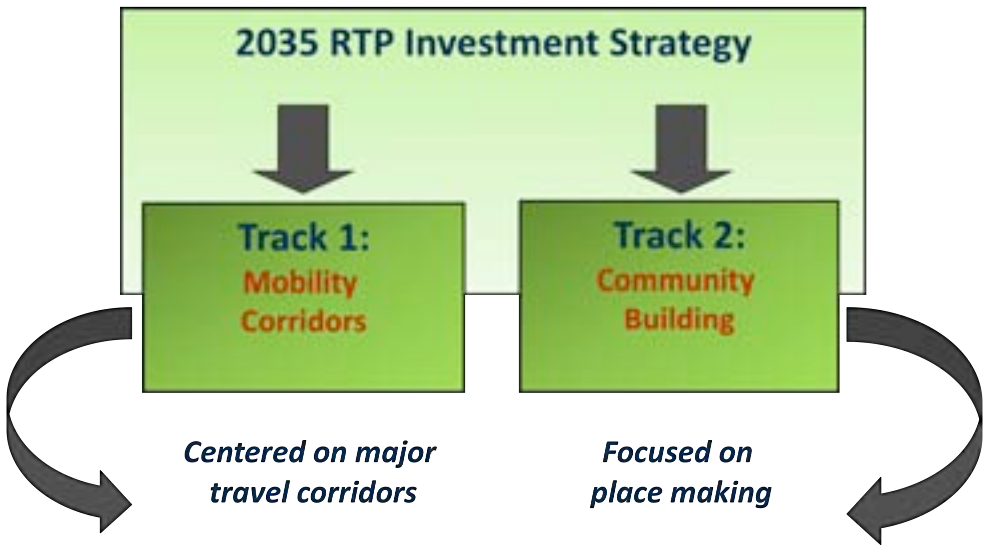

RTP Corridor Investments
Figure 3.4
0.5 Miles
10xxx 10xxx Financially constrained projects have thicker lines and rectangular labels while other projects have thin lines and rounded labels.
Roads and bridges
Highways
Transit
Freight
TOD/Other
Sidewalks and bike facilities
Regional trails
TSMO
Bike transit facility
Rail transit and station
Transit centers
Park and ride locations
Regional multi-use path
County lines
Urban growth boundary
Parks and Open spaces
Schools
Urban centers
Employment areas
Industrial areas
This map shows mobility corridor investments submitted by ODOT, TriMet, cities and counties for the 2035 Regional Transportation Plan.
WASHINGTON CO.
MULTNOMAH CO.
Forest Grove TC
Orenco TC
Aloha TC
Cedar Mill TC
Sunset TC
St Johns TC
Washington Square RC

## 3.2 WHAT ARE THE REGION'S INVESTMENT PRIORITIES?

The RTP responds to the 2040 Growth Concept through anapproach that views the transportation system as an integrated and interconnected system, shifting the emphasis from simply moving vehicles to moving people and goods, providing access, and connecting places. The six desired outcomes adopted by the Metro Policy Advisory Committee (MPAC) and the Metro Council are supported by the ten goals of the RTP and become the focal point for identifying investment priorities.

The 2035 RTP links land use and transportation by dividing investments into two tracks: mobility corridors and community building, identified in **Figure 3.5**.

**Figure 3.5**
**RTP Investment Strategy Tracks**




### Track 1: Providing metropolitan mobility in the region's mobility corridors

As part of the first phase of the 2035 Regional Transportation Plan (RTP), the mobility corridor concept emerged as a new way to think about an integrated transportation system. This concept focuses on the region's network of freeways and highways and includes parallel networks of arterial streets, bicycle parkways, high capacity transit and frequent bus service. The function of this network of integrated transportation corridors is metropolitan mobility – moving people and goods between different parts of the region and, in some corridors, connecting the region with the rest of the state and beyond. These transportation corridors also have a significant influence on the development and function of the land uses they serve.

### Track 2: Building community with transportation investments

The RTP community building concept recognizes the role of transportation in placemaking to achieve the 2040 Growth Concept vision for a strong economy, a healthy environment and communities that serve the needs of all. The concept calls for cultivating great communities by investing in the community assets essential to making downtowns, main streets and employment areas better places to live and work. Typically, these are investments that help revitalize downtowns and main streets or provide critical access to industrial lands and freight intermodal facilities. Planning transportation for community building outcomes will help protect our region's natural and cultural legacy and serve as an economic catalyst for businesses and jobs in these places.

**Centers and mainstreets**

A diverse, walkable community depends on a transportation infrastructure that provides a variety of ways to get around, serving pedestrians, bicyclists and transit-riders as well as drivers. The concept emphasizes streetscape retrofits, street connectivity, transit, sidewalks, bicycle and trail connections in downtowns and along main streets to leverage higher density mixed-use development and transit investments such as frequent bus, street car or high capacity transit.

*The RTP recognizes the importance of investing in centers and mainstreets to support the region's economic vitality and commercial activity in these areas.*

For example, an attractive, tree-lined main street, complete with wide sidewalks and "street furniture" – benches, bus shelters, trash cans – is a source of community pride and a magnet for walkers, shoppers and tourists. High quality transit service in these areas further supports placemaking objectives and provides important access and circulation.

**Industrial and employment areas**

In industrial and employment areas, the concept emphasizes providing critical freight access to the interstate highway system to help the region's businesses and industry in these areas remain competitive. Providing access and new street connections to support industrial area access and commercial delivery activities and upgrading main line and rail yard infrastructure in these areas are also emphasized.

Work force access to industrial and employment areas is also important. Using public transportation investments to leverage desired growth and private investment in 2040 centers, corridors and employment areas contributes to the quality of life and economic vitality of the region.

## 3.3 WHAT ARE THE CURRENT SOURCES OF REVENUE?

This section describes existing sources of revenues in the Metro region and defines traditional sources of revenues available for the transportation system in the Metro region from the federal, state and local levels.

**Federal sources of revenue:**

- Interstate Maintenance
- Surface Transportation Program funds
- Congestion Mitigation/Air Quality funds
- Bridge funds
- Transportation Enhancement Funds
- Safety Funds
- High Priority Project funds (earmarks)
- Transit formula and discretionary funds
- Transit discretionary funds

### Federal Sources

**Highway Trust Fund**.For road-related projects, Congress provides these revenues to the Metro region through the Federal Highway Administration (FHWA) to the Oregon Department of Transportation (ODOT) and then to Metro and the region's local cities and counties.

The original source of these monies is primarily the federal gas tax, various truck taxes and funding from the federal general fund. Allocation and distribution of federal funds, other than routine maintenance, are accounted for in the Metropolitan Transportation Improvement Program (MTIP). [4]

Some of these revenues are limited by FHWA to a particular purpose, such as highway bridge replacement and rehabilitation. Most of the funds, however, are flexible in that they can be spent on highways, streets, bikeways, sidewalks, transit capital, transportation system management (TSM), transportation demand management (TDM) and air quality mitigation programs.

Federal trust fund money to the Metro region accounted for during the years 2007 through 2035 includes:

- *Interstate Maintenance funds* These funds are used for preservation (resurfacing, etc.) of the interstate freeway system.
- *Regional Surface Transportation Program (STP) funds*. These funds may be used for virtually any transportation purpose short of building local residential streets.
- *Congestion Mitigation/Air Quality (CMAQ) funds***.** These funds are to assist urban areas to achieve or maintain air quality standards for ground-level ozone and carbon monoxide. Typically, CMAQ funds support biking, walking and transit projects, diesel emission reduction and system or demand management programs.
- *Bridge funds***.** The highway bridge replacement program was established to repair or replace bridges that have structural deficiencies and physical deterioration.

[4] Refer to Chapter 5 for more discussion on the MTIP.

- *Enhancement funds***.** Enhancement funds is limited to a list of 10 eligible activities relating to biking and walking,, preservation of right-of-way, historic preservation, and environmental mitigation for transportation projects.

- *Safety funds***.**A variety of safety funding programs including, the Highway Safety Improvement Program are available to fund safety improvement projects throughout the Metro region.

- *High Priority Project funds***.** These are for specific projects designated by Congress to receive funds.

Additionally, the Oregon Department of Transportation will use federal trust fund money for transportation projects in the Metro region. At this time, ODOT limits the spending of most of these monies to road preservation and safety projects.

**Transit Formula Funds.**For transit-related projects, Congress provides these revenues to the Metro region through the Federal Transit Administration (FTA) to TriMet, South Metropolitan Area Rapid Transit (SMART) in the Wilsonville area and Metro.

Transit formulafunds are primarily for transit capital purchases such as buses and transit maintenance facilities. As the local transit providers, TriMet and SMART propose and Metro approves requests to the U.S. Department of Transportation for use of these monies. These funds will be used to maintain TriMet's current fleet and operations. Capital expenses related to expansion of transit service needs to be funded from other sources.

**Transit Discretionary Funds.** These funds are for major new transit capital projects. In this region, these funds have primarily been used to provide the federal portion of capital cost construction of the light rail system. Other eligible uses include bus purchases, bus rapid transit and system capital improvements. As the regional transportation planning agency, Metro determines which large transit capital projects will be given priority in the region to receive these funds. Once the priority has been determined, TriMet applies to the Federal Transit Administration for transit discretionary funds to build the project. These revenues would only be available to the region if specific transit projects are built; the revenues are not transferable to other uses.

### State Sources

State revenues for transportation projects are distributed by the Oregon Transportation Commission, in accordance with state statutes, from the State Highway Trust Fund. The fund primarily derives its revenues from:

**State Sources of Revenue:**

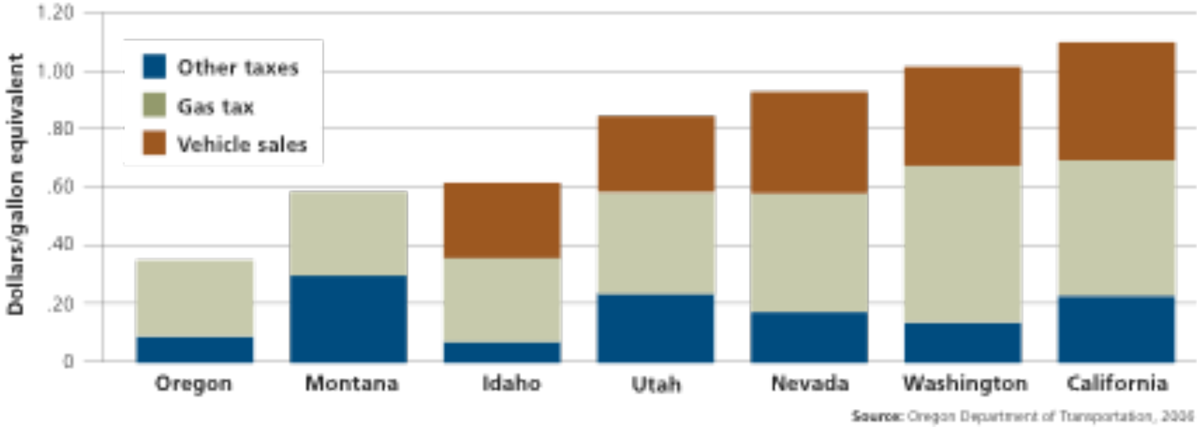
- Statewide gas tax
- Vehicle registration fee
- Truck weight mile tax

- Statewidegas taxes;
- Vehicle registration fees; and
- Weight mile taxes on trucks.

The general practice of state and local governments is to use trust fund monies they receive by statutory formula predominantly for road and bridge maintenance and preservation of the existing transportation system. Although modernization and expansion projects can be funded through this resource, the amount available is limited.

**Figure 3.6** shows Oregon has the lowest combined motor vehicle tax structure in the western United States. After collection costs, approximately 8 percent of the trust fund is dedicated to highway modernization. Approximately 60 percent of the State Highway Trust Fund revenues are distributed to ODOT. Oregon counties receive approximately 24 percent of the trust fund revenues, and Oregon cities receive approximately 16 percent. Historically, of the State Highway Trust Funds distributed to ODOT, the department has generally allocatedabout 28.8 percent of that money to the Metro region.

**Figure 3.6**
**Oregon ranks last compared to other western states in auto taxes and fees collected**




As prescribed by state statute, the Oregon Transportation Commission (OTC) distributes the State Highway Trust Fund money to Oregon cities and counties. Trust fund money is distributed to counties based on the number of vehicles registered in that county. The metropolitan portion of Clackamas, Multnomah and Washington counties currently accounts for approximately 37 percent of all state trust fund revenues distributed to Oregon counties. The distribution of state trust fund money to Oregon cities is based on population. Cities in the Metro area currently receive approximately 47 percent of all state trust fund monies distributed.

### Local Sources

Many of the cities and counties in the metropolitan region raiseother sources of revenue for theoperation, maintenance and preservation (OMP) and new construction ofthe regional transportation system. The amount of revenue applied to the system is controlled by each jurisdiction and is spent within their boundaries. Based on historical trends and expected future growth, Metro has forecast how much revenue is expected to support the regionally significant transportation system from the following local revenue sources.

**Local Sources of Revenue**

- Local portion of State Highway Trust Fund
- Local gas taxes
- Payroll tax
- Transit passenger fares

- **Local Portion of State Highway Trust Fund.** As noted, historically 40 percent of state trust fund revenues are distributed to the cities and counties of Oregon; although there is anticipation that 50 percent of new trust fund revenues would be distributed to cities and counties by formula.

- **Local Gas Tax.** Multnomah County levies a three-cent per gallon gas tax and Washington County levies a one-cent per gallon gas tax. Both counties share these revenues with the cities within their boundaries. Recently gas taxes have been approved for the cities of Milwaukie and Tigard. These revenues may be used for road maintenance and road expansion.

- **Payroll Tax**. TriMet levies a payroll tax of 0.6176 percent on all employers in its district (except federal employees). TriMet's payroll rate is limited by state statute to the current rate plus a planned increase to 0.7176 over the next ten years. Raising TriMet's payroll rate requires action by the state legislature. In May 2009, the Oregon Legislature passed Senate Bill 34 that authorizes TriMet to increase the payroll tax up to 0.8 percent once the economy recovers. SMART is funded through a 0.3 percent payroll tax in the Wilsonville area. This revenue is used to support operations and maintenance of the transit systems.

- **TriMet Passenger Fares and Other Revenues.**TriMet passenger fare revenues also support operation of the transit system. SMART is a fareless transit system except for two routes operating to Salem and downtown Portland.

**Development-Based Sources**

Development-based sources of transportation funding are fees collected by local governments based on the development of or use of land. These fees provide funding for transportation and other public investments as deemed appropriate by the local government that collects the fees and allocates the revenue. In some cases, the projects receiving these funds are transportation projects of regional significance and, therefore, a portion of these revenues estimated to be spent on regional projects is assumed in this forecast based on historical trends. These include:

**Development-Based Sources of Revenue**

- System development charges
- Traffic impact fees
- Urban renewal funding
- Developer contributions

- Transportation system development charges (SDCs) levied on new development
- Traffic impact fees (TIFs) on commercial properties
- Urban renewal funding in designated districts
- Developer contributions

The revenues are collected by the cities and counties in the region for use within their jurisdictions, and are generally limited to providing transportation projects to serve the new development on the assessed properties.

**Special Funds and Levies**

A final source of transportation funding for the Metro region is special funds and levies. This category includes:

- **Property taxes**. General levies such as Washington County's Major Streets Transportation Improvement Program (MSTIP), which are approved by popular election.
- **Local improvement districts (LIDs).** Special districts, such as the Lloyd District in the City of Portland, where a group of commercial property owners agree to provide money, in addition to their regular taxes, for public improvements and services (including transportation projects) within the district. In the Portland Central Business District, a local improvement district contributed to construction of the Portland Streetcar project.
- **Vehicle parking fees.** This source generates revenues from the City of Portland public parking garages and on-street parking meters. These revenues will contribute to construction of the Portland Streetcar project.
- **Port of Portland transportation improvement fund revenues.** These revenues are derived from passenger facility charges, parking revenues and lease revenues, and are limited to fund projects or services on Port property. Investment of these revenues is guided by the annually updated Port of Portland Transportation Improvement Plan (2007), and approval by the Port Commission. These revenues are expected to leverage private investment in transportation projects, particularly from freight railroad companies.
- **Street Utility Fees**. The cities of Tualatin, Lake Oswego, Wilsonville, Hillsboro and Milwaukie have adopted street maintenance fees that are included in the local sewer and water bill. The fees are based upon the cost to maintain the street system and are used for maintenance activities within each respective jurisdiction.
- **Washington County Urban Road Maintenance District.** The County collects a $0.25per $1,000 of assessed valuation fee in urban unincorporated Washington County for road maintenance within those areas.

**Other Sources of Revenue**

- Property taxes
- Local improvement districts (LIDs)
- Vehicle parking fees
- Port of Portland transportation improvement fund revenues
- Street utility fees
- Washington County Urban Road Maintenance District

## 3.4 WHAT'S OUR BUDGET?

The RTP seeks to address both federal and state requirements. To meet federal requirements, the plan must demonstrate "financial constraint," ensuring that the system of projects will not exceed reasonably expected future revenue. The federal RTP is constructed around meeting this requirement. The fundamental state requirement for the RTP is to develop a plan that is adequate to serve planned land uses. The region must have a financing strategy that supports implementation of the plan.

As the revenues identified to comply with the federal requirements of fiscal constraint do not provide enough financial capacity to meet the needs identified in the plan, it is necessary to identify more sources of revenue for the RTP to satisfy state requirements. The following discusses in more detail the amount and sources of revenue in both the federal and state RTP systems.

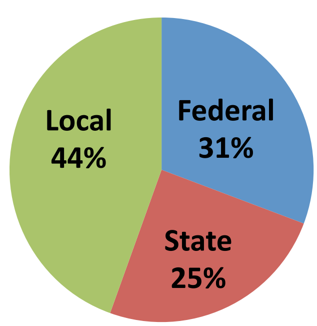
### 3.4.1 FEDERAL RTP SYSTEM

Federal regulations require that a regional transportation plan (RTP) be financially constrained. Total transportation expenditure levels identified within the RTP must not exceed the total revenue level reasonably expected to be available for the Metro region over the life of the plan; this includes existing revenues and new revenues that may be reasonably anticipated. This requirement ensures that the RTP is financially responsible. In following federal requirements, Metro has identified federal, state and local revenue resources that the region can reasonably expect to receive from now until 2035.

All revenue estimates were developed in consultation with Metro's federal, state, and local agency partners. Preparation of the financial plan included a review of historical data, recent trends and other relevant materials. Previous federal authorization levels also serve as a baseline for future expected revenues.

The following discusses the expected sources of transportation revenue in the Metro region for the federal financially constrained RTP.**Figure 3.7** shows the breakdown of federal, state, and local revenue.

**Figure 3.7**
**Financially Constrained Revenue by Federal, State and Local Sources**



Forecasts show $13.6 billion of reasonably expected revenue to be available in the Metro region from 2007 – 2035. Of this total $4.2 billion is comprised of federal, $3.4 billion of state and the remaining $6.1 billion is local funds. Local funds account for roughly 44 percent of all of the revenue in the RTP.

The RTP Financially Constrained System revenue forecast is based on amounts identified for seven funding pools:

- ODOT Modernization Funding Pool
- Regional Transit and Programs Funding Pool
- Washington County and Cities Modernization Funding Pool
- Clackamas County and Cities Modernization Funding Pool
- City of Portland Modernization Funding Pool
- Multnomah County and Cities (excl. Portland) Modernization Funding Pool
- Local Willamette River Bridges Funding Pool

A specific array of revenue sources was identified for each of these pools based on the historic use of the revenue sources and financial plans adopted by local governments. Some revenues – for example, the amount of Section 5309 New Start/Small Start Funds depend on the identified high capacity transit (HCT) and streetcar projects.

Also, some revenues are used for several purposes, and simplifying assumptions were made about their use. For example, existing state highway trust fund revenues (state gas tax and registration fees) apportioned to cities and counties were assumed to be solely used for Operations, Maintenance and Preservation (OMP). **Table 3.1**shows the revenue sources included in each funding pool.

**Table 3.1:**
**Modernization/Capital Revenue Sources by Funding Pool**

| | ODOT Modernization Pool | Regional Transit and Programs Modernization Pool | Local Government& Local WRB Modernization Pools |
|---|---|---|---|
| Existing State and Formula Federal Funds Excluding Federal Funds Allocated to Local Governments | ● | | |
| High Priority Projects and Other Federal Discretionary Grants: State Share Allocated to Metro Region | ● | | |
| New State Revenue Source: Assumed for Analytical Purposes to be the Metro Region Share of State Share of $15 Vehicle Registration Fee Increase Every 8 Years | ● | | |
| Metro Region STP Funds | | ● | ● |
| CMAQ Funds: Allocation from State | | ● | |
| Transportation Enhancement Funds from State | | ● | |
| State Support of Transit Capital Programs | | ● | |
| 5309 Discretionary Bus Grant | | ● | |
| 5309 Discretionary New/Small Start Grant | | ● | ● |
| Lottery Funds/Other State Grants | | ● | ● |
| Transit District General and Federal Formula Funds | | ● | |
| Property Tax/Non-Transportation Sources | | | ● |
| SDC/TIF | | | ● |
| Franchise Fee | | | ● |
| Urban Renewal | | | ● |
| Private Development | | | ● |
| Special Assessment | | | ● |
| Metro Region City and County Share of $15 Vehicle Registration Fee Increase Every 8 Years | | | ● |
| Local Bridge Program (Large/Small) | | | ● |
| Miscellaneous Local Sources | | | ● |
| Port of Portland Funds | | | ● |
| Metro Region City and County Share of Existing Highway Trust Fund and Any Increases to Trust Fund5 | | | ● |

[5] These funds must be used for roadway-related expenses, but can be used for capital or OM&P costs. Historically, the majority of these funds have been used for OM&P. It is included in this table as a potential source for funding capital projects. These funds are not included in the available revenue used for developing the financially constrained system of projects.

**Table 3.2** shows the total revenue for each funding pool that meet the federal definition of reasonably expected to be available over the life of the RTP.

**Table 3.2**
**Total Financially Constrained Revenue by Funding Pool**(Millions of 2007 $)

| Funding Pool | Total Revenue |
|---|---|
| ODOT Modernization Funding Pool | $3,958.20 |
| Regional Transit and Programs Funding Pool | $3,509.65 |
| Clackamas County/Cities Modernization Funding Pool | $1,172.00 |
| Washington County/Cities Modernization Funding Pool | $2,387.60 |
| City of Portland & Port of Portland Modernization Funding Pool | $1,429.90 |
| Multnomah County/Cities (Excluding Portland) Modernization Funding Pool | $1,039.30 |
| Local Willamette River Bridges Modernization Funding Pool | $144.7 |
| **TOTAL** | $13,641.35 |

**Columbia River Crossing Funding Assumptions**

Of the $13 billion dollars in costs and revenues assumed in the federal RTP, about a third can be attributed to one project. Because of the order of magnitude of the Columbia River Crossing (CRC) Project the following language is offered to describe the basic cost and revenue assumptions. The CRC Project is a collaboration of the Oregon Department of Transportation, Washington State Department of Transportation, Metro, Southwest Washington Regional Transportation Council, TriMet, C-TRAN, and the cities of Portland and Vancouver.

The CRC Project is a national transportation priority as it has been designated a “Corridor of the Future” by the Federal Highway Administration (FHWA). The Project will seek FHWA funding from this program category and other appropriate sources. Accordingly, the FHWA has indicated that it is a high priority to address the safety and congestion issues related to the segment of Interstate 5 between Columbia Boulevard north to State Route 500 in Vancouver, Washington.

The Federal Transit Administration (FTA) awards transit capital construction grants on a competitive basis. The CRC project will be submitting an application to the FTA for entry into Preliminary Engineering and eventually for a full funding grant agreement. The Metro region has been highly successful in securing FTA funds and it is considered reasonable, based on early cost-effectiveness rating analyses, that the high capacity transit component of the CRC Project will secure $750 million in federal transit funding.In addition, the

Governors of Oregon and Washington have stated their commitment to work with their respective state legislatures to provide state funds to add to federal funding.

Tolling is another unique source of funding for the project. It would be a substantial transportation demand management tool as well as providing a significant revenue source. The DEIS states that tolls may supply 36 – 49% of the capital revenues for the highway element of the project. Finally, the state of Washington has accumulated credits from tolls imposed on other projects in the state that can be used as local match for federal funds. The state has indicated support for using a portion of these credits for the transit component of this project. These funding sources for the total project may be summarized as follows (all figures in millions of dollars):

**Table 3.3**

**Columbia River Crossing – Total Project Costs and Revenues (both Oregon and Washington sides)**

| Costs | Low (Millions of Dollars) | High (Millions of Dollars) |
|---|---|---|
| Highway | $2,773 | $2,920 |
| Transit | $750 | $750 |
| TOTAL | $3,523 | $3,670 |

| Revenue | Low (Millions of Dollars) | High (Millions of Dollars) |
|---|---|---|
| Toll Bond Proceeds | $1,070 - $1,350 | $1,070 - $1,350 |
| Federal Discretionary Highway | $400 - $600 | $400 - $600 |
| State Funds | $823 - $1,303 | $970 - $1,450 |
| New Starts | $750 | $750 |
| Toll Credits | $188 | $188 |
| **TOTAL** | **$3,523** | **$3,670** |

### 3.4.2 STATE RTP SYSTEM

As Chapter 5 shows, federal RTP system of investments built around the financially constrained funding targets falls short in meeting the performance targets for the plan.Oregon state law however, has different requirements for transportation system plans (TSP). The RTP is the Portland Metro region's TSP. State law requires that TSPs adequately address the needs identified in the plan. The fundamental state requirement for the RTP is to develop a plan that is adequate to serve planned land uses. In addition, the region (through the RTP) and local governments (in local TSPs) must have a financing strategy that supports implementation of the plans.

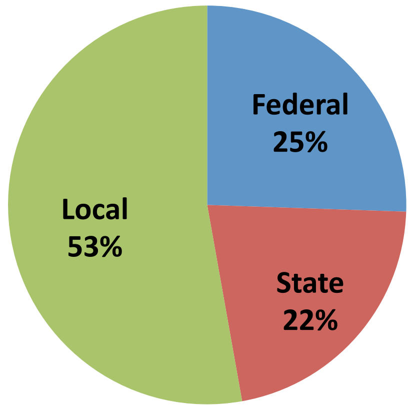
In 2009, JPACT participated policy discussions that focused on answering the question of what level of investments should be assumed for the state *2035 RTP Investment Strategy* and what potential increases in state and local revenue might be reasonable to pursue for this more aspirational level of investment.

JPACT recommended the following revenue assumptions be used to develop a funding target for the *2035 RTP Investment Strategy*:

- The equivalent of a $2 per year increase in the state vehicle registration fee through 2035
- Creation of a local/regional vehicle registration fee equivalent to $1 per year through 2035
- Increasing local system development charges across the region up to the regional average
- The equivalent of a .02 percent increase in TriMet's payroll tax
- Local street utility fees to fund operations, maintenance and preservation

In addition to the local revenue sources above, the Washington County Coordinating Committee (WCCC) requested that JPACT add more than $800 million in new state RTP revenue based on continuing their current MSTIP. JPACT endorsed the WCCC's recommendation at its August 2009 meeting. The following discusses the transportation revenue for the State RTP system. **Figure 3.8** shows the breakdown of federal, state, and local revenue.

**Figure 3.8**
**State RTP System Revenue by Federal, State and Local Sources**




Forecasts show $20.8 billion of revenue to be available in the Metro region from 2007 – 2035 for the State RTP system. Of this, $5.34 billion is comprised of federal revenue. This increase comes from an assumed federal contribution to the expansion of the region's HCT system. There is $4.53 billion in state revenue with the increase in the state VRF. Local funds increase to $11.04 billion, accounting for more than 50 percent of all of the revenue in the State RTP System.

**Table 3.4** shows the total revenue for each funding pool for the State RTP system. The totals include both the financially constrained revenue and the additional state and local revenue assumptions endorsed by JPACT.

**Table 3.4**
**Total State RTP System Revenue by Funding Pool** (Millions of 2007 $)

| Funding Pool | State RTP Revenue | Total RTP Revenue Federal & State |
|---|---|---|
| ODOT Modernization Funding Pool | $574.70 | $4,532.90 |
| Regional Transit and Programs Funding Pool | $3,147.31 | $6,656.96 |
| Clackamas County/Cities Modernization Funding Pool | $424.49 | $1,596.49 |
| Washington County/Cities Modernization Funding Pool | $1,607.81 | $3,995.41 |
| City of Portland & Port of Portland Modernization Funding Pool | $778.18 | $2,208.08 |
| Multnomah County/Cities (Excluding Portland) Modernization Funding Pool | $594.94 | $1,634.24 |
| Local Willamette River Bridges Modernization Funding Pool | $ 0 | $144.7 |
| **TOTAL** | | **$20,768.78** |

Local jurisdictions and agencies developed lists of projects for the State RTP system based on the increased revenue assumptions and followed the same process used to identify the federal priorities.The goal of the process was to link projects to the investment priorities emphasizing the linkage between land use and transportation using the mobility corridors and community building tracks. The following discusses the RTP projects by mode and as they relate to the support of the mobility corridors and community building. See Appendix 2 for the recommended list of investments.

## 3.5 WHAT INVESTMENT PRIORITIESARE INCLUDED IN THE FEDERAL AND STATE RTP SYSTEMS?

Based on the funding targets listed above, local jurisdictions and agencies developed lists of projects. Local county coordinating committees managed the project submittals for their county and cities. The City of Portland managed project submittals within the city. The Port of Portland, trails staff, land use staff and parks districts participated in meetings held by their respective county coordinating committees or City of Portland to coordinate their project submittals. ODOT determined state-owned system investments to submit within their funding target in coordination with other local and regional partners. Local agencies were also encouraged to include projects on state-owned facilities within their respective funding targets. Metro, TriMet, and the South Metro Area Rapid Transit (SMART) coordinated to identify transit projects and regional programs to be submitted as part of the regional transit and programs funding target.

Each county, the City of Portland, TriMet, ODOT and Metro submitted a project list with total project costs no greater than their funding target. A separate funding target was identified for the Multnomah County bridges. Multnomah County was responsible for submitting projects for the Local Willamette bridges funding pool. Project lists were created using the six desired outcomes for a successful region and the JPACT-endorsed draft performance targets.

In addition, projects to be emphasized were those that met one or more of the following refinement criteria:

- Make multi-modal travel safe and reliable
- Target investments to support local aspirations and the 2040 Growth Concept
- Provide multi-modal freight mobility and access
- Expand transit coverage and frequency
- Expand active transportation options
- Reduce transportation-related greenhouse gas emissions

- Address transportation needs of underserved communities

The goal of the process was to link projects to the investment priorities emphasizing the linkage between land use and transportation using the mobility corridors and community building tracks. The following discusses the RTP projects by mode and as they relate to the support of the mobility corridors and community building.

**Table 3.5**shows the breakdown of RTP projects in the federal and state systems.

**Table3.5**
**Federal and State RTP Projects**

| | Total # of Projects | Total Project Costs |
|---|---|---|
| Federal System | 704 | $13,414,307,415 |
| State System | 367 | $6,352,066,834 |
| TOTAL | 1071 | $19,766,374,249 |

**Figure 3.9** shows the RTP projects broken down into the mobility corridor and community building investment tracks. Community building projects comprise roughly 60 percent of both the federal and state RTP investments.

**Figure 3.9**
**RTP Investments by Investment Track**

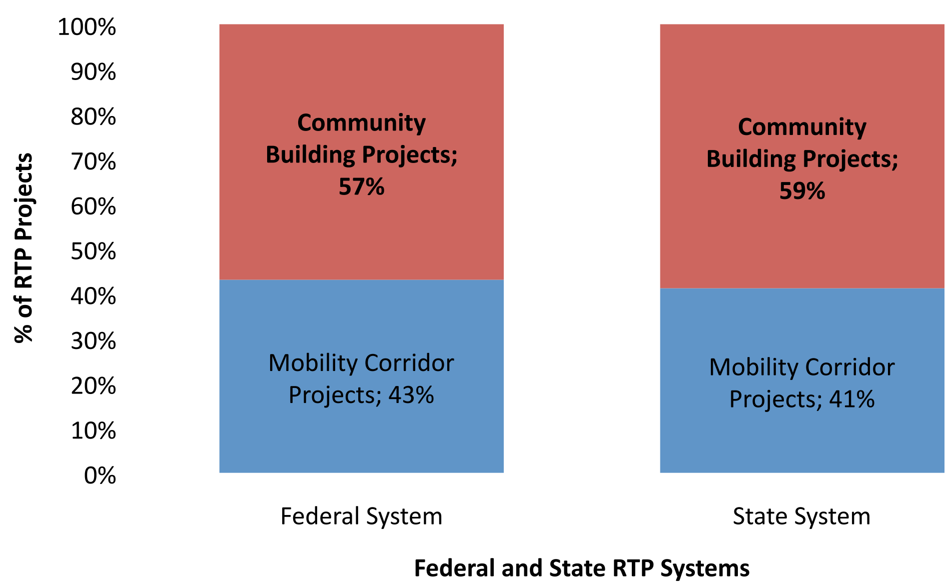


**Table 3.6**
**Total Cost of RTP Investments by Investment Track**

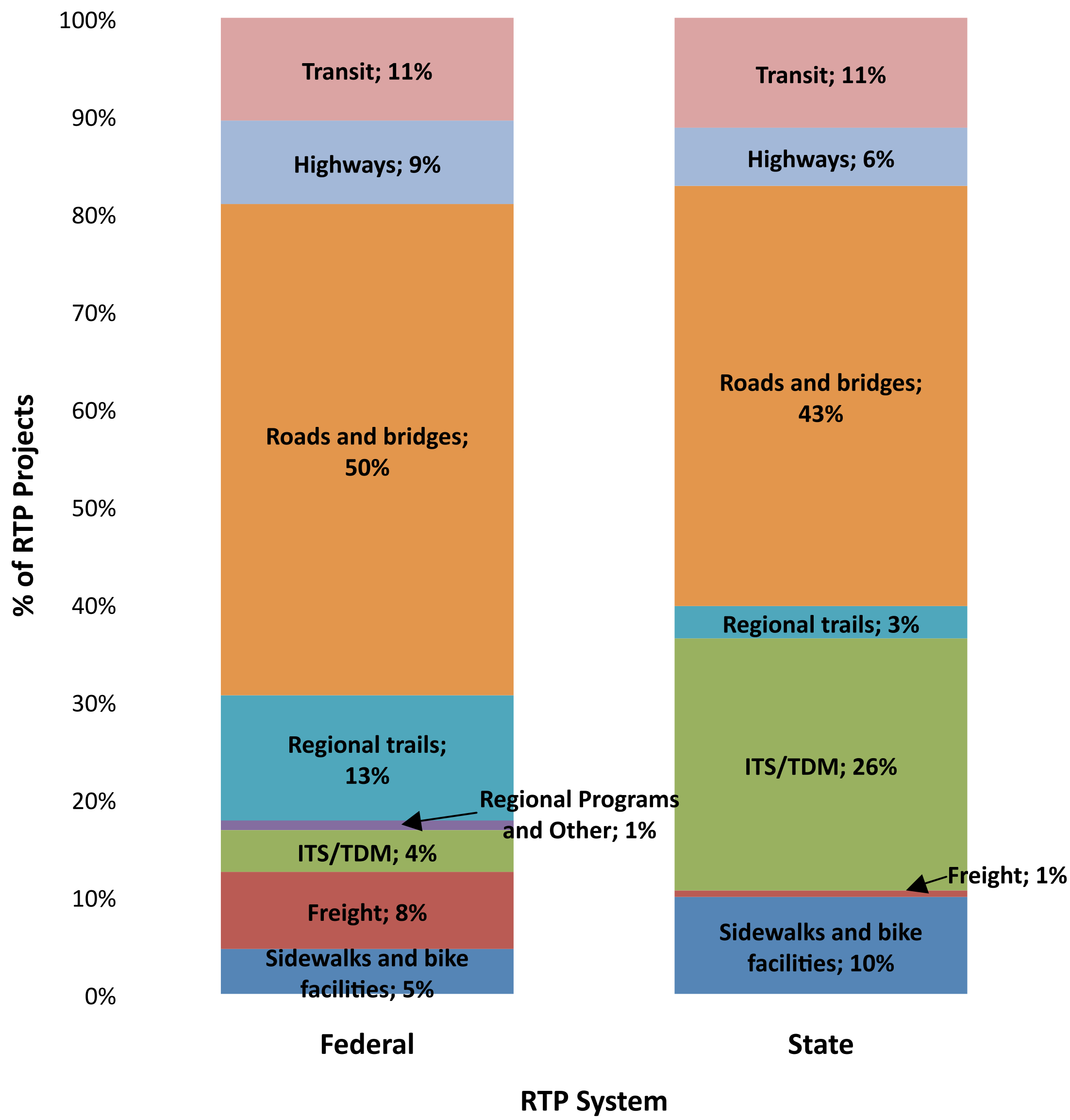
| | Total Cost of Federal System (Billions of 2007 $) | Total Cost of State System (Millions of 2007 $) |
|---|---|---|
| Mobility Corridor Investments | $9.8 | $4.6 |
| Community Building Investments | $3.6 | $1.8 |
| TOTAL | $13.4 | $6.4 |

Table 3.6 shows the breakdown of costs for mobility corridor and community building investments. Although community building investments account for 60 percent of projects in both the federal and state RTP systems, they amount to less than 30 percent of the total project costs. Mobility corridor investments make up 40 percent of total projects in both the federal and state RTP systems, but 70 percent of total costs.


*HCT is a key mobility corridor investment in the RTP, and will help the region meet greenhouse gas emissions reduction goals.*

**Figure 3.10** shows the percentage of mobility corridor projects by mode recommendedfor the federal and state RTP systems.

**Figure 3.10**
**Mobility Corridor Investments by Mode** (percentages based on number of projects)




In the federal RTP system, roads and bridges projects comprise 50 percent of the mobility corridor investments. In the state RTP system, the number of road and bridge projects in the mobility corridor investments decreases to 43 percent. Road and bridge projects recommended in the mobility corridor investment strategy include arterial street expansions that are complemented by new connections to maintain access to the regional throughway system and provide circulation and access between the central city, regional centers and town centers.

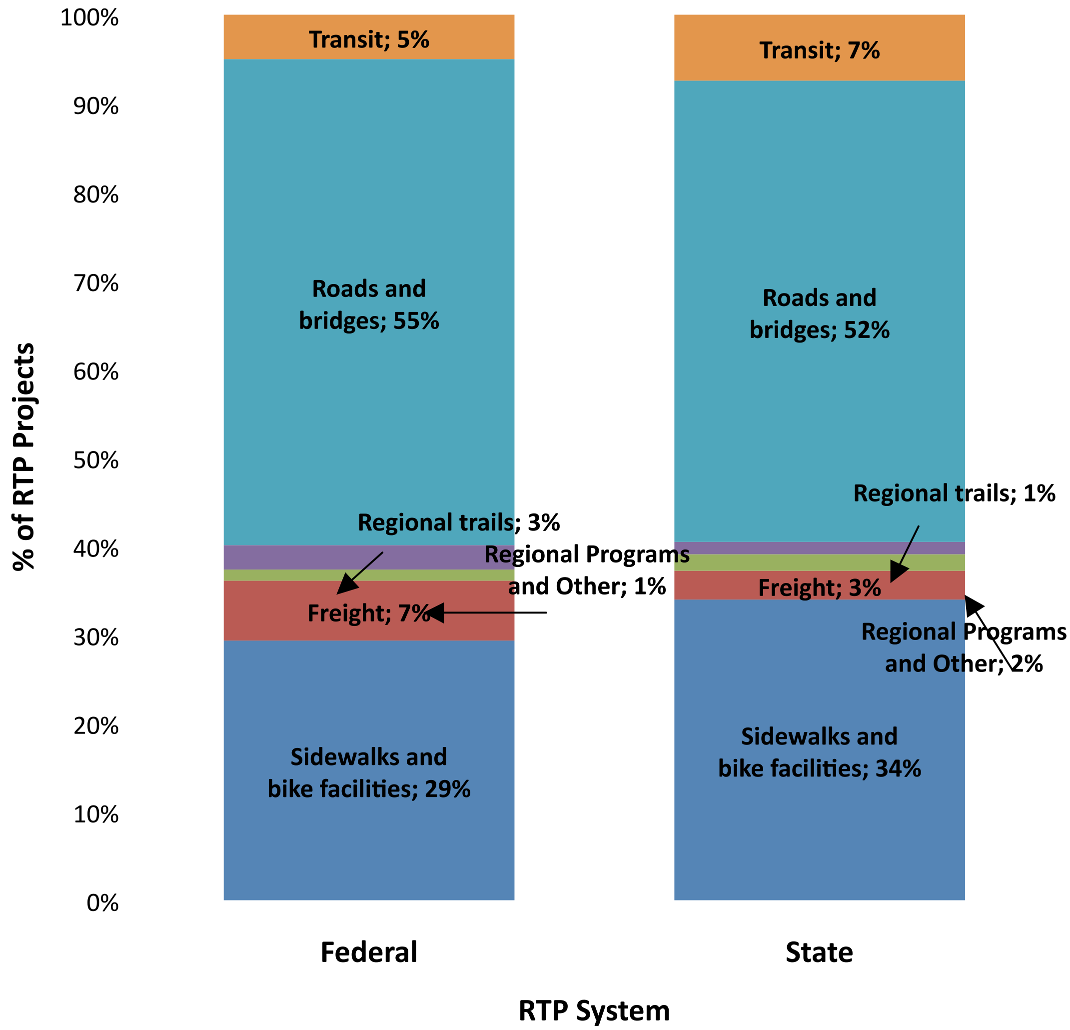
Some street expansions also focused on maintaining access and connections for national and international rail, air and marine freight to reach destination within the region's industrial areas. Road and bridge projects also includes many of the new street connections across and parallel to regional throughways provide direct alternate routes for shorter trips and improve access by all modes of travel. ITS/TDM projects account for 4 percent of federal RTP mobility corridor investments, but this jumps to 26% in the state RTP.

Projects on the state highway system comprise 9 percent and 6 percent of mobility corridor investments in the federal and state RTP systems respectively. Strategic throughway capacity was added to maintain regional mobility and enhance access to intermodal industrial areas and facilities where goods move from one transportation mode to another.

Transit makes up 11 percent of mobility corridor investments in both the federal and state RTP systems. New high capacity transit connections to Milwaukie, from Portland to Lake Oswego, to Clark County and to Tigard are included in the state RTP system. In addition, span-of-service and service frequency upgrades to WED commuter rail, expanded frequent bus service and other transit infrastructure investments are included.

**Figure 3.11** shows the percentage of community building projects by mode recommended for the federal and state RTP systems.

**Figure 3.11**
**Community Building Investments by Mode** (percentages based on number of projects)




In the federal RTP system, roads and bridges projects comprise 55 percent of the mobility corridor investments. In the state RTP system, the number of road and bridge projects in the mobility corridor investments decreases to 52 percent. Road and bridge projects in this category focus on completing new street connections in downtowns, centers and employment areas, retrofit of major streets for walking, biking and transit, completing gaps in the regional bike and pedestrian networks, providing bike and pedestrian connections to the regional trails network and transit, construction of many new multi-use paths throughout the region. No arterial or highway capacity projects were included in this category – they are accounted for in the mobility corridor investments.

Stand alone bicycle and pedestrian infrastructure projects comprise roughly a third of community building investments in the federal and state RTP systems. Transit accounts for 5 and 7 percent for the federal and state community building investments respectively. Community building transit investments include expanding the streetcar system in the City of Portland, sidewalk and bicycle access improvements to station areas, bus stop improvements, park and ride lots, and transit oriented development.

**Table 3.7**shows RTP investments broken down by mode and total cost. Roads and bridges account for roughly half of all the projects in the Federal and State RTP systems, but about a third of total project costs. Throughway investments account for less than 5 percent of RTP investments, but 23 percent of total project costs. Additionally, transit comprises less than 10 percent of RTP investments, but just fewer than 32 percent of total project costs. Cumulatively, roads and bridges, throughways, and transit projects account for 63 percent of all RTP projects and roughly 89 percent of total project costs.

**Table 3.7**
**RTP Investments By Mode and Share of Total Cost Road and Bridge Projects**

| Mode | Federal System Cost by Mode | % of Total Federal Project Cost | State System Cost by Mode | % of Total State Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $690,074,444 | 5% | $359,589,458 | 6% |
| Freight | $622,518,839 | 5% | $76,108,300 | 1% |
| ITS/TDM | $19,379,271 | 0% | $195,144,006 | 3% |
| Regional Programs/Other | $195,861,000 | 1% | $14,000,000 | 0% |
| Regional trails | $258,217,886 | 2% | $25,513,725 | 0% |
| Roads and bridges | $4,338,259,413 | 32% | $2,349,101,909 | 37% |
| Throughways | $3,882,748,243 | 29% | $648,037,000 | 10% |
| Transit | $3,407,248,319 | 25% | $2,835,697,516 | 45% |
| **TOTAL** | $13,414,307,415 | 100% | $6,352,066,834 | 100% |

More than fifty percent of the 1,071 RTP projects fall into the road and bridge category (549 projects) with a total cost of just under $6.7 billion. This category involves a wide variety of project types: expanding arterials and collectors, and new street connections to build a dense street grid, boulevard retrofits, and street reconstruction that include adding bike lanes and sidewalks. **Table3.8** and **Table 3.9** shows the Federal and State RTP road and bridge projects broken down into these categories.

**Table 3.8**
**Federal RTP Investment Road and Bridge Projects**

| | # of Federal Projects | % of Federal Roads/ Bridges Projects | % of Federal RTP Projects | TOTAL COST | % of Total Federal RTP Project Cost |
|---|---|---|---|---|---|
| Street Reconstruction | 127 | 34.14% | 18.04% | $ 1,076,455,939 | 8.02% |
| Boulevard Retrofits | 5 | 1.34% | 0.71% | $ 71,058,919 | 0.53% |
| New Connection | 95 | 25.54% | 13.49% | $ 1,367,414,670 | 10.19% |
| TSMO | 15 | 4.03% | 2.13% | $ 48,772,812 | 0.36% |
| Street Widening | 130 | 34.95% | 18.47% | $ 1,749,557,073 | 13.04% |
| **Total Federal Roads/Bridges Projects** | **372** | **100.00%** | **52.84%** | **$ 4,313,259,413** | 32.15% |

**Table 3.9**
**State RTP Road and Bridge Projects**

| | # of State Projects | % of State Roads/ Bridges Projects | % of State RTP Projects | TOTAL COST | % of Total State RTP Project Cost |
|---|---|---|---|---|---|
| Street Reconstruction | 50 | 28.25% | 13.62% | $402,871,865 | 6.34% |
| Boulevard Retrofits | 9 | 5.08% | 2.45% | $70,678,024 | 1.11% |
| New Connection | 40 | 22.60% | 10.90% | $695,059,339 | 10.94% |
| TSMO | 12 | 6.78% | 3.27% | $26,839,550 | 0.42% |
| Street Widening | 66 | 37.29% | 17.98% | $1,153,653,131 | 18.16% |
| **Total Federal Roads/Bridges Projects** | **177** | **100.00%** | **48.23%** | **$2,349,101,909** | **36.98%** |

## 3.6 WHAT ABOUT OPERATING AND MAINTAINING THE SYSTEM?

This section discusses the costs in the Metro region of operating and maintaining the existing and proposed investment priorities for highways, streets and transit.

### 3.6.1 Federal Requirements for Operations and Maintenance

Federal regulations require that the RTP include a financial plan that compares expected revenue with the costs of proposed transportation investments. Additionally, 23 CFR 450.322(b)(11) requires a comparison of the estimated costs of constructing, maintaining, and operating the total transportation system, including existing and planned investments, over the plan period.[6]

For transportation system operations and maintenance, the 2035 RTP discusses system-level estimates of costs and revenues that are expected to be reasonably available to be able to operate and maintain the Metro region's transportation system. The following discussion is aimed at addressing the issues regarding operations, maintenance and preservation of both the roadway and transit system in the Metro region.

### 3.6.2 2035 RTP Operations, Maintenance and Preservation Revenue

**State highway operations, maintenance and preservation costs**
OMP revenues for the 2035 RTP were derived from a December 2004 ODOT report to help MPOs like Metro develop long range transportation plans[7]. The ODOT report assumes a $0.01 per year increase from 2007 – 2035 in the state gas tax all dedicated to cover growing OMP costs at the state, regional and local level. **Figure 3.12** shows the revenue for OMP of state facilities from 2007 – 2035.

The State Highway Trust Fund (SHTF) revenue generated over the life of plan for cities and counties is roughly $4 billion for the Portland region based on a50-30-20 formula distribution by state statute. The state receives 50 percent, counties 30 percent and cities the remaining 20 percent of the SHTF revenue expected. **Figure 3.13** shows the highway and regional street-related revenuefrom 2007 – 2035.For counties and cities this allocation increases from $127.7 million in 2007 to $166.7 million

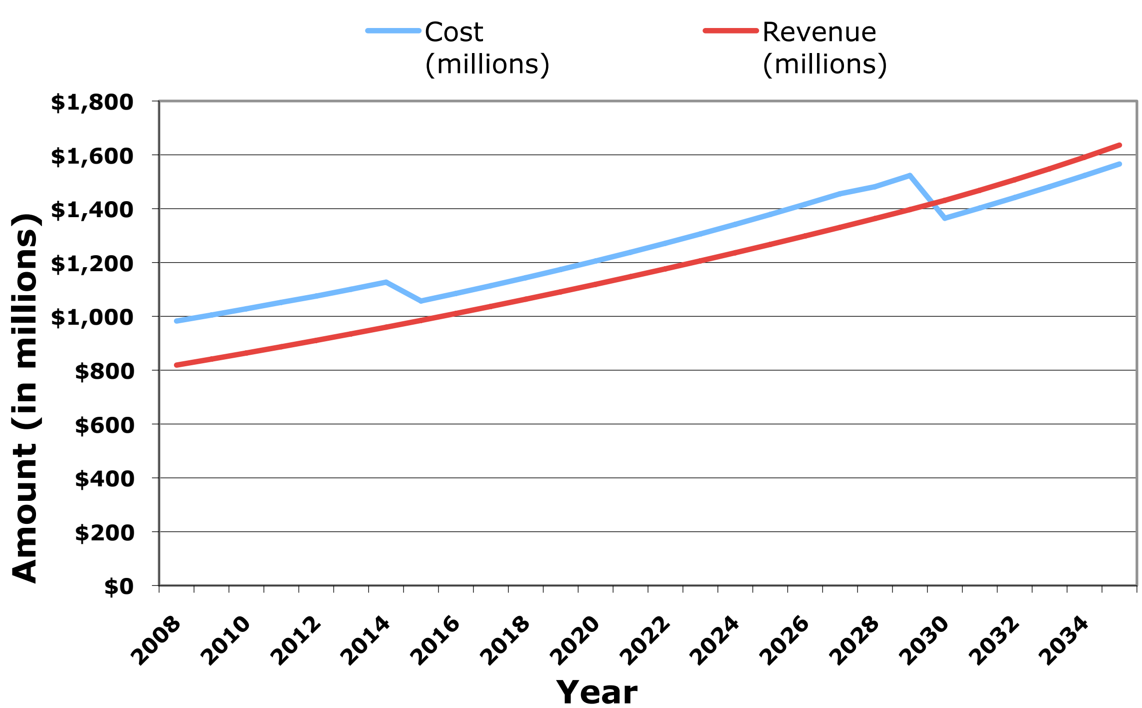
[6] "Metropolitan transportation planning process: Transportation plan." 23 CFR 450.322(b)(11).
[7] "Financial Assumptions for the Development of Metropolitan Transportation Plans 2005-2030." ODOT. Dec. 2004

### 3.6.3 State, Regional and Local Road-Related OMP Costs

**State highway operations, maintenance and preservation costs**
While ODOT has a long-range goal of improving state highway pavement condition to 90 percent fair-or-better, funding to meet this goal does not appear to be likely. ODOT OM&P needs were based (with minor adjustments) on Scenario 2 of the 2006 Oregon Transportation Plan. This would maintain pavement condition at the 78 percent fair-or-better level. The financial assumptions contained in this document indicate that even this level will be difficult for ODOT to maintain.

**Figure 3.12** shows the highway and regional street-related costs of OMP on the state highway system against expected revenue from 2007 – 2035. These numbers were generated by ODOT as part of a 2005 report to help MPOs across the state develop their RTPs.

**Figure 3.12**
**State Highway Operations, Maintenance and Preservation Costs and Revenues**




ODOT estimatesnon-modernization needs andOM&P costsstatewide at $983 million in the year 2008, increasing to $1,566 million in the year 2035. Financially constrained revenues forecasted to be available for these costs start at $819 million in 2008 and grow to $1,603 million by 2035. Revenue forecasts will fall just below this level of investment.

### State highway capital costs

Construction of new or improved state highway facilities on the Regional Mobility Corridors for financially constrained system by ODOT, including projects such as the Sunrise Corridor, US 26 and I-205, is expected to cost $1,232 million ($2007).

### Regional street operations, maintenance and preservation costs

Comprehensive data of the Portland metropolitan region OMP needs is not currently available. While conducting background research for the RTP, Metro staff found a lack of data that prevented effective reporting on asset conditions on regional streets. Additionally, while performing the financial analysis work, a lack of specific operations and maintenance spending information by local jurisdictions was identified.

As a post-adoption RTP task, Metro will be working to collect information from local jurisdictions on asset conditions as well as operations and maintenance costs. Collection of this data in a central location will allow for better forecasts of the costs of operating and maintaining the regional street system.

This RTP is relying on local government survey data that is collected by ODOT as a rough estimate for OMP expenditures.Based upon the information provided by cities and counties, it is estimated that achieving an ideal level of OMP would require an investment of approximately $237 million per year in 2008, increasing to more than $660 million per year by 2035.

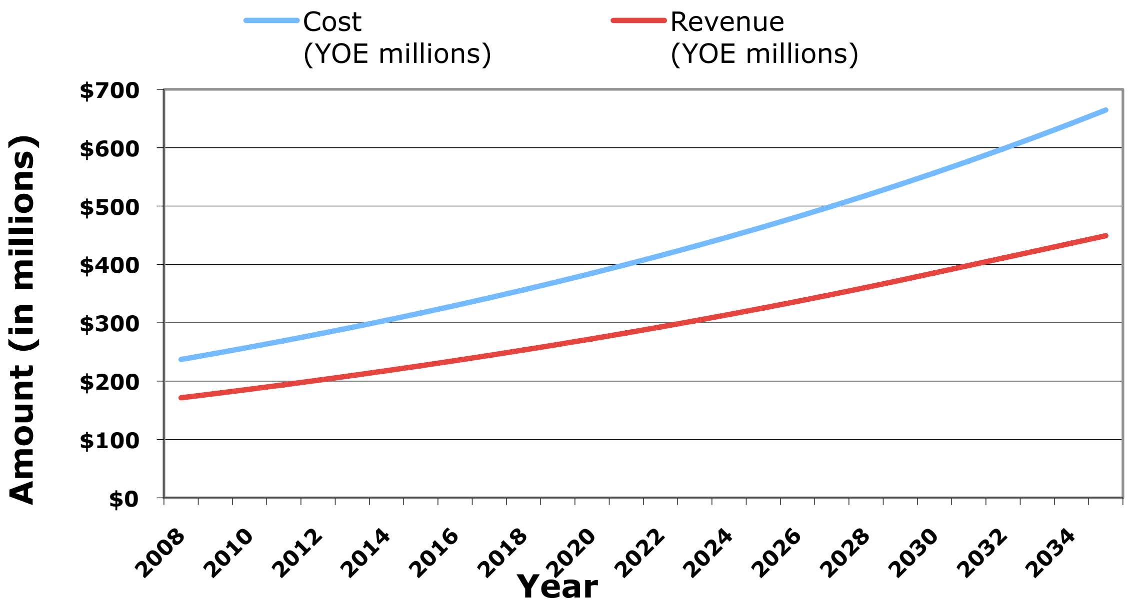
Forecasted revenues in the financially constrained plan available for local OMP expenditures fall short of this ideal level of OMP revenues, which range from approximately $171 million in 2008 to $450 million in 2035; roughly 70 percent of ”ideal” levels. However, this level of investment is fairly steady and represents the level of OMP investment in the regional street system that maintains the system at current conditions. While not ideal, this level of investment meets federal guidelines.

### Regional street-related capital costs

Construction and improvement of city and county owned regional street facilities in the 2035 Financially Constrained System is expected to cost $4,120 million (2007$). This includes all projects that expand street capacity, improves right-of-way for freight, vehicles, bicycles and pedestrians, and strategies such as the regional transportation demand management (TDM) and transit oriented development (TOD) programs.

**Figure 3.13** shows the roadway-related costs of OMP on the local roadway system against expected revenue from 2007 – 2035.

**Figure 3.13**
**Local Operations, Maintenance and Preservation Costs and Revenues**



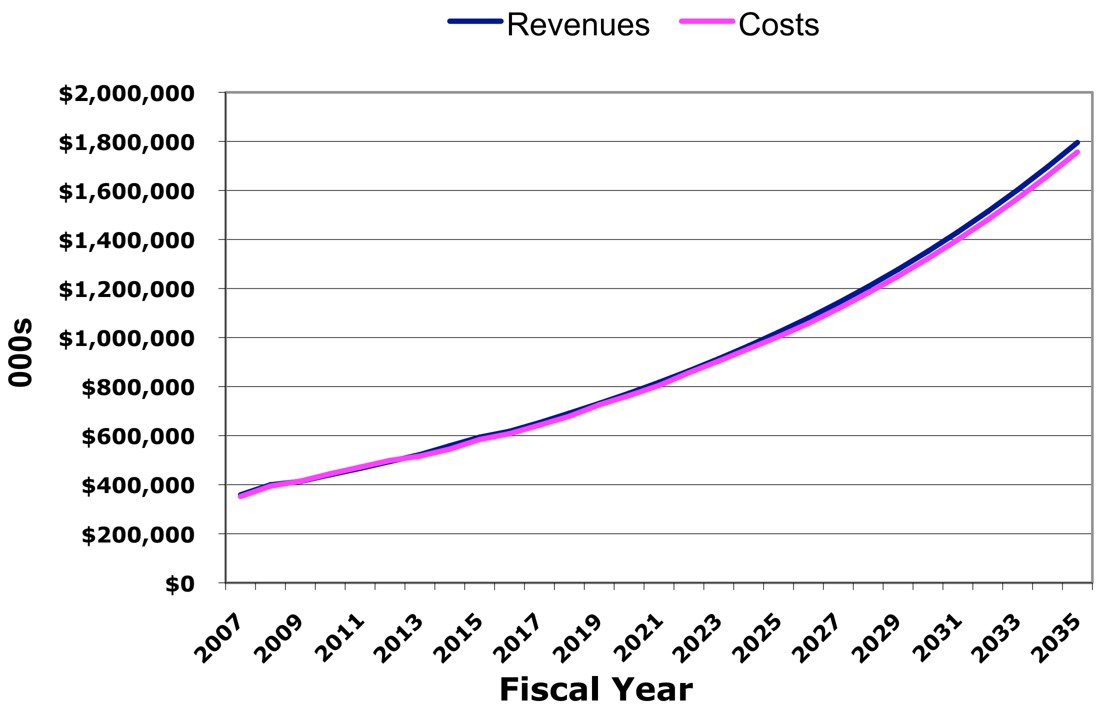

### 3.6.4 Transit-Related Costs

**Transit operations and maintenance**
Increasing TriMet and SMART service by 1 percent each year is assumed in the financially constrained transit system. Annual operating costs are expected to be $254 million in the year 2007 and $899 million in the year 2035, accounting for the approximately doubling of cost due to inflation and transit service provided.

**Transit capital**
Capital costs for transit include construction of light rail, commuter rail and streetcar rail systems, acquisition of additional buses and expanded maintenance facilities, right-of-way improvements such as bus shelters, bypass lanes and signals and new or upgraded transit centers and park-and-ride lots. Total transit capital costs for implementation of the financially constrained system are expected to be $2,672 million in 2007 dollars.

**Figure 3.14** below shows the transit costs of OMP against expected revenue from 2007 – 2035.

**Figure 3.14**
**Transit Operations, Maintenance and Preservation Costs and Revenues**





*Operating funds for the regional transit system are declining, making it difficult to maintain existing service levels and replace older bus fleets.*

## 3.7 MOVING FORWARD TO FUND OUR REGION'S PRIORITIES

*Federal and state funding is not keeping pace with infrastructure operation and maintenance needs so the majority of RTP investments are funded by local revenue sources.*

Federal and state funding for infrastructure investments is not keeping pace with needs, particularly for operations, maintenance and preservation of existing public assets but also needed expansion of the system. Local revenue sources are being used to fund the majority of RTP investments. State and local government purchasing power has steadily declined.

Until the recent passage of House Bill 2001 that will increase the state gas tax by six cents, the state gas tax hadnot increased since 1993. This shift in funding has been particularly acute in Oregon, as most states have turned to increased sales tax levies as a stop-gap for coping with the decrease in purchasing power of federal transportation funding. Lacking a sales tax, Oregon has focused on bonding strategies based on future revenue at the state level, but has not developed a long-term strategy. Local governments in Oregon have turned to increased property tax levies, road maintenance fees, system development charges and traffic impact fees to attempt to keep pace.

Diminished available resources mean increased competition for available transportation funds and reduced ability to expand, improve and maintain existing transportation infrastructure. Meanwhile, the region's transportation infrastructure continues to age and requires increasing maintenance. Increased traffic volumes also increase the maintenance needs of regional streets and throughways. Existing maintenance backlogs are expected to grow without new sources of revenues.

New funding strategies, enhanced public and private collaborations and stronger public support for seeking new revenue sources must be developed to maintain existing transportation assets as well as to pay for major system investments. The region needs a strategy that effectively links land use and transportation investment decisions. Both short-term and long-term strategies are needed to raise new revenues to fund needed investments.Ultimately, the region may decide to develop an action plan to raise these revenue sources in order to more fully implement the 2040 Growth Concept and address more of the needsidentified in this plan.

These and other key transportation finance issues will be the focus of additional policy discussions later this fall. The region's economy and livability depend on finding solutions to these issues – and so do future generations of people who will live and work in this region.

## CHAPTER 4

## MOBILITY CORRIDOR STRATEGIES:

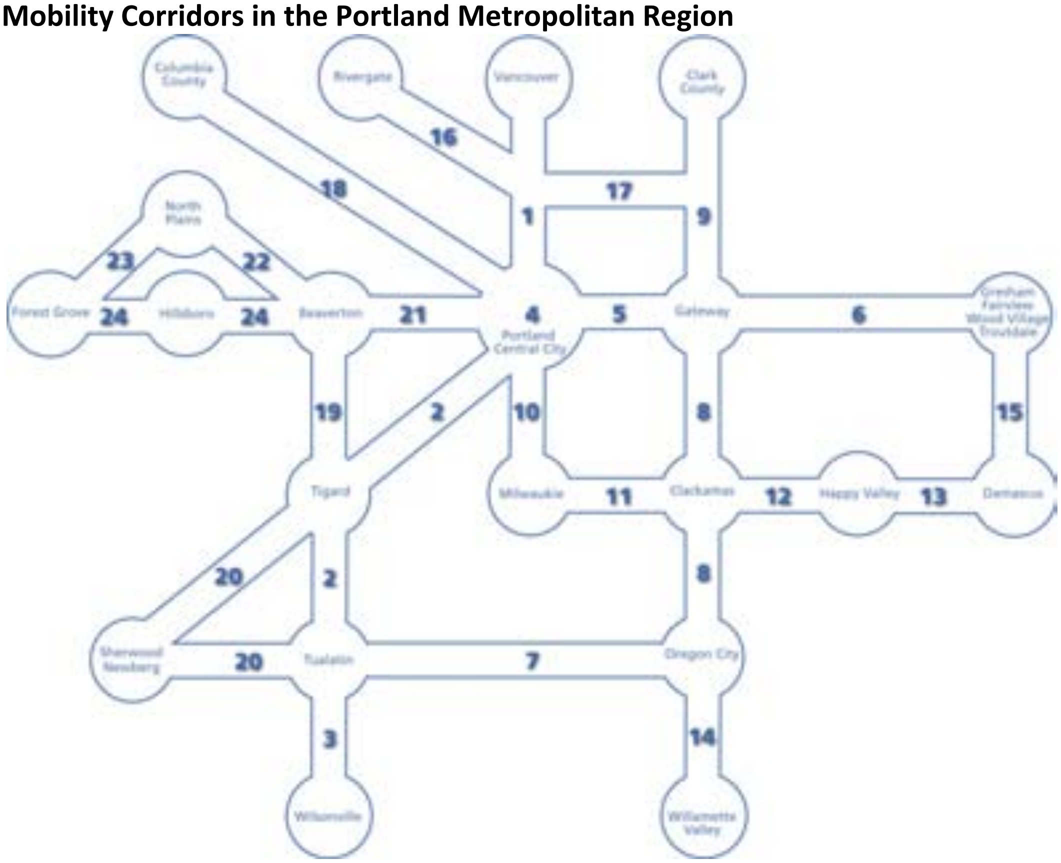
## HOW DO WE INVEST STRATEGICALLY IN OUR MOBILITY CORRIDORS?

### 4.1 INTRODUCTION

New RTP policies have been developed that call for a more comprehensive evaluation of potential solutions to address identified needs in the region's 24 mobility corridors. The 2035 RTP introduced the concept of regional mobility corridors, expanding the region's focus on mobility from individual facilities to the network of facilities and the adjacent land uses they serve.

The concept builds on the region's network of freeways and highways and the supporting parallel networks of arterial streets, regional bicycle parkways, high capacity transit, and frequent bus service. The function of this system of integrated transportation corridors is metropolitan mobility – moving people and goods between different parts of the region and, in some corridors, connecting the region with the rest of the state and other destinations outside Oregon. The region's mobility corridors are shown in **Figure 4.1** and listed in **Table 4.1**.

**Figure 4.1**
**Mobility Corridors in the Portland Metropolitan Region**



The mobility corridors provide a framework for changing the way in which the goals and policies of the RTP are implemented. The regional mobility corridor framework calls for consideration of multiple facilities, modes and land use when identifying needs and most effective mix of land use and transportation solutions to improve mobility within a specific corridor area. This emphasizes the integration of land use and transportation in determining regional system needs, functions, desired outcomes, performance measures, and investment strategies. At the same time, the mobility corridors are being used to satisfy state requirements for identifying regional needs and demonstrating the adequacy of the region's transportation system to support the region's planned land uses and improve system performance as much as feasible.

**Table 4.1**
**Mobility Corridors in the Portland Metropolitan Region**

| | |
|---|---|
| Corridor #1<br>Portland Central City to Vancouver | Corridor #13<br>Rock Creek Junction (OR 224) to US 26 |
| Corridor #2<br>Portland Central City to Tigard | Corridor #14<br>Oregon City to Willamette Valley |
| Corridor #3<br>Tigard to Wilsonville | Corridor #15<br>Troutdale/Wood Village/Fairview/Gresham to |
| Corridor #4<br>Portland Central City Loop | Corridor #16<br>Rivergate to I-5 |
| Corridor #5<br>Portland Central City to Gateway | Corridor #17<br>I-5 to Columbia South Shore |
| Corridor #6<br>Gateway to Troutdale/Wood Village/Fairview | Corridor #18<br>Portland Central City to Columbia County |
| Corridor #7<br>Tualatin to Oregon City | Corridor #19<br>Beaverton to Tigard |
| Corridor #8<br>Oregon City to Gateway | Corridor #20<br>Tigard to Sherwood |
| Corridor #9<br>Gateway to Clark County | Corridor #21<br>Portland Central City to OR 217 |
| Corridor #10<br>Portland Central City to Milwaukie | Corridor #22<br>OR 217 to North Plains |
| Corridor #11<br>Milwaukie to Clackamas | Corridor #23<br>Forest Grove to US 26 |
| Corridor #12<br>Clackamas to Rock Creek Junction (OR 224) | Corridor #24<br>Beaverton to Forest Grove |

This chapter sets forth overall regional transportation needs and strategies to address these needs for each of the 24 transportation corridors. It also summarizes the outreach process that Metro and ODOT staff engaged in during 2009 to develop the mobility corridor strategies.

## 4.2 MOBILITY CORRIDOR STRATEGIES

The "Mobility Corridor Strategy"framework emerged to better ground the outcomes-based policy framework of the RTP and to demonstrate compliance with state TPR requirements.

They are intended to document land use and transportation needs, function and potential solutions for each mobility corridor over the life of the RTP. Each of the 24 mobility corridor strategiesdocuments:

- Planned land use, local aspirations, pedestrian, bike, management and operations, freight, highway, road and transit needs
- Integrated mobility function and purpose for the facilities within a defined corridor-area
- Potential land use and transportation solutions and investment strategies

All 24 mobility corridor strategies were created in partnership with ODOT, TriMet, SMART and affected local governments and identify the relevant project development activities within each corridor. Each mobility corridor strategy contains projects from the two investment tracks: mobility corridors and community building, identified in Chapter 3. The RTP project list contained in Appendix 1.1 identifies projects by investment track and attributes it to a specific mobility corridor.

The mobility corridor strategies provide a framework to document regional needs and strategies, guide future planning, implementation and performance monitoring and inform local transportation system plans (TSPs) updates and corridor refinement plans. Each strategy applies the RTP policies and performance targets from Chapter 2 to identify regional needs for each mobility corridor, emphasizing development of a complete transportation system. The mobility corridor strategies also list all feasible actions and strategies that have been identified to address specific needs.

This is intended as a starting place to informlocal TSP updates and corridor refinement plans. The Regional Transportation Functional Plan directs how local governments will implement the RTP, and calls for local TSP updates to consider the regional needs identified in this chapter. Corridor refinement plans in Chapter 6 and TSP updates may further refine the needs and strategies identified in this chapter .The RTP recognizes that different parts of the region are at different stages of implementing the 2040 Growth Concept – ranging from largely undeveloped areas that are recent additions to the urban growth boundary to largely developed areas where growth will be accommodated through infill and redevelopment. As a result, different areas may have different transportation needs and investment priorities to support 2040 Growth Concept implementation at the community level. Implementation of a complete transportation system may stretch well beyond the 2035 planning period of this RTP.

### 4.2.1 Identifying Needs

The 2035 RTP system policies and concepts establish a framework for building a complete and well-connected multi-modal system of regional transportation facilities and services that supports all modes of travel and emphasizes safety, accessibility, mobility, and reliability for people and goods.

The regional street and throughway system concepts and policies emphasize system completion. Throughways are typically up to six-lanes, generally spaced five – seven miles, with interchanges spaced no less than two miles apart. The RTP calls for one-mile spacing of major arterial streets, with minor arterial streets or collector streets at half-mile spacing, recognizing that existing development, stream and other natural features may limit the provision of these connections.

The system of regional streets is multi-modal in design, serving automobiles, trucks, transit, motorcycles, bicycles and pedestrians. Inside the Portland metro region, throughways and arterial streets distribute freight moved by truck to air, marine, and pipeline terminal facilities, rail yards, industrial areas, and commercial centers. A complete street and throughway system allows for movement of goods and services to ensure the reliability of the regional freight system.

The regional transit system concept calls for fast, reliable high capacity transit connections between the central city and regional centers that serve longer trips at a higher operating speed than regional bus service. The regional transit system concept also calls for convenient and reliable regional transit bus service on the majority of the regional arterial system, with streetcars on some streets in the Portland central city and regional centers. These services require passenger infrastructure at stops and stations and a pedestrian system that connects to adjacent streets and neighborhoods.

The RTP elevates the importance of and the need to support pedestrian and bicycle travel, including on-street sidewalks and bicycle lanes, off-street multi-use trails, crossing locations, illumination, and streetscape amenities. Street system connectivity provides the backbone for bicycle and pedestrian travel in the region. For the purposes of the RTP, the regional bicycle and pedestrian systems typically correspond to the arterial street network and to regional multi-use trails with a transportation function. Bikeway gaps may be addressed through bicycle lanes or other bikeway designs, such as bicycle boulevards and bikeways on parallel collector or local streets when right-of-way constraints exist or when the arterial street system does not meet arterial spacing guidelines.

The RTP categorizes system needs into two components: gaps and deficiencies.

*System Gap*. System gaps are defined as missing links or barriers in the “typical” urban transportation system for any mode that functionally prohibits travel. A gap generally means a connection does not exist at all, but could also be the result of a physical barrier such as a throughway, natural feature, or existing development. A barrier can also be something that prevents an individual or a group from accessing the transportation system, including a lack of information, language, education and/or limited resources.

***System Deficiency*.** System deficiencies are performance, design or operational constraints that limit travel by a given mode. Examples may include unsafe designs, bicycle and pedestrian connections that contain obstacles (e.g., missing ADA-compliant curb ramps, distances greater than 330 feet between pedestrian crossings), low transit frequency; and throughways with less than six through lanes of capacity or arterials with less than four through lanes that fail to meet performance thresholds defined in RTP Tables 2.4 (Interim Regional Mobility Policy) or 2.5 (Non-SOV Modal Targets).

Table 4.2 summarizes the 2035 RTP regional transportation system concepts and policies that guide the identification of needs and evaluation of strategies and investments in the regional mobility corridors:

**Table 4.2**
**Regional Needs (Gaps and Deficiencies) by Modal Category**

| Category | Regional Needs |
|---|---|
| **Transit** | • Missing high capacity transit connections between regional centers and central city<br>• Missing regional transit service connections and low frequency service on major arterial streets, and in the central city, regional centers and industrial areas and along 2040 corridors<br>• Transit overcrowding, park-and-ride lot capacity constraints, and low frequency service<br>• Pedestrian and bicycle connections to all existing transit stops and major transit stops designated in Figure 2.15 of the RTP<br>• Transit access and servicethat address needs of youth, seniors, people with disabilities and environmental justice populations, including minorities and low-income families |
| **Bicycle and Pedestrian** | • Missing bicycle and pedestrian facilities, and lack of controlled bicycle and pedestrian crossings on major arterials<br>• Bicycle and pedestrian connections that contain obstacles (e.g., missing ADA-compliant curb ramps, distances greater than 330 feet between pedestrian crossings), absence of pedestrian refuges<br>• Safe crossings of streets and controlled crossings on major arterials. |
| **Regional Trails** | • Missing regional trail segments<br>• Safe crossings of streets and controlled crossings on major arterials. |
| **Throughways** | • System completion of two-mile spacing of interchanges<br>• Throughway capacity less than 6 through lanes in locations that do not meet performance thresholds defined in RTP Tables 2.4 (Interim Regional Mobility Policy) |
| **Arterials** | • Missing throughway, rail and stream over-crossings that help meet arterial network concept goals where practicable<br>• Missing arterial connections<br>• Missing collector connections in the central city, regional centers and industrial areas<br>• Arterial street capacity less than 4 lanes in locations that do not meet performance thresholds defined in RTP Table2.4 (Interim Regional Mobility Policy) |
| **Safety** | • Poor design or substandard design features<br>• High crash locations based on ODOT SPIS data |

| Category | Regional Needs |
|---|---|
| **Rail** | • At-grade rail crossings that are barriers to bicycle and pedestrian access, freight reliability, safety, and may contribute to congestion |
| **Regional Bridges** | • Bridge restrictions (height and weight) |
| **Freight** | • Freight access to intermodal facilities, employment and industrial areas, and commercial districts<br>• Lack of reliability on the regional freight transportation system as determined by regional freight facilities that do not meet performance thresholds defined in RTP Tables 2.4 (Interim Regional Mobility Policy) in the midday one-hour period |

## Mobility Corridor Development

In early 2009, Metro staff worked with regional partners to further develop and begin implementing the mobility corridor concept. The regional partners agreed on the need to better understand an individual mobility corridor's components and performance, and to compare performance across multiple mobility corridors in order to identify the most cost-effective strategies and prioritize transportation system investments. Together, 24[1] mobility corridors were identified that include a combination of highway, arterial streets, high capacity transit routes, frequent bus routes, freight/passenger rail and regional trails that move people and goods in and through the Portland region. There were three distinct products of this work:

- Mobility Corridor Atlas;
- Agency Coordination Interviews; and
- Agency Mobility Corridor Workshops.

**Mobility Corridor Atlas**
The Atlas of Mobility Corridors, published in April 2009, was conceived as a way to visually present current land use and multi-modal transportation data for each of the region's major travel corridors. It is designed to help planners and decision-makers understand existing system conditions, identify needs and prioritize investments. This tool is intended to help cities and counties when updating their transportation system plans upon adoption of the RTP.

For each corridor, the atlas provides a general overview that includes location in the region, primary transportation facilities and land use patterns, and an assessment of gaps and deficiencies by travel mode. The atlas also provides for the comparison of data between

[1] Initially, regional partners identified 23 mobility corridors. Subsequent discussions, however, have led to the addition of 1 mobility corridor for a total of 24. According to the Oregon Highway Plan (OHP), all mobility corridors include statewide highways. In discussions, staff discovered that the Tualatin Valley Highway from Highway 217 to Hillsboro Regional Center was the only statewide highway not designated a mobility corridor, so it was added.

corridors and the ability to merge multiple corridors for analysis of broader travel areas. The mobility atlas presents a series of maps for each corridor showing its geographic location, transportation facilities, adjacent land use patterns and operational attributes. The maps are accompanied by short explanatory narratives, data tables and "quick facts." The atlas is included in Appendix 7.0.

**Agency Coordination Interviews Summary**
During January 2009, Metro and ODOT staff conducted agency coordination interviews (ACIs) with city, county and regional agency staff to examine in greater detail the issues within each mobility corridor. The ACIs provided local jurisdiction staff with the background and context of the mobility corridors and draft versions of the mobility corridor atlas were presented for discussion. Metro and ODOT staff also presented a methodology for identifying regional transportation needs based on gaps and deficiencies, as defined by 2035 RTP policies, for each mobility corridor.

**Agency Mobility Corridor Workshops Summary**
Metro and ODOT hosted seven Mobility Corridor Workshops in March and April 2009.The main objectives of the workshops were to gather information to help define the needs based on RTP policies as well as mode, function, and general location of facilities within each mobility corridor. The workshops resulted in the information included in each of the mobility corridor strategies.

## Overview and Guide to Using the Mobility Corridor Strategies

The mobility corridor strategies that follow document the corridor's function, geographic location, transportation facilities, 2040 land uses, corridor needs, and all feasible investment strategies. Each strategy contains the same elements and the following descriptions are included to serve as a guide to understanding the mobility corridor strategies.

**Corridor Function** –Provides a statement of the mobility corridors function as it relates to accessing 2040 land uses and contributes to freight mobility and statewide travel.

**Corridor Characteristics** – Compares population, households, and employment in 2005 and 2035. It shows the percent change in the mobility corridor for all three categories and contrasts this with the increases in the overall regional totals.

**Regional Transportation Facilities** – Lists the major transportation facilities including high capacity transit (HCT), regional trails, regional bridges, state throughways, and major parallel arterial facilities.

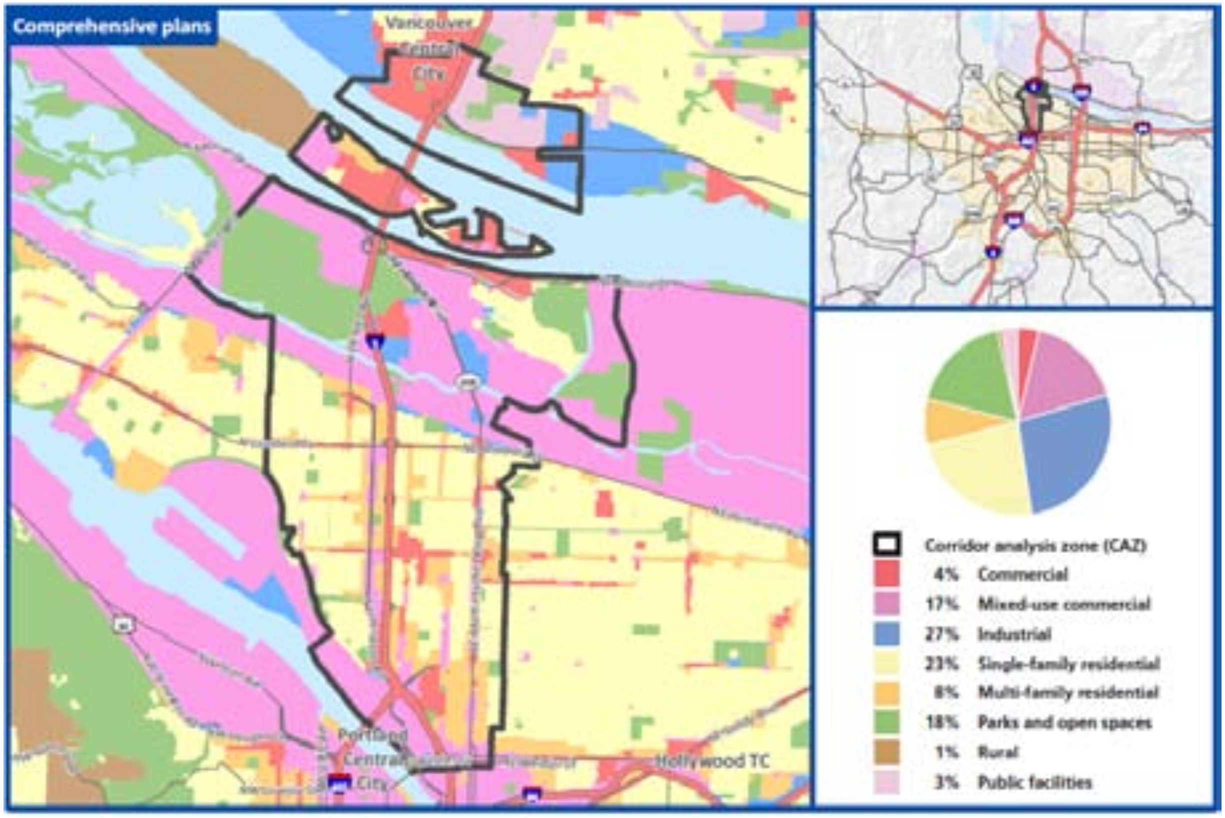
**Regional 2040 Land Uses** – Lists the 2040 land uses that fall within the boundaries of the mobility corridor focusing on regional centers, town centers, employment and industrial areas, passenger and freight intermodal facilities and identifying other key destinations.

**Summary of Needs** – The table summarizes needs based on the RTP system completion policies, performance targets, mobility policies and non-SOV modal targets detailed in Chapter 2. The needs focus on gaps and deficiencies in the transit network, bicycle and pedestrian networks, throughway network, arterial network, regional bridges, safety, and the regional freight network.

**2035 RTP Investments –** Discusses the modal breakdown of projects for each corridor. It also shows the total project cost for each corridor and by mode. This includes both mobility corridor and community building investments. The information compares the Federal and State RTP systems of projects. Because the mobility corridors have some overlap in analysis area, some projects fall into one or more mobility corridors.

**RTP Investment Strategy –** The table categorizes all feasible projects into near-term, medium term, and long-term investment strategies. It lists of unfunded projects that do not have identified revenue to be included in either the Federal or State RTP. Additionally, it proposes a list of regional and local actions to be performed for each mobility corridor to begin implementing the identified strategies.

### 4.2.2 Mobility Corridor #1– Portland Central City to Vancouver




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Central City to the City of Vancouver and provides access to the Albina, Swan Island, Rivergate and West Columbia Corridor industrial areas, marine and rail facilities, Portland Community College (Cascade Campus), and regional attractions in the Delta Park area and Smith and Bybee Lakes Regional Park. |
| **Freight Mobility:** Serves as part of the West Coast Trade Corridor (from Canada to Mexico), provides access to the intermodal Albina rail yard, Portland Harbor marine terminals and is part of the access route to Portland International Airport for air cargo. Also serves as rail and highway access to river-dependent industrial uses. |
| **Statewide Travel:** Serves as one of two northern gateways to the region, and provides access to the Central City hub and the state of Washington. |

### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 46,979 | 57,628 | 3,097,402 | 1.9% | 22.7% | 57.9% |
| **Households** | 19,884 | 29,774 | 1,208,686 | 2.5% | 49.7% | 57.6% |
| **Employment** | 39,810 | 61,721 | 1,799,152 | 3.4% | 55.0% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • Interstate MAX | • N. Willamette Trail<br>• Peninsula Crossing Trail<br>• Lewis & Clark Discovery Trail | • Columbia River Bridge | • I-5 | • MLK Jr. Blvd.<br>• Interstate Ave.<br>• Going St.<br>• Vancouver/Williams St.<br>• Greeley Ave. | • Union Pacific<br>○ Seattle Sub mainline<br>• BNSF<br>○ Seattle Sub mainline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Employment Areas | Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Portland Central City<br>• Vancouver | | | • Columbia Corridor<br>• Rivergate Industrial<br>• Swan Island IA<br>• Albina Industrial/Rail Yard<br>• T-6 | • Expo Center<br>• Delta Park<br>• University of Portland<br>• Portland Community College |

## Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy).<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy).<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops.<br>• Transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• HCT is currently in project development to connect Portland Central City with Vancouver Regional Center as part of the Columbia River Crossing(CRC) project.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas where they do not exist. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized. For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Safe, direct, continuous and comfortablebicycle and pedestrian connections between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | Plan. |
| **Regional Trails** | • North/south trail connectivity.<br>• Direct connections between trails and on-street bicycle and pedestrian facilities. | • The proposed North Willamette Greenway trail combines with the existing Peninsula Crossing trail to provide for north/south travel along the western section of the corridor<br>• The Peninsula Canal trail would provide for a north/south connection between the Columbia Slough trail and Marine Drive trails in the northeast section of the corridor.<br>• Analyze regional trail access points in relation to on-street bicycle and pedestrian network and provide direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways** [2] | • 7 interchanges within this mobility corridor along I-5do not meet the ODOT two-mile spacing standard.<br>• The distance between the N. Lombard Street and N. Columbia Blvd. interchange, the N. Columbia Blvd. and Hayden Island interchange, and the Hayden Island and Highway 14 interchange (in Clark County) are less than one-mile apart.<br>• The Interstate Bridge is a bottleneck.<br><br>(The following facilities do not meet the performance threshold in Table 2.4)<br>• 2035 PM 2-hour peak volumes exceed capacity onnorthbound I-5 for the entire corridor except for the area around Rosa Parks Way and the area between Fremont and N. Going.<br>• 2035 PM 2-hour peak volumes exceed capacity on southbound I-5 just north of the Fremont Bridge. | • No strategies currently identified to address interchange spacing.<br>• Columbia River Crossing project (RTP #10893) to address current Interstate Bridge bottleneck (financially constrained).<br>• Delta Park widening projects address other performance deficiencies in this corridor (financially constrained).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials** [3] | Arterial Gaps<br>• Need for a North Willamette River crossing.<br><br>The following do not meet the | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

[2] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[3] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

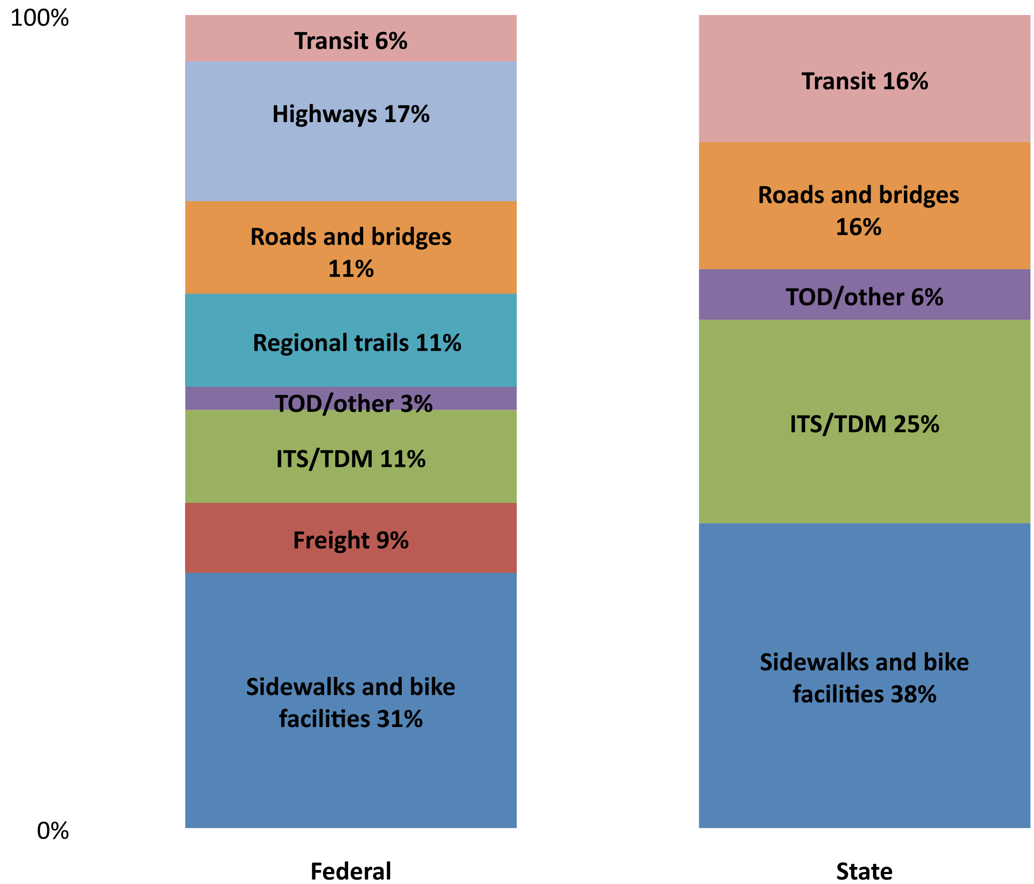
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | performance threshold in Table 2.4:<br>• N. Greeley Ave. in the 2035 PM 2-peak hour volumes exceed capacity northbound between N. Killingsworth Ave. and N. Rosa Parks Way. | |
| **At-grade Heavy Rail** | • There is one at-grade heavy rail crossing within this mobility corridor:<br>o NE Lombard Place | • NE Martin Luther King Jr. Blvd./Columbia Blvd. Transportation Improvement Program identified an advanced railroad crossing warning signal to address NE Lombard Place at grade rail crossing deficiency.<br>• Local TSPs evaluate at-grade heavy rail crossings for deficiencies and solutions.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Bridges** | • The following bridges within this mobility corridor have height or weight restrictions:<br>o N. Vancouver Ave. Eastbound crossing the Columbia Slough (8500 N. Vancouver) – Wt. Limits: 24,000 lbs. (single unit); 36,000 lbs. (combination unit)<br>o N. Incinerator Rd. crossing the Columbia Slough (12100 N. Incinerator Rd.) – Wt. Limits: 50,000 lbs. (single unit); 80,000 lbs. (combination unit)<br>o N. Going –Swan Island (inner lanes) crossing the UPRR tracks – Wt. Limits: 50,000 lbs. (single unit); 80,000 lbs. (combination unit)<br>o N. Vancouver Ave. Eastbound crossing the UPRR tracks (7800 N. Vancouver) – 50,000 lbs. (single unit); 80,000 lbs. (combination unit)<br>o N. Interstate Ave. Ramp (SB Interstate to Broadway Bridge) – Wt. Limits: 50,000 lbs. (single unit); 80,000 lbs. (combination unit)<br>o N. Interstate Ave. Viaduct (sloped hillside next to SB lane) – Wt. Limits: 50,000 lbs. (single unit); | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | 80,000 lbs. (combination unit)<br>o George School Pedestrian Overpass (N. Columbia Blvd.) – Clearance: 16’-00”<br>o The UP bridge just west of I-5 has a height limitation.<br>o NE 28th Ave. crossing LRT and I-84 (1100 NE 28th Ave.) – Wt. Limits: 50,000 lbs. (single unit); 80,000 lbs. (combination unit) | |
| **Safety** | • I-5 from the Rose Quarter north to the CRC ranks as Category 4 and 5, with most of the stretch ranking as a Category 5. (This is on a scale of 1-5, with Category 5 being the highest priority.)<br>• The following intersections rank in the 95% percentile according to ODOT’s SPIS rankings: I-5 and I-405, I-5 and N. Lombard St., and I-5 and the CRC. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | (The following do not meet the performance threshold in Table 2.4)<br>• 2035 midday 1-hour volumes exceed capacity, I-5 northbound from N. Killingsworth St. to N. Rosa Parks Way and northbound on the Interstate Bridge. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

## 2035 RTP investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #1 has 35 projects totaling more than $4 billion. Highways account for 17% of projects, but 73% of project costs (~$3.1 billion). Most of this cost is for components of the Columbia River Crossing (new bridge and HCT to Clark County). Federal system transit investments comprise 6% of projects, approximately $750 million for extending HCT into Clark County. Sidewalk and bike projects account for 31% of federal projects and 38% of state projects for this mobility corridor, but only account for 3% and 12% respectively of total project costs for both systems. The Federal and State systems investments total just over $5 billion, but the majority of project costs in this corridor relate to the Columbia River Crossing. |

## Projects by mode for federal and state systems




## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #1 Total Project Cost | State System Cost by Mode | % of MC #1 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $142,389,600 | 3% | $28,239,963 | 12% |
| Freight | $81,917,500 | 2% | $0 | 0% |
| ITS/TDM | $5,400,024 | 0% | $4,165,325 | 2% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 4% |
| Regional trails | $11,890,835 | 0% | $0 | 0% |
| Roads and bridges | $37,701,941 | 1% | $64,045,222 | 26% |
| Highways | $3,139,453,209 | 73% | $0 | 0% |
| Transit | $902,600,000 | 21% | $628,303,000 | 56% |
| **TOTAL** | **$4,322,864,109** | 100% | **$735,753,510** | 100% |

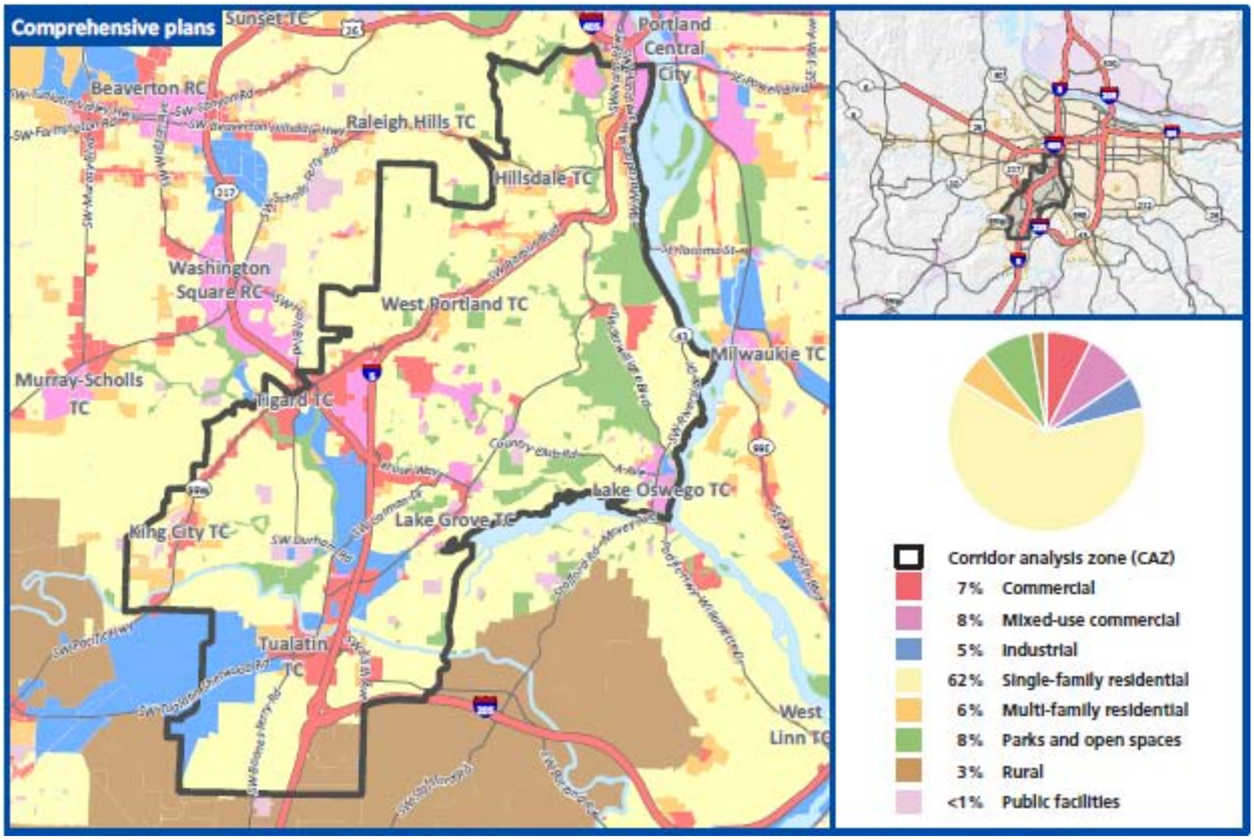
## 2035 investment strategy

| Strategy | |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Complete I-5/Columbia River Crossing (CRC) study.<br>• Continue work to develop Active Transportation concept in this corridor. |
| **Medium Term (5 – 10 years)** | • Interchange improvements, consistent with I-5/CRC study.<br>• Address capacity and safety issues for I-5/CRC.<br>• Complete HCT from Portland to Vancouver.<br>• N. Willamette Greenway trail.<br>• Peninsula Canal Trail. |
| **Long-term (10 – 25 years)** | |

| Unfunded Projects |
|---|
| • I-5 Rose Quarter improvements<br>• I-5/I-84 Interchange improvements (only ROW acquisition funded in RTP) |

| Regional Actions | Local Actions |
|---|---|
| • Continue work on I-5/CRC study, including HCT.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike andpedestrian inventory data when updated through TSP update. |

### 4.2.3 Mobility Corridor #2– Portland Central City to Tigard




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Central City to Washington Square Regional Center and the southwest part of the region, and access to regional destinations such as Oregon Health Sciences University, Portland Community College (Sylvania Campus) and Tryon Creek State Park. |
| **Freight Mobility:** Serves as part of the West Coast Trade Corridor (from Canada to Mexico). |
| **Statewide Travel:** Provides access to the Central City hub from the Willamette Valley. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 139,247 | 219,969 | 3,097,402 | 7.1% | 58.0% | 57.9% |
| **Households** | 58,498 | 83,116 | 1,208,686 | 6.9% | 42.1% | 57.6% |
| **Employment** | 110,647 | 177,500 | 1,799,152 | 9.9% | 60.4% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | • Willamette Shoreline Trail<br>• Terwilliger Trail<br>• Turf to Surf Trail | • Ross Island Bridge | • I-5<br>• OR 99W | • Barbur Blvd./OR 99W<br>• Macadam Ave./OR 43<br>• Boones Ferry Rd. | • Portland & Western |

### Regional 2040 land uses

| Regional Centers | Town Centers | Employment Areas | Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Portland Central City | • Tigard<br>• Lake Grove<br>• Lake Oswego TC<br>• Hillsdale<br>• Raleigh Hills Tualatin<br>• King City<br>• West Portland | • Kruse Way | • Tigard<br>• Tualatin | • PCC Sylvani a |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy).<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy).<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Bicycle parking and options for bike sharing at all HCT stations.<br>• Park- and- ride capacity | • More supportive, high to medium mixed-use development around MAX station areas.Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Long-Range HCT Plan identifies a potential HCT line between Portland Central City and Sherwood(in general vicinity of Barbur Blvd./OR99W). It is listed as a "Near-term" investment priority.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | constraints: Barbur Blvd @ 100%, Tualatin @ 93%. | Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized. For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth ManagementFunctional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan<br>• Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• $31 million in multimodal improvements identified on Barbur (State RTP projects 10283, 10285).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities.<br>• North/south trail connectivity.<br>• Fanno Creek Regional Trail gaps. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and providedirect, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth ManagementFunctional Plan. |
| **Throughways** [4] | • 7 interchanges heading south along I-5 from the Ross Island Bridge do not meet the ODOT 2-mile spacing standard.<br>• Fanno Creek, the rail line, and freeway corridors are transportation barriers in close proximity to each other, and | • Refinement planning to address issues in the corridor such as interchange spacing.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |

[4] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | there is a lack of capacity crossing these barriers.<br>• Potential need for additional I-5 crossings between the Ross Island Bridge and its intersection with Barbur Blvd.<br><br>The following do not meet the performance threshold in Table 2.4:<br>• Most of I-5 (both directions)in the 2005 PM 2-hour peakhour volumes exceed capacity, between the I-405 interchange and the Tualatin TC.<br>• I-5 (southbound) in the 2035 NB PM 2-hour peak hour volumes exceed capacityfrom the I-405 interchange to SW Elligsen Rd | |
| **Arterials**[5] | <u>Arterial Gaps</u><br>• East/west connectivity between OR 43 and I-5, south of the point at which I-5 turns west.<br>• Inadequate north/south arterial connection spacing between OR 99W and I-5 from Durham Road south to the County line<br>• Lack of connections to I-5.<br>• Lack of connectivity in Metzger area (Taylors Ferry Rd. to Oleson Rd.)<br>• Better connection between Terwilliger/I-5 and Washington Square.<br><br>The following do not meet the performance threshold in Table 2.4: 2005 PM 2-Hour Peak Volumes exceed capacity on:<br>• OR 43 between the I-405 interchange and the Sellwood Bridge (in both directions). | • ITS measures to improve efficiency and safety of Hwy 43 between I-405 and Sellwood Br. (RTPproject #10173)<br>• Widening and boulevard treatment to improve OR 43 between Marylhurst and I-205 (RTPproject#10127).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

[5] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • OR 99W (southbound) between the Ross Island Bridge and the Tigard TC.<br><br>2035 NB PM 2-Hour Peak Volumes Exceed Capacity on:<br>• OR 43 north of the Sellwood Bridge to its junction with I-205 (southbound mostly, but northbound just north of I-205).<br>• Boones Ferry Rd. for most of the stretch between the Sellwood Bridge and Kruse Way (southbound). The stretch between Avenue A and Kruse Way fails in both directions.<br>• OR 99W (southbound) between the Ross Island Bridge and the Tigard TC. The same is true for the 2005 PM 2-hour peak. In the 2035 NB PM 2-hour peak, Hwy 99W fails to meet the threshold in both directions south of the Tigard TC and beyond King City TC. | |
| **At-grade Heavy Rail** | • The following at-grade heavy rail crossings exist in this mobility corridor:<br>○ Highway 43 / N State St.<br>○ SW Tualatin-Sherwood Rd. (at intersection with Boones Ferry Rd.)<br>○ SW Nyberg St. (at intersection with SW Boones Ferry Rd.)<br>○ SW Tualatin Rd. (near SW 86$^{th}$ Ave.)<br>○ SW Durham Rd.<br>○ SW Bonita Rd.<br>○ SW Hall Blvd.<br>○ SW Main St.<br>○ SW Tiedeman Ave.<br>○ SW North Dakota St.<br>○ SW Scholls Ferry Rd. | • WES quiet zone project<br>• Local TSPsevaluate at-grade heavy rail crossings for deficiencies and solutions.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |

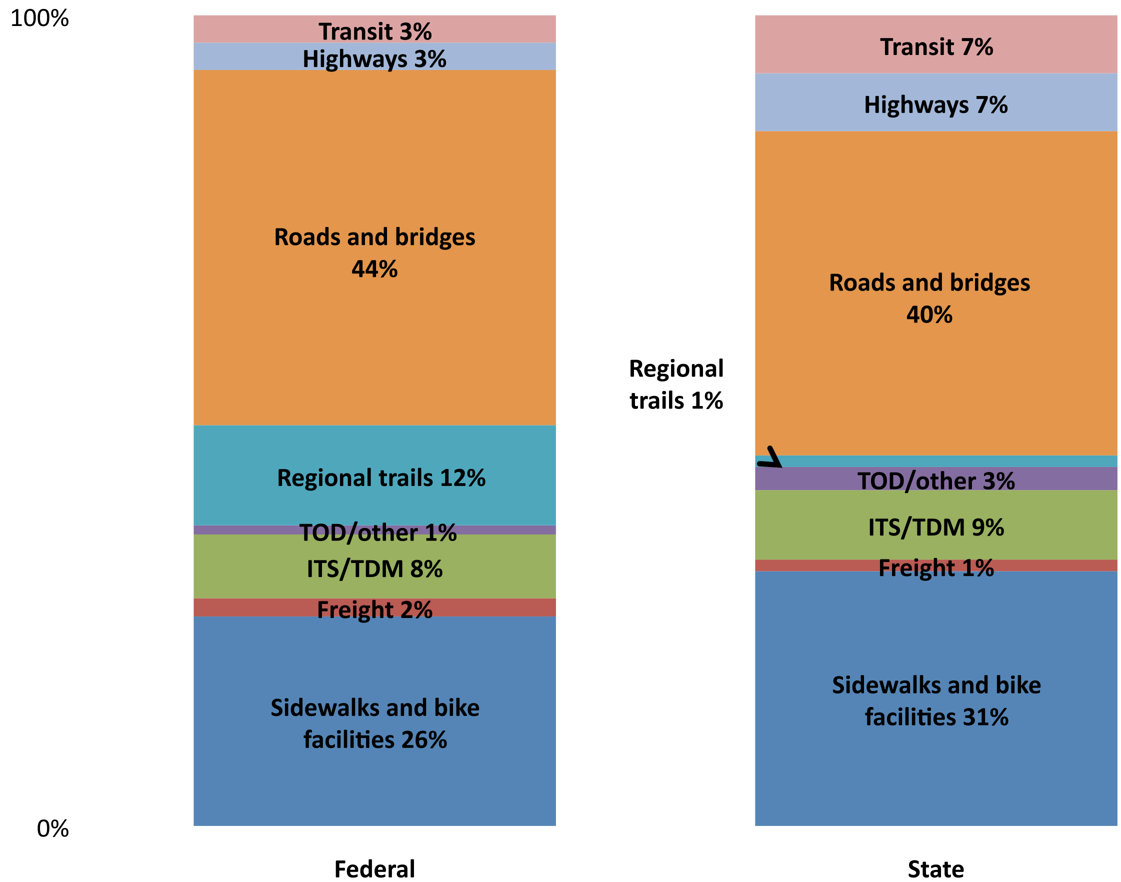
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | ○ SW Hall Blvd. (at SW Cascade Ave.)<br>○ SW 5th St. (near SW Alger Ave.)<br>○ SW Beaverton Hillsdale Hwy and SW Lombard Ave.<br>○ SW Farmington Rd. (at SW Hall Ave.)<br>○ SW 95th Ave. (near Tualatin-Sherwood Rd.) | |
| **Regional Bridges** | • The bridge at SW Capitol Highway (that crosses SW Bertha Blvd.) is weight restricted: 50,000 lbs. (single unit) and 80,000 lbs. (combination unit).<br>• The bridge on SW Capitol Highway (that crosses SW Bertha Blvd.) is height restricted. The clearance is 15'-02".<br>• The Sellwood Bridge has a weight restriction of 10 tons.<br>• Weight limited bridge (1419) on east end of Barrows south of Scholls Ferry Road. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |
| **Safety** | • I-5 from the I-405 interchange to the area just south of the I-205/I-5 interchange ranks on the ODOT SPIS list as Category 4 and 5(Scale 1-5, 5 being highest priority).Multiple locations rank above the 90th percentile. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |
| **Regional Freight** | The following do not meet the performance threshold)Midday 1-hour 2035 NB volumes exceed capacity:<br>• I-5 in both directions between the Tualatin TC and SW Durham Rd. and in both directions around the Lake Grove Town Center<br>• SW Durham Rd. between I-5 and the SW Pacific Hwy at the King City TC (both | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | directions).<br>• OR 217 between SW Denney Rd. and SW Hall Blvd. | |

## 2035 RTP investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #2 has 89 projects totaling $1.2 billion. Roads and bridge projects account for 44% of all of projects and 47% of total project costs (~$600 million). Sidewalk and bike projects account for 26% of projects, but only 16% of total project costs ($200 million).The State RTP adds 70 more projects and an additional $2 billion. Transit capital accounts for the majority of the additional investments. This includes HCT from Portland Central City to Tigard and Sherwood that costs roughly $1.6 billion, upgrades to WES service and other bus improvements in the corridor. The State system also consists of $800 million in additional road and bridge projects. For both the Federal and State systems investments total over $4 billion. |

## Projects by mode for federal and state systems




## RTP projects by cost and mode

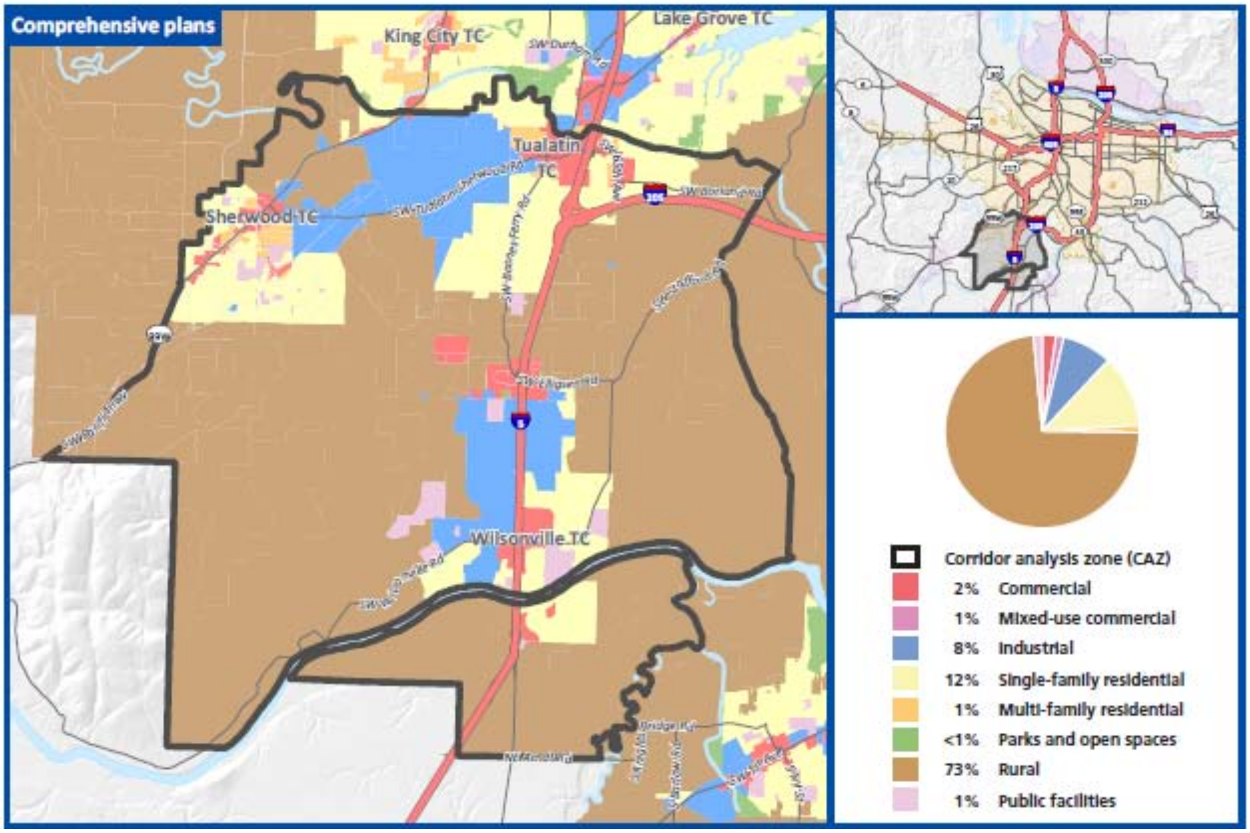
| Mode | Federal System Cost by Mode | % of MC #2 Total Project Cost | State System Cost by Mode | % of MC #2 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $201,140,232 | 16% | $109,454,384 | 3% |
| Freight | $53,000,000 | 4% | $28,166,850 | 1% |
| ITS/TDM | $11,429,794 | 1% | $26,690,675 | 1% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 0% |
| Regional trails | $116,593,000 | 9% | $6,800,000 | 0% |
| Roads and bridges | $597,697,548 | 47% | $798,389,619 | 24% |
| Highways | $35,700,000 | 3% | $459,537,000 | 14% |
| Transit | $243,590,000 | 19% | $1,914,056,000 | 57% |
| **TOTAL** | **$1,260,661,574** | 100% | **$3,354,094,528** | 100% |

## 2035 investment strategy

| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel |

<table>
<tr><td></td><td>
• Address arterial connectivity and crossings.<br>
• Complete mobility corridor refinement plan.<br>
• Complete alternatives analysis for HCT corridor.<br>
• Complete land use planning of HCT corridor as part of HCT System Expansion Policy.<br>
• Complete gaps and make crossing improvements in the sidewalk and bike network.
</td></tr>
<tr><td>Medium Term (5 – 10 years)</td><td>
• Complete gaps in the arterial network.<br>
• Interchange improvements, consistent with refinement plan<br>
• Coordinate TSM/TDM strategies.
</td></tr>
<tr><td>Long-term (10 – 25 years)</td><td></td></tr>
<tr><th colspan="2">Unfunded Projects</th></tr>
<tr><td colspan="2">
• 99W Multimodal improvements, $22,400,000<br>
• I-5 North Tigard to I-405 improvements, $398,700,000
</td></tr>
<tr><th>Regional Actions</th><th>Local Actions</th></tr>
<tr><td>
• Continue work on identifying resources to complete mobility corridor refinement plan.<br>
• Begin HCT alternatives analysis.<br>
• Conduct corridor refinement plan.<br>
• Update Atlas of mobility corridors.<br>
• Continue developing a data collection and performance monitoring system.<br>
• Work on furthering the Active Transportation Concept.
</td><td>
• Initiate actions related to the HCT System Expansion Policy.<br>
• Land use planning.<br>
• Address connectivity needs in local TSPs.<br>
• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>
• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>
• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update.
</td></tr>
</table>

## 4.2.4 Mobility Corridor #3 – Tigard to Wilsonville




### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Provides access to the Tualatin-Sherwood and Wilsonville industrial areas, connects the cities of Tualatin and Wilsonville and provides regional access to the Tualatin National Wildlife Refuge. |
| **Freight Mobility:** Provides Shortline heavy rail access to Washington County from the Willamette Valley, I-5 access for surrounding agricultural activities and is part of the West Coast Trade Corridor (from Canada to Mexico). |
| **Statewide Travel:** Serves as the primary southern gateway to the region and a statewide route to Portland International Airport. |

### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 63,742 | 157,269 | 3,097,402 | 5.1% | 146.7% | 57.9% |
| **Households** | 23,816 | 52,025 | 1,208,686 | 4.3% | 118.4% | 57.6% |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Employment** | 79,189 | 97,687 | 1,799,152 | 5.4% | 23.4% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • WES | • Tonquin Trail<br>• Powerline Trail | | • I-5<br>• OR 99W | • 72nd Ave.<br>• Boones Ferry Rd.<br>• Grahams Ferry Rd.<br>• Hall Blvd.<br>• Stafford Rd./Elligsen Rd.<br>• OR 43 (Ave. A to I-205) | • Portland & Western |

### Regional 2040 land uses

| Regional Centers | Town Centers | Employment Areas | Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| | • Tigard<br>• Tualatin<br>• Wilsonville | | • Tualatin/Sherwood Tigard<br>• Wilsonville | • Salem |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Better bike and pedestrian access to WES stations.<br>• Better shuttle or bus feeder service to WES stations.<br>• Midday WES commuter rail service.<br>• Address improvements to I-5 for easy transit access to transit hubs.<br>• The following parallel arterials for this corridor do not have transit service: Stafford Rd., Grahams Ferry Rd., 65th Ave., 72nd Ave., and Tonquin Rd.<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy).<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy).<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Long-Range HCT Plan Identifies a potential HCT line between Portland Central City and Sherwood (in general vicinity of Barbur Blvd./OR99W).It is listed as a "Near-term" investment priority.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized. For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |
| **Regional Trails** | • North/south trail connectivity in this corridor.<br>• Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |
| **Throughways**[6] | • The distance between the SW Nyberg St. and I-205 interchanges is less than one-mile apart and does not meet the ODOT 2-mile interchange spacing standard.<br>• There are existing merge-weave issues on NB I-5 | • A series of auxiliary lane improvements between the UGB and the I-205 interchange are planned (FC projects 11071, 10872, 11177).<br>• Operational improvements are currently being studied for this corridor ($220,000,000 in State RTP).<br>• Implement Regional Transportation |

[6] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | between I-205 and Nyberg Rd. interchanges.<br>The following do not meet the performance threshold in Table 2.4:<br>• 2035 PM 2-hour peak volumes exceed capacity on I-5 in both directions south of I-205 to Boones Ferry Rd. and in the southbound direction from Boones Ferry Rd. to Wilsonville Rd. | Functional Plan and Urban Growth Management Functional Plan |
| **Arterials**[7] | <u>Arterial Gaps</u><br>• East of I-5 and south of I-205 there are gaps in both the north/south and east/west connectivity near Stafford Rd.<br>• West of I-5 and both north and south of Tualatin-Sherwood Rd., there are gaps in both the north/south and east/west connectivity.<br>• Need for improved local grid systems to remove traffic from primary arterials and provide alternatives for local traffic.<br><br><u>Arterial Deficiencies</u><br>• Need for more Tualatin River crossings and more north-south multimodal access, more Willamette River crossings and an I-5 overcrossing on arterials.<br>• Grahams Ferry Rd. between River Rd. and Boeckman Rd. is narrow and has vision clearance issues.<br>• Most of the arterial roadways in the corridor are less than 4 lanes for at least part of the roadway. All or portions of the following roads have less than 4 lanes: Stafford Rd., Boones Ferry Rd., 65th Ave., Grahams Ferry Rd., Tonquin Rd., 72nd Ave., Day Rd., Tualatin- | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |

[7] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | Sherwood Rd., Nyberg St., Elligsen Rd., Wilsonville Rd., Boeckman Rd., Lower Boones Ferry Rd., Durham Rd., Tualatin Rd., Herman Rd., Bridgeport Rd., Bonita Rd., and Sagart St.<br>• Intersection spacing issue causes significant delay on Boones Ferry Rd. between the I-5 interchange and 95th Avenue.<br>The following do not meet the performance threshold in Table 2.4:<br>• 2035 PM 2-hour peak volumes exceed capacity onBoones Ferry Rd. just south of I-205 in both directions.<br>• 2035 PM 2-hour peak volumes exceed capacity on Stafford Rd. in both directions from I-205 to SW 65th Ave.<br>• 2035 PM 2-hour peak volumes exceed capacity on Grahams Ferry Rd. in both directions from just south of I-205 to Day Rd. north of I-205). | |
| **At grade Heavy Rail** | • There are multiple at-grade heavy rail freight and WES crossings at within this mobility corridor as follows:<br>○ SW Tualatin-Sherwood Rd. (at intersection with Boones Ferry Rd.)<br>○ SW Tonquin Rd.<br>○ SW Nyberg St. (at intersection with SW Boones Ferry Rd.)<br>○ Lower Boones Ferry Rd.<br>○ SW Tualatin Rd. (near SW 86th Ave.)<br>○ SW Durham Rd.<br>○ SW Bonita Rd.<br>○ SW Hall Blvd.<br>○ SW Main St.<br>○ SW Tiedeman Ave.<br>○ SW North Dakota St. | • WES quiet zone<br>• Local TSPs to evaluate at grade heavy rail crossings for deficiencies and solutions.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | ○ SW Scholls Ferry Rd.<br>○ SW Hall Blvd. (at SW Cascade Ave.)<br>○ SW 5th St. (near SW Alger Ave.)<br>○ SW Beaverton Hillsdale Hwy and SW Lombard Ave.<br>○ SW Farmington Rd. (at SW Hall Ave.)<br>○ SW 95th Ave. (near Tualatin-Sherwood Rd.)<br>○ SW Boeckman Rd.<br>○ Wilsonville Rd.<br>○ Barber St. (at WES) | |
| **Regional Bridges** | • 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. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |
| **Safety** | • I-5 from the I-405 interchange to the area just south of the I-205/I-5 interchange ranks on the ODOT SPIS list as Category 4 and 5(Scale 1-5, 5 being highest priority).Multiple locations rank above the 90th percentile. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |

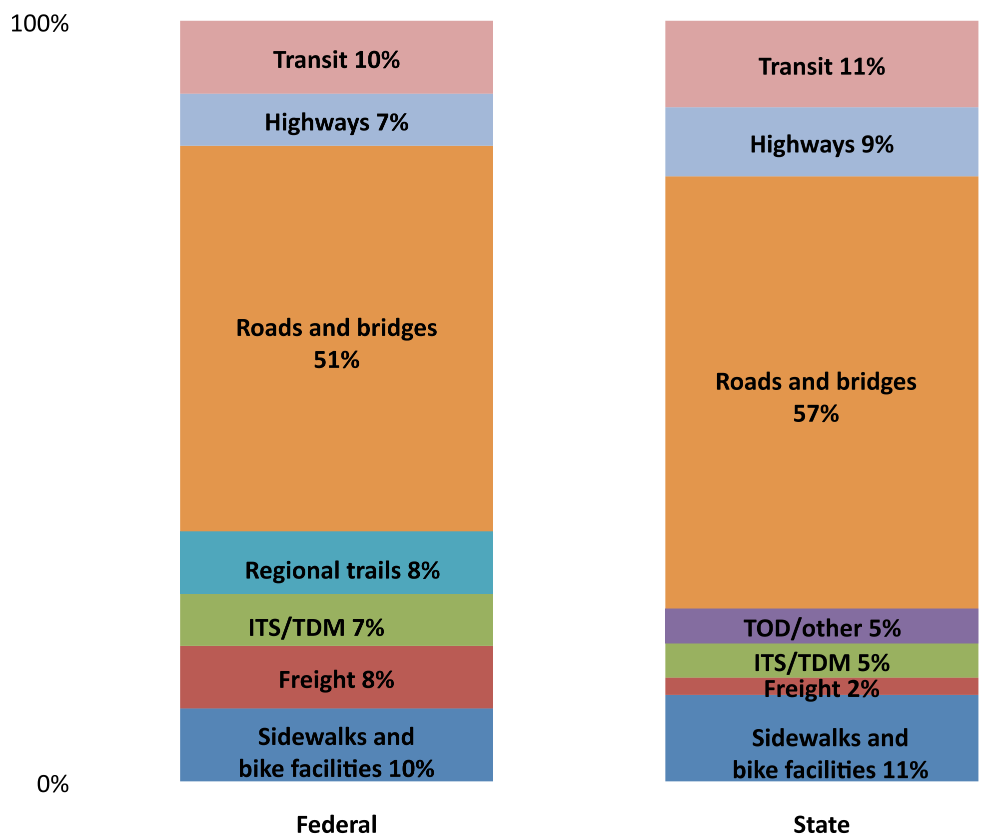
| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Regional Freight** | The following do not meet the performance threshold in Table 2.4:<br>• I-5 in the 2035 1-hour midday hour volumes exceed capacity from I-205 to Boones Ferry Rd. and from Wilsonville Rd. to the next interchange south in both directions.<br>• I-5 in the 2035 1-hour midday hour volumes exceed capacity in both directions around the Lake Grove Town Center.TheTonquin-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. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |

## 2035 RTP investments

**What are the strategies identified in the federal and state RTP?**

**Investment Summary:** In the Federal RTP, MC #3 has 73 projects totaling more than $800 million. Roads and bridges projects account for 51% of projects and 64% of total project costs ($550 million). Transit capital comprises almost 10% of projects and 12% of total project costs ($100 million).The State RTP adds 44 more projects and an additional $3 billion. Transit capital accounts for the majority of the additional costs. This includes HCT from Portland Central City to Tigard and Sherwood that costs roughly $1.6 billion, upgrades to WES service and other bus improvements in the corridor. The state system for MC #3 also contains a number of additional road and bridge, as well as highway investments totaling $1 billion. The majority of the roads/bridges projects focus on building a supportive arterial and collector network. For both the Federal and State systems investments total just over $3.8 billion.

### Projects by mode for federal and state systems



### RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #3 Total Project Cost | State System Cost by Mode | % of MC #3 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $98,673,000 | 12% | $33,227,198 | 1% |
| Freight | $52,265,000 | 6% | $10,400,000 | 0% |
| ITS/TDM | $7,768,000 | 1% | $25,300,000 | 1% |
| TOD/other | $0 | 0% | $11,000,000 | 0% |
| Regional trails | $33,165,000 | 4% | $0 | 0% |
| Roads and bridges | $548,231,000 | 64% | $595,947,123 | 20% |
| Highways | $64,900,000 | 8% | $402,500,000 | 13% |
| Transit | $47,202,000 | 6% | $1,946,250,000 | 64% |
| TOTAL | **$852,204,000** | 100% | **$3,024,624,321** | 100% |

### 2035 investment strategy

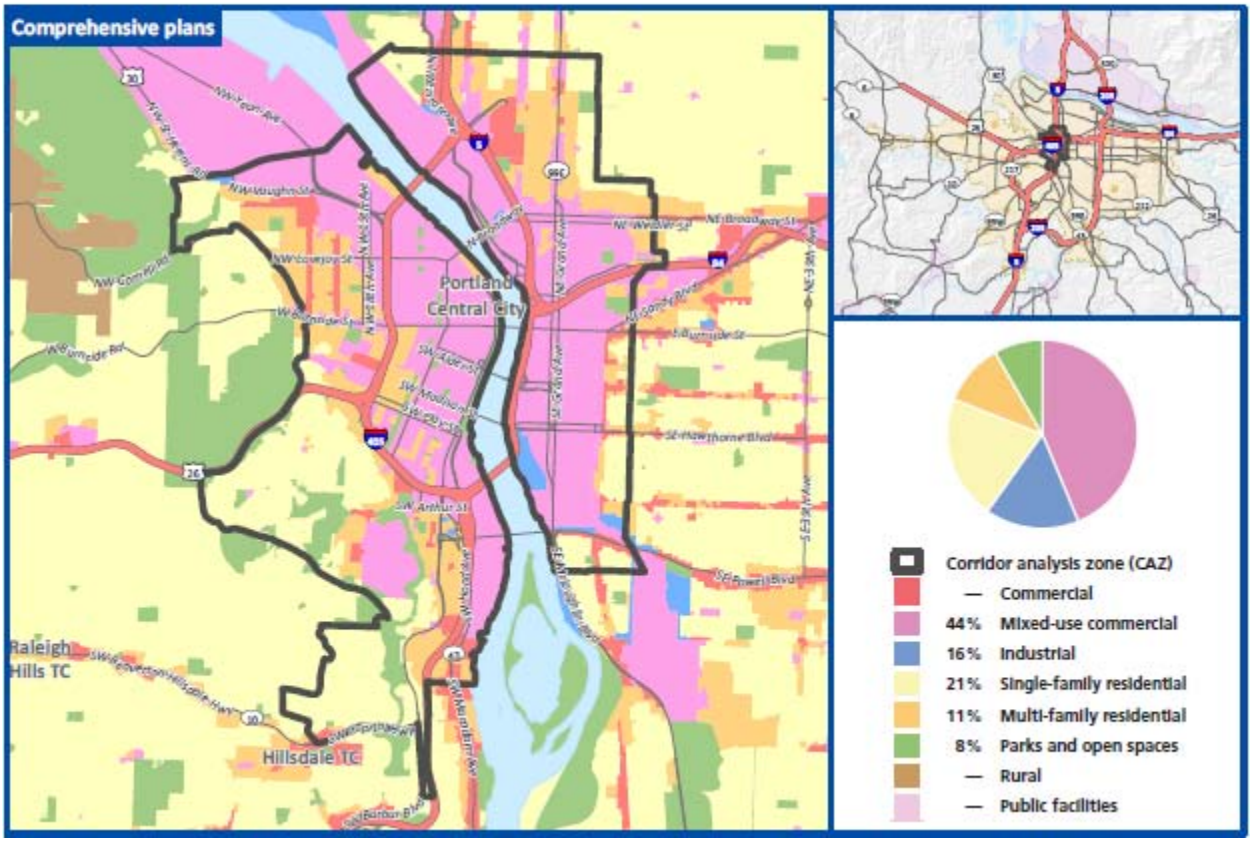
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Complete alternatives analysis for HCT corridor.<br>• Complete land use planning of HCT corridor as part of HCT System Expansion Policy.<br>• Complete gaps and make crossing improvements in the sidewalk and bike network. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network.<br>• Complete mobility corridor refinement plan.<br>• Coordinate TSM/TDM strategies. |
| **Long-term (10 – 25 years)** | • Interchange and/or capacity improvements, consistent with refinement plan. |

| Unfunded Projects |
|---|
| • I-5 improvements, UBG to North Tigard, $600,000,000<br>• OR 43 improvements, Marylhurst to 205, $25,400,000<br>• Boones Ferry improvements, Tualatin to I-5, $27,000,000<br>• I-5/Wilsonville Rd Interchange Phase 2, $13,300,000<br>• OR 141 improvements, Durham to Tualatin, $27,000,000<br>• I-5 Auxiliary Lanes, Elligsen to Wilsonville Rd., $8,000,000<br>• OR 43 Ped access to transit, $1,200,000 |

| Regional Actions | Local Actions |
|---|---|
| • Continue work on identifying resources to complete mobility corridor refinement plan.<br>• Begin HCT alternatives analysis.<br>• Conduct corridor refinement plan. | • Initiate actions related to the HCT System Expansion Policy.<br>• Land use planning.<br>• Address connectivity needs in local TSPs. |

| | |
|---|---|
| • Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.5 Mobility Corridor #4 – Central City Loop




#### Corridor function

| What function(s) does the corridor serve? |
| --- |
| **2040 Access:** Connects the region to the Portland Central City, including passenger intermodal stations, major educational institutions and regional attractions such as Tom McCall Park, the Rose Quarter and Oregon Convention Center. |
| **Freight Mobility:** Provides highway and Class I heavy rail access to the Central Eastside Industrial Area and serves as part of the West Coast Trade Corridor (extending from Canada to Mexico). |
| **Statewide Travel:** Provides statewide access to the Portland Central City and as a hub for statewide travel. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
| --- | --- | --- | --- | --- | --- | --- |
| **Population** | 63,447 | 152,944 | 3,097,402 | 4.9% | 141.1% | 57.9% |
| **Households** | 39,388 | 79,388 | 1,208,686 | 6.6% | 101.6% | 57.6% |
| **Employment** | 210,011 | 307,231 | 1,799,152 | 17.1% | 46.3% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • Redline MAX<br>• Greenline MAX<br>• Yellowline MAX<br>• Blueline MAX | • Eastbank Esplanade<br>• Willamette Greenway Trail | • Broadway Bridge<br>• Burnside Bridge<br>• Morrison Bridge<br>• Hawthorne Bridge<br>• Steel Bridge<br>• Ross Island Bridge<br>• Fremont Bridge<br>• Marquam Bridge | • I-405<br>• I-5 | • Front Ave./Naito Pkwy.<br>• MLK/Grand Ave. | • Union Pacific<br>○ Brooklyn Sub mainline<br>○ Seattle Sub mainline<br>○ Graham mainline<br>• BNSF<br>○ Seattle Sub mainline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/ Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Portland Central City | | • Union Station<br>• Lake Yard<br>• Albina Yard | • CEID<br>• NW Ind. District<br>• Albina | • Lloyd Center<br>• Convention Center<br>• Rose Quarter<br>• South Waterfront |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Address the motor vehicle/train interaction at the approaches to the Steel Bridge.<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Long-Range HCT Plan identifies a potential HCT line between Portland Central City and Gresham (in general vicinity of Powell Blvd.) It is listed as a "Near-term" investment |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | priority.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities. | • Trail connection along I-405 that would provide for east/west travel, connecting the existing Goose Hollow trail to PSU and the future Milwaukie LRT Bridge trail.<br>• Trail connection along US 26 connecting the existing Goose Hollow trail to the existing US 26 trail at Sylvan, which would help provide access to Beaverton Regional Center and other points west of the central city.<br>• Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |
| **Throughways**[8] | • Address the interchange spacing as it presents a safety issue throughout this corridor. All of the I-405 and I-5 interchanges are spaced less than two-miles apart, with all but one at less than one-mile and does not meet the ODOT two-mile spacing standard.<br><br>The following do not meet the performance threshold in Table 2.4:<br>• 2005 PM 2-hour peakhour volumes exceed capacity on I-405 in both directions. | • I-5 reconstruction between I-84 and Greeley St. to relieve congestion (FC projects 10867, 10884 and 11176). At least $400,000,000 of construction is currently unfunded.<br>• Over $600,000,000 in unfunded projects to address congestion, safety, and operational issues at southern end of loop where I-5, I-405, and US 26 come together.<br>• Address congestion in this corridor to support access to the Northwest Industrial Area and US 30 (in Corridor 18).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[9] | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan |

[8] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[9] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

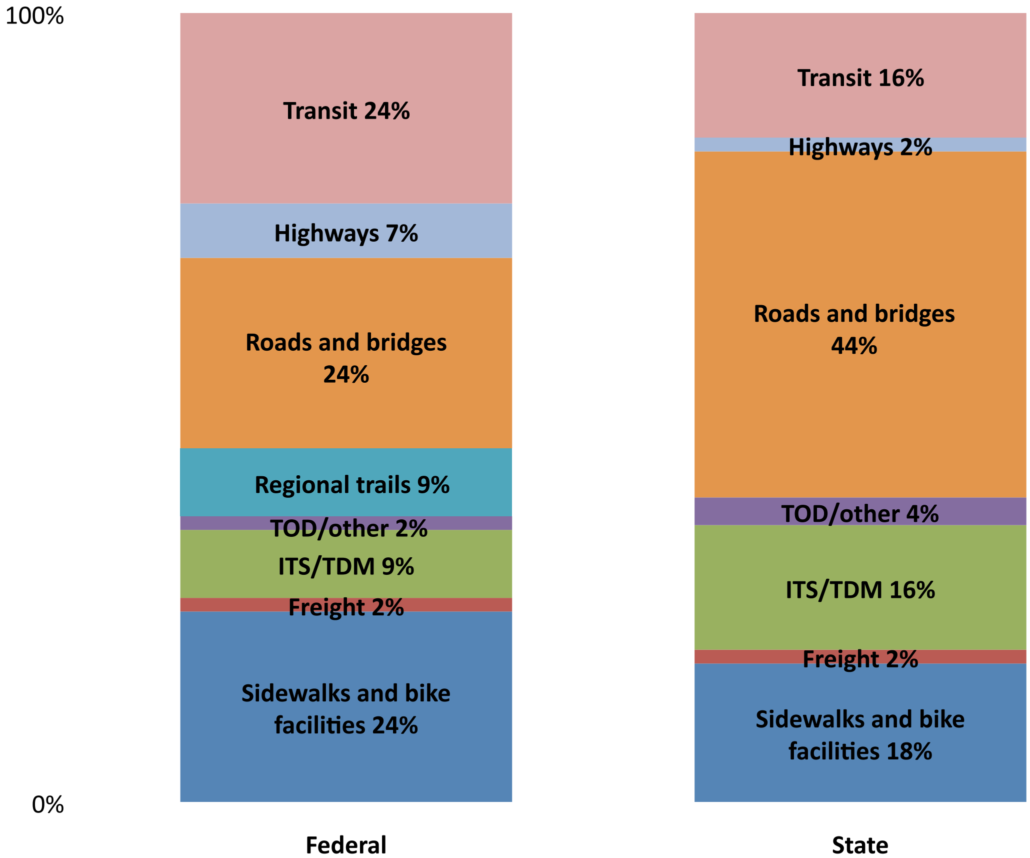
| Regional Needs | | Corridor Strategies |
|---|---|---|
| **At grade Heavy Rail Crossings** | • The heavy rail crossings within this mobility corridor are as follows:<br>• NW Naito Pkwy just north of Steel Bridge<br>• NW 9th Ave.<br>• SE Oak St.<br>• SE Stark St.<br>• SE Washington St.<br>• SE Alder St.<br>• SE Yamhill St.<br>• SE Taylor St.<br>• SE Main St.<br>• SE Salmon St.<br>• SE Clay St.<br>• SE Caruthers St.<br>• SE Division Pl.<br>• SE Ivon St.<br>• SE Milwaukie<br>• SE Clinton<br>• SE 12th | • Local TSPs to evaluate at grade heavy rail crossings for deficiencies and solutions.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Bridges** | The Steel Bridge EB (crossing the UPRR tracks) has a weight restriction: 46,000 lbs. (single unit) and 70,000 lbs. (combination unit). The SW Hooker St. Pedestrian Overpass (crossing SW Front Ave.) is height restricted. It has a clearance of 15 feet. A number of the I-5/I-405 bridges are below ODOT's height standards as well. I-84(1100 NE 28th Ave.) – Wt. Limits: 50,000 lbs. (single unit); 80,000 lbs. (combination unit) | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • I-5 and I-405 rank on the ODOT SPIS list as Category 4 (Scale 1-5, 5 being highest priority). Multiple locations rank above the 95th percentile. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | The following do not meet the performance threshold in Table 2.4 duringthe 2005 midday 1-hour period volumes exceed capacity:<br>• I-405 between W. Burnside St. and the Sunset Highway (northbound).<br>• I-5 in numerous areas.<br>• Intersection of SE Grand Ave. and SE Yamhill St. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • Intersection of SW Naito Pkwy and SW Washington St.<br>• Hawthorne Blvd. and E. Burnside St.<br>    o The eastern part of the Marquam Bridge to Hawthorne (northbound)<br>    o The I-84 interchange to just north of the Broadway Bridge (northbound)<br>The following do not meet the performance threshold in Table 2.4 during the 2035 midday 1-hour period volumes exceed capacity:<br>• I-405 between W. Burnside St. and US 26 in both directions and south of US 26 on I-405<br>• I-5 between the Fremont Bridge and the Marquam Bridge in both directions. I-5/Marquam Bridge in both directions. | |

## 2035 RTP investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #4 has 58 projects totaling $2.5 billion. Transit capital accounts for the majority of the additional investments for this corridor for both the federal and state systems. Transit comprises about 24% of the federal and 18% of the state projects for this corridor, but 75% ($1.8 billion) and 80% ($1.8 billion) of the total project costs for the federal and state systems respectively. The federal projects include Portland to Milwaukie HCT and the state projects includes HCT from Portland Central City to Tigard and Sherwood that costs roughly $1.6 billion and other bus improvements in the corridor. Both the Federal and State systems investments total $4.8 billion. |

## Projects by mode for federal and state systems



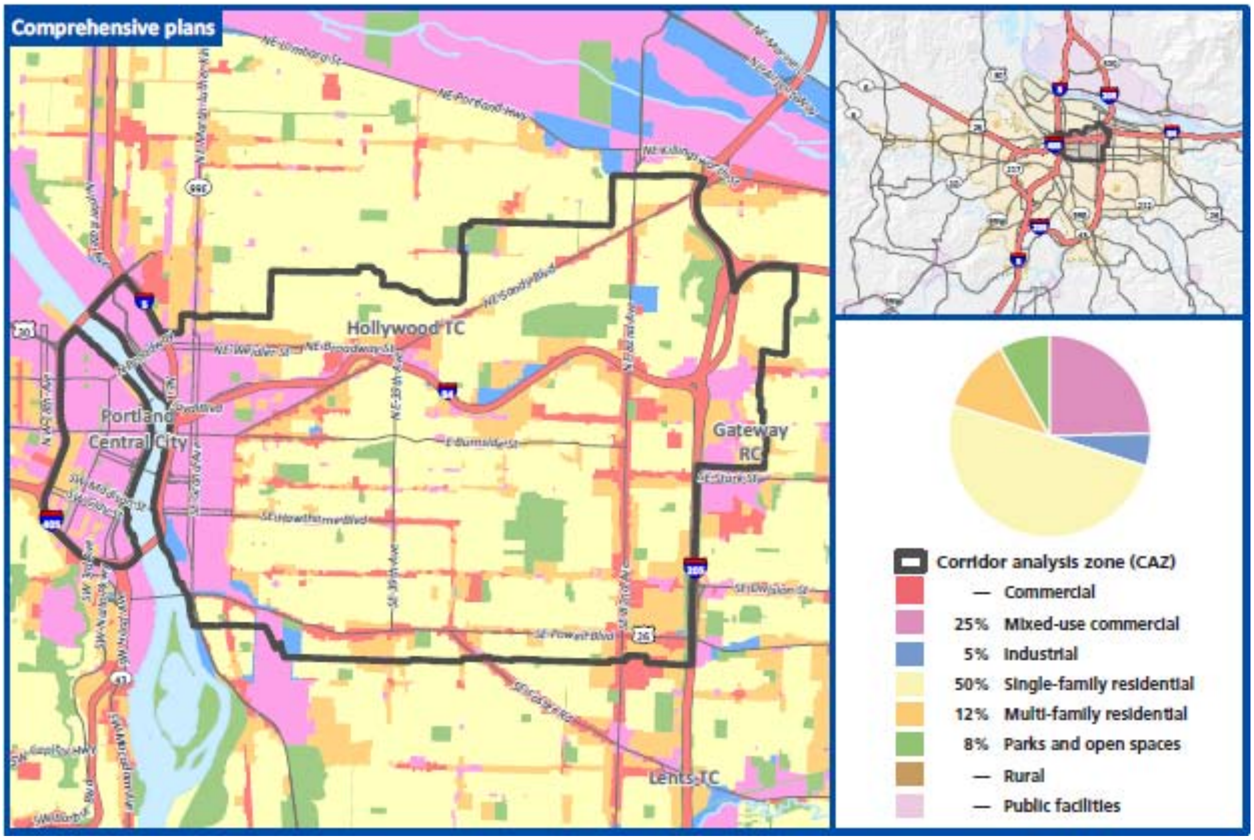

## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #4 Total Project Cost | State System Cost by Mode | % of MC #4 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $147,235,653 | 6% | $36,288,378 | 2% |
| Freight | $30,000,000 | 1% | $280,600 | 0% |
| ITS/TDM | $5,737,293 | 0% | $4,116,220 | 0% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 0% |
| Regional trails | $21,827,000 | 1% | $0 | 0% |
| Roads and bridges | $293,998,003 | 12% | $205,115,119 | 9% |
| Highways | $121,703,209 | 5% | $220,000,000 | 9% |
| Transit | $1,844,200,000 | 75% | $1,862,056,000 | 80% |
| **TOTAL** | **$2,466,212,158** | 100% | **$2,338,856,317** | 100% |

### 2035 investment strategy

<table>
<tr><th colspan="2">Strategy</th></tr>
<tr><td>Near-Term<br>(1 – 4 years)</td><td>• System and demand management along mobility corridor and parallel facilities for all modes of travel.</td></tr>
<tr><td>Medium Term<br>(5 – 10 years)</td><td>• Complete I-5/I-405 Master Plan work (mobility corridor refinement plan)<br>• Bridge Improvements.<br>• I-5/I-84 Interchange improvements based on</td></tr>
<tr><td>Long-term<br>(10 – 25 years)</td><td>• Downtown E/W MAX capacity improvements (Rose Quarter/Steel Bridge).<br>• I-5/I-84 Interchange improvements based on refinement plan.</td></tr>
<tr><th colspan="2">Unfunded Projects</th></tr>
<tr><td colspan="2">• McLoughlin/I-5 ramps, $281,600,000<br>• I-405/US 26W connector, $179,900,000<br>• I-84/I-5 Improvements, $521,000,000<br>• I-405/Front Ave ramp configuration, $14,400,000<br>• West Marquam interchange modifications, $203,400,000</td></tr>
<tr><th>Regional Actions</th><th>Local Actions</th></tr>
<tr><td>• Continue work on identifying resources to complete mobility corridor refinement plan.<br>• Complete corridor refinement plan for the Central City Loop.<br>• Conduct corridor refinement plan.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept.</td><td>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Initiate actions related to the HCT System Expansion Policy.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update.</td></tr>
</table>

### 4.2.6 Mobility Corridor #5 – Portland Central City to Gateway




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Portland Central City to the Gateway Regional Center, provides access to regional attractions in the Rose Quarter, Convention Center and regional access to Portland International Airport. |
| **Freight Mobility:** Provides air freight access for west side industrial areas, and statewide access to marine and rail facilities and serves as a Union Pacific main line corridor. |
| **Statewide Travel:** Provides access to Central City interstate hub and travel to the Columbia Gorge and Mountain. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 150,305 | 225,474 | 3,097,402 | 7.3% | 50.0% | 57.9% |
| **Households** | 73,557 | 109,974 | 1,208,686 | 9.1% | 49.5% | 57.6% |
| **Employment** | 195,448 | 280,224 | 1,799,152 | 15.6% | 43.4% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • MAX Blue Line, Red Line and Green Line | | • Sullivan's Gulch Trail | I-84 | • Sandy Blvd.<br>• Halsey St.<br>• Glisan St.<br>• Burnside St.<br>• Broadway St.<br>• Powell Blvd. | • F&P Rail<br>• Union Pacific<br>  ○ Graham mainline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment & Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Gateway<br>• Portland Central City | • Hollywood | • Portland International Airport and intermodal facilities<br>• Albina Yard | • CEID<br>• Albina | |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Better bike and pedestrian access to MAX stations.<br>• Better shuttle or bus feeder service to MAX stations from areas located greater than one mile from stations.<br>• Light rail capacity needs: Banfield segment, from Lloyd Center/NE 11th Ave. to Gateway will need signal upgrades<br>• Better east-west transit service in the future, as well as north-south transit service on or east of 148th Ave. to serve MAX station and the industrial Columbia Corridor.<br>• Powell Ave. does not have 15 minute peak regional transit service in Gresham (Bus 9 traveling east of 94th Ave. from Downtown Portland is 30 minute headways).<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy). | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Long-Range HCT Plan Identifies a potential HCT line between Portland Central City and Gresham (in general vicinity of Powell Blvd.) It is listed as a "Near-term" investment priority.<br>• On-street BRT in the Powell Corridor from Portland Central City to Gresham RC.<br>• Analyze transit stops in relation |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • Direct, safe, comfortable, bike and pedestrian connections to all transit stops.<br>• Transit connections between HCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Bike and Pedestrian** | • Direct, continuous and comfortable bicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Current RTP project #10259 retrofits Powell with multimodal and safety improvements. |
| **Regional Trails** | • Address gaps in trail network from Central City to Gateway. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Proposed Sullivan's Gulch Trail. |
| **Throughways** [10] | • All interchanges on I-84 are spaced less than 2 miles apart, with the majority spaced less than 1 mile apart and do not meet the ODOT two-mile interchange spacing standard.<br><br>The following do not meet the performance threshold in Table 2.4:<br>• 2005 PM 2-hour peak volumes exceed capacity on I-84 (eastbound) for the entire stretch between I-5 and I-205.<br>• 2035 PM 2-hour peak volumes exceed capacity on I-84 (eastbound) except for the following sections:<br>  o Between the I-5 interchange and the Lloyd Center exit.<br>  o Between NE 60th Ave. and NE 68th Ave. | • Extension of lane from Gateway/Halsey exit to I-205 NB exit addresses safety and congestion issues related to vehicles queuing in I-84 through-lanes (FC project 10876).<br>• Over $75,000,000 in unfunded interchange improvements for this stretch of I-84 have been identified.<br>• Active corridor management to improve traveler decision making and incident response (FC project 11206).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[11] | <u>Arterial Gaps</u> | • Implement Regional |

[10] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[11] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

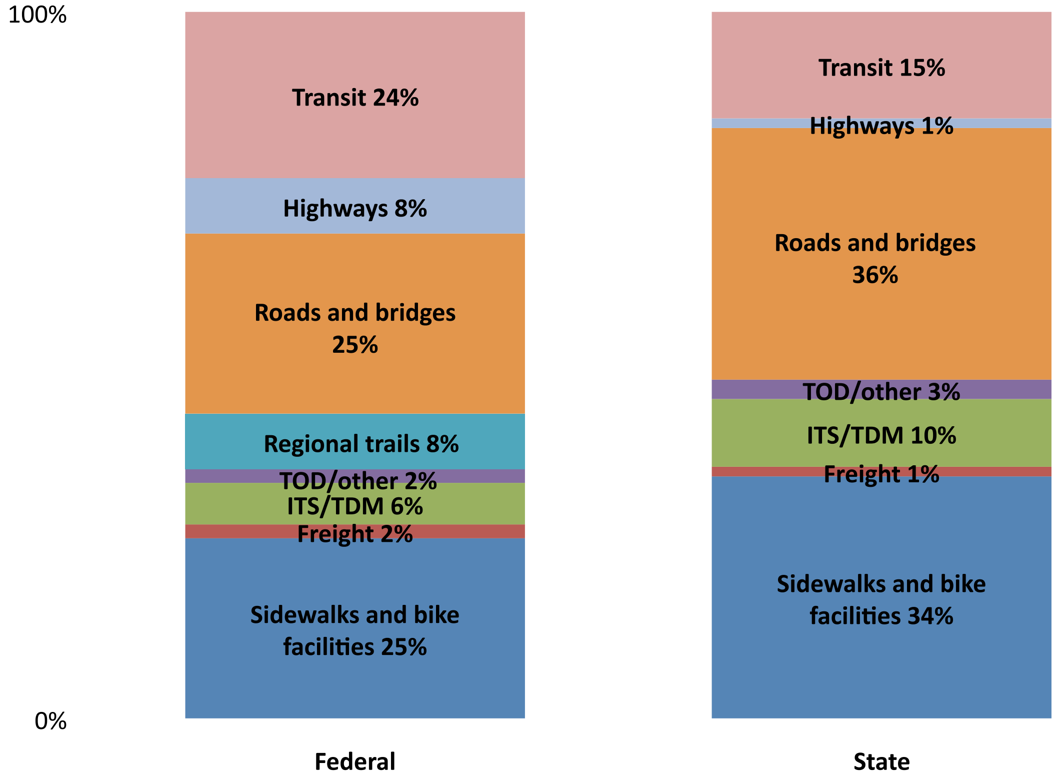
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • Connectivity between NE Sandy Blvd. and NE Halsey Street at 82nd Avenue; the spacing between these two arterials is greater than 1 mile.<br>• Connectivity between E. Burnside Street and SE Powell Blvd.; the spacing between these two arterials is more than 1 mile. A dense local street network augments this.<br>The following do not meet the performance threshold in Table 2.4:<br>• In the 2005 PM 2-hour peak volumes exceed capacity at the following locations:<br>o NE Glisan St. and 60th Ave.<br>o NE Glisan St. and 82nd Ave.<br>• 2005 and 2035 PM 2-hour peak volumes exceed capacity on:<br>o NE Sandy Blvd (northeast-bound)between NE 39th Ave. and the I-84 interchange.<br>o NE Halsey St. between NE 44th Ave. and NE 60th Ave. (eastbound).<br>• 2005 PM 2-hour peak volumes exceed capacity on:<br>o NE Halseybetween NE 72nd and NE 74th Ave. (eastbound)<br>o E. Burnside between 45th Ave. and 60th Ave. (eastbound) and between Gilham Ave. and 82nd Ave. (eastbound).<br>o SE Powell Blvdbetween I-5 and SE Foster Rd. (eastbound).<br>o 2035 PM 2-hour peak volumes exceed capacity on:<br>o E Burnside on either side of I-205<br>o SE Powell Blvd. between SE Milwaukie Ave. and SE Foster Rd. | Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At Grade Heavy Rail Crossings** | | |
| **Regional Bridges** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • I-84 between I-5 and I-205 ranks on the ODOT SPIS list as Category 5 (Scale 1-5, 5 being highest priority. | • Implement Regional Transportation Functional Plan and Urban Growth |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • Multiple locations rank above the 95th percentile. | Management Functional Plan. |
| **Regional Freight** | The following do not meet the performance threshold in Table 2.4:<br>• 2005 midday 1-hour volumes exceed capacity, I-84 (eastbound) between 12th Ave. and 58th Ave. (eastbound) as well as the I-84/I-5 interchange.<br>• 2035 NB midday 1-hour volumes exceed capacity, I-84 (eastbound) between NE 12th Ave. and NE 33rd Ave. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

### 2035 RTP investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #5 has 51 projects totaling $2.1 billion. Roads and bridges projects account for 25% of all of projects and 12% of the total corridor project costs ($255 million). Sidewalk and bike projects comprise 25% of the federal projects and 3% ($68 million) of the total corridor project costs. Transit projects account for 24% of the federal projects and 15% of the total corridor project costs, including HCT expansion to Milwaukie and additional streetcar. The State RTP adds 73 more projects and an additional $740 million. Roads and bridges projects account for 36% of all of state projects and 25% of the total corridor project costs ($184 million). Sidewalk and bike projects comprise 34% of the state projects and 12% ($90 million) of the total corridor project costs. Transit projects account for 15% of the state projects and 38% ($283 million) of the total corridor project costs, including continued streetcar system expansion. For both the Federal and State systems investments total just under $3 billion. |

## Projects by mode for federal and state systems




## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #5 Total Project Cost | State System Cost by Mode | % of MC #5 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $67,535,286 | 3% | $90,667,845 | 12% |
| Freight | $30,000,000 | 1% | $280,600 | 0% |
| ITS/TDM | $4,450,000 | 0% | $3,688,305 | 0% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 1% |
| Regional trails | $4,174,000 | 0% | | 0% |
| Roads and bridges | $255,512,543 | 12% | $184,303,904 | 25% |
| Highways | $119,703,209 | 6% | $170,000,000 | 23% |
| Transit | $1,633,037,609 | 77% | $283,030,000 | 38% |
| **TOTAL** | **$2,115,923,647** | 100% | **$742,970,654** | 100% |

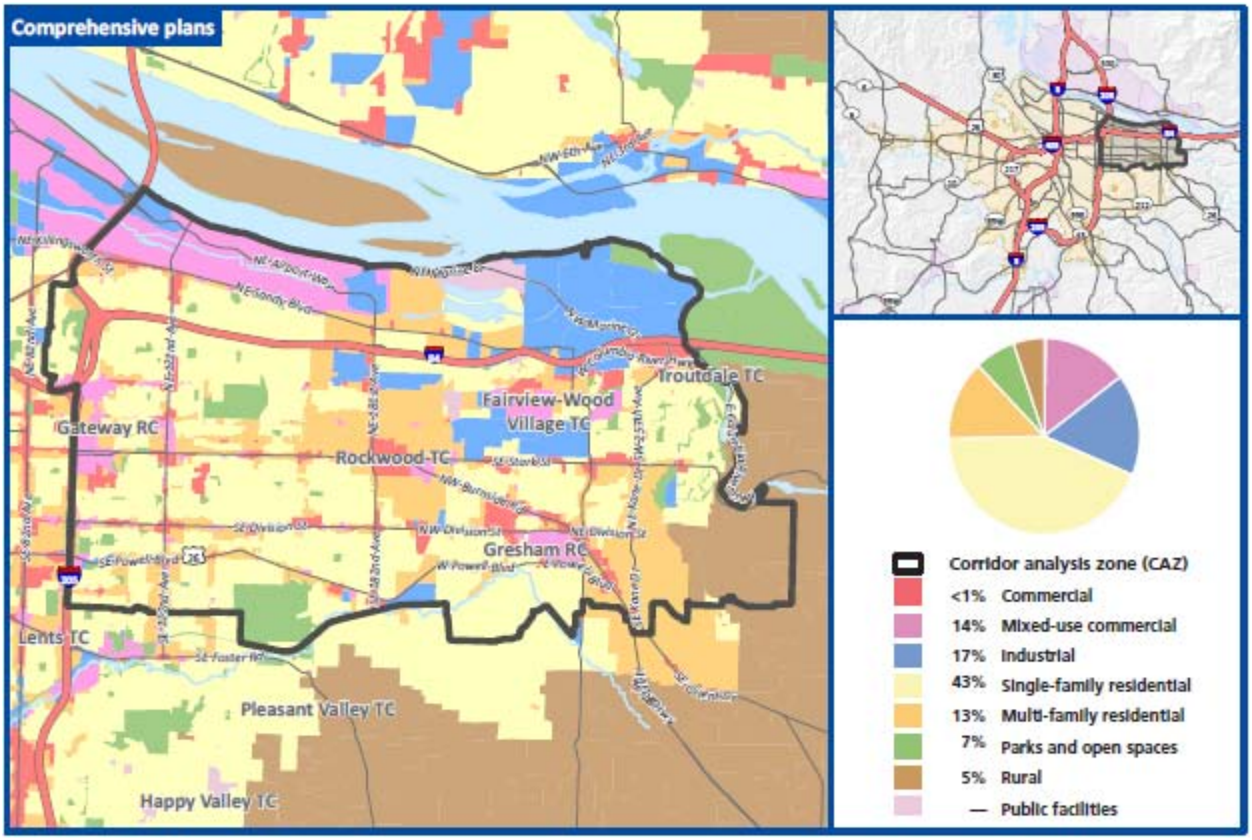
## 2035 investment strategy

| Strategy | |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along throughway and parallel facilities for all modes of travel.<br>• I-5/I-84 Interchange improvements. |
| **Medium Term (5 – 10 years)** | • I-5/I-84 Interchange improvements.<br>• MAX capacity improvements.<br>• Sullivan's Gulch Trail improvements.<br>• Streetcar system expansion. |
| **Long-term (10 – 25 years)** | • I-84/122nd Ave. interchange improvements.<br>• Streetcar system expansion. |

| Unfunded Projects |
|---|
| • SE Powell Bikeway, $5,000,000<br>• I-84 interchange improvements, I-5 to I-205, $78,400,000 |

| Regional Actions | Local Actions |
|---|---|
| • Continue work on HCT expansion from Central City to Gresham in the vicinity of Powell Blvd.<br>• Work on furthering the Active Transportation Corridor concept.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system. | • Initiate actions related to the HCT System Expansion Policy.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update.<br>• Address connectivity needs in local TSPs. |

### 4.2.7 Mobility Corridor #6–Gateway to Troutdale/Wood Village/Fairview




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Gateway and Gresham regional centers, and provides access to industrial areas including the Columbia South Shore and Columbia Cascade River District. Provides access to the Troutdale Airport and regional recreation, including Blue Lake Regional Park, the Columbia Gorge and Mount Hood. |
| **Freight Mobility:** Connects Gresham-area distribution centers to I-84 and I-205, and serves as the Union Pacific main line corridor to points east of the metropolitan area. Serves the Troutdale truck travel centers. |
| **Statewide Travel:** Serves as the eastern gateway to the region and provides statewide route to Portland International Airport. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| Population | 217,522 | 221,608 | 3,097,402 | 7.2% | 1.9% | 57.9% |
| Households | 83,211 | 100,636 | 1,208,686 | 8.3% | 20.9% | 57.6% |
| Employment | 93,060 | 160,420 | 1,799,152 | 8.9% | 72.4% | 74.3% |

### Regional transportation facilities

| Regional Transportation Facilities | | | | | |
|---|---|---|---|---|---|
| **HCT** | **Regional Trail** | **Regional Bridges** | **Throughways** | **Parallel Arterials** | **Heavy Rail** |
| • Blueline MAX | • Gresham/Fairview Trail<br>• Springwater Corridor Trail<br>• I-84 Trail (east of Gateway) | None | I-84 | • Sandy Blvd.<br>• Halsey St.<br>• Glisan St.<br>• Airport Way<br>• Marine Drive<br>• Powell Blvd.<br>• Division St. | • Union Pacific<br>○ Graham mainline<br>○ Kenton mainline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment & Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Gateway<br>• Gresham | • Fairview/ Wood Village<br>• Troutdale | • Portland International Airport and intermodal facilities | • Columbia Corridor<br>• Cascade River District<br>• Columbia South Shore<br>• Columbia Corridor | • Oxbow Park<br>• Mt. Hood Recreational Area<br>• Columbia Gorge National Scenic Area<br>• Troutdale Airport |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Address park and ride capacity constraints: Gresham City Hall @100% of capacity, Cleveland Ave. @ 92%<br>• Better east-westand north-south transit service on or east of 148th Ave. to serve MAX station and the industrial Columbia Corridor.<br>• Address lack of 15 minute peak hour service on Powell Ave in Gresham (Bus 9 traveling east of 94th Ave. from Downtown Portland is 30 minute headways).<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy); | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Long-Range HCT Plan Identifies a potential HCT line between Portland Central City and Gresham (in general vicinity of Powell Blvd.) It is listed as a "Near-term" investment priority. Gresham to Troutdale was |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections between HCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | ranked as a "developing" regional priority corridor in the HCT plan.<br>• On-street BRT via Powell Blvd. from Portland Central City to Gresham RC.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | Management Functional Plan. |
| **Regional Trails** | • Complete a trail gap from 122nd to Gateway RX along I-84<br>• The existing Marine Drive trail includes s multiple gaps between I-205 and Troutdale, including the 40-Mile Loop.<br>• Address trail gaps including:<br>  o The Gresham-Fairview Trail north of Halsey and south of Burnside.<br>  o The Columbia Slough Trail within its proposed extent of I-205 to Fairview Lake.<br>  o The MAX Path within its proposed extent of Ruby Junction to Cleveland Station.<br>• Direct connections between trails and on-street bicycle and pedestrian facilities. | • The proposed Sullivan's Gulch trail would complete the gap from 122nd Ave. to Gateway RC along I-84.<br>• Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[12] | | • I-84 EB lane extension to 122nd Ave. to address future queuing into I-84 through lanes.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[13] | <u>Arterial Deficiencies</u><br>The following do not meet the performance threshold in Table 2.4. 2005 and 2035 NB PM 2-hour peak volumes exceed capacity on:<br>• Westbound Marine Dr. approaching I-205<br>• Eastbound Halsey just past I-205<br>• Eastbound SE Division St. just east of I-205<br>• Eastbound SE Powell Blvd. just east of I-205. | • Over $60,000,000 in unfunded improvements identified on Powell between I-205 and 174th Ave. to address performance and safety.<br>• US 26 Traveler Information project (State project 11264).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At Grade Heavy Rail Crossings** | The heavy rail crossings within this corridor are as follows:<br>• NE Cully<br>• NE 105th<br>• NE 112th<br>• NE 138th<br>• NE 148th<br>• NE 158th | • Local TSPs to evaluate at grade heavy rail crossings for deficiencies and solutions.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Bridges** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

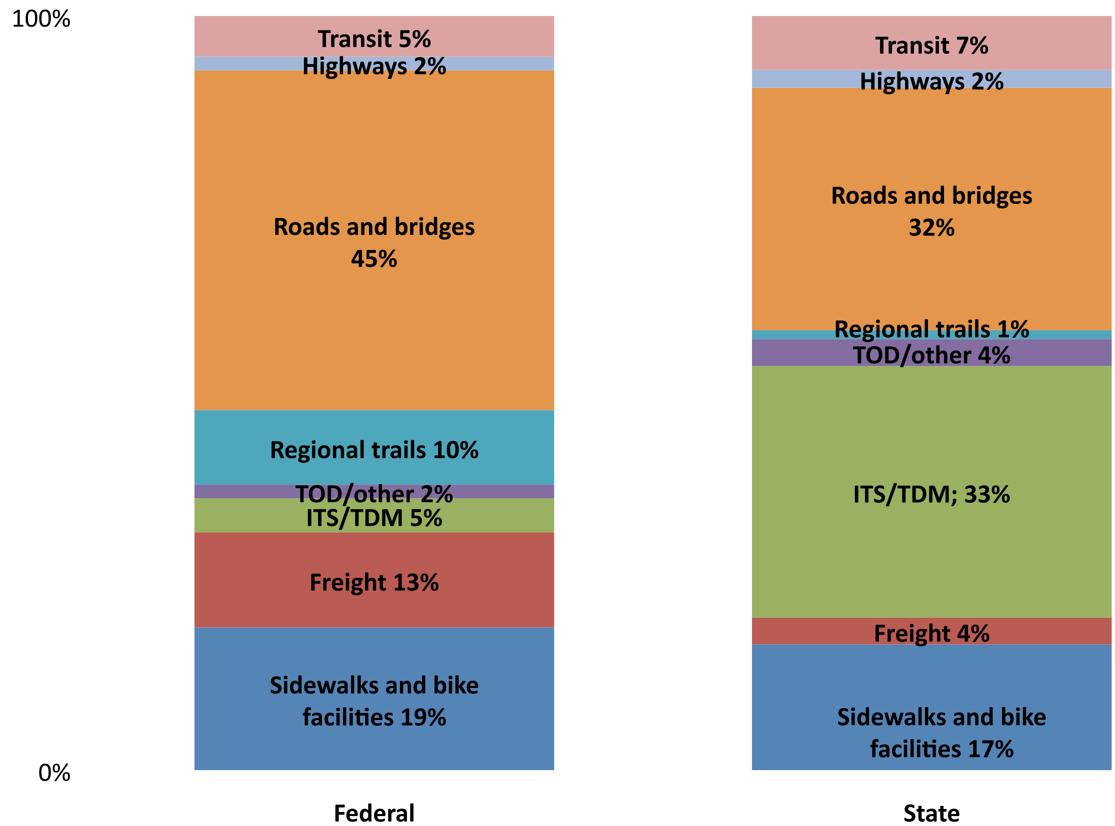
[12] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[13] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Safety** | • Powell Blvd. ranks on the ODOT SPIS list as Category 4 and 5(Scale 1-5, 5 being highest priority).<br>• I-84 has a stretch near the Fairview Pkwy Interchange that is listed as Category 4.<br>• Additionally, there are a few high scored (>85 percentile) SPIS intersections along Glisan St. (102nd and 122nd Ave.), Halsey St (122nd Ave.), Division St. (122nd Ave.), and Sandy Blvd. near I-205. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | | • Troutdale interchange improvements (FC project 10863).<br>• Springwater at-grade intersection (FC project 11125 in 2008-2017), full interchange (FC project 10864, 2018-2025).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

## 2035 RTP investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, corridor #6 has 111 projects totaling $744 million. Roads and bridges projects account for 45% of all of projects and 45% (~$330 million) of the total corridor project costs. The State RTP adds 84 more projects and an additional $664million in costs. Of the additional projects, ITS/TDM comprise 33% and 6% of the total cost (~$39 million) and roads and bridges account for 32% of the projects and 31% of the total cost (~$208 million). Transit makes up 7% of the state RTP investments, and 19% of the total costs. The new transit investments include improvements to Gateway, bus service improvements and additional light rail operations and maintenance facilities. Both the Federal and State investment systems total $1.4 billion. |

### Projects by mode for federal and state systems




### RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #6 Total Project Cost | State System Cost by Mode | % of MC #6 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $151,864,446 | 20% | $50,523,041 | 8% |
| Freight | $153,521,155 | 21% | $22,260,850 | 3% |
| ITS/TDM | $5,243,954 | 1% | $38,783,510 | 6% |
| TOD/other | $7,511,000 | 1% | $13,000,000 | 2% |
| Regional trails | $40,962,475 | 6% | $2,621,250 | 0% |
| Roads and bridges | $331,193,760 | 45% | $208,477,817 | 31% |
| Highways | $23,500,000 | 3% | $205,000,000 | 31% |
| Transit | $30,342,482 | 4% | $124,143,615 | 19% |
| TOTAL | **$744,139,272** | 100% | **$664,810,083** | 100% |

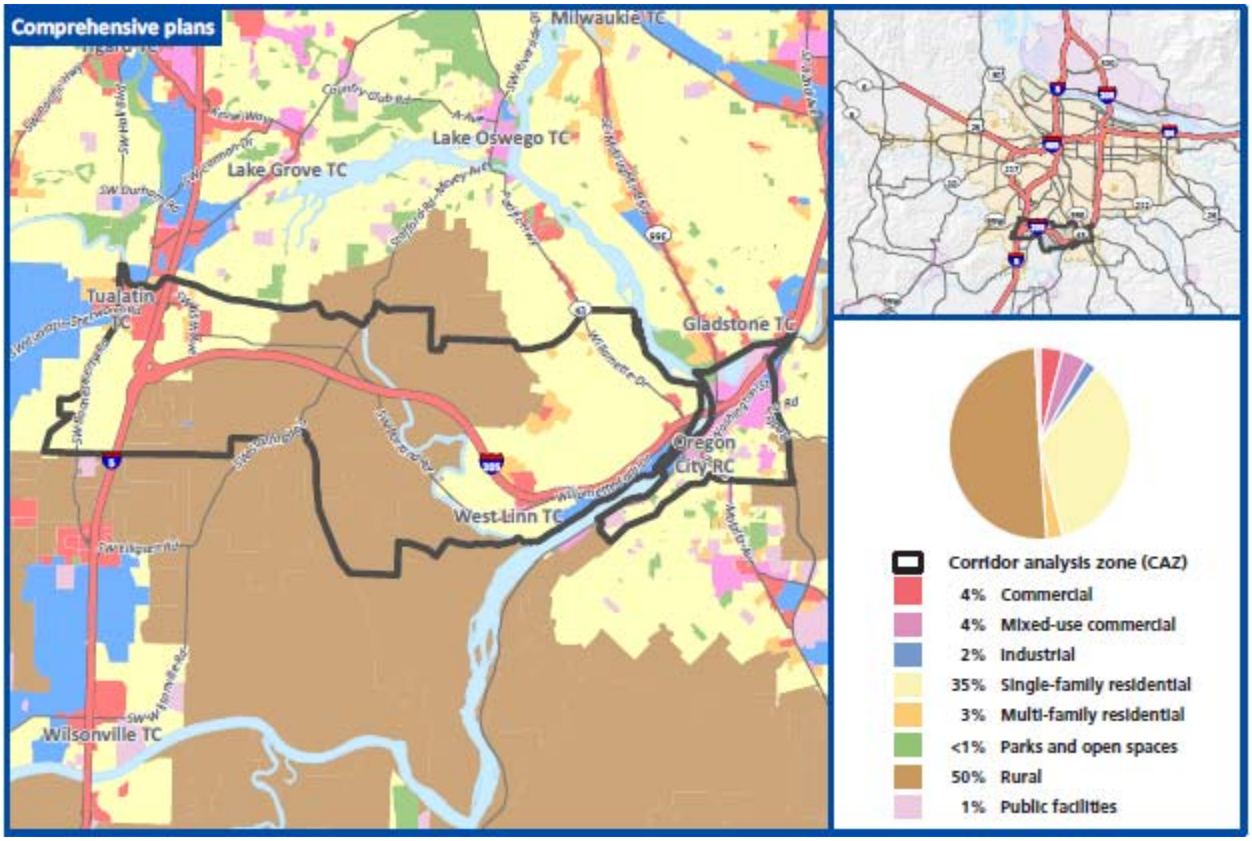
## 2035 investment strategy

| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along throughway and parallel facilities for all modes of travel.<br>• Troutdale interchange improvements and IAMP. |
| **Medium Term (5 – 10 years)** | • Potential interchange improvements resulting from MC #15 refinement plan.<br>• I-84/I-205 IAMP and potential improvements.<br>• MAX Blue Line capacity and frequency upgrades. |
| **Long-term (10 – 25 years)** | • I-84/122nd Ave. interchange improvements. |

| Unfunded Projects |
|---|
| • I-84 widening, Exit 17 to Crown Point interchange, $53,500,000<br>• US 26 improvements, 205 to 174th, $56,600,000<br>• US 26 safety improvements, 122nd to 136th, $7,800,000<br>• I-84 Eastbound lane extension to 122nd, $3,400,000 |

| Regional Actions | Local Actions |
|---|---|
| • Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.8 Mobility Corridor #7 – Tualatin to Oregon City




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:**Connects southern Metro area town centers of West Linn and Tualatin to the Oregon City Regional Center. |
| **Freight Mobility:** Serves as the West Coast Trade (from Canada to Mexico) alternative to I-5 and air freight access to Portland International Airport. |
| **Statewide Travel:** Serves as an extension of the southern gateway to the region, provides statewide access to Portland International Airport, and Mt. Hood, and connects to the Willamette Greenway Trail corridor. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 41,869 | 101,764 | 3,097,402 | 3.3% | 143.1% | 57.9% |
| **Households** | 15,284 | 31,797 | 1,208,686 | 2.6% | 108.0% | 57.6% |
| **Employment** | 18,691 | 31,601 | 1,799,152 | 1.8% | 69.1% | 74.3% |

## Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | • Lower Tualatin River Greenway Trail | | • I-205 | • Borland Rd<br>• Willamette Falls Dr. | • N/A |

## Regional 2040 land uses

| Regional Centers | Town Centers | Employment Areas | Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Oregon City | • Tualatin<br>Gladstone<br>West Linn | | | |

## Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Address the lack of 30 minute of better service on surrounding arterial with the exception of a circulator through West Linn TC and along Willamette Falls Dr.<br>• Address the lack of 15 minute of better peak transit service on the surrounding arterial streets.<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy).<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy).<br>○ Oregon City RC lacks HCT connection.<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations.<br>• Potential bus connection from Oregon City RC to WES station in Tualatin. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• HCT Plan identified a potential HCT line between Washington Square RCand Clackamas Town Center via I-205 as a "next phase" regional priority corridor.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortablebicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail.<br>• Ek Rd., SW 65th Ave, Stafford Rd., Borland Rd. and Willamette Rd. lack shoulders and are unsafe for bikes. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Use practical design to provide wider shoulders for bikes during pavement projects, particularly on Ek Rd., SW 65th Ave, Stafford Rd., Borland Rd. and Willamette Rd.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Address the need for a Willamette, Tualatin and Clackamas River crossings.<br>• Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortablebicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[14] | • 3 interchanges starting just west of | • Over $300,000,000 in unfunded |

[14] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | the Willamette River (OR 43), east of the river (OR 99E), and OR 213 are spaced less than one-mile apart.<br>The following do not meet the performance threshold in Table 2.4:<br>2005 and 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• I-205 from Stafford Rd. to OR 213.<br>• I-205 is 4 lanes from I-5 until the OR 99E interchange, when it becomes 6 lanes. | projects identified to address congestion and capacity issues on I-205 between Stafford Rd. and Oregon City.<br>• Develop alternative mobility standards for this corridor.<br>• Explore tolling and peak pricing for I-205 and necessary legislative actions.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[15] | <u>Arterial Gaps</u><br>• Address lack of east/west connectivity north and south of I-205. There is also a gap in north/south connections between I-205 and SW Stafford Rd., S. Salamo Rd., and Willamette Dr.<br>• Potential need for an additional Willamette River crossing, an I-205 overcrossing west of 10th St. to relieve through trips on 10th St. in West Linn and for more Clackamas River crossings. One potential location is near the OR 213 and I-205 interchange.<br><br>The following do not meet the performance threshold in Table 2.4. 2005 and 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• Borland Rd. from I-5 to Stafford Rd.<br>• Borland Rd. is 2 lanes with a few stretches with left turn lanes.<br>• Rosemont Rd. has some traffic issues.<br>• Nyberg St. and Borland Rd. east of I-5 | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At Grade Heavy Rail Crossings** | | • Local TSPs evaluate at grade heavy rail crossings for deficiencies and solutions.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Bridges** | • The Oregon City West Linn Arch Bridge located on OR 43 is weight-restricted and a need to keep transit on this bridge. | • Planned construction project for West Linn Arch Bridge.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management |

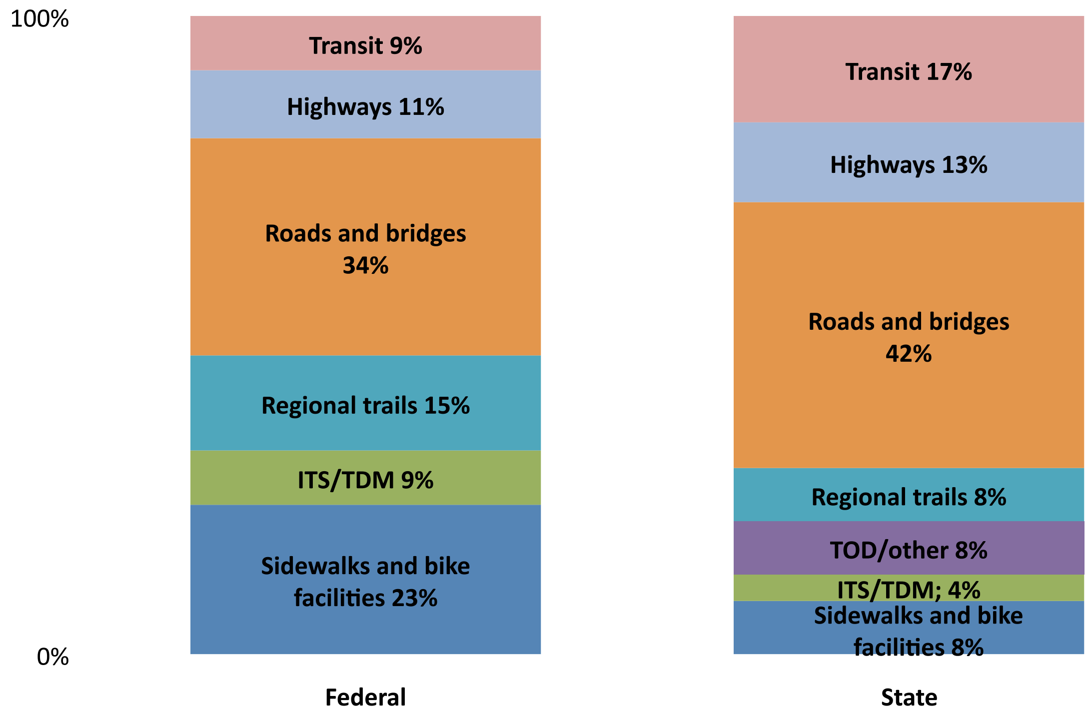
[15] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | Functional Plan. |
| **Safety** | • I-205 from Tualatin to Oregon City ranks on the ODOT SPIS list as Category 4 and 5(Scale 1-5, 5 being highest priority).<br>• Auxiliary lanes on the Abernethy Bridge are a safety problem.<br>• Lack of bicycle facilities throughout corridor.<br>• Unsafe merge length on NB I-205 on-ramp from OR43. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Truck climbing lane project on I-205 SB.<br>• Reduce weaving between OR213 and OR99E interchanges for I-205SB.<br>• Improve I-205NB on-ramp merge from OR 43. |
| **Regional Freight** | (Does not meet the performance threshold in Table 2.4)<br>• 2005 and 2035 midday one-hour volumes exceed capacity on the Abernethy Bridge. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

### 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #7 has 47 projects totaling more than $500 million. Roads and bridges projects account for 34% of all of projects and 48% of the total corridor project costs ($273 million). The State RTP adds 24more projects and an additional $1 billion. Transit capital accounts for 17% of the projects and 28% of the additional costs ($300 million). This includes upgrades to WES service accessible in Tualatin, I-205 BRT and other bus improvements in the corridor. The state system consists of an additional 42% of roads and bridges projects and 34% of the additional costs ($370 million). For both the Federal and State systems investments total $1.6 billion. |

### Projects by mode for federal and state systems




### RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #7 Total Project Cost | State System Cost by Mode | % of MC #7 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $139,300,000 | 24% | $12,846,598 | 1% |
| Freight | $0 | 0% | $0 | 0% |
| ITS/TDM | $6,578,000 | 1% | $0 | 0% |
| TOD/other | $0 | 0% | $11,000,000 | 1% |
| Regional trails | $19,200,000 | 3% | $7,000,000 | 1% |
| Roads and bridges | $273,544,000 | 48% | $372,151,423 | 34% |
| Highways | $95,700,000 | 17% | $390,000,000 | 36% |
| Transit | $40,000,000 | 7% | $301,000,000 | 28% |
| TOTAL | **$574,322,000** | 100% | **$1,093,998,021** | 100% |

### 2035 investment strategy

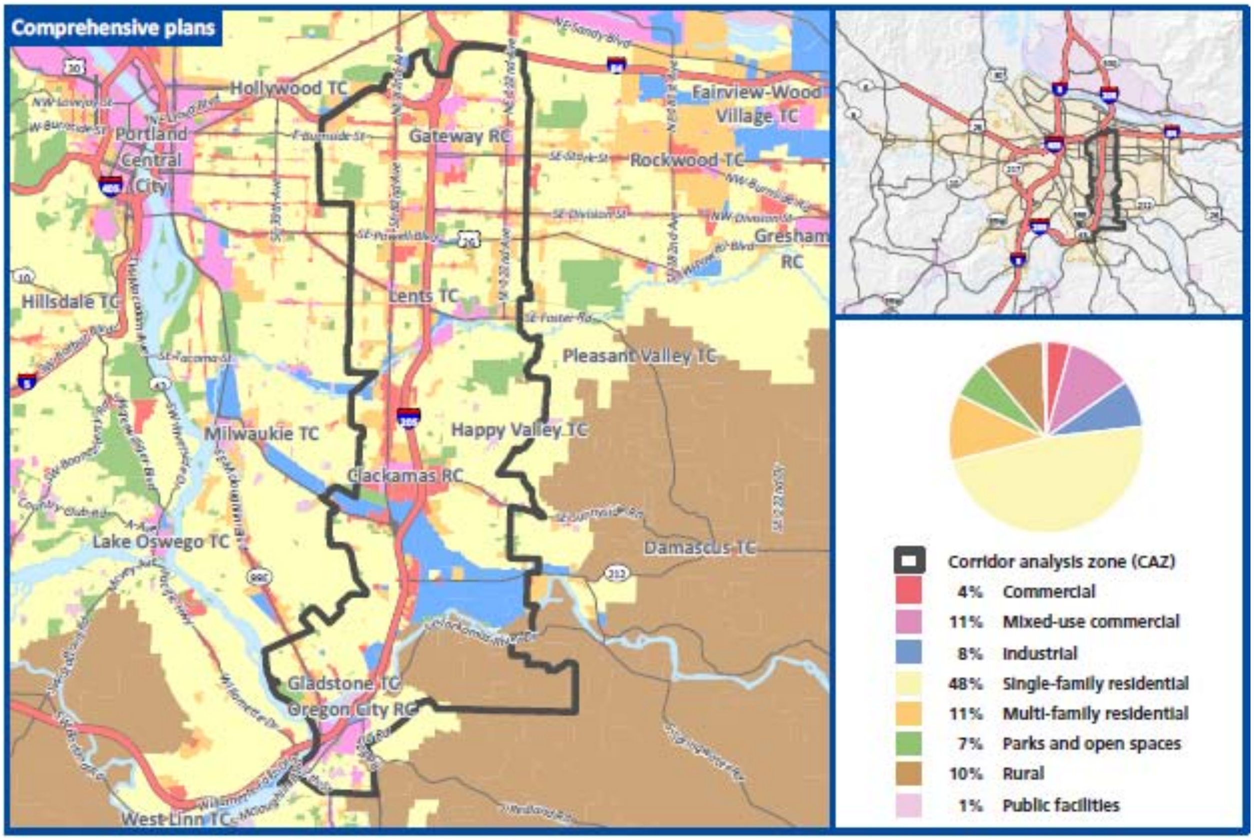
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Practical design solutions for bike and pedestrian connections to transit. |
| **Medium Term** | • Complete gaps in the arterial network. |

| Strategy | |
|---|---|
| **(5 – 10 years)** | • Complete corridor refinement plan for MC #7, #8 and #9.<br>• Develop tolling and congestion pricing methodologies for I-205.<br>• Develop plan and implement SEP to connect Oregon City RC with HCT.<br>• Identify funding solutions for alternative mode options. |
| **Long-term (10 – 25 years)** | • Construct HCT connection to Oregon City RC. |

| Unfunded Projects |
|---|
| • I-205 widening, Stafford to Willamette, $77,600,000<br>• Abernethy Bridge widening, $106,400,000<br>• I-205 climbing lanes, $56,800,000<br>• I-205 South aux lane improvements, $74,600,000 |

| Regional Actions | Local Actions |
|---|---|
| • Continue work on identifying resources to complete corridor refinement plan.<br>• Conduct corridor refinement plan.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.9 Mobility Corridor #8 – Oregon City to Gateway




### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Oregon City, Clackamas and Gateway regional centers and serves as the main access to the Clackamas Industrial Area and the South Metro waste transfer station. |
| **Freight Mobility:** Serves as the West Coast Trade (from Canada to Mexico) alternative to I-5, air freight access to Portland International Airport and provides Class I mainline freight rail access. |
| **Statewide Travel:** Serves as an extension of the southern gateway to the region, provides statewide access to Portland International Airport and provides statewide Amtrak service. |

### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 144,231 | 190,334 | 3,097,402 | 6.1% | 32.0% | 57.9% |
| **Households** | 55,824 | 87,166 | 1,208,686 | 7.2% | 56.1% | 57.6% |
| **Employment** | 77,846 | 133,823 | 1,799,152 | 7.4% | 71.9% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • Green Line MAX | • I-205 Trail | • | • I-205 | • 82nd Ave.<br>• 122nd Ave.<br>• 92nd Ave/Schumacher<br>• McLoughlin Blvd. | • Union Pacific<br>○ Valley Sub mainline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/ Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Gateway<br>• Clackamas<br>• Oregon City | • Lents<br>• Gladstone | • Portland International Airport | • Clackamas<br>• Johnson Creek | • Metro Transfer Station |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Address park and ride capacity constraints: Gateway @ 99% of capacity<br>• Address potential transit center capacity issues: Oregon City Transit Center<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy).<br>○ Inadequate bus connection between Green Line MAX and Oregon City RC<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy).<br>○ Address lack of HCT connection to Oregon City RC.<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections between HCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT plan identified Clackamas Town Center to Oregon City RC (via I-205 or McLoughlin) as a "next phase" regional priority corridor, use the HCT SEP process to identify which corridor to further refine.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail.<br>• Insufficient pedestrian crossings between signalized intersections of OR99E.<br>• Difficult connectivity over I-205 for bikes and pedestrians. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Over $20,000,000 in multimodal improvements to 82$^{nd}$ Ave. identified in RTP (projects 10014, 10291, 10018).<br>• $48,000,000 in multimodal improvements to McLoughlin Boulevard through Oak Grove, Gladstone, and Oregon City identified in RTP (projects 10118, 10145, 10146, 11186).<br>• Improve River Rd. ped and bike facilities.<br>• Create more frequent pedestrian crossings. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | • Identify locations for bike boulevards between OR99E and I-205.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | | • Connect Trolley Trail to Oregon City<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[16] | • All of the I-205 interchanges are spaced less than two-miles apart, with a handful at less than one-mile, which does not meet the ODOT 2 mile spacing standard.<br><br>The following do not meet the performance threshold in Table 2.4:<br>• 2005 and the 2035 NB PM 2-hour peak volumes exceed capacity on I-205 from Gateway RC to Oregon City RC in both directions. | • Unfunded I-205 interchange improvement projects at OR 212, Johnson Creek, Powell/Division, and OR 213 totaling over $125,000,000<br>• Unfunded widening, auxiliary lane, and braided ramp projects totaling over $300,000,000.<br>• $170,000,000 in operational improvements to I-205 in State RTP (project 11305) may include some of the above unfunded projects.<br>• Develop alternative mobility standards for this corridor.<br>• Explore tolling and peak pricing for I-205 and necessary legislative actions.<br>• Turn lanes on southbound OR 99E to I-205 ramp interchange area.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[17] | <u>Arterial Gaps</u><br>• Need for better north-south connectivity east of 122nd Ave.Gaps emerge south of Clackamas RC.<br>• Gaps east of I-205 from Oregon City to Gateway.<br>• Potential need for additional Willamette and Clackamas River crossings. | • Evaluate gaps east of I-205 from Oregon City to Gateway.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At-Grade Heavy Rail** | • The following at-grade heavy rail crossings exist in this corridor:<br>  • SE Linwood Ave./SE Harmony Rd. | • Local TSPsevaluate at grade heavy rail crossings for deficiencies and solutions. |

[16] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[17] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

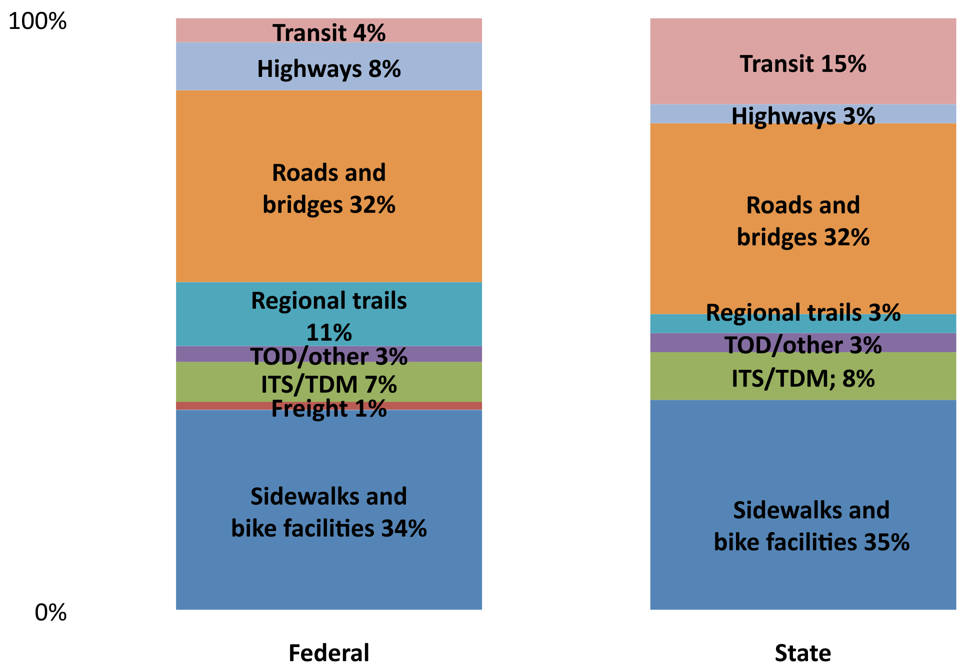
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • SE Lawnfield Rd.<br>• SE 37th Ave.<br>• SE Oak St.<br>• SE Harrison St.<br>• SE Clackamas Rd.<br>• Edgewater Rd.<br>• Forsythe Rd.<br>• 17th St.<br>• 16th St.<br>• 10th St. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Bridges** | • Ensure actual and perceived bicycle and pedestriansafety is addressedon regional bridges.<br>• OR99E bridge over Clackamas River nearing end of service life. | • Incorporate project into TSP to help identify project for OR99E bridge into RTP.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • I-205 ranks on the ODOT SPIS list as Category 4 (Scale 1-5, 5 being highest priority). Multiple locations rank above the 90th percentile.<br>• 82nd Ave. ranks as Category 5 with multiple intersections in the 95th percentile (Division, Powell, Holgate, Foster, and Sandy).<br>• 122nd Ave. has multiple intersections in the 95th percentile (Halsey, Glisan, Stark, Division, and Powell). | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Develop and implement design standards for OR99E that focus on and enhance pedestrian safety. |
| **Regional Freight** | | • Plan for OR224 and nearby arterials that serve Clackamas and Milwaukie industrial areas to recognize freight mobility needs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #8 has 74 projects totaling almost $1 billion. Sidewalk and bike projects account for 34% of the federal projects and 23% ($225 million) of the total corridor project costs. Roads and bridges projects account for 32% of all of projects and 31% of the total corridor project costs ($300 million). Highway projects comprise only 8% of federal projects, but account for 39% ($388 million) of the total corridor project costs, including improvements to I-205 for the Sunrise project. The State RTP adds 62 more projects and an additional $707 million. Sidewalk and bike projects account for 35% of the state projects and 19% ($130 million) of the total corridor project |

costs. Roads and bridges projects account for 32% of all of projects and 17% of the total corridor project costs ($123 million).Transit capital accounts for 15% of the projects and 22% of the additional costs ($154 million). Transit projects include maintenance and operations facilities and other bus improvements in the corridor. For both the Federal and State systems investments total $1.7 billion.

### Projects by mode for federal and state systems



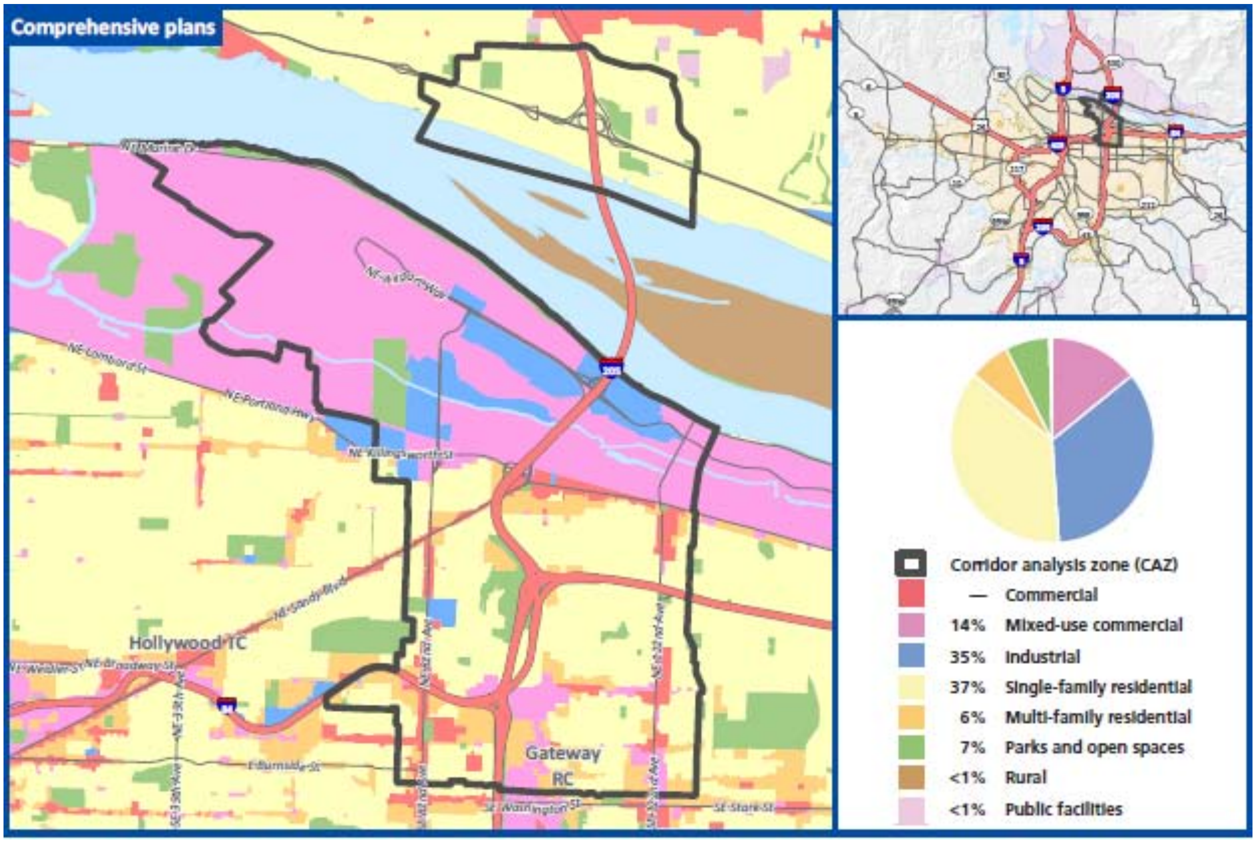

### RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #8 Total Project Cost | State System Cost by Mode | % of MC #8 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $225,783,568 | 23% | $132,435,967 | 19% |
| Freight | $25,650,000 | 3% | $0 | 0% |
| ITS/TDM | $11,465,703 | 1% | $1,675,000 | 0% |
| TOD/other | $5,511,000 | 1% | $11,000,000 | 2% |
| Regional trails | $16,194,000 | 2% | $7,000,000 | 1% |
| Roads and bridges | $307,332,540 | 31% | $123,315,046 | 17% |
| Highways | $388,000,000 | 39% | $280,000,000 | 40% |
| Transit | $18,637,609 | 2% | $153,224,000 | 22% |
| **TOTAL** | **$998,574,420** | 100% | **$708,650,013** | 100% |

## 2035 investment strategy

<table>
<tr><th colspan="2">Strategy</th></tr>
<tr><td>Near-Term<br>(1 – 4 years)</td><td>• System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Practical design solutions for bikes/peds for safety and to connect to transit.</td></tr>
<tr><td>Medium Term<br>(5 – 10 years)</td><td>• Complete gaps in the arterial network.<br>• Complete corridor refinement plan for MC #7, #8 and #9.<br>• Develop tolling and congestion pricing methodologies for I-205.<br>• Develop plan and implement SEP to connect Oregon City RC with HCT.</td></tr>
<tr><td>Long-term<br>(10 – 25 years)</td><td>• Identify funding solutions for alternative mode options, including HCT to Oregon City.</td></tr>
<tr><th colspan="2">Unfunded Projects</th></tr>
<tr><td colspan="2">• I-205 Powell/Division interchanges, $17,700,000<br>• I-205/OR 213 interchange, $200,900,000<br>• I-205/OR 212 interchange, $21,300,000<br>• I-205 widening, OR 212 to I-84, $63,400,000<br>• I-205 aux lanes, Gladstone to OR 212, $18,500,000<br>• OR 213 Ped and Bike access to transit, $5,000,000<br>• 82nd Ave Street Improvements, $5,400,000<br>• Streetscape and ped/bike access to transit projects on 82nd, $6,000,000.<br>• I-205/Johnson Creek interchange improvements, $9,800,000<br>• I-205 SB flyover to OR 213, $49,100,000<br>• I-205 East Portland aux lane improvements, $49,900,000<br>• I-205 north aux lane improvements, $46,000,000</td></tr>
<tr><th>Regional Actions</th><th>Local Actions</th></tr>
<tr><td>• Continue work on identifying resources to complete corridor refinement plan.<br>• Conduct corridor refinement plan.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept.</td><td>• Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update.</td></tr>
</table>

### 4.2.10 Mobility Corridor #9 – Gateway to Clark County




### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects Gateway Regional Center to Clark County, provides primary access to the Columbia South Shore industrial area and Portland International Airport. |
| **Freight Mobility:** Serves as the West Coast Trade (from Canada to Mexico) alternative to I-5, provides air freight access to Portland International Airport and serves as the primary access to the Columbia South Shore industrial area. |
| **Statewide Travel:** Serves as one of two northern gateways to the region, provides statewide access to Portland International Airport and serves interstate bicycle travel. |

### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 46,621 | 50,782 | 3,097,402 | 1.6% | 8.9% | 57.9% |
| **Households** | 18,913 | 23,477 | 1,208,686 | 1.9% | 24.1% | 57.6% |
| **Employment** | 43,613 | 62,504 | 1,799,152 | 3.5% | 43.3% | 74.3% |

## Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | • I-205 Trail | • Glenn Jackson Bridge | • I-205 | • 82nd Ave.<br>• 122nd Ave. | • Union Pacific<br>○ Graham mainline<br>○ Kenton mainline |

## Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/ Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Gateway | | • Portland International Airport | • Columbia Corridor | |

## Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• HCT Plan identified a potential HCT line Gateway to Salmon Creek as a next phase regional priority corridor.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Improve north/south trail connectivity.<br>• Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortablebicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[18] | • All of the I-205 interchanges are less than two-miles apart and do not meet the ODOT two-mile interchange spacing standard, but most are at least 1 mile apart.<br>a. Killingsworth Ave. and Airport | • Airport Way Interchange NB on-ramp improvement in FC project list (10865).<br>• Several unfunded braided ramp and auxiliary lane projects, totaling |

[18] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | Way interchanges are less than 1 mile apart.<br>• Address a gap (lack of throughway crossing) to the west of I-205 where NE Fremont Street could cross I-205.<br><br>The following do not meet the performance threshold in Table 2.4:<br><br>2005 and the 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• I-84 eastbound from NE 82nd Ave. to I-205, in both directions south of Washington St. on I-205, and northbound from NE Airport Way through the CRC.<br><br>2035 NB PM 2-Hour Peak volumes exceed capacity on:<br>• I-205 between the I-84 interchange and NE Sandy Blvd. (northbound)<br>• I-205 south of Washington St. (southbound)<br>• I-205 north of NE Airport Way through the CRC northbound<br><br>• In the AM Peak, there is congestion on the I-205 Glenn Jackson Bridge and in the Columbia Blvd. area.<br>• Currently, there is congestion on the mainline between Airport Way and Killingsworth St. southbound. | $73,200,000, have been identified in this section of I-205 to address performance deficiencies.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[19] | • Lack of connectivity across theNorth Willamette River | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At- Grade Heavy Rail** | The following list describes the heavy rail crossings within this mobility corridor:<br>• Columbia Blvd. east of 87th Ave.<br>• NE 105th Ave. north of Sandy Blvd.<br>• NE 109th Ave. north of Sandy Blvd.<br>○ NE 112th Ave. north of Sandy Blvd. | • Local TSPsevaluate at grade heavy rail crossings for deficiencies and solutions.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Bridges** | • The following bridges within this mobility corridor have height or weight restrictions:<br>○ NE 102nd Ave. crossing I-205 These two roads never cross | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

[19] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

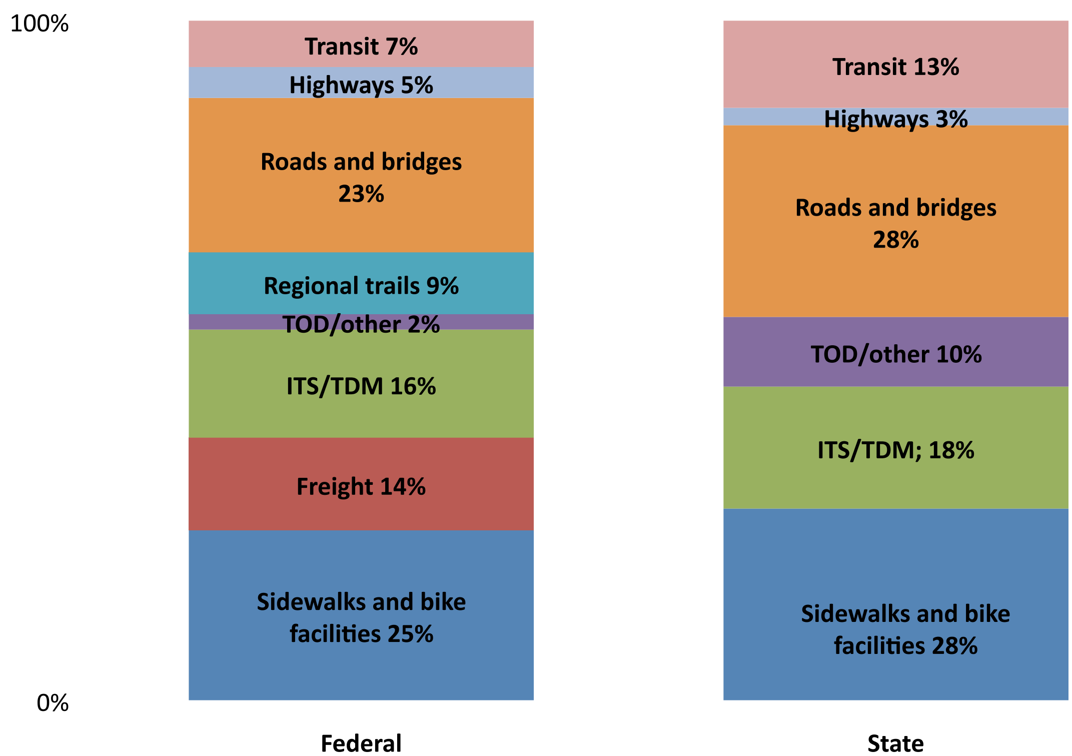
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | (Surface Maintenance Only) – Clearance: 15'-00"<br>○ NE Glisan St. crossing Mt. Hood RR right-of-way at 90th (9000 NE Glisan St.) – Wt. Limits: 50,000 lbs. (single unit); 80,000 lbs. (combination unit) (combination unit) | |
| **Safety** | • I-205 between I-84 and NE Columbia Blvd. ranks on the ODOT SPIS list as Category 5 (Scale 1-5, 5 being highest priority).<br>• The I-205/I-84 interchange and the I-205/Columbia Blvd interchange rank in the 95th percentile as SPIS intersections. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | The following do not meet the performance thresholds in Table 2.4:<br>• 2005 midday 1-hour volumes exceed capacity on I-84 (eastbound) between NE 20th Ave. and NE 60th Ave. and the interchange from I-84 east to I-205 south, just north of Gateway transit<br>2035 NB midday 1-hour volumes exceed capacity on the main freight roadway routes (I-205 and I-84):<br>• I-205 northbound between the interchange with I-84 and NE Beech St.<br>• I-84 eastbound and westbound at the interchange with I-205<br>• I-205 southbound at the intersection with Columbia Blvd<br>• I-205 northbound and southbound between NE Airport Way and NE Marine Drive | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #9 has 44 projects totaling $468 million. Freight projects account for 14% of all of projects yet40% of the total corridor project costs ($185 million). Sidewalk and bike projects account for 25% of the federal projects and 29% ($130 million) of the total corridor project costs. The State RTP adds 39 more projects and an additional $388 million. Highway projects comprise 3% of state projects yet account for 44% ($170 million) of the total corridor project costs, including operational improvements to I-205. Transit capital accounts for 13% of the projects and 24% of the additional costs ($92 million). Transit projects include maintenance and operations |

facilities and other bus improvements in the corridor. Both the Federal and State systems investments total about $856 million.

### Projects by mode for federal and state systems



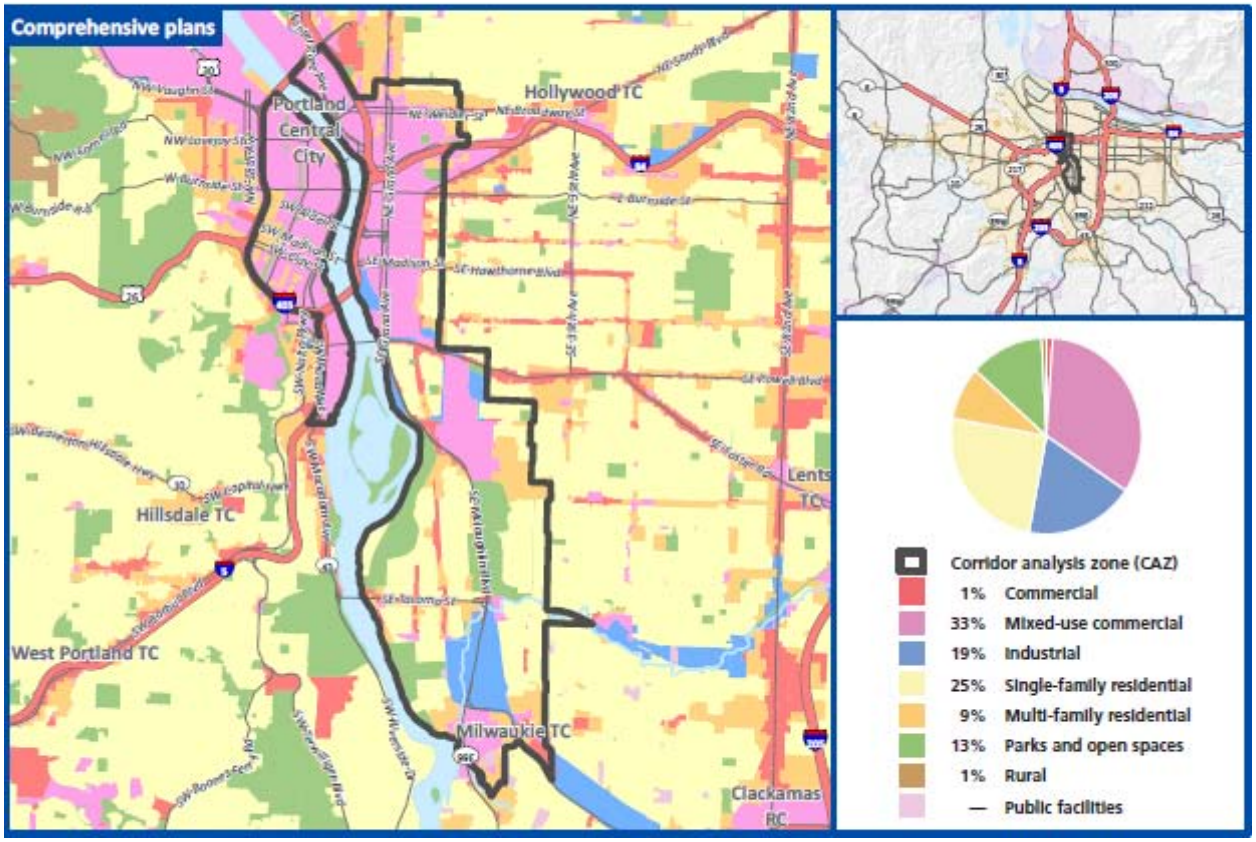

### Projects by mode for federal and state systems

| Mode | Federal System Cost by Mode | % of MC #9 Total Project Cost | State System Cost by Mode | % of MC #9 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $133,574,403 | 29% | $33,441,269 | 9% |
| Freight | $185,727,900 | 40% | $0 | 0% |
| ITS/TDM | $8,243,954 | 2% | $3,021,880 | 1% |
| TOD/other | $1,511,000 | 0% | $14,000,000 | 4% |
| Regional trails | $11,914,835 | 3% | $0 | 0% |
| Roads and bridges | $74,608,065 | 16% | $75,542,617 | 19% |
| Highways | $23,500,000 | 5% | $170,000,000 | 44% |
| Transit | $28,968,309 | 6% | $92,224,000 | 24% |
| **TOTAL** | $468,048,466 | 100% | $388,229,766 | 100% |

## 2035 investment strategy

<table>
<tr><th colspan="2">Strategy</th></tr>
<tr><td>Near-Term<br>(1 – 4 years)</td><td>• System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.</td></tr>
<tr><td>Medium Term<br>(5 – 10 years)</td><td>• Conduct corridor refinement plan</td></tr>
<tr><td>Long-term<br>(10 – 25 years)</td><td>• Interchange improvements.</td></tr>
<tr><th colspan="2">Unfunded Projects</th></tr>
<tr><td colspan="2">• I-205/Airport Way SB on-ramp, $11,800,000<br>• I-205 auxiliary lanes/braids, Airport Way to Columbia, $27,200,000<br>• I-205 auxiliary lanes, Airport Way to Glisan, $46,000,000</td></tr>
<tr><th>Regional Actions</th><th>Local Actions</th></tr>
<tr><td>• Conduct corridor refinement plan.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept.</td><td>• Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update.</td></tr>
</table>

### 4.2.11 Mobility Corridor #10 – Portland Central City to Milwaukie




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Central City to Clackamas regional center and provides regional access to the Milwaukie and Clackamas industrial areas, Brooklyn Yard intermodal facility and Clackamas Community College (Harmony). |
| **Freight Mobility:** Provides access to a rail intermodal facility at Brooklyn Yard and serves as a Class I Union Pacific main line corridor. |
| **Statewide Travel:** Provides a regional connection to Eastern Oregon via OR 212/224 and US 26 and serves as the Amtrak corridor to points south of the metropolitan region. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 52,960 | 132,444 | 3,097,402 | 4.3% | 150.1% | 57.9% |
| **Households** | 31,072 | 67,664 | 1,208,686 | 5.6% | 117.8% | 57.6% |
| **Employment** | 169,422 | 250,866 | 1,799,152 | 13.9% | 48.1% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Freight Rail |
|---|---|---|---|---|---|
| | • Springwater Trail | • Sellwood Bridge<br>• Ross Island Bridge | • OR 99E | • SE 17th Ave./ Milwaukie Ave.<br>• Holgate Ave. | • Union Pacific<br>○ Brooklyn Sub mainline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Portland Central City | • Milwaukie | • Union Station | • Central Eastside<br>• Johnson Creek<br>• Northwest<br>• Brooklyn Yards | • Convention Center<br>• Rose Quarter<br>• South Waterfront |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Increase 15 minute or better transit service along OR 224<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy).<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy).<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops.<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Long-Range HCT Plan Identifies a potential HCT line between Portland Central City and Gresham (in general vicinity of Powell Blvd.) It is listed as a "Near-term" investment priority.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Active Transportation project in RTP to improve safety and access for pedestrians and cyclists (11198).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Regional Trails** | • Address a gap in the Springwater Trail in the Sellwood neighborhood.<br>• Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[20] | The following do not meet the performance threshold in Table 2.4:<br><br>2005 and 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• OR 99E<br>• OR 224/Harrison St. intersection | • Unfunded projects identified to increase capacity and improve access management between Ross Island Bridge and I-205 along 99E/OR 224 corridor, $280,000,000.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[21] | <u>Arterial Gaps</u><br>• Address gap south of Holgate between 99E and 52nd Ave.<br>• Address a need for another south Willamette River crossing.<br><br><u>Arterial Deficiencies</u><br>The following do not meet the performance threshold in Table 2.4:<br><br>2005 and 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• Powell Blvd., Ross Island Bridge, Sellwood Bridge, Tacoma St., pieces of Holgate Blvd., 52nd Ave, and Johnson Creek Blvd. | • Address TSMO needs in this corridor.<br>• Improve access to neighborhoods, rather than just the throughway facility.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At-Grade Heavy Rail** | • SE Milwaukie<br>• SE Clinton<br>• SE 12th<br>• SE 8th/Division<br>• SE 17th<br>• SE Harrison | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPsevaluate at grade heavy rail crossings for deficiencies and solutions. |
| **Regional Bridges** | • Sellwood Bridge has weight restrictions and a low sufficiency rating which currently limits transit service in this corridor. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Implement Sellwood Bridge Study recommendations. |

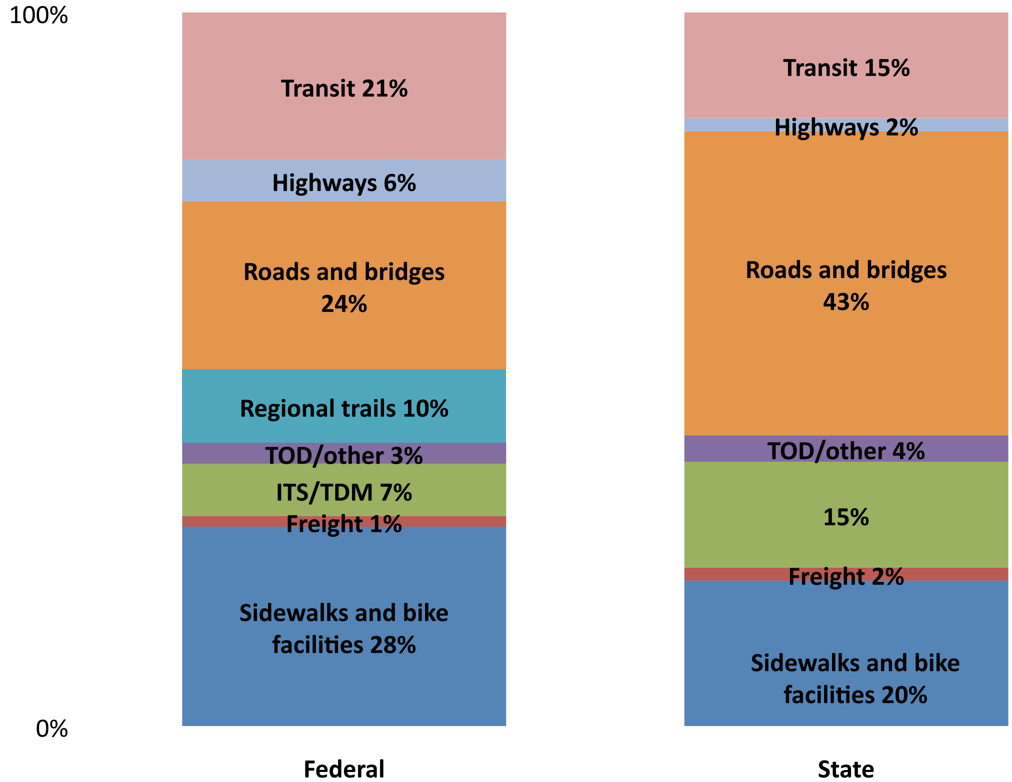
[20] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[21] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Safety** | • OR 99E/Powell, OR 99E near Holgate, and 17th and Tacoma St. intersections rank on the ODOT SPIS list as Category 4 and 5(Scale 1-5, 5 being highest priority). | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | • Improve access to Brooklyn Yard. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #10 has 68 projects totaling $2.5 billion. Transit projects account for 21% of the federal projects and 72% ($1.8 billion) of the total corridor project costs. These projects include expanding the HCT system to Milwaukie, Portland to Lake Oswego Streetcar and additional expansion of the streetcar system in the City of Portland. Sidewalk and bike projects comprise 28% of all of projects and 6% of the total corridor project costs ($163 million). Roads and bridges projects account for 24% of all of projects and 14% of the total corridor project costs ($360 million). The State RTP adds 54 more projects and an additional $2.7 billion. Transit projects account for 26% of the federal projects and 84% ($2.2 billion) of the total corridor project costs. These projects include expanding the HCT system from Central City to Tigard and increases in bus service and facilities. Sidewalk and bike projects comprise 20% of all of projects but only 1% of the total corridor project costs ($31 million). Roads and bridges projects account for 43% of all of projects and 8% of the total corridor project costs ($177 million). For both the Federal and State systems investments total $4.8 billion. |

## Projects by mode for federal and state systems




## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #10 Total Project Cost | State System Cost by Mode | % of MC #10 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $163,840,442 | 6% | $31,524,681 | 1% |
| Freight | $30,000,000 | 1% | $280,600 | 0% |
| ITS/TDM | $11,351,794 | 0% | $3,919,800 | 0% |
| TOD/other | $5,511,000 | 0% | $11,000,000 | 0% |
| Regional trails | $10,956,411 | 0% | $0 | 0% |
| Roads and bridges | $361,390,003 | 14% | $177,491,019 | 8% |
| Highways | $121,703,209 | 5% | $220,000,000 | 10% |
| Transit | $1,847,727,000 | 72% | $1,827,056,000 | 80% |
| **TOTAL** | **$2,552,479,859** | 100% | **$2,271,272,100** | 100% |

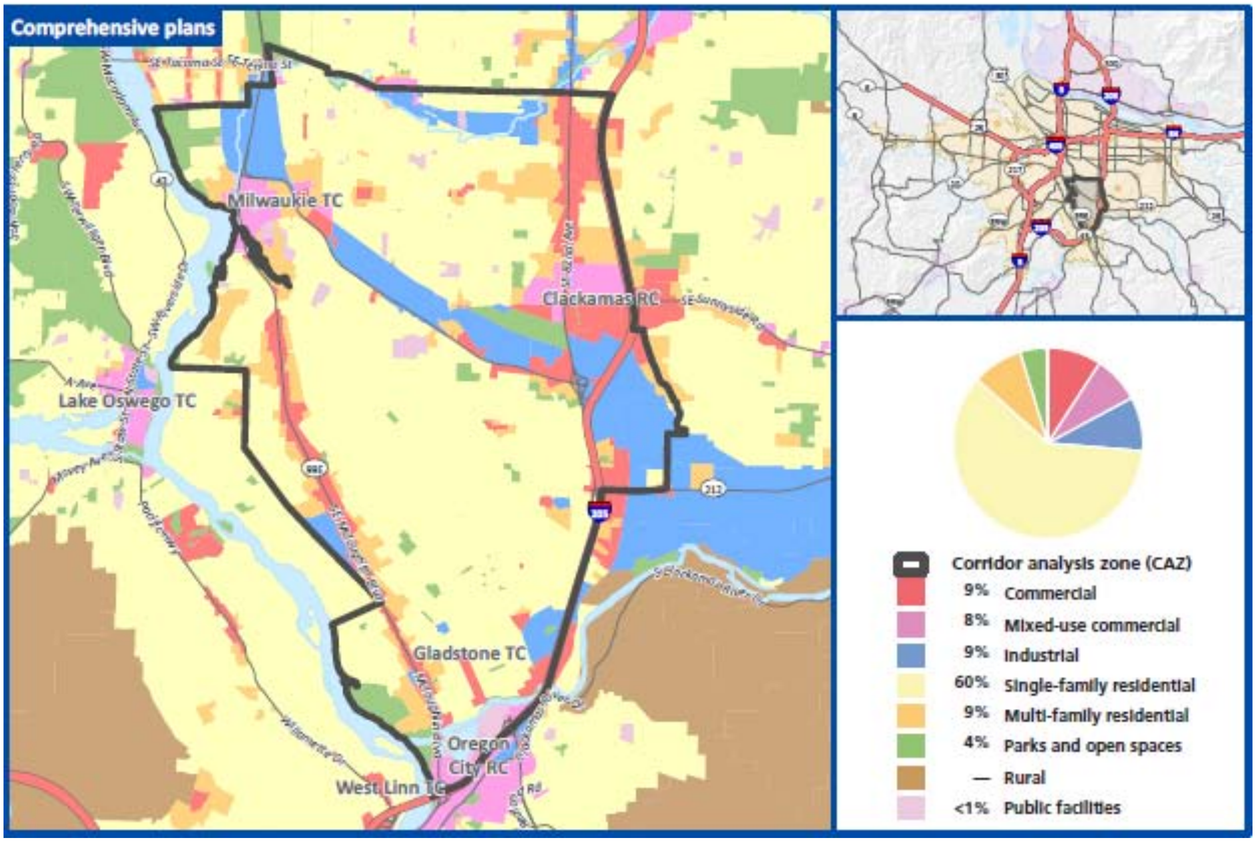
## 2035 investment strategy

| Strategy | |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Continue work on Milwaukie HCT. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network. |
| **Long-term (10 – 25 years)** | |

| Unfunded Projects |
|---|
| • Ross Island Bridge East Approach, $2,900,000<br>• SE McLoughlin Bikeway, $700,000<br>• OR 99E Improvements from Powell to OR 224, $241,600,000<br>• OR 99E Bike Improvements, Kellogg Cr. To Clackamas R., $4,000,000<br>• OR 99E Widening, Harold to Tacoma, $38,800,000 |

| Regional Actions | Local Actions |
|---|---|
| • Continued work on Milwaukie HCT.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update.. |

### 4.2.12 Mobility Corridor #11– Milwaukie to Clackamas




## Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Central City to Clackamas regional center and provides regional access to the Milwaukie and Clackamas industrial areas, Brooklyn Yard intermodal facility and Clackamas Community College (Harmony). |
| **Freight Mobility:** Provides access to a rail intermodal facility at Brooklyn Yard and serves as a Class I Union Pacific main line corridor. |
| **Statewide Travel:** Provides a regional connection to Eastern Oregon via OR 212/224 and US 26 and serves as the Amtrak corridor to points south of the metropolitan region. |

## Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 84,246 | 94,497 | 3,097,402 | 3.1% | 12.2% | 57.9% |
| **Households** | 34,127 | 42,475 | 1,208,686 | 3.5% | 24.5% | 57.6% |
| **Employment** | 46,362 | 72,915 | 1,799,152 | 4.1% | 57.3% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | • Springwater Trail | • Sellwood Bridge<br>• Ross Island Bridge | • OR 99E | • 82nd Ave.<br>• 122nd Ave.<br>• 92nd Ave/ Schumacher<br>• McLoughlin Blvd. | • Union Pacific<br>○ Brooklyn sub mainline<br>○ Valley sub mainline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Portland Central City | • Milwaukie | • Union Station | • Central Eastside<br>• Johnson Creek<br>• Northwest<br>• Brooklyn Yards | • Lloyd District<br>• Convention Center<br>• Rose Quarter<br>• South Waterfront |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Add 15 minute of better transit along OR 224 and SE Harmony Rd.<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy).<br>• Connect all 2040 Regional Centers with high capacity transit (Oregon City RC is not served by HCT.)<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT plan identified Milwaukie to Oregon City RC (via I-205 or McLoughlin Blvd) as a "next phase" regional priority corridor.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities.<br>• Address a bike parkway connecting Milwaukie TC to Clackamas RC parallel to OR 224. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | Functional Plan. |
| **Throughways**[22] | • OR 224 is a statewide highway and it has several signalized intersections between OR 99E and Lake Road. The intersections are spaced less than a mile apart.<br><br>The following do not meet the performance threshold in Table 2.4:<br>2005 and the 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• OR 224 at the OR 99E intersection and approaches to I-205. | • FC Project 10106 addresses access issues to increase vehicle throughput on OR 224.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[23] | Arterial Gaps<br>• Address gaps between SE Oatfield Rd. and SE Webster Rd south of OR 224 and between SE McLoughlin Blvd. and SE Linwood Ave south of Johnson Creek Blvd.<br><br>The following do not meet the performance threshold in Table 2.4:<br>2005 and 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• Parts of SE Lake Rd. and Harmony Rd.<br>• Address congestion in downtown Milwaukie at the intersections along OR 224. There is a need for better connectivity across the community and better access to downtown.<br>• | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At-Grade Heavy Rail** | • There is a heavy rail crossing of a main freight railroad line at the intersection of SE Lake Rd./SE Linwood Ave./Harmony Rd.<br>• There are two heavy rail crossings of both a main and branch freight railroad line on Harrison St. both west and east of the Harrison St./OR 224 Intersection:<br>  • Harrison<br>  • Oak<br>  • 37th<br>  • Harmony<br>  • Lawnfield | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPsevaluate at grade heavy rail crossings for deficiencies and solutions. |

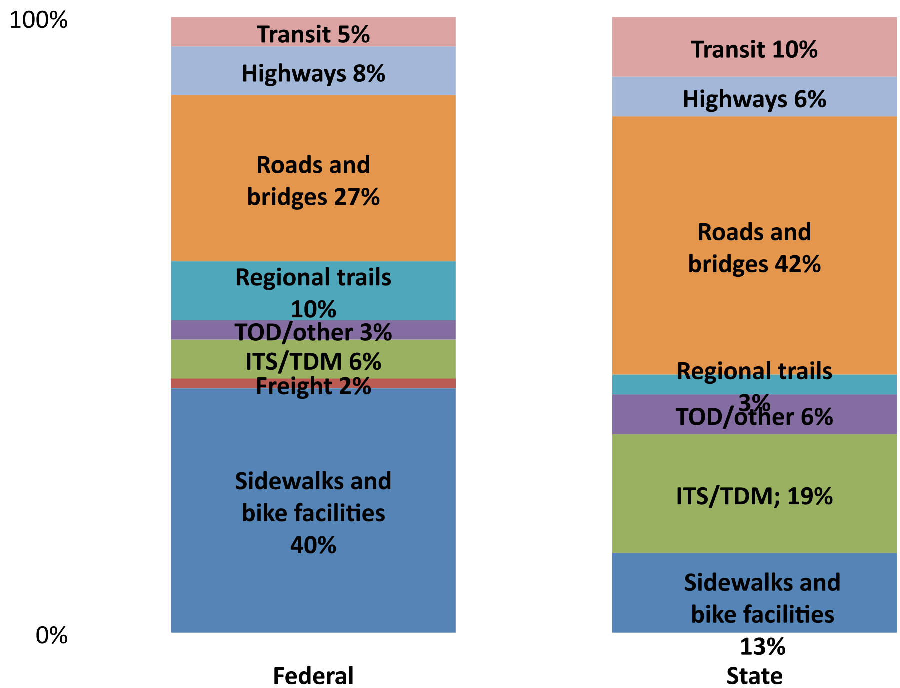
[22] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[23] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Regional Bridges** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • OR 224 intersections rank on the ODOT SPIS list as Category 4 and 5(Scale 1-5, 5 being highest priority). | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | • OR 224 in both 2005 and 2035 NB in the midday 1-hour:<br>• OR 99E intersection and as it approaches I-205. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

### 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #11 has 63 projects totaling more than $1.9 billion. Transit projects account for 5% of the federal projects and 58% ($1.1 billion) of the total corridor project costs. This includes expanding the HCT system from Central City to Milwaukie. Sidewalk and bike projects comprise 40% of all of projects and 7% of the total corridor project costs ($147 million). Roads and bridges projects account for 27% of all of projects and 13% of the total corridor project costs ($262 million). The State RTP adds 31 more projects and an additional $960 million. Highway projects account for 6% of all of projects yet 60% of the total corridor project costs ($280 million) for improvements to the I205/OR 213 Interchange and the Sunrise project. For both the Federal and State systems investments total $2.4 billion. |

### Projects by mode for federal and state systems




## RTP projects by cost and mode

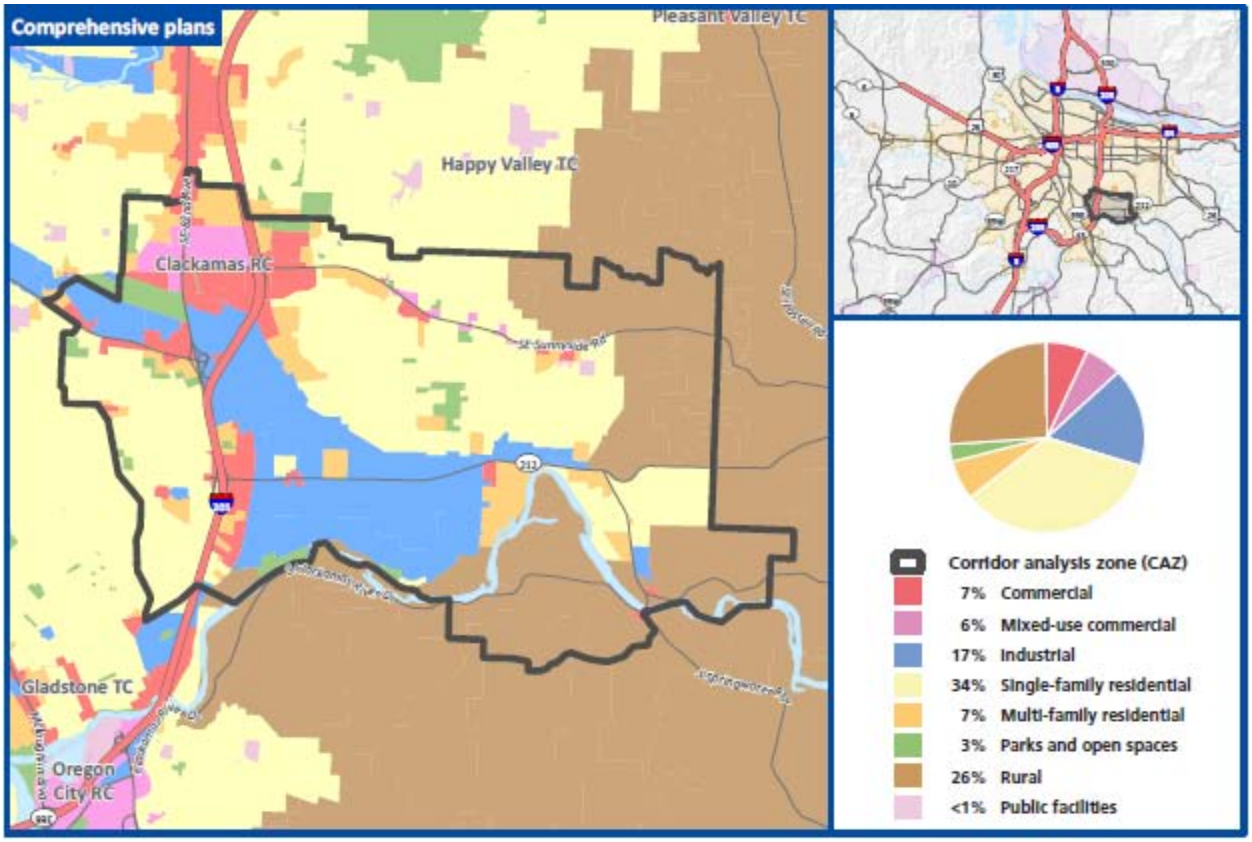
| Mode | Federal System Cost by Mode | % of MC #11 Total Project Cost | State System Cost by Mode | % of MC #11 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $146,814,193 | 7% | $19,964,842 | 4% |
| Freight | $25,650,000 | 1% | $0 | 0% |
| ITS/TDM | $10,950,000 | 1% | $49,061,295 | 10% |
| TOD/other | $5,511,000 | 0% | $11,000,000 | 2% |
| Regional trails | $10,620,000 | 1% | $5,000,000 | 1% |
| Roads and bridges | $262,148,295 | 13% | $68,758,253 | 15% |
| Highways | $375,000,000 | 19% | $280,000,000 | 59% |
| Transit | $1,154,627,000 | 58% | $40,000,000 | 8% |
| **TOTAL** | **$1,991,320,488** | 100% | **$473,784,390** | 100% |

## 2035 investment strategy

| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Continue work on Milwaukie HCT. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network. |
| **Long-term** | |

| **(10 – 25 years)** | |
|---|---|
| **Unfunded Projects** | |
| • Milwaukie to Clackamas RC Corridor Study, $1,400,000<br>• Projects identified to increase capacity and improve access management between Ross Island Bridge and I-205 along 99E/OR 224 corridor, $280,000,000. | |
| **Regional Actions** | **Local Actions** |
| • Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.13 Mobility Corridor #12 – Clackamas to Rock Creek Junction (Hwy. 224)




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Clackamas regional center and industrial areas to Eastern Oregon via OR 212/224 and US 26. |
| **Freight Mobility:** Connects the Clackamas industrial area distribution center to the interstate system and to Eastern Oregon via OR 212/224 and US 26. |
| **Statewide Travel:** Provides access to the metropolitan region from Eastern Oregon via OR 212/224 and US 26. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 40,808 | 65,900 | 3,097,402 | 2.1% | 61.5% | 57.9% |
| **Households** | 15,530 | 25,008 | 1,208,686 | 2.1% | 61.0% | 57.6% |
| **Employment** | 33,551 | 63,305 | 1,799,152 | 3.5% | 88.7% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | • Clackamas Bluffs Trail | | • OR 212/224 | • Sunnyside Rd. | • Union Pacific<br>○ Valley sub mainline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Employment Areas | Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Clackamas | • Damascus | | • Clackamas Ind. District | • |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Address lack of transit service within this mobility corridor.<br>• Increase regional transit service along Sunnyside Rd./Harmony Rd.<br>• Add 15 minute or better transit service along OR 212/224 and SE Sunnyside Rd. Need to connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT study ranked Clackamas Transit Center to Damascus as a regional vision corridor.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized for all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[24] | • OR 212/224 is a statewide highway and it has several signalized intersections all spaced less than a mile apart.<br><br>The following do not meet the performance | • Right of way acquisition, preliminary engineering, and environmentalof Sunrise facility between I-205 and Rock Creek Junction. $320,000,000 in FC project list (10869, 10890, |

[24] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
| --- | --- | --- |
| | threshold in Table 2.4:<br>2005 and 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• OR 212/224except as it approaches SE 142nd Ave and SE 152nd Ave in the eastbound direction.<br>• Sunrise/I-205/Sunnyside Rd. area. | 10894), $110,000,000 in State RTP (11301).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[25] | Arterial Gaps<br>• Address the gap on 122nd Ave. just north of OR 224.<br>• Address lack of north/south connectivity between SE Sunnyside Rd. and Hwy. 212/224 and east/west connectivity between SE 82nd Dr. and SE 122nd Ave.<br><br>The following do not meet the performance threshold in Table 2.4:<br>2005 and 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• Parts of SE Sunnyside Rd. as it approaches SE 132nd Ave and SE 142nd Ave do not meet the performance thresholds in 2005 PM 2-hour peak.<br>• In the 2035 NB PM 2-hour peak, SE Sunnyside Rd does not meet the performance thresholds throughout in the eastbound direction. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At-Grade Heavy Rail** | • There is an at-grade heavy rail crossing at Lawnfield Rd. near I-205. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPsevaluate at grade heavy rail crossings for deficiencies and solutions. |
| **Regional Bridges** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • OR 224 intersections rank on the ODOT SPIS list as Category 4 and 5 (Scale 1-5, 5 being highest priority). | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | The following do not meet the performance threshold in Table 2.4.<br>• 2035 NB PM 2-hour volumes exceed | • Implement Regional Transportation Functional Plan and Urban Growth |

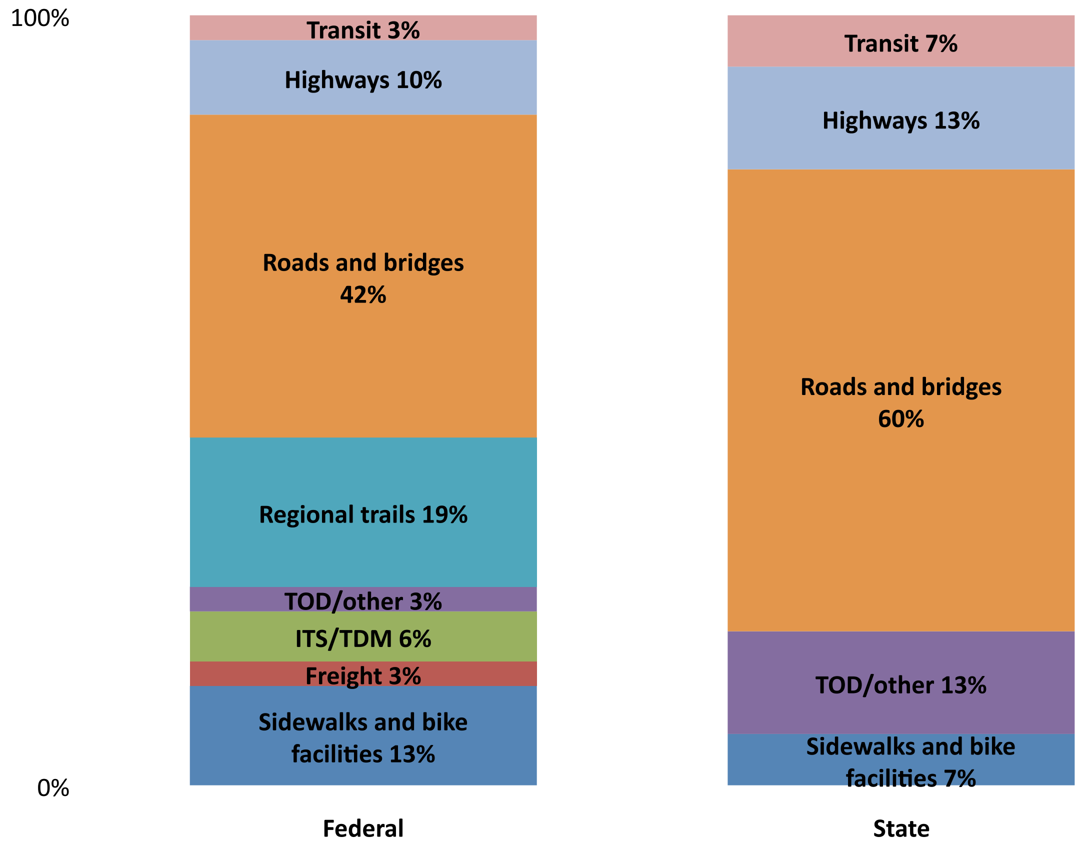
[25] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | capacity on OR 212/224 and SE 142nd Ave and SE 152nd Ave in the eastbound direction. | Management Functional Plan. |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #12 has 31 projects totaling $678 million. Roads and bridges projects account for 42% of all of projects and 30% of the total corridor project costs ($205 million). Highway projects comprise only 10% of federal projects, but account for 47% ($320 million) of the total corridor project costs, including the Sunrise project. The State RTP adds 15 more projects and an additional $429 million. Highway projects comprise only 13% of state projects, but account for 65% ($280 million) including additional Sunrise projects. Both the Federal and State systems investments total about $1.1 billion. |

## Projects by mode for federal and state systems



## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #9 Total Project Cost | State System Cost by Mode | % of MC #9 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $94,775,000 | 14% | $6,846,598 | 2% |
| Freight | $25,650,000 | 4% | $0 | 0% |
| ITS/TDM | $6,500,000 | 1% | $0 | 0% |
| TOD/other | $4,000,000 | 1% | $11,000,000 | 3% |
| Regional trails | $21,440,000 | 3% | $0 | 0% |
| Roads and bridges | $205,027,149 | 30% | $101,578,517 | 24% |
| Highways | $320,000,000 | 47% | $280,000,000 | 65% |
| Transit | $1,000,000 | 0% | $30,000,000 | 7% |
| **TOTAL** | **$678,392,149** | 100% | **$429,425,115** | 100% |

## 2035 investment strategy

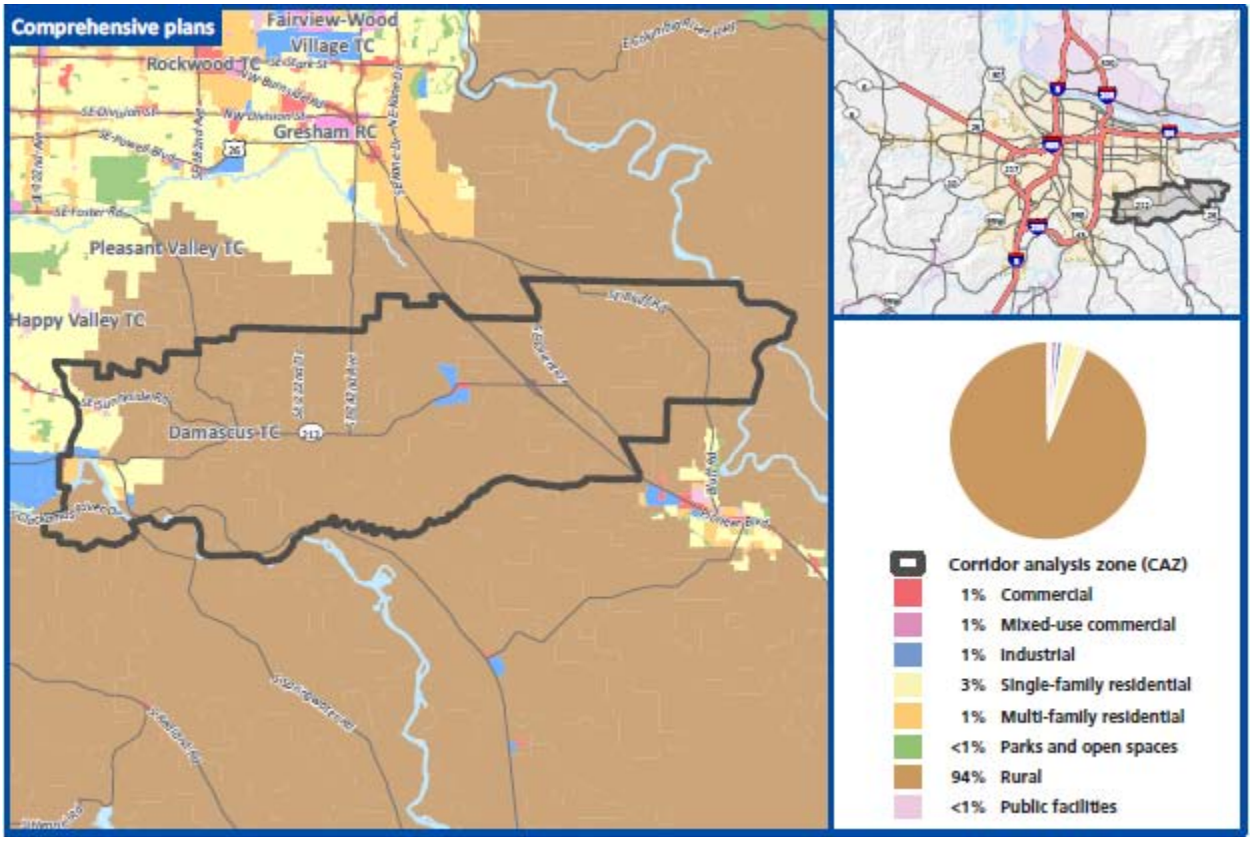
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Complete Sunrise study. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network.<br>• Interchange improvements and improvements consistent with Sunrise study |
| **Long-term (10 – 25 years)** | |

**Unfunded Projects**

- Sunrise Phase 1 construction, $392,000,000
- Sunrise Phase 2 construction, $247,900,000
- OR 212/224 Improvements, $7,000,000
- Additional westbound lane on OR 212 between 102nd and I-205

| Regional Actions | Local Actions |
|---|---|
| • Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.14 Mobility Corridor #13 – Rock Creek Junction (OR 224) to US 26




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Clackamas regional center and industrial areas to Eastern Oregon via OR 212/224 and US 26. |
| **Freight Mobility:** Connects the Clackamas industrial area distribution center to the interstate system and to Eastern Oregon via OR 212/224 and US 26. |
| **Statewide Travel:** Provides access to the metropolitan region from Eastern Oregon via OR 212/224 and US 26. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 23,616 | 116,508 | 3,097,402 | 3.8% | 393.3% | 57.9% |
| **Households** | 8,195 | 38,324 | 1,208,686 | 3.2% | 367.7% | 57.6% |
| **Employment** | 5,722 | 22,453 | 1,799,152 | 1.2% | 292.4% | 74.3% |

## Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | | | • OR 212 | • Sunnyside Rd. | |

## Regional 2040 land uses

| Regional Centers | Town Centers | Employment Areas | Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| | • Damascus<br>• Happy Valley | | • Clackamas | • Boring<br>• Sandy |

## Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Address lack of transit service within this mobility corridor.<br>• Improve regional transit service on Sunnyside Rd. into Damascus TC and OR 212.<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy).<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy).<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops.<br>• Connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT plan ranked Clackamas TC to Damascus TC as a "regional vision" corridor.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Need for east/west trail.<br>• Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[26] | The following do not meet the performance threshold in Table 2.4:<br><br>2035 NB PM 2-hour peakvolumes exceed capacity onOR 212<br>• OR 212 is primarily 2 lanes from Damascus to US 26. | • Sunrise Parkway EIS in State RTP (10114), $6,000,000.<br>• OR 224 widening from Rock Creek Junction to Carver Bridge, FC project 10078.<br>• OR 212 widening and boulevard improvements through Damascus, FC RTP project 10138.<br>• Improvements to OR 212 intersections to meet future traffic needs, FC project 10073.<br>• OR 212 truck climbing lanes east of Rock Creek Junction, unfunded.<br>• Implement Regional Transportation |

[26] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

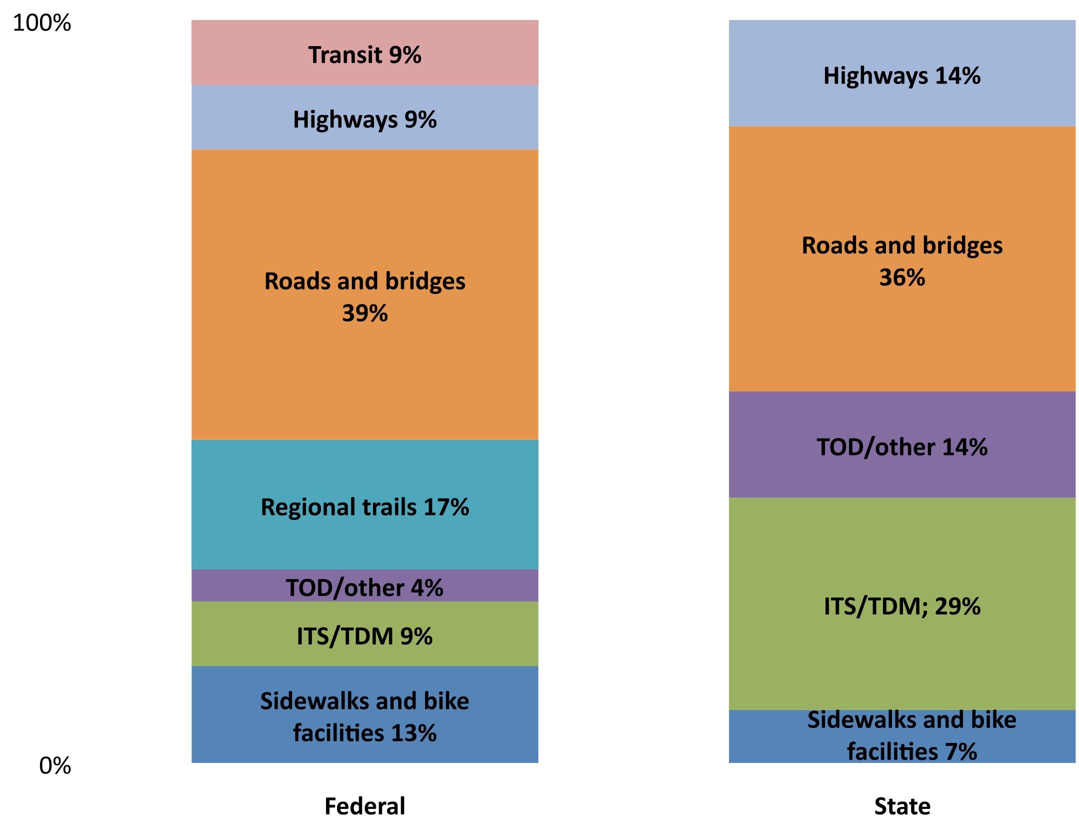
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[27] | Arterial Gaps<br>• Address north/south and east/west gaps between 142nd Ave and 172nd Ave., 172nd Ave and SE Foster Rd., SE Foster Rd. and SE 242nd Ave., and 242nd Ave. and US 26.<br>Arterial Deficiencies<br>• Sunnyside Rd. does not meet the performance thresholds in Table 2.4. 2035 NB PM 2-hour peak volumes exceed capacity in the eastbound direction. | • Address need for additional Clackamas River crossings.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At-Grade Heavy Rail** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Bridges** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • Stretches of OR 212 rank on the ODOT SPIS list as Category 3 and 4 (Scale 1-5, 5 being highest priority).<br>• Address safety problems on SE Tong Rd.<br>• There is a need for safety improvements to the Springwater Bridge in Carver. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

### 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #13 has 23 projects totaling $660 million. Roads and bridges projects account for 39% of all of projects but over half (54%) of the total corridor project costs ($327 million). Highway projects comprise only 9% of federal projects, but account for 28% ($170 million) of the total corridor project costs, including the Sunrise project. The State RTP adds 14 more projects and an additional $223 million. Highway projects comprise only 14% of state projects, but account for 52% ($116 million) including additional Sunrise projects. Both the Federal and State systems investments total $827million. |

### Projects by mode for federal and state systems

[27] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)


100%
0%
Transit 9%
Highways 9%
Roads and bridges 39%
Regional trails 17%
TOD/other 4%
ITS/TDM 9%
Sidewalks and bike facilities 13%
Highways 14%
Roads and bridges 36%
TOD/other 14%
ITS/TDM; 29%
Sidewalks and bike facilities 7%
Federal
State

RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #9 Total Project Cost | State System Cost by Mode | % of MC #9 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $81,940,000 | 14% | $6,846,598 | 3% |
| Freight | $0 | 0% | $0 | 0% |
| ITS/TDM | $6,500,000 | 1% | $1,675,000 | 1% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 5% |
| Regional trails | $14,070,000 | 2% | $0 | 0% |
| Roads and bridges | $327,357,149 | 54% | $88,423,854 | 39% |
| Highways | $170,000,000 | 28% | $116,000,000 | 52% |
| Transit | $2,000,000 | 0% | $0 | 0% |
| **TOTAL** | **$603,378,149** | 100% | **$223,945,452** | 100% |

## 2035 investment strategy

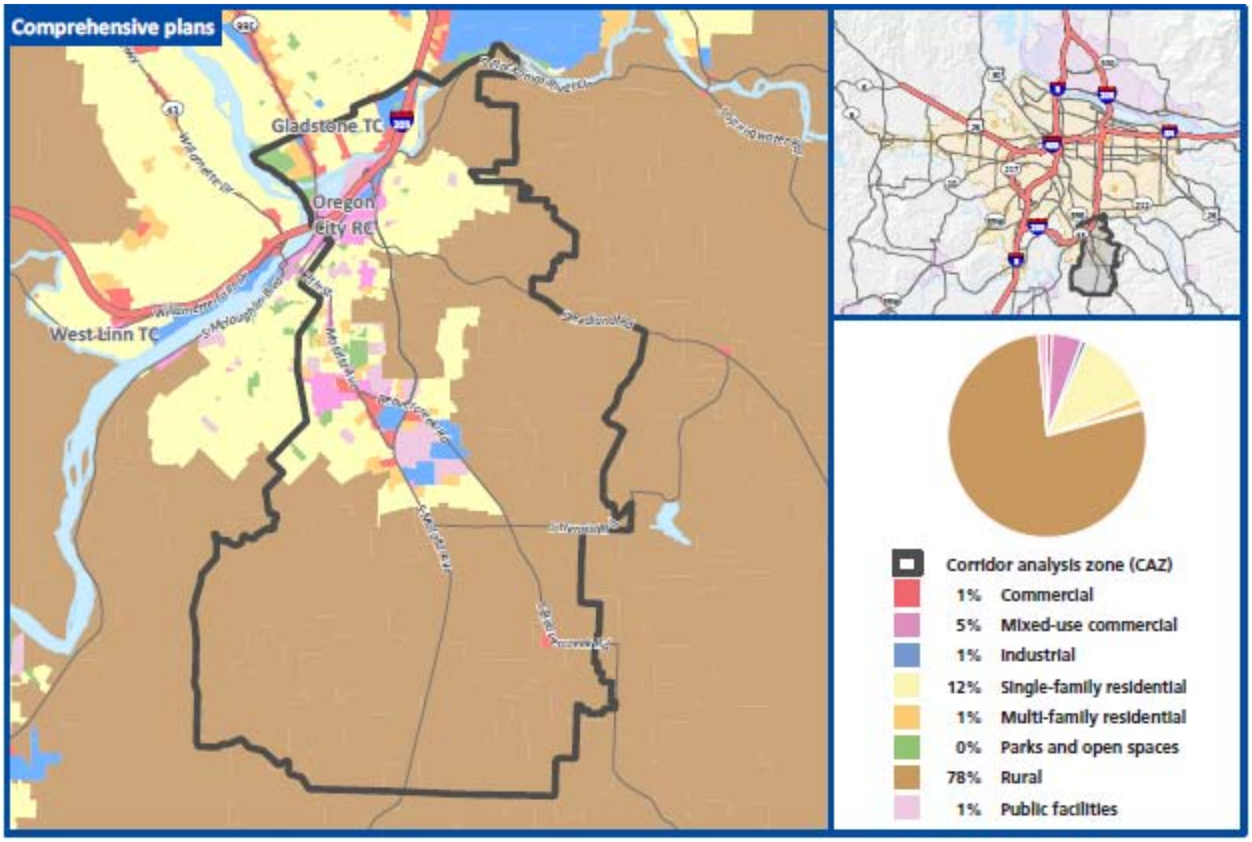
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Complete Sunrise study. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network.<br>• Interchange improvements and improvements consistent with Sunrise study. |
| **Long-term (10 – 25 years)** | |

**Unfunded Projects**

- Sunrise Parkway ROW, $150,000,000
- Sunrise Parkway construction, $600,000,000
- OR 212 truck climbing lanes, $1,800,000
- Sunrise Parkway Preliminary Engineering and Environmental, $60,000,000
- Sunrise Parkway Refinement Plan, $6,000,000
- OR 224 Corridor Plan, $1,200,000

| Regional Actions | Local Actions |
|---|---|
| • Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.15 Mobility Corridor #14 – Oregon City to Willamette Valley




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Serves as southern access to the Oregon City regional center and provides access to Clackamas Community College (Beavercreek Campus). |
| **Freight Mobility:** Provides freight access from surrounding agricultural areas and Beavercreek Industrial Area to I-205. |
| **Statewide Travel:** Serves as a secondary southern gateway to the region and connects agricultural areas in the Northern Willamette Valley to I-205. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 39,115 | 75,742 | 3,097,402 | 2.4% | 93.6% | 57.9% |
| **Households** | 14,376 | 29,128 | 1,208,686 | 2.4% | 102.6% | 57.6% |
| **Employment** | 16,116 | 30,881 | 1,799,152 | 1.7% | 91.6% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | • Oregon City Loop Trail | | • OR 213 | • Molalla Ave. | • Union Pacific<br>○ Valley sub mainline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Oregon City | • Gladstone | | | • Beavercreek<br>• Metro Transfer Station |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Address transit service deficiencies on Abernethy Rd. and Redland Rd.<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>○ Holcomb Blvd. has limited bus service; equity issues for public housing to be addressed.<br>○ Need to connect Park Place UGB expansion concept plan area with transit.<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will |

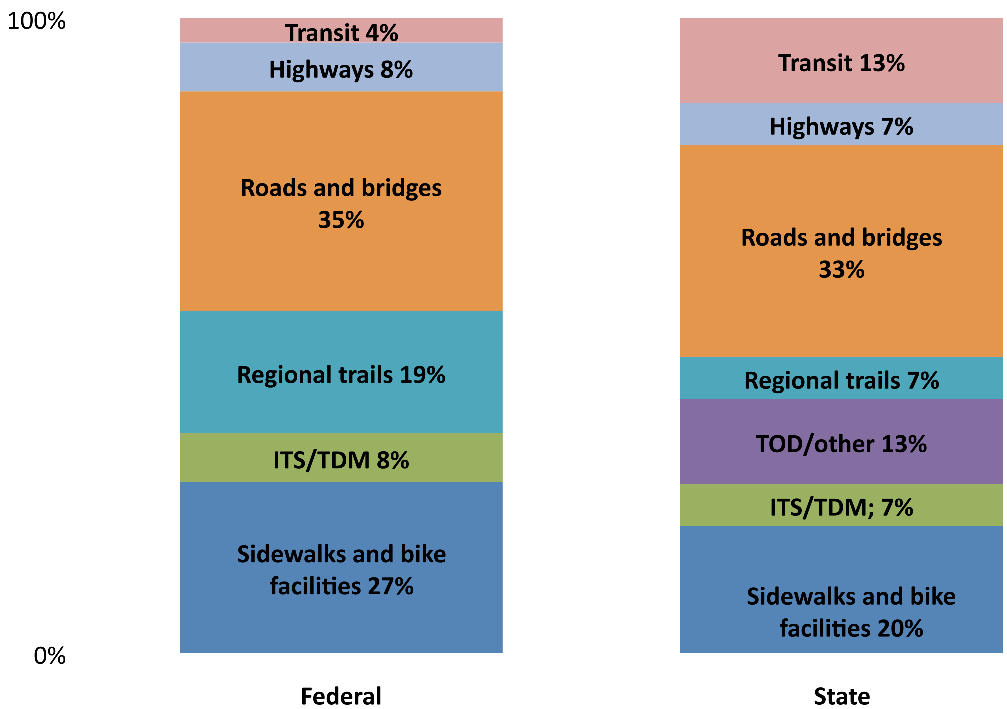
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | implement. Also consider developing private shuttle services to serve this need.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Strategies for transit connections will be evaluated as part of the Park Place concept plan areas annexation to Oregon City. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail.<br>• Need for pedestrian and bike safety and access improvements on OR 99E south of UPRR tunnel. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Use practical design to add shoulder width pavement for bike access.<br>• Bike/ped facilities on Beavercreek Rd. between OR213 and Oregon City limits.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities.<br>• Oregon City Loop, Beaver Lake, and Newell Canyon system trails incomplete. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Projects to be developed and constructed for trails identified in regional trails plan and RTP.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways** | • OR 213 is a district highway from the OR 213/I-205 interchange and it has several signalized intersections.<br>• Both the Washington St./Clackamas River Dr. and Redland Rd. intersections are spaced less than a half-mile apart. | • Improvements to OR 213 in the area of the I-205 interchange in FC projects 11180, 10141.<br>• OR 213 widening projects from Redland road couth to UGB in State RTP, projects 10119 and 10140. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • There is less than one-mile spacing between the Beavercreek Rd. and Molalla Ave. intersections.<br>The following do not meet the performance threshold in Table 2.4:<br>• In the 2005 PM 2-hour peak volumes exceed capacity on OR 213 southbound from I-205 interchange to the Redland Rd. intersections.<br>• In the 2035 NB PM 2-hour peak volumes exceed capacity on OR 210 northbound and southbound from the I-205 interchange down to S. Henrici Rd.<br>• Need for OR 213 crossings for bike/pedestrian connectivity. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials** | Arterial Gaps<br>• Address a gap in east/west connectivity between south of Warner Parrot Rd. between S. End Rd., Leland Rd., and Molalla Ave.<br>• Address gaps in east-west connectivity between Division St. and Holly Lane<br>The following do not meet the performance thresholds in Table 2.4:<br>• In the 2035 NB PM 2-hour volumes exceed capacity on MollalaAve, southbound near the Beavercreek Rd. intersection and the OR 213 intersections. | • Meyers Rd. from OR 213 to High School Lane (not in RTP).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At-Grade Heavy Rail** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Bridges** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • OR 213 ranks on the ODOT SPIS list as Category 4 (Scale 1-5, 5 being highest priority) through Oregon City RC, becoming Category 3 south of the City.<br>• Two locations rank above the 85$^{th}$ percentile and as Category 5 at the Beavercreek Rd. and Molalla Ave. intersections, although recent safety upgrades have improved these areas. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #14 has 26 projects totaling $281 million. Roads and bridges projects account for 35% of all of projects and 38% of the total corridor project costs ($106 million). Sidewalk and bike projects comprise 27% of all of projects and 35% of the total corridor project costs ($100 million). The State RTP adds 15 more projects and an additional $329 million. Highway projects account for 7% of all of projects and 52% of the total corridor project costs ($170 million) for operational improvements to I-205. Roads and bridges projects account for 33% of all of projects and 28% of the total corridor project costs ($92 million). For both the Federal and State systems investments total just over $610 million. |

### Projects by mode for federal and state systems




### RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #14 Total Project Cost | State System Cost by Mode | % of MC #14 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $99,700,000 | 35% | $20,846,598 | 6% |
| Freight | $0 | 0% | $0 | 0% |
| ITS/TDM | $6,500,000 | 2% | $0 | 0% |
| | | | | |

| Mode | Federal System Cost by Mode | % of MC #14 Total Project Cost | State System Cost by Mode | % of MC #14 Total Project Cost |
|---|---|---|---|---|
| Regional trails | $8,600,000 | 3% | $5,000,000 | 2% |
| Roads and bridges | $105,710,000 | 38% | $91,627,801 | 28% |
| Highways | $55,000,000 | 20% | $170,000,000 | 52% |
| Transit | $6,000,000 | 2% | $31,000,000 | 9% |
| **TOTAL** | **$281,510,000** | 100% | **$329,474,399** | 100% |

## 2035 investment strategy

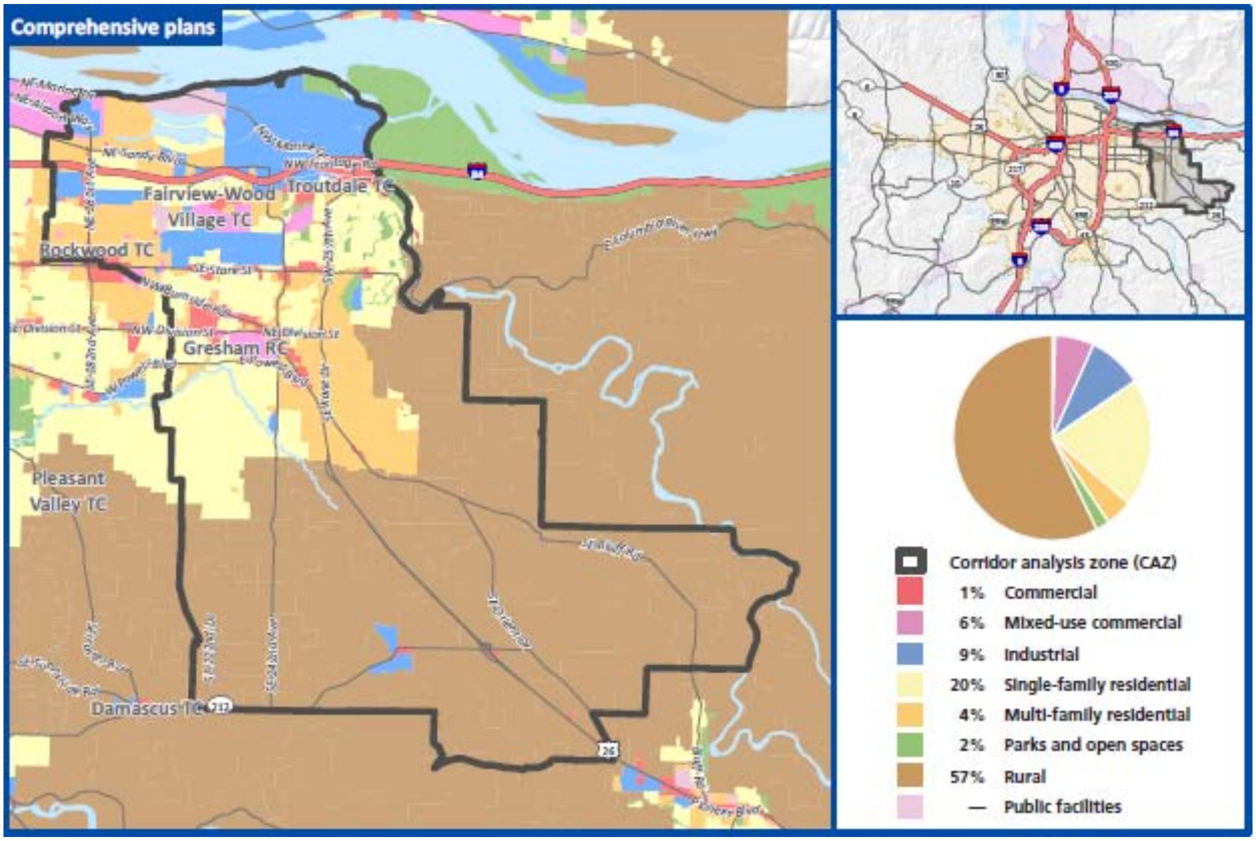
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• I-205/OR 213 Interchange.<br>• Project development for regional trails (Oregon City Loop and Newell Canyon). |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network.<br>• Project development for regional infrastructure to serve Park Place and Beavercreek Rd. concept plan UGB expansion areas. |
| **Long-term (10 – 25 years)** | • Construct regional trails and access in Newell Creek and Oregon City Loop |

**Unfunded Projects**

- I-205/OR 213 Interchange – Grade separate at Washington St., $15,600,000
- OR 213 Redland Road interchange, $72,400,000
- OR 213 Beavercreek Road Interchange, $80,000,000
- Additional interchange improvements on OR 213 at Washington, Redland, and Beavercreek totaling $168,000,000.

| Regional Actions | Local Actions |
|---|---|
| • I-205/OR 213 Interchange<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.16 Mobility Corridor #15 – Troutdale/Wood Village/Fairview/Gresham to Damascus




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects Gresham Regional Center and Springwater Industrial Area to I-84 and US 26 and provides regional access to Mount Hood Community College, Oxbow Park and Mount Hood. |
| **Freight Mobility:** Provides access from Springwater Industrial Area and surrounding agricultural areas to I-84 and US 26. |
| **Statewide Travel:** Serves as one of two gateways to the region from Central and Eastern Oregon. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 109,387 | 183,180 | 3,097,402 | 5.9% | 67.5% | 57.9% |
| **Households** | 40,416 | 70,323 | 1,208,686 | 5.8% | 74.0% | 57.6% |
| **Employment** | 47,012 | 104,635 | 1,799,152 | 5.8% | 122.6% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • Eastside MAX to Gresham | • Gresham/Fairview Trail<br>• Springwater Corridor Trail<br>• I-84 Trail (east of Gateway RC) | None | None | • 181st Ave.<br>• 207th/223rd Ave.<br>• 242nd/Hogan Rd.<br>• 257th/Kane Rd. | • Kenton line<br>• Graham line |

### Regional 2040 land uses

| Regional Centers | Town Centers | Employment Areas | Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Gresham | • Fairview<br>• Wood Village<br>• Troutdale<br>• Damascus | | • Springwater Industrial Area<br>• Columbia Cascade River District<br>• Columbia South Shore | • Boring<br>• Wood Village<br>• Oxbow Park<br>• Mt. Hood Recreational Area |

### Needs and Strategies

| | Regional Needs | Corridor Strategies |
|---|---|---|
| **Transit** | • Improve HCT to serve the north/south movement of this mobility corridor.<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>• Address need for transit service to continue south of Gresham RC.<br>• Add 30 minute of better transit service along 181st Ave south of Rockwood and 242nd Ave/Hogan Rd.<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT plan ranked Troutdale to Damascus as a "regional vision" corridor.<br>• Analyze transit stops in relation to bicycle and pedestrian network |

| | Regional Needs | Corridor Strategies |
|---|---|---|
| | • Provide bicycle parking and options for bike sharing at all HCT stations. | and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized. For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas. |

| | Regional Needs | Corridor Strategies |
|---|---|---|
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities.<br>• Address gaps in the Gresham-Fairview Trail north of Halsey and south of Burnside.<br>• Address several gaps in trails serving east/west travel in this corridor:<br>o The proposed Sullivan's Gulch trail would complete the gap from 122nd Ave. to Gateway RC along I-84.<br>o The existing Marine Drive trail includes multiple gaps between I-205 and Troutdale, including the 40-Mile Loop.<br>o The Columbia Slough trail includes gaps within its proposed extent of I-205 to Fairview Lake.<br>o The Max Path includes gaps within its proposed extent of Ruby Junction to Cleveland Station | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[28] | • There is no designated throughway for this mobility corridor. | • State RTP project 10383 will implement recommendations of refinement planning for this corridor.<br>• Unfunded right-of-way preservation and construction of improvements, including a new I-84 interchange as determined by refinement planning, have been identified. Total: $75,000,000.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[29] | <u>Arterial Deficiencies</u><br>The following do not meet the performance threshold in Table 2.4 2035 NB PM 2-hour peakvolumes exceed capacity on:<br>• 223rd Ave between Glisan St. and Stark St.<br>• 242nd Dr.<br>• 257th Ave at I-84 and south of Division St.<br>• Powell Blvd. from 242nd Ave to Kane Dr. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At-Grade Heavy Rail** | | • Implement Regional Transportation Functional Plan and Urban Growth |
| **Regional** | | |

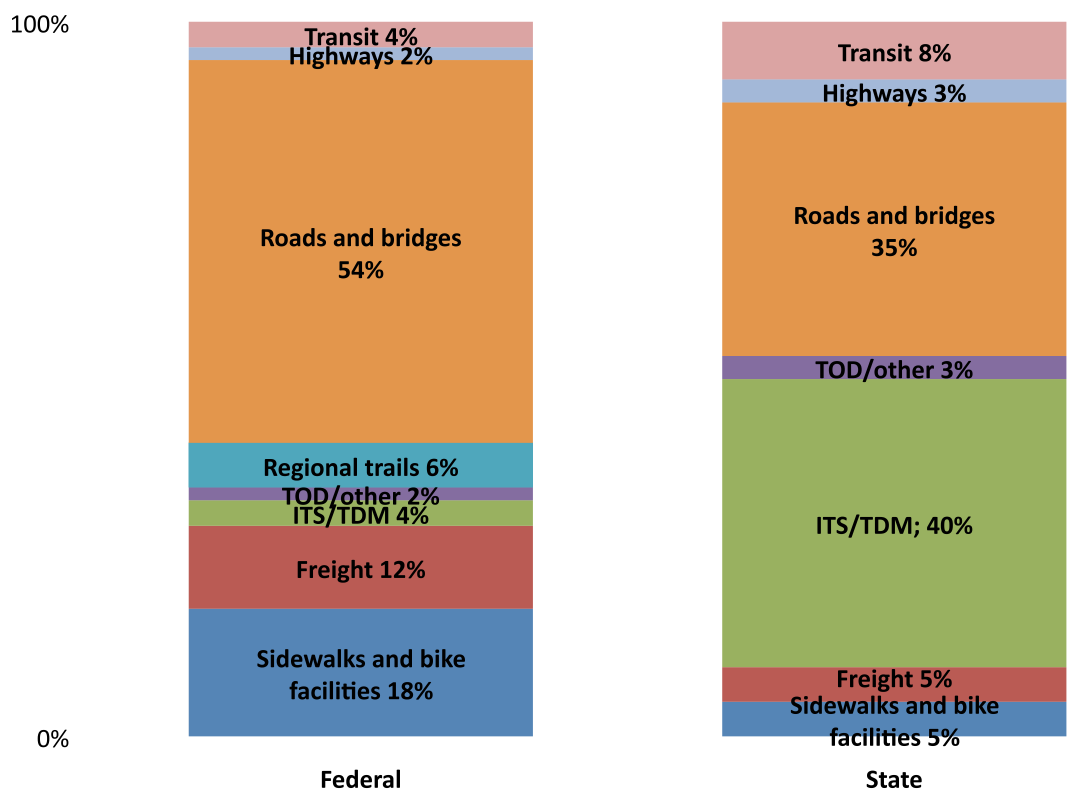
[28] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[29] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| | Regional Needs | Corridor Strategies |
|---|---|---|
| **Bridges** | | Management Functional Plan. |
| **Safety** | | |
| **Regional Freight** | | |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, this corridor has 112 projects totaling more than $1billion. Roads and bridges projects account for 54% of all of federal projects and 68% ($742million)of the total corridor project costs. The State RTP adds 62 more projects and an additional $364 million in costs. ITS/TDM projects account for the largest percentage of additional investments (40%) at a cost of $37 million. For both the Federal and State systems investments total roughly $1.4 billion. |

## Projects by mode for federal and state systems



## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #15 Total Project Cost | State System Cost by Mode | % of MC #15 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $159,552,483 | 15% | $17,878,151 | 5% |
| Freight | $94,521,155 | 9% | $22,260,850 | 6% |
| ITS/TDM | $10,950,000 | 1% | $37,633,510 | 10% |
| TOD/other | $7,511,000 | 1% | $11,000,000 | 3% |
| Regional trails | $22,806,078 | 2% | $0 | 0% |
| Roads and bridges | $742,914,393 | 68% | $188,174,411 | 52% |
| Highways | $31,500,000 | 3% | $41,000,000 | 11% |
| Transit | $18,704,873 | 2% | $46,919,615 | 13% |
| **TOTAL** | **$1,088,459,982** | **100%** | **$364,866,537** | **100%** |

## 2035 investment strategy

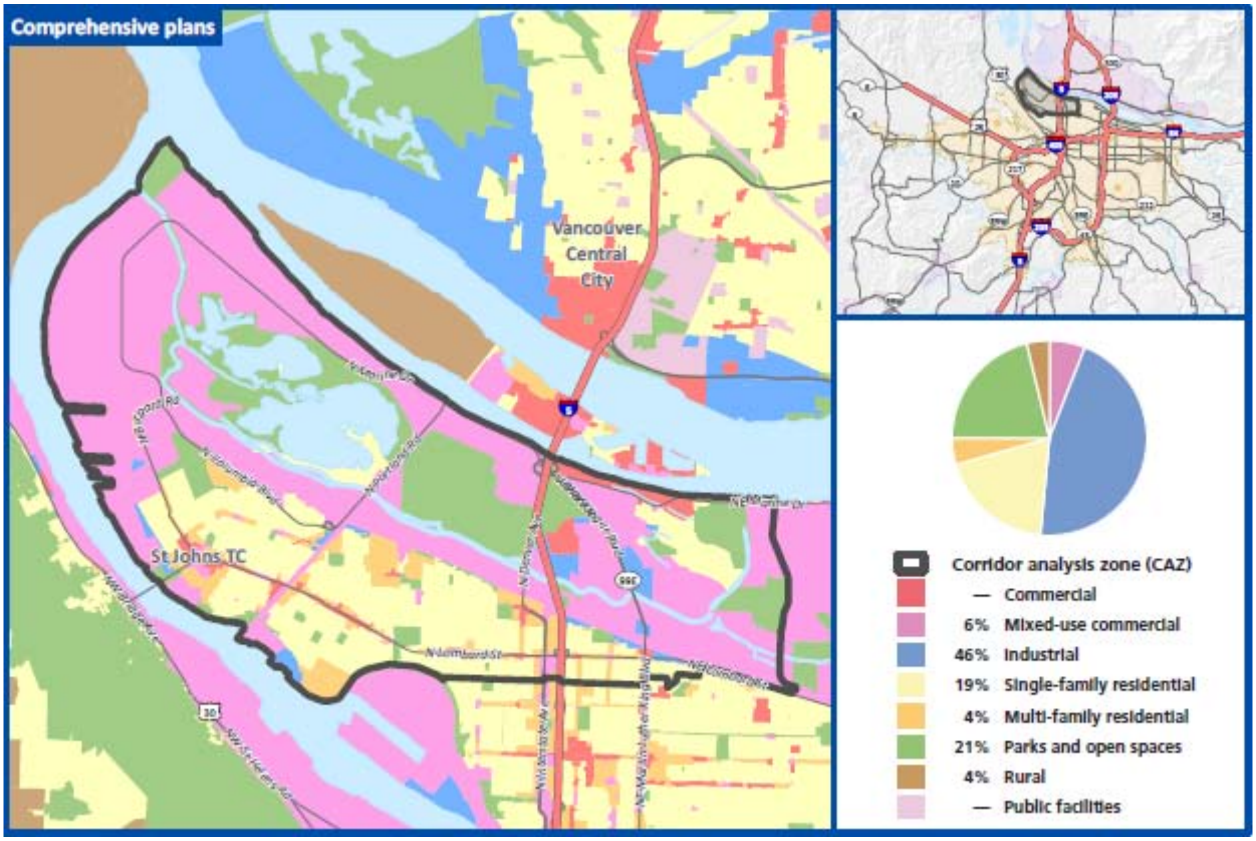
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• US 26/Springwater interchange improvements and IAMP.<br>• Complete corridor refinement plan to provide connection(s) from I-84 to US 26.<br>• Complete gaps and make crossing improvements in the Gresham/Fairview Trail. |
| **Medium Term (5 – 10 years)** | • Implement the results of the corridor refinement plan. |
| **Long-term (10 – 25 years)** | • Implement the results of the corridor refinement plan. |

**Unfunded Projects**

- I-84/US 26 ROW preservation, $20,700,000
- I-84/US 26 refinement plan, $1,400,000
- Hogan Corridor Improvements to I-84 interchange, $43,400,000
- Construct I-84/US 26 corridor improvements, $11,200,000

| Regional Actions | Local Actions |
|---|---|
| • Conduct corridor refinement plan.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.3.17 Mobility Corridor #16 – Rivergate to Interstate 5




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Provides access to Rivergate industrial area, Portland Harbor marine terminals, river-dependent industries, Smith and Bybee Regional Park and regional attractions in the Delta Park complex. |
| **Freight Mobility:** Serves the primary connection to the Portland Harbor marine terminals from the I-5 corridor and includes Class I mainline freight rail access. |
| **Statewide Travel:** Serves as an international shipping gateway for goods movement through the Portland Harbor. |

#### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 41,514 | 37,662 | 3,097,402 | 1.2% | -9.3% | 57.9% |
| **Households** | 16,294 | 18,991 | 1,208,686 | 1.6% | 16.6% | 57.6% |
| **Employment** | 31,212 | 42,028 | 1,799,152 | 2.3% | 34.7% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | • Columbia Slough Trail | • St. Johns Bridge | • I-5<br>• I-84 | • US 30 Bypass<br>• Marine Drive | • Union Pacific<br>○ Seattle sub<br>○ Kenton<br>• BNSF<br>○ Seattle sub |

### Regional 2040 land uses

| Regional Centers | Town Centers | Freight & Intermodal Facilities | Employment & Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Gateway<br>• Portland Central City | • St. Johns | • Cathedral Park Rail Corridor<br>• Terminals 4, 5 and 6 | • Rivergate | • Smith &Bybee Lakes Recreational Area |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>○ There is community desire for more transit service to serve large employers in this area.<br>○ There is a service gap on N. Columbia Blvd. between N. Portland Rd. and N. Denver Ave., although there is service on a parallel facility (N. Willis Blvd.).<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized for all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Streetscaping, pedestrian, and signalization improvements on Lombard between I-5 and Denver in State RTP (#10299).St. Johns Pedestrian District improvements in FC (#10182).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[30] | • N. Columbia Blvdintersection, N. Columbia Blvd. and N. Denver Ave., does not meet | • Implement Regional Transportation Functional Plan and Urban Growth |

30 Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | the spacing standard because it is less than 0.5 miles from the N. Columbia Blvd. and I-5 interchange.<br>The following do not meet the performance threshold in the Table 2.4<br>• 2005 PM 2-hour peak volumes exceed capacity on the majority of the I-5 stretch northbound2035 NB PM 2-hour peak volumes exceed capacity on the majority of the I-5 corridor northbound. | Management Functional Plan. |
| **Arterials**[31] | Arterial Gaps<br>• Address gaps in north/south connectivity between N. Denver Ave. and N. Portland Rd. as well as between N. Portland Rd. and N. Burgard Rd.<br>Arterial Deficiencies<br>• There are throughway under- and overcrossings as follows:<br>o Rail undercrossing near N. Portland Rd.<br>o N. Terminal Rd. crosses under N. Columbia Blvd.<br>The following do not meet the performance threshold in Table 2.4.:<br>• 2005 PM 2-hour peak volumes exceed capacity on the St. Johns southbound.<br>• 2005 PM 2-hour peak volumes exceed capacity on the segment of N. Willamette Blvd. between N. Chautauqua Blvd. and N. Rosa Parks Way in both directions.2035 PM 2-hour peak volumes exceed capacity on the St. Johns Bridge (both directions) and the stretch just south of the bridge onNW Bridge Ave. (northbound).<br>• 2035 PM 2-hour peak volumes exceed capacity on, N. Denver Ave. (northbound) between N. Columbia Blvd. and I-5.<br>• 2035 PM 2-hour peak volumes exceed capacity on Willamette Blvd. between N. Chautauqua Blvd. and N. Rosa Parks Way (southbound) and N. Greeley Ave. between N. Rosa Parks Way and NE Killingsworth Ave. (southbound). | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At-Grade Heavy Rail** | • There are numerous heavy rail crossings within this mobility corridor: | • Implement Regional Transportation Functional Plan and Urban Growth |

[31] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

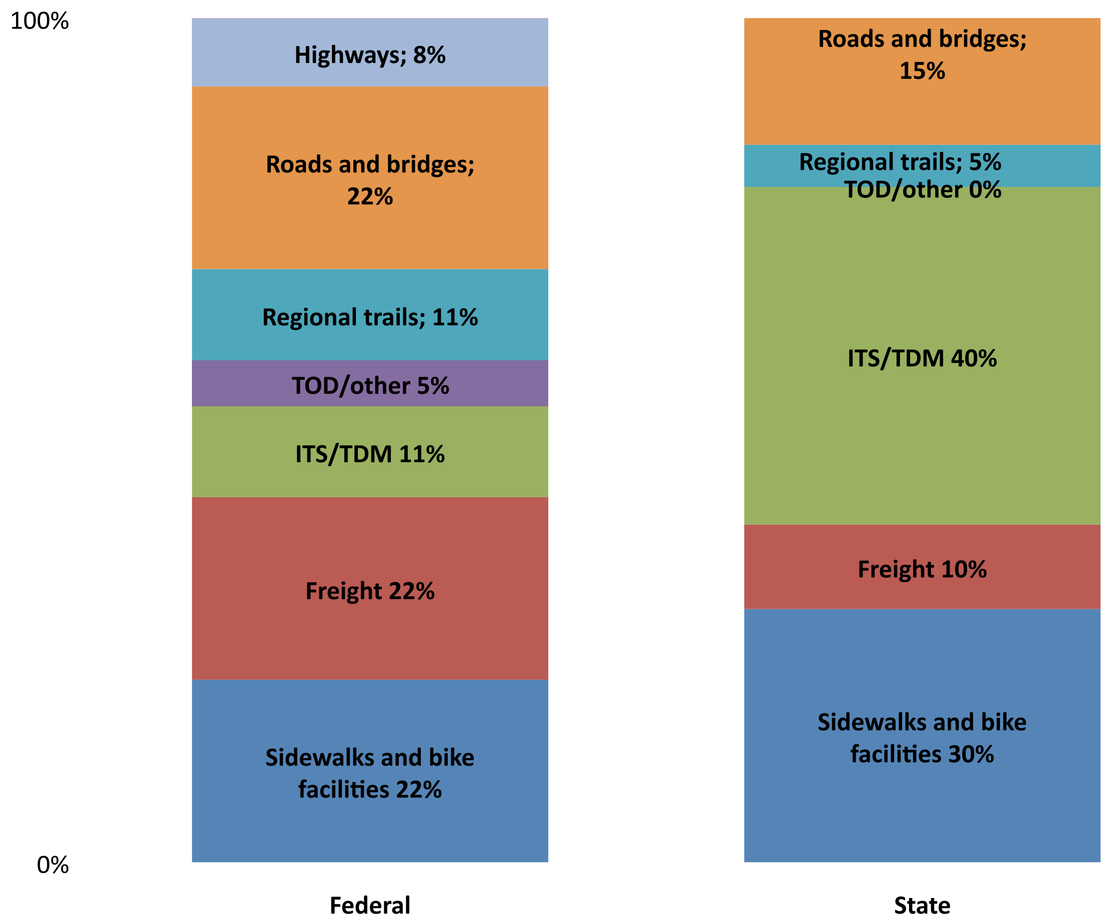
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | ○ N. Columbia Blvd. - 2 driveways between N. Denver Av. and N. Argyle Way<br>○ N. Columbia Blvd. at N. Tyndall Ave.<br>○ N. Columbia Blvd. at N. Peninsular Ave.<br>○ N. Columbia Blvd. at N. Chautauqua Blvd.<br>○ N. Columbia Blvd. at N. Hurst Ave.<br>○ N. Columbia Blvd. – Penn crossing<br>○ 2 along N. Columbia Blvd. between N. Hurst Ave. and N. Woolsey Ct.<br>○ N. Portland Rd.<br>○ N. Macrum Ave.<br>○ N. Marine Dr.<br>○ N. Leadbetter Rd.<br>○ N. Rivergate Blvd.<br>○ N. Ramsey Blvd.<br>○ N. Time Oil Rd.<br>○ N. Sever Rd.<br>○ N. Sever Ct.<br>○ N. Terminal Rd.<br>○ NW Front Ave. | Management Functional Plan.<br>• Local TSPsevaluate at grade heavy rail crossings for deficiencies and solutions. |
| **Regional Bridges** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • Columbia Blvd., Hwy 30, and N. Marine Dr. rank on the ODOT SPIS list as Category 3 (Scale 1-5, 5 being highest priority) in this mobility corridor.<br>• The intersection of Hwy 30 and the St. Johns Bridge ranks in the $90^{th}$ percentile as a SPIS intersection.<br>• The I-205/I-84 interchange and the I-205/Columbia Blvd interchange rank in the $95^{th}$ percentile as SPIS intersections.<br>• The intersection of Columbia Blvd. and I-5 as well as the intersection of N. Marine Dr. and I-5 rank above the $90^{th}$ percentile as SPIS intersections. | |
| **Regional Freight** | • The following do not meet the performance threshold in Table 2.4: I-5 2005 NB midday 1-hour volumes exceed capacity on I-5(southbound) near N. Denver Ave., north of Columbia Blvd.<br>• 2035 NB midday 1-hour volumes exceed | |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | capacity:<br>• I-5 (northbound) Interstate Bridge.<br>• The St. Johns Bridge (both directions). | |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #16 has 37 projects totaling more than $3.4 billion. Roads and bridges projects account for 22% of all of projects and 5% of the total corridor project costs ($176 million). Highway projects account for 5% of the federal projects and 90% ($3.1 billion) of the total corridor project costs, all due to the CRC project. The State RTP adds 20 more projects and an additional $75 million. Roads and bridges projects account for 15% of all of state projects and 47% of the total corridor project costs ($36 million). Sidewalk and bike projects comprise 30% of the state projects and 27% ($21 million) of the total corridor project costs. For both the Federal and State systems investments total just under $3.5 billion. |

## Projects by mode for federal and state systems




## RTP projects by cost and mode

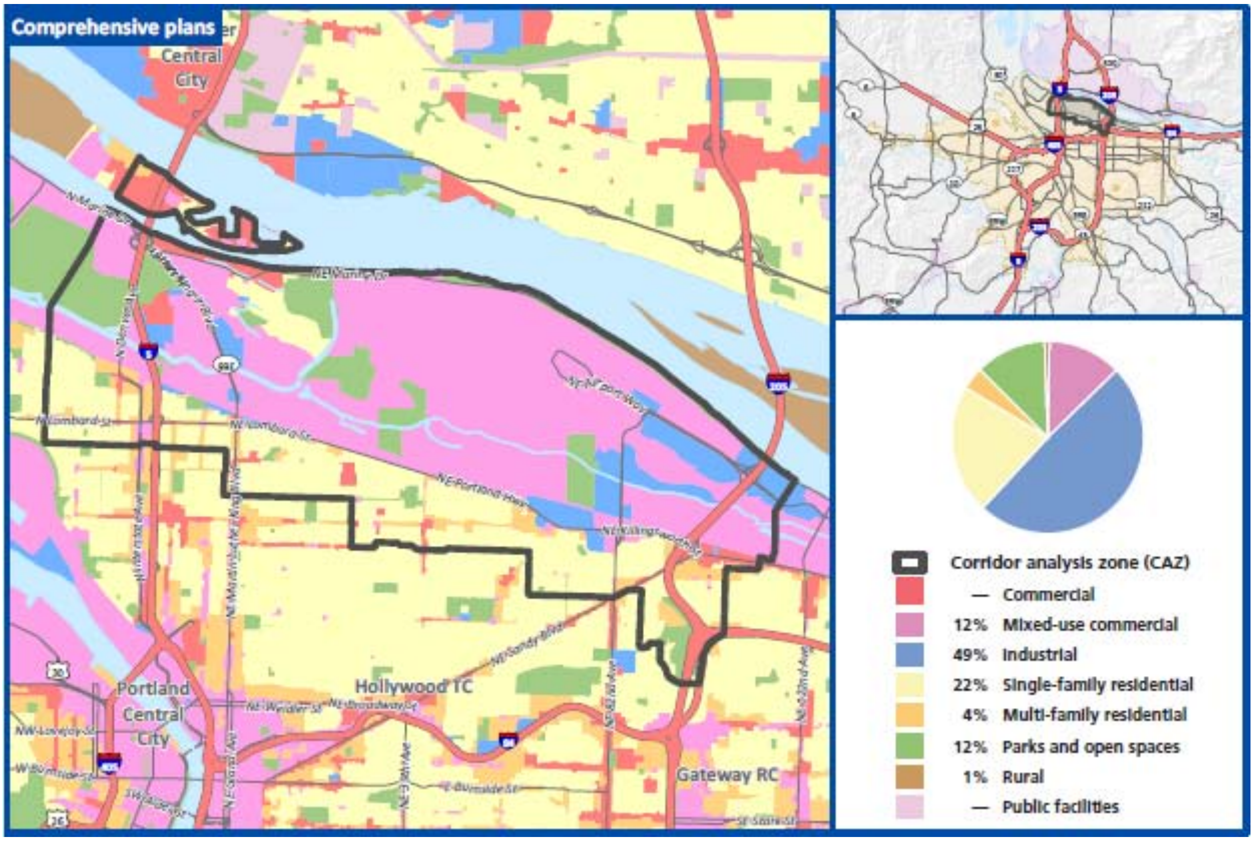
| Mode | Federal System Cost by Mode | % of MC #16 Total Project Cost | State System Cost by Mode | % of MC #16 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $55,189,600 | 2% | $20,845,053 | 27% |
| Freight | $84,410,784 | 3% | $15,000,000 | 20% |
| ITS/TDM | $4,930,000 | 0% | $4,165,325 | 5% |
| TOD/other | $3,611,000 | 0% | $0 | 0% |
| Regional trails | $11,890,835 | 0% | $0 | 0% |
| Roads and bridges | $176,758,458 | 5% | $35,934,117 | 47% |
| Highways | $3,032,750,000 | 90% | $0 | 0% |
| Transit | $0 | 0% | $0 | 0% |
| **TOTAL** | **$3,369,540,677** | **100%** | **$75,944,495** | **100%** |

## 2035 investment strategy

| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along throughway and parallel facilities for all modes of travel. |
| **Medium Term (5 – 10 years)** | • Improvements to Columbia Blvd. to remove freight barriers.<br>• Double tracking the Kenton mainline.<br>• STA/Blvd. improvements in St. Johns TC. |
| **Long-term (10 – 25 years)** | |
| **Unfunded Projects** | |
| | |

| Regional Actions | Local Actions |
|---|---|
| • Work on furthering the Active Transportation Corridor concept.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system. | • Initiate actions related to the HCT System Expansion Policy.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Address connectivity needs in local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.18 Mobility Corridor #17 – Interstate 5 to Columbia South Shore




### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Provides access to Portland International Airport and the Columbia South Shore industrial area. |
| **Freight Mobility:** Serves as freight access to Portland International Airport air cargo terminals, truck travel center and provides Class I freight rail service. |
| **Statewide Travel:** Serves as a statewide freight route to Portland International Airport cargo terminals. |

### Corridor characteristics

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 40,952 | 39,158 | 3,097,402 | 1.3% | -4.4% | 57.9% |
| **Households** | 16,530 | 18,574 | 1,208,686 | 1.5% | 12.4% | 57.6% |
| **Employment** | 45,602 | 65,403 | 1,799,152 | 3.6% | 43.4% | 74.3% |

## Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy R ail |
|---|---|---|---|---|---|
| | • Columbia Slough Trail | • | • I-5<br>• I-205<br>• I-84 east of I-205 | • Lombar d St.<br>• Marine Drive | • Union Pacific<br>○ Kenton line |

## Regional 2040 land uses

| Regional Centers | Town Centers | Freight & Intermodal Facilities | Employment & Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| | • St. Johns | • Portland International Airport | • Columbia Corridor | • Jubitz Truck Center |

## Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy)<br>○ Poor transit service exists north of Columbia Blvd., this area is difficult to serve given the low density industrial land uses in that area.<br>○ There is community desire for more transit service to serve large employers in this area.<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized for all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Increase direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas. |
| **Regional Trails** | • Increase direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[32] | • N. Columbia Blvd. intersection, N. Columbia Blvd. and N. Denver Ave., does not meet the spacing standard because it is less than 0.5 miles from the N. Columbia Blvd. and I-5 interchange.<br><br>The following do not meet the performance threshold in Table 2.4: | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

[32] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • 2005 PM 2-hour peak volumes exceed capacity on Columbia Blvd. (eastbound) from NE Cully Blvd. to NE Alderwood Rd., near NE 82nd Ave., and near NE 92nd Ave.<br>• 2035 NB PM 2-hour peak volumes exceed capacity on Columbia Blvd. (eastbound) between NE Alderwood Rd. and NE 60th Ave, and on the I-205/Killingsworth St. interchange. | |
| **Arterials[33]** | Arterial Gaps<br>• Address gapsin north/south connectivity between NE MLK Jr. Blvd. and NE 33rd Ave. and between NE 33rd Ave. and NE 82nd Ave.<br>Arterial Deficiencies<br>• There is potential for more opportunities to cross NE Lombard Street, particularly between NE MLK Jr. Blvd. and NE 33rd Ave., and NE 33rd Ave. and I-205.<br>• NE Sandy Blvd. (northeast bound) where it intersects with I-205, on NE Airport Way (westbound) between I-205 and NE 112th Ave., and on NE Cornfoot Dr. between NE Alderwood Rd. and NE 63rd Ave.<br><br>The following do not meet the performance threshold in Table 2.4:<br>• 2035 NB PM 2-hour peak volumes exceed capacity on:<br>o NE Columbia Blvd. (eastbound) between NE 60th Ave. and NE Cully Blvd.<br>o NE 72nd Ave. (southbound) just south of NE Killingsworth Ave.<br>o NE Cornfoot Dr. (eastbound) from the 60s to NE Alderwood Rd.<br>o NE Alderwood Rd. (northbound) from NE Cornfoot Dr. to NE 82nd Ave.<br>o NE Airport Way (eastbound) from its terminus to NE 82nd Ave.<br>o NE 82nd Ave. (southbound) just south of the intersection with NE Airport Way | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **At-Grade Heavy Rail** | • There are a handful of heavy rail crossings within this mobility corridor:<br>o NE Lombard at 11th<br>o NE Cully to Columbia | • MLK Coumbia Transportation Improvements Program<br>• Advanced Railroad Crossing Warning Signal Program |

33 Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

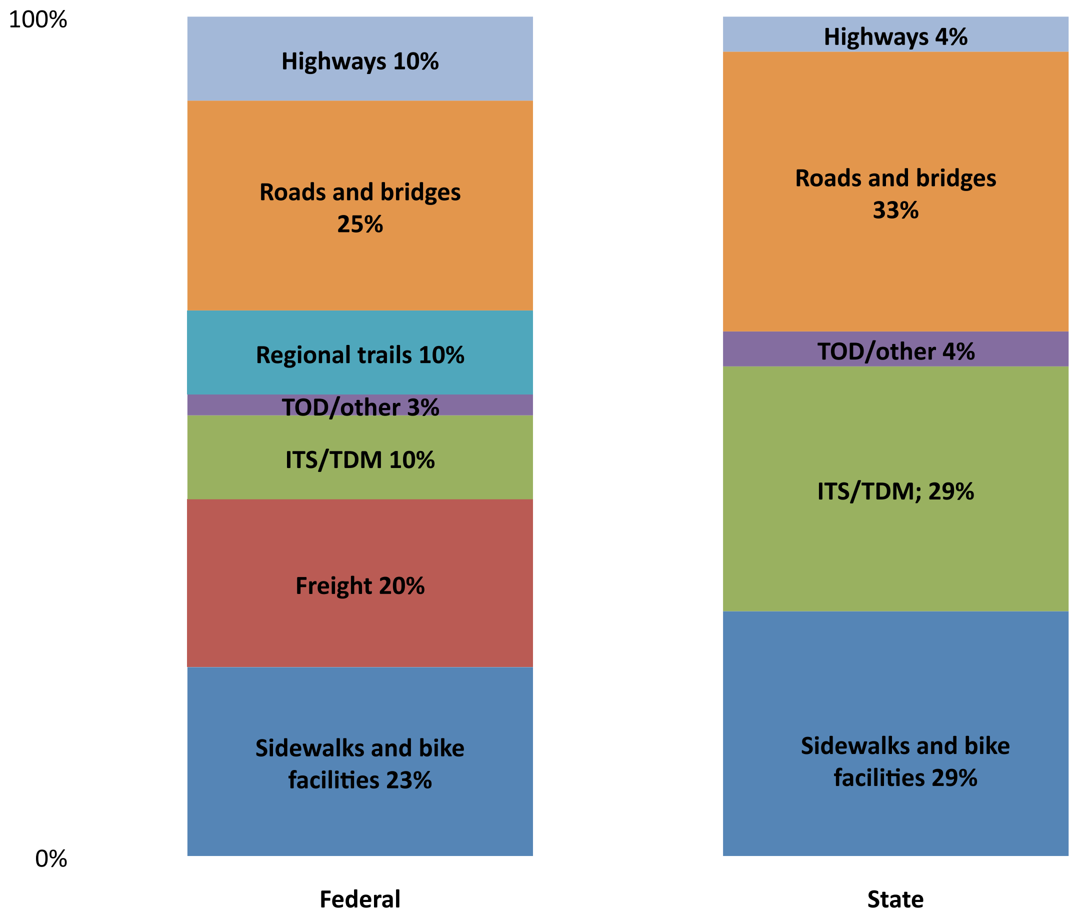
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | ○ NE Columbia near 89th<br>○ NE 87th north of Columbia<br>○ NE 82nd near NE Airport Way<br>○ NE Cascades Parkway west of Mt Hood Avenue<br>○ NE Mt. St Helens Avenue south of Cascades Parkway<br>○ NE Air Cargo Road south of Airport Way | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPs to evaluate at grade heavy rail crossings for deficiencies and solutions. |
| **Regional Bridges** | • The following bridges have height/weight restrictions in this mobility corridor:<br>○ NE 21st Ave. crossing the Columbia Slough (8000 NE 21st Ave.) – 50,000 lbs. (single unit); 80,000 lbs. (combination unit)<br>○ NE Sunderland Rd. crossing a drainage ditch (9100 NE Sunderland Rd.) – 50,000 lbs. (single unit); 80,000 lbs. (combination unit)<br>○ NE 42nd Ave. crossing Lombard St. and the UPRR Tracks (6500 NE 42nd Ave.) – 50,000 lbs. (single unit); 80,000 lbs. (combination unit) | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • NE Columbia Blvd. ranks on the ODOT SPIS list as Category 5(Scale 1-5, 5 being highest priority) from I-5 to I-205.<br>• I-5 from Columbia Blvd. to the CRC ranks as Category 4 and I-205 from Columbia Blvd. to the CRC ranks as Category 5.<br>• The intersection of Columbia Blvd. and I-5, the intersection of NE Marine Dr. and I-5, the intersection of I-205 and Columbia Blvd., and the intersection of I-205 and NE Marine Dr. rank in the 95th percentile as SPIS intersections. | |
| **Regional Freight** | The following do not meet the performance thresholds in Table 2.4:<br>• 2005 and 2035 midday 1-hour volumes exceed capacity on I-5 and I-205 for the section of I-5 (southbound) near N. Denver Ave., north of Columbia Blvd. and the section of I-5 (northbound) between N. Going St. and N. Rosa Parks Way.<br>2035 NB midday 1-hourvolumes exceed capacity at the following locations: theInterstate Bridge (northbound) and the section of I-5 (northbound) between NE | |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | Fremont and NE Killingsworth do not meet the performance threshold.<br>• Section of I-205 (northbound) just north of the I-205/I-84 interchange and the section of I-84 (eastbound) just east of the I-205/I-84 interchange do not meet the performance threshold.<br>• Section of I-205 (southbound) just south of Columbia Blvd. does not meet the performance threshold.<br>• Section of I-205 (both directions) between NE Airport Way and NE Marine Dr. does not meet the performance threshold. | |

### 2035 RTP Investments

| 2035 RTP Investments – What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #17 has 40 projects totaling more than $424 million. Roads and bridges projects account for 25% of all of projects and 13% of the total corridor project costs ($53 million). Freight projects account for 20% of the federal projects and 56% ($278 million) of the total corridor project costs, including improvements to Airport Way, the I-205/Airport Way interchange and the 82nd Ave/Airport Way intersection. Sidewalk and bike projects comprise 23% of the federal projects and 11% ($45 million) of the total corridor project costs. The State RTP adds 24 more projects and an additional $274million. Roads and bridges projects account for 33% of all of state projects and 31% of the total corridor project costs ($86 million). Sidewalk and bike projects comprise 29% of the state projects and 5% ($15 million) of the total corridor project costs. ITS/TDM comprise 29% of the state projects and 1% ($3.6 million) of the total corridor project costs. The state RTP includes one highway project for this corridor, operation improvements to I-205 that costs $170 million and accounts for 62% of total corridor project costs. For both the Federal and State systems investments total just under $700 million. |

## Projects by mode for federal and state systems




## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #17 Total Project Cost | State System Cost by Mode | % of MC #17 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $44,811,735 | 11% | $14,909,253 | 5% |
| Freight | $237,645,400 | 56% | $0 | 0% |
| ITS/TDM | $0 | 0% | $3,559,435 | 1% |
| TOD/other | $1,511,000 | 0% | $0 | 0% |
| Regional trails | $11,914,835 | 3% | $0 | 0% |
| Roads and bridges | $53,383,099 | 13% | $85,500,610 | 31% |
| Highways | $74,250,000 | 18% | $170,000,000 | 62% |
| Transit | $0 | 0% | $0 | 0% |
| **TOTAL** | **$423,516,069** | **100%** | **$273,969,298** | **100%** |

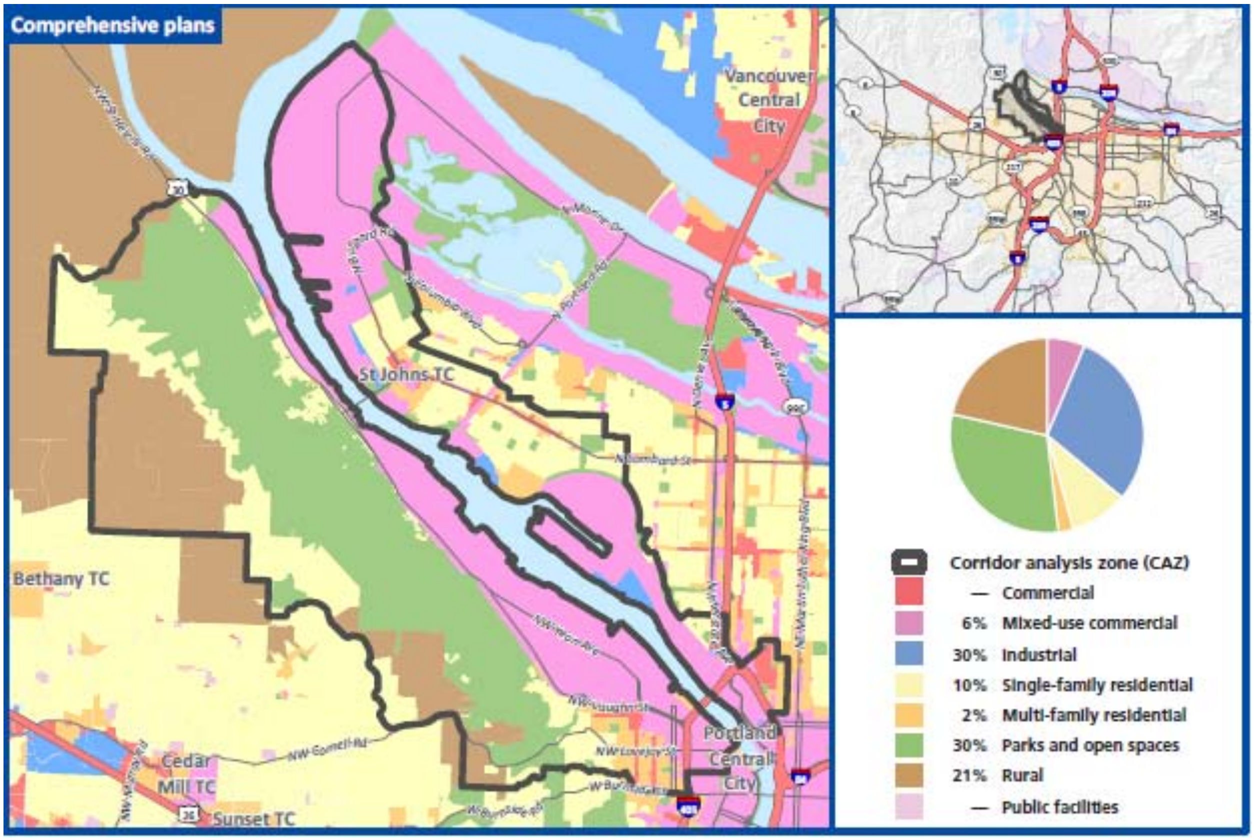
## 2035 investment strategy

| Strategy | |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along throughway and parallel facilities for all modes of travel.<br>• Bike and pedestrian improvements. |
| **Medium Term (5 – 10 years)** | • Improvements to Columbia Blvd. to remove freight barriers.<br>• Double tracking the Kenton mainline.<br>• |
| **Long-term (10 – 25 years)** | |

| Unfunded Projects |
|---|
| |

| Regional Actions | Local Actions |
|---|---|
| • Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Address connectivity needs in local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.19 Mobility Corridor #18– Portland Central City to Columbia County




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Provides access to the Central City from the northwest portion of the region, primary access to the Northwest Industrial Area, access to the Metro Central transfer station and regional attractions including Forest Park and Sauvie Island. |
| **Freight Mobility:** Provides rail and highway access to river-dependent industrial uses and the BNSF lake yard rail intermodal facility. |
| **Statewide Travel:** Northwest gateway to the region, providing access to industrial areas and the Central City from neighboring communities in Columbia and Clatsop counties. Connects to the statewide Pacific Greenway Trail corridor. |

#### Corridor characteristic

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 39,203 | 70,497 | 3,097,402 | 2.3% | 79.8% | 57.9% |
| **Households** | 20,214 | 32,084 | 1,208,686 | 2.7% | 58.7% | 57.6% |
| **Employment** | 81,820 | 115,263 | 1,799,152 | 6.4% | 40.9% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | • N. Willamette Greenway Trail | • St. Johns Bridge | • US 30 | • Front Ave.<br>• Balboa Ave.<br>• Greeley/Lombard St. | • Union Pacific<br>o Seattle sub mainline<br>• BNSF<br>o Portland and Western short line |

### Regional 2040 land uses

| Regional Centers | Town Centers | Freight & Intermodal Facilities | Employment & Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| | • St. Johns | • Terminal 2<br>• Burlington Northern Rail Yards | • NW Ind. District | • Tank Farms<br>• Metro Transfer Station<br>• Sauvie Island<br>• St. Helens<br>• Union Station |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Throughways**[34] | The following do not meet the performance thresholds in Table 2.4:<br>• 2005 PM 2 hour peak volumes exceed capacity on the St. Johns Bridge (northeast-bound).<br>• 2035 NB PM 2-hour peak volumes exceed capacity on the St. Johns Bridge (both directions) and US-30 (northbound) in the area just south of the St. Johns Bridge2005 PM 2-hour peak and 2035 NB PM 2-hour peak volumes exceed capacity on I-5 northbound in the mobility corridor. | • ITS improvements at the confluence of NW Yeon and NW St. Helens are in the FC project list (10175)<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[35] | Arterial Gaps<br>• Address gaps in north/south connectivity southwest of N. Lombard Ave. between N. Philadelphia St. and N. Portsmouth Ave. as well as between N. Portsmouth Ave. and N. Interstate Ave.<br><br>Arterial Deficiencies<br>The following do not meet the performance thresholds in Table 2.4:<br>• In the 2005 PM 2-hour peak volumes exceed capacity on:<br>o N. Willamette Blvd. between N. Chautauqua and N. Knowles Ave. (where it meets N. Rosa Parks Way) in both directions<br>o N. Greeley Ave. between N. Rosa Parks Way and N. Killingsworth (northbound) and the stretch just northwest of I-405 (southbound)<br>o N. Going Street (eastbound) between N. Basin and N. Greeley Ave.<br>• In the 2035 NB in the PM 2-hour peak volumes exceed capacity on:<br>o NW Front Ave. (eastbound) between NW 26th Drive and NW 29th Ave.<br>o N. Basin and N. Going Ave. (eastbound) along the length of Swan Island to N. Greeley Ave.<br>o N. Willamette Blvd. (southeast- | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

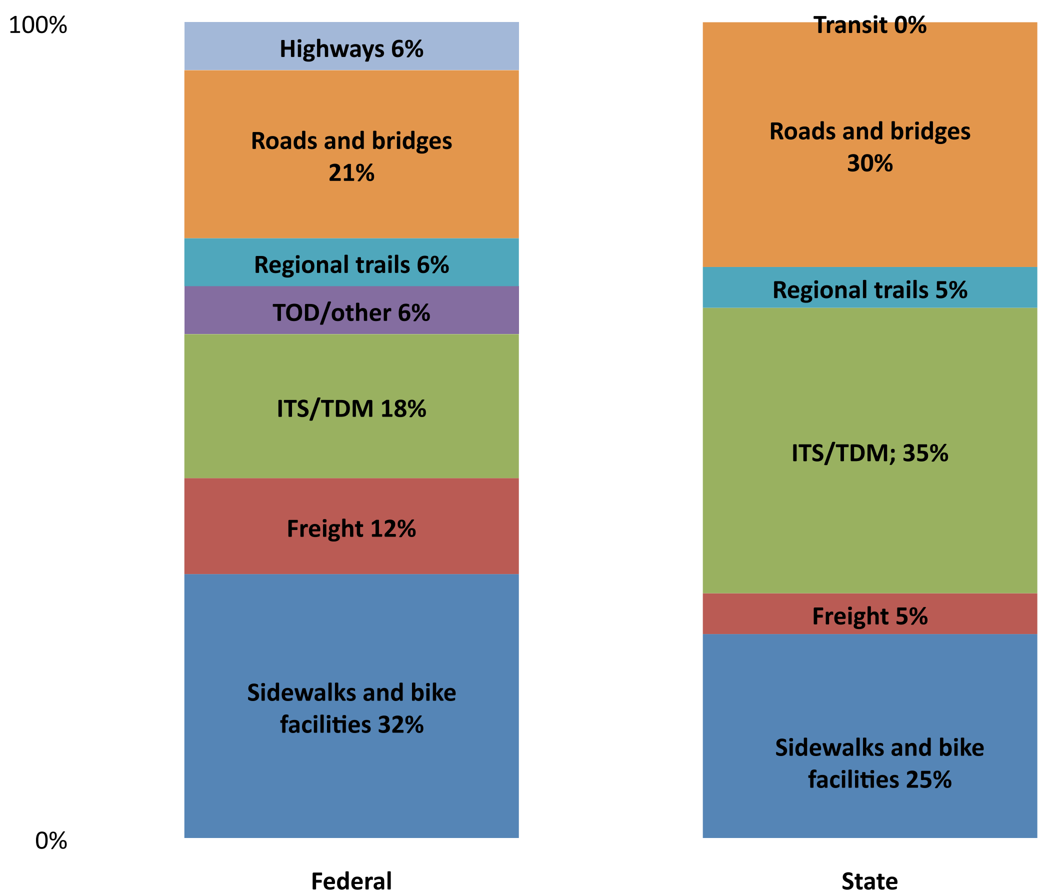
34 Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
35 Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | bound) between N. Chautauqua and N. Knowles Ave. (where it meets N. Rosa Parks Way)<br>o N. Greeley Ave. (northbound) between N. Killingsworth and N. Rosa Parks Way<br>o N. Denver Ave. (northbound) between N. Argyle Way and N. Schmeer Rd.<br>o The roads that lie west of the St. Johns Bridge (in both directions) show congestion as well in the 2035 NB PM 2-hour peak. | |
| **At-Grade Heavy Rail** | • There are a handful of heavy rail crossings within this mobility corridor:<br>o N. Pittsburg Ave. (near N. Albany St.)<br>o N. Van Houton Pl.<br>o N. Russell/N. Larrabee/N. Randolph Ave.<br>o NW $15^{th}$ Ave. near Naito Pkwy.<br>o NW $17^{th}$ Ave. near NW Upshur St.<br>o NW $21^{st}$ Ave. near NW Sherlock Ave.<br>o NW Nicolai St.<br>o NW Front Ave. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPs evaluate at grade heavy rail crossings for deficiencies and solutions. |
| **Regional Bridges** | | |
| **Safety** | • Hwy 30 ranks on the ODOT SPIS list as Category 3 (Scale 1-5, 5 being highest priority) from the St. Johns Bridge to I-405.<br>• The intersection of the St. Johns Bridge and Hwy 30, the St. Johns Bridge and N. Lombard St., N. Lombard St. and I-5, and Hwy 30 and I-405 rank above the 85th percentile as SPIS intersections. | |
| **Regional Freight** | • Sections of I-5 (northbound) from the Rose Quarter TC to just north of Broadway, from the intersection with I-405 to NE Fremont St. and from N. Going Street to N. Rosa Parks Wayexceed capacity in the 2005 midday 1 hour period.<br>• 2035 NB midday 1-hour volumes exceed capacity on I-5 between NE Broadway and the intersection with I-405 (both directions) and I-5 between NE Fremont and NE Killingsworth (northbound). | |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #18 has 34 projects totaling $368 million. Sidewalk and bike projects comprise 32% of the federal projects and 10% ($36 million) of the total corridor project costs. Roads and bridges projects account for 21% of all of projects and 45% of the total corridor project costs ($167 million). ITS/TDM projects account for 18% of the federal projects and 1% ($2.3 million) of the total corridor project costs. Freight projects account for 12% of the federal projects and 12% ($45 million) of the total corridor project costs. The State RTP adds 20 more projects and an additional $89 million. Sidewalk and bike projects comprise 25% of the state projects and 21% ($18 million) of the total corridor project costs. Roads and bridges projects account for 30% of all of projects and 75% of the total corridor project costs ($67 million). ITS/TDM projects account for 35% of the federal projects and 4% ($3 million) of the total corridor project costs. For both the Federal and State systems investments total roughly $356 million. |

### Projects by mode for federal and state systems



## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #18 Total Project Cost | State System Cost by Mode | % of MC #18 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $36,071,465 | 10% | $18,276,862 | 21% |
| Freight | $45,200,000 | 12% | $280,600 | 0% |
| ITS/TDM | $2,315,523 | 1% | $3,442,780 | 4% |
| TOD/other | $3,611,000 | 1% | $0 | 0% |
| Regional trails | $8,660,000 | 2% | $0 | 0% |
| Roads and bridges | $167,229,870 | 45% | $66,938,849 | 75% |
| Highways | $105,704,966 | 29% | $0 | 0% |
| Transit | $0 | 0% | $0 | 0% |
| **TOTAL** | **$368,792,824** | 100% | **$88,939,091** | 100% |

## 2035 investment strategy

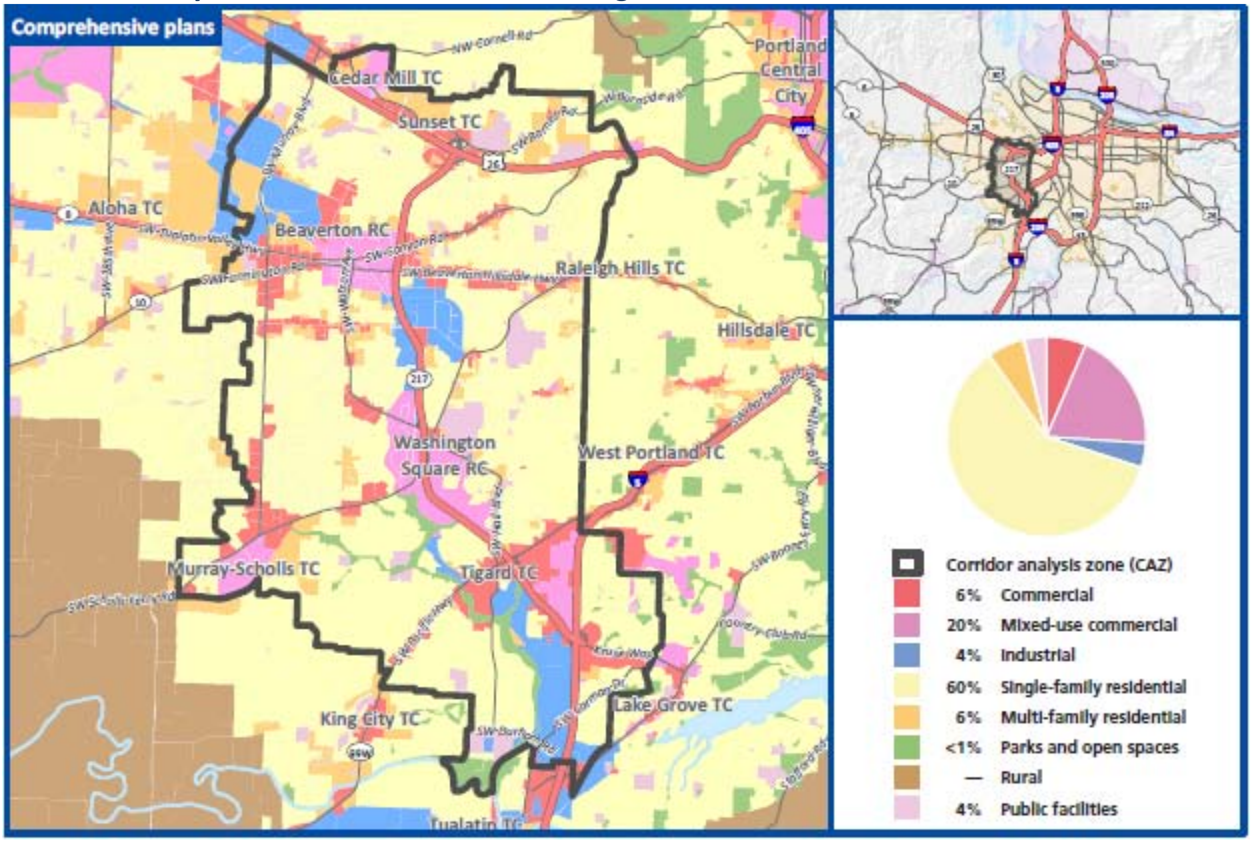
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along throughway and parallel facilities for all modes of travel. |
| **Medium Term (5 – 10 years)** | |
| **Long-term (10 – 25 years)** | |

**Unfunded Projects**

- Bridge Ave Bikeway, $400,000
- US 30/NW 112th intersection improvements, $200,000
- US 30/NW 108thPed Overcrossing, $350,000
- St. Helens Rd intersection improvements at Saltzman, $600,000
- US 30 Bike Improvements at Kittridge, $1,700,000
- US 30, Willamette bridge improvements, $100,000

| Regional Actions | Local Actions |
|---|---|
| • Work on furthering the Active Transportation Corridor concept.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system. | • Initiate actions related to the HCT System Expansion Policy.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Address connectivity needs in local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.20 Mobility Corridor #19 – Beaverton to Tigard




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the cities of Tigard and Beaverton and provides access to the Beaverton and Washington Square regional centers and industrial areas along Highway 217. |
| **Freight Mobility:** Serves as a primary connection for Washington County industries to the I-5 Corridor, and provides shortline heavy rail access. |
| **Statewide Travel:** Serves as the west side connection from US 26 to I-5. |

#### Corridor characteristic

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005-2035 |
|---|---|---|---|---|---|---|
| **Population** | 161,399 | 224,584 | 3,097,402 | 7.3% | 39.1% | 57.9% |
| **Households** | 65,594 | 91,961 | 1,208,686 | 7.6% | 40.2% | 57.6% |
| **Employment** | 120,599 | 183,599 | 1,799,152 | 10.2% | 52.2% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • WES Commuter rail<br>• Westside MAX to Beaverton | • Fanno Creek Trail | None | • OR 217 | • Hall Blvd.<br>• Cedar Hills Blvd.<br>• Murray Blvd.<br>• Scholls Ferry Rd.<br>• Highway 219<br>• Roy Rogers Rd./170th/175th<br>• Canyon Rd.<br>• Oleson Rd.<br>• River Rd. | • BNSF<br>○ Portland and Western Shortline |

### Regional 2040 land uses

| Regional Centers | Town Centers | Employment Areas | Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Beaverton<br>• Washington Square | • Cedar Mill<br>• Sunset<br>• Raleigh Hills<br>• Tigard TC<br>• Murray/Scholls TC | • Tigard Triangle | • Tigard Industrial Area<br>• Beaverton Industrial Area | • Cedar Hills Crossing<br>• Beaverton Town Square<br>• Canyon Place<br>• Beaverton Transit Center |

### Needs and Corridor Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Midday WES commuter rail service.<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>○ Segments of Scholls Ferry do not have 30 minute or better transit service<br>○ Walker, Oleson, Garden Home, Walnut/Gaarde are all arterial roads without 30 min bus service.<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT plan identified upgrades to the Beaverton to Wilsonville corridor as a "near- term" regional priority corridor.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Beaverton TSP update identified bike and pedestrian improvements along arterials and collectors, to transit stops, centers and station areas.<br>• Beaverton RC redevelopment and civic plans are ongoing. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Beaverton TSP update identified |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | lane and sidewalk improvements, trail crossings, filling gaps with accessways or street connections, intersections improvements to better accommodate bike/ped, and signing, pavement markings and lighting. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities.<br>• Complete sections of the FannoCreek Greenway Trail betweenScholls Ferry and OR 217.<br>• Complete sections of the north/south Westside Regional Trail between US 26 andScholls Ferry.<br>• Construct the Beaverton Creek Greenway Trail, a proposed trail that would that connect the FannoCreek Trail along OR 217 to the Beaverton RC and then provide east/west travel to the Hillsboro RC and the Rock Creek Greenway trail. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Beaverton TSP update proposed local parallel street signage by City, County and ODOT, completing all trail segments where planned off-street, including Westside Trail and refining Beaverton Creek Trail to accommodate on-street where appropriate. |
| **Throughways**[36] | The following do not meet the performance thresholds in Table 2.4:<br>• 2005 and 2035 PM 2-hour peak volumes exceed capacity on<br>• OR 217in the southbound direction from BH Hwy. to Allen Blvd., in both directions from Denney Rd. to Hall Blvd., Scholls Ferry Rd. to OR 99W, and just west of I-5. The equivalent of 6 lanes of capacity has been identified as a need in this corridor.<br>• OR99W from Dartmouth St. to Greenburg Rd.<br>• Beaverton-Hillsdale and Canyon Road through the Beaverton Regional Center.<br>• All of the OR 217 interchanges are spaced less than two-miles apart, with a handful at less than one-mile.<br>• Fanno Creek constrains the design of interchanges along OR 217. | • Implement OR 217 Corridor Study recommendations, including arterial connectivity, bike and pedestrian connectivity, transit service expansion and throughway capacity.<br>• Implement OR 217 Management Study recommendations (examples include shoulder widening, traveler information, variable speed and ramp management) and develop targeted capital improvements to achieve improved operation and reliability in the corridor).<br>• Aggressively pursue other TSMO and capital strategies in the OR 217 corridor and parallel arterials to produce the equivalent of three lanes of capacity in each direction.<br>• In FC project list, project 11122 adds a NB lane from Canyon Rd. to US 26; project 10875 braids ramps between |

[36] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | OR 10 and Allen; project 10599 improves 72nd Ave. interchange.<br>• On State project list, project 11302 improves operations of I-5/OR 217 interchange, project 11358 .<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Adaptive signal systems implementation on going for Farmington Rd., Canyon Rd., and BH Hwy. |
| **Arterials**[37] | Arterial Gaps<br>• Between Scholls Ferry Rd., OR 99W, SW Walnut St, and SW Greenburg Rd.<br>• Between SW Capitol Hwy., SW Oleson Rd. /Hall Blvd. and north and south of Taylors Ferry Rd.<br>• Between SW Denney Rd. and Beaverton-Hillsdale Hwy.<br>• There are street connectivity gaps to/from the Tigard Triangle area.<br>• There are additional gaps east of I-5, north of Kruse Way, west of Boones Ferry Rd./SW 49th Ave, and south of Barbur Blvd.<br><br>Arterial Deficiencies<br>The following do not meet the performance thresholds in Table 2.4:<br>• Existing bottlenecks around the Washington Square regional center cause significant delay in this corridor.<br>• Existing congestion on Highway 99W<br><br>In the 2005 PM 2-hour peak volumes exceed capacity on:<br>• Scholls Ferry Rd. just south of US 26 to Patton Rd. and from Cascade to Conestoga<br>• Oleson Rd. peak from Garden Home to 80th. | • Various Hall Blvd (OR 141) widening projects to improve performance (FC projects 11220, 11223, State project 10595).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Beaverton TSP update identified Davie Rd. extension, Western/102nd/103rd/Walker road connection, access management strategies, intersection improvements, and signalization.<br>• Project 10642 Adaptive Traffic Signal Systems, new signals and upgrades for Allen Blvd., Cedar Hills Blvd., Hall Blvd., Farmington Rd., and BH Hwy. |

[37] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

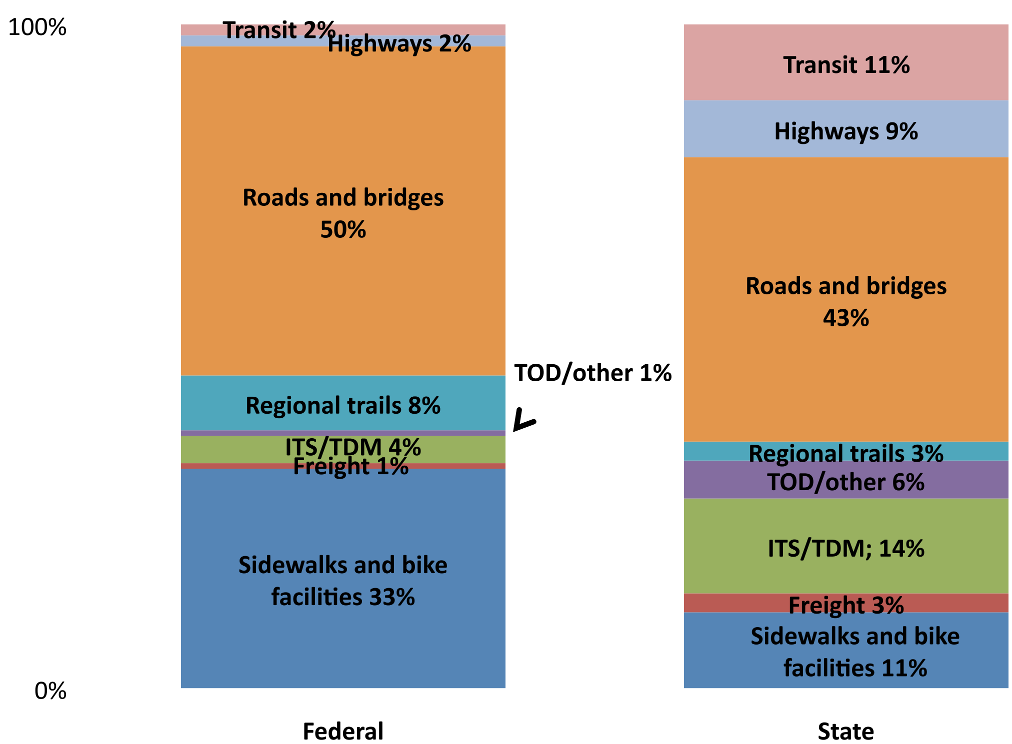
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • Hall Blvd. near SW Brockman St.<br><br>In the 2035 PM 2-hour peak volumes exceed capacity on<br>• Scholls Ferry Rd. and Oleson Rd./Greenburg Rd. from US 26 to OR 217.<br>• Murray Blvd. southbound for most of the section between OR 8 and SW Brockman St. | |
| **At-Grade Heavy Rail** | • There is a near complete failure to separate vehicle travel and rail. Within the City of Beaverton, there are 2 locations where there are over crossings of rail (Allen and Denney). The primary arterials of Beaverton-Hillsdale, Hall, and Scholls Ferry Road are at grade crossings frequently resulting in peak hour congestion.<br>• There are multiple heavy rail crossings within this mobility corridor:<br>  • Farmington Rd. / BH Hwy.<br>  • SW Hall Blvd. (3 crossings)<br>  • Scholls Ferry Rd.<br>  • 5th St.<br>  • Lombard Ave.<br>  • Murray Rd. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPs evaluate at grade heavy rail crossings for deficiencies and solutions.<br>• RTP 10638 construct Davies Rd. extensions, close Barrows Rd. at Scholls Ferry Rd. (east).<br>• OR 217 managementstudy is looking at variable speed signs, weaves and ramps to address safety issues.<br>• Project 10617, Farmington Rd. from Murray to Hocken includes safety improvements.<br>• Adaptive signal systems project will improve traffic flow for freight. |
| **Regional Bridges** | • Barrows Bridge is a significant weight restricted bridge to the west of this corridor. | |
| **Safety** | • OR-217 between I-5 and Beaverton Regional Center ranks on the ODOT SPIS list as Category 5(Scale 1-5, 5 being highest priority).Multiple locations rank above the 90th percentile, including the interchange with I-5, the intersection with OR 99W, and the intersection with SW Tualatin Valley Highway.<br>• The Hall Blvd. /Scholls Ferry Rd. Intersection ranks above the 85th percentile as a SPIS intersection.<br>• Top 25 out of 272 ranked intersections on Wash. Co. 2005-07 SPIS list are: Hall/Scholls (#1), Murray/TV (#4), Murray/Allen (#7), | |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | Murray/Farmington (#9), B-H/107th (#24), B-H/Western (#25). | |
| **Regional Freight** | • The stretch south of Denney way to Hall Blvd. does not meet performance thresholds in the 2035 NB midday 1-hour. | |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #19 has 121 projects totaling more than $1billion. Roads and bridges projects account for 50% of all of projects and more $570 million of the total corridor project costs. The State RTP adds 35 more projects and an additional $2.7 billion. Transit capital accounts for the majority of the additional investments in the state system. Projects includes HCT from Portland Central City to Tigard and Sherwood that costs roughly $1.6 billion, upgrades to WES service and other bus improvements in the corridor. For both the Federal and State systems investments total  $3.7 billion. However, there is a lack of investment on OR 217 as highlighted in the needs above. The majority of the roads/bridges projects focus on building a supportive arterial and collector network. |

## Projects by mode for federal and state systems



## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #11 Total Project Cost | State System Cost by Mode | % of MC #11 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $265,593,772 | 25% | $17,983,298 | 1% |
| Freight | $25,000,000 | 2% | $28,166,850 | 1% |
| ITS/TDM | $10,950,000 | 1% | $26,375,000 | 1% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 0% |
| Regional trails | $40,440,000 | 4% | $6,800,000 | 0% |
| Roads and bridges | $570,186,033 | 54% | $453,557,899 | 17% |
| Highways | $117,276,000 | 11% | $289,537,000 | 11% |
| Transit | $16,000,000 | 2% | $1,912,250,000 | 70% |
| **TOTAL** | **$1,046,956,805** | 100% | **$2,745,670,047** | 100% |

## 2035 investment strategy

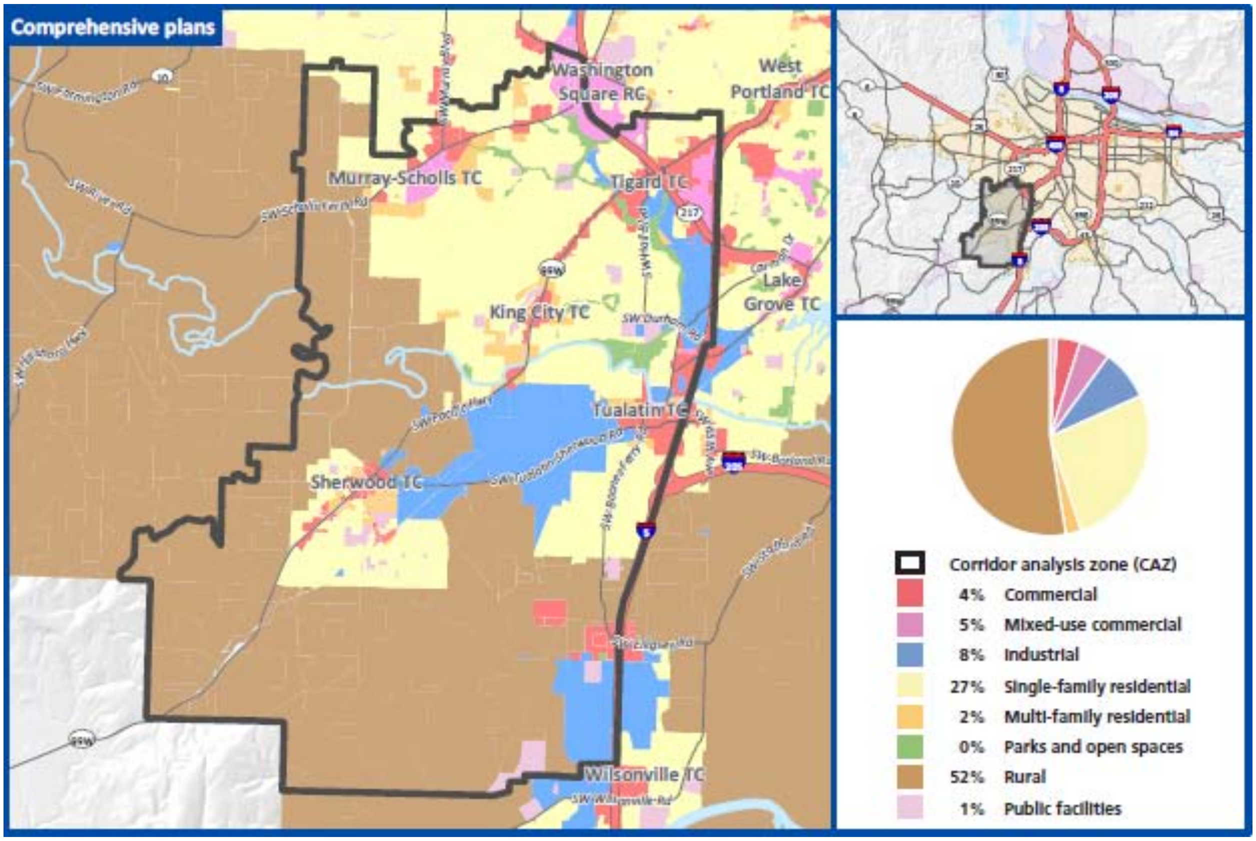
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel consistent with OR 217 Management Study.<br>• Address arterial crossings of OR 217.<br>• Complete project 11122 to add a NB lane from Canyon Rd. to US 26.<br>• Address capacity and safety issues on OR 217.<br>• Complete gaps and make pedestrian/bike crossing improvements in the Fanno Creek Trail, Westside Trail, and Beaverton Creek Trail. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network.<br>• Interchange improvements and other operational, management and capital solutions, consistent with OR 217 corridor study and OR 217 management plan (Projects 10599, 11302 and 11358). |
| **Long-term (10 – 25 years)** | • Commuter rail service upgrade between Beaverton and Wilsonville.<br>• New parallel arterial connections to remove local trips from OR 217.<br>• Add throughway capacity, consistent with OR 217 corridor study recommendations. |

**Unfunded Projects**

- Unfunded throughway capacity projects on OR 217 (~$600million)
- Unfunded capacity improvement projects have been identified for OR 217, including widening, aux lanes, and braided ramps at different locations on the corridor. These total $346,000,000.
- Unfunded interchange improvements to enhance safety and operations have been identified, totaling $201,000,000.
- OR 217 Improvements, $200,600,000
- OR 217 PE and NEPA, $6,000,000
- I-5/OR 217 Interchange OR 217 to I-5 NB flyover, $27,400,000
- OR 217 overcrossing at 72nd, $9,600,000
- 72nd Ave interchange, $19,500,000
- Denney interchange, $700,000

| | |
|---|---|
| • Allen/Denney Split Diamond, $25,900,000<br>• OR 217 Canyon-Walker Braided Ramps, $67,400,000<br>• OR 217 Scholls Ferry-Greenburg Braided Ramps, $71,700,000<br>• Greenburg Road SPUI, $62,800,000<br>• Scholls Ferry SPUI, $79,100,000<br>• OR 217/99W interchange improvements, $32,600,000 | |
| **Regional Actions** | **Local Actions** |
| • Pursue local, state and federal resources to address OR 217 needs andaggressively pursue technological, operational and strategic capital improvements to meet identified needs in this corridor consistent with the recently completed OR 217 Management Study. Examples include shoulder widening, traveler information, variable speed and ramp management) and develop targeted capital improvements to achieve improved operation and reliability in the corridor.<br>• Work on transit priority treatments on arterials.<br>• Work on regional HCT improvements in corridor.<br>• Work on regional bus improvements in corridor.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Improve bike and pedestrian access to transit stops and major destinations.<br>• Develop and maintain local demand management programs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.21 Mobility Corridor #20– Tigard to Sherwood & Sherwood to Newberg




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Washington Regional Center to the cities of Tigard, Tualatin and Sherwood, and provides access to the Tualatin/Sherwood Industrial Area and Tualatin National Wildlife Refuge. |
| **Freight Mobility:** Provides shortline heavy rail access to the region from the Willamette Valley and connects agricultural areas to the interstate highway system. |
| **Statewide Travel:** Serves as a secondary gateway to the region, connecting to communities in Yamhill County and the Central Oregon Coast. |

#### Corridor characteristic

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 117,269 | 198,325 | 3,097,402 | 6.4% | 69.1% | 57.9% |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Households** | 45,364 | 73,336 | 1,208,686 | 6.1% | 61.7% | 57.6% |
| **Employment** | 81,628 | 137,903 | 1,799,152 | 7.7% | 68.9% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • WES | • Tonquin Trail | | • I-5<br>• OR 99W | • Tualatin-Sherwood Rd.<br>• Tonquin Rd./Grahams Ferry Rd./Day Rd./Boones Ferry Rd.<br>• OR 99W | • BNSF<br>○ Portland and Western Shortline |

### Regional transportation facilities

| Regional Centers | Town Centers | Employment Areas | Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| | • Tigard<br>• Tualatin<br>• Wilsonville<br>• Sherwood | | • Tualatin/Sherwood<br>• Tigard<br>• Wilsonville | • Newburg |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);Need transit service from Tualatin TC to Sherwood TC.<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Midday WES commuter rail service.<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT Plan identified a potential HCT line between Portland Central City and Sherwood (in general vicinity of Barbur Blvd./OR99W), It is listed as a "Near-term" regional priority.<br>• The HCT Plan identified potential upgrades in the WES corridor from Beaverton to Wilsonville as a "Near-term" regional priority.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Improve bike and pedestrian access to major destinations, including major bus stops, major employers, and retail and housing located on arterials or HCT lines. | • State projects include bike/ped overpasses and other improvements through Sherwood section of 99W (10706 and 10707), and sidewalk improvements on 99W through Tualatin (10723).<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Complete a gap in the Westside Regional Trail that would connect to the proposed Tualatin River trail, across a new bridge to the Tualatin TC and the Tonquin Trail. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways** [38] | • OR 99W is a statewide highway from the Tigard/I-5 interchangewith | • Projects on the FC list include intersection improvements through Tigard (10680 and |

[38] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | several (26) signalized intersections, all spaced less than one-mile apart with multiple driveways being problematic between the intersections.<br><br>The following do not meet the performance thresholds in Table 2.4:<br>• 2005 PM 2-hour peak volumes exceed capacity from SW Gaarde St. and SW Beef Bend Rd (southbound) and SW Durham Rd. and SW Tualatin Rd (northbound),<br>• OR 99W 2035 PM 2-hour peak volumes exceed capacity alongI-5 to Tualatin Rd southbound in both directions. | 10723), and projects to be determined as replacements for the I-5/99W connector (11179).<br>• Projects on the State list include system management (11303), and widening through Tualatin (10723).<br>• Project 10770 will improve multiple intersections on OR99W from I-5 to Durham Rd.<br>• Southern Arterial connection to I-5 or other surface arterials in the vicinity of the I-5/North Wilsonville Interchange when all the project conditions are met: including integration with land use plans for UGB expansion areas and Urban Reserves, conducting the I-5 South Corridor Refinement Plan, including Mobility Corridors 2, 3 and 20, and resolution of access between I-5 and southern arterial with no negative impacts to I-5 and I-205 beyond the forecast No-Build condition, addressing NEPA to determine the preferred alignment and addressing any conditions associated with land use goal exception for southern arterial<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[39] | Arterial Gaps<br>• Lack of east/west and north/south connectivity east of OR 99W, and south of Scholls Ferry Rd. north of Gaarde St.<br>• Lack of north/south connectivity between Hall Blvd., OR 99W, McDonald St., and Durham Rd.<br>• Lack of north/south and east/west connectivitywest and north of OR 99W, south of Beef Bend Rd., and east of Roy Rogers Rd.<br>• Lack of north/south connectivity east of OR 99W, west of Boones Ferry Rd., south of Durham Rd., and north of Tualatin Rd. This gap is | • Identify replacement solutions for the Tualatin Rd. project recommended by the I-5/Connector study as part of the next Tualatin TSP update. This project was removed from the RTP based on community concerns and lack of support by the Tualatin City Council.If Tualatin (through their TSP) does not identify project(s) to adequately address the capacity/connectivity issues identified in this are, then the RTP should be amended to direct the Corridor Refinement Plan effort for corridors #2, 3 and 20 to address this need in that planning effort. The need would go unaddressed until completion of that corridor refinement |

[39] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | created by the Tualatin River.<br>• Lack of east/west and north/south connectivity west of I-5 and south of Tualatin-Sherwood Rd.<br><u>Arterial Deficiencies</u><br>The following do not meet the performance thresholds in Table 2.4:<br>• Scholls Ferry Rd. in the 2005 PM 2-hour volume exceed capacityfor the stretch west of OR 217. In the 2035 PM 2-hour peak, this congestion worsens in the westbound direction from OR 217 to Murray Blvd. and as it approaches Roy Rogers Rd.<br>• Existing congestion on Highway 99W from OR 217 to Tualatin Rd.<br>• The stretch of Roy Rogers Rd.in the 2005 PM 2-hour peak volume exceeds capacity from Scholls Ferry Rd. to SW Beef Bend Rd. In the 2035 PM 2-hour peak volumes exceed capacity on:<br>• Roy Rogers Rd. to OR 99W in both directions.<br>• There are potential turning conflict capacity issues at the unsignalized intersections of Roy Rogers Road and both Beef Bend Rd and Bull Mountain Rd.<br>• SW Hall Blvd. in the 2005 PM 2-hour peak volumes exceeds capacity from SW McDonald to SW Bonita Rd. In the 2035 PM 2-hour peak volume exceeds capacity on Hall Blvd. from OR 99W to SW Durham Rd.<br>• In the 2005 PM 2-hour peak on 72nd Ave./Boones Ferry Rd./Tualatin-Sherwood Rd. volumes exceeds capacityfrom SW Avery St. to OR 99W. In the 2035 PM 2-hour peak, the entire stretch exceeds capacity from OR 217 to OR 99W. | plan, or the next RTP update.<br>• The Roy Rogers/Scholls Ferry Rd. intersection was recently reconfigured, which has alleviated congestion.<br>• Address signals at Roy Rogers and Beef Bend Rd.through the West Bull Mountain concept plan.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

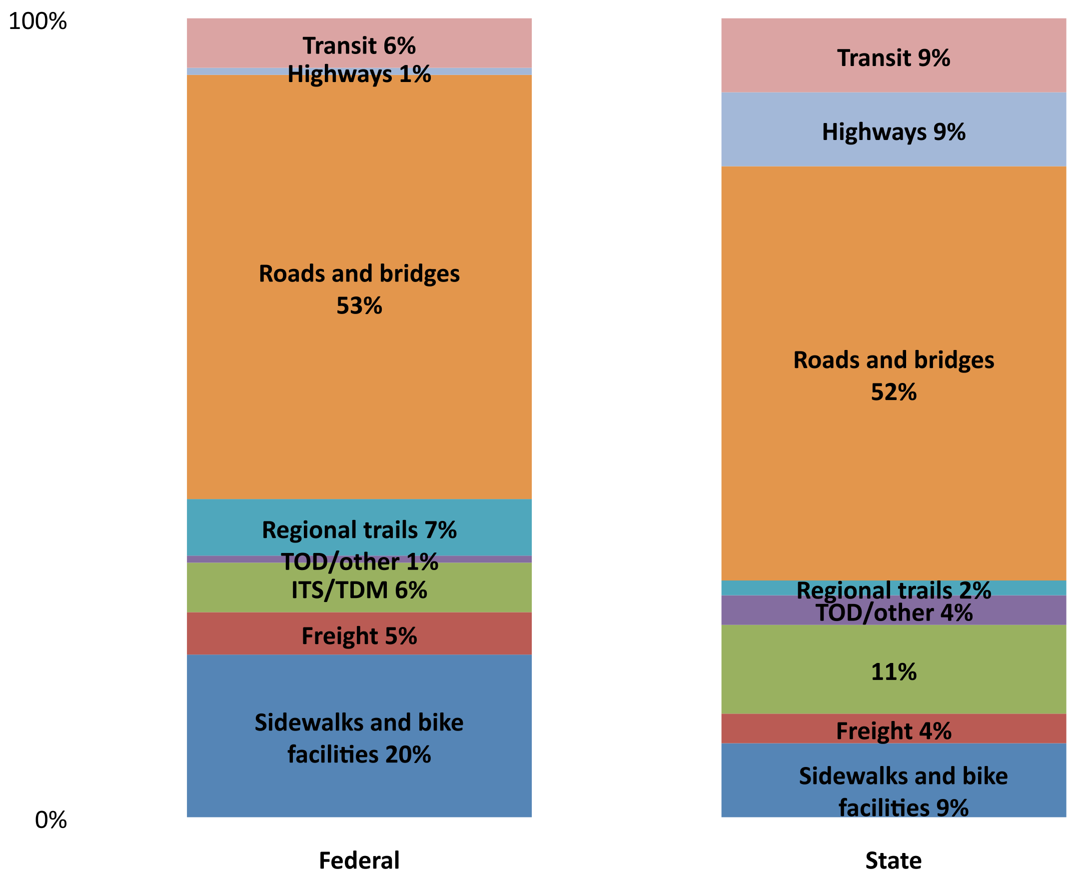
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • Tualatin-Sherwood Road exceeds capacity during both the midday and pm peak in both 2005 and 2035.<br>• The intersection of Highway 99W and Tualatin-Sherwood Rd experiences significant peak period congestion in 2005 and 2035, primarily on Tualatin-Sherwood Rd due to the number of left turns, and the short queue space available. | |
| **At-Grade Heavy Rail** | • There are a number of heavy rail crossings within this mobility corridor:<br>○ SW Tualatin-Sherwood Rd.<br>○ SW Sunset Blvd.<br>○ SW Main St.<br>○ SW Teton Ave.<br>○ SW Oregon St.<br>○ SW Sherwood Blvd. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPs evaluate at grade heavy rail crossings for deficiencies and solutions. |
| **Regional Bridges** | • Barrows Bridge is a significant weight restricted bridge to the west of this corridor. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • OR 99W ranks on the ODOT SPIS list as Category 4 and 5(Scale 1-5, 5 being highest priority) from Tigard TC to Sherwood TC. | |
| **Regional Freight** | • Existing midday freight reliability is compromised by intersection operations and driveway turn movements. In the 2035 midday 1-hour, OR 99W for the stretch between SW McDonald St. and SW Beef Bend Rd. and from Durham Rd. to just north of SW 124th Ave. in both directions.<br>• Volumes exceed capacity in the 2035 NB midday 1-hour period on Tualatin Sherwood Rd., a freight road connector, from SW Avery St. to NE Oregon St. | |

## 2035 RTP Investments

**What are the strategies identified in the federal and state RTP?**

**Investment Summary:** In the Federal RTP, MC #20 has 113 projects totaling more than $1.1 billion. Roads and bridges projects account for 53% of all of projects and 68% of the total corridor project costs ($769 million). Many of these investments are intended to fully build out the arterial network that complements OR 217, and the I-5/99W Connector study. The State RTP adds 54 more projects and an additional $3.3 billion. Transit projects account for 9% of the state projects and 58% ($ 1.9 billion) of the total corridor project costs. These projects include extending HCT from Central City to Tigard and increases in bus service and maintenance facilities. Highway projects account for 9% of all of projects and 14% of the total corridor project costs ($460 million) for operational improvements to both I-5 and I-205. For both the Federal and State systems investments total about $4.5 billion.

## Projects by mode for federal and state systems




## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #11 Total Project Cost | State System Cost by Mode | % of MC #11 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $186,536,600 | 16% | $33,227,198 | 1% |
| Freight | $74,265,000 | 7% | $38,566,850 | 1% |
| ITS/TDM | $12,218,000 | 1% | $26,975,000 | 1% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 0% |
| Regional trails | $31,055,000 | 3% | $6,800,000 | 0% |
| Roads and bridges | $769,329,000 | 68% | $835,999,200 | 25% |
| Highways | $9,700,000 | 1% | $459,537,000 | 14% |
| Transit | $47,202,000 | 4% | $1,946,250,000 | 58% |
| **TOTAL** | **$1,131,816,600** | **100%** | **$3,358,355,248** | **100%** |

## 2035 investment strategy

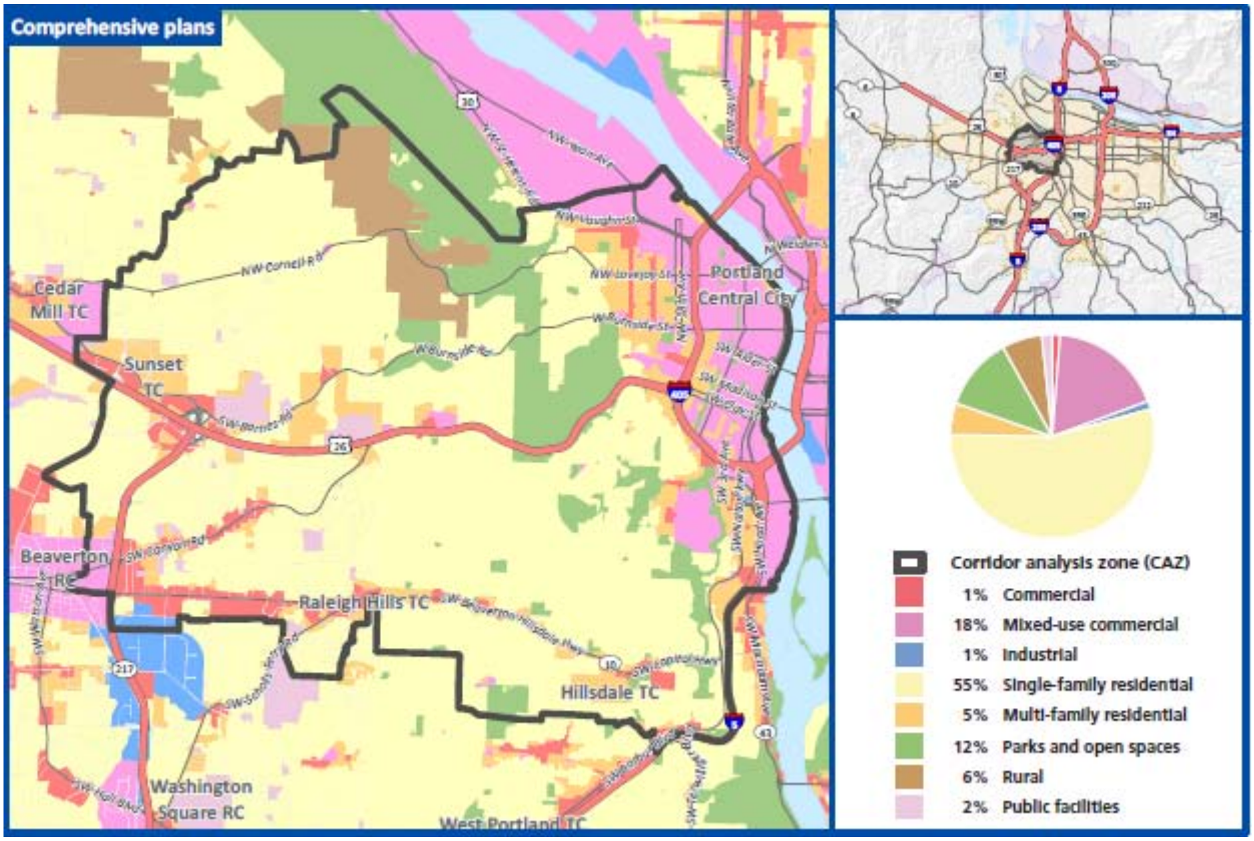
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Complete mobility corridor refinement plan.<br>• Complete alternatives analysis for HCT corridor.<br>• Complete land use planning of HCT corridor as part of HCT System Expansion Policy.<br>• Complete gaps and make crossing improvements in the sidewalk and bike network.<br>• Implement the Tigard OR 99W Corridor Improvement and Management Plan. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network.<br>• Intersection improvements, consistent with refinement plan.<br>• Coordinate TSM/TDM strategies.<br>• Implement the Tigard OR 99W Corridor Improvement and Management Plan. |
| **Long-term (10 – 25 years)** | • Implement the Tigard OR 99W Corridor Improvement and Management Plan. |

| Unfunded Projects |
|---|
| • 99W/Hall Blvd intersection improvements, $13,700,000 |

| Regional Actions | Local Actions |
|---|---|
| • Continue work on identifying resources to complete mobility corridor refinement plan.<br>• Begin HCT alternatives analysis.<br>• Conduct corridor refinement plan.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Land use planning.<br>• Address connectivity needs as part of local TSPs, including replacement solutions for the Tualatin Rd. connection recommended by the I-5/OR 99W Connector study as part of the Tualatin TSP update. If the Tualatin TSP does not identify project(s) to adequately address connectivity needs, then the RTP should |

| | |
|---|---|
| | amended to direct the Corridor Refinement Plan effort for corridors #2, 3 and 20 or the next RTP update to address this need in that planning effort.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.22 Mobility Corridor #21– Portland Central City to Hwy 217




### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Central City to Beaverton regional center and regional attractions, including the Oregon Zoo complex and Washington Park. |
| **Freight Mobility:** Provides air freight access for west side industrial areas, and statewide access to marine and rail facilities. |
| **Statewide Travel:** Provides access to Central City interstate hub and travel to the Oregon Coast. |

### Corridor characteristic

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 103,776 | 223,018 | 3,097,402 | 7.2% | 114.9% | 57.9% |
| **Households** | 54,904 | 99,715 | 1,208,686 | 8.2% | 81.6% | 57.6% |
| **Employment** | 189,102 | 280,827 | 1,799,152 | 15.6% | 48.5% | 74.3% |

### Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • MAX Red Line<br>• MAX Blue Line | • Fanno Creek Greenway Trail<br>• Westside Trail<br>• Beaverton Creek Trail | • | • US 26 | • Burnside/Barnes Rd.<br>• Cornell Rd.<br>• Beaverton-Hillsdale Hwy.<br>• Canyon Rd. | • N/A |

### Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Portland Central City<br>• Beaverton | • Sunset<br>• Hillsdale<br>• Raleigh Hills | • Sunset Transit Center<br>• Beaverton Transit Center | • Providence | • NE Washington County<br>• Oregon Zoo/Children's Museum<br>• Washington Park |

### Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Regional partners have identified HCT transit overcrowding in this corridor.<br>• Address light rail capacity needs: Robertson tunnel & along Hwy 26 & 217 will need signal upgrades<br>• Address park and ride capacity constraints: Sunset Transit Center @ 98% of capacity<br>• Increase 30 minute of better transit service on Cornell Rd. (between the Central City and Cedar Mill TC).<br>• Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT plan identified Hillsboro to Hillsdale as a "next phase" regional priority corridor.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Beaverton TSP update identified bike and sidewalk improvements, to better access transit.<br>• Beaverton RC, Redevelopment and Civic Plans ongoing.<br>• Adaptive signal system upgrades to improve flow and transit headways. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas. |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | • Unfunded ped/bike improvements have been identified on Beaverton-Hillsdale Hwy and Canyon Rd., totaling $32,700,000.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Beaverton TSP update identified lane and sidewalk improvements, trail crossings, filling gaps with accessways or street connections, intersections improvements to better accommodate bike/ped, and signing, pavement markings and lighting. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[40] | • There are 6 interchanges within this mobility corridor along US 26. None of them meet the two-mile spacing and most are spaced less than one-mile apart.<br>• The US 26/Vista ridge tunnel is a bottleneck.<br><br>The following do not meet the performance thresholds in Table 2.4 for the 2005 and 2035 NB PM 2-hour peak:<br>• US 26 in both directions near the tunnel.<br>• Westbound US 26 from the Central City to Scholls Ferry Rd.<br>• US 26/vista ridgetunnel | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[41] | Arterial Gaps<br>• Generally, the local street network is poor.<br>• South of US 26 between Scholls Ferry Rd. and Barbur Blvd. and north of BH Hwy there is a | • Identify intersections located on arterials where bicyclists and pedestrians feel unsafe and have high crash rates. Once identified. |

[40] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[41] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

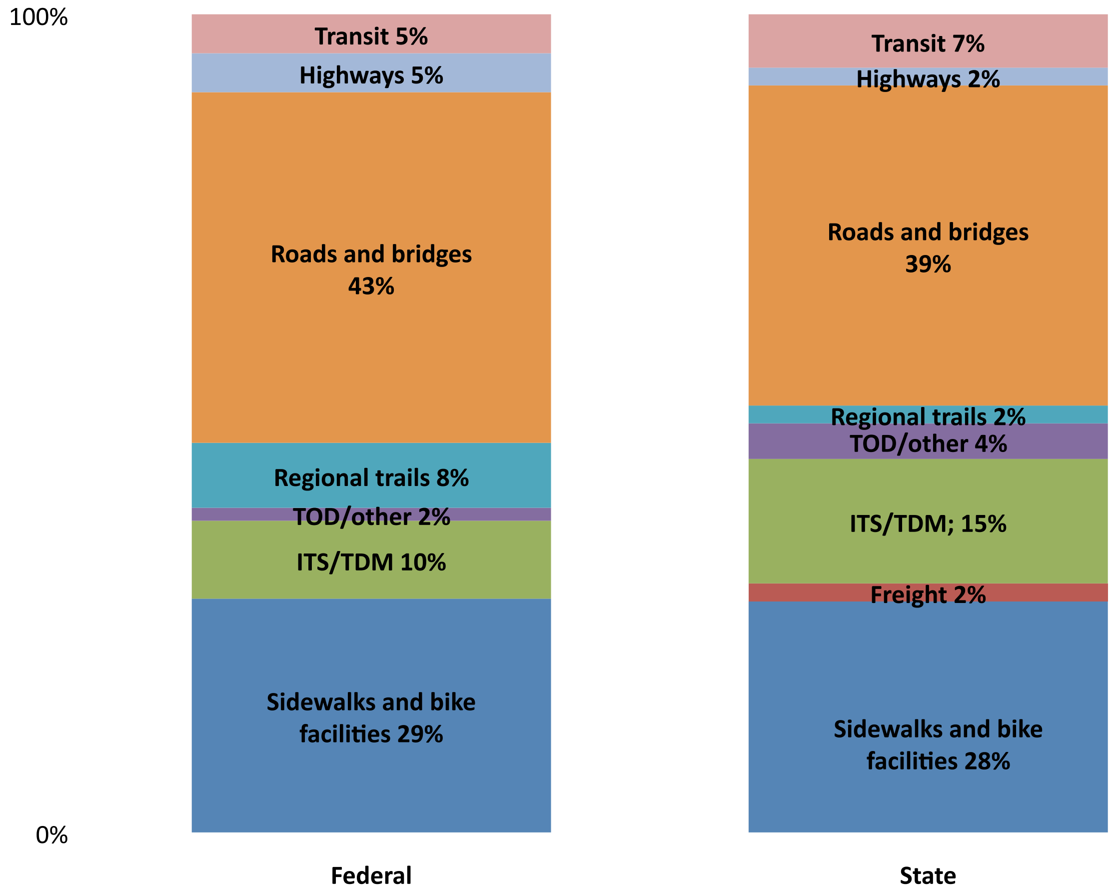
| Regional Needs | | Corridor Strategies |
|---|---|---|
| | gap in both east/west and north/south connectivity.<br>• North of US 26 there are gaps in the north/south connectivity throughout the corridor.<br><u>Arterial Deficiencies</u><br>The following do not meet the performance thresholds in Table 2.4:<br>• Cornell Rd. volumes exceed capacity westbound inboth 2005 and 2035 PM 2-hour peak. It is 2 lanes.<br>• Barnes/Burnside Rd. volumesexceed capacity in both directions for 2005 and 2035 PM 2-hour peak as it approaches Skyline Blvd. Also in the westbound direction as it approaches Sunset TC. It is 2-3 lanes with a few stretches with left turn lanes and becomes 4 lanes at SW 88th Ave. | • FC Project 10545 improves local street network by reconfiguring intersection of Oleson, Beaverton-Hillsdale, and Scholls Ferry.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Adaptive signal system upgrades to improve flow and transit headways. |
| **At-Grade Heavy Rail** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPs evaluate at-grade heavy rail crossings for deficiencies and solutions. |
| **Regional Bridges** | | |
| **Safety** | • US 26 near Central City ranks on the ODOT SPIS list as Category 4 and 5(Scale 1-5, 5 being highest priority). | |
| **Regional Freight** | • The main freight roadway route (US 26) within this mobility corridor in the midday 1-hour in 2005 and the 2035 NB near the tunnel in both directions and westbound from Central City to Scholls Ferry Rd.<br>• Cornelius Pass Rd., a key alternative to the US 26 tunnel has capacity issues in the 2035 network and a handful of moderate SPIS hotspots along the section north of the urban boundary that includes several hairpin turns. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

### 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #21 has 63 projects totaling more than $1 billion. Roads and bridges projects account for 43% of all of projects and 38% of the total corridor project costs ($396 million). Transit projects account for 5% of the federal projects and 29% ($295 million) of the total corridor project costs, including the Portland to Lake Oswego Streetcar line and improvements to the Steel Bridge MAX tracks. The State RTP adds 46 more projects for MC #21 and an additional $2.4 billion. Transit projects account for 7% of the state projects and 78% ($1.9 billion) of the total corridor project costs. This includes expanding the HCT system from Central City to Tigard and improvements in the WES commuter rail corridor. For both the Federal and State systems |

investments total just over $3.4 billion.

## Projects by mode for federal and state systems




## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #21 Total Project Cost | State System Cost by Mode | % of MC #21 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $169,773,139 | 16% | $64,042,386 | 3% |
| Freight | $0 | 0% | $280,600 | 0% |
| ITS/TDM | $5,737,293 | 1% | $2,607,995 | 0.1% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 0.5% |
| Regional trails | $29,403,000 | 3% | $2,126,948 | 0.1% |
| Roads and bridges | $395,855,868 | 38% | $226,731,609 | 9% |
| Highways | $132,276,000 | 13% | $220,000,000 | 9% |
| Transit | $295,700,000 | 29% | $1,911,250,000 | 78% |
| **TOTAL** | **$1,030,256,300** | **100%** | **$2,438,039,538** | 100% |

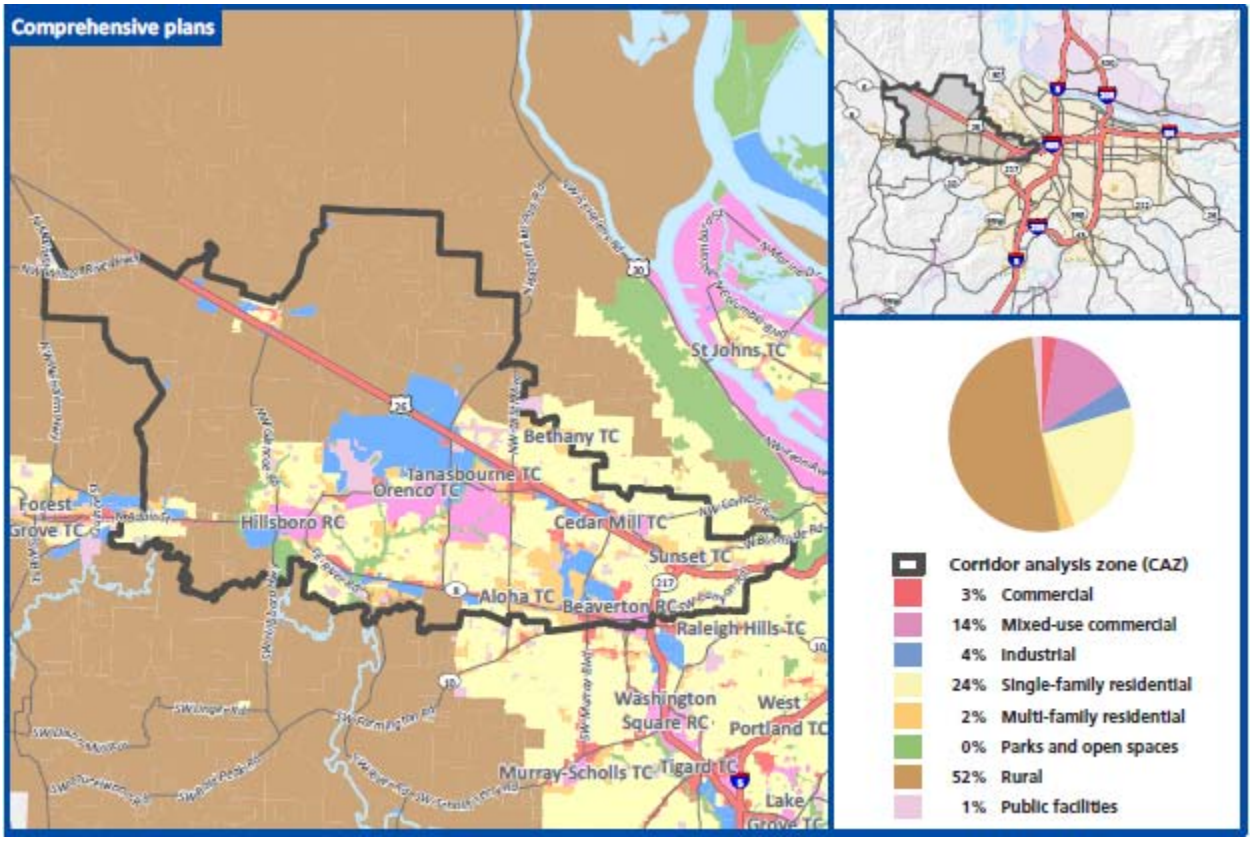
## 2035 investment strategy

| Strategy | |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Complete gaps and make crossing improvements in the Fanno Creek Trail. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network.<br>• Interchange improvements, consistent with OR 217 refinement plan. |
| **Long-term (10 – 25 years)** | • Commuter rail service upgrade between Beaverton and Wilsonville (constrained by P&W RR needs). |

| Unfunded Projects |
|---|
| • OR 8 bike/ped improvements, US 26 to 110th, $18,400,000<br>• OR 10 bike/ped improvements, 65th to OR 217, $14,300,000<br>• Extend eastbound truck climbing lane, OR 217 to Sylvan, $5,400,000 |

| Regional Actions | Local Actions |
|---|---|
| • Continue work on HCT expansion from Portland Central City to Tigard.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.23 Mobility Corridor #22– Hwy 217 to North Plains




#### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Central City to Hillsboro regional central the Sunset industrial area and provides regional access to Hillsboro Airport, Portland Community College (Rock Creek Campus) and the Oregon Graduate Institute. |
| **Freight Mobility:** Provides air freight access for west side industrial areas, and statewide access to marine and rail facilities. |
| **Statewide Travel:** Serves as a western gateway to the region, and provides access to Central City interstate hub and travel to the Northern Oregon Coast. |

#### Corridor characteristic

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change Regionally |
|---|---|---|---|---|---|---|
| **Population** | 233,998 | 319,575 | 3,097,402 | 10.3% | 17.3% | 57.9% |
| **Households** | 87,983 | 129,723 | 1,208,686 | 10.7% | 41.5% | 57.6% |
| **Employment** | 141,003 | 273,353 | 1,799,152 | 15.2% | 57% | 74.3% |

## Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • MAX Red Line<br>• MAX Blue Line | • Fanno Creek Greenway Trail | • | • US 26 | • Burnside/Barnes Rd.<br>• Cornell Rd.<br>• Beaverton-Hillsdale Hwy.<br>• Canyon Rd.<br>• Farmington Rd.<br>• TV Hwy. | • BNSF<br>○ Portland and Western Shortline |

## Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Beaverton<br>• Hillsboro | • Sunset<br>• Tanasbourne<br>• Cedar Mill<br>• Aloha<br>• Bethany<br>• Orenco | • Hillsboro Airport | • Hillsboro Industrial Area | • Northern Washington County<br>• North Plains |

## Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy)<br>• Address gaps in transit service. The following streets do not have 30 minute or better transit service:<br>○ Cornelius Pass Rd.<br>○ Brookwood Ave./Pkwy.<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations.<br>• Address park and ride capacity constraints at:<br>○ Quatama/NW 205th @ 97% of capacity | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT plan identified the Sunset TC and redline extension to Tanasbourne as a "next phase" regional priority corridor.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | o Milikan Way @ 98% of capacity<br>o Elmonica/SW 170th @ 93%<br>• Address transit center capacity issues at Willow Creek Transit Center | areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Beaverton TSP update identified bike lane and sidewalk improvements, trail crossings, filling gaps with accessways or |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | | street connections, intersections improvements to better accommodate bike/ped, and signing, pavement markings and lighting. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[42] | • On US 26, from OR 217 to Brookwood Pkwy., none of the interchanges meet the two-mile spacing standard, with a handful spaced at less than one-mile.<br>• Need for more overcrossings along US 26.<br>• Address a need for an additional overcrossing of US 26 at NW 174th Ave.<br>The following do not meet the performance thresholds in Table 2.4:<br>• On US 26, from Cedar Hills Blvd. to NW 158th Ave.volumes exceed capacity in both the 2005 and 2035 NB in the PM 2-hour peak. It is 6 lanes from OR 217 to Cornell Rd., where it becomes 4 lanes. | • Capacity improvements in FC project list from Cornell Rd. to Cornelius Pass Rd. (11124 and 10873).<br>• Interchange improvements at Shute (FC project 11178) and 185th (State project 11279).<br>• RTP 10547 173rd/174th undercrossing of US 26 project<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[43] | <u>Arterial Deficiencies</u><br>The following do not meet the performance thresholds in Table 2.4:<br>• In the 2005 and 2035 PM 2-hour peak volumes exceed capacity on:Both directions of Walker Rd. between 158th Ave. and Cedar Hills Blvd.,<br>• Both directions Walker Road between 158th Avenue and 185th Avenue and between OR 217 and Cedar Hills Blvd. | • FC project 10601 widens Bethany Blvd. bridge over US 26.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Projects 10579, 10576,10572, 10571, 10558, 10559, 11233, 11234, 11235, 11236, and 11237<br>• Adaptive signal systems – Farmington Rd/BH Hwy and Canyon Rd. |
| **At-Grade Heavy Rail** | There are heavy rail crossings at the following locations: | • Implement Regional Transportation Functional Plan and Urban Growth |

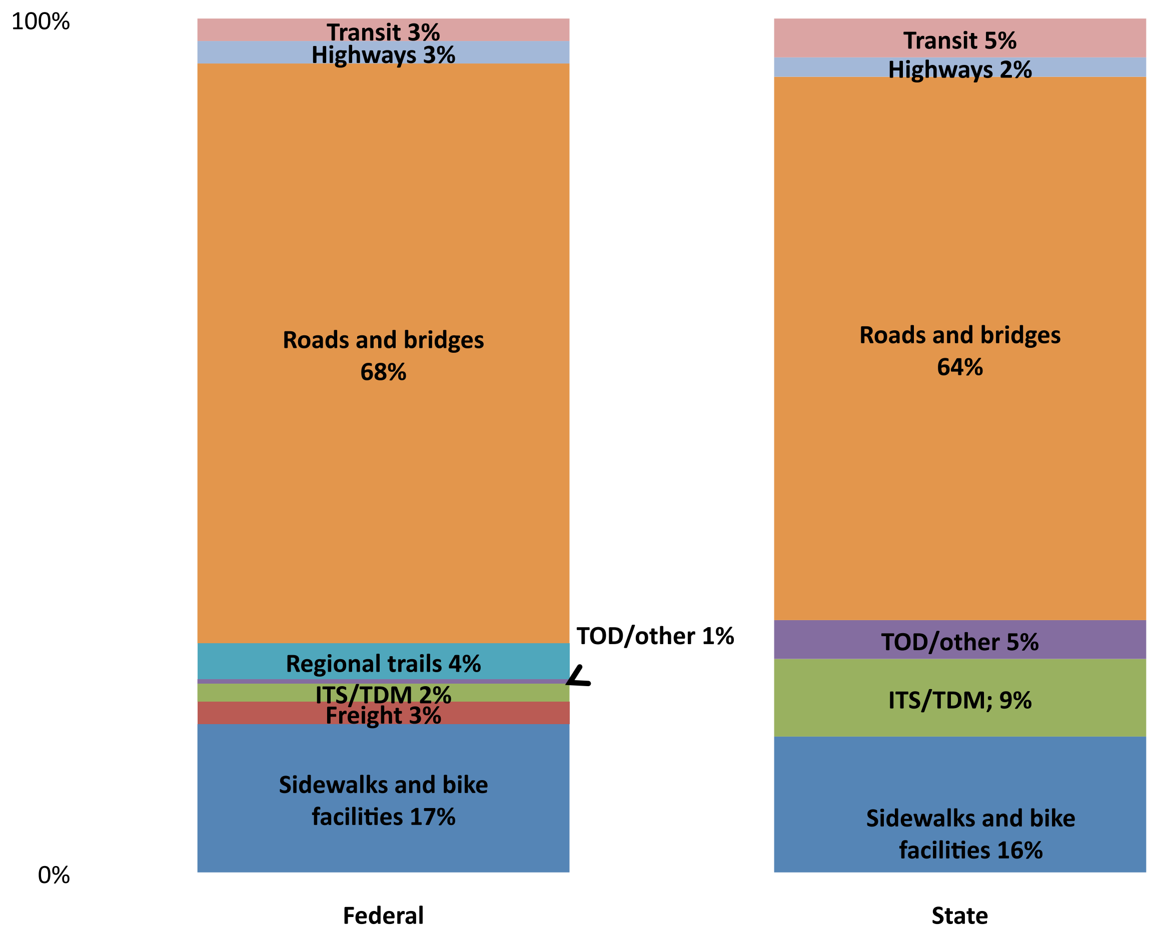
[42] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[43] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | • SW 185th Ave./Stucki<br>• Cedar Hills Blvd.<br>• SW Hall Blvd.<br>• Hocken Ave.<br>• SW Lombard Ave.<br>• SE BH Hwy. (OR 10)<br>• SW Hillsboro Hwy. (OR 219)<br>• OR 47 (Forest Grove)<br>• 198th Ave.<br>• 206th Ave.<br>• 209th Ave.<br>• Century Blvd. (234th)<br>• 229th Ave.<br>• Murray Blvd.<br>• 142nd Ave.<br>• 160th Ave.<br>• 170th Ave.<br>• Brookwood Ave./Pkwy.<br>• River Rd.<br>• Jenkins Rd./Baseline Rd. | Management Functional Plan.<br>• Local TSPsevaluate at grade heavy rail crossings for deficiencies and solutions.<br>• RTP 10607 Farmington Rd Murray to Hocken to address safety issues. |
| **Regional Bridges** | | |
| **Safety** | • US 26 west of OR 217 ranks on the ODOT SPIS list as Category 3 (Scale 1-5, 5 being highest priority).<br>• Murray Blvd. at Farmington Rd. | |
| **Regional Freight** | • The stretch of US 26 between NW 158th Ave. and Cedar Hills Blvdin the midday 1-hour volumes exceed capacity in 2005 and 2035.<br>• Address a lack of freight reliability on Murray Blvd. between TV Hwy (OR 8) and US 26. | |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #22 has 190 projects totaling more than $1.5 billion. Roads and bridges projects account for 68% of all of projects and 66% of the total corridor project costs ($1 billion). Sidewalk and bike projects comprise 17% of the federal projects and 15% ($220 million) of the total corridor project costs. Highway projects account for 3% of the federal projects and 14% ($220 million) of the total corridor project costs. The State RTP adds 44 more projects and an additional $460 million. Roads and bridges projects account for 64% of all of projects and 82% of the total corridor project costs ($380 million). For both the Federal and State systems investments total just under $2 billion. |

### Projects by mode for federal and state systems



## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #22 Total Project Cost | State System Cost by Mode | % of MC #22 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $221,773,128 | 15% | $12,817,498 | 3% |
| Freight | $14,650,000 | 1% | $0 | 0.0% |
| ITS/TDM | $4,450,000 | 0% | $1,675,000 | 0.4% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 2% |
| Regional trails | $28,820,000 | 2% | $0 | 0% |
| Roads and bridges | $1,014,727,000 | 66% | $378,652,000 | 82% |
| Highways | $218,395,034 | 14% | $25,000,000 | 5% |
| Transit | $24,350,000 | 2% | $31,000,000 | 7% |
| **TOTAL** | **$1,528,676,162** | 100% | **$460,144,498** | 100% |

## 2035 investment strategy

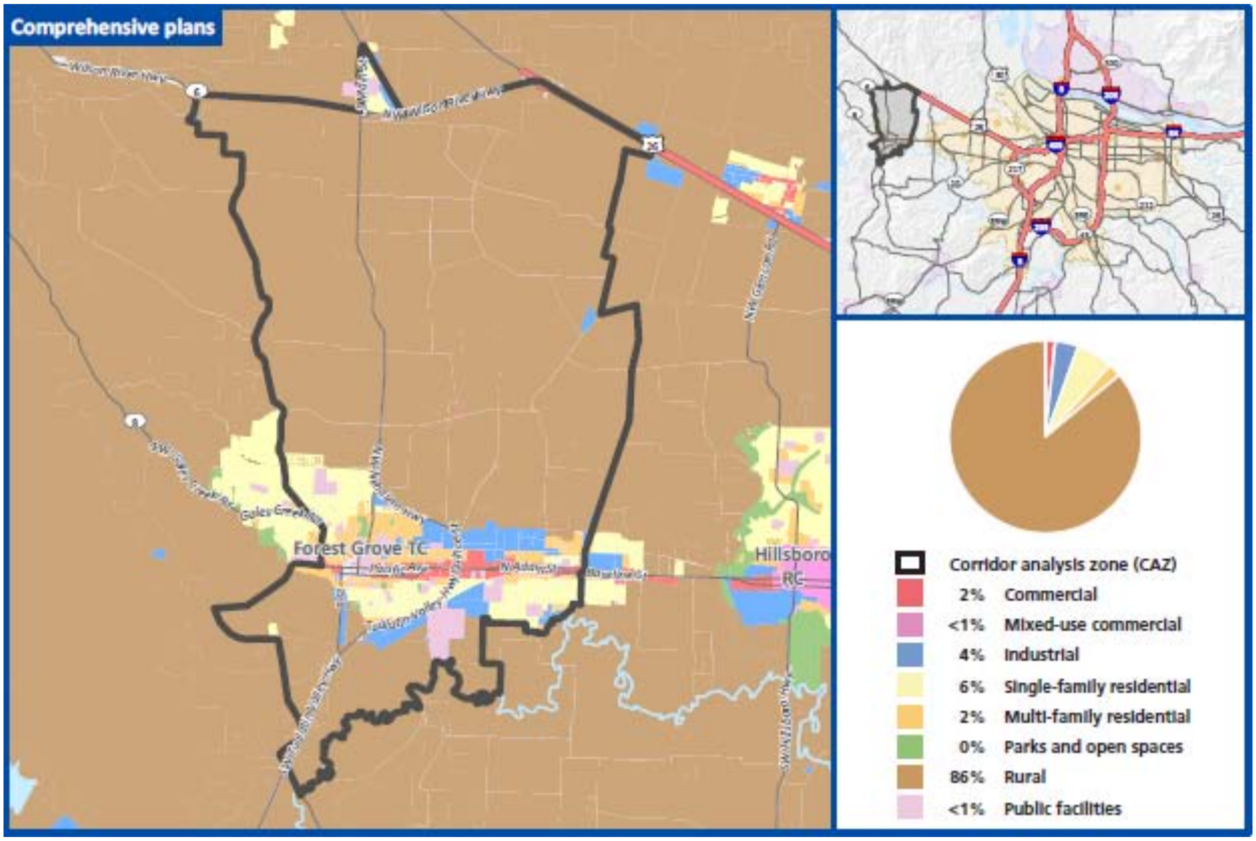
| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network.<br>• Interchange improvements and IAMP at Glencoe Rd. and Shute Rd. |
| **Long-term (10 – 25 years)** | |

**Unfunded Projects**

- US 26 Cornell to Helvetia refinement, $800,000
- US 26 Bethany Bridge, $8,700,000
- US 26 improvements, Cornelius Pass to Shute Rd., $17,700,000

| Regional Actions | Local Actions |
|---|---|
| • Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

### 4.2.24 Mobility Corridor #23 – Forest Grove to US 26




## Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects the Forest Grove industrial area and town center to US 26. |
| **Freight Mobility:** Provides freight access from Forest Grove industrial areas and surrounding agricultural activities to US 26. |
| **Statewide Travel:** Agricultural farm-to-market route connecting US 26 and 99W. |

## Corridor characteristic

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change Regionally |
|---|---|---|---|---|---|---|
| **Population** | 26,993 | 31,684 | 3,097,402 | 1% | 17.3% | 57.9% |
| **Households** | 9,819 | 13,895 | 1,208,686 | 1.1% | 41.5% | 57.6% |
| **Employment** | 10,761 | 16,891 | 1,799,152 | .9% | 57% | 74.3% |

## Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| | • Council Creek Trail | | • OR 47 | • Zion Church/Cornelius Schefflin/10th Ave.<br>• Glencoe/OR 219 | • P&W<br>• Port of Tillamook |

## Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/ Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| | • Forest Grove | | | • Cornelius Main Street<br>• Connection to US 26<br>• Yamhill County<br>• McMinnville |

## Needs and Strategies

| | Regional Needs | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service.<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy).<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops.<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations. | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• Long-Range HCT Plan Identifies a potential HCT line between Portland Central City and Gresham (in general vicinity of Powell Blvd.) It is listed as a "Near-term" investment priority.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to |

| | Regional Needs | Corridor Strategies |
|---|---|---|
| | | focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas. |
| **Regional Trails** | • Need to Direct connections between trails and on-street bicycle and pedestrian facilities.<br>• Address gaps in proposed Council Creek Trail. | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections. |
| **Throughways**[44] | • Addressunsignalized intersections on OR 47 as it approaches Forest Grove TC.<br>• There is one signal at the intersection with TV Hwy. (OR 8). The spacing of both the intersections is less than one mile apart. | • Intersection improvements on OR 47 in State project 10780. |
| **Arterials**[45] | <u>Arterial Gaps</u><br>• Hwy. (OR 8) is the only east/west arterial in this mobility corridor. | • Address gaps in east/west connectivity. TV |
| **At-Grade Heavy Rail** | • There are a handful of heavy rail crossings within this mobility corridor, but they are on local streets including the following locations:<br>○ Hwy 47<br>○ 10th<br>○ 20th | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPs to evaluate at grade heavy rail crossings for deficiencies and solutions. |

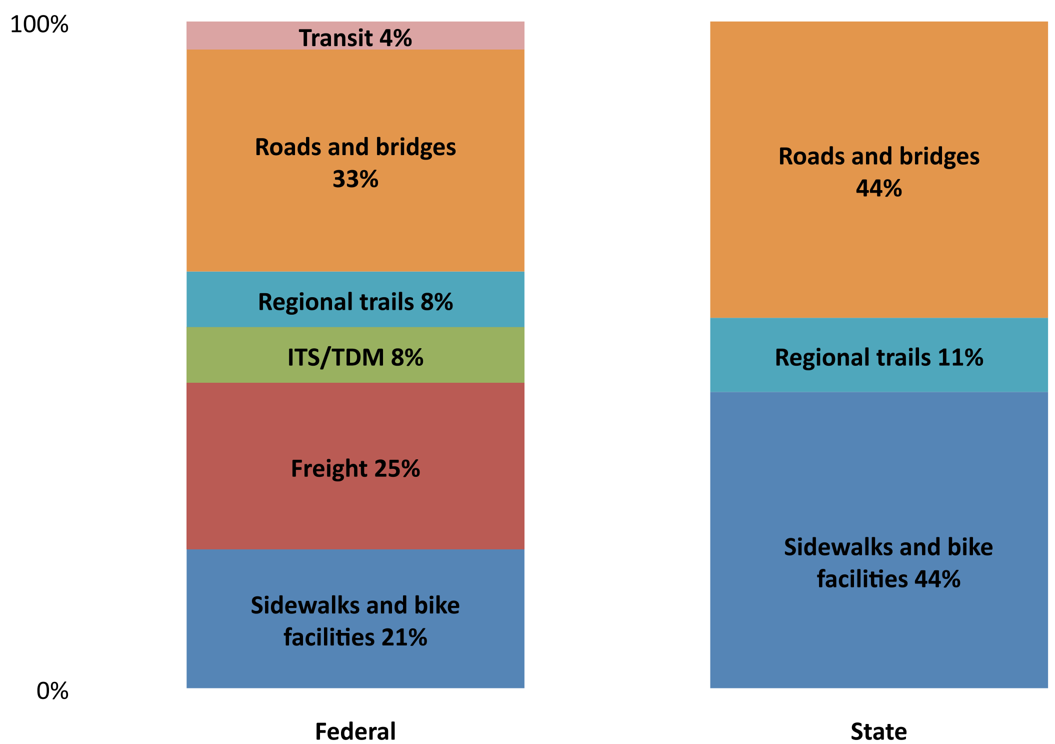
[44] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[45] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

| | Regional Needs | Corridor Strategies |
|---|---|---|
| | • Camp (There are 2 crossings on this street.) | |
| **Regional Bridges** | | |
| **Safety** | • OR 47 ranks on the ODOT SPIS list as Category 4 and 5 (Scale 1-5, 5 being highest priority as it approaches Forest Grove. | |
| **Regional Freight** | • There is a need for better freight reliability on Zion Church Rd. | |

## 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #23 has 24 projects totaling $87 million. Roads and bridges projects account for 33% of all of projects and 56% of the total corridor project costs ($48 million). Sidewalk and bike projects comprise 21% of the federal projects and 16% ($14 million) of the total corridor project costs. Freight projects account for 25% of the federal projects and 20% ($17.5 million) of the total corridor project costs. The State RTP adds 9 more projects and an additional $19 million. Roads and bridges projects account for 44% of all of projects and 92% of the total corridor project costs ($17 million). For both the Federal and State systems investments total just over $100 million for this mobility corridor. |

## Projects by mode for federal and state systems



## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #23 Total Project Cost | State System Cost by Mode | % of MC #23 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike | $13,970,000 | 16% | $585,000 | 3% |
| Freight | $17,150,000 | 20% | $0 | 0% |
| ITS/TDM | $0 | 0% | $0 | 0% |
| TOD/other | $0 | 0% | $0 | 0% |
| Regional trails | $6,100,000 | 7% | $1,000,000 | 5% |
| Roads and bridges | $48,400,000 | 56% | $17,050,000 | 92% |
| Highways | $0 | 0% | $0 | 0% |
| Transit | $1,500,000 | 2% | $0 | 0% |
| **TOTAL** | **$87,120,000** | 100% | **$18,635,000** | 100% |

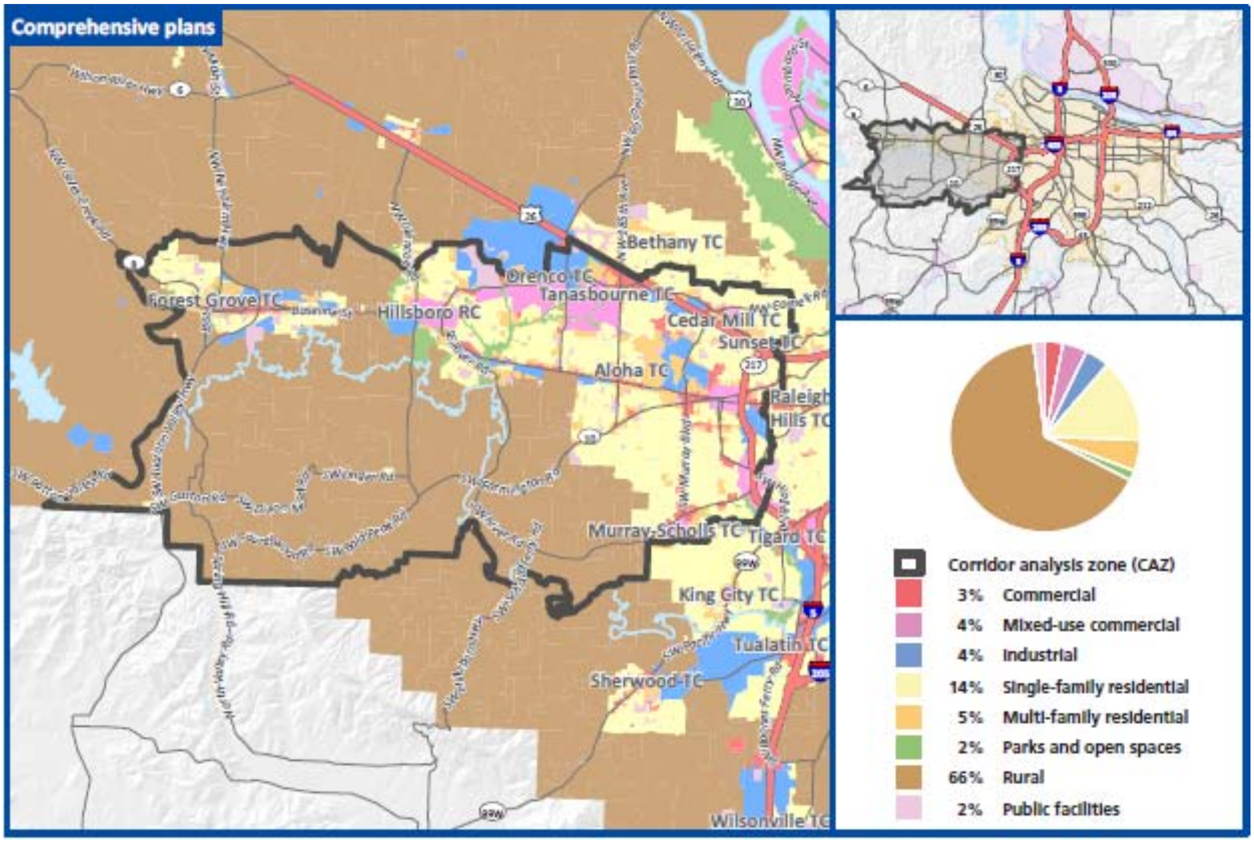
## 2035 investment strategy

| | Strategy |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and Parallel Facilities for all modes of travel<br>• Complete gaps and make crossing improvements in the Council Creek Trail. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network |
| **Long-term (10 – 25 years)** | |

| Unfunded Projects |
|---|
| |

| Regional Actions | Local Actions |
|---|---|
| • Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system. | • Initiate actions related to the HCT System Expansion Policy<br>• Address connectivity needs as part of local TSPs<br>• Incorporate strategies from the Regional TSMO plan into local TSPs<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

## 4.2.25 Mobility Corridor #24– Beaverton to Forest Grove




### Corridor function

| What function(s) does the corridor serve? |
|---|
| **2040 Access:** Connects Beaverton and Hillsboro regional centers, provides access to OR 217 for industrial area within the corridor. |
| **Freight Mobility:** Industrial access to Highway 217 from areas within the corridor. |
| **Statewide Travel**: No statewide mobility function. Provides access from Beaverton Regional Center to Hillsboro Regional Center, access from OR 217 west to OR 47, and serves as a parallel arterial to US 26 |

### Corridor characteristic

| | 2005 | 2035 | 2035 Regional Totals | % of Regional Total | % Change in Corridor | % Change in Region 2005- 2035 |
|---|---|---|---|---|---|---|
| **Population** | 318,112 | 443,581 | 3,097,402 | 14.3% | 39.4% | 57.9% |
| **Households** | 120,670 | 180,182 | 1,208,686 | 14.9% | 49.3% | 57.6% |
| **Employment** | 152,752 | 283,074 | 1,799,152 | 15.7% | 85.3% | 74.3% |

## Regional transportation facilities

| HCT | Regional Trail | Regional Bridges | Throughways | Parallel Arterials | Heavy Rail |
|---|---|---|---|---|---|
| • MAX Blue Line | • Turf to Surf Trail | | • TV Highway | • Baseline Rd.<br>• Farmington Rd.<br>• River Rd.<br>• Murray Blvd.<br>• OR 219<br>• Roy Rogers Rd.<br>• Scholls Ferry Rd. | • P&W |

## Regional 2040 land uses

| Regional Centers | Town Centers | Intermodal Facilities | Employment/ Industrial Areas | Other Key Destinations |
|---|---|---|---|---|
| • Beaverton<br>• Hillsboro | • Aloha<br>• Orenco<br>• Forest Grove | • Hillsboro Airport | • Hillsboro | • Cornelius Main Street<br>• Beaverton Transit center |

## Needs and Strategies

| Regional Needs | | Corridor Strategies |
|---|---|---|
| **Transit** | • Connect all 2040 Town Centers, Regional Centers, and the Central City with frequent transit service (consistent with RTP policy);<br>• Connect all 2040 Regional Centers with high capacity transit (consistent with RTP policy);<br>• Direct, safe, comfortable, bike and pedestrian connections to all transit stops;<br>• Ensure transit connections betweenHCT stations and essential destinations located greater than one mile from stations.<br>• Provide bicycle parking and options for bike sharing at all HCT stations.<br>• Address park and ride capacity constraints at:<br>  ○ Quatama/NW 205th @ 97% of capacity<br>  ○ Milikan Way @ 98% of capacity<br>  ○ Elmonica/SW 170th @ 93%<br>• Address potential transit center | • Incentivize high to medium density, mixed-use, pedestrian oriented development in the Central City, Regional Centers, Town Centers, Main Streets, and around HCT station areas. If sufficient demand exists, additional transit service will be added to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement service.<br>• The HCT study identified Hillsboro to Hillsdale as a next phase regional priority corridor. Hillsboro to Forest Grove was ranked as a developing regional priority corridor in the HCT study.<br>• Analyze transit stops in relation to bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these facilities. Refer to TriMet's Pedestrian Network Analysis project for recommended places to focus attention and for replicable analysis methodology.<br>• Identify essential destinations greater |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | capacity issues at Willow Creek Transit Center.<br>• There is a need for more frequent bus service.<br>• Address gaps in transit service. The following streets do not have 30 minute or better transit service:<br>o Cornelius Pass Rd.<br>o Brookwood Ave./Pkwy. | than one mile from transit stops, estimate demand for local transit service that connects to HCT lines. If sufficient demand exists, add local transit investment to TriMet's 5-year Transit Investment Plan (TIP). When finances permit, TriMet will implement. Also consider developing private shuttle services to serve this need.<br>• Refer to the RTP Regional Transit Network map for regional bike-transit facility locations where demand is expected to be sufficient to warrant a major bike parking facility. Bikeway connections to these stations should be prioritized.For all other stations, refer to TriMet's bike parking design guidelines. When finances permit, TriMet will implement.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Bike and Pedestrian** | • Direct, continuous and comfortablebicycle and pedestrian pathways between essential destinations, transit stops, housing, jobs, and retail. | • Identify where essential destinations are in relation to transit stops, housing, jobs, and retail and prioritize pedestrian pathways between these areas.<br>• Boulevard and ped infill improvements on TV Highway in Cornelius and Forest Grove (RTP projects #10779 and #10805)<br>• Unfunded boulevard improvements on TV Highway, $20,000,000.<br>• Beaverton TSP update identified bike lane, sidewalk, trail crossing, intersection improvements, signing, lighting, and signalization improvements.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Trails** | • Direct connections between trails and on-street bicycle and pedestrian facilities.<br>• There are incomplete sections of the north/south Westside Regional Trail between US 26 and Scholls Ferry, and none of the trail has been developed south of Barrows Road.<br>• The Beaverton Creek Greenway trail is a | • Analyze regional trail access points in relation to on-street bicycle and pedestrian network and build direct, safe, comfortable bicycle and pedestrian facilities in areas that do not have these connections.<br>• RTP Projects #10809,#10810 #10811, #10812, and #10813<br>• Implement Regional Transportation |

| Regional Needs | | Corridor Strategies |
|---|---|---|
| | proposed trail that would that connect the FannoCreek Trail along OR 217 to the Beaverton RC and then provide east/west travel to the Hillsboro RC and the Rock Creek Greenway trail. Most of this trail between Denney and the Beaverton RC is unconstructed. | Functional Plan and Urban Growth Management Functional Plan. |
| **Throughways**[46] | • Address TV Hwy (OR 8) access management and spacing issues throughout the mobility corridor.<br>The following do not meet the performance thresholds in Table 2.4:<br>• TV Hwy (OR 8)volumes exceed capacity in both the 2005 and 2035 NB in the PM 2-hour in the westbound direction from Cedar Hills Blvd. to NW 158th Ave and in both directions from 158th Ave. to just beyond Cornelius Pass Rd. The termini are Hwy 217 and Hwy 47.<br>• Address a need for overcrossings of TV Hwy (OR 8).<br>• There is a need for an east-west connection between Forest Grove and Hillsboro. | • TV Highway widening, 196th to Brookwood (FC project 10846)<br>• Intersection improvements at 209th and Century (FC projects 11136 and 11137)<br>• Intersection improvement at Murray (State project 10557).<br>• Signal interconnect in Cornelius, FC project 10803<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Arterials**[47] | <u>Arterial Gaps</u><br>• There are gaps south of TV Hwy (OR 8) between SW 209th Ave. and SW River Rd. There are also gaps south of Farmington Rd. to Scholls Ferry Rd. in both north/south and east/west connectivity.<br><u>Arterial Deficiencies</u><br>The following do not meet the performance thresholds in Table 2.4:<br>• For the 2005 and 2035 NB in the PM 2-hour peak volumes exceed capacity on<br>• Both directions of Walker Rd. between 158th Ave. and Cedar Hills Blvd<br>• Walker Road between 158th Avenue and 185th Avenue and between OR 217 and Cedar Hills Blvd. | • Farmington Rd improvements between 170th and 198th (FC projects 10560 and 10574).<br>• 10617 Farmington Road Murray to Hocken<br>• 10634 Cedar Hills Blvd improvements<br>• 10642 Adaptive signal systems<br>• 10646 Hall Blvd bike and pedestrian improvements<br>• 10643 sidewalk gaps<br>• 10668 Farmington Road gaps<br>• 10669 Hall Blvd gap<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

[46] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)
[47] Do not meet performance thresholds defined in RTP Table 2.4 (Interim Regional Mobility Policy)

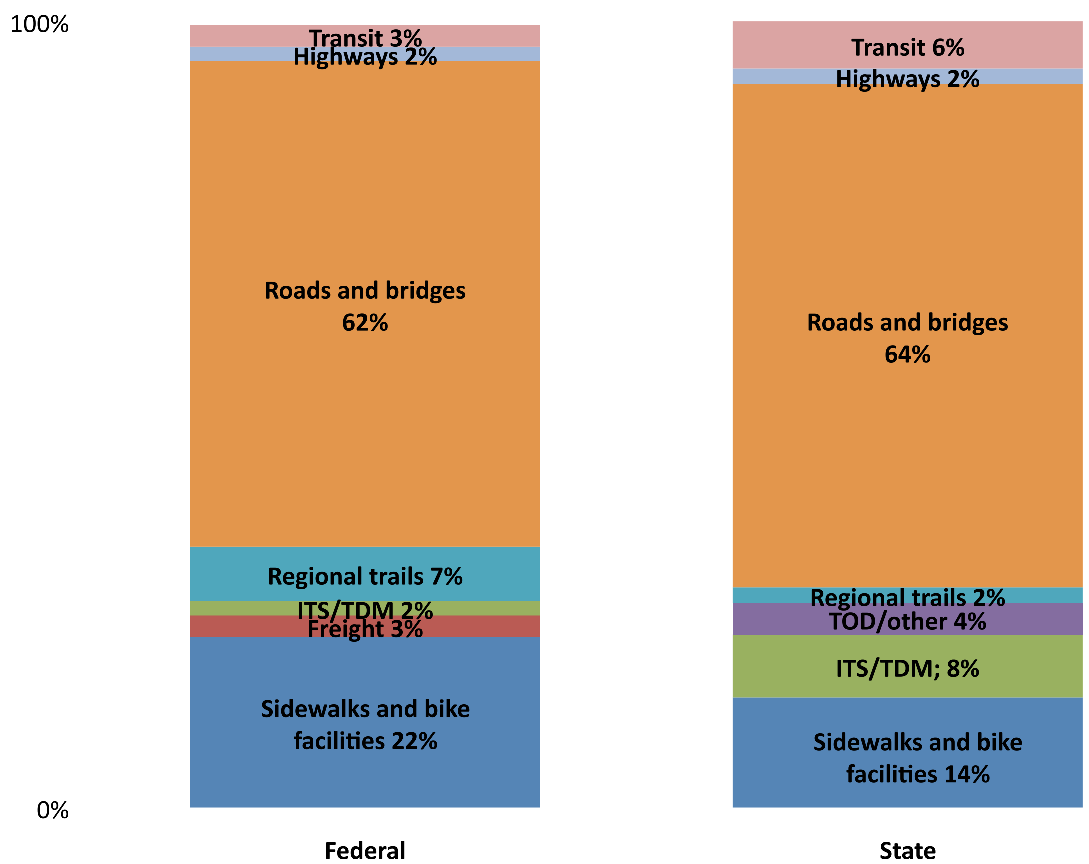
| Regional Needs | | Corridor Strategies |
|---|---|---|
| **At-Grade Heavy Rail** | There are heavy rail crossings at the following locations:<br>• SW 185th Ave./Stucki<br>• Cedar Hills Blvd.<br>• SW Hall Blvd.<br>• Hocken Ave.<br>• SW Lombard Ave.<br>• SE BH Hwy. (OR 10)<br>• SW Hillsboro Hwy. (OR 219)<br>• OR 47 (Forest Grove)<br>• 198th Ave.<br>• 206th Ave.<br>• 209th Ave.<br>• Century Blvd. (234th)<br>• 229th Ave.<br>• Murray Blvd.<br>• 142nd Ave.<br>• 160th Ave.<br>• 170th Ave.<br>• Brookwood Ave./Pkwy.<br>• River Rd.<br>• Jenkins Rd./Baseline Rd. | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Local TSPsevaluate at grade heavy rail crossings for deficiencies and solutions. |
| **Regional Bridges** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Safety** | • TV Hwy (OR 8) ranks on the ODOT SPIS list as Category 5 (Scale 1-5, 5 being highest priority) from Beaverton RC to Hillsboro RC.<br>• Farmington Road at Murray | • 10617 Farmington Road Murray to Hocken<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |
| **Regional Freight** | | • Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan. |

### 2035 RTP Investments

| What are the strategies identified in the federal and state RTP? |
|---|
| **Investment Summary:** In the Federal RTP, MC #24 has 218 projects totaling more than $1.7 billion. Roads and bridges projects account for 61% of all of projects and 66% of the total corridor project costs ($1 billion). Sidewalk and bike projects comprise 22% of the federal projects and 17% ($280 million) of the total corridor project costs. Highway projects account for 2% of the federal projects and 10% ($170 million) of the total corridor project costs. The State RTP adds 50 more projects and an additional $800 million. Roads and bridges projects account for 64% of all of projects and 59% of the total corridor project costs ($480 million). Transit projects comprise 6% of the state projects and 35% ($281 million) of the total corridor project costs, consisting mainly of upgrades to WES and MAX |

extension to Amberglen. For both the Federal and State systems investments total just under $2.5 billion.

## Projects by mode for federal and state systems




## RTP projects by cost and mode

| Mode | Federal System Cost by Mode | % of MC #24 Total Project Cost | State System Cost by Mode | % of MC #24 Total Project Cost |
|---|---|---|---|---|
| Sidewalks and bike facilities | $281,797,600 | 17% | $9,665,598 | 1.2% |
| Freight | $17,150,000 | 1% | $0 | 0.0% |
| ITS/TDM | $4,450,000 | 0% | $1,675,000 | 0.2% |
| TOD/other | $1,511,000 | 0% | $11,000,000 | 1.4% |
| Regional trails | $55,560,000 | 3% | $1,000,000 | 0.1% |
| Roads and bridges | $1,099,199,000 | 66% | $480,027,000 | 59.3% |
| Highways | $173,395,034 | 10% | $25,000,000 | 3.1% |
| Transit | $24,200,000 | 1% | $281,000,000 | 34.7% |
| | | | | |

## 2035 investment strategy

| Strategy | |
|---|---|
| **Near-Term (1 – 4 years)** | • System and demand management along mobility corridor and parallel facilities for all modes of travel.<br>• Address arterial connectivity and crossings.<br>• Address deficiencies and safety issues on TV Highway. |
| **Medium Term (5 – 10 years)** | • Complete gaps in the arterial network.<br>• TV Highway (OR 8) refinement plan |
| **Long-term (10 – 25 years)** | • Implement TV Highway (OR 8) refinement plan. |

| Unfunded Projects |
|---|
| • OR 8/10th Ave intersection improvements, $1,000,000<br>• OR 8 Cornelius STA/Boulevard improvements, $8,200,000<br>• OR 8 system management, OR 217 to 10th, $4,000,000<br>• OR 8 ped improvements, Cornelius Pass to 10th, $11,300,000<br>• OR 10 improvements, 185th to 209th, $11,800,000<br>• Unfunded intersection improvement on TV Highway, $1,000,000<br>• System management projects on TV Highway, $4,000,000 |

| Regional Actions | Local Actions |
|---|---|
| • Continue work on identifying resources to address TV Highway issues and identify resources to conduct corridor refinement plan.<br>• Conduct corridor refinement plan.<br>• Update Atlas of mobility corridors.<br>• Continue developing a data collection and performance monitoring system.<br>• Work on furthering the Active Transportation Concept. | • Initiate actions related to the HCT System Expansion Policy.<br>• Address connectivity needs in local TSPs.<br>• Incorporate strategies from the Regional TSMO plan into local TSPs.<br>• Implement Regional Transportation Functional Plan and Urban Growth Management Functional Plan.<br>• Provide Metro with TSMO, bike and pedestrian inventory data when updated through TSP update. |

# CHAPTER 5

# PERFORMANCE EVALUATION AND MONITORING:

# HOW FAR DO WE GO TOWARD ACHIEVING OUR VISION?

## 5.1 INTRODUCTION

The 2035 RTP purposefully lays out a set of projects, programs and policies intended to achieve the region's vision for an integrated land use and transportation system. Performance evaluation of the planned system and monitoring of implementation between plan updates provide valuable information for establishing transportation policy and planning objectives, and for informing transportation investment actions and priorities. While evaluation and monitoring of system performance has long been a part of the RTP development and implementation, outcomes-based evaluation of transportation policy and planning objectives is a more recent trend in transportation planning, occurring since the last major update to the RTP in 2000.[1]

Outcomes-based planning requires performance evaluation of desired outcomes and careful monitoring to ensure that incremental land use decisions and transportation project development are consistent with the plan vision. Monitoring the effectiveness of transportation investments is challenging. System performance results from multiple factors, including land use, land supply, cost, availability of capacity, level of transportation options, and demand for travel. Despite the challenges, benefits of an outcomes-based approach to performance evaluation and monitoring include:

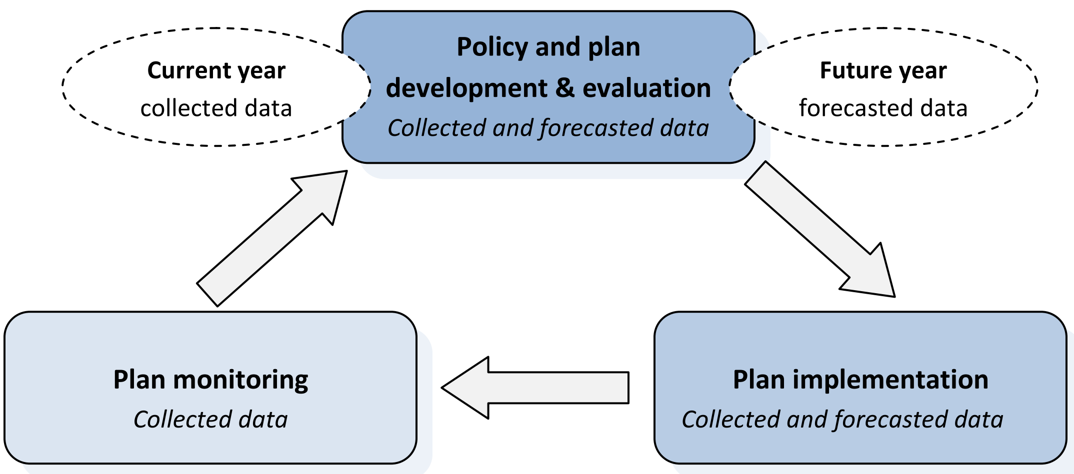
- Measurement of and feedback on the RTP policies and investment priorities submitted by ODOT, TriMet and local agencies;
- Improved communication of needs and priorities, which is especially important given the limited resources available for funding;
- Informed decision-making;
- Increased transparency of the transportation analysis and decision-making process; and
- Increased accountability through periodic reporting.

1 This trend is documented in Transportation Research Board Conference Proceedings 36: Performance Measures to Improve Transportation Systems, August 22-24, 2004.

## 5.2 RTP PERFORMANCE MEASUREMENT SYSTEM

The performance measurement system initiated with the 2035 RTP establishes an on-going evaluation and monitoring cycle. The performance measures will serve as the dynamic link between RTP goals and plan implementation by formalizing the process of evaluation and monitoring to ensure the RTP advances toward achievement of the region's transportation, land use, economic, and environmental goals. The RTP refers to the process of plan development, evaluation and monitoring over time as the performance measurement system, as shown in F**igure 5.1**.

***Figure 5.1 RTP Performance Measurement Systems***




Through evaluation and monitoring, the region can better understand the extent to which investments in the transportation system achieve desired outcomes and provide the best return on public investments. Development of a performance measurement system also satisfies benchmarks mandated by the Oregon Transportation Planning Rule (TPR) and federal requirements to use performance monitoring as part of the region's Congestion Management Program (CMP).

### 5.2.1 RTP System Evaluation

The evaluation element of the RTP performance measurement system applies during periodic plan updates, which occur approximately every four years. During these updates, the region revisits its goals and objectives for the transportation system and develops and refines an investment strategy comprised of infrastructure projects and programs submitted by ODOT, TriMet and the local agencies that together help achieve the plan goals.

In previous RTPs, success of the investment strategy was measured narrowly, considering whether the plan met vehicle level of service standards and mode share targets for walking, bicycling, transit use and shared ride. The performance measurement system introduced with the 2035 RTP update adopts an outcomes-based performance evaluation and substantially broadens the performance measures applied to track how well the investment strategy addresses the full set of goals described in Chapter 2.

The RTP system evaluation has two levels: performance targets and investment strategy performance evaluation. As previously described in section 2.3.1, RTP performance targets are the highest order evaluation measures in the outcomes-based policy framework. The performance targets set quantifiable goals for the achieving the region's desired policy outcomes. In comparison, investment strategy evaluation measures changes between current conditions and the set of transportation investments the region has chosen to pursue. There is some overlap between the targets and the measures but they serve different functions. The performance targets are listed in Table 2.3 of Chapter 2.

**Table 5.1**lists the RTP performance measures used for plan evaluation, linking them to the RTP goals they support. The investment strategy performance is evaluated at the system-wide level, and for some measures at the mobility corridor level. The performance measures rely on data generated by the regional travel demand forecast model and Metroscope, the regional land use model, to generate current and future year findings.

**Table 5.1 RTP System Evaluation Performance Indicators**

| System Evaluation Measures | | RTP Goals: Foster Vibrant Communities and Compact Urban Form | Sustain Economic Competitiveness and Prosperity | Expand Transportation Choices | Effective and Efficient Management of Transportation System | Enhance Safety and Security | Promote Environmental Stewardship | Enhance Human Health | Ensure Equity | Ensure Fiscal Stewardship | Deliver Accountability |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.** | Vehicle miles traveled (total and per capita) | ● | | | | *Unable to predict/forecast system safety. To be addressed in plan monitoring.* | ● | ● | | | *Unable to predict/forecast accountability. To be addressed in plan monitoring.* |
| **2.** | Total delay and cost of delay on the regional freight network in mid-day and PM peak | | ● | | ● | | | | | | |
| **3.** | Motor vehicle and transit travel time between key origin-destinations for mid-day and 2-HR PM peak | ● | ● | ● | ● | | | | | | |
| **4.** | Congestion - Location of throughways, arterials, and regional freight network facilities that exceed RTP motor vehicle-based level of service thresholds in mid-day and 2-HR PM peak | | ● | | ● | | | | | | |
| **5.** | Mode share and non-drive alone trips system-wide, by mobility corridor and for central city and individual regional centers (*Number of daily walking, bicycling, shared ride and transit trips and % by mode)* | ● | | ● | ● | | ● | ● | | | |
| **6.** | Transit productivity *(transit boarding rides per revenue hour)* for High Capacity Transit (HCT) and bus | ● | | ● | | | | | | ● | |
| **7.** | Number and percent of homes within ½-mile of regional trail system | | | ● | | | ● | ● | ● | | |
| **8.** | Number and percent of homes and environmental justice communities (census data) within ½-mile of HCT or ¼-mile frequent bus service | | | ● | | | | | ● | | |
| **9.** | Tons of transportation-related air pollutants (e.g. CO, ozone, and PM-10) | | | ● | | | ● | ● | | | |
| **10.** | Tons of transportation-related greenhouse gas emissions (e.g. $CO_2$) | | | ● | | | ● | | | | |
| **11.** | Percent of projects that intersect high value habitat areas | ● | | | | | ● | | | | |
| Additional land use-related measures to be developed as part of the *Making the Greatest Place.* | | | | | | | | | | | |

### 5.2.2 RTP System Monitoring

Between plan updates, the 2035 RTP establishes a monitoring program to periodically assess how well the region's transportation system is functioning in order to inform implementation decisions. Funding decisions made for state, regional, and local improvement programs can benefit from current and readily available data about the performance of the transportation system.

The RTP system monitoring also serves as a key element of the region's Congestion Management Process (CMP). The CMP emphasizes monitoring and evaluating regional system performance as a way to better diagnose and address congestion. It requires a "coordinated program for data collection and system performance monitoring to assess the extent of congestion, to contribute in determining causes of congestion and evaluate the efficiency and effectiveness of implemented actions."

The great challenge for establishing and maintaining a monitoring program has been the availability of data. Historically, collecting and managing data has been expensive and difficult. With advancements in intelligent transportation systems in the region, more and better data is available today and will continue to grow with implementation of data collection projects identified in the Regional Transportation System Management and Operations (TSMO) plan.

The RTP system monitoring program will report out current conditions using observed data for each of the 24 mobility corridors. A system performance report will be prepared every two years in advance of the allocation process for regional flexible funds and future RTP updates. **Table 5.2** lists recommended performance monitoring measures.

**Table 5.2**
**RTP System Monitoring Performance Measures**

| | |
|---|---|
| 1. | Vehicle miles traveled (total and per capita) |
| 2. | Average trip length by mobility corridor |
| 3. | Motor vehicle and transit travel time between key origin-destinations for mid-day and PM peak |
| 4. | Congestion - Location of throughways, arterials, and regional freight network facilities that exceed RTP motor vehicle-based level of service thresholds in mid-day and PM peak |
| 5. | Travel time reliability on throughways (buffer index – additional time added to ensure on time arrival 95% of the time) |
| 6. | Average incident duration on throughway system |
| 7. | Number and share of average daily shared ride, walking, bicycling and transit trips region wide, by mobility corridor and for the Portland central city and individual regional centers |
| 8. | Transit productivity (transit boarding rides per revenue hour) for High Capacity Transit and bus |
| 9. | Percent of regional pedestrian system completed region-wide and by 2040 centers and RTP transit-mixed-use corridor |
| 10. | Percent of regional bicycle system completed region-wide and by mobility corridor |
| 11. | Number and percent of households and jobs within 30 minutes of central city, regional centers, and key employment/industrial areas for mid-day and PM peak |
| 12. | Number of fatalities, serious injuries and crashes per capita for all modes of travel region-wide |
| 13. | Average household combined cost of housing and transportation |
| 14. | Tons of transportation-related air pollutants (e.g. CO, ozone, and PM-10) |

## 5.3 2035 RTP PERFORMANCE EVALUATION FINDINGS

This section details the performance evaluation findings that compare the four investment systems: 2005 Base Year, 2035 No Build, 2035 RTP Federal Priorities, and the 2035 RTP Investment Strategy for eleven performance measures. The geographic extent of the evaluation is the Metro's urban growth boundary, which excludes Clark County.

### 1. Vehicle miles traveled

*Data source:* Metro travel forecast model

*Description:* System-wide evaluation of average weekday (AWD) total and per person vehicle miles traveled (VMT)

*Target direction:* Reduce AWD total VMT and VMT per person as compared to the 2035 No Build scenario.

*Findings:* While total AWD VMT increase between 2005 and 2035 for all investment systems, VMT per person continues to decrease from the 2005 base year. When compared to the 2035 No Build, however, the 2035 Federal Priorities System and 2035 RTP Investment Strategy both total VMT and per person VMT increased slightly.

| VMT | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| Total | 20,056,391 | 27,066,029 | 27,309,936 | 27,443,788 |
| Per person | 14.24 | 13.27 | 13.39 | 13.46 |

### 2a. Total traffic delay on the regional freight network

*Data source:* Metro travel forecast model

*Description:* Evaluates traffic delay for freight movement using the regional freight roadway network in the one-hour mid-day travel period and in the two-hour pm rush hour. Figure 2.20 provides a map of the regional freight system which includes the roadway network.

*Target direction:* Reduce growth in total delay on the regional freight network in the 1-hour mid-day and 2-hour pm peak as compared to the 2035 No Build scenario.

*Findings:* Between 2005 and 2035, traffic delay on the regional freight network increases significantly for all investment scenarios. However, when compared with the 2035 No Build both 2035 RTP investment systems show a markedly slower pace of growth in delay in each travel period. In the 1-hour mid-day the 2035 Federal Priorities System traffic delay grows at a rate 27% slower than the 2035 No Build and the 2035 RTP Investment Strategy traffic delay grows 29% slower. In the 2-hour pm peak, 2035 Federal Priorities System and the 2035 RTP Investment Strategy growth is slower than 2035 No Build by 20% and 21%, respectively.

| Travel period | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| **1-hour mid-day** Hours of delay | 420 | 3,690 | 2,689 | 2,622 |
| **2-hour pm peak** Hours of delay | 7,406 | 36,762 | 29,271 | 29,354 |

*Vehicle Hours of Delay (VHD) is the time accrued above the travel time at v/c=0.9

## 2b. Total cost of traffic delay on the regional freight network

*Data source:* Metro travel forecast model

*Description:* Evaluates cost of delay for freight movement in the one-hour mid-day travel period and in the two-hour pm rush hour. Values of time are derived by using person cost figures from *Cost of Congestion to the Economy of the Portland Region Study* with 2004 figures converted to 2007 dollars using Bureau of Labor Statistics consumer price index inflation calculator. The cost of delay takes into account both auto and truck delay that occurs on the regional freight network. Auto value of time was calculated at $14.64 and truck value of time at $38.42. These values include both time of the driver as well as operating expenses and are held constant for both 2007 and 2035.

*Target direction:* Reduce growth in cost of delay (in constant dollars) on the regional freight network in the 1-hour mid-day and 2-hour pm peak as compared to the 2035 No Build scenario.

*Findings:* In 2035, the cost of delay on the regional freight network increases over five fold compared to the 2005 Base Year. However, implementation of the 2035 RTP Federal Priorities or the 2035 Investment Strategy results in a 27% - 30% decrease in the cost of delay for the mid-day peak period compared to the 2035 No Build strategy. For the 2-hour pm peak travel period both 2035 RTP investment packages reduce cost of delay by 21% compared to the 2035 No Build.

| Travel period | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| **1-hour mid-day** Cost of delay | $6,665 | $62,813 | $45,455 | $44,493 |
| **2-hour pm peak** Cost of delay | $114,190 | $578,443 | $459,348 | $461,265 |

## 3a. Motor vehicle travel time between key origin-destinations

*Data source:* Metro travel forecast model

*Description:* Evaluates mid-day and pm peak travel time between 20 regional origin-destination pairs.

*Target direction:* Reduce motor vehicle travel times between key origin-destinations.

*Findings:* Motor vehicle delay increases for all three 2035 systems compared to the 2035 Base Year, for both travel periods and all origin-destinations. Pm peak travel time grow at a faster pace the mid-day travel times. A few origin-destination pairs demonstrate a significant increase in travel time including Gateway to Oregon City and Washington Square to Oregon City, which increase by 56% in the 2035 No Build system. Overall, the 2035 Federal Priorities and RTP Investment Strategy decrease motor vehicle travel time when compared to the 2035 No Build system. Central City to Vancouver shows a significant improvement in travel time due to planned throughway and transit investment in the corridor. The 2035 RTP Investment Strategy has slightly lower travel times than the 2035 RTP Federal System, but differences are negligible.

| **Auto travel time between origin-destination pairs** (in minutes) | **2005 Base Year** | | **2035 No Build** | | **2035 RTP Federal Priorities System** | | **2035 RTP Investment Strategy** | |
|---|---|---|---|---|---|---|---|---|
| | 1-hour mid-day | 2-hour pm | 1-hour mid-day | 2-hour pm | 1-hour mid-day | 2-hour pm | 1-hour mid-day | 2-hour pm |
| Central City to Beaverton (Pioneer Square to Beaverton central via Sunset/217) | 16.9 | 18.9 | 19.8 | 23.0 | 19.6 | 22.8 | 19.6 | 22.9 |
| Central City to Hillsboro (Pioneer Square to First Main via Sunset/Shute) | 32.9 | 38.1 | 38.7 | 44.9 | 37.1 | 42.8 | 37.1 | 42.9 |
| Central City to Tigard (Pioneer Square to Main via Sunset/217) | 23.6 | 28.2 | 28.7 | 38.1 | 28.8 | 37.9 | 28.8 | 36.3 |
| Central City to Vancouver SOV* (Pioneer Square to Vancouver transit center via I-5) | 16.6 | 25.5 | 20.3 | 36.6 | 16.3 | 25.5 | 16.5 | 25.4 |
| Central City to Vancouver HOV* (Pioneer Square to Vancouver transit center via I-5) – No HOV mid-day | N/A | 19.7 | N/A | 27.8 | N/A | 18.2 | N/A | 18.0 |
| Central City to Gateway (Pioneer Square to Gateway transit center via I-84) | 14.2 | 19.2 | 16.6 | 22.6 | 16.8 | 22.0 | 16.8 | 22.0 |
| Central City to Gresham (Pioneer Square to City Hall via I-84/207th/223rd) | 26.3 | 33.3 | 28.5 | 39.6 | 28.5 | 37.9 | 28.5 | 37.7 |
| Gateway to Gresham (Gateway transit center to City Hall via 102nd/Division | 15.7 | 17.7 | 16.7 | 22.8 | 16.5 | 21.2 | 16.5 | 21.2 |
| Central City to Milwaukie (Pioneer Square to Milwaukie transit center via McLoughlin) | 15 | 20.7 | 16.7 | 24.8 | 16.7 | 24.7 | 16.7 | 24.8 |
| Milwaukie to Clackamas regional center (Milwaukie transit center to CTC via 224/82nd) | 8.5 | 10.3 | 9.6 | 13.5 | 9.5 | 13.9 | 9.5 | 13.7 |

| Auto travel time between origin-destination pairs (in minutes) | 2005 Base Year | | 2035 No Build | | 2035 RTP Federal Priorities System | | 2035 RTP Investment Strategy | |
|---|---|---|---|---|---|---|---|---|
| | 1-hour mid-day | 2-hour pm | 1-hour mid-day | 2-hour pm | 1-hour mid-day | 2-hour pm | 1-hour mid-day | 2-hour pm |
| Washington Square to Oregon City (WS to Main in OC via 217/I-5/I-205) | 22.8 | 33.9 | 29.8 | 53.0 | 29.9 | 51.2 | 29.9 | 49.3 |
| Gateway to Oregon City (Gateway transit center to Main in OC via I-205) | 18.3 | 24.3 | 23.3 | 38.0 | 23.3 | 37.4 | 23.3 | 37.4 |
| Beaverton to Hillsboro (Beaverton Central to First/Main via TV Hwy) | 18.4 | 22.7 | 21.8 | 26.5 | 20.5 | 24.7 | 20.5 | 24.7 |
| Beaverton to Washington Square (Beaverton Central to WS via 217) | 7 | 8.6 | 8.5 | 12.0 | 8.2 | 11.3 | 8.2 | 11.0 |
| Terminal 6 to I-205 (via Marine/Portland Rd/Columbia/US 30 to I-205/Sandy interchange | 19.1 | 22.5 | 20.5 | 24.8 | 20.4 | 23.8 | 20.4 | 23.7 |
| Terminal 6 to St. Helens Rd (via Lombard/St. Johns Bridge to US 30) | 12.1 | 12.4 | 12.8 | 13.4 | 12.6 | 13.2 | 12.6 | 13.2 |
| PDX to Gateway (Airport Way/I-205 to Gateway transit center) | 9 | 10.2 | 10.5 | 12.1 | 10.3 | 11.8 | 10.3 | 11.8 |
| Milwaukie to Oregon City (via McLoughlin) | 12.8 | 16.2 | 15.0 | 25.2 | 15.1 | 24.6 | 15.1 | 24.5 |
| Sunset Industrial Area to PDX (US 26/Shute to I-405/I-84/I-205 to Airport Way | 40.8 | 49 | 47.3 | 61.5 | 45.9 | 59.3 | 45.9 | 58.9 |
| Clackamas Industrial Area to Rivergate (via I-205 to Columbia/Marine Dr) | 33.1 | 36.2 | 35.9 | 38.8 | 35.9 | 39.0 | 35.9 | 39.1 |


### 3b. Transit travel time between key origin-destinations

*Data source:* Metro travel forecast model

*Description:* Evaluates mid-day and pm peak travel time between 18origins and destinations across the region.

*Target direction:* Reduce transit travel times between key origin-destinations.

*Findings:* In general, there are modest increases in transit travel times during the pm peak travel period from 2005 Base Year to the 2035 Federal Priorities System. In corridors where significant new transit service was added in the 2035 RTP Federal Priorities and RTP Investment Strategy systems (i.e. light rail to Clackamas, Milwaukie and Vancouver WA), there is significant travel time savings. Comparing the 2035 No Build System to the 2035 Federal System, across the board there are reductions in travel times for the pm peak travel period. Even greater travel time savings are generated with the 2035 RTP Investment Strategy.

**Transit travel times between origin-destination pairs in 2-hour PM Peak (in minutes)**

| **Destination** | Central City West | | | | Central City East | | | | Rivergate Industrial Area | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Origin** | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | N/A | N/A | N/A | N/A | 6.6 | 7.3 | 7.0 | 7.0 | 47.8 | 54.8 | 52.1 | 52.1 |
| **Central City East** | 6.4 | 6.6 | 7.7 | 7.7 | N/A | N/A | N/A | N/A | 42.0 | 46.3 | 38.8 | 38.8 |
| **Rivergate Industrial** | 40.3 | 46.4 | 43.8 | 43.8 | 33.2 | 38.4 | 35.8 | 35.8 | N/A | N/A | N/A | N/A |
| **Portland Airport** | 34.9 | 35.8 | 35.8 | 35.8 | 27.1 | 27.4 | 27.4 | 27.4 | 74.1 | 78.7 | 70.0 | 70.0 |
| **Gateway RC** | 22.1 | 22.0 | 22.1 | 22.1 | 14.0 | 14.1 | 14.1 | 14.1 | 61.0 | 65.4 | 56.7 | 56.7 |
| **Gresham RC** | 44.0 | 44.6 | 45.0 | 45.0 | 35.7 | 36.2 | 36.5 | 36.5 | 82.7 | 87.4 | 79.1 | 79.1 |
| **Troutdale** | 68.8 | 76.8 | 69.2 | 69.2 | 58.1 | 80.4 | 80.0 | 80.0 | 105.1 | 132.3 | 123.2 | 123.1 |
| **Clackamas TC** | 33.2 | 36.9 | 36.6 | 36.6 | 42.4 | 29.9 | 29.5 | 29.5 | 88.6 | 81.2 | 72.1 | 72.1 |
| **Clackamas Industrial** | 39.6 | 56.7 | 49.7 | 47.0 | 49.0 | 49.7 | 42.6 | 39.9 | 93.4 | 101.0 | 85.2 | 82.5 |
| **Oregon City** | 40.6 | 43.5 | 55.6 | 55.2 | 50.0 | 53.5 | 54.7 | 50.5 | 94.4 | 104.1 | 106.4 | 93.1 |
| **Wilsonville** | 51.0 | 49.7 | 49.3 | 47.7 | 60.4 | 59.3 | 59.1 | 57.2 | 104.8 | 111.5 | 105.8 | 96.1 |
| **Tigard** | 30.5 | 36.0 | 35.2 | 28.0 | 39.9 | 43.3 | 43.1 | 37.5 | 84.3 | 96.6 | 91.3 | 76.3 |
| **Tualatin Industrial** | 28.4 | 40.5 | 40.1 | 38.6 | 37.8 | 50.1 | 49.9 | 48.0 | 82.2 | 96.3 | 88.9 | 86.9 |
| **Beaverton** | 21.4 | 21.3 | 21.3 | 21.3 | 30.6 | 30.9 | 31.1 | 31.1 | 74.8 | 83.2 | 77.8 | 77.8 |
| **Sunset Industrial** | 40.1 | 40.1 | 39.7 | 39.7 | 49.5 | 49.6 | 49.4 | 49.4 | 93.4 | 101.9 | 96.2 | 96.2 |
| **Hillsboro** | 44.4 | 44.4 | 44.2 | 44.2 | 53.8 | 53.9 | 53.9 | 53.9 | 97.8 | 106.2 | 100.7 | 100.7 |
| **Forest Grove** | 74.0 | 76.0 | 74.9 | 74.9 | 83.4 | 85.5 | 84.6 | 84.6 | 127.3 | 137.8 | 131.3 | 131.4 |
| **Vancouver CBD** | 26.0 | 29.4 | 29.5 | 29.5 | 33.5 | 36.6 | 21.5 | 21.5 | 53.0 | 40.8 | 24.7 | 24.7 |

**Transit travel times between origin-destination pairs in 2-hour PM Peak (in minutes)**

| Destination | Portland International Airport | | | | Gateway Regional Center | | | | Gresham Regional Center | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Origin | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 35.1 | 35.9 | 35.9 | 35.9 | 22.5 | 22.5 | 22.5 | 22.5 | 43.8 | 44.2 | 45.0 | 45.0 |
| **Central City East** | 27.4 | 27.4 | 27.4 | 27.4 | 14.4 | 14.2 | 14.1 | 14.1 | 35.6 | 36.0 | 36.5 | 36.5 |
| **Rivergate Industrial** | 68.0 | 73.2 | 70.7 | 69.1 | 50.1 | 54.1 | 51.2 | 51.1 | 72.5 | 78.1 | 75.3 | 75.3 |
| **Portland Airport** | N/A | N/A | N/A | N/A | 13.1 | 13.4 | 13.4 | 13.4 | 38.0 | 38.9 | 38.9 | 38.9 |
| **Gateway RC** | 13.0 | 13.4 | 13.4 | 13.4 | N/A | N/A | N/A | N/A | 21.1 | 21.8 | 22.5 | 22.5 |
| **Gresham RC** | 42.2 | 43.1 | 43.4 | 41.9 | 21.7 | 22.2 | 22.5 | 22.5 | N/A | N/A | N/A | N/A |
| **Troutdale** | 58.3 | 65.3 | 56.1 | 54.6 | 44.1 | 49.9 | 48.0 | 48.1 | 18.6 | 24.0 | 22.4 | 22.6 |
| **Clackamas TC** | 51.3 | 36.6 | 36.1 | 34.6 | 33.4 | 15.7 | 15.3 | 15.3 | 55.7 | 41.2 | 40.8 | 40.8 |
| **Clackamas Industrial** | 61.7 | 56.4 | 49.2 | 45.0 | 43.8 | 35.5 | 28.4 | 25.6 | 66.1 | 61.0 | 53.9 | 51.2 |
| **Oregon City** | 83.2 | 63.2 | 61.3 | 55.6 | 65.6 | 42.3 | 40.5 | 36.2 | 90.4 | 67.8 | 66.0 | 61.8 |
| **Wilsonville** | 93.6 | 91.8 | 91.8 | 90.3 | 76.0 | 73.4 | 73.1 | 72.9 | 98.5 | 96.4 | 96.4 | 96.4 |
| **Tigard** | 73.1 | 75.8 | 75.8 | 69.9 | 55.5 | 57.5 | 57.1 | 53.4 | 78.0 | 80.5 | 80.5 | 76.0 |
| **Tualatin Industrial** | 71.0 | 82.6 | 82.6 | 81.1 | 53.4 | 64.2 | 63.9 | 63.7 | 75.9 | 87.2 | 87.3 | 87.3 |
| **Beaverton** | 57.7 | 58.5 | 58.5 | 58.5 | 45.0 | 45.1 | 45.1 | 45.1 | 66.3 | 66.9 | 67.6 | 67.6 |
| **Sunset Industrial** | 82.7 | 83.1 | 83.0 | 81.5 | 63.9 | 63.9 | 63.4 | 63.4 | 85.0 | 85.6 | 86.0 | 86.0 |
| **Hillsboro** | 87.0 | 87.4 | 87.5 | 86.0 | 68.2 | 68.2 | 67.9 | 67.9 | 89.4 | 90.0 | 90.5 | 90.5 |
| **Forest Grove** | 116.6 | 119.0 | 118.2 | 116.7 | 97.8 | 99.7 | 98.6 | 98.7 | 118.9 | 121.5 | 121.1 | 121.2 |
| **Vancouver CBD** | 68.6 | 72.8 | 56.4 | 54.9 | 50.9 | 51.8 | 37.0 | 36.9 | 73.5 | 77.4 | 61.0 | 61.0 |

**Transit travel times between origin-destination pairs in 2-hour PM Peak (in minutes)**

| **Destination** | Troutdale Town Center | | | | Clackamas Regional Center | | | | Clackamas Industrial Area | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Origin** | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 69.8 | 77.7 | 74.8 | 74.9 | 38.5 | 36.9 | 36.6 | 36.6 | 42.9 | 68.9 | 53.0 | 48.4 |
| **Central City East** | 83.7 | 88.7 | 87.2 | 87.7 | 52.7 | 29.5 | 29.5 | 29.5 | 57.0 | 61.6 | 45.9 | 41.2 |
| **Rivergate Industrial** | 120.6 | 130.8 | 126.0 | 126.5 | 89.3 | 71.6 | 69.0 | 69.0 | 93.7 | 103.7 | 85.4 | 80.7 |
| **Portland Airport** | 57.7 | 67.9 | 58.9 | 59.0 | 49.4 | 32.4 | 32.4 | 32.4 | 88.3 | 64.5 | 48.8 | 44.1 |
| **Gateway RC** | 69.3 | 74.4 | 73.2 | 73.7 | 36.3 | 15.3 | 15.3 | 15.3 | 75.5 | 47.3 | 31.6 | 27.0 |
| **Gresham RC** | 18.1 | 22.7 | 20.7 | 21.2 | 58.0 | 41.2 | 41.5 | 41.5 | 97.4 | 73.2 | 57.9 | 53.2 |
| **Troutdale** | N/A | N/A | N/A | N/A | 85.6 | 68.9 | 67.0 | 67.1 | 105.1 | 101.0 | 83.3 | 78.8 |
| **Clackamas TC** | 88.7 | 93.8 | 91.5 | 92.0 | N/A | N/A | N/A | N/A | 6.7 | 17.1 | 11.4 | 8.0 |
| **Clackamas Industrial** | 99.1 | 113.6 | 104.6 | 102.4 | 9.7 | 16.1 | 9.4 | 6.6 | N/A | N/A | N/A | N/A |
| **Oregon City** | 122.0 | 120.5 | 116.7 | 113.0 | 20.3 | 22.9 | 21.5 | 17.2 | 24.7 | 31.9 | 21.4 | 9.7 |
| **Wilsonville** | 132.4 | 149.1 | 147.1 | 147.6 | 95.2 | 91.7 | 91.1 | 67.4 | 99.5 | 123.7 | 107.5 | 59.9 |
| **Tigard** | 111.9 | 133.1 | 131.2 | 111.6 | 74.6 | 76.9 | 75.9 | 68.7 | 79.0 | 109.0 | 92.3 | 57.5 |
| **Tualatin Industrial** | 109.8 | 129.5 | 117.3 | 138.5 | 72.5 | 75.6 | 73.5 | 50.8 | 76.9 | 107.6 | 89.9 | 43.2 |
| **Beaverton** | 114.4 | 119.5 | 118.3 | 118.8 | 69.9 | 63.4 | 63.1 | 63.1 | 74.3 | 95.4 | 79.5 | 67.3 |
| **Sunset Industrial** | 133.2 | 138.3 | 136.6 | 137.2 | 88.6 | 82.1 | 81.4 | 81.4 | 93.0 | 114.2 | 97.8 | 93.2 |
| **Hillsboro** | 137.5 | 142.6 | 141.1 | 141.7 | 92.9 | 86.4 | 85.9 | 85.9 | 97.3 | 118.5 | 102.3 | 97.7 |
| **Forest Grove** | 167.1 | 174.2 | 171.8 | 172.4 | 122.5 | 118.0 | 116.6 | 116.7 | 126.9 | 150.0 | 133.0 | 128.4 |
| **Vancouver CBD** | 105.9 | 122.3 | 111.7 | 112.2 | 69.6 | 67.0 | 54.8 | 54.7 | 74.0 | 99.1 | 71.1 | 66.4 |

**Transit travel times between origin-destination pairs in 2-hour PM Peak (in minutes)**

| Destination | Oregon City Regional Center | | | | Wilsonville Town Center | | | | Tigard Town Center | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Origin** | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 46.5 | 60.6 | 61.0 | 61.1 | 58.5 | 62.2 | 62.2 | 51.5 | 34.0 | 42.6 | 40.9 | 28.0 |
| **Central City East** | 55.6 | 68.2 | 67.2 | 60.3 | 72.3 | 71.9 | 71.9 | 61.2 | 45.3 | 55.9 | 55.9 | 37.7 |
| **Rivergate Industrial** | 92.3 | 112.0 | 110.2 | 99.8 | 109.3 | 112.8 | 109.8 | 96.9 | 82.3 | 96.0 | 93.4 | 73.5 |
| **Portland Airport** | 86.9 | 77.1 | 70.1 | 63.2 | 103.9 | 99.3 | 99.3 | 91.8 | 76.9 | 83.3 | 83.3 | 67.6 |
| **Gateway RC** | 74.1 | 60.0 | 53.0 | 46.1 | 91.1 | 85.9 | 85.9 | 78.4 | 64.1 | 69.9 | 69.9 | 54.0 |
| **Gresham RC** | 96.0 | 85.9 | 79.3 | 72.3 | 113.0 | 108.1 | 108.4 | 100.9 | 86.0 | 92.1 | 92.5 | 76.7 |
| **Troutdale** | 121.7 | 113.6 | 104.7 | 97.9 | 138.7 | 146.2 | 133.9 | 125.5 | 111.7 | 130.2 | 118.8 | 101.9 |
| **Clackamas TC** | 22.4 | 29.7 | 27.7 | 27.1 | 98.0 | 104.1 | 103.3 | 67.0 | 71.0 | 85.8 | 85.4 | 69.0 |
| **Clackamas Industrial** | 32.4 | 37.7 | 31.8 | 17.1 | 104.4 | 123.9 | 116.4 | 57.7 | 77.4 | 105.6 | 98.5 | 55.3 |
| **Oregon City** | N/A | N/A | N/A | N/A | 67.3 | 69.6 | 69.4 | 40.7 | 78.4 | 88.5 | 51.0 | 38.3 |
| **Wilsonville** | 73.1 | 57.3 | 56.9 | 50.2 | N/A | N/A | N/A | N/A | 57.8 | 16.0 | 16.0 | 16.0 |
| **Tigard** | 77.6 | 95.2 | 64.6 | 47.8 | 51.9 | 16.0 | 16.0 | 16.0 | N/A | N/A | N/A | N/A |
| **Tualatin Industrial** | 75.5 | 91.7 | 78.8 | 33.5 | 26.9 | 9.2 | 9.2 | 9.2 | 15.5 | 6.8 | 6.8 | 6.8 |
| **Beaverton** | 72.9 | 84.9 | 81.9 | 57.7 | 89.9 | 25.8 | 25.8 | 25.8 | 20.8 | 9.9 | 9.9 | 9.9 |
| **Sunset Industrial** | 91.6 | 103.7 | 105.7 | 83.5 | 108.5 | 59.6 | 59.2 | 51.7 | 47.5 | 43.6 | 43.2 | 35.7 |
| **Hillsboro** | 95.9 | 108.0 | 110.2 | 88.0 | 112.9 | 63.9 | 63.7 | 56.2 | 51.8 | 47.9 | 47.7 | 40.2 |
| **Forest Grove** | 125.5 | 139.6 | 140.9 | 118.7 | 142.4 | 95.5 | 94.4 | 86.9 | 87.8 | 79.5 | 78.4 | 70.9 |
| **Vancouver CBD** | 72.6 | 88.1 | 92.2 | 85.6 | 85.6 | 94.7 | 95.6 | 82.7 | 56.2 | 66.7 | 79.1 | 59.2 |

**Transit travel times between origin-destination pairs in 2-hour PM Peak (in minutes)**

| Destination | Tualatin Industrial Area | | | | Beaverton Regional Center | | | | Sunset Industrial Area | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Origin** | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 31.3 | 53.0 | 53.0 | 42.3 | 21.2 | 21.3 | 21.3 | 21.3 | 39.7 | 39.7 | 39.7 | 39.7 |
| **Central City East** | 40.1 | 54.7 | 62.7 | 52.0 | 30.7 | 31.1 | 31.1 | 31.1 | 49.3 | 49.4 | 49.4 | 49.4 |
| **Rivergate Industrial** | 77.1 | 100.6 | 98.6 | 87.8 | 63.1 | 71.9 | 69.0 | 68.8 | 82.9 | 91.5 | 88.2 | 88.2 |
| **Portland Airport** | 71.7 | 90.1 | 90.1 | 82.6 | 57.6 | 58.5 | 58.5 | 58.5 | 78.3 | 79.3 | 78.5 | 78.5 |
| **Gateway RC** | 58.9 | 76.7 | 76.7 | 69.2 | 44.7 | 45.1 | 45.1 | 45.1 | 63.3 | 63.4 | 63.4 | 63.4 |
| **Gresham RC** | 80.8 | 98.9 | 99.2 | 91.7 | 66.6 | 67.3 | 67.6 | 67.6 | 85.1 | 85.6 | 85.9 | 85.9 |
| **Troutdale** | 106.5 | 129.3 | 123.3 | 122.1 | 88.9 | 105.4 | 93.0 | 104.6 | 107.4 | 124.7 | 111.4 | 111.5 |
| **Clackamas TC** | 65.8 | 88.9 | 90.4 | 48.2 | 57.5 | 63.3 | 62.5 | 62.3 | 77.1 | 82.8 | 81.7 | 81.7 |
| **Clackamas Industrial** | 72.2 | 108.7 | 103.5 | 38.9 | 63.9 | 83.1 | 75.6 | 65.2 | 83.6 | 102.6 | 94.8 | 86.5 |
| **Oregon City** | 73.2 | 91.0 | 72.8 | 21.9 | 64.8 | 67.8 | 75.5 | 48.1 | 84.5 | 87.4 | 96.8 | 69.5 |
| **Wilsonville** | 22.3 | 9.2 | 9.2 | 9.2 | 76.0 | 25.8 | 25.8 | 25.8 | 95.0 | 47.9 | 47.2 | 47.2 |
| **Tigard** | 16.7 | 6.8 | 6.8 | 6.8 | 20.0 | 9.9 | 9.9 | 9.9 | 42.6 | 31.9 | 31.2 | 31.2 |
| **Tualatin Industrial** | N/A | N/A | N/A | N/A | 33.6 | 16.6 | 16.6 | 16.6 | 56.2 | 38.7 | 38.0 | 38.0 |
| **Beaverton** | 34.8 | 16.6 | 16.6 | 16.6 | N/A | N/A | N/A | N/A | 18.5 | 18.3 | 18.3 | 18.3 |
| **Sunset Industrial** | 68.9 | 50.4 | 50.0 | 42.5 | 18.8 | 18.8 | 18.3 | 18.3 | N/A | N/A | N/A | N/A |
| **Hillsboro** | 73.2 | 54.7 | 54.5 | 47.0 | 23.1 | 23.1 | 22.8 | 22.8 | 4.3 | 4.3 | 4.5 | 4.5 |
| **Forest Grove** | 109.4 | 86.3 | 85.2 | 77.7 | 52.7 | 54.6 | 53.5 | 53.6 | 33.9 | 35.9 | 35.2 | 35.2 |
| **Vancouver CBD** | 53.4 | 73.2 | 84.4 | 73.5 | 50.4 | 53.9 | 54.7 | 54.6 | 70.0 | 73.5 | 73.9 | 73.9 |

## Transit travel times between origin-destination pairs in 2-hour PM Peak (in minutes)

| Destination | Hillsboro Regional Center | | | | Forest Grove Town Center | | | | Vancouver City Center | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Origin** | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 44.2 | 44.2 | 44.2 | 44.2 | 78.2 | 81.3 | 81.0 | 81.0 | 30.2 | 39.6 | 29.9 | 29.9 |
| **Central City East** | 53.8 | 53.9 | 53.9 | 53.9 | 87.9 | 91.1 | 90.8 | 90.8 | 32.8 | 43.5 | 22.1 | 22.1 |
| **Rivergate Industrial** | 87.4 | 96.0 | 92.7 | 92.7 | 121.4 | 133.2 | 129.6 | 129.5 | 56.0 | 40.3 | 22.2 | 22.2 |
| **Portland Airport** | 82.8 | 83.8 | 83.0 | 83.0 | 116.8 | 120.9 | 119.9 | 119.9 | 62.1 | 70.9 | 53.2 | 53.2 |
| **Gateway RC** | 67.8 | 67.9 | 67.9 | 67.9 | 101.9 | 105.1 | 104.8 | 104.8 | 49.1 | 60.2 | 39.9 | 39.9 |
| **Gresham RC** | 89.6 | 90.1 | 90.4 | 90.4 | 123.6 | 127.3 | 127.3 | 127.3 | 70.9 | 79.7 | 62.3 | 62.3 |
| **Troutdale** | 111.9 | 129.2 | 115.9 | 116.0 | 146.0 | 166.4 | 152.7 | 152.8 | 97.9 | 123.3 | 106.4 | 106.4 |
| **Clackamas TC** | 81.6 | 87.3 | 86.2 | 86.2 | 115.7 | 124.5 | 123.0 | 123.0 | 67.4 | 75.9 | 55.3 | 55.3 |
| **Clackamas Industrial** | 88.1 | 107.1 | 99.3 | 91.0 | 122.1 | 144.3 | 136.1 | 127.9 | 73.8 | 95.7 | 68.4 | 65.7 |
| **Oregon City** | 89.0 | 91.9 | 101.3 | 74.0 | 123.1 | 129.1 | 138.2 | 110.8 | 74.8 | 87.1 | 89.7 | 76.3 |
| **Wilsonville** | 99.5 | 52.4 | 51.7 | 51.7 | 133.5 | 89.6 | 88.5 | 88.5 | 85.2 | 95.4 | 84.6 | 79.3 |
| **Tigard** | 47.1 | 36.4 | 35.7 | 35.7 | 81.1 | 73.6 | 72.6 | 72.5 | 64.7 | 79.6 | 70.0 | 59.6 |
| **Tualatin Industrial** | 60.7 | 43.2 | 42.5 | 42.5 | 94.7 | 80.4 | 79.3 | 79.3 | 62.6 | 81.2 | 67.6 | 70.1 |
| **Beaverton** | 23.0 | 22.8 | 22.8 | 22.8 | 57.0 | 60.0 | 59.7 | 59.7 | 57.7 | 67.1 | 56.6 | 56.6 |
| **Sunset Industrial** | 4.5 | 4.5 | 4.5 | 4.5 | 38.5 | 41.6 | 41.4 | 41.3 | 76.4 | 85.8 | 75.0 | 75.0 |
| **Hillsboro** | N/A | N/A | N/A | N/A | 25.0 | 28.1 | 27.8 | 27.8 | 80.7 | 90.1 | 79.5 | 79.5 |
| **Forest Grove** | 24.2 | 26.2 | 26.1 | 26.1 | N/A | N/A | N/A | N/A | 110.3 | 121.7 | 110.2 | 110.2 |
| **Vancouver CBD** | 74.5 | 78.0 | 78.4 | 78.4 | 108.6 | 115.1 | 115.3 | 115.3 | N/A | N/A | N/A | N/A |

## Transit travel times between origin-destination pairs in 1-hour mid-day (in minutes)

| Destination | Central City West | | | | Central City East | | | | Rivergate Industrial Area | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Origin** | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | N/A | N/A | N/A | N/A | 7.4 | 7.8 | 6.7 | 6.7 | N/A | N/A | N/A | N/A |
| **Central City East** | 8.1 | 8.0 | 7.2 | 7.2 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Rivergate Industrial** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Portland Airport** | 34.9 | 35.8 | 35.8 | 35.8 | 27.1 | 27.4 | 27.4 | 27.4 | N/A | N/A | N/A | N/A |
| **Gateway RC** | 22.1 | 22.1 | 22.1 | 22.1 | 14.0 | 14.1 | 14.1 | 14.1 | N/A | N/A | N/A | N/A |
| **Gresham RC** | 44.0 | 44.6 | 45.0 | 45.0 | 35.7 | 36.2 | 36.5 | 36.5 | N/A | N/A | N/A | N/A |
| **Troutdale** | 69.1 | 74.6 | 73.4 | 73.1 | 58.5 | 60.3 | 79.0 | 78.7 | N/A | N/A | N/A | N/A |
| **Clackamas TC** | 46.3 | 36.9 | 36.6 | 36.6 | 41.3 | 29.9 | 29.5 | 29.5 | N/A | N/A | N/A | N/A |
| **Clackamas Industrial** | 45.2 | 47.6 | 53.0 | 48.8 | 57.7 | 47.0 | 45.9 | 41.8 | N/A | N/A | N/A | N/A |
| **Oregon City** | 39.0 | 41.5 | 57.0 | 57.2 | 48.5 | 54.7 | 57.3 | 51.2 | N/A | N/A | N/A | N/A |
| **Wilsonville** | 81.7 | 67.4 | 63.1 | 50.0 | 91.2 | 83.4 | 72.8 | 59.5 | N/A | N/A | N/A | N/A |
| **Tigard** | 30.5 | 34.4 | 31.5 | 28.0 | 40.1 | 46.2 | 41.2 | 37.5 | N/A | N/A | N/A | N/A |
| **Tualatin Industrial** | 26.7 | 31.9 | 57.3 | 40.8 | 36.2 | 43.4 | 67.0 | 50.3 | N/A | N/A | N/A | N/A |
| **Beaverton** | 21.4 | 21.3 | 21.3 | 21.3 | 30.6 | 30.9 | 31.1 | 31.1 | N/A | N/A | N/A | N/A |
| **Sunset Industrial** | 40.1 | 40.1 | 39.7 | 39.7 | 49.5 | 49.6 | 49.4 | 49.4 | N/A | N/A | N/A | N/A |
| **Hillsboro** | 44.4 | 44.4 | 44.2 | 44.2 | 53.8 | 53.9 | 53.9 | 53.9 | N/A | N/A | N/A | N/A |
| **Forest Grove** | 74.3 | 76.0 | 78.2 | 76.8 | 83.7 | 85.6 | 88.0 | 86.5 | N/A | N/A | N/A | N/A |
| **Vancouver CBD** | 25.7 | 29.5 | 29.5 | 29.5 | 36.2 | 38.6 | 21.5 | 21.5 | N/A | N/A | N/A | N/A |

**Transit travel times between origin-destination pairs in 1-hour mid-day (in minutes)**

| **Destination** | Portland International Airport | | | | Gateway Regional Center | | | | Gresham Regional Center | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Origin** | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 35.1 | 35.9 | 35.9 | 35.9 | 22.4 | 22.5 | 22.5 | 22.5 | 43.8 | 44.2 | 45.0 | 45.0 |
| **Central City East** | 27.4 | 27.4 | 27.4 | 27.4 | 14.4 | 14.2 | 14.1 | 14.1 | 35.6 | 36.0 | 36.5 | 36.5 |
| **Rivergate Industrial** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Portland Airport** | N/A | N/A | N/A | N/A | 13.1 | 13.4 | 13.4 | 13.4 | 39.3 | 40.2 | 43.4 | 41.9 |
| **Gateway RC** | 13.0 | 13.4 | 13.4 | 13.4 | N/A | N/A | N/A | N/A | 21.1 | 21.8 | 22.5 | 22.5 |
| **Gresham RC** | 42.2 | 43.1 | 43.4 | 41.9 | 21.7 | 22.2 | 22.5 | 22.5 | N/A | N/A | N/A | N/A |
| **Troutdale** | 58.0 | 63.5 | 63.6 | 61.8 | 44.5 | 46.3 | 48.6 | 47.3 | 17.7 | 19.1 | 18.6 | 18.8 |
| **Clackamas TC** | 49.6 | 36.6 | 36.2 | 34.7 | 32.2 | 15.7 | 15.3 | 15.3 | 55.3 | 42.5 | 45.3 | 43.8 |
| **Clackamas Industrial** | 59.5 | 54.7 | 52.5 | 46.9 | 42.0 | 32.8 | 31.6 | 27.5 | 65.2 | 60.7 | 61.6 | 56.1 |
| **Oregon City** | 81.6 | 64.8 | 63.9 | 56.3 | 64.4 | 43.9 | 43.0 | 36.9 | 84.6 | 70.6 | 73.1 | 65.5 |
| **Wilsonville** | 124.3 | 116.6 | 106.4 | 90.3 | 107.1 | 100.1 | 89.0 | 73.9 | 129.6 | 121.8 | 115.6 | 99.4 |
| **Tigard** | 73.1 | 77.7 | 74.9 | 69.9 | 55.9 | 60.0 | 57.5 | 53.5 | 78.5 | 83.6 | 84.0 | 74.1 |
| **Tualatin Industrial** | 69.3 | 82.6 | 98.1 | 81.1 | 52.1 | 60.1 | 81.0 | 64.7 | 74.7 | 81.8 | 107.3 | 90.3 |
| **Beaverton** | 57.7 | 58.5 | 58.5 | 58.5 | 45.0 | 45.1 | 45.1 | 45.1 | 66.3 | 66.9 | 67.6 | 67.6 |
| **Sunset Industrial** | 82.7 | 83.1 | 83.0 | 81.5 | 63.9 | 63.9 | 63.4 | 63.4 | 85.0 | 85.6 | 86.0 | 86.0 |
| **Hillsboro** | 87.0 | 87.4 | 87.5 | 86.0 | 68.2 | 68.2 | 67.9 | 67.9 | 89.4 | 90.0 | 90.5 | 90.5 |
| **Forest Grove** | 123.4 | 119.1 | 127.3 | 125.8 | 98.1 | 99.8 | 102.0 | 100.5 | 119.3 | 121.6 | 124.5 | 123.1 |
| **Vancouver CBD** | 75.1 | 75.7 | 56.4 | 54.9 | 57.7 | 55.0 | 38.1 | 37.6 | 80.9 | 79.5 | 65.5 | 64.0 |

## Transit travel times between origin-destination pairs in 1-hour mid-day (in minutes)

| Destination | Troutdale Town Center | | | | Clackamas Regional Center | | | | Clackamas industrial Area | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Origin** | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 64.9 | 69.4 | 66.0 | 66.1 | 46.8 | 36.9 | 36.6 | 36.6 | 67.9 | 56.1 | 56.4 | 46.4 |
| **Central City East** | 82.3 | 83.7 | 83.4 | 83.3 | 42.6 | 29.5 | 29.5 | 29.5 | 81.2 | 51.0 | 49.3 | 39.2 |
| **Rivergate Industrial** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Portland Airport** | 56.0 | 64.3 | 61.7 | 61.7 | 46.7 | 36.2 | 36.2 | 34.7 | 67.1 | 57.6 | 56.0 | 44.4 |
| **Gateway RC** | 68.8 | 70.8 | 70.9 | 71.1 | 33.6 | 15.3 | 15.3 | 15.3 | 53.9 | 36.7 | 35.1 | 25.0 |
| **Gresham RC** | 17.7 | 19.0 | 18.4 | 18.6 | 55.3 | 45.0 | 45.3 | 43.8 | 75.7 | 66.4 | 65.1 | 53.5 |
| **Troutdale** | N/A | N/A | N/A | N/A | 82.6 | 69.0 | 71.3 | 59.0 | 103.0 | 96.1 | 91.2 | 68.7 |
| **Clackamas TC** | 85.0 | 91.5 | 93.7 | 82.7 | N/A | N/A | N/A | N/A | 6.1 | 6.5 | 9.8 | 6.0 |
| **Clackamas Industrial** | 94.9 | 99.5 | 110.1 | 95.0 | 6.2 | 9.6 | 8.9 | 6.3 | N/A | N/A | N/A | N/A |
| **Oregon City** | 116.3 | 125.4 | 121.5 | 104.3 | 19.0 | 20.7 | 20.3 | 15.6 | 44.2 | 30.3 | 25.4 | 8.7 |
| **Wilsonville** | 159.0 | 159.2 | 145.6 | 132.2 | 107.4 | 115.3 | 107.7 | 52.5 | 132.6 | 126.8 | 117.8 | 45.5 |
| **Tigard** | 107.8 | 121.1 | 114.0 | 110.3 | 78.5 | 78.1 | 76.1 | 50.01 | 99.6 | 91.6 | 83.7 | 43.1 |
| **Tualatin Industrial** | 104.0 | 119.2 | 145.9 | 123.0 | 74.7 | 75.3 | 102.8 | 35.8 | 95.8 | 86.8 | 105.2 | 28.8 |
| **Beaverton** | 107.9 | 115.9 | 109.9 | 110.1 | 73.1 | 67.1 | 66.9 | 65.4 | 96.9 | 84.9 | 86.7 | 53.0 |
| **Sunset Industrial** | 132.7 | 134.6 | 134.4 | 134.6 | 92.0 | 85.9 | 85.2 | 83.7 | 115.5 | 103.7 | 105.0 | 78.8 |
| **Hillsboro** | 137.0 | 139.0 | 138.9 | 139.1 | 96.4 | 90.2 | 89.7 | 88.2 | 119.9 | 108.0 | 109.5 | 83.3 |
| **Forest Grove** | 167.0 | 170.6 | 172.9 | 171.7 | 126.3 | 121.8 | 123.8 | 120.8 | 149.8 | 139.6 | 143.6 | 121.7 |
| **Vancouver CBD** | 102.1 | 115.5 | 112.4 | 112.3 | 74.1 | 70.9 | 58.5 | 57.0 | 95.3 | 87.3 | 78.3 | 66.7 |

**Transit travel times between origin-destination pairs in 1-hour mid-day (in minutes)**

| Destination | Oregon City Regional Center | | | | Wilsonville Town Center | | | | Tigard Town Center | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Origin | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 39.4 | 42.5 | 57.1 | 57.8 | 104.5 | 75.6 | 70.9 | 51.5 | 30.8 | 34.3 | 31.4 | 28.0 |
| **Central City East** | 55.8 | 65.9 | 65.2 | 54.0 | 120.9 | 91.5 | 87.2 | 61.2 | 47.2 | 50.2 | 47.7 | 37.7 |
| **Rivergate Industrial** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Portland Airport** | 82.6 | 72.6 | 71.8 | 59.1 | 147.7 | 119.7 | 114.8 | 91.8 | 74.0 | 78.4 | 75.2 | 69.9 |
| **Gateway RC** | 69.8 | 51.7 | 50.9 | 39.7 | 134.9 | 105.5 | 101.0 | 78.4 | 61.2 | 64.3 | 61.5 | 56.3 |
| **Gresham RC** | 91.7 | 81.4 | 80.9 | 68.4 | 156.8 | 128.5 | 123.9 | 100.9 | 83.1 | 87.2 | 84.4 | 79.0 |
| **Troutdale** | 118.1 | 105.4 | 107.0 | 83.4 | 183.2 | 158.8 | 153.1 | 125.7 | 109.5 | 118.4 | 113.6 | 108.1 |
| **Clackamas TC** | 19.4 | 21.4 | 20.7 | 16.9 | 122.3 | 119.3 | 115.5 | 54.3 | 76.4 | 78.0 | 76.0 | 51.8 |
| **Clackamas Industrial** | 29.4 | 31.4 | 31.3 | 10.0 | 132.3 | 125.6 | 131.9 | 47.0 | 78.4 | 84.3 | 92.4 | 44.9 |
| **Oregon City** | N/A | N/A | N/A | N/A | 88.2 | 70.2 | 69.5 | 37.3 | 72.2 | 78.2 | 42.6 | 39.1 |
| **Wilsonville** | 73.2 | 77.4 | 77.2 | 36.9 | N/A | N/A | N/A | N/A | 71.8 | 52.4 | 48.4 | 16.0 |
| **Tigard** | 71.1 | 76.2 | 43.0 | 34.4 | 94.3 | 51.4 | 64.2 | 16.0 | N/A | N/A | N/A | N/A |
| **Tualatin Industrial** | 67.3 | 80.7 | 64.5 | 20.2 | 122.4 | 46.6 | 59.5 | 9.2 | 12.5 | 16.0 | 14.8 | 6.8 |
| **Beaverton** | 68.4 | 78.9 | 64.1 | 44.3 | 133.4 | 70.0 | 82.4 | 25.8 | 18.2 | 20.3 | 17.8 | 9.9 |
| **Sunset Industrial** | 87.0 | 97.6 | 89.9 | 70.1 | 152.1 | 103.8 | 108.2 | 51.7 | 44.8 | 46.6 | 39.9 | 35.7 |
| **Hillsboro** | 91.4 | 102.0 | 94.4 | 74.6 | 156.4 | 108.1 | 112.7 | 56.2 | 49.2 | 50.9 | 44.4 | 40.2 |
| **Forest Grove** | 121.3 | 133.6 | 132.1 | 121.7 | 186.4 | 147.0 | 150.5 | 94.6 | 81.7 | 89.7 | 82.1 | 78.7 |
| **Vancouver CBD** | 66.8 | 81.2 | 88.3 | 66.7 | 125.3 | 100.1 | 109.2 | 82.7 | 51.6 | 58.8 | 69.7 | 59.2 |

**Transit travel times between origin-destination pairs in 1-hour mid-day (in minutes)**

| Destination | Tualatin Industrial Area | | | | Beaverton Regional Center | | | | Sunset Industrial Area | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Origin** | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 26.1 | 47.5 | 54.3 | 42.3 | 21.3 | 21.3 | 21.3 | 21.3 | 39.7 | 39.7 | 39.7 | 39.7 |
| **Central City East** | 49.9 | 59.6 | 71.3 | 52.0 | 30.7 | 31.1 | 31.1 | 31.1 | 49.3 | 49.4 | 49.4 | 49.4 |
| **Rivergate Industrial** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Portland Airport** | 76.7 | 84.7 | 98.6 | 82.6 | 57.6 | 58.5 | 58.5 | 58.5 | 79.6 | 80.5 | 83.0 | 81.5 |
| **Gateway RC** | 63.9 | 69.1 | 85.3 | 65.6 | 44.7 | 45.1 | 45.1 | 45.1 | 63.3 | 63.4 | 63.4 | 63.4 |
| **Gresham RC** | 85.9 | 93.5 | 107.8 | 91.7 | 66.6 | 67.3 | 67.6 | 67.6 | 85.1 | 85.6 | 85.9 | 85.9 |
| **Troutdale** | 112.3 | 124.3 | 133.8 | 116.5 | 89.3 | 91.3 | 93.7 | 92.4 | 107.8 | 109.7 | 112.0 | 110.7 |
| **Clackamas TC** | 75.0 | 84.7 | 98.9 | 35.5 | 71.9 | 63.8 | 64.1 | 63.3 | 92.6 | 84.1 | 86.2 | 84.7 |
| **Clackamas Industrial** | 81.2 | 90.5 | 115.3 | 28.6 | 70.2 | 72.7 | 80.5 | 54.7 | 90.6 | 93.0 | 102.5 | 79.1 |
| **Oregon City** | 75.0 | 84.5 | 63.8 | 18.6 | 64.0 | 66.6 | 62.9 | 44.8 | 84.4 | 87.0 | 88.7 | 69.1 |
| **Wilsonville** | 100.4 | 47.5 | 36.7 | 9.2 | 97.6 | 70.4 | 60.5 | 25.8 | 127.1 | 93.7 | 86.4 | 50.2 |
| **Tigard** | 13.6 | 16.1 | 14.4 | 6.8 | 17.8 | 19.7 | 17.0 | 9.9 | 41.7 | 43.1 | 42.9 | 34.2 |
| **Tualatin Industrial** | N/A | N/A | N/A | N/A | 28.5 | 34.0 | 32.2 | 16.6 | 52.3 | 57.4 | 58.0 | 41.0 |
| **Beaverton** | 29.1 | 34.7 | 32.7 | 16.6 | N/A | N/A | N/A | N/A | 18.5 | 18.3 | 18.3 | 18.3 |
| **Sunset Industrial** | 63.2 | 68.4 | 58.5 | 42.5 | 18.8 | 18.8 | 18.3 | 18.3 | N/A | N/A | N/A | N/A |
| **Hillsboro** | 67.5 | 72.8 | 63.0 | 47.0 | 23.1 | 23.1 | 22.8 | 22.8 | 4.3 | 4.3 | 4.5 | 4.5 |
| **Forest Grove** | 100.2 | 111.6 | 100.7 | 85.4 | 57.8 | 54.7 | 61.3 | 61.3 | 34.3 | 36.0 | 38.6 | 37.1 |
| **Vancouver CBD** | 56.7 | 69.1 | 92.6 | 73.5 | 50.6 | 54.5 | 56.3 | 55.6 | 71.0 | 74.9 | 78.4 | 76.9 |

**Transit travel times between origin-destination pairs in 1-hour mid-day (in minutes)**

| Destination | Hillsboro Regional Center | | | | Forest Grove Town Center | | | | Vancouver City Center | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Origin | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
| **Central City West** | 44.2 | 44.2 | 44.2 | 44.2 | 76.3 | 78.0 | 77.9 | 78.0 | 26.6 | 30.6 | 29.9 | 29.9 |
| **Central City East** | 53.8 | 53.9 | 53.9 | 53.9 | 86.0 | 87.7 | 87.6 | 87.8 | 50.0 | 56.3 | 22.1 | 22.1 |
| **Rivergate Industrial** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Portland Airport** | 84.1 | 85.0 | 87.5 | 86.0 | 116.2 | 118.8 | 121.2 | 119.9 | 78.9 | 82.3 | 56.9 | 55.4 |
| **Gateway RC** | 67.8 | 67.9 | 67.9 | 67.9 | 100.0 | 101.7 | 101.6 | 101.8 | 65.9 | 69.7 | 43.6 | 42.1 |
| **Gresham RC** | 89.6 | 90.1 | 90.4 | 90.4 | 121.7 | 123.9 | 124.1 | 124.3 | 87.7 | 91.1 | 66.1 | 64.6 |
| **Troutdale** | 112.3 | 114.2 | 116.5 | 115.2 | 144.4 | 148.0 | 150.2 | 149.0 | 114.2 | 132.2 | 109.1 | 107.3 |
| **Clackamas TC** | 97.1 | 88.6 | 90.7 | 89.2 | 129.2 | 122.4 | 124.4 | 123.0 | 92.9 | 87.3 | 59.1 | 57.6 |
| **Clackamas Industrial** | 95.1 | 97.5 | 107.0 | 83.6 | 127.3 | 131.3 | 140.7 | 117.4 | 97.6 | 104.1 | 75.4 | 69.8 |
| **Oregon City** | 88.9 | 91.5 | 93.2 | 73.6 | 121.1 | 125.3 | 133.3 | 107.4 | 91.4 | 98.0 | 88.5 | 79.2 |
| **Wilsonville** | 131.6 | 98.2 | 90.9 | 54.7 | 163.8 | 132.0 | 130.9 | 88.5 | 134.1 | 129.4 | 101.8 | 81.5 |
| **Tigard** | 46.2 | 47.6 | 47.4 | 38.7 | 83.8 | 81.4 | 87.4 | 72.5 | 82.9 | 90.9 | 70.2 | 59.6 |
| **Tualatin Industrial** | 56.8 | 61.9 | 62.5 | 45.5 | 94.6 | 95.7 | 102.5 | 79.3 | 79.1 | 89.4 | 96.3 | 72.4 |
| **Beaverton** | 23.0 | 22.8 | 22.8 | 22.8 | 59.4 | 56.7 | 56.5 | 56.7 | 75.0 | 79.0 | 60.4 | 58.9 |
| **Sunset Industrial** | 4.5 | 4.5 | 4.5 | 4.5 | 36.6 | 38.3 | 38.2 | 38.3 | 93.7 | 97.7 | 78.7 | 77.2 |
| **Hillsboro** | N/A | N/A | N/A | N/A | 23.1 | 24.7 | 24.6 | 24.8 | 98.0 | 102.1 | 83.2 | 81.7 |
| **Forest Grove** | 23.3 | 25.0 | 25.0 | 25.0 | N/A | N/A | N/A | N/A | 127.9 | 133.7 | 117.3 | 114.3 |
| **Vancouver CBD** | 75.5 | 79.4 | 82.9 | 81.4 | 107.6 | 113.2 | 116.6 | 115.3 | N/A | N/A | N/A | N/A |

## 4. Congestion - Location of throughways, arterials, and regional freight network facilities that exceed threshold for the interim regional mobility policy[2]

*Data source:* Metro travel forecast model

*Description:* Identifies number of network miles and locations that exceed the interim regional mobility policy for congestion in the mid-day and pm peak.

*Target direction:* Reduce total miles of throughways and arterials that exceed the interim regional mobility policy thresholds for congestion.

*Findings:* All three 2035 systems increase the number of congested network miles of congestion over 2005. In 2035,network miles of congestion in the region are reduced by 17 -18% in each travel period in the 2035 Federal Priorities system compared to the 2035 No Build. Overall, the 2035 Investment Strategy shows the lowest number of congested network miles in the four-county region and within the urban growth boundary; 4-7% lower than the 2035 Federal Priorities System.

| Location | 2005 Base Year | | 2035 No Build | | 2035 RTP Federal Priorities System | | 2035 RTP Investment Strategy | |
|---|---|---|---|---|---|---|---|---|
| | PM Peak | Mid Day | PM Peak | Mid Day | PM Peak | Mid Day | PM Peak | Mid Day |
| Network miles of congestion in the region* | 90 | 31 | 440 | 151 | 365 | 146 | 402 | 80 |
| Network miles of congestion within the UGB | 118 | 29 | 243 | 134 | 244 | 121 | 320 | 72 |

*Regional data includes Clark, Clackamas, Multnomah and Washington counties

[2] See Chapter 2, Table 2.4

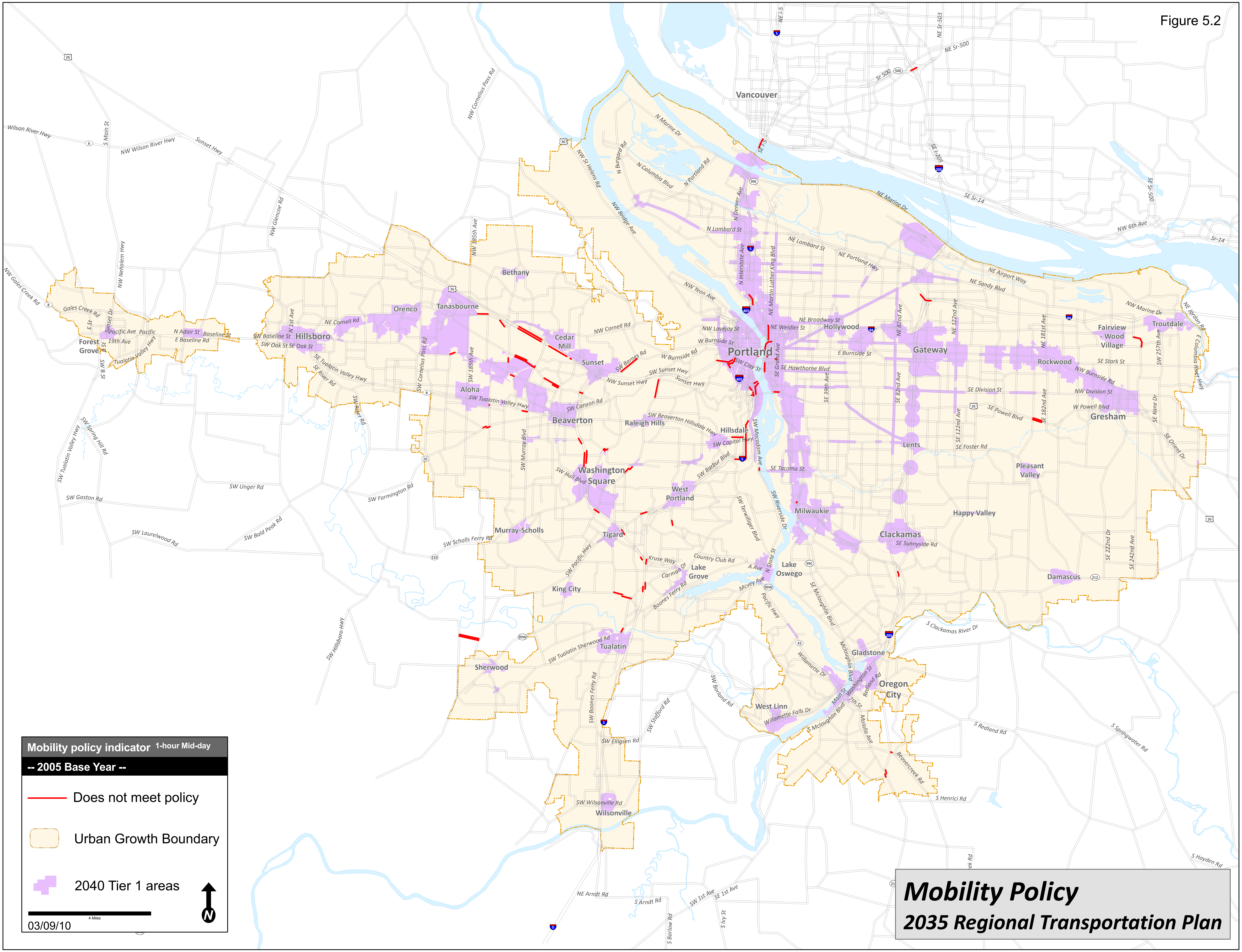


Figure 5.2
Mobility Policy
2035 Regional Transportation Plan
Mobility policy indicator 1-hour Mid-day
-- 2005 Base Year --
Does not meet policy
Urban Growth Boundary
2040 Tier 1 areas
4 Miles
N
03/09/10
Vancouver
Portland
Hillsboro
Forest Grove
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
Aloha
Beaverton
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray-Scholls
Tigard
King City
Lake Grove
Lake Oswego
Tualatin
Sherwood
Wilsonville
West Linn
Oregon City
Gladstone
Milwaukie
Clackamas
Happy Valley
Pleasant Valley
Damascus
Lents
Gateway
Hollywood
Rockwood
Gresham
Fairview - Wood Village
Troutdale

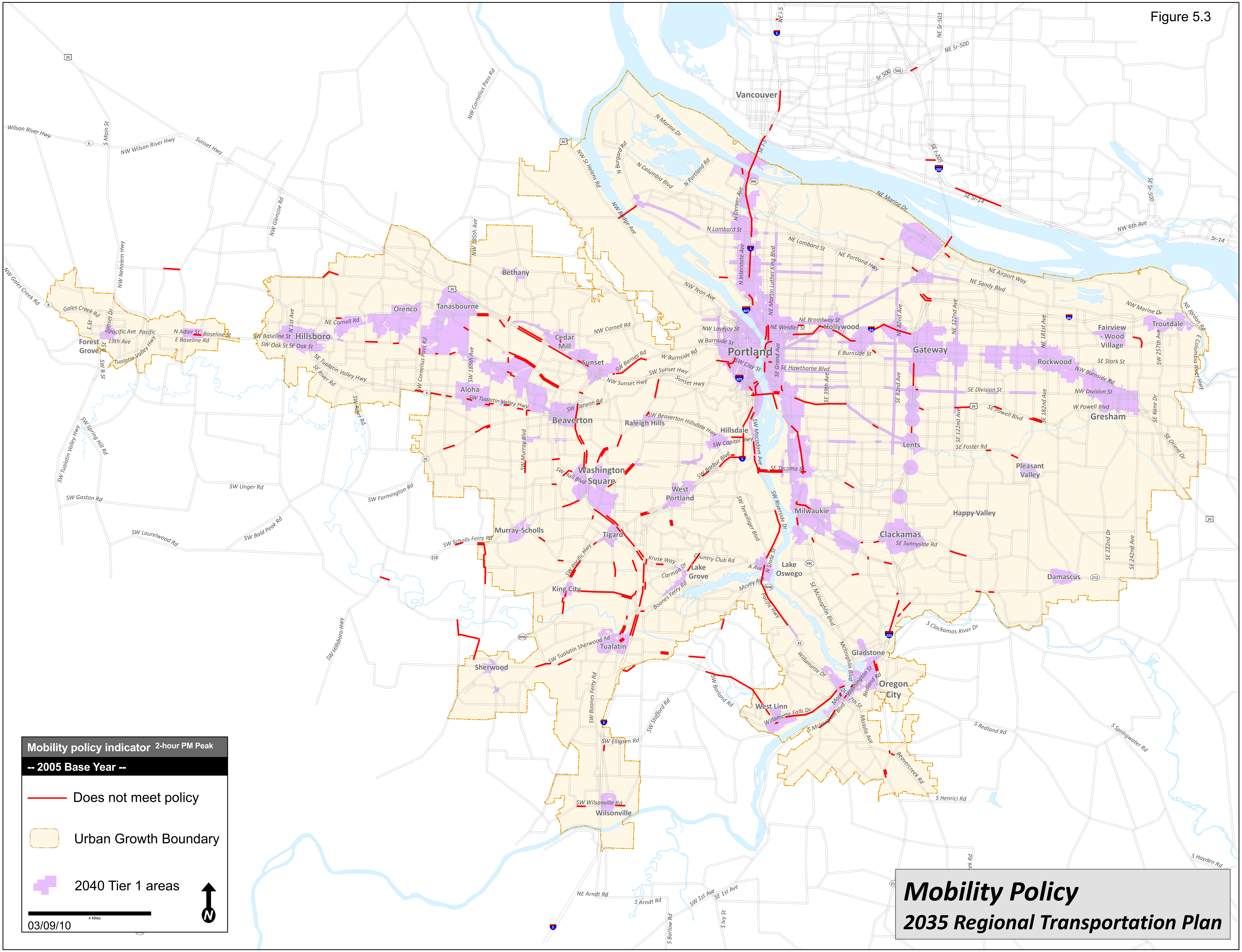
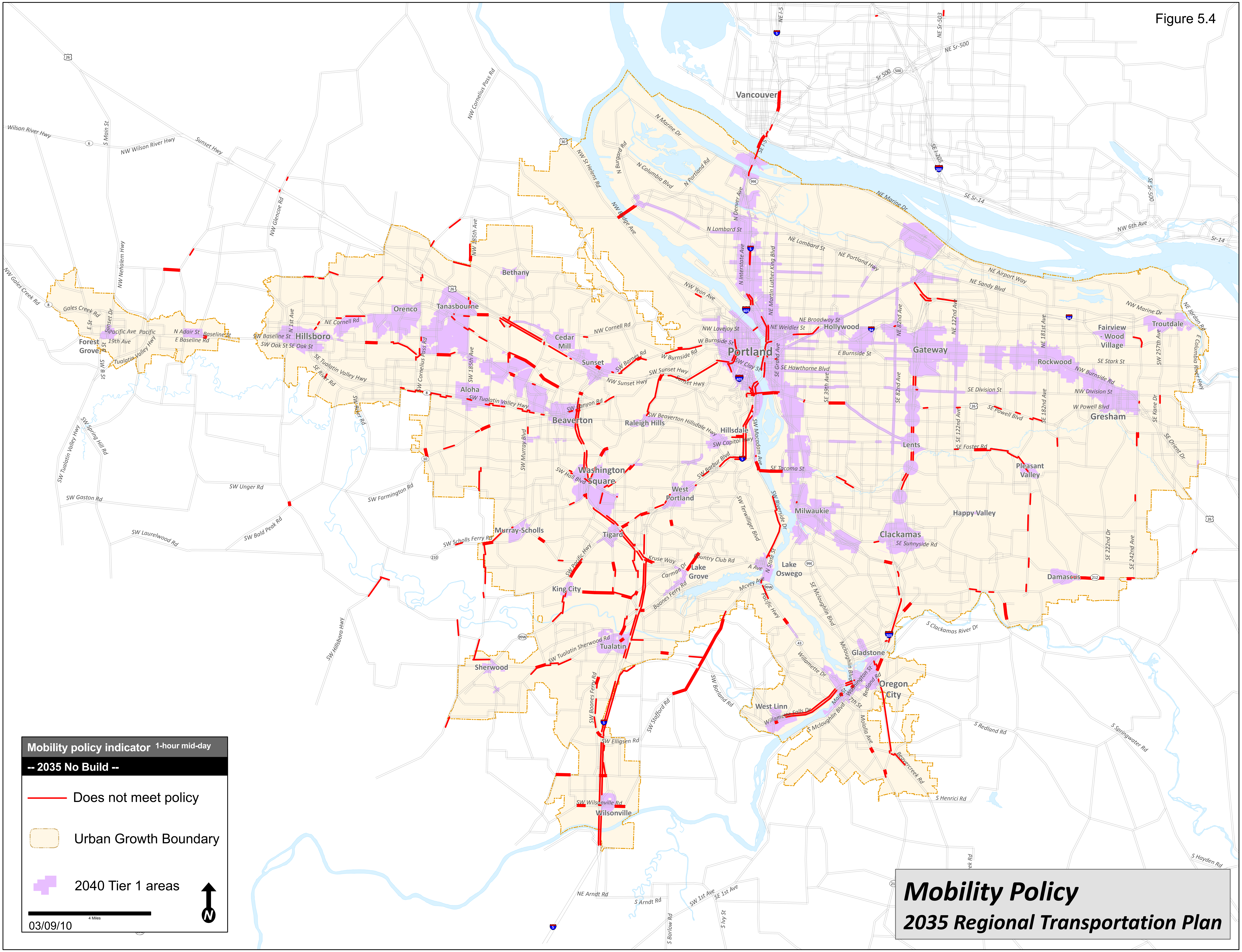


Figure 5.3
Mobility Policy
2035 Regional Transportation Plan
Mobility policy indicator 2-hour PM Peak
-- 2005 Base Year --
Does not meet policy
Urban Growth Boundary
2040 Tier 1 areas
4 Miles
N
03/09/10
Vancouver
Portland
Hillsboro
Forest Grove
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
Aloha
Beaverton
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray-Scholls
Tigard
King City
Lake Grove
Lake Oswego
Tualatin
Sherwood
Wilsonville
West Linn
Oregon City
Gladstone
Milwaukie
Clackamas
Happy Valley
Damascus
Pleasant Valley
Lents
Gateway
Hollywood
Rockwood
Gresham
Fairview - Wood Village
Troutdale

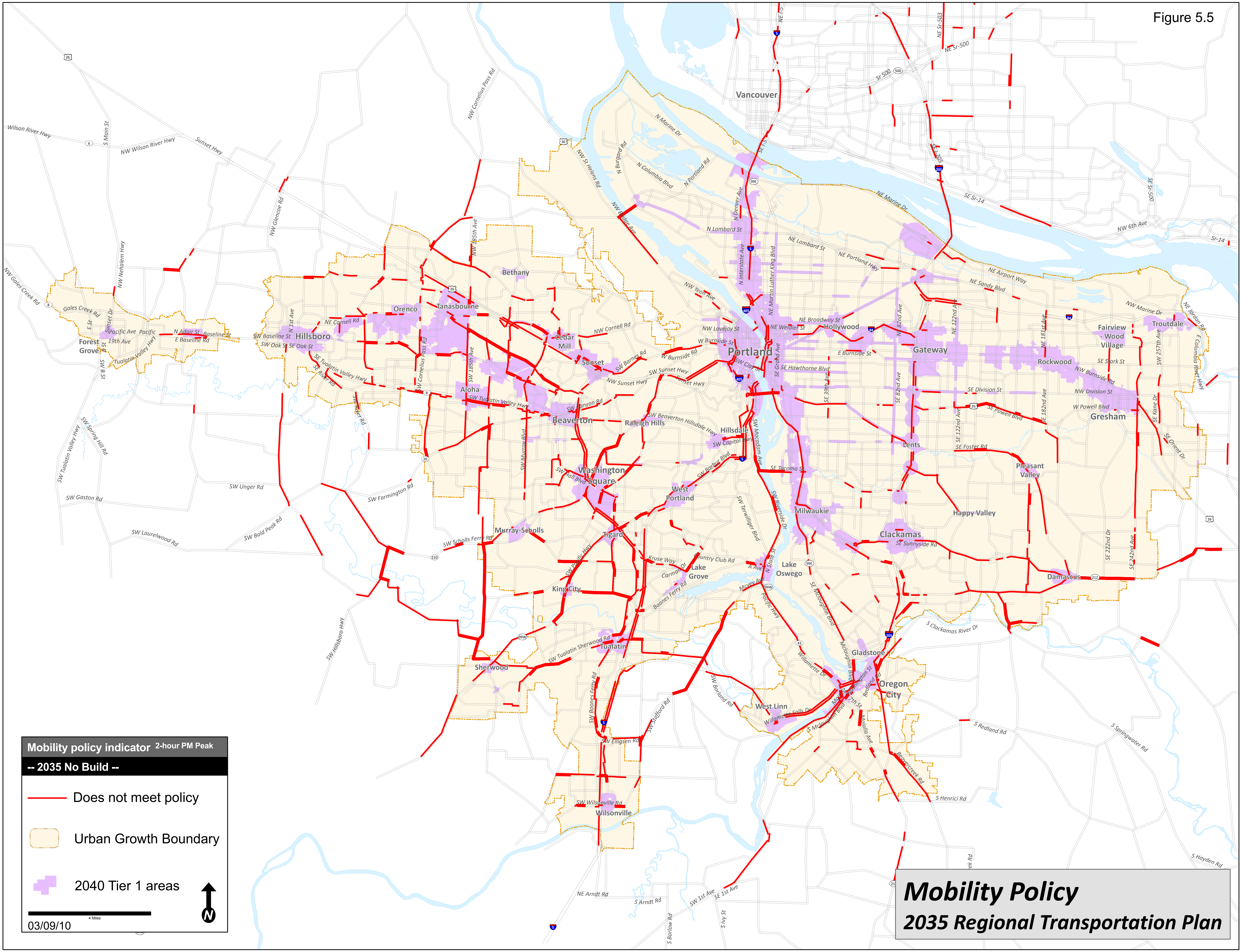
Figure 5.4




# Mobility Policy

## 2035 Regional Transportation Plan

Figure 5.5



Vancouver
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Hillsboro
Forest Grove
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
Aloha
Beaverton
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray-Scholls
Tigard
King City
Lake Grove
Lake Oswego
Tualatin
Sherwood
Wilsonville
West Linn
Gladstone
Oregon City
Milwaukie
Clackamas
Happy Valley
Pleasant Valley
Damascus
Lents
Gateway
Hollywood
Rockwood
Gresham
Fairview - Wood Village
Troutdale
Mobility policy indicator 2-hour PM Peak
-- 2035 No Build --
Does not meet policy
Urban Growth Boundary
2040 Tier 1 areas
4 Miles
03/09/10
N
Mobility Policy
2035 Regional Transportation Plan

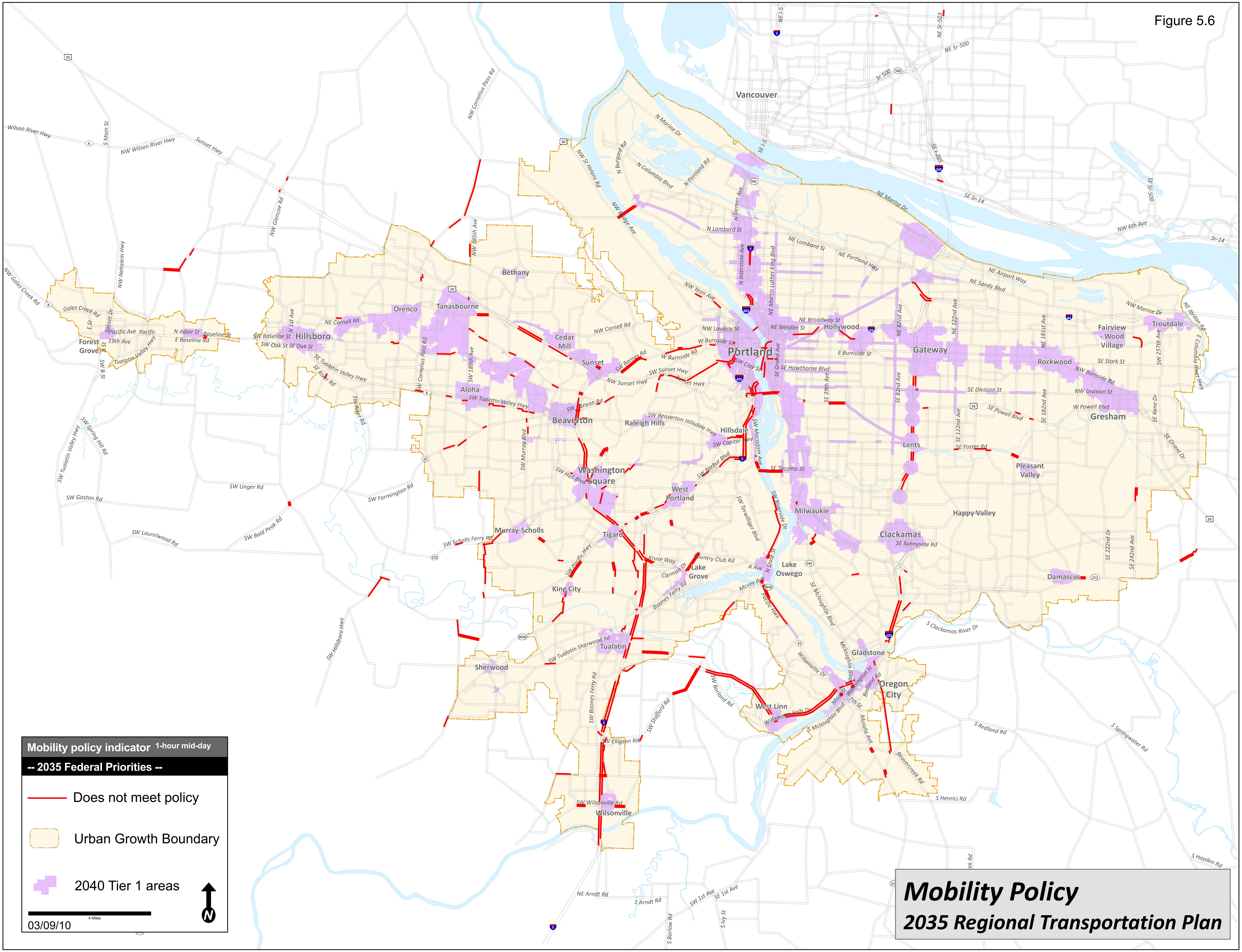
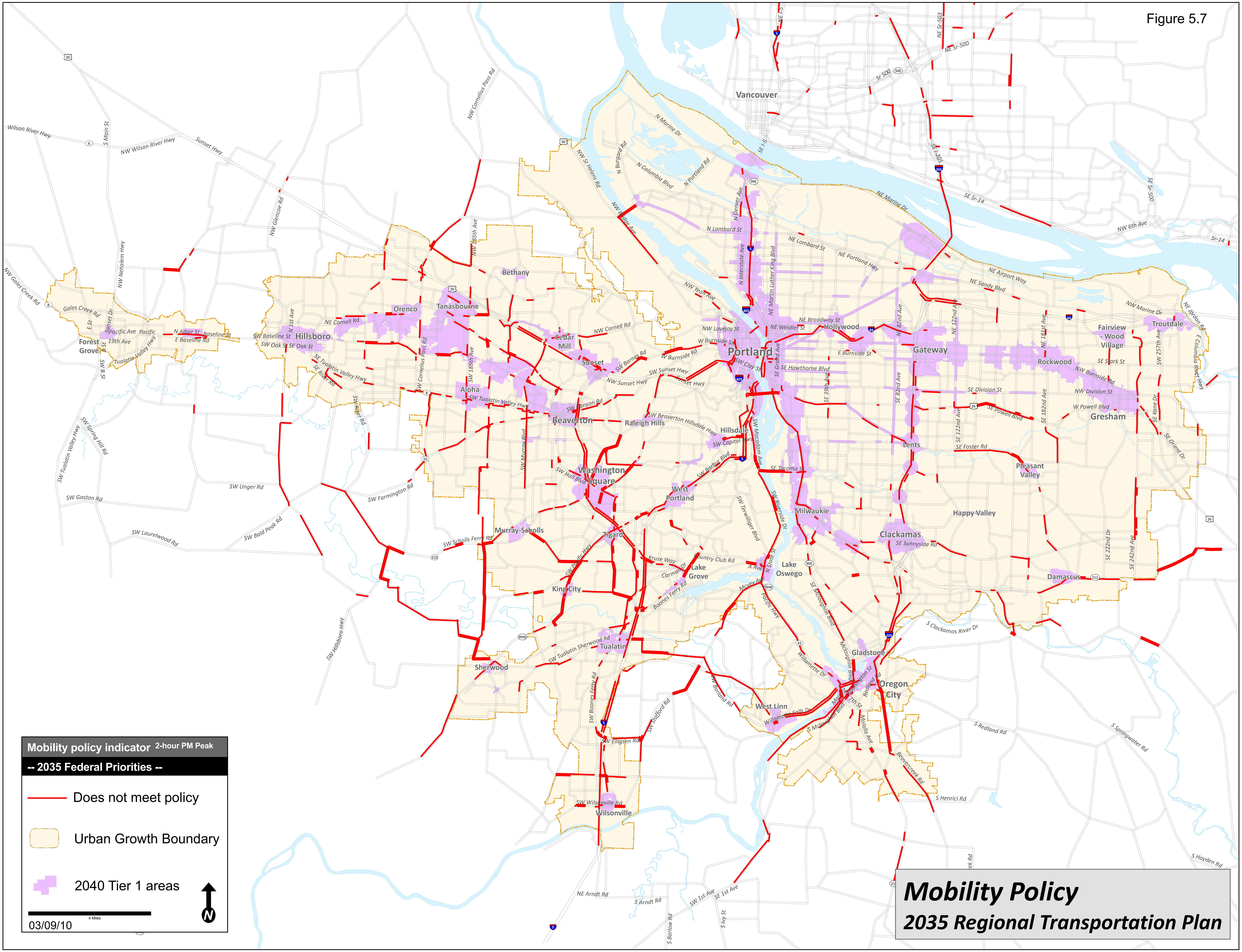


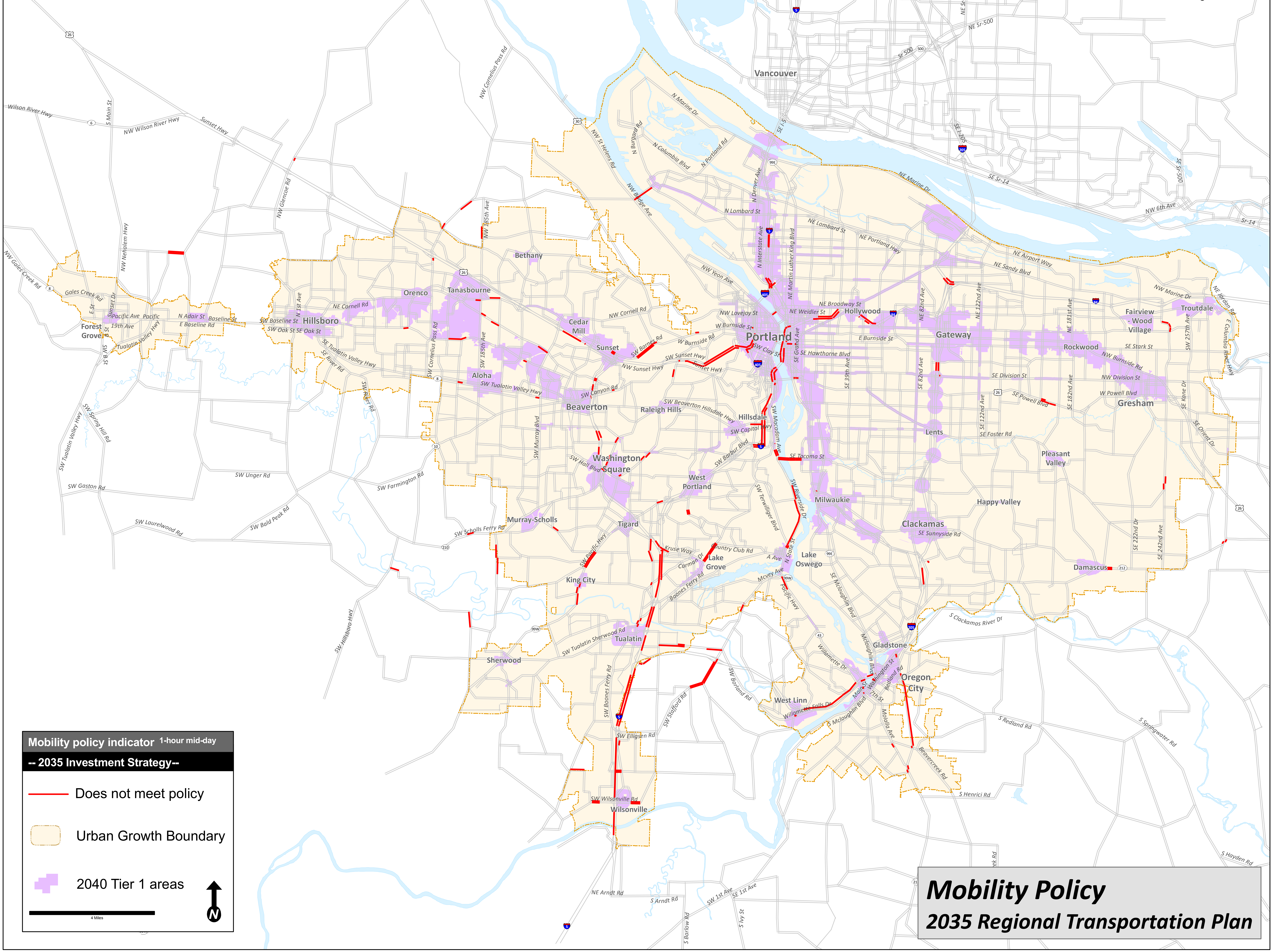
Figure 5.6
Mobility Policy
2035 Regional Transportation Plan
Mobility policy indicator 1-hour mid-day
-- 2035 Federal Priorities --
Does not meet policy
Urban Growth Boundary
2040 Tier 1 areas
4 Miles
03/09/10
N
Vancouver
Portland
Hollywood
Gateway
Rockwood
Gresham
Fairview - Wood Village
Troutdale
Hillsboro
Forest Grove
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
Aloha
Beaverton
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray-Scholls
Tigard
King City
Lake Grove
Lake Oswego
Milwaukie
Clackamas
Happy Valley
Lents
Pleasant Valley
Damascus
Gladstone
Oregon City
West Linn
Tualatin
Sherwood
Wilsonville

Figure 5.7



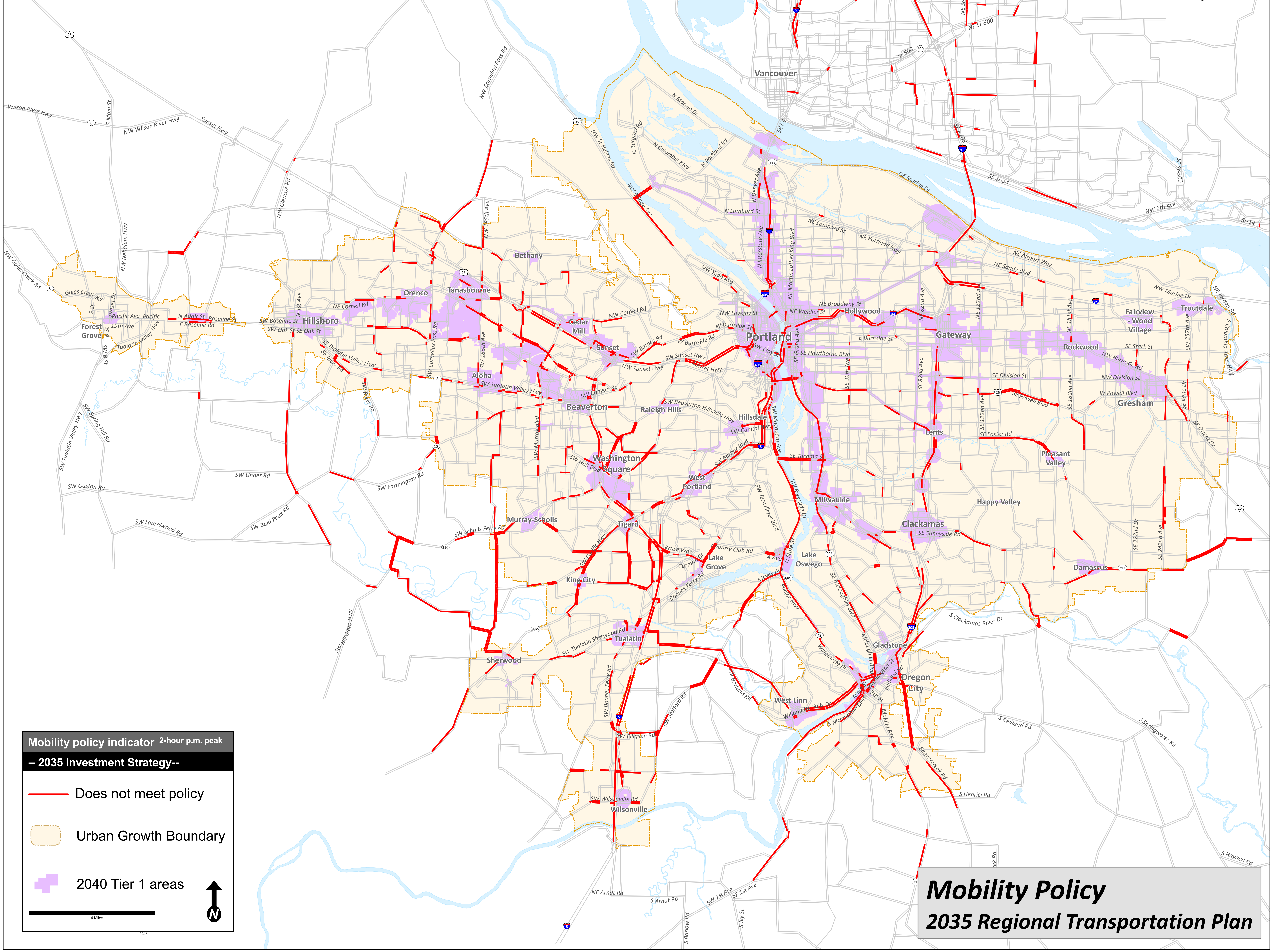
Mobility Policy
2035 Regional Transportation Plan
Mobility policy indicator 2-hour PM Peak
-- 2035 Federal Priorities --
Does not meet policy
Urban Growth Boundary
2040 Tier 1 areas
4 Miles
N
03/09/10
Vancouver
Portland
Hillsboro
Forest Grove
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
Aloha
Beaverton
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray-Scholls
Tigard
King City
Lake Grove
Lake Oswego
Tualatin
Sherwood
Wilsonville
West Linn
Oregon City
Gladstone
Milwaukie
Clackamas
Happy Valley
Damascus
Pleasant Valley
Lents
Gateway
Hollywood
Rockwood
Gresham
Fairview - Wood Village
Troutdale

Figure 5.8



Mobility Policy
2035 Regional Transportation Plan
Mobility policy indicator 1-hour mid-day
-- 2035 Investment Strategy--
Does not meet policy
Urban Growth Boundary
2040 Tier 1 areas
4 Miles
N
Vancouver
Portland
Hillsboro
Forest Grove
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
Aloha
Beaverton
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray-Scholls
Tigard
King City
Lake Grove
Lake Oswego
Tualatin
Sherwood
Wilsonville
West Linn
Oregon City
Gladstone
Milwaukie
Clackamas
Happy Valley
Damascus
Pleasant Valley
Lents
Gateway
Hollywood
Rockwood
Gresham
Fairview - Wood Village
Troutdale

Figure 5.9



Mobility Policy
2035 Regional Transportation Plan
Mobility policy indicator 2-hour p.m. peak
-- 2035 Investment Strategy--
Does not meet policy
Urban Growth Boundary
2040 Tier 1 areas
4 Miles
N
Vancouver
Portland
Hillsboro
Forest Grove
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
Aloha
Beaverton
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray-Scholls
Tigard
King City
Lake Grove
Lake Oswego
Tualatin
Sherwood
Wilsonville
West Linn
Oregon City
Gladstone
Milwaukie
Clackamas
Happy Valley
Pleasant Valley
Damascus
Lents
Gateway
Hollywood
Rockwood
Gresham
Fairview - Wood Village
Troutdale

## 5. Mode share for walking, bicycling, transit and shared ride (non-drive alone mode share)

*Data source:* Metro travel forecast model

*Description:* Evaluates percent of non-drive alone trips (daily walking, bicycling, shared ride and transit trips) at multiple levels (system-wide, mobility corridor, central city and individual regional centers). The data is categorized by 'trips within' and 'all trips'. 'Trips within' encompasses all trips that occur within the center or corridor. 'All trips' encompasses trips to, from and within the center or corridor.

*Target direction:* Increase non-drive alone mode share.

*Findings:*

System-wide and Centers
In 2035, system-wide non-drive alone mode share does not increase by more than 2% from the 2005 Base Year. When compared to the 2035 No Build, both 2035 RTP investment systems slightly increase on-drive alone trips.

The data shows an increase in non-drive alone trips for all centers in both 2035 RTP Investment systems and the No Build. Portland central city shows the greatest overall increase in non-drive alone trips. Approximately 8% more trips within the central city occur on foot, bike, transit or in a carpool for both 2035 RTP investment systems and the 2305 No Build.

Mobility Corridors (MC)
In general, the 2035 RTP Investment Strategy has a higher rate of non-drive alone trips than the 2035 Federal System. In both investment systems, over half of the mobility corridors (58%) increase the rate of non-drive alone trips within and for all trips. About 21% of these corridors increase non-drive alone trips by at least 5%. For example, MC #10(Portland central city to Milwaukie) increases non-drive alone trips by 8-9% due to increased light rail service. Several MCs (42%) in the No Build scenario and 33% from the two investment strategies showed a slight decrease in non-drive alone trips when compared to the 2005 Base Year.

| System-wide non SOV mode share | **2005 Base Year** | **2035 No Build** | **2035 RTP Federal Priorities System** | **2035 RTP Investment Strategy** |
|---|---|---|---|---|
| Within the UGB | 55% | 56% | 57% | 57% |
| Total Region | 54% | 55% | 56% | 56% |

| Centers<br>Non SOV mode share | **2005 Base Year** | | **2035 No Build** | | **2035 RTP Federal Priorities System** | | **2035 RTP Investment Strategy** | |
|---|---|---|---|---|---|---|---|---|
| | Trips Within* | All Trips** | Trips Within* | All Trips** | Trips Within* | All Trips** | Trips Within* | All Trips** |
| Portland central city | 74 % | 62% | 81% | 71% | 82% | 72% | 82% | 72% |
| Beaverton regional center | 66% | 56% | 67% | 57% | 70% | 59% | 70% | 59% |
| Clackamas regional center | 62% | 54% | 64% | 55% | 67% | 57% | 68% | 57% |
| Gateway regional center | 64% | 55% | 67% | 57% | 68% | 58% | 69% | 59% |
| Gresham regional center | 61% | 55% | 61% | 54% | 61% | 54% | 62% | 54% |
| Hillsboro regional center | 61% | 55% | 59% | 52% | 60% | 53% | 60% | 53% |
| Oregon City regional center | 58% | 50% | 59% | 52% | 59% | 52% | 59% | 52% |
| Vancouver, WA central business district | 62% | 51% | 63% | 50% | 64% | 51% | 64% | 51% |
| Washington Square regional center | 62% | 51% | 62% | 52% | 65% | 54% | 65% | 55% |

| Mobility corridors<br>Non SOV mode share | **2005 Base Year** | | **2035 No Build** | | **2035 RTP Federal Priorities System** | | **2035 RTP Investment Strategy** | |
|---|---|---|---|---|---|---|---|---|
| | **Trips Within*** | **All Trips**** | **Trips Within*** | **All Trips**** | **Trips Within*** | **All Trips**** | **Trips Within*** | **All Trips**** |
| Corridor 1- Portland Central City to Vancouver | 62% | 53% | 61% | 52% | 62% | 54% | 63% | 54% |
| Corridor 2- Portland Central City to Tualatin | 54% | 49% | 56% | 52% | 57% | 53% | 58% | 54% |
| Corridor 3- Tualatin to Wilsonville | 53% | 46% | 52% | 48% | 53% | 48% | 53% | 48% |
| Corridor 4- Portland Central City Loop | 67% | 58% | 75% | 66% | 76% | 67% | 76% | 68% |
| Corridor 5- Portland Central City to Gateway | 66% | 59% | 74% | 65% | 74% | 66% | 75% | 66% |
| Corridor 6- Gateway to Troutdale/Wood Village/ Fairview | 58% | 54% | 54% | 51% | 55% | 51% | 55% | 52% |
| Corridor 7- Tualatin to Oregon City | 61% | 51% | 64% | 53% | 64% | 54% | 64% | 54% |

| Mobility corridors Non SOV mode share | 2005 Base Year | | 2035 No Build | | 2035 RTP Federal Priorities System | | 2035 RTP Investment Strategy | |
|---|---|---|---|---|---|---|---|---|
| | Trips Within* | All Trips** | Trips Within* | All Trips** | Trips Within* | All Trips** | Trips Within* | All Trips** |
| Corridor 8- Oregon City to Gateway | 59% | 54% | 58% | 53% | 58% | 54% | 59% | 54% |
| Corridor 9- Gateway to Clark County | 58% | 51% | 57% | 50% | 57% | 50% | 57% | 50% |
| Corridor 10- Portland Central City to Milwaukie | 70% | 59% | 78% | 67% | 78% | 68% | 79% | 69% |
| Corridor 11- Milwaukie to Clackamas | 58% | 52% | 57% | 52% | 58% | 53% | 58% | 53% |
| Corridor 12- Clackamas to Rock Creek Junction | 58% | 51% | 58% | 51% | 59% | 52% | 59% | 53% |
| Corridor 13-Rock Creek Junction to US 26 | 63% | 50% | 63% | 53% | 63% | 53% | 63% | 53% |
| Corridor 14- Oregon City to Willamette Valley | 60% | 52% | 58% | 51% | 58% | 52% | 59% | 52% |
| Corridor 15- Troutdale/ Wood Village/ Fairview to Damascus | 58% | 53% | 54% | 51% | 55% | 51% | 55% | 51% |
| Corridor 16- Rivergate to I5 | 63% | 51% | 58% | 49% | 60% | 50% | 60% | 50% |
| Corridor 17- I5 to Columbia South Shore | 58% | 49% | 55% | 47% | 56% | 48% | 56% | 48% |
| Corridor 18- Central City to Columbia County | 59% | 50% | 64% | 55% | 66% | 56% | 66% | 57% |
| Corridor 19- Beaverton to Tigard | 54% | 49% | 55% | 50% | 56% | 51% | 57% | 52% |
| Corridor 20- Tualatin to Sherwood to Sherwood to Newberg | 56% | 47% | 55% | 49% | 56% | 50% | 56% | 50% |
| Corridor 21- Portland Central City to Hwy 217 | 66% | 58% | 73% | 65% | 74% | 66% | 74% | 66% |
| Corridor 22- Hwy 217 to North Plains | 54% | 52% | 53% | 51% | 53% | 51% | 53% | 52% |
| Corridor 23- Forest Grove to US 26 | 59% | 53% | 56% | 50% | 56% | 51% | 56% | 51% |
| Corridor 24- Beaverton to Forest Grove | 55% | 52% | 54% | 52% | 55% | 53% | 55% | 53% |

*Trips within are all trips that begin and end in the center or corridor

**All trips include trips to, from and within the center or corridor

## 6. Transit productivity

*Data source:* TriMet and Metro Travel Forecast Model

*Description:* Evaluates average weekday (AWD) transit boarding rides per revenue hour for high capacity transit and bus combined.

*Target direction:* Increase AWD transit boarding rides per revenue hour.

*Findings:* AWD transit boarding rides increase by 40% from the 2005 Base Year to the 2035 No Build. The two investment systems increase AWD transit boardings/revenue hour by 7% compared to the 2035 No Build. Both of the investment strategies show a 44% increase in transit boardings/revenue hour from the 2005 Base Year.

| Transit productivity | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| AWD transit boardings/revenue hour* | 65 | 109 | 117 | 117 |

*For the entire region including Clark, Clackamas, Multnomah and Washington counties

## 7. Homes within ½ mile of a regional trail system

*Data source:* Metro RLIS

*Description:* Evaluates household access to regional trail system by number and percent of homes.

*Target direction:* Increase access to regional multi-use trail system.

*Findings:* In the 2005 Base Year about one quarter of households in the Metro area are within ½ mile of a regional trail system. While there is a greater number of households with access to a regional trail in the 2035 No Build strategy, there is only a 4 % increase in households with access to a regional trail. When comparing both 2035 RTP Investment Systems to the 2035 No Build, approximately 23% more households are within ½ mile of a regional trail.

| Regional trail system | 2005 Base Year | | 2035 No Build | | 2035 RTP Federal Priorities System | | 2035 RTP Investment Strategy | |
|---|---|---|---|---|---|---|---|---|
| | # of HH | % of HH | # of HH | % of HH | # of HH | % of HH | # of HH | % of HH |
| | 148,944 | 26% | 257,063 | 30% | 414,189 | 48% | 425,385 | 49% |

## 8. Environmental justice communities within ½ mile of high capacity transit (HCT) or ¼ mile of frequent bus service

*Data source:* Metro RLIS and U.S. Census

*Description:* Evaluates the number of environmental justice (EJ) households with access to high capacity transit and frequent bus service.

*Target direction:* Increase environmental justice households' access to high capacity and frequent transit service.

*Findings:* When compared to 2005, EJ household access to HCT increases by at least 13% for every system including the 2035 No Build. The 2035 RTP Investment Strategy shows the greatest increase (22%) from the 2005 Base Year. The 2035 No Build system does not effectively increase EJ household access to frequent bus service, actually showing a slight decrease in access to HCT compared to the 2005 Base Year. Both 2035 RTP investment systems show the most promise to increase EJ households to frequent service (15 minute or better). Specifically, investment in the 2035 Federal Priorities System will increase access to frequent service by 11%.

| | 2005 Base Year | | 2035 No Build | | 2035 RTP Federal Priorities System | | 2035 RTP Investment Strategy | |
|---|---|---|---|---|---|---|---|---|
| | # of HH | % of HH | # of HH | % of HH | # of HH | % of HH | # of HH | % of HH |
| High Capacity Transit | 32,160 | 29% | 65,132 | 42% | 66,926 | 43% | 79,144 | 51% |
| Frequent Service Bus | 69,013 | 61% | 93,466 | 60% | 112,033 | 72% | 108,985 | 70% |

## 9. Tons of transportation-related air pollutants

*Data source:* DEQ and Metro

*Description:* Evaluates levels of carbon monoxide (CO), nitrogen oxide (NOX), volatile organic compounds (VOC), and particulate matter (PM10).

*Target direction:* Decrease pounds of air pollutants.

*Findings:* All three 2035 systems show a significant reduction of CO, NOX, VOC and PM10 compared to both summer and winter Base Year measurements. For instance, PM10 will decrease about 90% from base year levels. Overall, the 2035 No Build strategy shows the greatest reduction for all pollutants (for both summer and winter) compared to both 2035 RTP Investment Systems. Although pollutants will decrease significantly for the two investment systems, pollutant levels will be about 5% higher than the No Build strategy.

| Type of pollutant (in tons) | 2005 Base Year | | 2035 No Build | | 2035 RTP Federal Priorities System | | 2035 RTP Investment Strategy | |
|---|---|---|---|---|---|---|---|---|
| | Summer | Winter | Summer | Winter | Summer | Winter | Summer | Winter |
| Carbon monoxide (CO) | 805,067 | 1,103,381 | 541,758 | 792,913 | 569,139 | 834,891 | 571,900 | 839,097 |
| Nitrogen oxide (NOX) | 127,642 | 132,975 | 29,886 | 31,791 | 31,391 | 33,449 | 31,531 | 33,620 |
| Volatile organic compounds (VOC) | 73,824 | 62,436 | 31,762 | 28,014 | 33,149 | 29,289 | 33,269 | 29,397 |
| Particulate matter 10 exhaust (PM10) | 1,735 | 1,541 | 167 | 146 | 176 | 154 | 177 | 154 |

### 10. Tons of transportation-related greenhouse gas (GHG) emissions

*Data source:* DEQ and Metro

*Description:* Evaluates level of carbon dioxide ($CO_2$), a primary greenhouse gas pollutant.

*Target direction:* Decrease tons of transportation-related $CO_2$.

*Findings:* All three systems will increase tons of transportation GHG emissions from 2005 Base Year levels. The No Build scenario increases GHG by 41% while both 2035 RTP Investment Systems increase GHG by 49%. The difference in tons of GHG emissions between the two investment systems is slight.

| **Carbon dioxide** (in tons, measured in summer) | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| Transportation-source GHG emissions | 16,655 | 23,563 | 24,809 | 24,926 |

### 11. Percent of new transportation projects that intersect high value habitat areas

*Data source:* Metro Regional Land Inventory System (RLIS)

*Description:* Evaluates impact of transportation investments on Goal 5 high value habitat areas.

*Target direction:* Decrease transportation impacts on high value habitat areas.

*Findings*: There are 43% more projects in the 2035 Investment Strategy compared to the 2035 Federal System that intersect high value habitat areas. However, for each investment strategy alone there are 2% more projects in the overall Federal System that cross high value habitat.

| | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| Number of projects that intersect high value habitat areas | N/A | N/A | 228 | 325 |
| Percent of projects that intersect high value habitat areas | N/A | N/A | 32.4% | 30.3% |

## 5.4 2035 RTP OTHER POTENTIAL ENVIRONMENTAL IMPACTS

In addition to system evaluation measures #8 – #11, Metro has updated its environmental impact analysis from the 2008 federal component of the RTP update. This system level analysis responds to federal requirements to discuss potential environmental mitigation activities and potential areas to carry out these activities. A summary of this analysis is presented below. More detail is provided in Appendix 4.5Environmental Considerations Analysis.

### 5.4.1 Methodology

Metro identified the potential areas of conflict between the proposed RTP project and protected environmental features identified in the planning area. Using Geographic Information System (GIS) mapping software, different environmental features of the planning area were overlaid with the projects identified in the pool of projects identified for the RTP. It is important to note that the potential alignments for proposed projects are conceptual until more detailed project development work is conducted. For more detail see the Analysis of Environmental Considerations for RTP Update in the Appendices. The appendices also identify potential mitigation strategies in the region.

### 5.4.2 Regionally Significant Fish and Wildlife Habitat Inventory Analysis

This analysis used the regionally significant fish and wildlife habitat (Goal 5) inventory completed by Metro in 2005 as its basis. Metro developed the inventory based on the best science and data available and mapped regionally significant fish and wildlife habitat with input from local partners, resource agencies, technical review committees, and the public. Metro conducted fieldwork to validate and adjust the inventory. Identified habitat was ranked in importance based on its capacity to provide benefits to fish and wildlife.

Metro intersected the RTP projects with regionally significant Goal 5 resource areas. The results can be found in system evaluation measure #11 earlier in this section.

It is important to note that the potential alignments for proposed projects are conceptual until more detailed project development work is conducted. Projects that intersect high value areas should consider mitigation strategies as well as alignment options that avoid the resource area during future project development. See Appendix 4.5 for more analysis of the RTP projects that cross high value habitat.  See RTP project list (Appendix 1.1) for flagging of projects that intersect high-value habitat areas.

### 5.4.3 Wildlife Incident Hotspots and Fish Passage Barriers Analysis

The purpose of the wildlife incident hotspot inventory is to identify key areas in the region where wildlife mortalities are caused by motor vehicles. This information highlights key areas where wildlife crossings designs should be considered in the transportation planning and project development process.

Fish barriers can come in the form of culvert blockages, dams, shallow water, or a combination of factors that prevent fish from reaching their spawning grounds. Transportation projects that may develop new barriers, or intersect existing barriers will require adequate fish passage as directed by State law.

Metro intersected the RTP projects with wildlife incident hotspot areas as well as culverts that serve as barriers to fish passage and found that several projects intersect wildlife incident hotspots and/or problematic culverts. Identification of these projects early in the planning process provides an opportunity to consider wildlife corridor acquisition/restoration, wildlife crossing design treatments and other strategies as part of future project development. See Appendix 4.5 for further description of the Wildlife incident hotspot analysis. Appendix 1.1 identifies projects that intersect high-value habitat areas.

### 5.4.4 Historic Sites, Properties and Districts Analysis

Metro intersected RTP Financially Constrained projects with historic sites and properties within the Metro region. See appendices for a list of historic sites in the Metro region as well as a maps showing where these sites intersect with RTP projects. The nature of these impacts is highly site and project specific, and the information about historic and cultural resources is constantly evolving. It is important for each project to be evaluated with up-to-date information during project development.

### 5.4.5 Air Quality Analysis

Metro estimated future carbon monoxide, precursors of smog (volatile organic compounds and oxides of nitrogen) and carbon dioxide emissions from cars and trucks operating within the greater Portland air shed to the year 2035 using EMME/2 modeling software and Mobile 6.2, the latest model approved by the U.S. Environmental Protection Agency (EPA). The emissions analysis demonstrates that the Portland area meets both Federal and State air quality standards.  See results in system evaluation measure #9 earlier in this chapter. See Appendix 4.5 for the detailed analysis.

### 5.4.6 Tribal Lands Analysis

Metro reviewed tribal lands data available from the Bureau of Indian Affairs to identify potential federally recognized tribal lands in the planning area. None were identified within or adjacent to the Metro planning area.

### 5.4.7 Environmental Justice Analysis

As an entity utilizing federal funds, Metro is responsible for successful integration of environmental justice (EJ) standards into its transportation program and planning activities. Any program or activity receiving federal financial assistance cannot discriminate against people based on race, color, national origin, age, sex, disability, religion or income status. RTP projects were intersected with identified Environmental Justice Communities (a census block group that has a concentration of two or more socio-economically sensitive populations, including people living in poverty low-income people, people of color, elderly, children, people with disabilities and other populations protected by Title VI and related nondiscrimination statutes.). Results are included in system evaluation measure #8 earlier in this chapter. For more details, including maps of RTP projects intersecting EJ areas, see Appendix 4.5.

# CHAPTER 6

# IMPLEMENTATION:

# HOW DO WE IMPLEMENT OUR STRATEGY?

## 6.1 FRAMEWORK FOR CHANGE: SETTING A NEW COURSE FOR TRANSPORTATION

Over the past three years, Metro worked with state and local government partners as well as residents, community groups, and businesses to develop the 2035 Regional Transportation Plan. The result of that work is a plan that responds to transportation needs and demands based on our shared community values and the outcomes we are trying to achieve as a region. The policies, projects and strategies in this plan also address federal, state and regional planning requirements.

*The RTP is moving away from a single measure of success to an outcomes based planning framework.*

The plan sets a new course for future transportation decisions and implementation of the 2040 Growth Concept. The plan takes into account the changing circumstances and challenges we face and addresses them directly, adopting new approaches that distinguish this plan from past RTPs. Central to this plan are innovative approaches such as strong links between community aspirations and transportation investments and multi-pronged regional mobility corridor strategies to maximize operations on existing highways, roads and transit networks and strategically expand the transit and roadway system.

This RTP is moving away from a single measure of success and has adopted an outcomes-based planning framework with an emphasis on desired outcomes and measurable performance. Policies have shifted from primarily using roadway level-of-service to a broader system completion policy to define system needs.

Through its policies, projects and strategies, the 2035 RTP aims to attract jobs and housing to downtowns, main streets and employment areas. It seeks to increase the use of public transit, improve the safety, convenience and appeal of bicycling and walking, and reduce miles traveled and emissions by cars and trucks in the metropolitan region. It also seeks to increase the safety, reliability and efficiency of the roadway and transit systems for all users. When we measure our performance we find we have some successes, but overall the RTP falls short of meeting all of the performance targets set forth in Chapter 2.

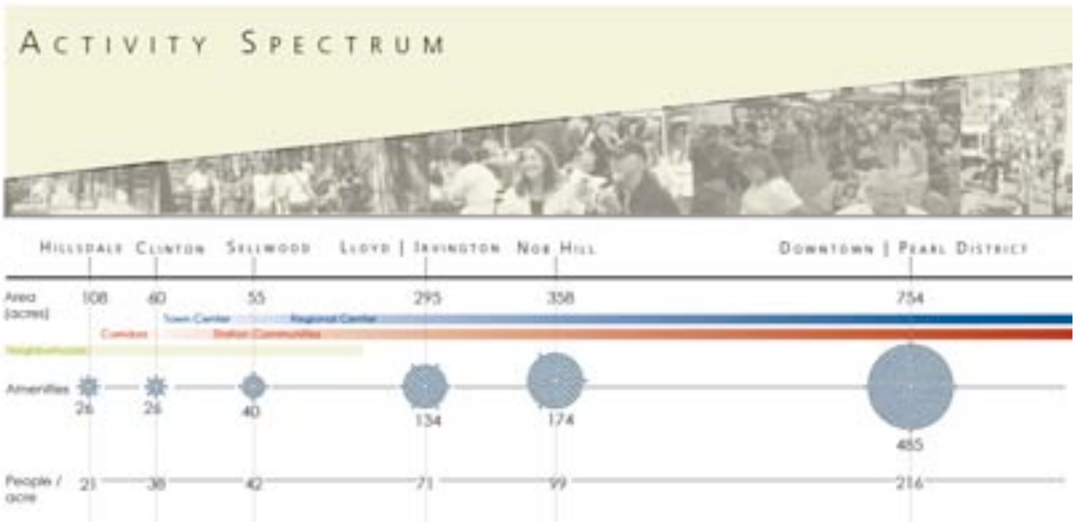
To continue making progress toward the goals and vision of the plan, the region must take additional steps. The plan will be implemented through a variety of strategies and actions at the local, regional, state and federal levels. The various jurisdictions in the region are expected to pursue policies, projects and strategies that contribute to specific elements of the vision.

Implementation of this plan will require a cooperative effort by all jurisdictions responsible for transportation planning in the region, and will involve:

- Adoption of regional policies and strategies in local plans.
- A concerted regional effort to secure needed funding to build planned transportation facilities needed to serve a growing region.
- Focusing strategic investments and system management policies that leverage 2040 Growth Concept implementation and preserve the function of the region's mobility corridors.
- Periodic updates of the plan to respond to development trends and the associated changes in travel demand.
- Incorporating land use and transportation needs and solutions identified in each mobility corridor strategy in local plans.
- Ongoing monitoring for consistency of changes to local transportation system plans (TSPs) and local Comprehensive Plan and land use designations with the RTP and other agency plans, including the Oregon Department of Transportation's Oregon Highway Plan and four-year State Transportation Improvement Program (STIP), the Oregon Department of Land Conservation and Development's Transportation Planning Rule (TPR), and TriMet's Transit Implementation Plan (TIP).

## 6.2 IMPLEMENTATION OF THE COMMUNITY BUILDING STRATEGY

In an effort to better understand how and where local communities intend to grow and how the region can support them, Metro asked local cities and counties to summarize their aspirations for how their communities will develop and function over the next few decades. The aspirations reflect the communities' priorities for redevelopment, the values that guide their decisions and the challenges and barriers they anticipate to achieving these aspirations. The activity spectrum illustrated below provided a tool for local governments to consider the type and level of activity they would like for regional and town centers, station communities, corridors and main streets in their community.




The community building strategy described in Chapter 2 recognizes the important role of transportation in placemaking to achieve the 2040 Growth Concept vision. The concept calls for cultivating great communities by investing in the community assets essential to making downtowns, main streets and employment areas better places to live and work.  Typically, these are investments that help revitalize centers and main streets or provide critical access to industrial lands and freight intermodal facilities.

The activity spectrum provides a tool to identify community building investments needed to serve centers and main streets, the RTP emphasizes streetscape retrofits, building new street connections, transit, completing missing sidewalks, bicycle and trail connections in downtowns, centers and along main streets to leverage higher density mixed-use development and transit investments such as frequent bus, street car or high capacity transit.

In industrial and employment areas, the RTP emphasizes providing critical freight access to the interstate highway system and protecting interchange capacity to help the region's businesses and industry in these areas remain competitive. This means strategically adding road capacity to arterials and building new street connections in these areas in addition to providing access to support commercial delivery activities and upgrading main line and rail yard infrastructure.

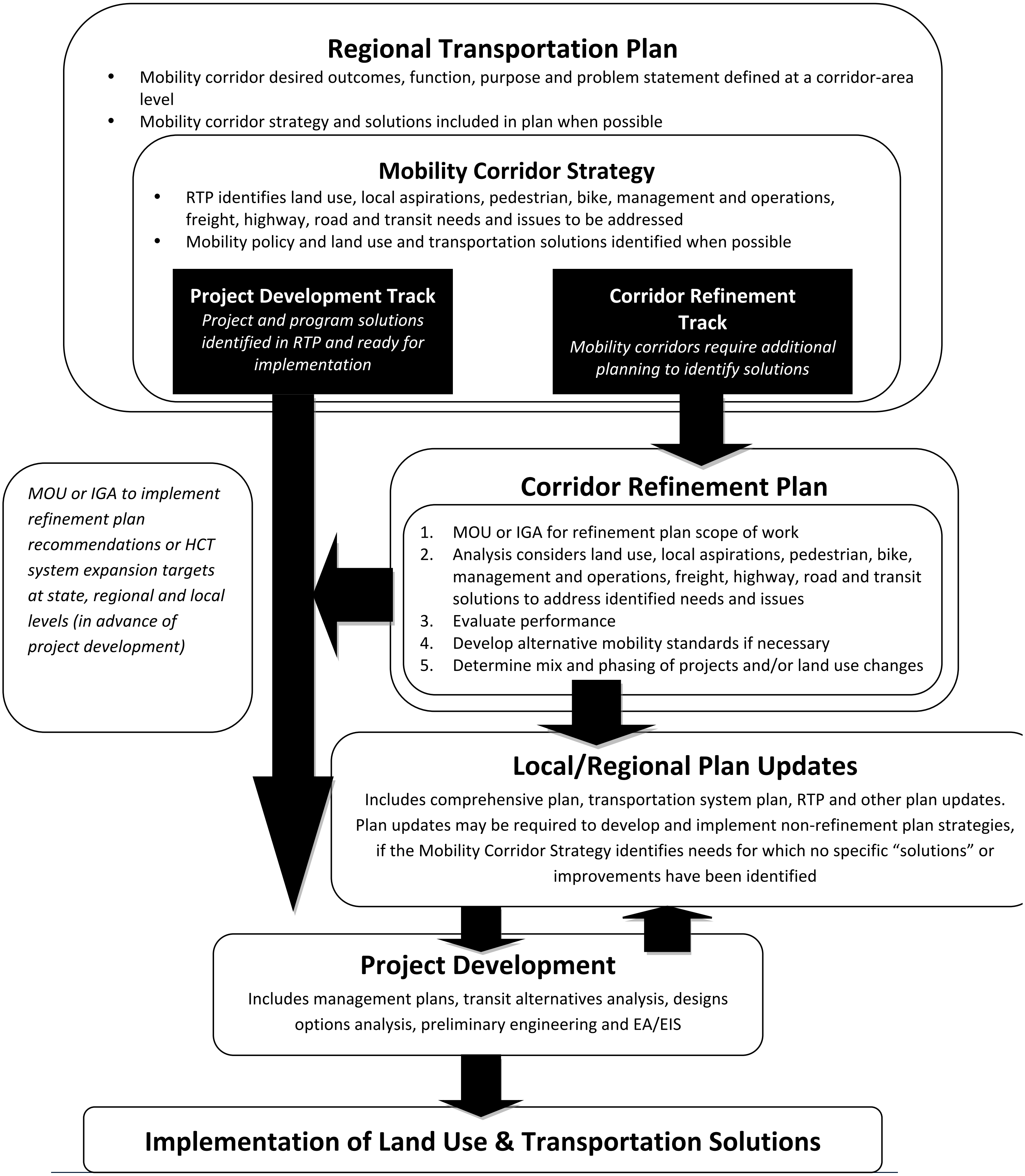
Achieving all of these aspirations requires different types and amounts of investments by local governments, Metro and the private sector in order to achieve on-the-ground results. More work is being done to better understand what is needed to fulfill these aspirations. Metro summarized the needs identified by local governments for 16 different types of investments in five community design types described in the 2040 Growth Concept: central city (Downtown Portland), corridors, employment areas (including industrial areas), town centers and regional centers in an Investment Matrix. Many of these community building investments will be defined through local transportation system plans and other local plans, connecting back to community aspirations for these areas. The Investment Matrix will inform local and regional policy and investment decisions and longer-term efforts to refine tools that assist with the achievement of these aspirations.

## 6.3 IMPLEMENTATION OF THE MOBILITY CORRIDOR STRATEGY

Chapter 4 details the investment strategies for all 24 of the regional mobility corridors. The idea of a mobility corridor strategy emerged to better ground the outcome-based policy framework of the RTP and to demonstrate compliance with state TPR requirements. The strategies are scoping tools to document land use and transportation needs, functions for all modes, mobility standards and other performance measures, and potential solutions for each mobility corridor. Mobility corridors that have uncertainty surrounding transportation needs, modes, function and potential solutions require a corridor refinement plan.

**Figure 6.1** shows the framework for how the mobility corridor strategy will be incorporated into the RTP or developed through a corridor refinement plan.

**Figure 6.1 – How A Mobility Corridor Strategy Is Developed and Implemented**



### 6.3.1 Corridor Refinement Planning

The State of Oregon Transportation Planning Rule (TPR) section 660-012-0020 requires that transportation system plans (TSPs) establish a coordinated network of planned transportation facilities adequate to serve regional transportation needs. The RTP is the region's TSP. Section 660-012-0025 of the TPR allows a Metropolitan Planning Organization (MPO) to defer decisions regarding function, general location and mode as long as it can be demonstrated that the refinement effort will be completed in the near future.

If a TPR determination cannot be made based on the information available, a mobility corridor would need a corridor refinement plan as defined by the TPR. A corridor refinement plan includes the following steps:

- MOU or IGA for refinement plan scope of work
- Analysis that considers land use, local aspirations, pedestrian, bike, management and operations, freight, highway, road and transit solutions
- Evaluate performance
- Develop alternative mobility standards if necessary
- Determine mix and phasing of projects and/or land use changes needed to address function and needs
- Local and/or regional plan updates and MOU or IGA to implement refinement plan recommendations at state, regional and local levels
- HCT system expansion targets policy MOU, if applicable.

This process represents a change in how mobility corridors are planned for and analyzed to more comprehensively consider land use, management, walking and biking solutions in addition to traditional transit and highway-focused analyses. The refinement plan will result a wide range of strategies and projects to progress through project development and implementation at the local, regional and/or state levels.

Individual project and program solutions identified in the RTP may move forward to project development at the discretion of the facility owner/operator. The MOU or IGA from a corridor refinement plan is intended to provide more accountability and to formalize agreements across implementing jurisdictions on moving forward to implement the corridor refinement plan recommendations. This is particularly important in corridors with multiple jurisdictions.

**Mobility Corridors Recommended for Future Corridor Refinement Plans**
The main objective of the RTP mobility corridor work program was to gather information to help define the need, mode, function, performance standards, and general location of facilities within each mobility corridor consistent with the TPR. The needs assessment was developed based on the

RTP policy framework and was used to guide the identification of projects and programs during the RTP system development phase.

Under the mobility corridor concept framework, when determinations of needs, modes, functions, and scope and general location of solutions cannot be made, the mobility corridor needs a refinement plan. Corridor refinement plans are intended to be multi-modal evaluations of possible transportation solutions, including land use solutions.

Using the results of the mobility corridor work program, the RTP has identified a list of mobility corridors that do not meet the outcomes performance standards of the RTP and do not fully answer questions of mode, function and general location. These corridors need refinement planning and are listed in **Table 6.1**. In addition, most potential HCT Corridors identified in the Regional HCT Plan are likely to require Corridor Refinement Plans to resolve issues of changes in transit function and any associated changes in vehicular or freight rail function and performance standards of existing transportation facilities.

**Table 6.1**
**Mobility Corridors Recommended for Future Corridor Refinement Plans**

| |
|---|
| Mobility Corridors #2 and #3 - Portland Central City to Wilsonville and Sherwood, which includes I-5 South[1] |
| Mobility Corridor #4 - Portland Central City Loop, which includes I-5/I-405 Loop |
| Mobility Corridors #7, #8 & #9 - Clark County to I-5 via Gateway, Oregon City and Tualatin, which includes I-205 |
| Mobility Corridor #15 - Gresham/Fairview/Wood Village/Troutdale to Damascus |
| Mobility Corridor #24 - Beaverton to Forest Grove, which includes Tualatin Valley Highway |

#### 6.3.1.1 Portland Central City to Tigard (Mobility Corridor #2)

This corridor provides access to the Central City and to neighborhoods and commercial areas in the inner southwest quadrant of the region. Barbur Boulevard is identified as a multi-modal facility with potential light rail or Rapid Bus as well as serving a regional role for motor vehicle, bicycle and pedestrian systems. I-5 in this corridor is a Main Roadway route for freight and a Principal Arterial for motor vehicles extending southward beyond the region.

Segments of both Barbur Boulevard and I-5 in this corridor experience significant congestion and poor service levels, especially from the Terwilliger interchange northward. However, high capacity transit service along Barbur Boulevard and other expanded bus services are expected to experience promising ridership levels. Significant localized congestion occurs along the intersecting street segments of Bertha, Terwilliger and Capitol Highway/Taylors Ferry roads. Broad street cross-sections, angled intersections and limited signalized crossing opportunities along Barbur Boulevard create traffic safety hazards and inhibit walking to local destinations and access to transit services.

[1] In coordination with project development activities for Mobility Corridor #20.

A corridor refinement plan is proposed to address the following in coordination with corridor refinement planning for Mobility Corridor #3 and project development activities for Mobility Corridor 20:

- Regional and local transit services and facilities needed to serve the Barbur corridor within the RTP planning horizon.
- Possible new locations or relocations for I-5 on-ramps and off-ramps and street connections across the freeway right-of-way.
- Opportunities for new or improved local street connections to Barbur Boulevard.
- Added capacity on parallel arterials, and arterial street connectivity, consistent with the regional street design concept and regional street system design concept.
- Facilities to improve bicycle and pedestrian safety along Barbur Boulevard and access to transit services and local destinations.
- Provide additional overcrossings in West Portland town center to improve local circulation and interchange access management
- Traffic management and intelligent transportation system improvements along I-5, Barbur Boulevard and other parallel arterials within the corridor.
- Potential mainline freeway improvements including possible southbound truck climbing lanes.
- Identify and implement safety and modernization improvements to I-5 defined by the Portland Central City to Tigard Corridor Refinement Plan.

#### 6.3.1.2 Tigard to Wilsonville (Mobility Corridor #3)

This mobility corridor provides the major southern access to and from the central city. The corridor also provides important freight access, where Willamette Valley traffic enters the region at the Wilsonville "gateway," and provides access to Washington County via OR 217.

In 2002, a joint ODOT and Wilsonville study[2] concluded that in 2030 widening of I-5 to eight lanes would be required to meet Oregon Highway Plan and RTP mobility standards, and that freeway access capacity would not be adequate with an improved I-5/Wilsonville Road interchange. The appropriate improvements in this corridor are unclear at this time. However, I-5 serves as a critical gateway for regional travel and commerce, and an acceptable transportation strategy in this corridor has statewide significance. Projections for I-5 indicate that growth in traffic between the Metro region and the Willamette Valley will account for as much as 80 percent of the traffic volume along the southern portion of I-5, in the Tualatin and Wilsonville area.

[2] I-5/Wilsonville Freeway Access Study, DKS Associates, November 2002

A corridor refinement plan is proposed to address the following in coordination with corridor refinement planning for Mobility Corridor #2 and project development activities for Mobility Corridor 20:

- Effects of widening I-205 on the I-5 South corridor
- Effects of the I-5 to 99W Connector study recommendations on the N. Wilsonville interchange and the resultant need for increased freeway access
- Effects of peak period and mid-day congestion in this area on regional freight reliability, mobility and travel patterns
- Ability of inter-city transit service, to/from neighboring cities in the Willamette Valley, including commuter rail, to slow traffic growth in the I-5 corridor
- Ability to maintain off-peak freight mobility with capacity improvements
- Potential for better coordination between the Metro region and Willamette Valley jurisdictions on land-use policies
- Effects of a planned long-term strategy for managing increased travel along I-5 in the Willamette Valley
- Effects of UGB expansion and Industrial Lands Evaluation studies on regional freight mobility
- Effects to freight mobility and local circulation due to diminished freeway access capacity in the I-5/Wilsonville corridor
- Identify and implement safety and modernization improvements to I-5 defined by the Tigard to Wilsonville Corridor Refinement Plan in phases totaling over $600 million.
- I-5/OR217 Interchange Phase 2: SB OR217/Kruse Way Exit – Complete interchange reconstruction: Braid SB OR 217 exit to I-5 with Kruse Way exit, approximately $50 million.
- I-5/OR217 Interchange Phase 3: SB OR217 to I-5 NB Flyover Ramp – Complete interchange reconstruction with new SB OR217 to NB I-5 flyover ramp - $30 million

In addition, the following design elements should be considered as part of the corridor refinement plan:

- Peak period pricing and HOV lanes for expanded capacity
- Provide regional transit service, connecting Wilsonville to the central city
- Provide additional freeway access improvements in the I-5/Wilsonville corridor to improve freight mobility and local circulation
- Add capacity to parallel arterial routes, including 72nd Avenue, Boones Ferry, Lower Boones Ferry and Carman Drive

- Add overcrossings in vicinity of Tigard Triangle and City of Wilsonville to improve local circulation
- Extend commuter rail service from Salem to the Portland Central City, Tualatin transit center and Milwaukie, primarily along existing heavy rail tracks
- Additional I-5 mainline capacity
- Provision of auxiliary lanes between all I-5 freeway on- and off-ramps in Wilsonville.

#### 6.3.1.3 Portland Central City Loop (Mobility Corridor #4)

In 2005, the I-5/405 Freeway Loop Advisory Group (FLAG) completed its review of the near- and long-term transportation, land use, and urban design issues regarding the I-5/405 Freeway Loop. Appointed by Mayor Vera Katz and the ODOT Director in 2003, the 24-member group developed and evaluated concepts to address identified transportation issues and needs. The concepts represented a range of options that included modest improvements within existing right-of-way, a One-Way Loop System, and a full tunnel that would connect the Freeway Loop to I-84 and Sunset Highway. The three concepts were evaluated against the region's proposed transportation system, along with projected employment and household growth, for the year 2030.

In completing its initial review, FLAG found that additional master planning work is needed to identify, prioritize and fund specific projects, and that short-term or interim investments should move forward while the master planning work is being completed.  In addition, FLAG recommended that planning on I-84/I-5 interchange (currently underway in conjunction with the Portland Plan) and the I-5 elements of South Portland Plan contemplated in the area of the interchange of I- 405 and I-5 may proceed independent of the Master Plan with the understanding that the final plan for any such project would be consistent with the Master Plan. In addition, the study recommended master planning work to begin to identify short-term and long-term investments and a recommended scope, problem statement and set of principles:

<u>Scope</u>

- Develop an overall Freeway Loop Corridor Refinement Plan that will guide public investment for improvements to the I-5/405Freeway Loop.
- Develop a phasing strategy for implementation of the Master Plan. Include the currently approved Regional Transportation Plan improvements as well as new elements.
- Identify and pursue a funding strategy.

<u>Proposed Purpose Statement</u>

Improvements to the I-5/4-5 Freeway Loop must address long-term transportation and land use needs in a system-wide context. Because the movement of people and goods is a vital economic function, changes must be considered in relation to local, regional, and statewide geographies.

Freeway Loop improvements should enhance, not inhibit, high-quality urban development, and should function as seamless and integral parts of the community.

Proposed Principles

These objectives will guide the selection and evaluation of options in the next phase:

- Maintain or enhance transportation performance, including highway and transit performance.
- Support a multi-modal strategy for automobiles, transit, trucks, bicycles, and pedestrians.
- Support trade and freight movement to facilitate regional and state economic development.
- Support local, regional, and state land use plans.
- Ensure regional accessibility to and from the Central City to reinforce its significant statewide, regional, and national, economic role.
- Support economic activities and new investments in the Central City and in adjacent industrial areas.
- Improve the quality of the built environment and connections across facilities.
- Avoid or minimize negative impacts on the natural environment.
- Evaluate facility improvement costs relative to the distribution of benefits and impacts.
- Develop strategies that can be implemented in phases.

The Corridor Refinement Plan should include short- and long-term improvements to be built over the next 30 years.

#### 6.3.1.4 Clark County to I-5 via Gateway, Oregon City and Tualatin (Mobility Corridors #7, 8 and 9)

Improvements are needed in this corridor to address existing deficiencies and expected growth in travel demand in Clark, Multnomah and Clackamas counties. Transportation solutions in this corridor should address the following needs and opportunities:

- Provide for some peak period and off-peak mobility and reliability for longer trips
- Preserve freight mobility from I-5 to Clark County, with an emphasis on connections to Highway 213, Highway 224 and Sunrise Corridor
- Maintain an acceptable level of access to the Oregon City, Clackamas and Gateway regional centers and Sunrise industrial area
- Maintain acceptable levels of access to PDX, including air cargo access

- Adding general purpose lanes to I-205 should be considered to meet state and regional policies, to bring the freeway up to three through lanes in each direction in the southern section from Oregon City to I-5. Interchange improvements, auxiliary lanes and other major operational improvements such as ramp improvements and other weaving area improvements in the corridor should also be considered. Specific projects to be considered to meet identified needs include: Southbound truck climbing lanes from Willamette River to 10th St. interchange, over $20 million; Interchange improvements at locations including: Division/Powell, Airport Way, OR213, OR 212/224, Sunrise, Johnson Creek Boulevard and others, totaling over $250 million; Auxiliary lanes, northbound and southbound in the following locations: Airport Way to Columbia Blvd., Columbia Blvd. to I-84, I-84 to Glisan, Glisan to Division/Powell, Division/Powell to Foster, Foster to Johnson Creek Boulevard, OR 212/224 to Gladstone, Gladstone to OR 99E, averaging $20 million each; totaling over $200 million; Widen to 6 lanes from Stafford Interchange to Willamette River, over $40 million; Widen Abernethy Bridge to 6 lanes plus auxiliary lanes, over $100 million; Improvements needed on OR 213 (82nd Avenue) include bicycle/pedestrian and streetscape improvements, totaling over $30 million.

Potential transportation and land use solutions in this corridor should evaluate the potential of the following design concepts:

- Auxiliary lanes added from Airport Way to I-84 East
- Consider express, peak period pricing or HOV lanes as a strategy for expanding capacity
- Relative value of specific ramp, overcrossing and parallel route improvements
- Eastbound HOV lane from I-5 to the Oregon City Bridge
- Truck climbing lane south of Oregon City
- Potential for rapid bus service or light rail from Oregon City to Gateway
- Potential for extension of rapid bus service or light rail north from Gateway into Clark County
- Potential for refinements to 2040 land-use assumptions in this area to expand potential employment in the subarea and improve jobs/housing imbalance
- Potential for re-evaluating the suitability of the Beavercreek area for urban growth boundary expansion, based on ability to serve the area with adequate regional transportation infrastructure
- Provide recommendations to the Bi-State Coordination Committee prior to JPACT and Metro Council consideration of projects that have bi-state significance.

### 6.3.1.5 Gresham/Fairview/Wood Village/Troutdale to Damascus (Mobility Corridor #15)

A need to develop a long-term mobility strategy for the area between I-84 and Highway 26 exists, and has become increasingly critical since the time of the 2004 RTP. The addition of Springwater and Damascus within the UGB has heightened the need for the link. In 2007, the mayors of the east Multnomah County cities—Gresham, Troutdale, Wood Village and Fairview - entered into a MOU that identifies the need to comprehensively analyze I-84/US26 connectivity as their shared top transportation priority.

A series of interim improvements to Hogan Road are inadequate to meet projected demand through 2035. The modeling shows that Hogan will fail even with these arterial improvements. Since only projects on the financially constrained system are likely to be carried forward, the modeling actually underestimates the extent of the system failure.

The RTP calls for a series of interim improvements that will better connect Hogan Road to both I-84 on the north, and US 26 to the south. These improvements are needed to ensure continued development of the Gresham regional center and expected freight mobility demands of through traffic. The purpose of the refinement plan is to develop a long-term strategy for the area between 181st/182nd Avenue and 257th Avenue/Kane Road to address regional transportation needs. The refinement plan would consider a full range of transportation solutions that support planned land uses and recommend improvements for the connection between I-84 and US26, including but not limited to: 181st\181st Avenue, Fairview Parkway, 242nd Avenue/Hogan Road and 257th Avenue, per the MOU. The corridor refinement plan is necessary to make informed transportation investment decisions that will facilitate the development the underutilized industrial lands, foster economic growth and maintain and enhance the livability of east Metro communities.

An improved north/south corridor will also benefit transit-oriented development along the MAX light rail corridor, as it would move freight traffic from its current route along Burnside Street, where it conflicts with development of the Rockwood town center and adjacent station communities. In addition to planned improvements to the Hogan Road corridor and the analysis of alternative routes, a corridor study should address:

- More aggressive access management between Stark Street and Powell Boulevard on 181st, 207th and 257th avenues
- Redesigned intersection improvements on Hogan at Stark, Burnside, Division and Powell to streamline through-flow
- Need for a long-term primary freight route in the corridor
- Potential for a new alignment south of Powell Boulevard to US 26
- High capacity transit, including a potential to link Mt. Hood Community College to the light rail system.

- All local street improvements, including locally needed connections to I-84 and US-26.

#### 6.3.1.6 Beaverton to Forest Grove (Mobility Corridor #24)

A number of improvements are needed in this corridor to address existing deficiencies and serve increased travel demand. One primary function of this route is to provide access to and between the Beaverton and Hillsboro regional centers. Tualatin Valley Highway also serves as an access route to Highway 217 from points west along the Tualatin Valley Highway corridor. As such, the corridor is defined as extending from Highway 217 on the east to Forest Grove to the west, and from Farmington Road on the south to Baseline Road to the north. The following should be addressed as part of a corridor refinement plan:

- Develop an access management plan as part of a congestion management strategy
- Implement TSM and other interim intersection improvements at various locations between Cedar Hills Boulevard and Brookwood Avenue
- Relative trade-offs of a variety of capacity and transit improvements, including:
    a. Improvements on parallel routes such as Farmington, Alexander, Baseline and Walker roads as an alternative to expanding Tualatin Valley Highway
    b. Arterial improvements from Cedar Hills Boulevard or Murray Boulevard to Brookwood Avenue or Baseline Road in Hillsboro
    c. A limited access, divided facility from Cedar Hills Boulevard or Murray Boulevard to Brookwood Avenue, with three lanes in each direction and some grade separation at major intersections
    d. Transit service that complements both the function of Tualatin Valley Highway and the existing light rail service in the corridor
- Evaluate impacts of the principal arterial designation, and subsequent operation effects on travel within the Beaverton regional center
- Evaluate motor vehicle and street design designations of TV Highway as part of the plan to determine the most appropriate classifications for this route
- Transportation System Management – signal interconnects – from Beaverton to Aloha and Aloha to Hillsboro, over $4 million; transit service improvements to provide frequent bus service.

### 6.3.2 Project Development

Transportation improvements where need, mode, function and general location have already been identified in the RTP and local plans for a specific alignment must be evaluated on a detailed, project development level. This evaluation is generally completed at the local jurisdictional level or jointly by affected or sponsoring agencies, in coordination with Metro. The purpose of project development planning is to consider project design details and select a project alignment, as necessary, after evaluating engineering and design alternatives, potential environmental impacts and consistency with applicable comprehensive plans and the RTP. The project need, mode, function and general location do not need to be addressed at the project level, since these findings have been previously established by the RTP.

Once the RTP or corridor refinement plans have established mode, function, general location, and identified potential solutions, project development is needed to clearly define a set of projects. The TPR defines project development as, "implementing the transportation system plan by determining the precise location, alignment and preliminary design of improvements included in the TSP based on site-specific engineering and environmental studies," (660-012-005 (36)). Using the TPR definition the following activities would be considered project development related activities:

- Design Options Analysis (DOA)
- Management plans
- Transit Alternatives Analysis (AA)
- Environmental Impact Statement/Environmental Assessment (EIS/EA)

The mobility corridor strategies in Chapter 4 identify the relevant project development activities within each corridor. A summary of project development activities is provided for the following corridors for reference:

- Columbia River Crossing Project
- Sunrise Project
- I-5/99W Connector Study Recommendations and Implementation (Tigard to Sherwood - Mobility Corridor #20)

#### 6.3.2.1 Columbia River Crossing Project (Mobility Corridor #1 – Portland Center City to Clark County)

This heavily traveled route is the main connection between Portland and Vancouver. The Metro Council has approved a Locally Preferred Alternative for the Columbia River Crossing Project (CRC). It creates a multi-modal solution for the Interstate 5 corridor between Oregon and Washington to address the movement of people and freight across the Columbia River. A replacement bridge with three through lanes in each direction, reconstructed interchanges, tolls priced to manage travel demand as well as provide financing of the project construction, operation and maintenance, light rail transit to Vancouver, and bicycle and pedestrian investments have been identified for this corridor. As project details are evaluated and implemented in this corridor, the following shall be brought back to JPACT and the Metro Council for a subsequent RTP amendment:

- The number and design of auxiliary lanes on the I-5 Columbia River bridge and approaches to the bridge, including analysis of highway capacity and induced demand.

More generally in the I-5 corridor, the Portland Metro region should:

- Consider the potential adverse human health impacts related to the project and existing human health impacts in the project area, including community enhancement projects to address environmental justice.
- Consider managed lanes.
- Maintain an acceptable level of access to the central city from Portland neighborhoods and Clark County
- Maintain off-peak freight mobility, especially to numerous marine, rail and truck terminals in the area
- Consider new arterial connections for freight access between Highway 30, port terminals in Portland and port facilities in Vancouver, Washington
- Maintain an acceptable level of access to freight intermodal facilities and to the Northeast Portland Highway
- Address freight rail network needs
- Develop actions to reduce though-traffic on MLK and Interstate to allow main street redevelopment
- Provide recommendations to the Bi-State Coordination Committee prior to JPACT and Metro Council consideration of projects that have bi-state significance

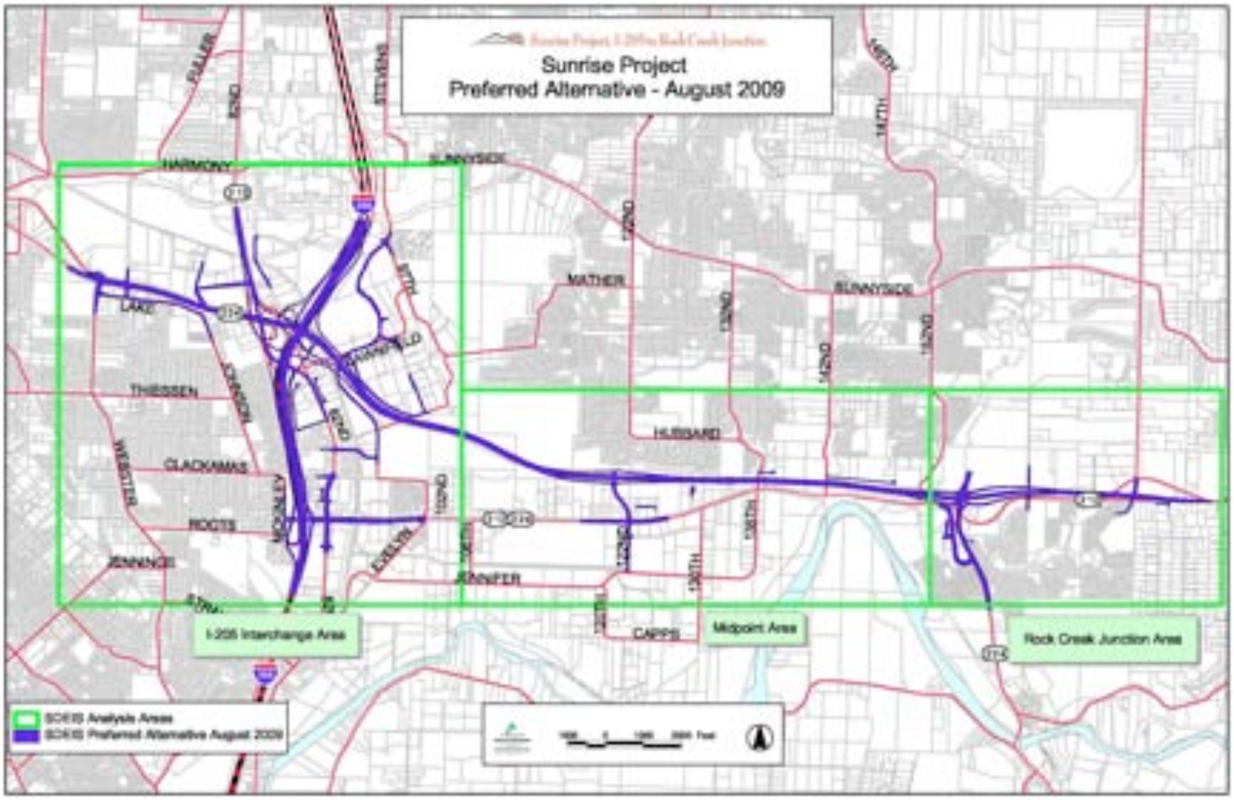
#### 6.3.2.2 Sunrise Project and Damascus TSP/OR 212 Corridor Study Recommendations (Mobility Corridor #12 -Clackamas to Rock Creek Junction and Mobility Corridor #13 – Rock Creek Junction to US 26))

In July 2009, the Sunrise Project's Policy Review Committee (PRC) selected a Preferred Alternative, shown in **Figure 6.2**. The Preferred Alternative is Alternative 2 as studied in the SDEIS with Design Options C-2 and D-3 and a portion of Design Option A-2 (Tolbert Overcrossing). Additionally, the Preferred Alternative includes several refinements to the individual portions of the SDEIS alternatives and a limited number of refinement alternatives that were not studied as part of the SDEIS alternatives. These refinement alternatives are based on stakeholder input and additional design refinement related to assessment of environmental resource avoidance and analysis of traffic performance.

A detailed description of the Sunrise Project Preferred Alternative is included in the Appendix.

The RTP includes some phases of the projects in the preferred alternative and updates Figures 2.10 and 2.12. A text note has been added to Figures 2.10 and 2.12 to recognize that the Damascus TSP and OR 212 corridor study will provide further direction for solutions in this corridor. Further map refinements and project recommendations may be identified through this work.

**Figure 6.2**
**Sunrise Project Preferred Alternative (**as Recommended by the project's Policy Review Committee)




### 6.3.2.3 I-5/99W Connector Study Recommendations and Implementation (Tigard to Sherwood - Mobility Corridor #20)

Between 2006 and 2009, the I-5/99W Corridor Study identified a number of improvements in this corridor to support access to 2040 land uses, address existing deficiencies and serve increased travel demand. One primary function of this route is to connect the Washington Regional Center to the cities of Tigard, Tualatin and Sherwood, and provide access to the Tualatin/Sherwood Industrial Area and Tualatin National Wildlife Refuge. This corridor provides shortline heavy rail access to the region from the Willamette Valley and connects agricultural areas to the interstate highway system in this region. This mobility corridor also serves as a secondary gateway to the region, connecting communities in Yamhill County and the Central Oregon Coast to the Portland metropolitan region.

In February 2009, the I-5/99W Connector Project Steering Committee (PSC) was unable at the end of its process to reach a unanimous recommendation for the I-5/99W Corridor Study as required by the PSC Partnership Agreement in order to forward a Recommended Corridor Alternative to the

RTP. However, there was unanimous agreement on some aspects of the Connector that could be reflected in the RTP:

- Identify projects for inclusion in the RTP with minimal extra conditions, particularly the extension of SW 124th from SW Tualatin Sherwood Road to the I-5/North Wilsonville Interchange,
- Identify conditions to be met before a new Southern Arterial is implemented to ensure integration with surrounding land use and transportation plans, particularly an I-5 South Corridor Study,
- Determine an incremental phasing plan to ensure the projects with the most benefit that can reasonably be built within the 20-year horizon be included in the RTP Financially Constrained list.

The recommendations for the I-5/99W Corridor Study proposed for inclusion in the RTP are based upon the conclusions reached by the Project Steering Committee (PSC) as follows:

- The 3 options consisting of a new limited access expressway from I-5 to OR 99W (2 alignments north of Sherwood and 1 alignment south of Sherwood) were unacceptable due to high impact on the natural and built environment, the need for extensive improvements to I-5, high cost and concern about the potential for induced growth to Yamhill County, and
- The option focused on expanding Tualatin-Sherwood Road was unacceptable due to the very large size it would need to be and the resulting impacts on the Tualatin and Sherwood Town Centers.
- The alternative recommended is based upon the principle that it is preferable to spread the traffic across three smaller arterials rather than one large expressway. The analysis concluded this approach could effectively serve the traffic demand, would provide better service to urban land uses in the Tualatin/Sherwood area, especially industrial lands, and could be built incrementally based upon need to serve growth and revenue

*The I-5/99W Corridor Study recommended a variety of transportation investments to improve the area's road, transit, bicycle, pedestrian and trail networks and to distribute traffic across a network of three arterials so that no single route would function as a defacto through "connector." The RTP places additional conditions on the "Three Arterial" recommendation and implementation.*

availability. The overall concept is structured around a Northern, Central and Southern arterial providing east-west access between OR 99W and I-5 with an extension of SW 124th providing north-south connectivity (see diagram).

The City of Wilsonville was and continues to raise objections to the Southern Arterial component throughout this process. The City is very concerned about growing I-5 congestion and the City's dependence on effective access to the two I-5 interchanges. The City is concerned that the Southern Arterial connecting into the I-5/North Wilsonville interchange will significantly increase traffic and impair that access.

When the PSC considered the recommendation, the Clackamas County Commission representative introduced a series of amendments to the conditions to ensure that the Southern Arterial would be examined in greater detail to:

- evaluate alignment options and their environmental impact;
- integrate the proposal with the concept plan and transportation system plan for the newly expanded UGB area and any new Urban Reserves that are designated in the area;
- address any requirements that may result from adoption of an exception to Goal 14 (if needed) for an urban facility outside the UGB;
- integrate the proposal with a Tigard to Wilsonville Corridor Study (Corridor #3) 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 an interchange at the I-5/North Wilsonville interchange or consideration of extending the Southern Arterial across I-5 to Stafford Road east of I-5, thereby providing better access to I-205.

The Project Steering Committee acknowledged many significant issues to be addressed before the Southern Arterial can proceed to construction, and approved the proposed conditions unanimously. The detailed conditions can be found in Appendix 3.3.

Typically, there is a need to transition from a "planning" level of detail to a "project" level of detail which involves better definition of alignments and designs and consideration of impacts on the natural and built environment and how to mitigate those impacts. These conditions proposed by the Project Steering Committee add in the need to integrate the recommendation with land use planning for recent UGB expansion areas and potential Urban Reserves (still to be defined) and the importance of integrating the overall system for the area with an I-5 corridor strategy.

The RTP places additional conditions on the "Three Arterial" recommendation and implementation, as reflected below:

**Short-term phasing strategy (2008-2017)**

- Identify replacement solutions for the Tualatin Road project recommended by the I-5/Connector study as part of the next Tualatin TSP update. This project was removed from the RTP based on community concerns and lack of support by the Tualatin City Council. The two-lane connection from the Tualatin Road/Herman road intersection to I-5 at Lower Boones Ferry Road was not intended to serve through traffic, but rather to provide access to the surrounding industrial area and neighborhoods. The planning work will consider alternative alignments and designs across the Tualatin River and I-5 near the I-5/Lower Boones Ferry Road interchange to mitigate impacts. If Tualatin (through their TSP update) does not identify project(s) to adequately address the capacity/connectivity issues identified in this are, then the RTP will be amended to direct the Corridor Refinement Plan effort for corridors #2, 3 and 20 to address this need in that planning effort. The need would go unaddressed until completion of that corridor refinement plan, or the next RTP update.
- Begin construction of the Tonquin Trail (RTP Projects #10092 and #10854).
- Upgrade existing streets to two lanes with turn lanes, traffic signal timing, bike lanes and sidewalks, including Herman Road, Tualatin-Sherwood Road, 95th Avenue (RTP Projects #10715, #10718, #10852).
- Add southbound auxiliary lane from I-205 to I-5/Elligsen Road and northbound auxiliary lane from I-5/Elligsen Road to I-205 interchange. (RTP Projects #10872 and #11177)
- Conduct more detailed project planning and begin construction of a two-lane extension of SW 124th Avenue (RTP Project #10736: 124th Avenue) from Tualatin-Sherwood Road to I-5/North Wilsonville interchange to support its operation as an industrial access route. The planning work will further consider potential impacts on the existing development and the natural environment. It will also include more detailed definition of the design and alignment to mitigate impacts and to integrate with land use and transportation plans for the area.
- Conduct more detailed planning to meet all of the conditions placed on new Southern Arterial project, including:

    1. Conduct the I-5 South Corridor Refinement Plan (includes I-5 from Portland to Tigard, I-5 from Tigard to Wilsonville, and OR 99W from I-5 through Tigard and Sherwood) and land use planning for areas recently added to the urban growth boundary and any land designated as urban reserves. These planning efforts will include opportunities for further public participation and input.
    2. Conduct more detailed project planning on potential Southern Arterial impacts on existing development and the natural environment to develop more detailed definition of the design and alignment to mitigate impacts and coordinate with land use and transportation plans for the area, including integration with land use plans for UGB expansion areas and Urban Reserves, conducting the I-5 South Corridor Refinement Plan, including Mobility Corridors 2, 3 and 20, and resolution of access between I-5 and southern arterial with no negative

impacts to I-5 and I-205 beyond the forecast No-Build condition, addressing NEPA to determine the preferred alignment and addressing any conditions associated with land use goal exception for the southern arterial. This planning effort will include opportunities for further public participation and input.

Tualatin-Sherwood Road is sized in the recommended alternative based upon the expectation there will be a Southern Arterial and will fail due to insufficient capacity without a Southern Arterial and further expansion is incompatible with the plans for the Tualatin and Sherwood Town Centers. If the Southern Arterial is dropped through future studies, there is a major unresolved issue addressing east-west travel through this area. The RTP will need to be amended to direct the Corridor Refinement Plan effort for corridors #2, 3 and 20 to address this need. The need would go unaddressed until completion of that corridor refinement plan, or the next RTP update.

**Medium-term phasing strategy (2018-2025)**

- Widen existing streets to four lanes with turn lanes, traffic signal timing, bike lanes and sidewalks, including Tualatin-Sherwood Road, Roy Rogers Road, Boones Ferry Road and Herman Road (RTP Projects #10568, #10700, #10708, #10732 and #10735)
- Program right-of-way acquisition for the Southern Arterial project in the 2018 - 2025 time period to allow time to conduct the I-5 South refinement plan and land use plans for designated urban reserves in the area.

**Longer-term phasing strategy (2026-2035)**

- Construct the Southern Arterial connection to I-5 or other surface arterials in the vicinity of the I-5/North Wilsonville Interchange when all the project conditions are met.

## 6.4 CONGESTION MANAGEMENT PROCESS

A key change from SAFETEA-LU was an updated requirement for a CMP for metropolitan planning organizations (MPOs) in Transportation Management Areas (TMAs – urban areas with over 200,000 in population). This change is intended to build on the previous requirement of a congestion management system (CMS), placing a greater emphasis on management and operations and enhancing the linkage between the CMP and the long-range regional transportation plan (RTP) through an objectives driven, performance-based approach.

A CMP is a systematic approach for managing congestion that provides information on transportation system performance. It recommends a range of strategies to minimize congestion and enhance the mobility of people and goods. These multimodal strategies include, but are not limited to, operational improvements, travel demand management, policy approaches, and additions to capacity. The region's CMP will advance the goals of the 2035 RTP and strengthen the connection between the RTP and the Metropolitan Transportation Improvement Program (MTIP). A "Roadmap" of the region's CMP can be found in Appendix 4.4.

The goal of the CMP is to provide for the safe and effective management and operation of new and existing transportation facilities through the use of demand reduction and operational management strategies. The CMP seeks to address current and future congestion challenges through an eight-step process:

1. Develop Congestion Management Objectives
2. Identify Area of Application
3. Define System or Network of Interest
4. Develop Performance Measures
5. Institute System Performance Monitoring Plan
6. Identify and Evaluate Strategies
7. Implement Selected Strategies and Manage Transportation System; and
8. Monitor Strategy Effectiveness[3]

All of the 2035 RTP work on the mobility corridors (Chapter 4) and performance measures (Chapter 5) relates to this eight-step process. The RTP goals(Chapter 2) serve as the overarching framework of the region's CMP. The Congestion Management Process will also implemented by local jurisdictions as required by the Regional Transportation Functional Plan, section 3.08.220. The mobility corridors will be the focus of the system and network of interest. The CMP will identify congested mobility corridors and multimodal strategies to mitigate the congestion. Where more motor vehicle capacity is appropriate, the CMP will include additional system and demand management strategies to ensure the capacity investment is effectively managed to get the most value from the investment.

Building upon the performance measures in the RTP, the CMP will provide a framework for data collection and plan monitoring for system performance. The data will be used to help assess various strategies for managing congestion. The region's partner agencies and local governments then look for ways to implement appropriate strategies into on-going or new projects in those corridors. As strategies are implemented, a follow-up assessment will be conducted to determine the effectiveness of the improvements.

## 6.5 METROPOLITAN TRANSPORTATION IMPROVEMENT PROGRAM

An important tool for implementing the RTP is the Metropolitan Transportation Improvement Program (MTIP). The MTIP schedules and identifies funding sources for projects of regional significance to be built during a four-year period. Federal law requires that all projects using federal funds be included in the MTIP. This section describes the role of the MTIP in regional planning and its relationship to the RTP.

### 6.5.1 The Role of the MTIP in Regional Planning

In developing the MTIP, the region gives top priority to strategic transportation investments that leverage and reinforce the urban form outlined in section 2.2, of this plan. The MTIP is approved by

[3] USDOT, "An Interim Guidebook on the Congestion Management Process in Metropolitan Transportation Planning." Pg. 1-1. Feb. 2008.

JPACT, the Metro Council and the Governor of the State of Oregon. The MTIP is then incorporated, without change, into the State TIP (STIP), which integrates regional and statewide improvement plans. The MTIP is updated every two years.

ISTEA, TEA-21 and SAFETEA-LU created important new fiscal requirements for the TIP. The TIP is fiscally constrained and includes only those projects for which federal resources are reasonably available. Projects are grouped by funding category, with project costs not to exceed expected revenue sources. The MTIP financial plan is not comprehensive; it covers only federal funds for capital improvements, and does not include operations, maintenance and preservation or local funds for capital costs.

It is the responsibility of the cities, counties, ODOT, TriMet and the Port of Portland to implement necessary improvements to the regional system, as well as those needed for local travel. These agencies are eligible to receive federal funds allocated through the MTIP process for projects included in the RTP. The TIP is prepared by Metro in consultation with these agencies. Inter-regional coordination throughout the planning and programming process will help to ensure that improvement projects are consistent with regional objectives and with each other.

Projects included in the MTIP must also be included in the RTP financially constrained system. The revenue assumptions used to develop the financially constrained system are defined in Chapter 3. Projects included in the financially constrained system are identified in Appendix 1. However, while the financially constrained system should provide the basis for most MTIP funding decisions, other projects from the RTP may also be selected for funding.

In the event that such projects are drawn from the plan for funding, the RTP financially constrained system will be amended to include the project or projects. In addition, when the financially constrained system is amended, continued financial constraint must be demonstrated by identifying additional revenues or removal of other projects from the financially constrained system. Except in the case of exempt projects (as defined by the federal and state conformity rules) such actions require an air quality conformity determination.

### 6.5.2 Developing the MTIP

Though the MTIP development process is initiated by Metro, the work begins at the local level, with city and county elected officials receiving input from citizens through local planning efforts, and later sharing their transportation needs at the Joint Policy Advisory Committee on Transportation (JPACT). Additional public input is received at the regional level, as well, when JPACT and the Metro Council review the MTIP for final approval. Upon adoption by the Council, the MTIP is submitted to the Oregon Transportation Commission (OTC) for approval as part of the State Transportation Improvement Plan (STIP).

## 6.6 PROCESS FOR AMENDING THE RTP

### 6.6.1 RTP Policy, System Map and Compliance Criteria Amendments

When Metro amends policies or system maps in Chapter 2 of this plan, it will evaluate and adopt findings regarding consistency with the Regional Framework Plan. Decisions on amendments made at this level are land-use decisions for need, mode, corridor, general scope and function of a proposed project. Subsequent land-use decisions on final project design and impact mitigation will be needed prior to construction. Such analysis to evaluate impacts could lead to a “no-build” decision where a proposed project is not recommended for implementation, and would require reconsideration of the proposed project or system improvements. As such, amendments at this level shall be reviewed through the post-acknowledgement process. However, a decision on an amendment to the Regional Transportation Plan should not foreclose or appear to foreclose full and fair consideration of all relevant statewide planning goal issues at such time that specific projects and programs are adopted by a local jurisdiction.

It is Metro's responsibility to adopt findings based on project need, mode, corridor, general scope and function of projects proposed in the Regional Transportation Plan. The affected jurisdiction is responsible for preparing the specific local plan amendments and findings related to specific location, project design and impact mitigation and for scheduling them for hearing before the governing body in time for action by that body by the time required.

### 6.6.2 RTP Project Amendments

The RTP establishes a comprehensive policy direction for the regional transportation system and recommends a balanced program of transportation investments to implement that policy direction. However, the recommended investments do not solve all transportation problems and are not intended to be the definitive capital improvement program on the local transportation system for the next 20 years.

Rather, the RTP identifies the projects, programs or further refinement studies required to adequately meet regional transportation system needs during the planning period. Local conditions will be addressed through city and county TSPs, and will require additional analysis and improvements to provide an adequate transportation system. This chapter anticipates such refinements, particularly given the degree to which this RTP has been updated from previous plans. Similarly, refinements to the RTP may result from ongoing corridor refinement plans, NEPA studies or other area studies. The following processes may be used to update the RTP to include such changes:

1. Major amendments: These are amendments that come from NEPA processes, Corridor Refinement Plans or other studies and involve additions or deletions of projects or a significant change in scope of the project location or function. As the findings for need for an amendment are produced, they will be recommended by a resolution of JPACT and the Metro Council. These amendments must be incorporated into the RTP through a quasi-judicial or legislative process,

as needed, and consistent with the Public Involvement Policy for Transportation Planning (last updated in June 2009) and Federal and State Air Quality Conformity Procedures.[4]

2. Other amendments resulting from local TSPs: new roadway, transit, bikeway, pedestrian, freight and demand management projects necessary to meet the objectives of the RTP shall be accompanied by an demonstration of consistency with the RTP.

   The amount of information required to demonstrate consistency with the RTP shall be commensurate with the scope of the project. Such additions will be amended into the RTP as part of the project update process described in this section. Operations, maintenance and safety improvements are deemed consistent with the policy intent of the RTP if (a) they are needed to serve the travel demand associated with Metro's adopted population and employment forecasts, and (b) they are consistent with affected jurisdictional plans.

3. Amendments resulting from updates to the Regional Framework Plan or related functional plans.

## 6.7 IMPLEMENTATION ACTIVITIES TO BE ADDRESSED POST-RTP ADOPTION

### 6.7.1. Local Plan Implementation

Local plans and projects will be updated to implement the outcomes-based RTP and Regional Transportation Functional Plan (RTFP). The RTFP directs how city and county plans will implement the new RTP through their respective comprehensive plans, local transportation system plans (TSPs) and other land use regulations. All of the actions included in the RTFP will help the region begin proactively addressing climate change, improve mobility and support other desired outcomes.

The TPR includes provisions for local TSPS to be updated within one year of adoption of the final RTP, but allows for the RTP to determine a schedule for local plan compliance. A schedule for local transportation system plan updates is provided in the Regional Transportation Functional Plan, Table 3.08-4. The local plan updates are phased appropriately to support local desires for completing plan updates in a timely manner, in coordination with other planning efforts and to take advantage of state funding opportunities.

### 6.7.2 Alternative Mobility Standards

The RTP establishes a new outcomes-based framework and includes new policies, tools and actions to guide future planning and investment decisions. To successfully implement this new approach and support the region's efforts to create jobs, sustain economic prosperity, use land efficiently and address climate change, the region needs new tools to evaluate and diagnose our transportation

[4] State Conformity rule 340-252-0060 describes required consultations on air-quality determinations, including required public involvement.

system. Existing volume-to-capacity-focused mobility standards have limited applicability and flexibility under the new outcomes-based RTP:

- **The 2040 Growth Concept vision for land use and transportation must be accelerated to achieve desired outcomes; yet institutional and fiscal barriers exist.** For example, the City of Tigard proposed mixed-use zoning and doubling the height limit in downtown to 8 stories to create more jobs and housing and support a future high capacity transit connection. Due to potential traffic impacts to OR 99W and Hall Boulevard, the City adopted the mixed-use zoning but had to retain the current 4-story height limit to meet state requirements.
- **Existing volume-to-capacity-focused mobility standards only tell part of the story.** A more comprehensive framework of measures is needed to define success and guide investments and actions needed to support local implementation of the 2040 Growth Concept vision.
- **Benefits and impacts of different actions are not always fully understood or accounted for.** Current analysis tools are limited in their ability to fully quantify the benefits of individual actions (e.g., timing traffic signals, providing financial incentives and civic infrastructure in downtowns, building sidewalks and bike facilities, etc.). All of these actions will help improve mobility in the region and support other desired outcomes.

A series of actions are recommended for Metro, ODOT and other regional partners to take over the next few years to support the outcomes identified through the *Making the Greatest Place* effort. These actions will result in a more comprehensive approach for implementing the 2040 Growth Concept and meet statewide goals for compact development patterns, mobility and greenhouse gas emissions.

**2010 Recommended Actions**

- **Retain current mobility standards**, subject to future refinement. **(June 2010)**
- **Adopt revisions to the Regional Transportation Functional Plan (June 2010) and Urban Growth Management Functional Plan (December 2010)**

  *Metro's functional plans direct how local governments implement regional policies, recognizing that "one size does not fit all." Any new functional plan actions should allow for flexibility and varying local aspirations, circumstances, and readiness, but ensure regional policies are being implemented consistently through local transportation system plans (TSPs), comprehensive plans and codes. The following revisions are recommended:*

  <u>Transportation Functional Plan provisions</u> **(June 2010)**

  - Require TSPs, mobility corridor strategies and corridor refinement plans to implement the new RTP policies for system management and operations, bike, pedestrian, transit, safety, freight, and connectivity, consistent with state and federal policies (e.g., Congestion Management Process and Oregon Highway Plan (OHP), Major Improvements Policy 1G).

- Require TSPs, mobility corridor strategies and corridor refinement plans to include transportation system management and operations (TSMO) strategies and projects, consistent with the regional TSMO plan.
- Allow local governments to identify alternative mobility standards, as set forth in OHP Policy 1F3, in collaboration with ODOT and Metro, through TSP updates, corridor refinement planning, concept planning or other planning efforts.
- Allow an automatic 30 percent trip reduction credit for plan amendments in areas that have adopted a minimum level of "best practices" actions.
- Provide a list of "best practice" actions that will automatically qualify for 30 percent trip reduction credit and other actions that could allow for additional credit if implemented.
- Clarify RTP amendment process and procedures, including public involvement and notification requirements.
- Require adoption of parking management plans in centers and along high capacity transit corridors.

<u>Proposed Urban Growth Management Functional Plan revisions</u> **(December 2010)**

- Require adoption of property-line boundaries for 2040 designated land uses through a public process.
- Require that a mix of land uses be allowed in 2040 centers, main streets and along transit corridors.
- Require limitations on new auto-oriented uses in centers.
- Require limitations on large-format retail near interchanges, unless allowed by an adopted Interchange Area Management Plan.

- **Adopt multi-modal mobility corridor strategies (June 2010)**

  *The strategies in Chapter 4 define the vision and planned system for each of the region's 24 mobility corridors. The strategies have been tailored for each corridor to support adopted land use plans and corridor function(s) and include management, operations and capital investments to support all modes of travel.*

- **Adopt findings (June 2010)**
  - Document the extent of congestion in the region. (Chapter 5)
  - Demonstrate that the region has "done the best we can" to improve highway performance as much as feasible for purposes of meeting state requirements and OHP Policy 1F5.
  - Allow the RTP State System to serve as the "reasonably likely" system of improvements and "baseline condition" for local governments to use to assess the traffic impacts of plan

amendments to determine if a plan amendment has a “significant effect” on state facilities. This requires local government and TriMet concurrence.

    - Document evidence for automatic 30 percent trip reduction credit for plan amendments.

- **Develop best practices checklist** for determining consistency of local plans with the RTP. **(June 2010)**

- **Request amendments to the Transportation Planning Rule** to define an automatic 30 percent credit for plan amendments in areas that have adopted certain “best practices” actions. **(June 2010)**

- **Request ODOT to engage Metro region** and other MPOs, cities, counties and interested stakeholders **in the mobility standards research** Project #716 that is underway. **(June 2010)**

### 2011-12 Recommended Actions

- **Metro and regional partners consider development of alternative mobility standards for individual corridors through refinement plans, concept planning and TSP updates.**

- **Metro updates Best Practices in Transportation System Design Toolkits/Livable Streets Handbooks** in collaboration with ODOT and other regional partners.

- **Metro and regional partners continue model enhancements and develop data collection and performance monitoring system**, to better understand the relationship between compact urban form, transportation policies and investments, greenhouse gas emissions, health outcomes and combined housing/transportation costs.

- **Metro and regional partners complete greenhouse gas scenarios planning as required by House Bills 2001 and 2186 (2009 Session) and Senate Bill 1059 (2010 Session)**, and identify implementation recommendations for Metro region.

- **The Oregon Transportation Commission (OTC) works with Metro and other stakeholders to develop and implement a jurisdictional transfer strategy** for regional and district highways, and provide funding to upgrade facilities prior to, or in conjunction with, the transfer of ownership to local governments.

- **The OTC and the Land Conservation and Development Commission (LCDC) work with Metro and other stakeholders conduct a comprehensive and coordinated review and update to the Transportation Planning Rule, Oregon Highway Plan and mobility standards**, and state procedures manuals and guidelines to more fully integrate the Oregon Transportation Plan policies and state greenhouse gas goals.

- **The OTC and LCDC work with Metro and other stakeholders to develop State Greenhouse Reduction Strategy and Toolkit** for local governments.

### 6.7.3 High Capacity Transit System Expansion Policy (SEP) Guidebook

In June and July 2009, the Joint Policy Advisory Committee on Transportation and the Metro Council adopted the Regional High Capacity Transit (HCT) System Plan. The HCT Plan identifies corridors where new HCT is desired over the next 30 years. It prioritizes corridors for implementation, based on a set of evaluation criteria, and sets a system expansion policy (SEP) framework to advance future corridors by setting targets and defining regional and local actions, consistent with the goals of the Regional Transportation Plan (RTP) and the region's 2040 Growth Concept.

More work is needed to define how the SEP policy will be implemented. This work is underway and will be brought forward for future policy discussion by JPACT, MPAC and the Metro Council.

The SEP is intended to provide policy direction on the range of factors that should be considered when determining the next high capacity transit corridor to pursue, including:

- Community factors that center on local land use aspirations, transit-supportive land uses, building-orientation and block sizes, transportation infrastructure (e.g., sidewalks, bicycle facilities and street connectivity) parking and demand management policies, and design factors that will leverage HCT investments and increase ridership potential within a particular corridor. Generally, these factors are under the control of local governments and are implemented through local land use and transportation plans. If successfully implemented, these factors would bring a given HCT corridor and the communities connected by that corridor closer to the 2040 Growth Concept vision.
- Readiness factors such as political commitment, community support and partnerships needed to pursue the long and sometimes difficult process that even the most popular transportation investments must work through.
- Regional factors such as financial capacity and regional consensus on the appropriate next corridor.

To aid this decision-making, the HCT Plan focuses on technical factors. It will be updated with each RTP update, though the specific measures and methodologies are expected to evolve over time through a collaborative regional decision-making process. Potential HCT corridors can move closer to implementation, advancing from one tier to the next through a set of coordinated TriMet, Metro, ODOT and local jurisdiction actions that address the remaining factors.

More work is needed to define how the SEP policy will be implemented. This work is underway and will be brought forward for future policy discussion by JPACT, MPAC and the Metro Council. This section and the Regional Transportation Functional Plan will include guidance to help local jurisdictions, Metro and TriMet work together to achieve the community, readiness and regional factors listed above. This can include Memorandum of Understandings (MOUs) and eventually Intergovernmental Agreements (IGAs) that harness the synergy between community aspirations, the ability to develop high capacity transit to further those aspirations and other needed local, regional and state actions. It will also include specific targets to measure corridor readiness and contribution to regional goals.

The factors are complex and stem from the interactions of private individuals and businesses, local jurisdictions, and regional agencies.  The intention of the guidance is that those jurisdictions which are achieving positive outcomes in these factors and/or have the aspiration to create the most improvement on these factors are simultaneously improving their own communities, creating more transit-friendly environments, and also may be able to pursue a near-term high capacity transit project along with the other jurisdictions in the corridor.

### 6.7.4 Climate Smart Communities (Regional Greenhouse Gas Scenarios Planning) and Climate Action Plan

During the update of the 2035 Regional Transportation Plan (RTP), the reduction of greenhouse gas emissions gained prominence at the regional, state, and national/international levels.  In 2007, the Oregon Legislature established statewide targets for greenhouse gas emissions (GHGs) – calling for stopping increases in GHG emissions by 2010; 10 percent reduction below 1990 levels by 2020 and a 75 percent reduction below 1990 levels by 2050.  These targets apply to all emission sectors, including energy production, buildings, solid waste, and transportation.  Federal climate legislation, with targets and commensurate planning requirements to mitigate GHG emissions remain pending in Congress.

In 2008, the region examined a number of scenarios during the Making the Greatest Place process intended to best meet six regional outcomes, including minimizing contributions to climate change. Those scenarios provide a baseline for further work but did not demonstrate the necessary emission reductions to meet the long-term state and regional targets.

In 2009, the Legislature passed House Bill 2001, directing Metro to "develop two or more alternative land use and transportation scenarios" by January 2012 that are designed to reduce greenhouse gas emissions from light-duty vehicles. Sections 37 and 38 of House Bill 2001 are intended to ensure statewide targets for GHG emissions are being addressed in metropolitan transportation plans and regional and local land use plans. House Bill 2001 also calls for LCDC rulemaking in 2011 to establish a specific Metro-area target for the transportation-related emissions sector. The region's LCDC established target will take into account all sectors of CO2 emissions for all parts of the state. A report on the Metro-region scenarios is due to the Oregon Legislature by February, 2012. House Bill 2001 also requires Metro to adopt one scenario that meets the state targets after public review and comment.  Finally, it requires local governments to adopt comprehensive plan and land use regulations consistent with the adopted scenario.[5]

[5] For more information on House Bill 2001, go to http://www.oregon.gov/ODOT/JTA_overview.shtml.

The 2009 Legislature also established the Metropolitan Planning Organization Greenhouse Gas Emissions Task Force through House Bill 2186. The task force's recommendations were approved by 2010 Legislature as part of Senate Bill 1059. Senate Bill 1059 provides further direction to greenhouse gas scenario planning in the other Oregon MPOs and the Metro region. [6] It also calls for a statewide GHG emission reduction strategy for the light-duty vehicle emissions sector; and calls for the state to develop a toolkit of emission reductions actions.

There is no silver bullet, but the region can build on past successes. In general, the Portland region is leading the United States in reducing transportation-related GHGs. Vehicle miles traveled (VMT) per capita have been declining, transit and bike mode shares are increasing, and shorter trips have resulted due to compact, mixed-use urban form. National studies, research in California and the Puget Sound region and other scenario planning efforts have shown that compact urban form coupled with expanded travel choices, user fees, and technology will reduce transportation-related carbon emissions. These strategies are recommended by the 2035 Regional Transportation Plan (RTP), and will be further tested through the scenarios.

### CLIMATE CHANGE ACTION PLAN

In order to meet state goals and the region's broader set of desired outcomes, Metro's greenhouse gas scenario planning work will be guided by the following principles:

- **Regional collaboration and partnerships.** Addressing the climate change challenge will take a regional approach and partnerships in the public and private sectors, requiring meaningful policy and investment discussions with elected leaders, stakeholders and the public. It is only by working together and combining resources that we can hope to make real progress and be successful.

- **Healthy environment, healthy people <u>and</u> healthy economy.** Environmental and community health and economic vitality are not mutually exclusive -- with strategic planning, innovation and investment, the region can achieve these desired outcomes.

- **Continued leadership on the integration of land use and transportation.** National studies continue to show that a compact urban form coupled with expanded travel choices as key to reducing greenhouse gas emissions. Land-use and transportation policy-makers must work together to provide leadership and commit to strategies that will enhance this integration at the local, regional and state levels.

- **Build on past successes and innovation.** The scenarios analysis will build on the innovative policy and technical work from the *Making the Greatest Place* initiative, the Regional Transportation Plan update and local efforts to implement the 2040 Growth Concept. Scenarios will be based on agreed-upon assumptions for land use and development patterns, transportation, user fees and technological advancements related to vehicle fleets and fuels.

[6] For more information on House Bill 2186 and the Task Force recommendations, go to http://www.oregon.gov/ODOT/TD/TP/HB2186.shtml.

- **Better tools for complex decisions.** Appropriate baseline data and enhanced analysis tools will be developed to better understand which strategies are most effective and the benefits and impacts of different strategies on reducing carbon emissions and achieving other desired outcomes.

**SHORT-TERM STRATEGIES JANUARY 2010-2012**

- **Local transportation system plans –** TSP updates will begin in late-2010 to be consistent with the new RTP policies and targets, including reductions in greenhouse gas emissions.
- **Metropolitan Transportation Improvement Program** – Metro Council and JPACT/MPAC revise the Metropolitan Transportation Improvement Program (MTIP) criteria to help the region select transportation investments that meet all the RTP performance targets including minimizing global warming. Multi-modal transportation investments within designated centers, corridors and employment areas should be the focus of investments.
- **Corridor refinement plans -** Investments identified through corridor refinement plan studies will be evaluated and prioritized on their ability to best leverage the region's desired outcomes, including minimizing contributions to global warming.
- **Local land use commitments and regional capacity ordinance work** – In December 2010, adopt a regional capacity ordinance that commits communities and the region to specific land use actions that minimize contributions to climate change.

**CLIMATE SMART COMMUNITIES (GREENHOUSE GAS SCENARIO PLANNING)**

**Phase II – Scoping and Research January – December 2010**

Develop an overall scope of work and budget, refined timeline, project management and oversight processes, outreach and communication structures, governance structure, and inter-governmental agreements to complete the work. Develop and enhance transportation, land use, and GHG forecasting models. Finalize baseline GHG inventory. Publish climate change background report(s). Establish policy basis for new tools, such as parking pricing, tolling and other strategies. Initiate public/stakeholder outreach.

**Phase III – Scenario Development May – December 2010**

Work with stakeholders to develop evaluation criteria and two scenarios intended to meet transportation-sector GHG targets. Continue public/stakeholder outreach.

**Phase IV – Scenario Evaluation January – September 2011**

Work with DLCD staff and other stakeholders to develop a recommended transportation-related GHG emissions reduction target. LCDC will adopt target in June 2011. Evaluate a baseline and two scenarios against criteria and refine scenarios, if necessary, to meet LCDC-adopted GHG targets.

**Phase V - Public Review Process October – December 2011**

Report on scenarios as defined in public/stakeholder outreach plan. Public review process results in a public comment report and accompanying transmittal to forward to the Oregon Legislature.

**Phase VI – Scenario Selection** **January – September 2012**

Provide a report to the 2012 Legislature on scenarios results and policy implications. Consider public comments and select preferred scenario to forward to next RTP. Initiate next RTP update in June 2012.

**Phase VII – Regional and Local Implementation** **September 2012 - 2014**

Incorporate preferred scenario into Regional Transportation Plan as part of RTP update. Identify local and regional actions needed to implement preferred scenario. Begin local plan updates and regional implementation.

### 6.7.5 Rural Arterial Policy Refinements

The 2000 RTP included new classifications for "Rural Arterials", organizing these facilities as "farm-to-market" or "urban-to-urban" in function. The purpose of these designations was to recognize rural routes that are impacted by urban traffic, and potentially requiring mitigation or management practices to help them retain their principal function as rural transportation routes.

"Farm-to-market" routes are generally radial routes connecting to the region, and in some areas, serving as a secondary gateway to the state highways that serve as the main routes in and out of the region. "Urban-to-urban" routes are facilities where the rural connection provides for direct travel between different parts of the urban area as a result of the irregular shape of the Urban Growth Boundary (UGB).

As part of this RTP update, these routes have been combined into a single "rural arterial" designation. A broader discussion on rural arterials should follow the urban and rural reserves designation process, since parts of this network will be critical to providing the base transportation infrastructure for areas that are designated as urban reserves.

### 6.7.6 Greater Portland-Vancouver Indicators

As the region increasingly shares similar desired outcomes, the need to use similar performance measures increases. To take advantage of this, Metro has been and continues to be engaged in an effort with PSU's Institute of Metropolitan Studies to develop a coordinated regional approach to develop and utilize performance measures that can provide a shared lens for tracking how the region is doing socially, economically and environmentally. As this new regional approach is developed, the performance indicators identified in this RTP can be included into a broader, even more holistic performance monitoring system for the region.

Results teams have been identified for the following sectors: economy; education; culture and the arts; civic engagement; well-being (health, protection and public safety); access and mobility; housing and community; and the natural environment. Although the teams will be sector specific, they will be provided venues and resources to collaborate on critical inter-relationships across indicators and issues (i.e., economic vitality and transportation, housing and transportation, equity and transportation). More information on this project can be found at http://www.pdx.edu/ims/Indicators.

### 6.7.7 Community Investment Strategy

The system the region can afford with "expected revenue" is not expected to be sufficient to achieve the region's vision for the future. The region's funding gap is so significant, the region must use every tool at our disposal to address current and future transportation needs in support of the Region 2040 Growth Concept. The region needs a strategy that effective links land use and transportation investment decisions.

Community building investments are tied primarily to locally-generated growth-related revenues. In addition, new growth areas need seed money before system development charges can begin to be collected. Both short-term and long-term strategies are needed to raise new revenues to fund needed investments. A regional funding strategy must be developed to focus on identifying those investments that are needed to achieve the 2040 Growth Concept and implementation of the RTP over time.

### 6.7.8 Regional Transportation Model Enhancements

Model Development Activities
Portland State University (PSU) and Metro are developing a tour based dynamic demand model (DASH). The relevancy of this tool is that it will better reflect the traveler response to congestion (e.g., time of day choices, tour alterations). In addition, the response to pricing is better measured due to more discrete value of time delineations.

Metro is just beginning its work implementing a dynamic traffic assignment tool (DynusT). This is critical due its ability to better reflect speed conditions by accounting for queuing effects, peak spreading.

Air Quality Conformity Modeling

Metro has transitioned to theEPA MOVES model for evaluating transportation-related greenhouse gas emissions and air pollutants that must be analyzed for air quality conformity. We are current with its assumptions and implementation procedures.

Transit Modeling

Metro is conducting research with regard to the transit traveler's perception of time. Is the wait time at a fully developed station less onerous than at a street corner? Is the ride on a LRT vehicle more pleasant than on a bus? We are working to statistically quantify these time perceptions and integrate them into the model. Capturing these time perceptions is important to more confidently estimate transit travel and its potential reduction of VMT.

Bicycle and Pedestrian Modeling

The existing regional transportation model underestimates bicycle and pedestrian trips, and does not predict bicycle travel according to the transportation network. Instead, the current model predicts bicycle and pedestrian trips as part of the "mode choice" step of the modeling process, but does not assign these trips to a network to predict how they might be distributed.

More work is needed to capture the increased pedestrian mode share that may result due to urban form and amenities. Pedestrian trips are accounted for in the regional travel demand model, but are generally short enough to make a Transportation Analysis Zone (TAZ) to TAZ network assignment impractical. Efforts are being made to bring the scale of pedestrian analysis into sharper focus – at a block to block level.

Bicycle trips are of sufficient length to be assigned to a network and evaluated at this level. In 2007, Metro initiated work to improve bicycle modeling capability. The bicycle model work is expected to be available for use in the HB 2001 climate change scenarios work and the next RTP update.

ODOT Statewide Model

ODOT has nearly completed a more detailed set of travel zones for the state which will allow Metro to better predict travel demand at "gateway" points where statewide traffic enters the region. Currently, the regional model simply projects historic traffic volumes on such routes, but is unable to evaluate how congestion, parallel routes, and distribution of employment in and outside the region affects travel demand at these "gateway" locations. The ODOT Statewide Model was updated in 2008.It is still undergoing validation and is still to be determined how Metro's regional model will interface with it. The results will be considered for the next RTP update.

Regional Travel Behavior Survey

The Portland region travel behavior survey scheduled for 2007 was postponed until Spring 2011 due to the significant construction in the downtown Portland transit mall area and funding constraints. The survey results will be used to refine the region's travel demand model to better predict travel behavior based on data collected as part of the survey. This update will inform model enhancement for the next RTP update.

### 6.7.9 Parking Management Policy Refinement

The RTP scenarios analysis demonstrated the effectiveness of parking management for helping the region achieve the modal targets in Table 2.4. More work is needed to determine what parking management strategies should be implemented in this region and where they could be applied (beyond what is currently required in Title 4 of the Regional Transportation Functional Plan.) This effort could define how to tailor the application of these strategies to recognize different levels of development, transit service provision and freight parking needs.

This work could include updating and expanding the existing inventory of parking practices in the Metro region, and developing a parking model code and a parking “best practices” handbook to guide local implementation in the region.

### 6.7.10 Urban and Rural Reserve Planning and Green Corridor Implementation

Green corridors were adopted as part of the 2040 Growth Concept. They are designated in rural areas where state-owned highways connect neighbor cities to the metro area. The purpose of green corridors is to prevent unintended urban development along these often heavily traveled routes, and maintain the sense of separation that exists between neighbor cities and the Metro region. The green corridor concept calls for a combination of access management and physical improvements to limit the effects of urban travel on the routes on adjacent rural activities.

In several corridors, Metro has already developed inter-governmental agreements (IGAs) with local governments to address access management issues. However, IGAs are not in place in most corridors, and physical improvements, such as street and driveway closures, landscaping and public signage have not been implemented in any green corridors.

The 2035 RTP household and employment forecast assumes future urban growth boundary expansions following the current state land use hierarchy. Work has been completed underway to designate urban and rural reserves in the region, under new statutes approved by the 2007 Legislature. The urban and rural reserve work program will not only provide an opportunity to establish a more certain framework for transportation improvements along the urban edge, but also a context for an update the Green Corridors policy. Metro will also continue to work with ODOT and affected local jurisdictions to complete IGAs for the remaining green corridors that reflect updated plans for urban and rural reserves, and develop plans for necessary improvements and management strategies for Green Corridors that reinforce emerging policies for our urban edge. A new forecast and planning for reserves designations will be addressed in the next RTP update.

### 6.7.11 Funding Strategy for Regional Bridges

The region continues to struggle with a long-term strategy for maintaining major bridges that serve regional travel, particularly local bridges spanning the Willamette River. Currently, Multnomah County has primary responsibility for five of the ten bridges. Within 20 years, four of Multnomah County’s five Willamette River Bridges will be 100 years old. The county’s capital program for these bridges is estimates to cost $450 million, yet only $144 million in federal, state and county revenues has been identified. All the region's bridges face maintenance challenges that come from age and use.

More work is needed to determine primary financial responsibility for ensuring ongoing operations and maintenance and other transportation needs of regional bridges given the regional economic importance of keeping the Willamette River bridge and other regional bridges fully functional in the long-term.

### 6.7.12 ODOT District and Regional Highways Jurisdictional Transfer Strategy

As ODOT continues to face decreased funding for system operations and maintenance, a significant backlog of multi-modal modernization investments on the ODOT-owned "district and regional highways" continue to grow. These are former highway routes, built before the development of the regional throughway system evolved. They have since evolved into urban arterial streets that connect centers, industrial and employment areas and in many cases, function as regional transit routes.

However, most have a backlog of basic urban improvements that must be addressed in order to fully implement the 2040 Growth Concept. Work is needed to define a long-term strategy for transferring responsibility for these routes to local governments, which are best equipped to build and maintain needed improvements. Some of these routes should also be evaluated for their role as complementary facilities within the context of the regional mobility corridors, and prioritized accordingly for needed multi-modal investments.

### 6.7.13 Emerging Communities

Emerging communities are areas that have been brought into the urban growth boundary since 1998, that have 2040 land use designations, and that lack adequate transportation and transit infrastructure and financing mechanisms. Additional work is needed to better define the needs of emerging communities and strategies needed to facilitate development in these areas, consistent with the 2040 Growth Concept.

### 6.7.14 Active Transportation Action Plan

In 2008, as part of the larger Connecting Green initiative, Metro convened a Blue Ribbon Committee (BRC) of civic, business and elected leaders to think big about regional trails. The BRC met for six months from May through October 2008. The BRC was charged with evaluating the regional trails system and its benefits. They were asked to determine whether the current level of investment in the regional trails system, which would take nearly 200 years to complete, was adequate.

The BRC determined that development of the trails system should be accelerated, and that it must be done as part of a larger strategy to support active transportation – including well integrated and mutually supportive bike, pedestrian and transit networks. The BRC's final report, "The Case for Active Transportation," identifies four main elements to implement such a strategy: 1) Organize leadership, 2) Demonstrate Potential, 3) Reduce Costs, 4) Develop System.

The development of a regional active transportation action plan following the RTP update is key to the "Develop system" element of the BRC's strategy. For example, a key RTP policy concept that emerged out of the BRC work is the "Regional Bicycle Parkway." Regional bicycle parkways form the backbone of the regional bicycle system. A bicycle parkway serves as a green ribbon connecting 2040 activity centers, downtowns, institutions and greenspaces within the urban area while providing an opportunity for bicyclists to travel efficiently with minimal delays.

The development of a regional active transportation action plan is needed to further develop the bike parkway concept, and may include defining the ideal spacing of these routes, identifying specific routes, as well as prioritizing which routes should be developed first. The parkways will likely be composed of routes currently designated as Regional Bikeway, Community Bikeway and Regional Trails. During the development of the action plan, Metro will recommend amending RTP policy to consider "trails" a design type rather than a functional classification.

In addition, the regional pedestrian network vision needs to be updated, and recommendations incorporated into the Active Transportation Action Plan.

### 6.7.15 Best Design Practices in Transportation

Starting in 2010, Metro staff will initiate an update to the Best Design Practices in Transportation, formerly known as the Livable Streets handbook. Recommendations from the Regional Freight Plan and further development of the principal arterial parkway concept will be addressed as part of this effort. The update to the guidebooks will incorporate designs for low-volume bicycle boulevards, alternate designs for high volume arterial streets (e.g. cycle tracks) and regional trails. The guidelines will address the added design elements that are needed when these facilities serve as a bicycle parkway route, e.g. bicycle priority treatments and strategies for avoiding bike and pedestrian conflicts. The outcomes of this process will be incorporated into the next RTP update.

### 6.7.16 High-Speed Rail

The Federal Rail Administration is currently developing a strategic plan for developing a comprehensive high-speed intercity passenger rail network. It has received $8 billion down payment provided in the American Recovery and Reinvestment Act (ARRA) and a high-speed rail grant program of $1 billion per year (proposed in his fiscal year (FY) 2010 budget). These first steps emphasize strategic investments that will yield tangible benefits to intercity rail infrastructure, equipment, performance, and intermodal connections over the next several years, while also creating a "pipeline" of projects to enable future corridor development.

High-speed intercity passenger rail can play a critical role in certain travel markets, but the United States has historically failed to invest in this mode. The President proposes a long-term strategy intended to build an efficient, high-speed passenger rail network of 100- to 600-mile intercity corridors, as one element of a modernized transportation system. The near-term investment strategy seeks to:

- Advance new express high-speed corridor services (operating speeds above 150 mph on primarily dedicated track) in select corridors of 200–600 miles.

- Develop emerging and regional high-speed corridor services (operating speeds up to 90–110 mph and 110–150 mph respectively, on shared and dedicated track) in corridors of 100–500 miles.
- Upgrade reliability and service on conventional intercity rail services (operating speeds up to 70 – 90 mph)

**Figure 6.3**shows the high-speed rail corridors, including corridors in the Portland Metro region and greater Pacific Northwest. The next RTP update will incorporate results from this national effort.

**Figure 6.3**
**National Vision for High Speed Rail in America**


### 6.7.17 Regional Safety Planning Work Program

As part of U.S. DOT's quadrennial certification review of the region's transportation planning practices, Metro received recommendations to better incorporate safety into long-range planning. Metro will work with local jurisdictions and agencies to develop a safety work program. The work program will focus on data collection for plan monitoring, analysis and presentation, context sensitive solutions, and performance measurement. This work will be tied to the region's Congestion Management Process (CMP).

Metro will work with ODOT and members of the Regional Safety Work Group, or develop an official safety committee, to refine the existing statewide traffic safety data to reflect conditions within the subset of the Metro boundary and develop a regional Traffic Safety Plan by December, 2011, with goals, performance measures, and strategies specific to the MPO. Upon adoption of the plan by JPACT and the Metro Council, the MPO Traffic Safety Plan measures will replace the existing Safety Performance Target.

### 6.7.18 Congestion Management Program Data Collection and Monitoring

The great challenge for establishing and maintaining a monitoring program has been the availability of data. Historically, collecting and managing data has been expensive and difficult. With advancements in intelligent transportation systems in the region, more and better data is available today and will continue to grow with implementation of data collection projects identified in the Regional Transportation System Management and Operations (TSMO) plan.

In 2008, the region approved ongoing funding for implementation, including $100,000 per year to fund PORTAL data collection, maintenance and reporting on the region's highway and transit system. Metro will work with ODOT and other regional partners to expand existing data collection and performance monitoring efforts to include other parts of the system and develop new tools and methods to evaluate system performance for all modes of travel.

This work will include developing a data management system to facilitate data collection, maintenance and reporting to support on-going RTP monitoring. The data will be reported biennially as part of the Regional Mobility Program, consistent with the region’s federally-approved congestion management process.

### 6.7.19 Environmental Justice Methodology and Criteria

Metro has recognized the need to enhance the region’s commitment to better address equity and federal Environmental Justice requirements. Prior to the next RTP update, Metro staff should research and recommend improved evaluation tools and criteria for policy-making and priority-setting in order to better understand how low-income, minority, disabled and elderly populations are being served by transportation policies and investment decisions.

### 6.7.20 Freight system bottlenecks

As a critical West Coast domestic hub and international gateway for commerce and tourism, the Portland area must maintain well-functioning river ports, rail connections and highways. The Regional Freight Plan and RTP identify a small set of key highway bottlenecks on National Highway System facilities critical to state and regional truck mobility. The plans also note freight rail bottlenecks critical to access to the region’s ports and intermodal facilities, as well as the need for rail to carry its full share of existing and future commodities efficiently.

In order to address these long standing needs and to increase understanding of their economic importance, the Regional Freight Technical Advisory Committee, with assistance from private sector stakeholders (e.g., through a Regional Freight and Business Task Force) will develop criteria and a methodology for ranking these locations in terms of their freight and business impacts. This can be done by: (a) measuring the extent to which sensitive economic activities are affected by those facilities, and (b) estimating the magnitude of potential economic benefit associated with making improvements to these facilities, using the best available methods and tools. Information generated through this analysis will be used in future RTP updates to help prioritize investments and may be needed in the future to qualify for certain federal funding categories.

## GLOSSARY OF TERMS

**Accessibility** – The ability or ease to reach desired goods, services, activities and destinations with relative ease, within a reasonable time, at a reasonable cost and with reasonable choices. Many factors affect accessibility (or physical access), including mobility, the quality, cost and affordability of transportation options, land use patterns, connectivity of the transportation system and the degree of integration between modes. The accessibility of a particular location can be evaluated based on distances and travel options, and how well that location serves various modes. Locations that can be accessed by many people using a variety of modes of transportation generally have a high degree of accessibility.

**Access management** – Measures regulating access to streets, roads and highways from public roads and private driveways. These measures include restrictions on the siting of interchanges, restrictions on the type and amount of driveway and intersection access to roadways, and use of physical controls, such as signals and raised medians, to reduce the impact of connecting road traffic on the main facility.

**Active Living** - Lifestyles characterized by incorporating physical activity into daily routines through activities such as walking or biking for transportation, exercise or pleasure. To achieve health benefits, the goal is to accumulate at least 30 minutes of activity each day.

**Active transportation** - Non-motorized forms of transportation including walking and biking.

**Affordability** –See cost-burdened household.

**Americans With Disabilities Act (ADA) of 1990** – Civil rights legislation enacted by Congress in 1990 that mandates equal opportunities for persons with disabilities in the areas of employment, transportation, communications and public accommodations. Under this Act, most transportation providers are obliged to purchase lift-equipped vehicles for their fixed-route services and must assure system-wide accessibility of their demand-responsive services to persons with disabilities. Public transit providers also must supplement their fixed-route services with paratransit services for those persons unable to use fixed-route service because of their disability. TriMet's ADA transportation plan outlined the requirements of the ADA as applied to TriMet services, the deficiencies of the existing services when compared to the requirements of the new act and the remedial measures necessary to bring TriMet and the region into compliance with the act. Metro, as the region's metropolitan planning organization (MPO) is required to review TriMet's ADA Paratransit Plan annually and certify that the plan conforms to the Regional Transportation Plan. Without this certification, TriMet is not in compliance with the ADA. ADA also affects the design of pedestrian facilities being constructed by local governments.

**Arterial** – A class of street. Arterial streets interconnect and support the throughway system. Arterials are intended to provide general mobility for travel within the region. Correctly sized arterials at appropriate intervals allow through trips to remain on the arterial system thereby discouraging use of local streets for cut-through travel. Arterial streets link major commercial, residential, industrial and institutional areas. Major arterials serve longer distance through trips and serve more of a regional traffic function. Minor arterials serve shorter, more localized travel within a community. As a result, major arterials usually carry more traffic than minor arterials. Arterial streets are usually spaced about one mile apart and are designed to accommodate bicycle, pedestrian, truck and transit travel.

**Asset management** – A systematic process of maintaining, upgrading and operating physical assets cost-effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision-making. Asset management provides a framework for handling both short- and long-range planning. It is based on the process of monitoring the physical condition of assets, predicting deterioration over time and providing information on how to invest in order to maintain or enhance the performance of assets over their useful life.

**Attainment area** – An area considered to have air quality that meets or exceeds the U.S. Environmental Protection Agency (EPA) health standards used in the Clean Air Act.

**Barrier** – A condition or obstacle that prevents an individual or a group from accessing the transportation system or transportation planning process. Examples include a physical gap or impediment, lack of information, language, education and/or limited resources.

**Benchmark** – A numerical goal or stated direction to be achieved for which quantifiable or directional targets may be set, assigning a value to what the RTP is trying to achieve. Benchmarks (also known as targets) are expressed in quantitative terms and provide an important measure of progress toward achieving different goals within a timeframe specified for it to be achieved.

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

**Bicycle boulevards -** Sometimes called a bicycle priority street, a bicycle boulevard is a low-traffic street where all types of vehicles are allowed, but the street is modified as needed to enhance bicycle safety and convenience by providing direct routes that allow free-flow travel for bicyclists at intersections where possible. Traffic controls are used at major intersections to help bicyclists cross streets. Typically these modifications also calm traffic and improve pedestrian safety.

**Bicycle facilities** – A general term denoting improvements and provisions made to accommodate or encourage bicycling, including parking facilities, all bikeways and shared roadways not specifically designated for bicycle use.

**Bike lane** – A portion of a roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

**Bike-transit facilities -** Infrastructure that provide connections between the two modes, by creating a "bicycle park-and-ride," i.e. large-scale bike parking facility at a transit station.

**Bikeway** – Any road, street, path or right-of-way that is specifically designated in some manner as being open to bicycle travel, either for the exclusive use of bicycles or shared use with other vehicles or pedestrians.

**Boulevards** – Facilities designated in mixed-use areas (e.g., 2040 centers, station communities and main streets) that are designed to integrate motor vehicles, freight, transit, bicycle and pedestrian modes of travel, with an emphasis on pedestrian, bicycle and transit travel.

**Branch railroad lines** - Non-Class I rail lines, including short line or branch lines.

**Bus Rapid Transit (BRT)** - Bus rapid transit service uses high capacity buses in their own guideway or mixed in with traffic, with limited stops and a range of transit priority treatments to provide speed, frequency, and comfort to users. This service typically runs at least every 15 minutes during the weekday and weekend mid-day base periods through frequencies may increase or decrease for individual applications and based on demand.. Stops are generally spaced one-quarter mile apart or more. Most stops have significant and easily identifiable passenger infrastructure, including waiting areas that are weather protected. Additional passenger amenities at stops may include real-time schedule information, trip planning kiosks, ticket machines, special lighting, benches, and bicycle parking.

**Capacity** – A transportation facility's ability to accommodate a moving stream of people or vehicles in a given place during a given time period. Increased capacity can come from building more streets or throughways, adding more transit service, timing traffic signals, adding turn lanes at intersections or many other sources.

**Carbon footprint** – A measure of the amount of carbon dioxide (CO2) emitted through the combustion of fossil fuels. This measure is often expressed as tons of carbon dioxide or tons of carbon emitted, usually on a yearly basis.

**Carbon monoxide (CO**) – An air pollutant that is a highly toxic, odorless and colorless gas, formed in lalrge part by incomplete combustion of fuel. Automobile emissions are the primary source of CO.

**Carpool** – An arrangement in which two to six people share the use and/or costs, of traveling in privately owned automobiles between fixed points on a regular basis. See also vanpool.

**Carsharing** – A transportation demand management strategy wherein a group of people share a single vehicle. Benefits of this strategy include reduced vehicle ownership, parking needs and drive-alone trips, as well as improved accessibility. Implementation in the Portland region includes public/private partnerships and a private sector membership organization.

**Central city** – The downtown and adjacent portions of the city of Portland. See the 2040 Growth Concept map and text.

**Chronic disease** - An illness that is prolonged, does not resolve spontaneously and is rarely cured completely. Chronic diseases such as heart disease, cancer and diabetes account for seven of every 10 deaths in America. Although chronic diseases are among the most common and costly problems, they are also among the most preventable. Adopting healthy behaviors such as eating nutritious foods, being physically active and avoiding tobacco use can prevent or control the these diseases.

**Clean Air Act** – The Federal clean air act identifies "mobile sources" (vehicles) as primary sources of pollution and calls for stringent new requirements in metropolitan areas and states where attainment of federal air quality standards is or could be a problem.

**Climate change** - Any significant variation in the earth's climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- natural processes within the climate system (e.g. changes in ocean circulation); and
- human activities that change the atmosphere's composition (e.g. through burning fossil fuels) and the land surface (e.g. deforestation, reforestation, urbanization, desertification, etc.).[1]

**Collector street** – A class of street. 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 arterial streets, with reduced travel speeds. Collector streets are usually spaced at half-mile intervals, midway between arterial streets. Collectors may serve as bike, pedestrian and freight access routes, providing local connections to the arterial street network and transit system. While the focus for collectors has been on motor vehicle traffic, they are developed as multi-modal facilities that accommodate bicycles, pedestrians and transit.

**Community bikeway** – Designated on-street routes that connect main streets, station areas, industrial areas and other regional attractions such as schools and parks and connect neighborhoods to the rest of the regional bicycle network. These bikeways are typically located on arterial streets but may also be located on collectors or other low-volume streets. These bikeways should be designed using a flexible "toolbox" of bikeway designs, including bike lanes, cycle tracks (physically separated bicycle lanes) shoulder bikeways, shared roadway/wide outside lanes and bicycle priority treatments (e.g. bicycle boulevards).

**Community boulevard** – These facilities generally consist of two vehicle travel lanes, balanced multi-modal function, narrower right of way than a regional boulevard, landscaped medians, on-street parking, narrower travel lanes than throughways, more intensive land use oriented to the street and wide sidewalks. The right of way ranges from 61 to 98 feet or greater. These facilities are located within the most intensely developed activity centers with development oriented to the street. These are primarily central city and regional centers, town centers, station communities and some main streets.

**Community Street** – These facilities consist of two to four travel lanes, balanced multi-modal function, narrower right of way than regional streets, on-street parking, narrower or fewer travel lanes than regional streets, and residential neighborhood and corridor land uses set back from the street. These facilities provide a higher level of local access and street connectivity than regional streets.

[1] http://www.epa.gov/climatechange/basicinfo.html. Accessed on December 17, 2007.

They have the greatest flexibility in cross sectional elements. The right of way ranges from 60 to 80 feet or greater.

**Commute** – Regular travel between home and a fixed location (e.g., work, school).

**Commuter rail** – Short-haul rail passenger service operated within and between metropolitan areas and neighboring communities. This transit service operates in a separate right-of-way on standard railroad tracks, usually shared with freight use. The service is typically focused on peak commute periods but can be offered other times of the day and on weekends when demand exists and where rail capacity is available. The stations are typically located one or more miles apart, depending on the overall route length. Stations offer infrastructure for passengers, bus and LRT transfer opportunities and parking as supported by adjacent land uses. See also Inter-city rail.

**Complete streets** - Roadways that are designed and operated with all users in mind – including bicyclists, transit vehicles and users, freight delivery vehicles and pedestrians of all ages and abilities.

**Concept planning** – A planning process to create a blueprint for the future of land brought inside the urban growth boundary for urbanization. The process is required to address the provisions listed in Title 11 of the Urban Growth Management Functional Plan. These provisions include a minimum level of residential units per acre, a diversity of housing stock, an adequate transportation system, protection of natural resource areas and needed school facilities.

**Conformity** – Process defined by the Clean Air Act to assess the compliance of any transportation plan, program or project with air quality implementation plans.

**Congestion** - A condition characterized by unstable traffic flows that prevents movement on a transportation facility at optimal legal speeds. Recurrent congestion is caused by constant excess volume compared with capacity. Nonrecurring congestion is caused by incidents such as bad weather, special events and/or traffic accidents.

**Congestion management process** - A federally mandated program directed at the Portland metropolitan region (and other metropolitan areas) to systematically manage traffic congestion. The process provides information on transportation system performance and recommends a range of strategies to minimize congestion and enhance the mobility of people and goods. These multimodal strategies include, but are not limited to, operational improvements, travel demand management, policy approaches, and additions to capacity.

**Corridors (2040 design type)** – A type of land use that is typically located along regional transit routes and arterial streets, providing a place for somewhat higher densities than is found in 2040 centers. These land uses should feature a high-quality pedestrian environment and convenient access to transit. Typical new developments would include rowhouses, duplexes and one to three-story office and retail buildings, and average about 25 persons per acre. While some corridors may be continuous, narrow bands of higher-intensity development along arterial streets, others may be more nodal, that is a series of smaller centers at major intersections or other locations along the arterial that have high quality pedestrian environments, good connection to adjacent neighborhoods and transit service.

**Cost-burdened household**– A renter household that spends more than 50 percent of its gross income on housing and transportation expenses. Housing and transportation costs include all expenditures tracked under those two categories by the U.S. Bureau of Labor Statistics in the Consumer Expenditures Survey.

**Cycletrack –** Bicycle lanes that are physically separated from motor vehicle and pedestrian travel.

**Deficiency -** Capacity or design constraints that limit, but do not prohibit the ability to travel by a given mode or meet thresholds defined in Tables 2.4 (Regional Motor Vehicle Performance Measures) or 2.5 (Non-SOV Modal Targets). Examples include locations where throughway capacity is less than six through lanes and arterial street capacity less than 4 lanes, or that have poor or substandard design features; at-grade rail crossings; height restrictions; bike and pedestrian connections that contain obstacles (e.g., missing curb ramps, distances greater than 330 feet between pedestrian crossings, absence of pedestrian refuges, sidewalks occluded by utility infrastructure, high traffic volumes and complex traffic environments); transit overcrowding or schedule unreliability and high crash locations).

**Delay -** The additional travel time required by all travelers, as measured by the time to reach destinations at posted speed limits (free-flow speed) versus traveling at a slower congested speed. Delay can be expressed in several different ways, including total delay in vehicle-hours, total delay per vehicle miles traveled (VMT) and share of delay by time period, day of week or speed range.

**Developed areas** – Areas of the region that are primarily built-up, with most new housing and employment being primarily accommodated through infill, redevelopment and use of brownfields.

**Developing areas** – Areas of the region containing significant areas of developable and re-developable land, with most new housing and employment being primarily accommodated through a combination of greenfield development, infill and redevelopment.

**Disability -** The limitation of normal physical, mental, social activity of an individual. There are varying types (functional, occupational, learning), degrees (partial, total) and durations (temporary, permanent) of disability.

**Emissions budget** – The part of the State Implementation Plan (SIP) that identifies the allowable emissions levels, mandated by the National Ambient Air Quality Standards for certain pollutants emitted from mobile, stationary and area sources. The emissions levels are used for meeting emission reduction milestones, attainment or maintenance demonstrations.

**Employee Commute Options (ECO) rules** – The Employee Commute Options or "ECO" Program requires larger employers to provide commute options to encourage employees to reduce auto trips to the work site. ECO is one of several strategies included in the Ozone Maintenance Plan for the Portland Air Quality Maintenance Area. ECO applies to employers within the Portland Air Quality Maintenance Area (AQMA) with more than 50 employees at a work site. Employers must provide commute options that have the potential to reduce employee commute auto trips

**Employment areas** – Areas of mixed employment that include various types of manufacturing, distribution and warehousing uses, and may include commercial and retail development. Retail uses should primarily serve the needs of the people working or living in the immediate employment area. Exceptions to this general policy can be made only for certain areas indicated in a functional plan.

**End-of-trip facilities** – Parking facilities and other accommodations that meet the needs of bicyclists, walkers and carpoolers. Examples include parking spaces striped for rideshare vehicles only, bike parking, locker rooms and showers.

**Environmental justice (EJ) community** – A U.S. Census block group that has a concentration of people living in poverty, people with low-income, people of color, elderly, children, people with disabilities, and other populations protected by Title VI and related nondiscrimination statutes. “Concentration” shall be defined as having two or more socio-economically sensitive populations in a Census Block Group of any of the groups listed above greater than 2.5 times the regional percentage based on the most recent actual census bureau data. This includes minorities, seniors, and people with disabilities, low-income, or who do not speak English.

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

**Environmental Protection Agency** – The federal regulatory agency responsible for administering and enforcing federal environmental laws, including the Clean Air Act, the Clean Water Act, and the Endangered Species Act.

**Equity** – In transportation, a normative measure of fairness among transportation system users.

**Facility** – The fixed physical assets (structures) enabling a transportation mode to operate (including travel, as well as the loading and unloading of passengers). This includes streets, throughways, bridges, sidewalks, bikeways, transit stations, bus stops, ports, air and marine terminals and rail lines.

**Equitable access** – Equal opportunities low-income residents and people with disabilities to access the regional transportation system.

**Federal Highway Administration (FHWA) -** The federal agency responsible for administering roadway programs and funds. The FHWA implements transportation legislation approved at the congressional level that appropriates all federal funds to states and local governments.

**Federal Transit Administration (FTA) -** The federal agency responsible for administering transit programs and funds. The FTA works with state and local governments to select new transit systems for implementation and guides capital, operating, and transit methodology decisions.

**Fiscal constraint** – Making sure that a given program or project can reasonable expect to receive funding within the time allotted for its implementation.

**Fixed-route transit** – Regularly scheduled service operating repeatedly over the same street or throughway pattern on a determined schedule.

**Forecast** – Projection of population, employment or travel demand for a given future year.

**Freeway** – A design for a Throughway in which all access points are grade separated.

**Freight intermodal facility** – An intercity facility where freight is transferred between two or more modes (e.g., truck to rail, rail to ship, truck to air).

**Freight mobility** – The efficient movement of goods from point of origin to destination.

**Frequent bus** – Frequent bus service offers local and regional bus service with stops approximately every 750 to 1000 feet, providing corridor service rather than nodal service along selected arterial streets. This service typically runs at least every 15 minutes throughout the day and on weekends though frequencies may increase based on demand, and it can include transit preferential treatments, such as reserved bus lanes and transit signal priority, and enhanced passenger infrastructure along the corridor and at major bus stops, such as covered bus shelters, curb extensions, special lighting and median stations.

**Gap -** Missing links or barriers in the "typical" urban transportation system for any mode that functionally prohibits travel where a connection might be expected to occur. A gap generally means a connection does not exist at all, but could also be the result of a physical barrier such as a throughway, natural feature, weight limitations on a bridge (e.g., Sellwood Bridge), or existing development. Investments to address system gaps include throughway, rail and stream over-crossings that help meet arterial network concept goals as appropriate; new arterial connections up to four lanes with turn lanes; new collector connections in the central city, regional centers and industrial areas; new bike and pedestrian facilities; regional multi-use trails with a transportation function; new transit service connections, new vanpool connections, individualized travel marketing programs.

**Global warming -** The increase in the average temperature of the air near the Earth's surface and oceans, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced. In common usage, "global warming" often refers to the warming that can occur as a result of increased emissions of greenhouse gases from human activities.2

**Greenhouse gases -** The six gases identified in the Kyoto Protocol and by the Oregon Greenhouse Gas Mandatory Reporting Advisory Committee as contributing to global warming:  carbon dioxide ($CO_2$), nitrous oxide ($N_2$), methane ($CH_4$), hydrofluorocarbons (HFCs), perfluorocarbons (PFC s), and sulfur hexafluoride ($SF_6$).

**Green street, throughway or parking lot -** A transportation facility designed to:

- Integrate a system of stormwater management.
- Reduce the amount of water that is piped directly to streams and rivers.

[2] http://www.epa.gov/climatechange/basicinfo.html. Accessed on December 17, 2007.

- Be a visible component of a system of "green infrastructure" that is incorporated into the aesthetics of the community. Make the best use of vegetation for stormwater interception as well as temperature mitigation and air quality improvement.
- Ensure the roadway has the least impact on its surroundings, particularly at locations where it crosses a stream, wildlife corridor or other sensitive area. These facilities include features like street trees, landscaped swales, pervious curb treatments and special paving materials to manage stormwater runoff.

**Habitat conservation areas** – Riparian habitat areas within the current urban growth boundary identified by the regional fish and wildlife protection program. Habitat Conservation Areas are to be protected by development standards contained in Title 13 of the Urban Growth Management Functional Plan or through equivalent approaches by local jurisdictions. As new areas are added to the urban growth boundary, highly valued upland habitat areas will also be identified as Habitat Conservation Areas, with their protection level adjusted depending on the area's economic importance to the region.

**Health -** A condition of complete physical, mental and emotional well-being, not merely the absence of disease.

**Health Impact Assessment -** A combination of procedures, methods, and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of these effects within the population.

**High capacity transit network** – High capacity transit is defined by its function: to carry high volumes of passengers quickly and efficiently from one place to another. Other defining characteristics of HCT service include the ability to bypass traffic and avoid delay by operating in exclusive or semi-exclusive rights of way, faster overall travel speeds due to wide station spacing, frequent service, transit priority street and signal treatments, and premium station and passenger amenities. Speed and schedule reliability are preserved using transit signal priority at at-grade crossings and/or intersections. High levels of passenger infrastructure are provided at transit stations and station communities, including real-time schedule information, ticket machines, special lighting, benches, shelters, bicycle parking, and commercial services. The transit modes most commonly associated with high capacity transit include:

- light rail transit, light rail trains operating in exclusive or semi-exclusive right of way[3]
- bus rapid transit, regular or advanced bus vehicles operating primarily in exclusive or semi-exclusive right of way
- rapid streetcar, streetcar trains operating primarily in exclusive or semi-exclusive right of way
- commuter rail, heavy rail passenger trains operating on exclusive, semi-exclusive or nonexclusive (with freight) railroad tracks.

[3] Exclusive right of way, as defined by Transportation Research Board TCRP report 17, includes fully grade -separated right of way. Semi-exclusive right of way includes separate and shared rights of way as well light rail and pedestrian malls adjacent to a parallel roadway. Nonexclusive right of way includes operations in mixed traffic, transit mall and a light rail/pedestrian mall.

Other transit modes, such as exclusive track heavy rail or monorail, could be applied in Portland but have generally not been considered due to high costs.

**High-occupancy vehicle (HOV) lane** – Highway and arterial lanes restricted for use to vehicles carrying more than two passengers with the exception of motorcycles.

**Highway** – A design for a Throughway in which access points are a mix of separate and at-grade.

**Housing affordability** – See cost-burdened household.

**Impervious surfaces** – Surfaces that do not allow water to infiltrate into the ground and rely on piped stormwater drainage systems that convey runoff directly to streams. The majority of impervious surfaces are roads, rooftops, sidewalks, parking lots and driveways. A conventional stormwater management approach uses storm sewer pipes beneath the street to quickly convey storm runoff to stream channels that are also managed for stormwater conveyance.

**Indicator** – Also called performance measure. A measure of how well the transportation system is performing that is used to evaluate the success of the objective with quantitative or qualitative data and provide feedback in the plan's decision-making process. Some measures can be used to predict the future as part of an evaluation process using forecasted data, while other measures can be used to monitor changes based on actual empirical or observed data. In both cases, they can be applied at a system-level, corridor-level and/or project-level. Indicators provide the planning process with a basis for evaluating alternatives and making decisions on future transportation investments. They can also be used to monitor performance of the plan in between updates to evaluate the need for refinements to policies, investment strategies or other elements of the plan.

**Individualized marketing** – A transportation demand management strategy that provides support programs and customized travel choice information based on a person's interest-level. Examples include TravelSmart™ and SmartTrips. A TravelSmart™ project in North and Northeast Portland provided transit information, bike and walking maps, guided walks and rides, customized trip planning and in-home assistance to help residents get started walking, biking, or riding transit.

**Industrial areas** – Areas set aside for industrial activities. Supporting commercial and related uses may be allowed, provided they are intended to serve the primary industrial users. Residential development and retail users whose market area is larger than the industrial area are not considered supporting uses.

**Infrastructure** –The fundamental physical facilities and systems required to provide a community with services it needs or wants, including transportation and communication systems, power plants, sewer and water treatment systems, and schools, for example.

**Inner neighborhoods** – Areas in Portland and typically other older cities that are primarily residential, close to central employment and shopping areas, and have smaller lot sizes and higher population densities than in outer neighborhoods.

**Intelligent transportation systems (ITS**) - The application of a broad range of communications-based information, control and electronics technologies to improve the efficiency and safety of transportation systems. ITS can be integrated into the transportation system infrastructure and in vehicles to help monitor and manage traffic flow, reduce congestion, provide alternate routes to travelers, and improve safety.

**Interchange area management plan (IAMP)** - A joint ODOT and local government long-term (20+ years) transportation and land use plan to balance and manage transportation and land use decisions in interchange areas. The primary purpose of this planning tool is to protect the function, operations and safety of the interchange, the state highway, and the supporting arterial and local street network. The IAMP uses access management and site design standards for interchange areas to preserve traffic efficiency and function, while ensuring safety for all modes of travel. The standards should include guidelines for pedestrian and bicycle access, access restrictions, gateway treatments at interchanges, use of medians, landscaping minimums, and other design considerations. The IAMPs may use interchange zoning (as a base zone and/or overlay zone) to regulate the type of development that may take place at an interchange or along arterials connecting to the interchange to accomplish these objectives. This plan is required for new interchanges or as part of major changes to existing interchanges.

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

**Intercity bus** – A mode of transit service that provides connections between cities, towns, and other places typically tens or hundreds of miles away. This type of service generally provides fewer bus stops than provided by local bus routes. Greyhound Bus Lines and private carriers operate inter-city buses. Some local transit systems offer bus lines to nearby cities or towns served by another transit agency. Intercity bus services provide important travel connections to smaller towns and rural areas that do not have airports or train service. Several private inter-city bus services are currently provided in the region.

**Intercity rail** – Inter-city passenger rail that is part of the state transportation system and extends from the Willamette Valley north to British Columbia. Amtrak already provides service south to California, east to the rest of the continental United States and north to Canada. These systems should be integrated with other transit services within the metropolitan region with connections at passenger intermodal facilities.

**Jurisdiction** - Typically refers to a government or quasi-government agency or the authority of a government or quasi-government agency, including, for example, counties, cities, regional agencies, federal and state agencies and federally recognized tribes.

**Level of service (LOS)** – A tool for evaluating system performance and identifying deficiencies for roadways, transit and other motorized and non-motorized modes of travel. For example, roadway measures of level-of-service often assign criteria based on volume-to-capacity ratios. A qualitative measure describing operational conditions within a traffic stream from a motorist's point of view. A level of service definition describes conditions in terms of speed and travel time, freedom to maneuver, and traffic interruptions. LOS is rated on a scale of A through F:

| LOS | Motor Vehicle Traffic Flow Characteristics |
|---|---|
| A | Virtually free flow; completely unimpeded |
| B | Stable flow with slight delays; reasonably unimpeded |
| C | Stable flow with delays; less freedom to maneuver |
| D | High density but stable flow |
| E | Operating conditions at or near capacity; unstable flow |
| F | Forced flow, breakdown conditions |
| > F | Severe congestion - demand exceeds roadway capacity, limiting volume than can be carried and forcing excess demand onto parallel routes and extending the peak period |

Sources: 1985 Highway Capacity Manual (A through F descriptions)

Metro (>F Description)

**Light rail transit (LRT)** – In this region, Light Rail Transit (LRT) is TriMet's MAX service. It is a system of modern passenger rail cars operating on a fixed guideway within an exclusive right-of-way. LRT serves the Central City and Regional Centers as well as station communities and may serve Town Centers and Corridors. In addition, LRT serves regional public attractions such as the Washington County Fair Grounds, Civic Stadium, the Oregon Convention Center, Oregon Zoo, Metropolitan Exposition Center and the Rose Garden. LRT service typically runs at least every 15 minutes throughout the day. It operateswith limited stops and operates at higher speed outside of downtown Portland. MAX is powered by overhead electric lines though some systems in other regions are powered by on-board diesel or electric motors. Main elements include rail vehicles, rail tracks, overhead electric lines, modern rail stations, signal priority at intersections, and integration with transit-oriented development strategies. A high level of passenger infrastructure is provided at transit stations and station communities, including schedule information, ticket machines, special lighting, benches, shelters, bicycle parking and commercial services. The speed and reliability of LRT can be maintained using transit signal priority at at-grade crossings and grade separation.

**Local bus -** Local bus lines provide access to public transit within neighborhoods, commercial districts and some industrial areas, and often provide access to 2040 Target Areas and the remainder of the regional transit system. Local transit services are characterized by frequent stops along the route, with stop spaced every 750 to 1000 feet. Service levels vary, but are typically every 30 minutes during the weekday base period in higher-density areas and may be more frequent as demand warrants. Weekend and evening service levels are typically policy, not demand based.

**Local government** – For the purpose of this plan, this term refers to a city or county within the Metro boundary.

**Local streets** – Local streets primarily provide direct access to adjacent land. While Local streets are not intended to serve through traffic, the aggregate effect of local street design impacts the effectiveness of the Arterial and Collector system when local travel is restricted by a lack of connecting routes, and local trips are forced onto the Arterial street network. In the urban area, local roadway system designs often discourage "through traffic movement." Regional regulations require local street connections spaced no more than 530 feet in new residential and mixed used areas, and cul-de-sacs are limited to 200 feet in length. These connectivity requirements ensure that a lack of adequate local street connections does not result in the arterial system becoming congested. While the focus for local streets has been on motor vehicle traffic, they are developed as multi-modal facilities that accommodate bicycles, pedestrians and sometimes transit.

**Local transit network** – The local transit network provides basic service and access to local neighborhoods and activity centers as well as to the regional and high capacity transit networks. It also offers coverage and access to primary and secondary land-use components. Transit preferential treatments and passenger infrastructure are appropriate at high ridership locations. Sidewalk connectivity and protected crosswalks are critical elements of the local transit network. This network includes local bus, para-transit, streetcar, and tram.

**Main roadway route** – Designated freights routes that connect major activity centers in the region to other areas in Oregon or other states throughout the U.S., Mexico and Canada.

**Main streets** – Neighborhood shopping areas along an arterial street or at an intersection, having a unique character that draws people from outside the adjacent neighborhood. Northwest 23rd Avenue and SE Hawthorne Boulevard in the city of Portland are examples of established main streets.

**Maintenance area** – Any geographic region in the U.S. previously designated non-attainment pursuant to the Clean Air Act (CAAA) Amendments of 1990 and subsequently designated to attainment subject to the requirements to develop a maintenance plan under section 175A of the CAA as amended.

**Major Bus Stop** – Major Bus Stops are intended to provide highly visible and comfortable bus stops to encourage greater use of transit. Major Bus Stops include most Frequent Service bus stops, most transfer locations between bus lines (especially when at least one of the bus lines is a frequent service line), stops at major ridership generators (e.g., schools, hospitals, concentrations of shopping or high density employment), and other high ridership bus stops. These stops may include shelters, lighting, seating, bicycle parking, or other passenger amenities and are intended to be highly accessible to adjacent buildings while providing for quick and efficient bus service. Major Bus Stop locations are shown in Figure 2.15.

**Marine facility** – A facility where freight is transferred between water-based and land-based modes.

**Metropolitan Planning Organization (MPO) -** A regional policy body, required in urbanized areas with populations more than 50,000 and designated by the governor of the state. MPOs are responsible, in cooperation with the state and other transportation providers for carrying out the metropolitan transportation planning requirements of federal highway and transit legislation. In 2007, Oregon had six designated MPOs– Bend, Corvallis, Eugene-Springfield, Medford, Portland and Salem-Keizer.

**Metropolitan Transportation Plan (MTP) -** A long-range intermodal transportation plan that is developed and adopted through the metropolitan transportation planning process for the metropolitan planning area. The plan guides future regional investments and responds to legal mandates contained in federal legislation such as SAFETEA-LU, the 1990 Clean Air Act. Under federal legislation, the RTP is a MTP.

**Metropolitan Transportation Planning Process** – A federally mandated decision-making framework used by MPOs to develop metropolitan transportation plans in consultation and coordination with federal, state, regional and local governments, and engagement of other stakeholders with an interest in or who are affected by the planning process. The process also includes opportunities for open, timely and meaningful involvement of the public.

**Mini-bus** – A transit service vehicle that provides coverage in lower density areas by providing transit connections to 2040 Target Areas or the regional transit system. Mini-bus services, which may follow fixed routes or respond to customer demand, include dial-a-ride, employer shuttles and bus pools. These services typically provide a 60-minute response time on weekdays. Weekend service is provided as demand warrants.

**Minority** - A person who is:

A. Black (having origins in any of the black racial groups of Africa);

B. Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);

C. Asian American (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands);

D. American Indian and Alaskan Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition); or

E. Native Hawaiian or Other Pacific Islander (having origins in any of the original peoples of Hawaii , Guam, Samoa, or other Pacific Islands).

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

**Mobility corridor** – Mobility corridors represent sub-areas of the region and include all regional transportation facilities within the subarea as well as the land uses served by the regional transportation system. This includes freeways and highways and parallel networks of arterial streets, regional bicycle parkways, high capacity transit, and frequent bus routes. The function of this network of integrated transportation corridors is metropolitan mobility – moving people and goods between different parts of the region and, in some corridors, connecting the region with the rest of the state and beyond. This framework emphasizes the integration of land use and transportation in determining regional system needs, functions, desired outcomes, performance measures, and investment strategies.

**Mobility corridor strategy -** A scoping tool to document land use and transportation needs, function and potential solutions for each of the region's 24 mobility corridors**.** A strategy will be included in the RTP for each corridor that includes:

- Integrated statement mobility function and purpose defined at a corridor-area level

- Proposed land use and transportation solutions after consideration of land use, local aspirations, pedestrian, bike, management and operations, freight, highway, road and transit solutions

**Modal targets** – Targets for increased walking, biking, transit, shared ride and other non-drive alone trips as percentages of all trips. The targets apply to trips to, from and within each 2040 Design Type. The targets reflect mode shares for the year 2040 needed to comply with Oregon Transportation Planning Rule objectives to reduce reliance on single-occupancy vehicles.

**Regional Modal Targets**

| 2040 Design Type | Non-SOV Modal Target |
|---|---|
| Portland central city | 60-70% |
| Regional centers<br>Town centers<br>Main streets<br>Station communities<br>Corridors<br>Passenger intermodal facilities | 45-55% |
| Industrial areas<br>Freight intermodal facilities<br>Employment areas<br>Inner neighborhoods<br>Outer neighborhoods | 40-45% |

Note: *The targets apply to trips to and within each 2040 design type. The targets reflect conditions needed in the year 2040 to comply with Oregon Transportation Planning Rule objectives to reduce reliance on single-occupancy vehicles.*

**Mode** – A type of transportation distinguished by means used (e.g., such as walking, bike, bus, single- or high-occupancy vehicle, bus, train, truck, air, marine).

**Mode choice** – The ability to choose one or more modes of transportation.

**Mode split** – The proportion of total person trips using various modes of transportation.

**Multi-modal** – The movement of people or goods by more than one mode.

**National Environmental Policy Act (NEPA)** – Federal legislation that established a federal environmental policy requiring that any project using federal funding or requiring federal approval, including transportation projects, examine the effects of proposed and alternative choices on the environment before a federal decision is made.

**National Highway System (NHS)** - Title 23 of the U.S. Code section 103 states that the purpose of the NHS is to provide an interconnected system of principal routes that serve major population centers, international border crossings, ports, airports, public transportation facilities, intermodal transportation facilities, major travel destinations, meet national defense requirements, and serve interstate and inter-regional travel. Facilities included in the NHS are of regional significance.

**Nonattainment** – A geographic region of the U.S. that the EPA has designated as not meeting air quality standards.

**Nonmotorized** - Generally referring to bicycle, walking and other modes of transportation not involving a motor vehicle.

**Objective**- An intermediate, short-term desired outcome or result that is measurable and must be realized within the timeframe of the RTP plan period to reach a longer-term goal.

**Off-peak period** – The hours outside of the highest motor vehicle traffic period, generally between 9 a.m. and 3 p.m. and between 6 p.m. and 7 a.m.

**On-Street Bus Rapid Transit** – A version of Bus Rapid Transit (see separate definition in glossary) with limited stops and service at least every 15 minutes during much of the day though frequencies by increase or decrease for individual applications are based on demand. On-Street BRT operates mostly in general purpose traffic lanes, mixed with other traffic, though transit preferential treatments which could include short bus-only lanes and/or queue jumps can be included. Stops are generally spaced one-quarter mile apart or more. Passenger amenities and information is similar to BRT. Due to its flexibility, On-Street BRT can have attributes that are more like High Capacity Transit or like Frequent Service Bus and may be considered as a mode in either depending on circumstances.

**Oregon Transportation Plan** – The official statewide intermodal transportation plan that is developed through the statewide transportation planning process by ODOT.

**Operator** – An agency responsible for providing a service or operating a facility. ODOT is the operator of the state highway system. TriMet is an operator of elements of the regional transit system.

**Outer neighborhoods** – Areas in the outlying cities that are primarily residential and farther from employment and shopping areas. Outer neighborhoods generally exhibit larger average lot sizes and lower population densities than inner neighborhoods.

**Ozone** – An air pollutant that is a toxic, colorless gas which is the product of the reaction of hydrocarbons (HC) and oxides of nitrogen (NOx) in the presence of sunlight in the atmosphere. Motor vehicle emissions are the primary source of ozone precursors.

**Para-transit** - On-demand non-fixed route transit service that serves special transit markets, such as the elderly, people with disabilities or where demand is not sufficient to support fixed-route service. Components of this service are typically owned, operated, scheduled and dispatched by a combination of public and private entities. Vehicles are typically small buses (mini-buses) or vans, but may include contract taxis. Service may be door-to-door or fixed schedule/flexible route and can act as feeder service to the fixed-route transit system.

**Park-and-ride** – Parking areas or structures that are placed near transit stations or stops to enhance access to transit and other HOV-modes. Transit patrons typically drive private automobiles or ride bicycles to a park and ride facility, where they store their vehicles in facilities designed for that purpose before transferring to transit. Vanpools also use park-and-rides as a common meeting place and sometimes as a destination. Transit services, transit transfer, bicycle parking and passenger drop off and pick-up areas are incorporated in site design. Bicycle and pedestrian access is considered in the siting process of new park-and-ride facilities. Periodic evaluation is needed to determine how park-and-ride facilities can best support regional and local land use goals.

**Parking cash-out** – A transportation demand management strategy where the market value of a parking space is offered to an employee by the employer. The employee can either spend the money on a parking space, or pocket it and use an alternative mode to travel to work. Measures such as parking cash-out projvide disincentives for commuting by single-occupancy vehicles.

**Parkway** - A design for a Throughway in which access points are a mix of separate and at-grade. They typically have a greener design than a highway, often showcasing and preserves scenic areas and incorporating a parallel park and/or multi-use trail.

**Passenger intermodal facilities** – Facilities that accommodate or serve as transfer points to interconnect various transportation modes for the movement of people. Examples include Portland International Airport, Union Station, Oregon City Amtrak station and inter-city bus stations.

**Passenger rail** – Transit systems operating, in whole or part, on a fixed guideway.

**Peak period** – The period of the day during which the maximum amount of travel occurs. It may be specified as the morning (A.M.) or afternoon or evening (P.M.) peak. Peak periods in the Portland metropolitan region are currently generally defined as from 7-9 AM and 4-6 PM.

**Pedestrian** – A person on foot, in a wheelchair or in another health-related mobility device.

**Pedestrian connection** – A continuous, unobstructed, reasonably direct route between two points that is intended and suitable for pedestrian use. Pedestrian connections include but are not limited to sidewalks, walkways, accessways, stairways and pedestrian bridges. On developed parcels, pedestrian connections are generally hard surfaced. In parks and natural areas, pedestrian connections may be soft-surfaced pathways. On undeveloped parcels and parcels intended for redevelopment, pedestrian connections may also include rights-of-way or easements for future pedestrian improvements.

**Pedestrian district** – A comprehensive plan designation or set of land use regulations designed to provide safe and convenient pedestrian circulation, with a mix of uses, density, and design that support high levels of pedestrian activity and transit use. The pedestrian district can be a concentrated area of pedestrian activity or a corridor. Pedestrian districts can be designated within the following 2040 Design Types: Central City, Regional and Town Centers, Corridors and Main Streets. Though focused on providing a safe and convenient walking environment, pedestrian districts also integrate efficient use of several modes within one area, e.g., auto, transit, and bike.

**Pedestrian facility** – A facility provided for the benefit of pedestrian travel, including walkways, crosswalks, plazas, signs, signals, illumination and benches.

**Pedestrian plaza** – A small semi-enclosed area usually adjoining a sidewalk or a transit stop which provides a place for pedestrians to sit, stand or rest. Plazas are usually paved with concrete, pavers, bricks or similar material, and include seating, pedestrian scale lighting and similar improvements. Low walls, planters, or landscaping are often used to separate the plaza from adjoining parking lots and vehicle maneuvering areas. Plazas connect directly to adjacent sidewalks, walkways, transit stops and building entrances. A 150-250 square foot plaza would be considered small.

**Pedestrian-scale** – An urban development pattern where walking is a safe, convenient and interesting travel mode. The following are examples of pedestrian scale facilities: continuous, smooth and wide walking surfaces, easily visible from streets and buildings and safe for walking; minimal points where high speed automobile traffic and pedestrians mix; frequent crossings; and storefronts, trees, bollards, on-street parking, awnings, outdoor seating, signs, doorways and lighting designed to serve those on foot; all well-integrated into the transit system and having uses that cater to pedestrians.

**Performance measures** – Also called indicators. A measure of how well the transportation system is performing that is used to evaluate the success of the objective with quantitative or qualitative data and provide feedback in the plan's decision-making process. Some measures can be used to predict the future as part of an evaluation process using forecasted data, while other measures can be used to monitor changes based on actual empirical or observed data. In both cases, they can be applied at a system-level, corridor-level and/or project level, and provide the planning process with a basis for evaluating alternatives and making decisions on future transportation investments. They can also be used to monitor performance of the plan in between updates to evaluate the need for refinements to policies, investment strategies or other elements of the plan.

**Person-Trip** - Trip made by a person from one location to another, whether as a driver, passenger or pedestrian.

**Placemaking** – A planning term that refers to the design of a building, transportation facility or area to make it more attractive to--and compatible with--the people who use it.

**Posted speed** – The posted speed limit on a given street or the legal speed limit, as defined in ORS 811.105 and 811.123 when a street is not posted.

**Preliminary design** – An engineering design that specifies in detail the location and alignment of a planned transportation facility or improvement.

**Principal arterial** – These facilities form the backbone of the motor vehicle network. These routes connect over the longest distance and are spaced less frequently than other Arterials or Collectors. These facilities form the primary connections between the central city, regional centers, industrial areas and intermodal facilities, as well as between neighboring cities and the metro region. Principal arterials generally span several jurisdictions and often are designated to be of statewide importance and serve as major freight routes.

**Project development** – A phase in the transportation planning process during which a proposed project undergoes a more detailed analysis of the project's social, economic and environmental impacts and various project alternatives. After a project has successfully passed through this phase, it may move forward to right-of-way acquisition and construction phases. Project development activities include: Environmental Assessment (EA)/Environmental Impact Statement (EIS) work, Design Options Analysis (DOA), management plans, and transit Alternatives Analysis (AA).

**Public participation** – The active meaningful involvement of the public in the development of transportation plans and programs.

**Ramp metering** – Traffic signal control on an entry ramp to a freeway for regulating vehicle access.

**Rail main line** – Class I rail lines (e.g., Union Pacific and Burlington Northern/Sante Fe).

**Rapid streetcar** – Streetcars operating primarily in exclusive right-of-way so that they are able to travel faster and more reliably than streetcars that operate primarily mixed in traffic.

**Reasonably direct** – A route that does not require likely users to deviate from the most direct path to their destination.

**Refinement plan -** The Oregon transportation planning rule defines "refinement planning" as resolving at the system-level the need, function, mode, and general location of transportation facilities and improvements. The RTP expands this definition to specifically call out a comprehensive consideration of land use, management, walking and biking solutions in addition to traditional transit and highway-focused analyses. A refinement plan would be conducted for mobility corridors for which the need, function, mode, and general location of transportation facilities and improvements cannot be identified through the RTP. The plan is intended to result in a wide range of strategies and projects to progress through project development and implementation at the local, regional and/or state levels.

**Regional bicycle parkway -** A bicycle route designed to serve as a green ribbon providing for direct and efficient travel for large volumes of cyclists with minimal delays in different urban environments and to destinations outside the region. These bikeways connect 2040 activity centers, downtowns, institutions and greenspaces within the urban area. The specific design of a bike parkway will vary depending on the land use context within which it passes through. These bikeways could be designed as an off-street trail along a stream or rail corridor, a cycletrack along a main street or town center, or a bicycle boulevard through a residential neighborhood.

**Regional Bike-Transit Facility** - the hub where the spokes of the regional bikeway network connect to the regional transit network. Stations and transit centers identified as regional bike-transit facilities have high-capacity bike parking and are suitable locations for bike-sharing and other activities that support bicycling. Criteria for identifying locations are found in the TriMet Bicycle Parking Guidelines.

**Regional bikeway** – Designated routes that provide access to and within the central city, regional centers and town centers. These bikeways are typically located on arterial streets but may also be located on collectors or other low-volume streets. These bikeways should be designed using a flexible "toolbox" of bikeway designs, including bike lanes, cycle tracks (physically separated bicycle lanes) shoulder bikeways, shared roadway/wide outside lanes and bicycle priority treatments (e.g. bicycle boulevards).

**Regional boulevard** – See "Boulevard". These facilities typically consist of four or more vehicle travel lanes, balanced multi-modal function and a broad right of way. Features highly desirable on regional boulevards include on-street parking, bicycle lanes, narrower travel lanes than throughways, more intensive land use oriented to the street and wide sidewalk features that may include a landscaped median. The right of way ranges from 80 to 120 feet or greater. These facilities are located within the most intensely developed activity centers with development oriented to the street. These are primarily central city, regional centers, station communities, town centers and some main streets.

**Regional bus** – Bus service that operates on arterial streets with typical frequencies of 15 minutes during most of the day, though midday headways may drop to 30 minutes. Regional bus may operate seven days per week, but not necessarily based on demand or policy. Stops are generally spaced every 750 to 1000 feet. Transit preferential treatments and passenger infrastructure such as bus shelters, special lighting, transit signal priority and curb extensions are appropriate at some locations such as those with high ridership.

**Regional centers** – Compact, specifically-defined areas where higher density growth and a mix of intensive residential and commercial land uses exists or is planned. Regional centers are to be supported by an efficient, transit-oriented, multi-modal transportation system. Examples include traditional centers, such as downtown Gresham, and new centers such as Gateway and Clackamas Town Center.

**Regional multi-use trails with transportation function** – Paved, off-street facilities connections that accommodate pedestrian and bicycle travel and meet the requirements of the Americans with Disabilities Act. These connections are likely to be used by people walking or bicycling to work or school, to access transit or to travel to a store, library or other local destination. Regional multi-use trails that support both utilitarian and recreational functions are included as part of the regional transportation system. These trails are generally located near or in residential areas or near mixed-use centers. Bicycle/pedestrian sidewalks on bridges are also included in this definition. Multi-use trails are physically separated from motor vehicle traffic by open space or a barrier. Bicyclists, pedestrians, joggers, skaters and other non-motorized travelers use these facilities.

**Regional Street** – See "Street." These facilities consist of four or more vehicle travel lanes, balanced multi-modal function, broad right of way, limited on-street parking, wider travel lanes than boulevards, corridor land uses set back from the street, sidewalks with pedestrian buffering from the street, and a raised landscaped median with turn pockets at intersections. The right of way ranges from 80 to 100 feet or greater. These facilities are located within low-density inner and outer residential neighborhoods to more densely developed commercial corridors and employment centers where development is set back from the street. They can be within main street districts where buildings are oriented toward the street at major intersections and transit stops.

**Regional transit network** – The network of transit operates primarily on arterial streets. Most services operate at intervals of 15-minute headways or better (all day and weekends when possible). This network also includes preferential treatments, such as transit signal priority and queue bypasses and in some cases exclusive or limited-access lanes. Supportive design treatments and enhanced passenger infrastructure such as covered bus shelters, curb extensions and special lighting are provided at regional transit stops and high ridership locations. This network includes: frequent bus, regional bus, streetcar, transit centers, park-and-ride lots and regional transit stops.

**Regional transit stops** – Transit stops that provide a high degree of transit passenger comfort and access. Regional transit stops are located at stops on light rail, commuter rail, rapid bus, frequent bus or streetcar lines in the central city, regional and town centers, main streets and corridors. Regional transit stops may also be located where bus lines intersect providing transfer opportunities or serve intermodal facilities, and major destinations such as hospitals, colleges and universities. Regional transit stops may provide real-time schedule information, lighting, benches, shelters and trash cans. Other features may include real time information, special lighting or shelter design, public art and bicycle parking.

**Regional transit system -** The regional transit system includes light rail, commuter rail, bus rapid transit, frequent bus, regional bus, and streetcar modes.

**Regional Transportation Functional Plan** – A regional functional plan regulating transportation in the Metro region, as mandated by Metro's Regional Framework Plan. The plan directs local plan implementation of the Regional Transportation Plan.

**Regional transportation plan (RTP) -** The official multimodal transportation plan that is developed and adopted through the metropolitan transportation planning process for the Portland metropolitan region.

**Regional transportation system** – The regional transportation system is identified on the regional transportation system map(s) in Chapter 2. The system is limited to facilities of regional significance generally including regional arterials and throughways, high capacity transit and regional transit systems, regional multi-use trails with a transportation function, bicycle and pedestrian facilities that are located on or connect directly to other elements of the regional transportation system, air and marine terminals, as well as regional pipeline and rail systems.

**Regional travel** – Longer trips that span the region, including interstate and intrastate travel, but occur within the larger metropolitan area.

**Reliability** – This term refers to consistency or dependability in travel times, as measured from day to day and/or across different times of day. Variability in travel times means travelers must plan extra time for a trip.

**Reload facility** – An intermediary facility where freight is reloaded from one land-based mode to another.

**Rideshare** – A transportation demand management strategy where two or more people share a trip in a vehicle to a common destination or along a common corridor. Private passenger vehicles are used for carpools, and some vanpools receive public/private support to help commuters. Carpooling and vanpooling provide travel choices for areas under-served by transit or at times when transit service is not available.

**Right-of-way (ROW)** – Land that is publicly-owned, or in which the public has a legal interest, usually in a strip, within which the entire road facility (including travel lanes, medians, sidewalks, shoulders, planting areas, bikeways and utility easements) resides. The right-of-way is usually acquired for or devoted to multi-modal transportation purposes including bicycle, pedestrian, public transportation and vehicular travel.

**Road connector** – Designated freight route that connects freight facilities or freight generation areas to a main roadway route.

**Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for**

**Users (SAFETEA-LU) -** Signed into federal law in 2005, SAFETEA-LU authorizes the federal surface transportation programs for highways, highway safety, and transit through 2009. SAFETEA-LU refined and reauthorized TEA-21.

**Shared roadway** – A roadway designed and designated to enable bicyclists and motor vehicles to share travel lanes.

**Sidewalk** – A walkway separated from the roadway with a curb, constructed of a durable, hard and smooth surface, designed for preferential or exclusive use by pedestrians.

**Single-occupancy vehicle (SOV)** – Motor vehicles occupied by the driver only.

**Stakeholders** – Individuals and organizations with an interest in or who are affected by the transportation planning process, including federal, state, regional and local officials and jurisdictions, institutions, community groups, transit operators, freight companies, shippers, the general public, and people who have traditionally been underrepresented.

**State Highways -** State highways are important elements of the regional transportation system, functioning as the most important interstate, inter-regional, intra-regional and urban-rural connections for people and goods movement.

**State Implementation Plan (SIP)** – Air quality plan produced by the Department of Environmental Quality and required by the federal Clean Air Act. The plan contains procedures to monitor, control, maintain and enforce compliance with the NAAQS and must be taken into account in the transportation planning process. The RTP must conform to the SIP.

**State Transportation Improvement Program** – The funding and scheduling document for major street, highway and transit projects in Oregon for a four-year period. The document is produced by ODOT, consistent with the Oregon Transportation Plan (the statewide transportation plan) and planning processes as well as metropolitan transportation plans, MTIPs, and processes.

**State Transportation Plan -** The official statewide intermodal transportation plan that is developed through the statewide transportation planning process. See also Oregon Transportation Plan.

**Station Communities -** Areas generally within a 1/4- to 1/2-mile radius of a light rail station or other high capacity transit stops that are planned as multi-modal, mixed-use communities with substantial pedestrian and transit-supportive design characteristics and improvements.

**Stewardship** – A planning and management approach that takes responsibility for actions affecting the natural or built environment and considering environmental impacts and public benefits of actions as well as public and private dollar costs.

**Street** – A generally gravel or concrete- or asphalt-surfaced facility. The term collectively refers to arterial, collector and local streets that are located in 2040 mixed-use corridors, industrial areas, employment areas and neighborhoods. While the focus for streets has been on motor vehicle traffic, they are designed as multi-modal facilities that accommodate bicycles, pedestrians and transit, with an emphasis on vehicle mobility and special pedestrian infrastructure on transit streets.

**Streetcar** – Fixed guideway transit service mixed in traffic for locally oriented trips within or between higher density mixed-use centers. Streetcar services provide local circulator service and may also serve as a potent incentive for denser development in centers. Service runs typically every 15 minutes or better and streetcar routes may include transit preferential treatments, such as transit signal priority systems, and enhanced passenger infrastructure, such as covered real-time schedule information, bus shelters, curb extensions and special lighting. Streetcar is distinguished from Rapid Streetcar (defined elsewhere) by it operation in generally mixed-traffic lanes and with relatively short stop spacing.

**Sustainable development** – Development uses, develops and protects resources in a manner that enables people to meet current needs and provides that future generations can meet future needs, from the joint perspective of environmental, economic and community objectives.

**Sustainability** – Using, developing and protecting resources in a manner that enables people to meet current needs and provides that future generations can meet future needs, from the joint perspective of environmental, economic and community objectives. This definition of sustainability is from the 2006 Oregon Transportation Plan and ORS 184.421(4). The 2001 Oregon Sustainability Act and 2007 Oregon Business Plan maintain that these principles of sustainability can stimulate innovation, advance global competitiveness and improve quality of life in communities throughout the state.

**System management** - A set of strategies for increasing travel flow on existing facilities through improvements such as ramp metering, traffic signal synchronization and access management.

**Target** – A numerical goal or stated direction to be achieved for which quantifiable or directional targets may be set, assigning a value to what the RTP is trying to achieve. Benchmarks (also known as benchmarks) are expressed in quantitative terms and provide an important measure of progress toward achieving different goals within a timeframe specified for it to be achieved.

**Telecommute** – This term refers to a transportation demand management strategy whereby an individual communicates electronically (e.g., telephone, computer, fax, etc.) with an office either from home, or a satellite office located closer to home instead of traveling to it physically.

**Throughways** – Limited-access facilities that serve longer-distance motor vehicle and freight trips, providing for interstate, intrastate and cross-regional travel. Throughways are classified as a principal arterial and connect major activity centers within the region to one another and to destinations outside the region.

**Town centers** – Areas of mixed residential and commercial land uses that serve tens of thousands of people. Examples include the downtowns of Forest Grove and Lake Oswego.

**Traffic** – Movement of motorized vehicles, nonmotorized vehicles and pedestrians on transportation facilities. Often traffic levels are expressed as the number of units moving over or through a particular location during a specific time period.

**Traffic calming** – A transportation system management technique that aims to prevent inappropriate through-traffic and reduce motor vehicle travel speeds on a particular roadway. Traditionally, traffic calming strategies provide speed bumps, curb extensions, planted median strips or rounds and narrowed travel lanes.

**Traffic signal coordination/ synchronization** – A process by which a number of traffic signals are synchronized to create efficient progression.

**Transit-oriented development** – A mix of residential, retail and office land uses designed with transit-supportive characteristics, and typically located near a regional transit stop to support a high level of transit use. The key features may include:

(a) A mixed-use center at the transit stop, oriented principally to transit riders and pedestrian and bicycle travel from the surrounding area;

(b) Relatively high density of residential development near the transit stop that is sufficient to support transit operation and neighborhood commercial uses within the TOD;

(c) A network of roads, and bicycle and pedestrian paths to provide a high level of access to and within the TOD.

**Transit/mixed-use corridor** – Designated facilities that generally correspond to the 2040 Corridor designation, and are a priority for pedestrian investments. The designation is applied to high-quality regional transit routes that will be redeveloped at densities that are somewhat more than today. These corridors have designs that promote pedestrian travel to enhance access to the regional transit system. These corridors will generate substantial pedestrian traffic near neighborhood-oriented retail development, schools, parks and bus stops.

**Transportation control measure (TCM)** – Strategies that affect travel patterns or reduce vehicle use to reduce air pollutant emissions. These projects, programs or actions are identified in the State Implementation Plan to demonstrate attainment of national air quality standards. The RTP must include these strategies. Examples include HOV lanes, provision of bicycle and pedestrian facilities, telecommuting, rideshare and land use.

**Transportation demand -** The quantity of transportation services desired by users of the transportation system.

**Transportation demand management (TDM)** – A general term for any action or set of strategies designed to influence the intensity, timing and distribution of travel in order to make more efficient use of transportation infrastructure and services. Methods may include but are not limited to offering other modes of travel such as walking, bicycling, ride-sharing and vanpool programs, car sharing, providing opportunities to link or "chain" trips together, individualized marketing, and trip-reduction ordinances. Public and private partners of the Regional Travel Options (RTO) Program implement TDM.

**Transportation disadvantaged/persons potentially underserved by the transportation system** – Individuals who have difficulty in obtaining important transportation services because of their age, income, physical or mental disability.

**Transportation Equity Act (TEA-21) -** The Transportation Equity Act for the 21st Century was enacted June 9, 1998 as Public Law 105-178. TEA-21 authorizes the federal surface transportation programs for highways, highway safety, and transit for the 6-year period 1998-2003. TEA-21 refined and reauthorized ISTEA. See entry for SAFETEA-LU for updated federal transportation authorization.

**Transportation facilities** – Any physical facility that is used to accommodate the movement of people or goods, including facilities identified in OAR 660-012-0020 but excluding electricity, sewage and water systems.

**Transportation Improvement Program (TIP) -** The 4-year, specific multimodal program of regional transportation improvements for highways, transit and other travel modes. The TIP consists of projects drawn from the Regional Transportation Plan financially constrained system as well as local plans and programs.

**Transportation management area (TMA)** – Federally designated urbanized areas over 200,000 population that, among other activities, must have a congestion management program that identifies actions and strategies to reduce congestion and increase mobility.

**Transportation management associations (TMA)** – Formally designated non-profit coalitions of local businesses and/or public agencies dedicated to reducing traffic congestion and pollution and improving commuting options for employees.

**Transportation service** – A service that provides or supports the movement of people and goods, such as intercity bus service and passenger rail service.

**Transportation system -** Various transportation modes or facilities (aviation, bicycle and pedestrian, throughway, street, pipeline, transit, rail, water transport) serving as a single unit or system.

**Transportation system management (TSM)** – Strategies and techniques for increasing the efficiency, safety, capacity or level of service of a transportation facility without major new capital improvements. Examples include traffic signal improvements, traffic control devices such as medians, parking removal, channelization, access management, re-striping of HOV lanes, ramp metering, incident response, targeted traffic enforcement and programs that smooth transit operations.

**Transportation System Management and Operations (TSMO)** – An integrated "toolkit" of programs and strategies that will allow the region to more effectively and efficiently manage existing and new multi-modal transportation facilities and services in the region to preserve capacity and improve security, safety, and reliability. TSMO has two components. The first component (transportation system management) includes strategies that focus on making the infrastructure better serve the users by improving efficiency, safety and capacity of the system. The second component (transportation demand management) includes programs and strategies seeking to modify travel behavior in order to make more efficient use of transportation infrastructure and services and enable the users to take advantage of everything the system has to offer.

**Transportation system plan (TSP)** – The transportation element of the comprehensive plan for one or more transportation facilities that is planned, developed, operated and maintained in a coordinated manner to supply continuity of movement between modes, and between geographic and jurisdictional areas. The TSP supports the development patterns and land uses contained in adopted community plans. The TSP includes a comprehensive analysis and identification of transportation needs associated with adopted land use plans. The TSP complies with Oregon's Transportation Planning Rule, as described in statewide planning goal 12.

**Travel options** – The ability range of travel mode choices available, including motor vehicle, walking, bicycling, riding transit and carpooling. Telecommuting is sometimes considered a travel option because it replaces a commute trip with a trip not taken.

**Travel time** – The measure of time that it takes to reach another place in the region from a given point for a given mode of transportation. Stable travel times are a sign of an efficient transportation system that reliably moves people and goods through the region.

**Travel time contours** – An analysis map that depicts the distance a given mode of transportation can travel within a specified travel time from a given point to show relative changes in accessibility over time within the region.

**Travel time reliability** – This term refers to consistency or dependability in travel times, as measured from day to day and/or across different times of day. Variability in travel times means travelers must plan extra time for a trip.

**Trip** - A one-way movement of a person or vehicle between two points. A person who leaves home on one vehicle, transfers to a second vehicle to arrive at a destination, leaves the destination on a third vehicle and has to transfer to yet another vehicle to complete the journey home has made four unlinked passenger trips.

**Truck terminal** – A facility that serves as a primary gateway for commodities entering or leaving the metropolitan area by road.

**Undeveloped areas** – Areas inside the urban growth boundary that are not currently developed with urban uses, or which are otherwise under-utilized.

**Unified Planning Work Program (UPWP)** – The management plan for the metropolitan planning program. Its purpose is to coordinate the planning activities of all participants in the metropolitan planning program.

**Universal design** – Transportation facilities designed to accommodate all users, including people who rely on mobility aids such wheelchairs and walkers.

**Update** - TSP amendments that change the planning horizon year and that apply broadly to a city or county and typically entails changes that need to be considered in the context of the entire TSP, or a substantial geographic area.

**Urban form** – The spatial arrangement of land uses and supporting infrastructures within an urban area. Stating and pursuing urban form objectives generally provides the focal strategy for managing a region's growth

**Urban growth boundary** – The politically defined boundary around an urban area beyond which no urban improvements may occur. In Oregon, UGBs are defined so as to accommodate projected population and employment growth within a 20-year planning horizon. A formal process has been established for periodically reviewing and updating the UGB so that it meets forecasted population and employment growth.

**Urban Growth Management Functional Plan** – A regional functional plan regulating urban development in the Metro region, as mandated by Metro's Regional Framework Plan. The plan addresses such issues as accommodation of projected regional population and job growth, regional parking management, water quality conservation, retail in employment and industrial areas and the regional fish and wildlife protection program.

**Urbanized area** – A federal designation of an area that contains a city of 50,000 or more population plus incorporated surrounding areas meeting size or density criteria as defined by the U.S. Census.

**Vanpool** - An organized ridesharing arrangement in which 7 to 15 people regularly commute together in a van. The van may be publicly owned, employer owned, individually owned, leased, or owned by a third party. Expenses are generally shared and there is usually a regular volunteer driver. See also carpool.

**Value pricing** - A demand management strategy that involves the application of market pricing (through variable tolls, variable priced lanes, area-wide charges or cordon charges) to the use of roadways at different times of day. Also called congestion pricing or peak period pricing.

**Volume-to-capacity (v/c) ratio** - A measure of potential roadway capacity. A ratio expressing the relationship between the existing or anticipated volume of traffic on a roadway and the designed capacity of the facility. V/C standards set ratios as a minimum operating standard. One of the important characteristics of the v/c ratio is that it does not bias solutions. Deficiencies can be addressed by lowering traffic volumes through demand management, transit, etc. or by increasing capacity through access management, signal timing, adding lanes, etc., or a combination of methods.

**Vehicle miles traveled (VMT)** – A measurement of the total miles traveled by all vehicles for a specified time period. For purposes of this definition, "vehicles" include automobiles, light trucks, and other similar vehicles used for the movement of people. The definition does not include buses, heavy trucks and trips that involve commercial movement of goods. For regional planning purposes, VMT generally includes trips with an origin and a destination within the MPO boundary and excludes pass through trips (i.e., trips with a beginning and end point outside of the MPO) and external trips (i.e., trips with a beginning or end point outside of the MPO boundary). VMT is often estimated prospectively through the use of metropolitan area transportation models.

**Walkable neighborhood** - A place where people live within walking distance to most places they want to visit, whether it is school, work, a grocery store, a park, church, etc.

**Walkway** – A hard-surfaced transportation facility designed and suitable for use by pedestrians, including persons using wheelchairs. Walkways include sidewalks, hard-surfaced portions of accessways, regional trails, paths and paved shoulders.

**Wide outside lane** – A wider than normal curbside travel lane that is provided for ease of bicycle operation where there is insufficient room for a bike lane or shoulder bikeway.

## ACRONYMS

| | |
|---|---|
| ADA | Americans with Disabilities Act |
| ATMS | Advanced Traffic Management System |
| AQMA | Air Quality Maintenance Area |
| BRT | Bus rapid transit |
| CAAA | Clean Air Act Amendments of 1990 |
| CMAQ | Congestion Mitigation/Air Quality Program |
| CMP | Congestion Management Program |
| DEIS | Draft Environmental Impact Statement |
| DEQ | Department of Environmental Quality |
| ECO | Employee Commute Options Rule |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| FEIS | Final Environmental Impact Statement |
| FHWA | Federal Highway Administration |
| FTA | Federal Transit Administration |
| HCT | High-Capacity Transit |
| HOV | High-Occupancy Vehicle |
| IAMP | Interchange Area Management Plan |
| ISTEA | Intermodal Surface Transportation Efficiency Act of 1991 |
| ITS | Intelligent Transportation System |
| JPACT | Joint Policy Advisory Committee on Transportation |
| LCDC | Land Conservation and Development Commission |
| LRT | Light Rail Transit (MAX) |
| LOS | Level of Service |
| MCCI | Metro Committee for Citizen Involvement |
| MPAC | Metro Policy Advisory Committee |
| MPO | Metropolitan Planning Organization |
| MSTIP | Major Streets Improvement Program |
| MTAC | Metro Technical Advisory Committee |
| MTIP | Metropolitan Transportation Improvement Program |
| MTP | Metropolitan Transportation Plan |
| NAAQS | National Ambient Air Quality Standards |
| NEPA | National Environmental Protection Act |
| NHS | National Highway System |
| OAR | Oregon Administrative Rules |
| ODOT | Oregon Department of Transportation |
| ORS | Oregon Revised Statutes |
| OTC | Oregon Transportation Commission |
| OTP | Oregon Transportation Plan |
| PE | Preliminary Engineering |
| PEF | Pedestrian Environmental Factors |
| RFP | Regional Framework Plan |
| PSU | Portland State University |
| ROW | Right-of-Way |
| RTC | Regional Transportation Council |
| RTP | Regional Transportation Plan |

RUGGO Regional Urban Growth Goals and Objectives

SAFETEA-LU Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

SIP Oregon State Implementation Plan

SMART South Metro Area Rapid Transit

SOV Single-Occupancy Vehicle

STIP Statewide Transportation Improvement Program

STP Surface Transportation Program

TAZ Transportation Analysis Zones

TCM Transportation Control Measures

TDM Transportation Demand Management

TIP Transit Investment Plan

TMA Transportation Management Area

TMA Transportation Management Association

TOD Transit-Oriented Development

TPAC Transportation Policy Alternatives Committee

TPR Transportation Planning Rule

TriMet Tri-County Metropolitan Transportation District

TSM Transportation System Management

TSMO Transportation System Management and Operations

TSP Transportation System Plan

UGB Urban Growth Boundary

USDOT United States Department of Transportation

VMT Vehicle Miles Traveled

WSDOT Washington State Department of Transportation

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Metro is required to update the Regional Transportation Plan (RTP) every four years. This is the first major update since 2000. An update of this magnitude could not be done without the help of many people representing many disciplines and skills, and the involvement of several RTP work groups that met during the past four years to help develop the RTP.

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*In memory of Ron Sarver, lead printer*

## NONDISCRIMINATION NOTICE TO THE PUBLIC

*Metro hereby gives public notice that it is the policy of the Metro Council to assure full compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice and related statutes and regulations in all programs and activities. Title VI requires that no person in the United States of America shall, on the grounds of race, color, sex, or national origin, be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which Metro receives federal financial assistance. Any person who believes they have been aggrieved by an unlawful discriminatory practice under Title VI has a right to file a formal complaint with Metro. Any such complaint must be in writing and filed the Metro's Title VI Coordinator within one hundred eighty (180) days following the date of the alleged discriminatory occurrence. For more information, or to obtain a Title VI Discrimination Complaint Form, see the web site at www.oregonmetro.gov or call 503-797-1536.*

Metro | *People places. Open spaces.*

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy.

**Metro representatives**

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Carlotta Collette, District 2

Carl Hosticka, District 3

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