# Regional Transportation Plan

Related plans for freight, high capacity transit and transportation system management and operations

**Section 3C**

## Setting a new course for transportation with innovative policies, projects and strategies to create a sustainable and prosperous region

Over the past three years, Metro worked with state and local government partners as well as residents, community groups, and businesses to develop the draft Regional Transportation Plan (RTP) and related plans. The plans set a new course for future transportation decisions and implementation of the 2040 Growth Concept through 2035.

The 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 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.

In 2009, the Metro Council will consider accepting the draft RTP and related plans by resolution. Following approval, staff would then complete a final draft RTP for public review and hearings in spring 2010. The Metro Council will consider final adoption of the RTP by ordinance in summer 2010.

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Draft resolution accepting RTP projects and funding (2009)

Draft RTP ordinance narrative (2010)

Draft 2035 Regional Transportation Plan

RTP Appendix

Draft Transportation System Management and Operations Plan

Draft Regional Freight Plan

Draft High Capacity Transit System Plan

Draft Regional Transportation Functional Plan

Integrated Mobility Strategy

BEFORE THE METRO COUNCIL

| | | |
|---|---|---|
| FOR THE PURPOSE OF ACCEPTING THE DRAFT 2035 REGIONAL TRANSPORTATION PLAN, WITH THE FOLLOWING ELEMENTS, FOR FINAL REVIEW AND ANALYSIS FOR AIR QUALITY CONFORMANCE: THE TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS ACTION PLAN; THE REGIONAL FREIGHT PLAN; THE HIGH CAPACITY TRANSIT SYSTEM PLAN; AND THE REGIONAL TRANSPORTATION FUNCTIONAL PLAN | ) ) ) | RESOLUTION NO. 09-XXXX<br><br>Introduced by Chief Operating Office Michael Jordan with the Concurrence of Council President David Bragdon |

WHEREAS, federal and state law require Metro to adopt a transportation plan for the region and to revise it at least every four years to keep it up to date; and

WHEREAS, the 2035 Regional Transportation Plan ("RTP") is a central tool for implementing the 2040 Growth Concept and is a policy component of the Regional Framework Plan; and

WHEREAS, Phase 1 of the RTP focused on development of the federally-recognized metropolitan plan for the Portland metropolitan region that serves as the threshold for all federal transportation funding in the region; and

WHEREAS, the Metro Council adopted the 2035 RTP as the federal component of the RTP by Resolution No. 07-3831B on December 13, 2007, deferring adoption of the state component in order to address outstanding issues identified during development of the federal component; and

WHEREAS, the U.S. Department of Transportation approved the federal component of the 2035 RTP on March 5, 2008; and

WHEREAS, Phase 2 of the RTP focused on development of the state component of the 2035 RTP; and

WHEREAS, the state component of the 2035 RTP is intended to serve as the regional transportation system plan under statewide planning Goal 12 and the state Transportation Planning Rule, and must be consistent with those laws; and

WHEREAS, the 2035 RTP must be consistent with other statewide planning goals and the state transportation system plan as contained in the Oregon Transportation Plan and its several components; and

WHEREAS, a 30-day public comment period was held on the state and federal component of the 2035 RTP from September 15 to October 15, 2009; and

WHEREAS, the Metro Council, JPACT, the Metro Policy Advisory Committee ("MPAC"), the Metro Technical Advisory Committee ("MTAC"), the Transportation Policy Advisory Committee ("TPAC"), the Regional Travel Options ("RTO") subcommittee of TPAC, the Regional Freight and Goods Movement Technical Advisory Committee, the Bi-State Coordination Committee, the Regional

Freight and Goods Movement Task Force, the Federal Highway Administration and the Federal Transit Administration, and other elected officials, representatives of business, environmental and transportation organizations from the Portland-Vancouver metropolitan area assisted in the development of the state component of the RTP and provided comment on the RTP throughout the planning process; and

WHEREAS, JPACT and MPAC have recommended acceptance of the state and federal components of the 2035 RTP by the Council for final review and air quality conformance analysis; now, therefore,

BE IT RESOLVED that the Metro Council:

1. Accepts the Draft 2035 Regional Transportation Plan ("RTP") (Exhibit A to this ordinance), with the following elements, for analysis of air quality conformance under federal law and for final review and public hearings:
    - The Transportation System Management and Operations Action Plan (Exhibit B to this ordinance)
    - The Regional Freight Plan (Exhibit C to this ordinance)
    - The High Capacity Transit System Plan (Exhibit D to this ordinance)
    - The Regional Transportation Functional Plan (Exhibit E to this ordinance).
2. Direct staff to consolidate the Draft 2035 RTP and the Summary of Public Comments received during the September 15 to October 15, 2009, comment period (Exhibit F to this ordinance) into a single document for final public review.
3. Declares that Resolution No. 09-XXXX does not adopt the state component of the 2035 RTP, or any of its elements and is not a land use decision. The resolution accepts the state and federal components of the 2035 RTP for final review and analysis, to be adopted by ordinance following public hearings in 2010.

ADOPTED by the Metro Council this __ day of December, 2009

David Bragdon, Council President

Approved as to form:

Daniel B. Cooper, Metro Attorney

DRAFT

**2035 Regional Transportation Plan Ordinance (adopt in 2010)**

**New Strategies**

*Strategy 1: Measure Performance of Investments and Tools and Use Lessons Learned from Performance*

The Chief Operating Officer recommends that the Council:

- Commit to monitoring the performance of the transportation system using performance indicators and performance targets (included in the Regional Transportation Plan and its components)
- Highlight indicators that inform the region about performance of the elements of the 2035 Regional Transportation Plan in reducing carbon in the atmosphere from travel in the region.

*Strategy 2: Invest in Our Centers, Corridors and Employment Areas*

The Chief Operating Officer recommends that the Council:

- Give priority to transportation investments that give residents of the region greater choice among modes of transportation for their everyday travels (projects included in the Regional Transportation Plan and its components)
- Use investments in high-capacity transit to achieve regional Outcomes and local aspirations for Centers and Corridors leveraging supportive land uses to accompany the investments (projects included in the High Capacity Transit System Plan)
- Invest in completion of the region's existing network of local streets and roads to achieve connectivity standards that will provide better choices of mode and route (projects included in the Regional Transportation Plan)
- Invest in the capacity of the region's freight routes and accesses to intermodal transfer facilities (projects included in the Regional Freight and Goods Management and Operations Action Plan)
- Seek a new source of funding to provide "match" for federal funds for improvements to the region's transportation system.

*Strategy 3: Use Tools to Direct Growth to Centers, Corridors and Employment Areas*

The Chief Operating Officer recommends that the Council:

- Give priority to improved management of the region's existing transportation system before investing in new system capacity (methods and technologies included in the Transportation System Management and Operations Action Plan)
- Use parking management more extensively and thoroughly in the region to reduce congestion in Centers and Corridors (included in the Regional Transportation Functional Plan)
- Use mobility standards, access management and other techniques to limit access to the freight system for trips not related to industrial use (included in the Regional Transportation Functional Plan).



DRAFT












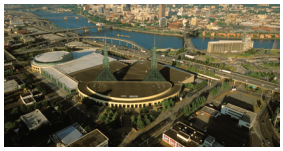

# 2035
## REGIONAL TRANSPORTATION PLAN
## Public review draft

**September 15, 2009**

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.*

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## Acknowledgements

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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 three 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 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 economic vitality.

## Our work is not finished

A public comment period is scheduled from September 15 to October 15, 2009, on an integrated set of recommendations that includes this document and related plans for freight, high capacity transit and transportation system management and operations, a draft Urban Growth Report and recommendations on the designation of urban and rural reserves. Read the Metro Chief Operating Officer's recommendation at http://www.oregonmetro.gov/greatestplace.

### RTP AND RELATED PLANS AND DOCUMENTS FOR COMMENT

**Draft 2035 Regional Transportation Plan**

**Draft Transportation System Management and Operations Plan**

**Draft Regional Freight Plan**

**Draft High Capacity Transit Plan**

**Draft Regional Transportation Functional Plan**

All of the RTP documents are posted at: http://www.oregonmetro.gov/rtp in addition to other reports and publications prepared during the RTP update process.

On November 18, 2009, the Metro Policy Advisory Committee (MPAC) will consider accepting the draft RTP and related plans with any proposed changes, followed by the Joint Policy Advisory Committee on Transportation (JPACT) on December 10 and the Metro Council on December 17.

Following approval, staff would then complete a final analysis of the plan's projects and prepare findings, a final draft document, and regional transportation functional plan amendments for public review and hearings in spring 2010. MPAC, JPACT and the Metro Council will consider final adoption of the RTP by ordinance in summer 2010.

Visit the project web site for more information about the 2035 RTP update and comment opportunities.

# Help make our region the greatest place

## Public comment period, noon Sept. 15 to 5 p.m. Oct. 15, 2009

Metro Council seeks public comment on an integrated set of recommendations to sustain economic competitiveness, protect farms and natural areas, and enhance the quality of life in our communities. Read the Metro Chief Operating Officer's recommendation at **www.oregonmetro.gov/greatestplace** and tell us what you think.

**Transportation priorities for the next 25 years**
Comment opportunity on policies, projects and funding strategies within the long-range blueprint for our transportation system, the 2035 Regional Transportation Plan. Approval of the final, complete 2035 RTP expected in June 2010.

**Criteria for selecting urban and rural reserves outside the Urban Growth Boundary**
Early chance to weigh in on general criteria for selecting reserves for the next 50 years. Formal comment period expected to start in late October and the final decision in 2010.

**Regional employment and population forecast for the next 20 and 50 years**
Final comment opportunity on the Urban Growth Report which contains population and employment forecasts that affect urban growth boundary decisions made in the next two years.

### Open houses and public hearings

**Monday, Sept. 21**
Hillsboro Civic Center, room 113 A and B
Open house 2 to 4 p.m.
*Spanish interpreter*

**Tuesday, Sept. 22**
Multnomah County Library,
North Portland branch
Open house 5 to 7:45 p.m.
*Spanish interpreter*

**Thursday, Sept. 24**
Beaverton City Hall
Open house 4 p.m.; hearing 5:15 p.m.

**Thursday, Oct. 1**
Gresham Conference Center,
Oregon Trail room
Open house 4 p.m.; hearing 5:15 p.m.

**Thursday, Oct. 8**
Happy Valley City Hall
Open house 4 p.m.; hearing 5:15 p.m.

**Tuesday, Oct. 13**
Clackamas County Public Service Bldg.
Open house 4 p.m.; hearing 5:15 p.m.

**Thursday, Oct. 15**
Metro Regional Center, council chamber
Open house 4 p.m.; hearing 5:15 p.m.

*Oral testimony limited to two minutes. Come prepared to submit your remarks in writing.*

**Other ways to comment**
E-mail: greatestplace@oregonmetro.gov

Mail: Greatest Place Comments,
Planning and Development,
600 NE Grand Ave.,
Portland, OR 97232

Web: www.oregonmetro.gov/greatestplace

Call: 503-797-1735

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Metro | www.oregon**metro.gov**

"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 change demand 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 between transportation 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.



## 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.

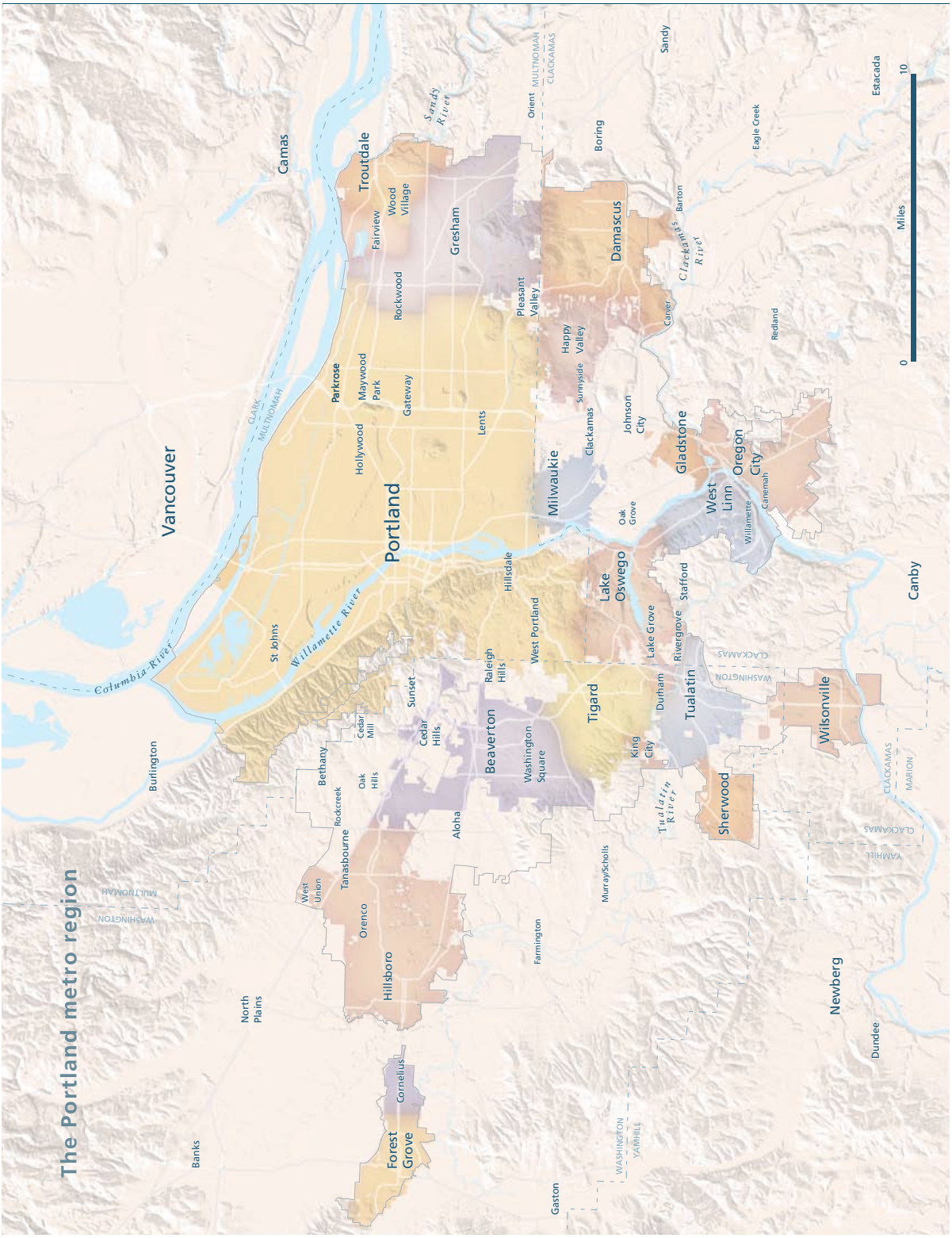
The Oregon portion of the Portland-Vancouver metropolitan region encompasses 25 cities and 3 counties as shown in **Figure 1.2**. Covering 463 square miles, Metro's jurisdictional boundary region makes up about 4.7 percent of the state's land area; however, with just under 1.4 million residents and nearly 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**.

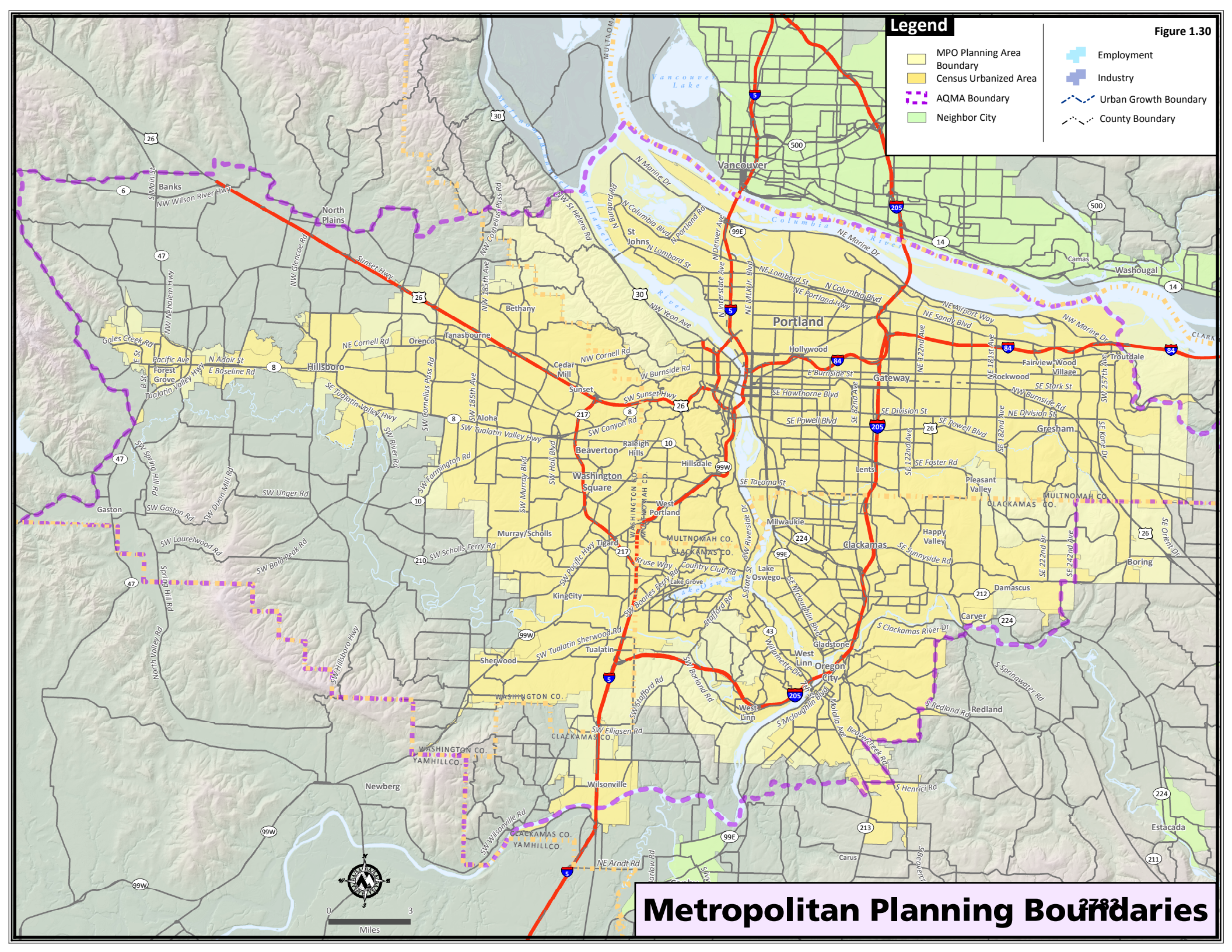
[1] *Identification and Assessment of the Long-Term Commercial Viability of Metro Region Agricultural Lands*, Oregon Department of Agriculture, January 2007, Pg. 4.
[2] Bureau of Labor Statistics and U.S. Census data as compiled by Metro.

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



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




Legend
MPO Planning Area Boundary
Census Urbanized Area
AQMA Boundary
Neighbor City
Employment
Industry
Urban Growth Boundary
County Boundary
Figure 1.30
Metropolitan Planning Boundaries
Vancouver
Portland
Gresham
Hillsboro
Beaverton
Tigard
Tualatin
Lake Oswego
West Linn
Oregon City
Wilsonville
Newberg
Forest Grove
Banks
North Plains
Sherwood
Milwaukie
Clackamas
Happy Valley
Damascus
Boring
Estacada
Troutdale
Washougal
Camas
Carus
Redland
Aloha
Orenco
Tanasbourne
Bethany
Cedar Mill
Sunset
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray/Scholls
KingCity
Gaston
Lents
Pleasant Valley
Gateway
Hollywood
Rockwood
Fairview/Wood Village
St Johns
Columbia River
Willamette River
Vancouver Lake
Miles
0
3

## 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).

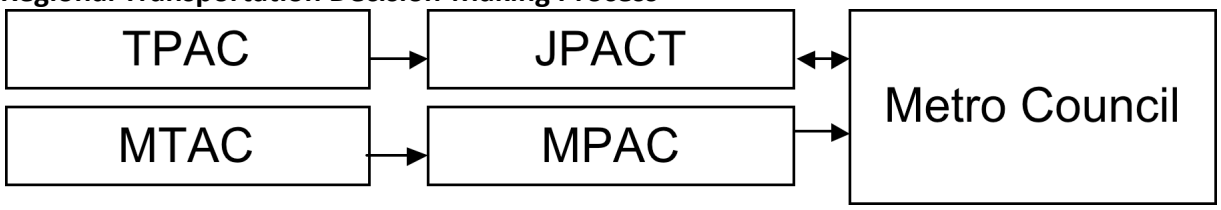
Fourth, MPO's are required to establish a Metropolitan Planning Area (MPA) Boundary, which marks the geographic area to be covered by MPO transportation planning activities. At a minimum, the MPA boundary must include the urbanized area, areas expected to be urbanized within the next twenty years and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

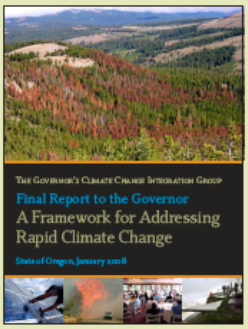
therefore, requires the concurrence of both bodies. Under state law, the RTP serves as the region's transportation system plan (TSP). As a result, the Metro Policy Advisory Committee (MPAC) also has a role in approving the regional transportation plan as a land use action, consistent with statewide planning 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.



## 1.2 CLIMATE CHANGE



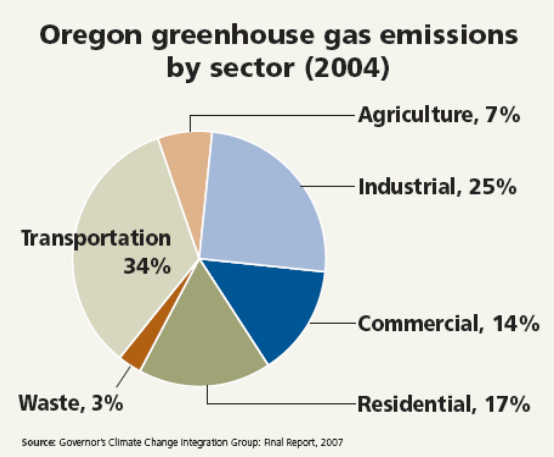

**Greenhouse gas goals adopted by the Oregon Legislature and Governor Kulongoski in HB 3543:**

- **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 HB 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.

HB 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.

HB 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 2008-09, a number of potential requirements for transportation agencies to integrate greenhouse gas considerations in the transportation planning process were being proposed and debated at the state and federal level. Some of would require future RTPs to include goals, targets and strategies to reduce greenhouse gas emissions. In 2009, the Oregon Legislature passed HB 2001, which requires Metro to develop land use and transportation scenarios designed to reduce GHGs. This work will begin in 2010.

In anticipation of future requirements, this RTP includes specific CO2 reduction targets and policy objectives and actions that aim reduce the need 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.

## 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.[8] Businesses and households depend on an efficient, multi-modal transportation system that reliably moves freight, services, and people.



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 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.

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

**Table 1.2**
**Oregon Shipments by 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/parts | 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. 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.



**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.*

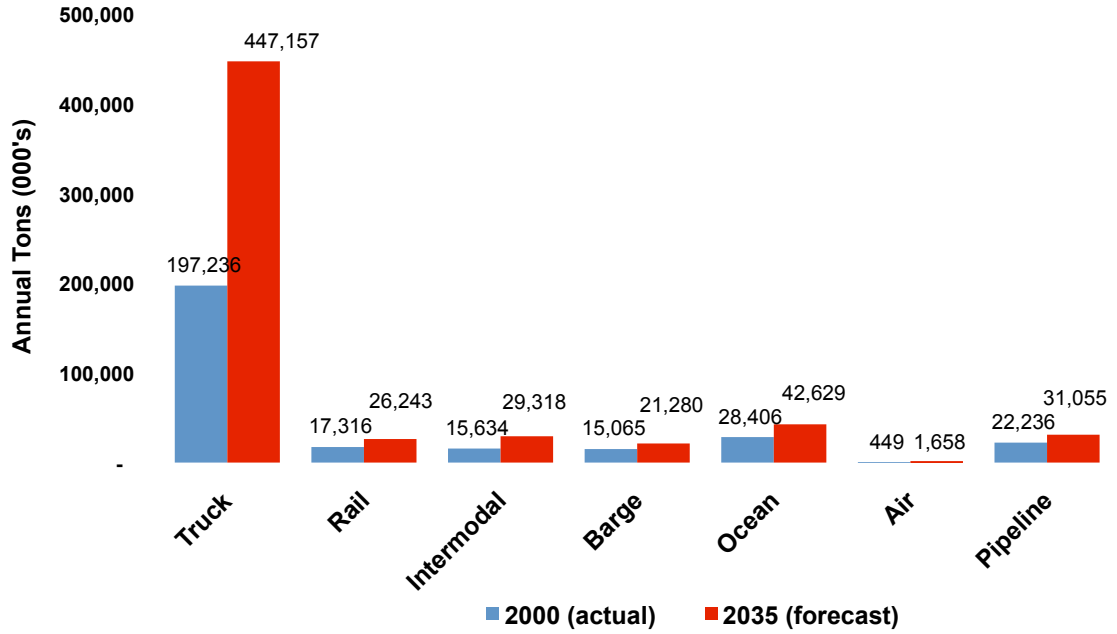
*[2] Pipeline and unknown shipments are combined because data on region-to-region flows by pipeline are statistically uncertain. Note: Numbers may not add to totals due to rounding.*

**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.

The 1997 Commodity Flow Forecast for the Portland-Vancouver region estimated that 450 million tons of commodities passed through the region over roads, rails, pipelines and waterways that year, and projects that the overall tonnage shipped will double by 2035.[9] **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**[10]
(in thousands of tons)




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

[9] Freight in America, 2006.
[10] 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.

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.

***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.[11]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 are also support implementation of Transportation System Management strategies such as incident management. [12]

***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. This has led, in turn, causing firms to lose valuable production time and increasing their production costs.

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

[12] 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[13] railroads in 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 at or near capacity, and so has little room to handle more traffic without additional investment in rail mainline, yard and siding capacity.[14] 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.



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.

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

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 and Rivergate areas. Congestion during peak hours adversely impacts these truck movements. Intermittent congestion also impacts the Class 1 and shortline railroads that provide connections to the marine ports.

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[15] 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**

Industrial sanctuaries should continue to be considered a unique and protected land use. Preserving the region's existing industrial sanctuaries is essential to maintaining 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.

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

## 1.4 GROWTH AND SHIFTING DEMOGRAPHICS

The world's population is growing, and here at home our population is 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 2.4 million. 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.[16]

**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%) | 423% | 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)*

[16] Metro 2000–2030 Regional Forecast
http://www.oregonmetro.gov/library_docs/maps_data/2000_2030regionalforecasesept2002.pdf

**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[17] — 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*

## 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.[18] During the 1990s, the black/african american population grew from about 38,000 to 44,000, a 16 percent increase, then to 56,000 by 2005, an 18 percent increase.[19]

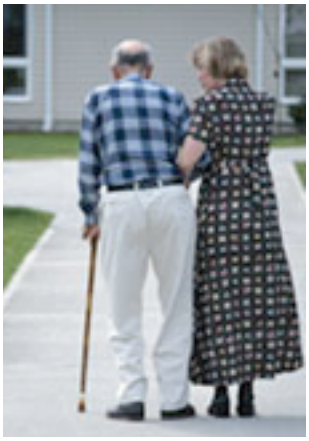
[17] Metro 2000–2030 Regional Forecast http://www.oregonmetro.gov/library_docs/maps_data/2000_2030regionalforecasesept2002.pdf
[18] Hough, George C and Amy Koski, "Population Outlook for the Portland-Vancouver Metropolitan Region;" Portland State University, 2007
[19] Ibid.

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.[20] 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.

However, in the suburbs and outlying areas transportation choices are limited. Transit service, bicycle facilities and sidewalks commonly have gaps or may be missing altogether. Participants in a fall 2006 stakeholder workshop that included people who live on the western edge of the Metro urban growth boundary related personal experiences of their families, who must walk five miles or more on roads without sidewalks to reach the nearest transit stop. Participants also mentioned the lack of transit connections to other suburbs, where their jobs may be located.[21]

### 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.[22]

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.[23] An aging population requires transportation facilities equitably designed to serve people with a range of physical abilities.

[20] Regional Equity Atlas (2007). Coalition for a Livable Future in partnership with Portland State University.
[21] 2035 Regional Transportation Plan Update Stakeholder Engagement Report, Metropolitan Group, February 2007
[22] Hough, George C and Amy Koski, "Population Outlook for the Portland-Vancouver Metropolitan Region;" Portland State University, 2007
[23] Portland State University, "Age-Related Shifts in Housing and Transportation Demand", pgs. 6,8.

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 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.

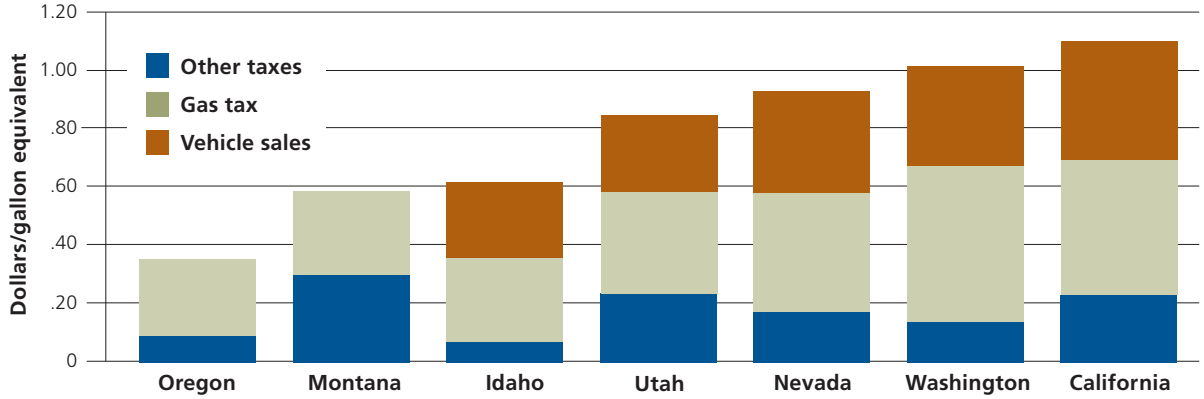
### Federal and state transportation sources are not keeping up with growing needs

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**. 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**




**Source:** Oregon Department of Transportation, 2006

Purchasing power is further eroded by rising material costs.

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.

### Growing streets 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.[24]

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

## 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.

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.

**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)

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 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.

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.[25]

[25] Baker, Eric, Cowden, Steve, Mode, Michael, The Oregonian. Friday, August 3, 2007, p. A4. "Bridge Collapse".

**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 Marquam Bridge 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, and 500 bicycles.[26]

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 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.

[26] http://www.answers.com/topic/steel-bridge?cat=technology. Retrieved on 11/09/07.

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 be studied as a method to help finance the project. Tolls paid for the construction of the existing I-5 bridges in 1917 and 1958.[27]



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

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

[27] 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.

**Figure 1.7 – Regional Bridges Inventory**

(This map is currently being developed and will be included in the final draft plan)

## 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.




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 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.

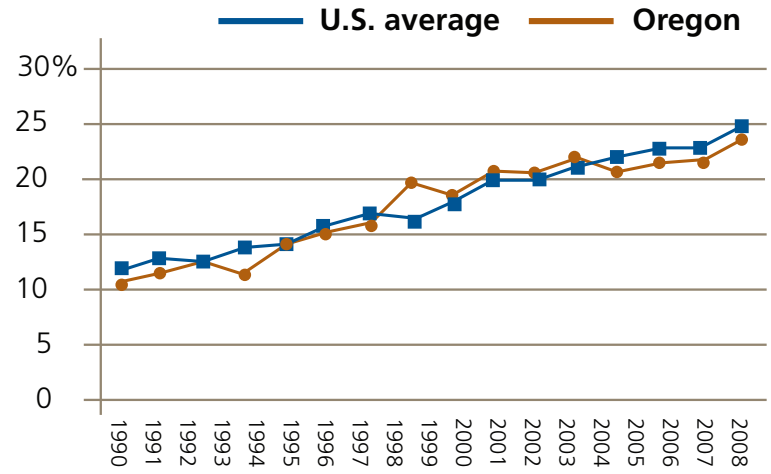
## 1.6 PUBLIC HEALTH, ENVIRONMENTAL AND SAFETY CONCERNS

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.[28] 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.

[28] 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.[29]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.[30]

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, and expects to expand the region's analytical capability to allow for transportation investments to be evaluated for both their land use and public health 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.[31]

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.

[29] "Four Model Ordinances to help Create Physically Active Communities. https://www.planning.org/smartgrowthcodes accessed 9/13/07
[30] Active Living By Design Website (Research Page, viewed on Oct. 5, 2006) www.activelivingbydesign.org.
[31] 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. [32] 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.

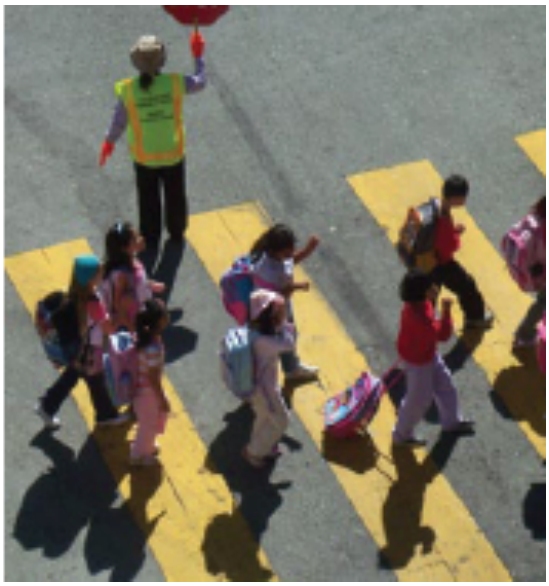
Several Metro-initiated activities are aimed at restoring habitat or mitigating the effects of the transportation system on air quality and the natural environment, including:



- 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.

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

## Transportation Safety



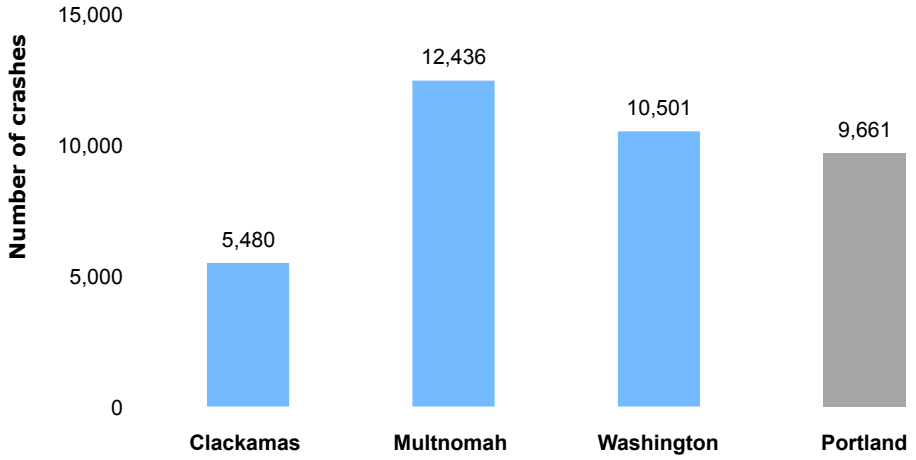
Traffic safety affects the Metro region on multiple levels. Safety fears prevent many from choosing to walk or bike. Crashes cause personal tragedy, lost productivity, rising insurance costs, congestion and delay to the movement of people and goods. Increasing awareness of safety issues is a first step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

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.[33]

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.

[33] 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)



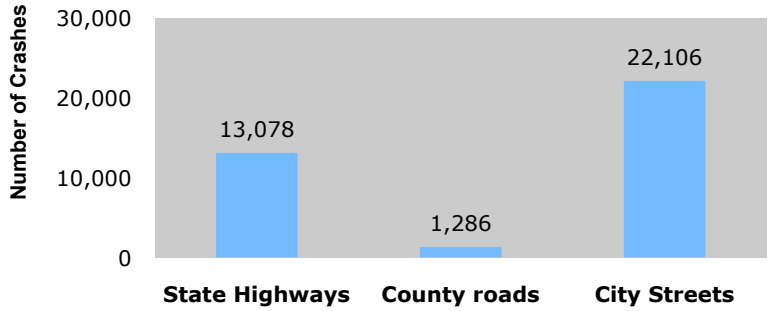

*Source: Oregon Department of Transportation's Crash Analysis Reporting Unit*

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.[34]

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.

[34] 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.

## 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.[35] 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.

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.

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.

[35] 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.

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.[36] 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 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.

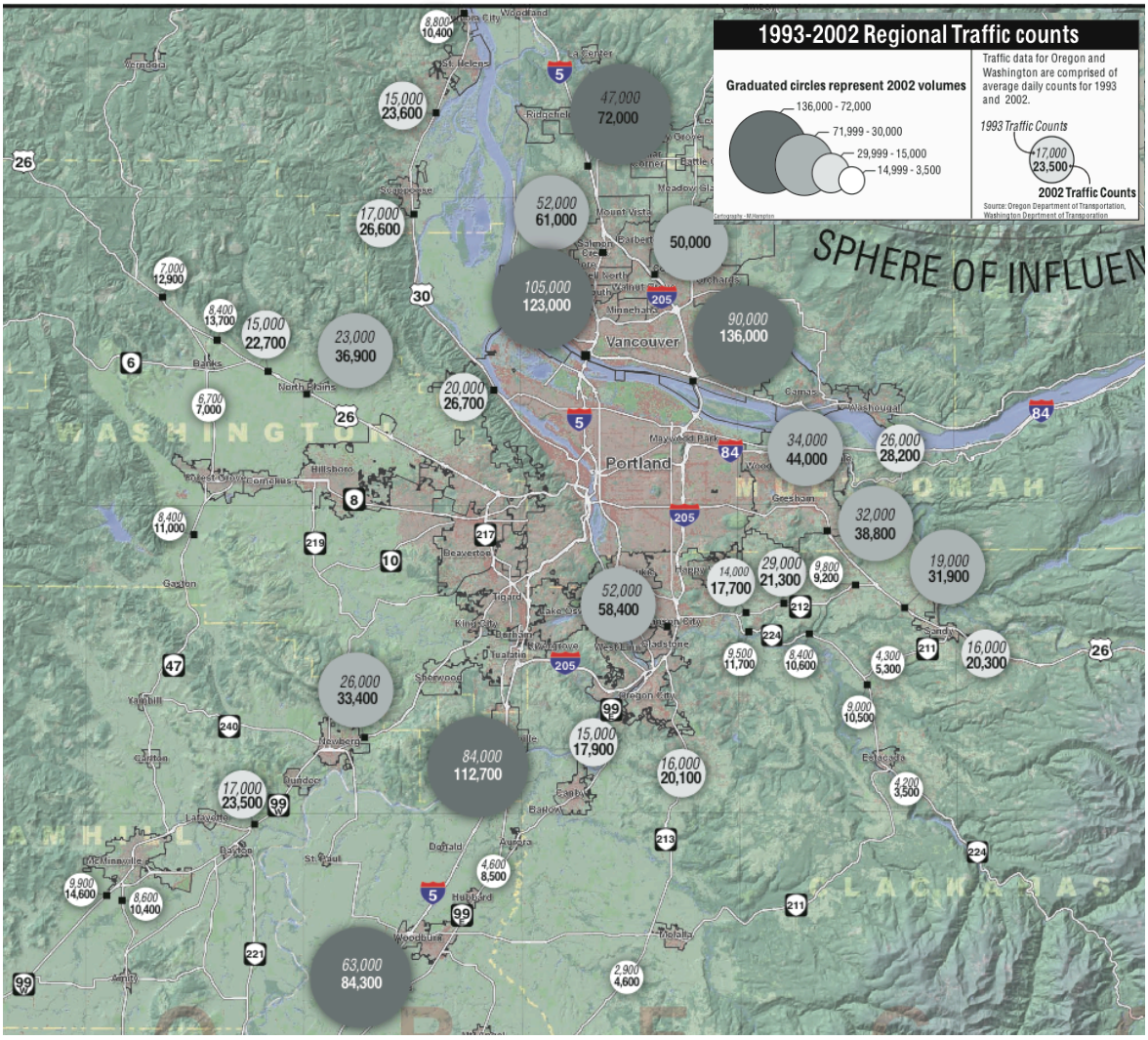
[36] Emergency Management, http://www.portlandonline.com/oem/

## 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**



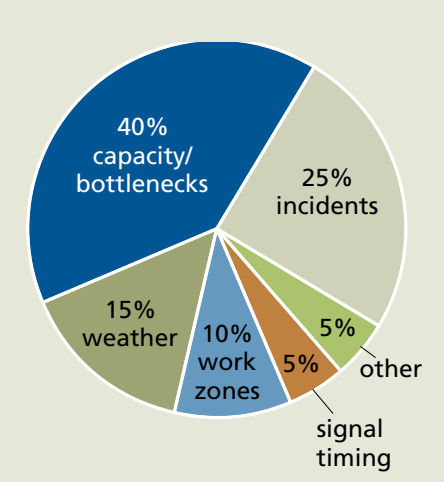

*Source: Metro*

## 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.[37] 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)[38]




*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.[39] 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 from an

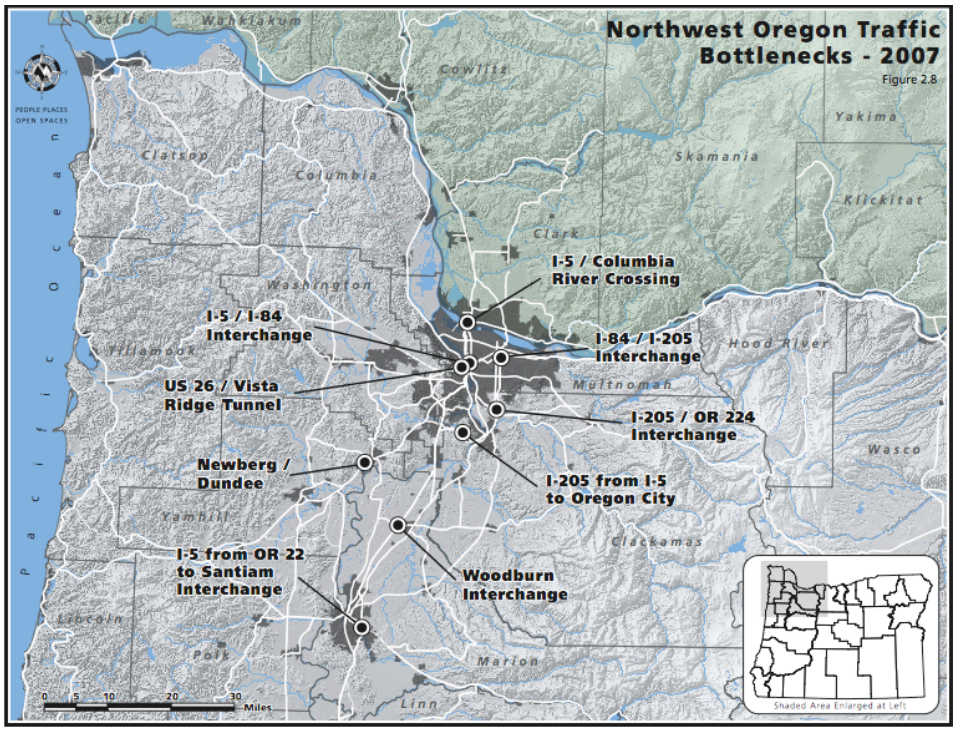
[37] FHWA, 2006. Travel Time Reliability: Making it there on time, every time.
[38] Traffic Congestion and Reliability: Linking Solutions to Problems, prepared for the Federal Highway Administration by Cambridge Systematics, Inc., and the Texas Traffic Institute, 2004, accessed at www.ops.fhwa.dot.gov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

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.[40] 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)**




[40] 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.



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.[41] 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.[42] **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.

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

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

- 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.

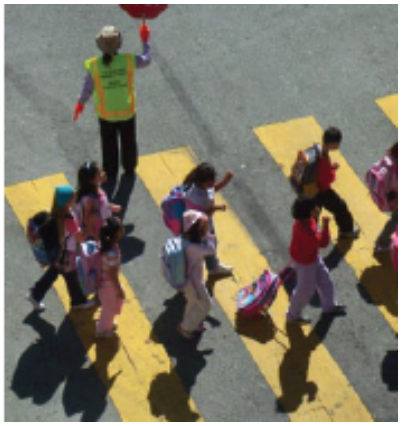
- Public education efforts to promote trip reduction. For example, in February 2006 the Oregon Department of Transportation (ODOT), Metro, TriMet, City of Vancouver and other public and private partners launched the Drive Less/Save More Campaign, to reduce drive-alone car trips that are not related to work. Such trips constitute more than two-thirds of drive-alone travel.[43]

Drive less. Save more.
www.DriveLessSaveMore.com

- 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.

- Promotion of walking bicycling and transit use. Many cities in the region are helping residents learn about their choices, including the Travel Smart program in the City of Portland.

- 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, 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.[44]



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

### RTP scenarios results point to an integrated solution

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.

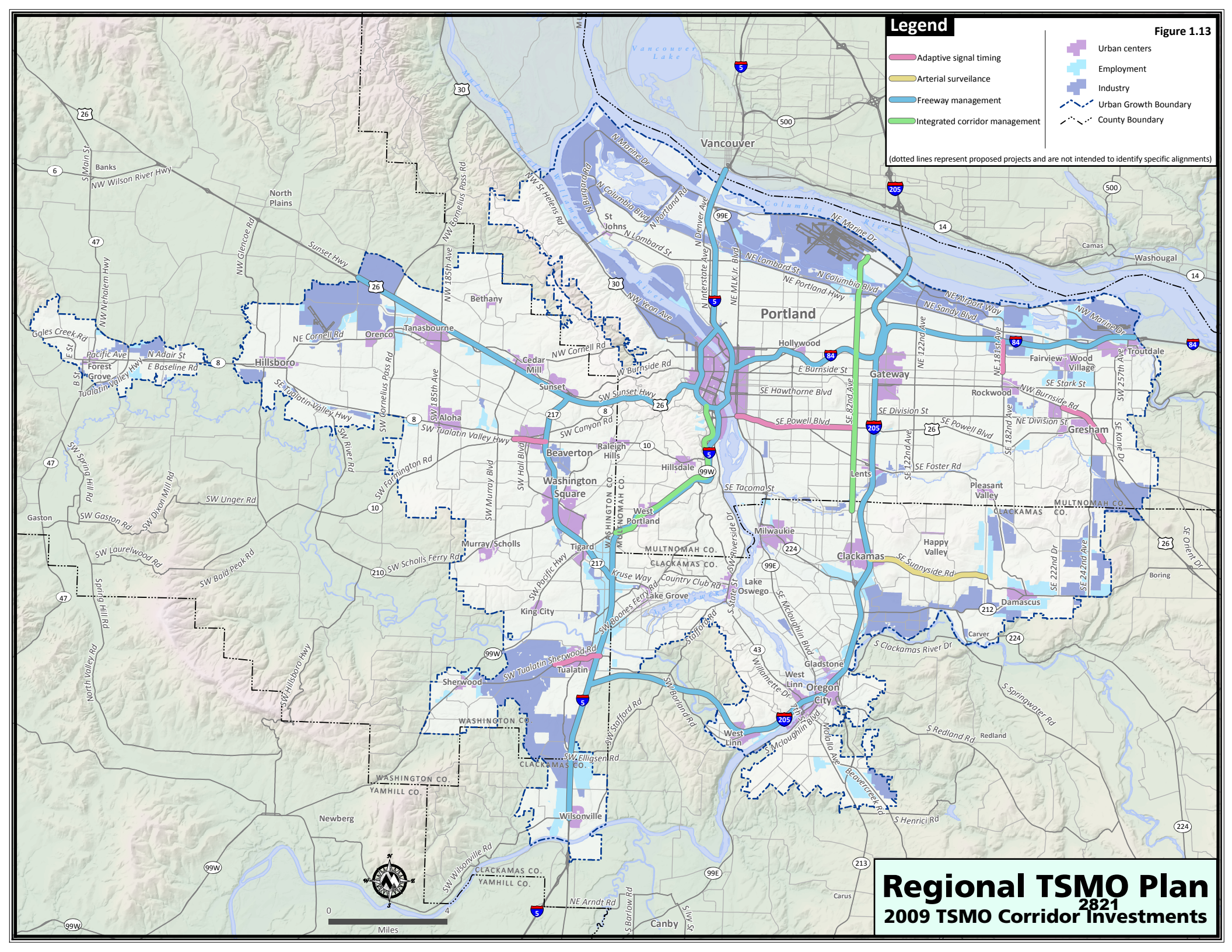
Business and consumer needs are expected to double the amount of goods moved on the region's waterways, runways, railways, and roadways over the next 30 years. The continued economic health of our region and state depends on effectively serving growing transportation needs of business by providing reliable 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.

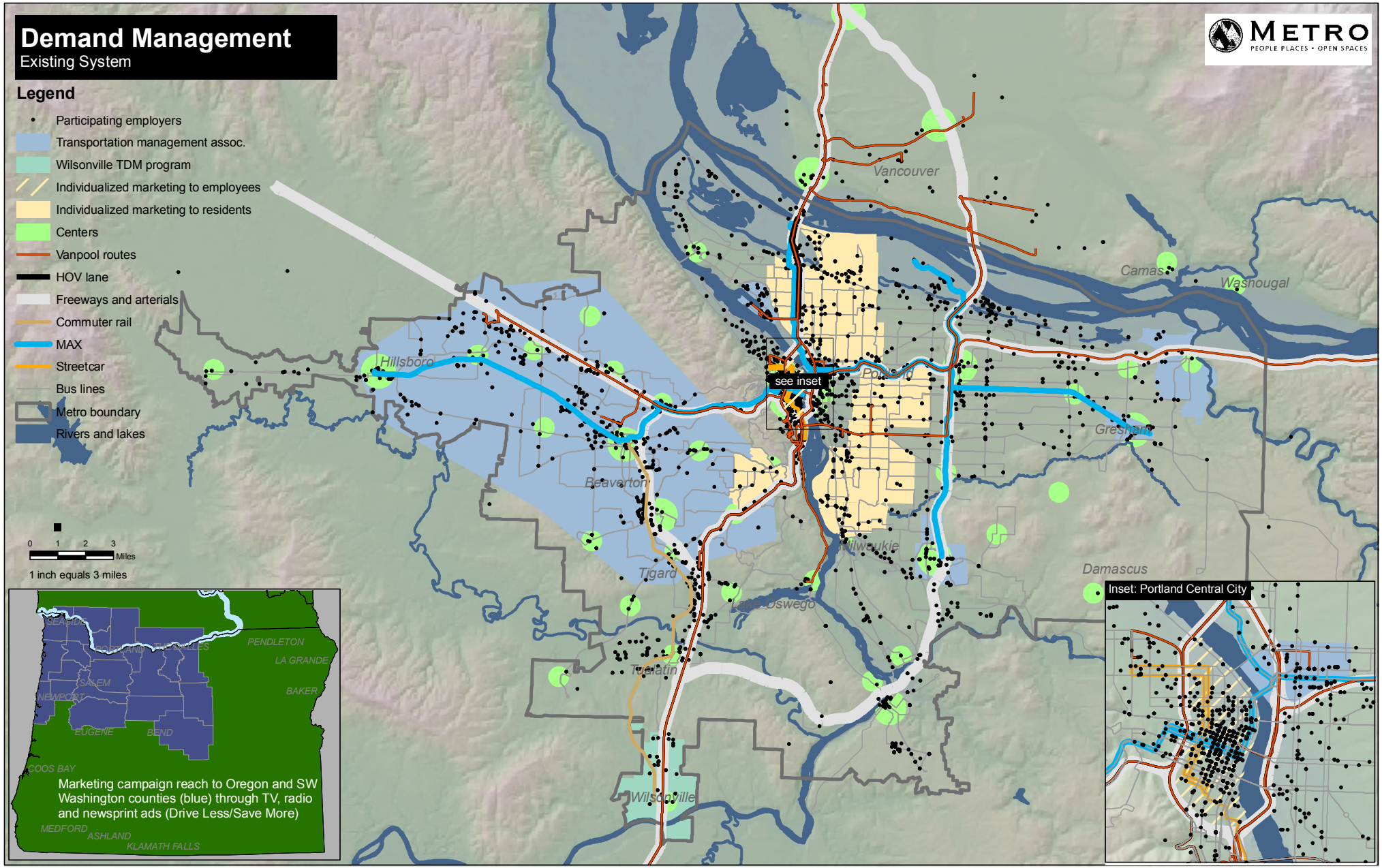
The results of the scenarios analysis support a growing body of research that suggest adding road capacity alone is not a sustainable solution to congestion. Rather, a coordinated strategy that links land use and transportation decisions, provides targeted road and highway improvements along with high 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.


Legend
Figure 1.13
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)
Vancouver
Portland
Hillsboro
Beaverton
Tigard
Tualatin
Lake Oswego
West Linn
Oregon City
Gresham
Troutdale
Wilsonville
Newberg
Sherwood
Forest Grove
Banks
North Plains
Camas
Washougal
Boring
Damascus
Canby
Carus
Redland
Miles
Regional TSMO Plan
2821
2009 TSMO Corridor Investments


Demand Management
Existing System
Legend
Participating employers
Transportation management assoc.
Wilsonville TDM program
Individualized marketing to employees
Individualized marketing to residents
Centers
Vanpool routes
HOV lane
Freeways and arterials
Commuter rail
MAX
Streetcar
Bus lines
Metro boundary
Rivers and lakes
METRO
PEOPLE PLACES • OPEN SPACES
0 1 2 3 Miles
1 inch equals 3 miles
see inset
Vancouver
Camas
Washougal
Hillsboro
Beaverton
Tigard
Tualatin
Wilsonville
Gresham
Damascus
Milwaukie
Lake Oswego
PENDLETON
LA GRANDE
BAKER
SALEM
NEWPORT
EUGENE
BEND
COOS BAY
MEDFORD
ASHLAND
KLAMATH FALLS
Marketing campaign reach to Oregon and SW Washington counties (blue) through TV, radio and newsprint ads (Drive Less/Save More)
Inset: Portland Central City

2822

## 1.8 CHANGING TRAVEL BEHAVIOR

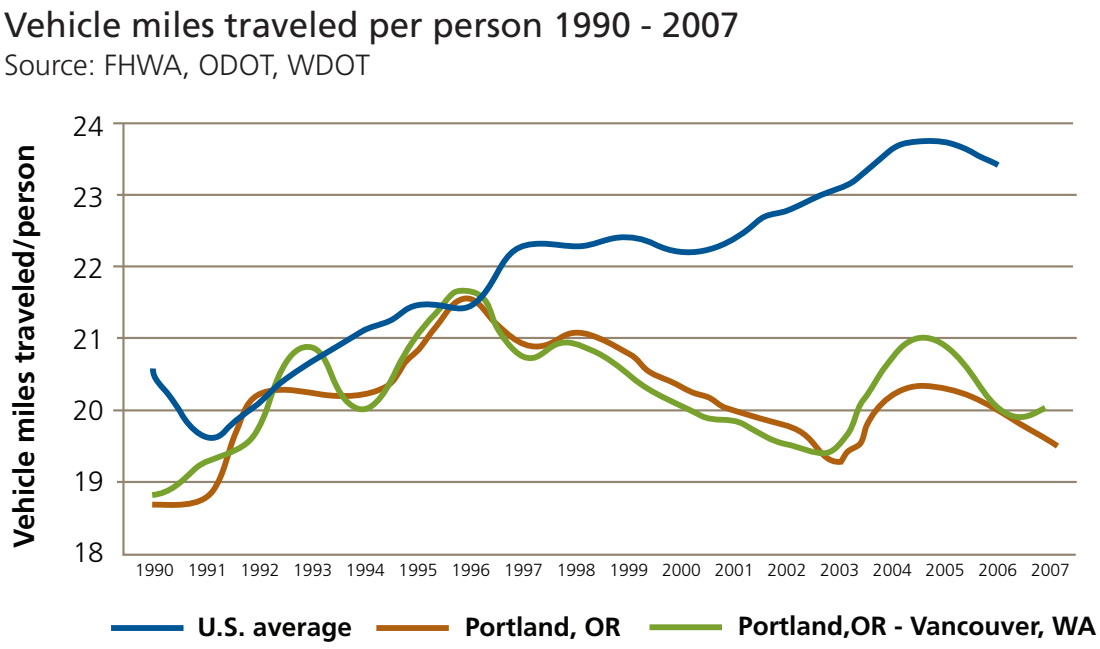
Travel behavior—mode choice, commuting patterns, trip length and frequency—is influenced by a number of factors, including demographics, land use, community design, cost, access, the economy, job locations as well as social and environmental values.

### 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. 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 through compact growth and by providing transportation options.

**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.[45] However, the average commute time in the region grew by only six minutes between 1990 and 2000, increasing from 19 minutes to 25 minutes.[46] 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.

Furthermore, as seen in **Table 2.7**, not all counties have the same share of residents who commute to another county for work. 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 2.7**
**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.

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

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.[47]

As of 2001, the average American was taking approximately four more trips a week for non-work purposes compared to 1990.[48] 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 target non-commute trips during rush hour and throughout the day as a key strategy to congestion and air quality issues.

## 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.

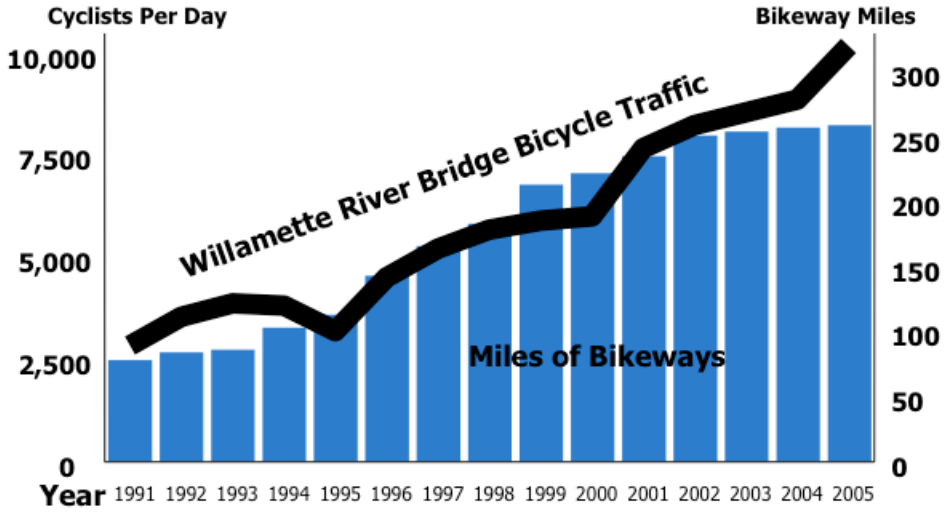
A study by the North Carolina Department of Transportation found that the availability of good bicycle facilities played an important role in tourist decisions, and that investments in bicycle facilities yielded an estimated nine-to-one return on investment in tourist dollar.[49] The bicycle-related industry in Portland is currently valued at $63 million and includes retail, tours, races, events, distribution and manufacturing, and professional services.[50]

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.[51] 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.[52]

[47] *Congestion: Non-Work Trips in Peak Travel Times*, USDOT, April 2007.
[48] Congestion: Who is Traveling in the Peak?, USDOT, August 2007.
[49] *Pathways to Prosperity*, North Carolina Department of Transportation, 5/11/04
[50] Alta Planning, Bicycling-Related Industry Growth in Portland, 2006.
[51] 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
[52] Portland Office of transportation, Bicycle Count Report, 2006.

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 2005.

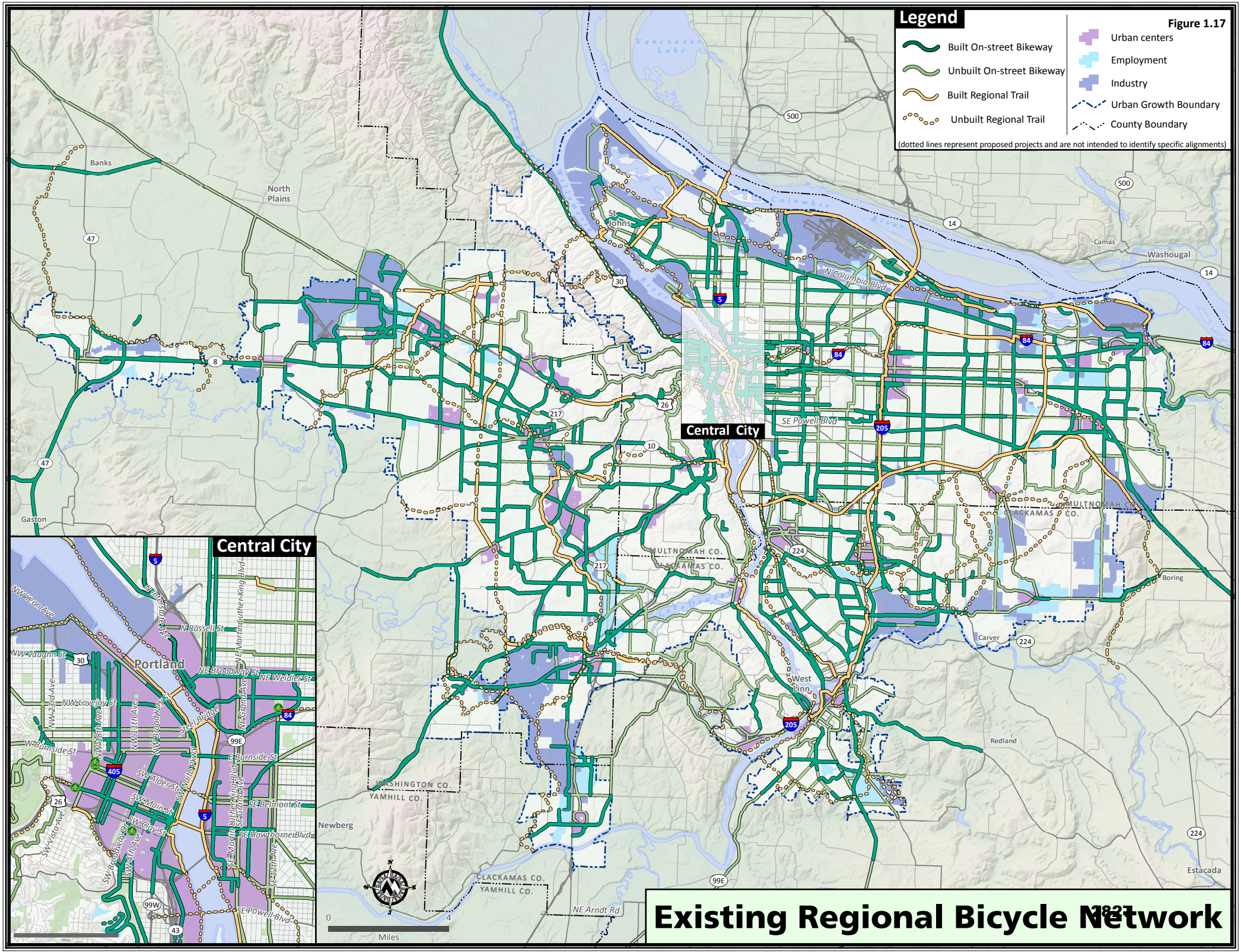
**Figure 1.16**
**Bicycle Traffic on Willamette River Bridges and Miles of Bikeways Constructed 1991-2005**

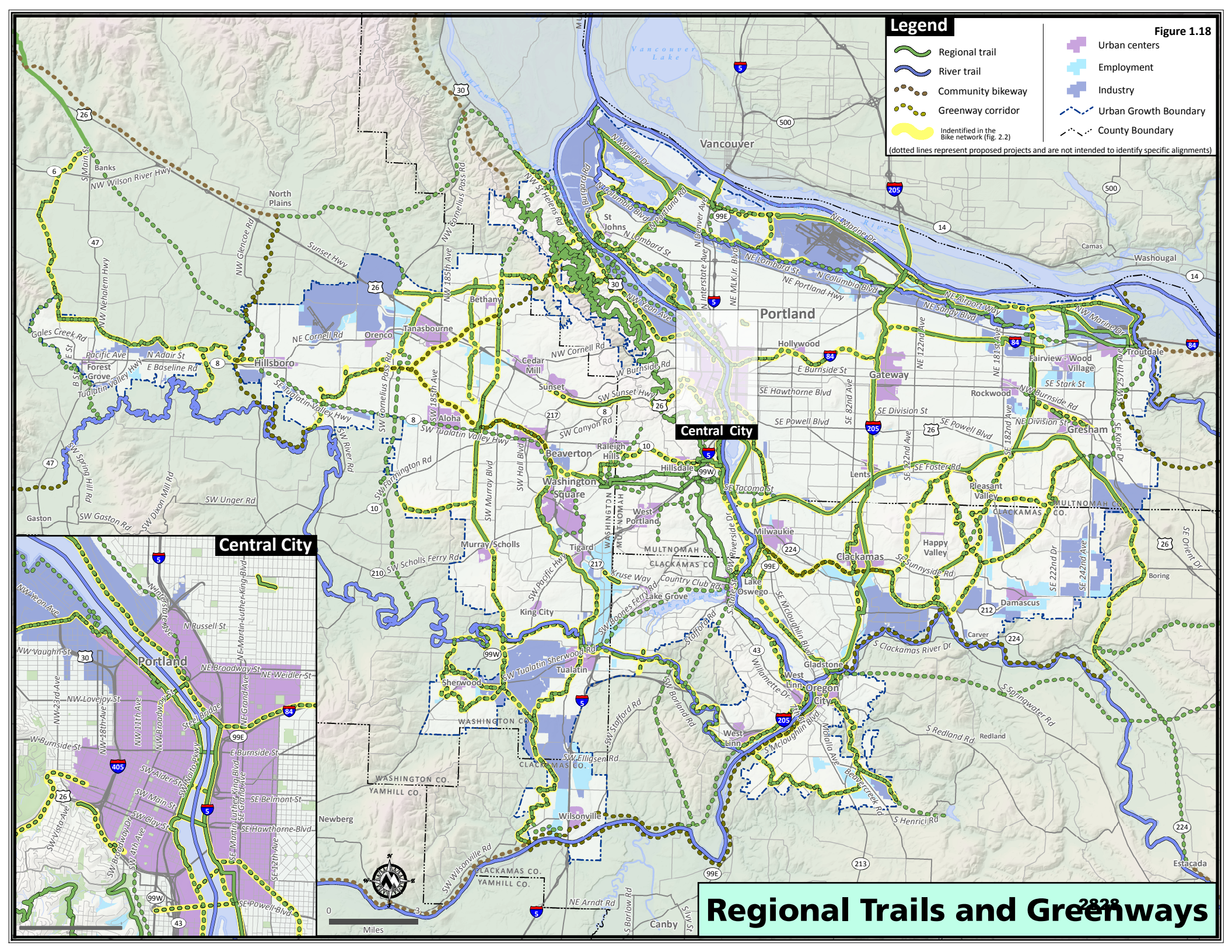


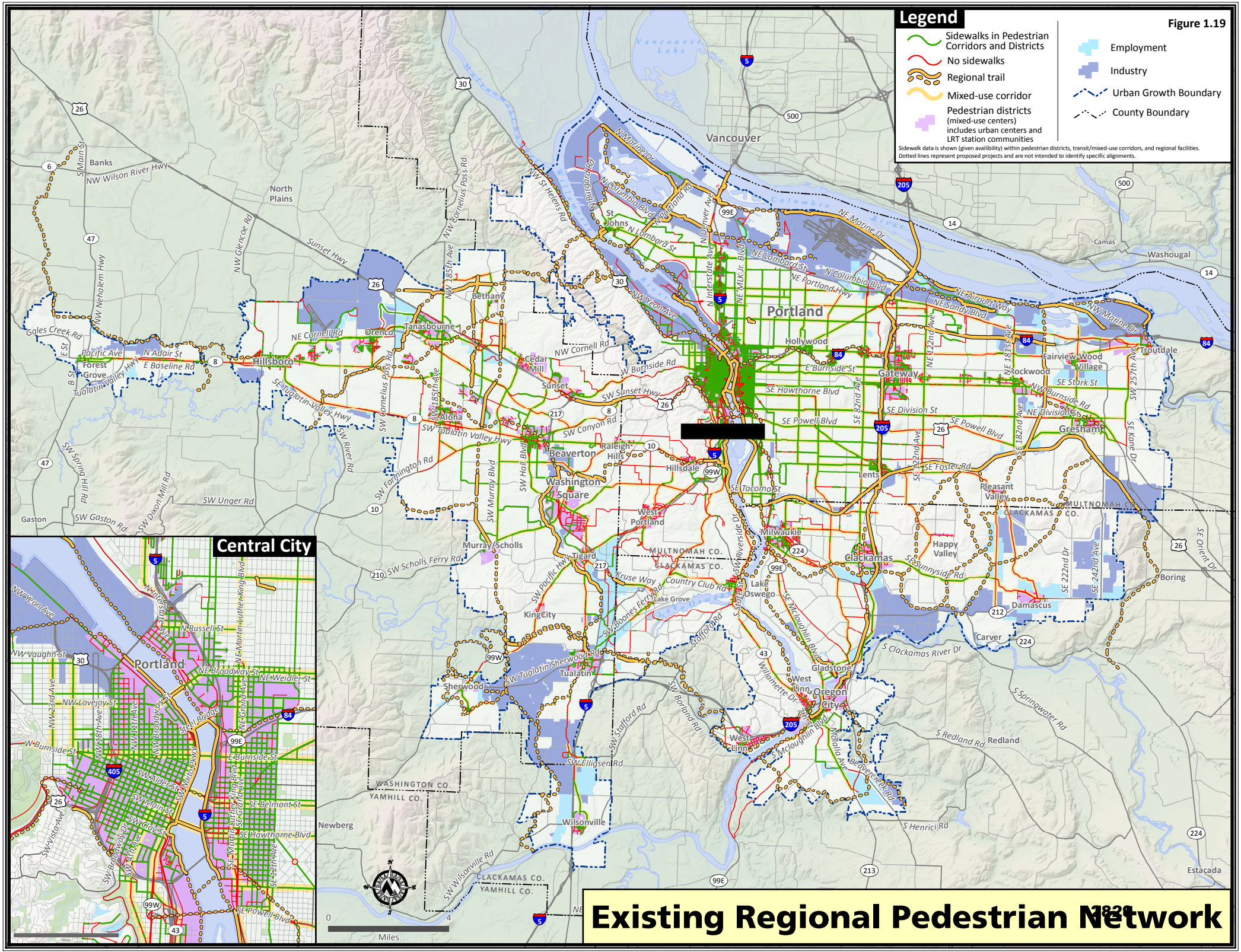

Bicycle safety has improved with increased ridership. Despite increasing numbers of people bicycling in Portland, the number of bicycle crashes has held constant for a reduced crash rate. [53] However, the increase in bicycling has also brought new riders to the system who are not always aware of safety 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.

[53] 2006 City of Portland Bicycle Count Report – Significant Findings & Analysis.


Legend
Built On-street Bikeway
Unbuilt On-street Bikeway
Built Regional Trail
Unbuilt Regional Trail
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Figure 1.17
Urban centers
Employment
Industry
Urban Growth Boundary
County Boundary
Central City
Central City
Portland
Gaston
Banks
North Plains
St Johns
Camas
Washougal
Boring
Carver
West Linn
Redland
Estacada
Newberg
MULTNOMAH CO.
CLACKAMAS CO.
WASHINGTON CO.
YAMHILL CO.
CLACKAMAS CO.
YAMHILL CO.
N Columbia Blvd
SE Powell Blvd
NE Arndt Rd
Miles
0
4
Existing Regional Bicycle Network


Legend
Regional trail
River trail
Community bikeway
Greenway corridor
Indentified in the Bike network (fig. 2.2)
Figure 1.18
Urban centers
Employment
Industry
Urban Growth Boundary
County Boundary
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Central City
Central City
Regional Trails and Greenways
2828
Miles
Vancouver
Portland
Gresham
Hillsboro
Beaverton
Tigard
Tualatin
Lake Oswego
Oregon City
West Linn
Wilsonville
Newberg
Sherwood
Forest Grove
Banks
North Plains
Camas
Washougal
Troutdale
Fairview
Wood Village
Gateway
Hollywood
Rockwood
Lents
Milwaukie
Clackamas
Happy Valley
Damascus
Boring
Estacada
Gladstone
Carver
Redland
Canby
Aloha
Bethany
Cedar Mill
Tanasbourne
Orenco
Sunset
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray/Scholls
King City
Lake Grove
Pleasant Valley
Multnomah Co.
Clackamas Co.
Washington Co.
Yamhill Co.


Legend
Figure 1.19
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
Existing Regional Pedestrian Network
Miles
Vancouver
Portland
Beaverton
Hillsboro
Gresham
Tigard
Lake Oswego
Tualatin
Wilsonville
Oregon City
West Linn
Milwaukie
Gladstone
Happy Valley
Damascus
Troutdale
Fairview
Wood Village
Camas
Washougal
Banks
North Plains
Forest Grove
Cornelius
Sherwood
Newberg
King City
Durham
Aloha
Raleigh Hills
Cedar Mill
Bethany
Sunset
Orenco
Tanasbourne
Hollywood
Gateway
Lents
Rockwood
Pleasant Valley
Glencoe
Boring
Estacada
Redland
Carver
Gaston
Washington Square
West Portland
Murray/Scholls
Kruse Way
Lake Grove
Country Club Rd
Stafford Rd
Willamette Dr
Multnomah Co.
Clackamas Co.
Washington Co.
Yamhill Co.

**Walking**

Walking is the most widespread and universal 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 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.[54] **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.[55]

Pedestrians will be increasingly affected by the growth in motor vehicle and bicycle traffic on the major street systems. The expected growth in motor vehicles on the system will increase the need for more and better pedestrian facilities and crossings. 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.




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

**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 58 percent between 1990 and 2000,[56] nearly double the percentage growth rate in population.

Forty-four 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. Another 8.3-mile line from Clackamas town center to Portand State University in downtown Portland opened in September 2009. Planning is underway for additional high capacity connections from downtown Portland to downtown Milwaukie, from downtown Portland to downtown Lake Oswego and from downtown Portland to Vancouver, Washington.

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). TriMet bus service includes 93 routes covering 892 miles, with 16 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 of downtown Portland, with lines being considered for the east side of Portland and 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.[57]




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.

[56] TriMet, Transit Investment Plan. 2007. Pg. 6.
[57] Metro. *A Profile of the Regional Transit System in the Portland Metropolitan Region*, 2007, pg. 16.

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.[58] 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.[59]

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.



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

## 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 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.

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 the changes 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.



# 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.

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.*

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 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.

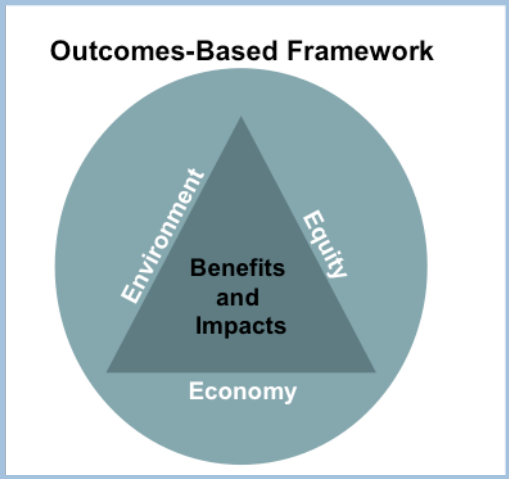
2. **Environment** - Responsibility of the plan to the landscape of the region.

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.*

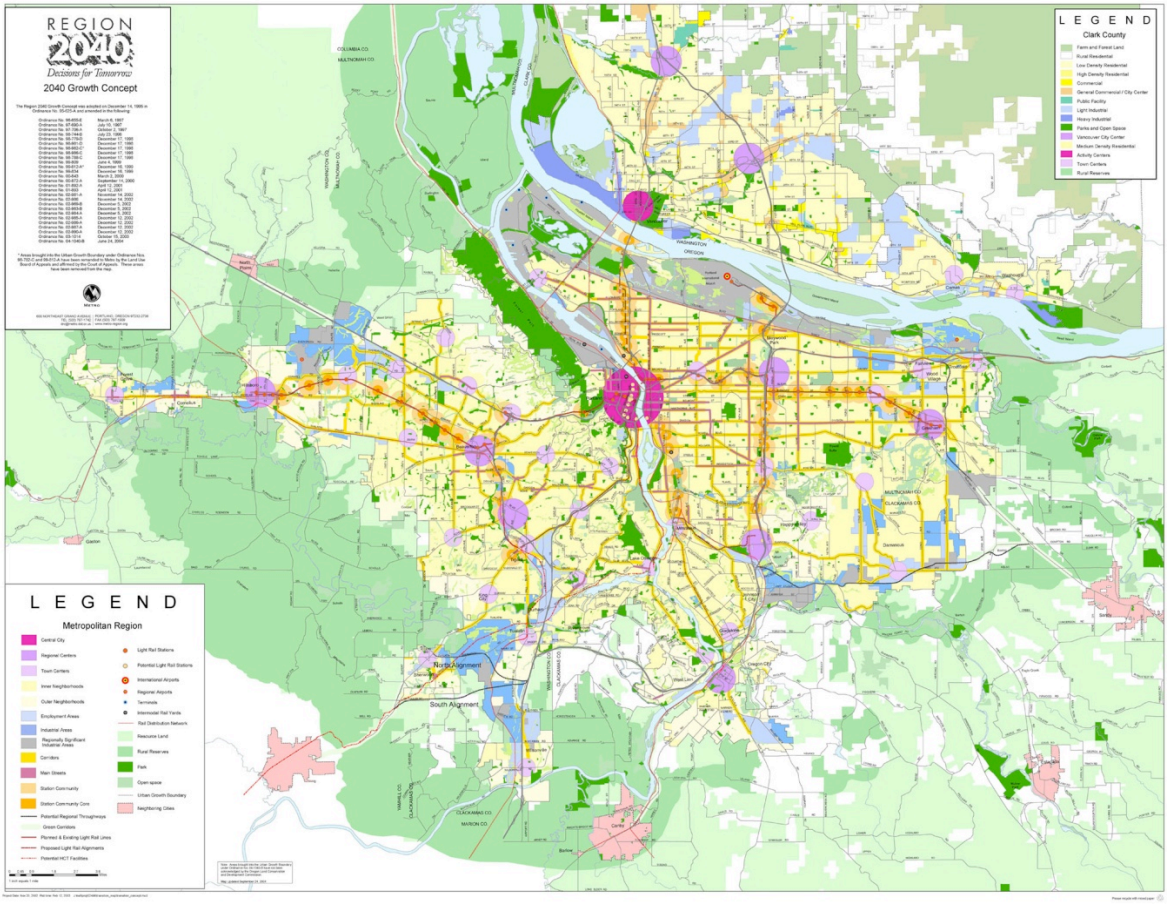
The outcomes-based planning and decision-making framework forms the foundation for the rest of the plan to ensure transportation decisions support this larger set of responsibilities and the six desired outcomes.

## 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 400 miles of "corridors" that connect many of the centers. The Growth Concept then plans high-capacity transit (principally light rail) to connect the Portland central city and seven "regional centers" (Hillsboro, Gresham and Beaverton among them)." 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.[1]

**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 |

[1] 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.[2] Table 2.2 summarizes infrastructure investment strategies for each stage of 2040 implementation.

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

| Stage of Development | Developed Areas<br>Built-out areas with most new housing and jobs accommodated through infill, redevelopment and brownfields development. | Developing Areas<br>Redevelopable and developable areas, with most new housing and jobs being accommodated through infill, redevelopment, and greenfield development. | Undeveloped Areas<br>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>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. |

[2] 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.

The overarching vision for the RTP 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.*

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.



## 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 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 awareness of travel options.
- **Objective 4.5 Value Pricing -** Consider, and selectively promote as appropriate, a broader application of value pricing as a potential management tool.

## 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).

## 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 Joint Policy Advisory Committee on Transportation (JPACT) endorsed a set of transportation performance targets, listed in **Table 2.3,** that support the outcomes-based framework and the plan's goals and objectives. The targets provided policy direction for developing the investment strategy recommended in Chapter 4.

Additional work is needed to refine the targets. Refinements will be informed by the system evaluation that is underway and future policy discussion by JPACT, MPAC and the Metro Council.

**Table 2.3**
**JPACT-Endorsed Draft Performance Targets** *(transportation performance targets only)*

| | |
|---|---|
| **Economy** | **Safety –** By 2035, reduce crashes, injuries and fatalities by 50 percent compared to 2005. |
| | **Congestion** – By 2035, reduce vehicle hours of delay per person by 10 percent compared to 2005. |
| **Environment** | **Climate change** – By 2035, reduce carbon dioxide emissions by 40 percent below 1990 levels. |
| | **Active transportation** – By 2035, triple walking, biking and transit trips compared to 2005. |
| | **Clean air** – By 2035, ensure zero percent population exposure to at-risk levels of air pollution. |
| | **Travel** – By 2035, reduce vehicle miles traveled per person by 10 percent compared to 2005. |
| **Equity** | **Affordability** – By 2035, reduce the average household combined cost of housing and transportation by 25 percent compared to 2000. |
| | **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. |

The performance targets are numerical benchmarks to assess the region's progress in carrying out the RTP vision. These targets are drawn from federal and state legislation.

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* effort in 2010. 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 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.[3]

**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 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 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 will demonstrate 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.

In August 2009, ODOT recommended that the Metro region request the Oregon Transportation Commission to consider adopting alternative mobility standards as part of the 2035 RTP.

Additional work is needed to finalize the aggregate set of performance targets and indicators that will be used to make an "adequacy" determination per the Oregon Transportation Planning Rule. In the interim, the targets Table 2.3, the regional mobility policy identified in Table 2.4 and regional modal targets in Table 2.5 will serve as a starting point for this work.

The RTP and regional transportation functional plan must include all feasible actions. The plan must fully demonstrate the infeasibility of meeting the mobility policy in Table 2.4. Refinements to Table 2.4 and Table 2.5 and the regional transportation functional plan will be developed prior to final adoption of the RTP update in 2010.

[3] 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[1]

| Location | Mid-Day One-Hour Peak | | | A.M./P.M. Two-Hour Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Preferred Operating Standard | Tolerable Operating Standard | Exceeds Deficiency Threshold | Preferred Operating Standard | | Tolerable Operating Standard | | Exceeds Deficiency Threshold | |
| | | | | 1st Hour | 2nd Hour | 1st Hour | 2nd Hour | 1st Hour | 2nd Hour |
| Central City<br>Regional Centers<br>Town Centers<br>Main Streets<br>Station Communities | C | E | F | E | E | F | E | F | F |
| Corridors<br>Industrial Areas<br>Intermodal Facilities<br>Employment Areas<br>Inner Neighborhoods<br>Outer Neighborhoods | C | D | E | E | D | E | E | F | E |
| Banfield Freeway[1]<br>*(from I-5 to I-205)* | C | E | F | E | E | F | E | F | F |
| I-5 North*<br>*(from Marquam Bridge to Interstate Bridge)* | C | E | F | E | E | F | E | F | F |
| Highway 99E[1]<br>*(from the Central City to Highway 224 interchange)* | C | E | F | E | E | F | E | F | F |
| Sunset Highway[1]<br>*(from I-405 to Sylvan interchange)* | C | E | F | E | E | F | E | F | F |
| Stadium Freeway[1]<br>*(I-5 South to I-5 North)* | C | E | F | E | E | F | E | F | F |
| Other Principal Arterial Routes | C | D | E | E | D | E | E | F | E |
| Areas of Special Concern | Areas with this designation are planned for mixed used development, but are also characterized by physical, environmental or other constraints that limit the range of acceptable transportation solutions for addressing a level-of-service need, but where alternative routes for regional through-traffic are provided. Figures 2.2 – 2.6 in this chapter define areas where this designation applies. In these areas, substitute performance measures are allowed by OAR.660.012.0060 (1)(d). Provisions for determining the alternative performance measures will be included in the Regional Transportation Functional Plan. Adopted performance measures for these areas are detailed in Appendix 2. | | | | | | | | |

Level-of-service is determined by using either the latest edition of the Highway Capacity Manual (Transportation Research Board) or through volume to capacity ratio equivalencies as follows: LOS C = .8 or better; LOS D = .8 to .9; LOS E = .9 to 1.0; and LOS F = 1.0 to 1.1.

[1] Thresholds shown are for interim purposes only; a mobility corridor strategy and/or a corridor refinement plan for these corridors are required in Chapter 5 of this plan, and will include a recommended mobility policy for each corridor.

*Source: Metro*

### Interim 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. They may also serve as performance indicators in Areas of Special Concern until other measures are developed. 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**
**Interim 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% |

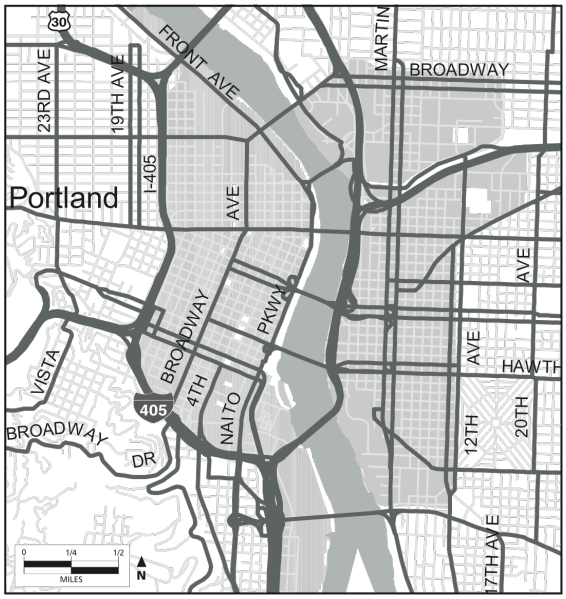
Note: *The targets apply to trips to and within each 2040 design type. The targets reflect conditions needed in the year 2040 to comply with Oregon Transportation Planning Rule objectives to reduce reliance on single-occupancy vehicles.*

### Areas of Special Concern

In areas of special concern, substitute performance measures will be used to make a determination of whether the transportation system is adequate to serve planned land uses. Areas with this designation are planned for mixed used development, but are also characterized by physical, environmental or other constraints that limit the range of acceptable transportation solutions to address a level-of-service deficiency, but where alternative routes for regional through-traffic are provided.

**Figures 2.2 through 2.6** define areas where this designation applies. In these areas, substitute performance measures are allowed by OAR.660.012.0060 (1)(d). Adopted performance measures for these areas are detailed in Appendix 2. The state component of the RTP update will conduct additional analysis and may identify refinements to these designations, and new areas in the region to apply this designation.

**Figure 2.2**
**Portland Central City Area of Special Concern**




The Portland central city area east of the Willamette River and generally within the I-405 freeway ring has an extensive grid of well-connected arterial, collector and local streets. The Willamette River bridges are a key part of the transportation system, connecting the central city and adjacent neighborhoods to the region. The hilly topography has constrained much of the transportation system in the Northwest and Southwest portions of the central city.

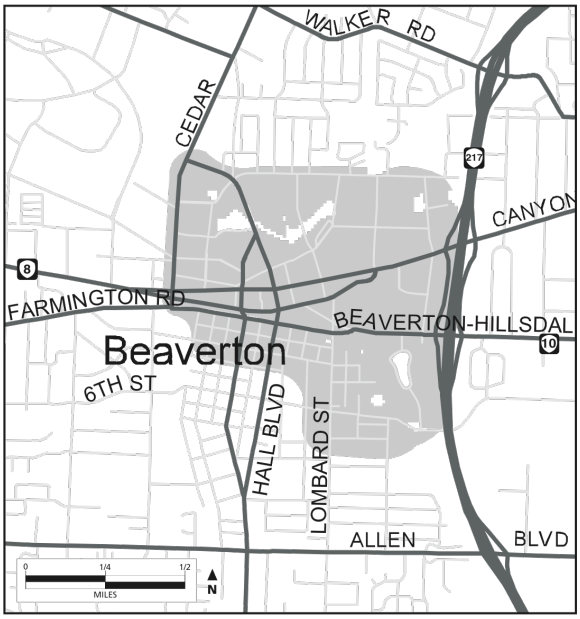
Despite these limitations, this area is expected to continue to be served by high-quality transit and be conducive to bicycle and pedestrian travel. Refer to Appendix 2 for detail on alternative performance measures identified for this area of special concern.

**Figure 2.3**
**Gateway Regional Center Area of Special Concern**



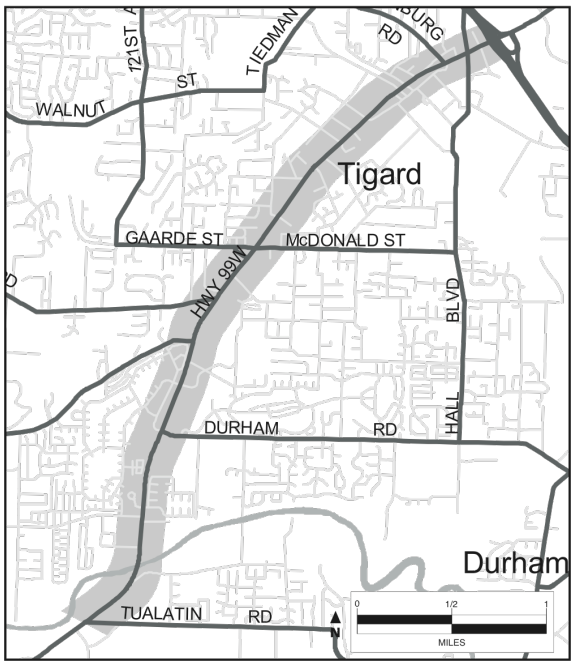

Gateway regional center is defined as a major crossroads of transportation that is impacted by through traffic that is not destined for the regional center such and which presents barriers to local circulation where congested through-streets isolate some parts of the regional center. Refer to Appendix 2 for detail on alternative performance measures identified for this area of special concern.

**Figure 2.4**
**Beaverton Regional Center Area of Special Concern**



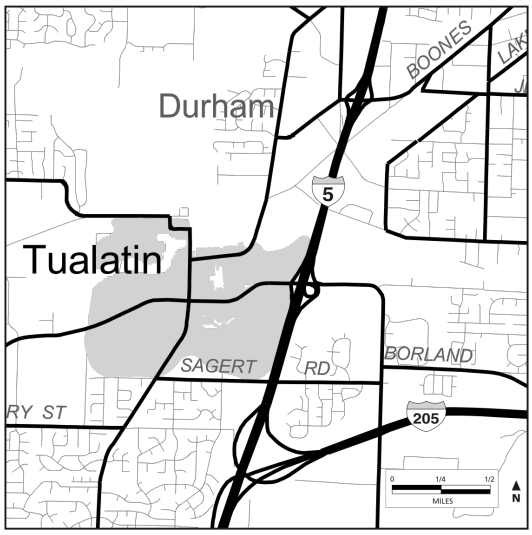

Beaverton has historically been defined as a crossroads of transportation, with both the advantages and limitations that heavy through traffic brings. While the level of access has helped make the Beaverton regional center a focus of commerce in Washington County, it also presents barriers to local circulation where congested through-streets isolate some parts of the area. Refer to Appendix 2 for detail on alternative performance measures identified for this area of special concern.

**Figure 2.5**
**Highway 99W Area of Special Concern**




The Highway 99W corridor between Highway 217 and Tualatin Road is designated as a mixed-use corridor in the 2040 Growth Concept and connects the Tigard and Tualatin town centers. This corridor is also designated as an area of special concern due to existing development patterns and economic constraints that limit adding capacity to address heavy travel demand in this corridor. Local planning studies have found that approximately 50 percent of the traffic using this corridor is local. Refer to Appendix 2 for detail on alternative performance measures identified for this area of special concern.

**Figure 2.6**
**Tualatin Town Center Area of Special Concern**




Tualatin town center is adjacent to an important industrial area and employment center. New street connections and capacity improvements to streets parallel to 99W and I-5 help improve local circulation and maintain adequate access to the industrial and employment area in Tualatin.

However, the analysis of travel demand on regional streets shows that several streets continue to exceed the LOS policy established in Table 2.4, including Hall Boulevard and Boones Ferry Road.

## 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.

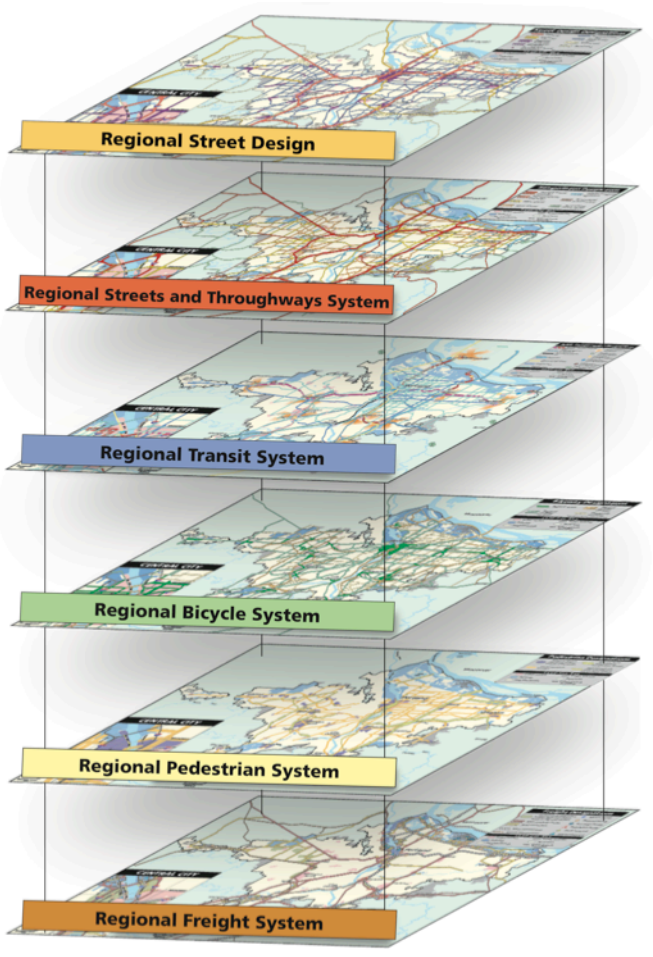
A detailed system concept vision and supporting policies are described for each component in the next section.

## 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.

### Centers and mainstreets

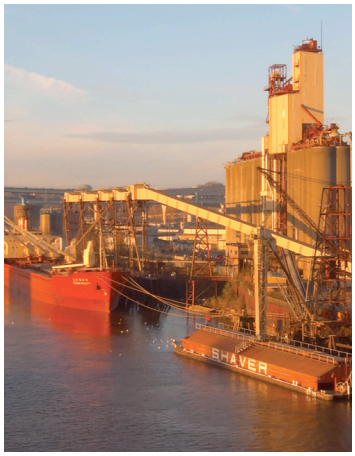
A diverse, walkable community depends on transportation infrastructure that provides a variety of ways to get around - serving pedestrians, bicyclists and transit-riders as well as drivers. The concept emphasizes streetscape retrofits, street connectivity, transit, sidewalks, bicycle and trail connections 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.



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.




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.

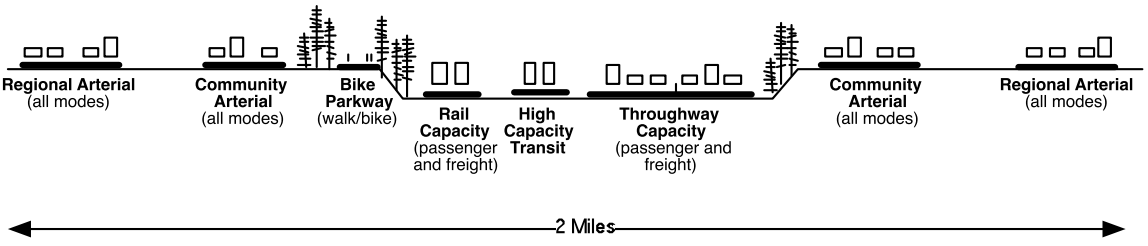
## Regional Mobility Corridor Concept

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 not be a barrier to bicycling or walking.

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.[4] 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**

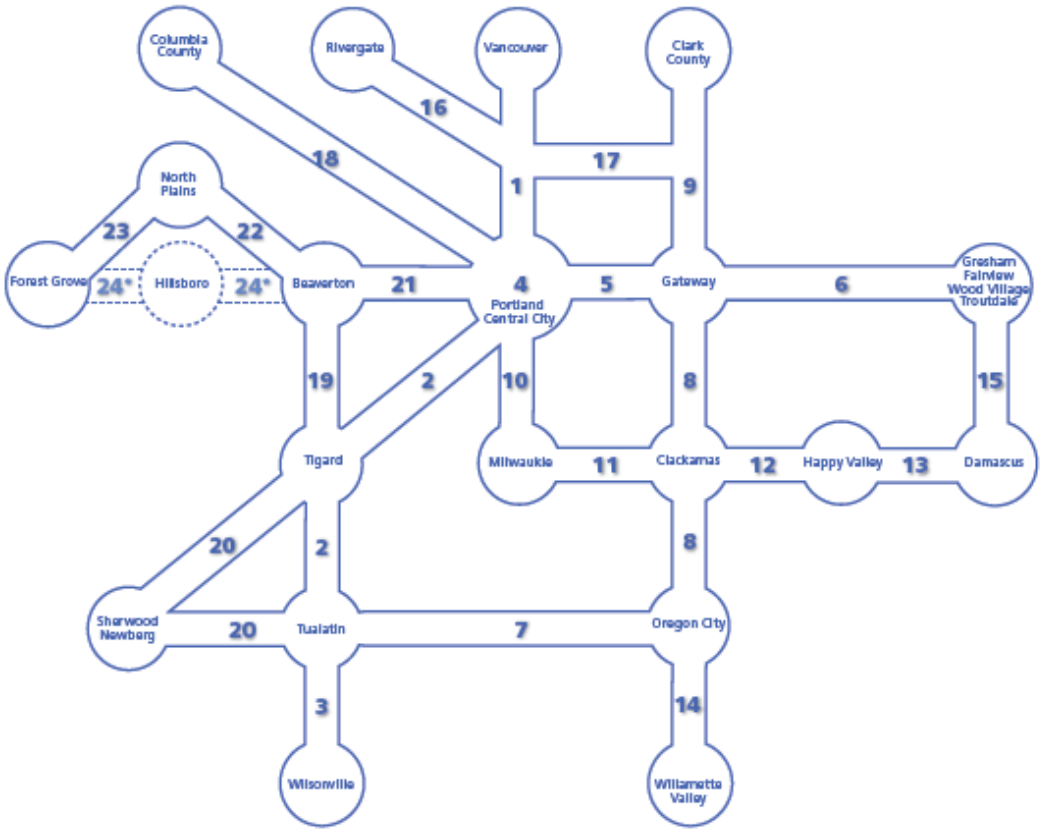



*Note: Idealized concept for illustrative purposes showing recommended range of system analysis for the evaluation, monitoring, management and phasing of investments to throughways, arterial streets and transit service in the broader corridor. The illustration is modeled after I-84 between 12th and 60th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

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

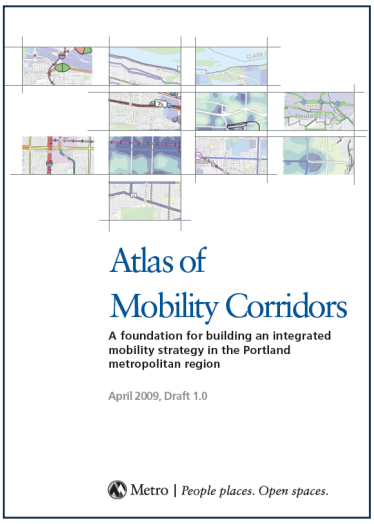
[4] See 2.4.2.4 Regional Bicycle System for more information about the bicycle parkway concept.

**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.

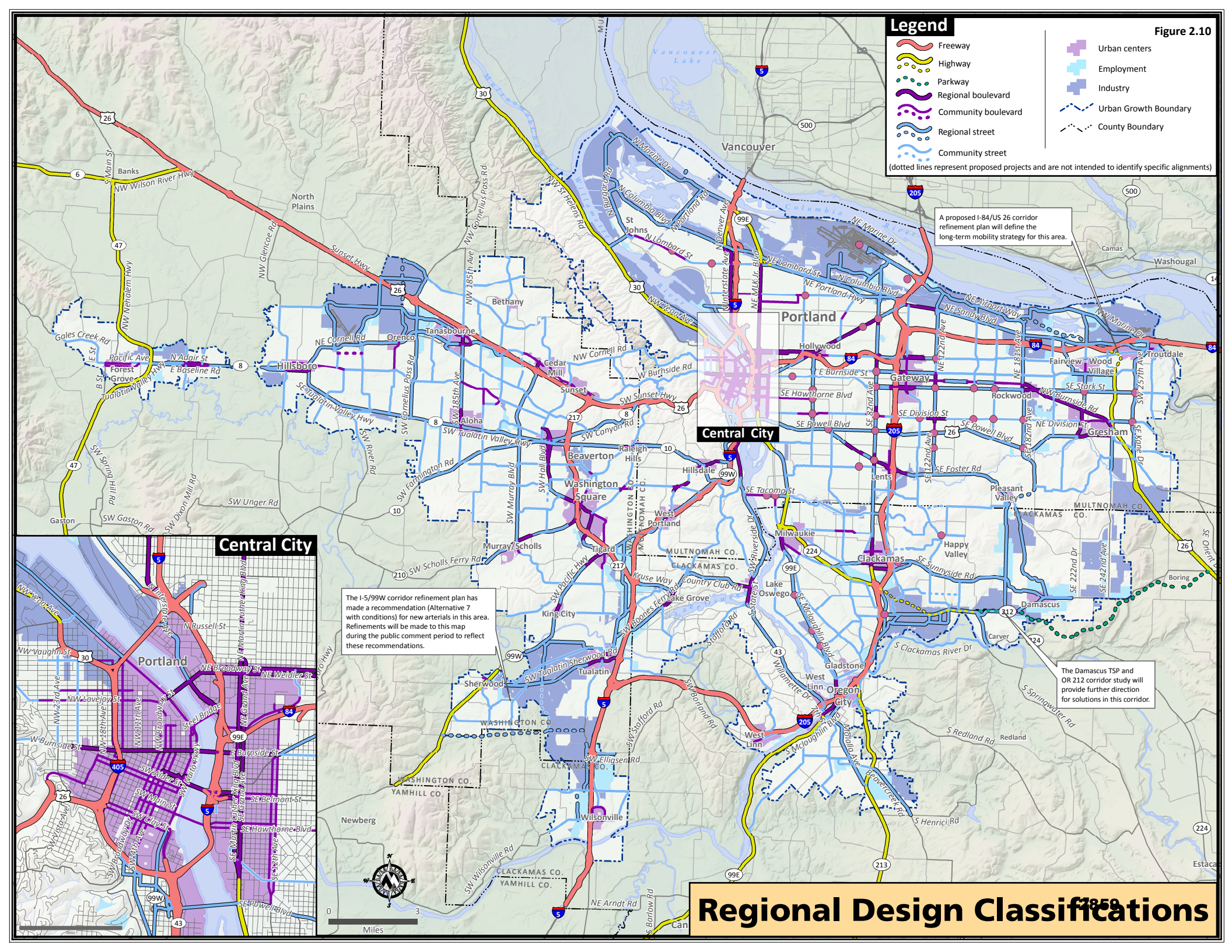
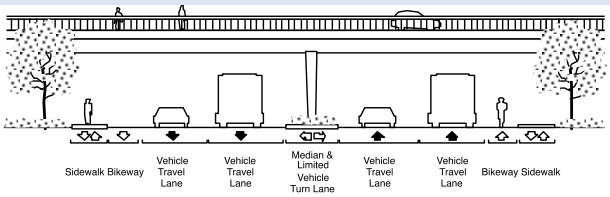
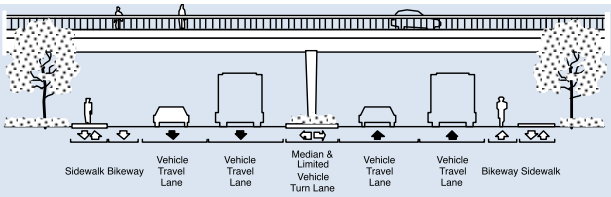
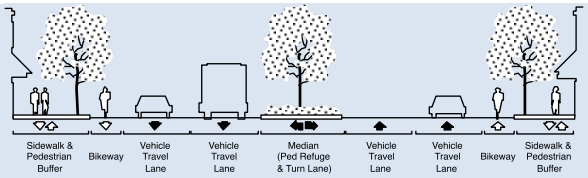
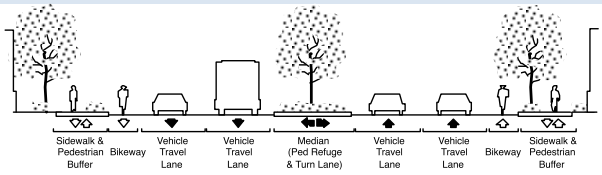
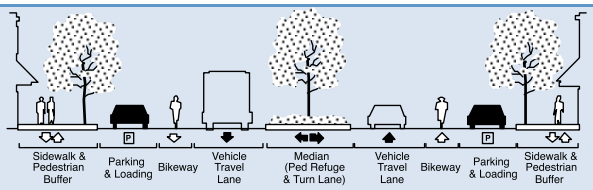
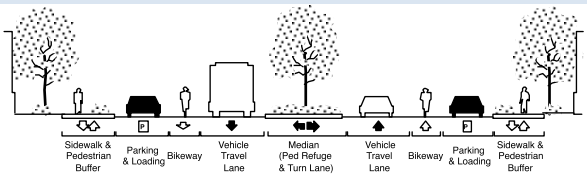

Legend
Figure 2.10
Freeway
Highway
Parkway
Regional boulevard
Community boulevard
Regional street
Community street
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Urban centers
Employment
Industry
Urban Growth Boundary
County Boundary
A proposed I-84/US 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. Refinements will be made to this map during the public comment period to reflect these recommendations.
The Damascus TSP and OR 212 corridor study will provide further direction for solutions in this corridor.
Central City
Portland
Vancouver
Beaverton
Hillsboro
Gresham
Tigard
Tualatin
Lake Oswego
Oregon City
West Linn
Wilsonville
Newberg
Sherwood
King City
Forest Grove
Tanasbourne
Washington Square
Raleigh Hills
Hillsdale
Milwaukie
Clackamas
Happy Valley
Damascus
Gladstone
Troutdale
Fairview
Wood Village
Rockwood
Gateway
Hollywood
Lents
Pleasant Valley
Camas
Washougal
Boring
Estacada
Redland
Aloha
Cedar Mill
Sunset
Bethany
North Plains
Banks
Gaston
Orenco
St Johns
West Portland
Murray/Scholls
Lake Grove
Willamette River
Columbia River
Vancouver Lake
Regional Design Classifications
2050

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

| Trip Type | 2040 Design Concept | Network Function | Illustrative Design Concept | Typical number of travel lanes[5] |
|---|---|---|---|---|
| | | | **THROUGHWAYS** | |
| **Interstate/ regional** | **Throughway** (Freeway) | Principal arterial |  | 4 to 6 through lanes with grade separated interchanges |
| **Interstate/ regional** | **Throughway** (Highway) | Principal arterial |  | 4 to 6 through lanes with grade separated intersections/ interchanges |
| **Interstate/ regional** | **Throughway** (Parkway) | Principal arterial |  | 4 to 6 through 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 |

[5] 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.

| | | | | |
|---|---|---|---|---|
| City | **Community Boulevard**<br>*2040 centers*<br>*Station communities*<br>*Main streets* | Minor Arterial |  | 2 to 4 through lanes with turn lanes |
| City | **Community Street**<br>*Industrial areas*<br>*Employment areas*<br>*Corridors*<br>*Intermodal facilities* | Minor Arterial |  | 2 to 4 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.



## 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.



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.

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 policy areas form the foundation of this vision**

1. **Build a well-connected network of "complete" streets**
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

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:

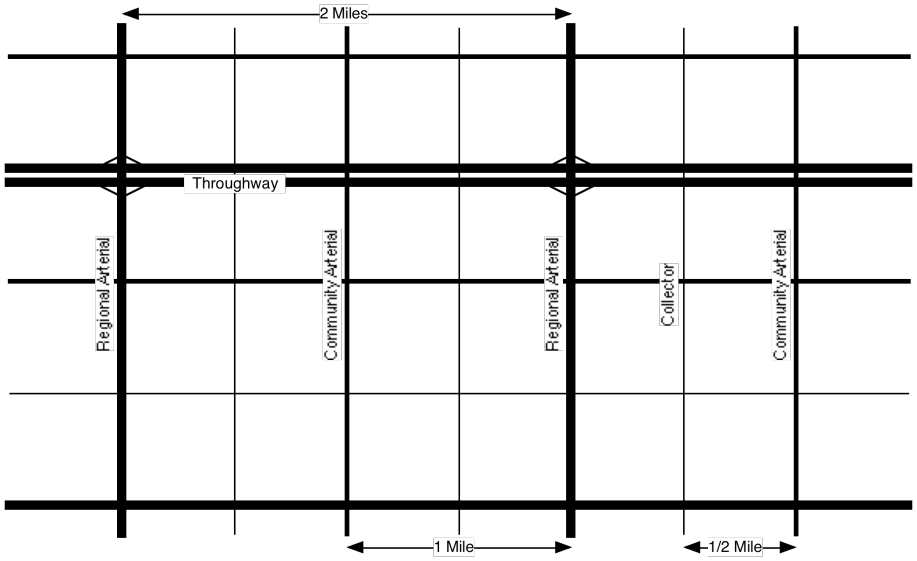
- throughways (for example, limited-access facilities such as I-84, US 26, I-5, I-205 and I-405)
- arterial streets (for example, Cornell Road in Washington County, Halsey Street in the City of Portland and Sunnyside Road in Clackamas County).
- collector streets
- local streets

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 4-lane regional arterial streets, with 2-lane community 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.

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.

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



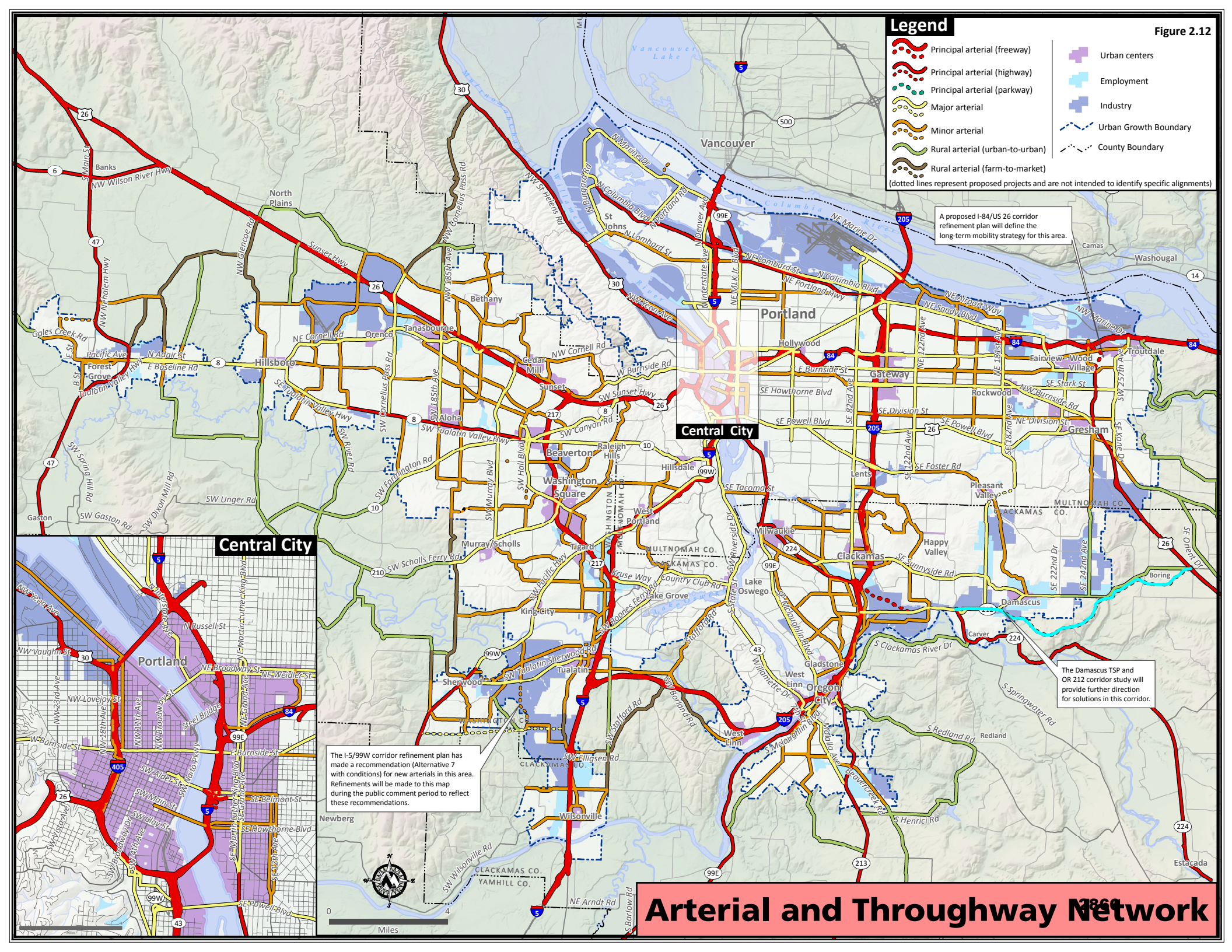

**Concept**

*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**.

### 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. Today, throughways are typically six-lane facilities that 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.


Legend
Figure 2.12
Principal arterial (freeway)
Principal arterial (highway)
Principal arterial (parkway)
Major arterial
Minor arterial
Rural arterial (urban-to-urban)
Rural arterial (farm-to-market)
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Urban centers
Employment
Industry
Urban Growth Boundary
County Boundary
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. Refinements will be made to this map during the public comment period to reflect these recommendations.
The Damascus TSP and OR 212 corridor study will provide further direction for solutions in this corridor.
Central City
Portland
Vancouver
Beaverton
Hillsboro
Gresham
Tigard
Tualatin
Lake Oswego
Oregon City
West Linn
Wilsonville
Newberg
Sherwood
King City
Tanasbourne
Aloha
Bethany
North Plains
Banks
Forest Grove
Cornelius
Gaston
Milwaukie
Clackamas
Happy Valley
Damascus
Boring
Estacada
Redland
Camas
Washougal
Troutdale
Fairview
Wood Village
Gateway
Hollywood
Rockwood
Lents
Pleasant Valley
Foster Road
Sunset
Cedar Mill
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray Scholls
Lake Grove
Kruse Way
Country Club Rd
Stafford Rd
Gladstone
Carver
Multnomah Co.
Clackamas Co.
Washington Co.
Yamhill Co.
Miles
0
4
Arterial and Throughway Network

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 connect major activity centers within the region, including the central city, regional centers, industrial areas and intermodal facilities.

These routes are divided into limited-access freeway designs, where all access points are grade separated, and highways and parkways, which include a mix of separate and at-grade access points. Throughway interchanges are spaced no less than two miles apart.




**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.



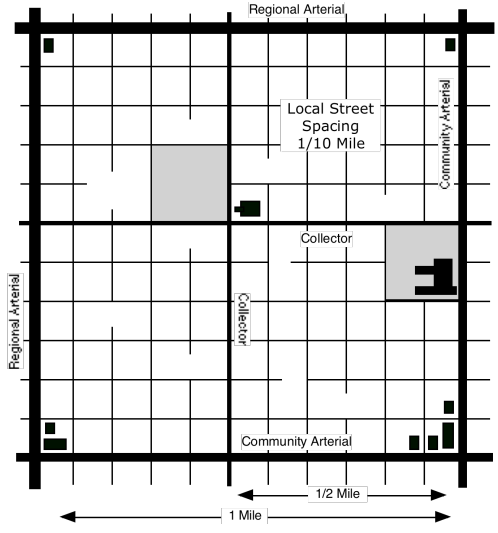
## Improve local and collector street connectivity

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, 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.



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
- reduce overall transportation and housing costs
- lead healthier lives
- 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).

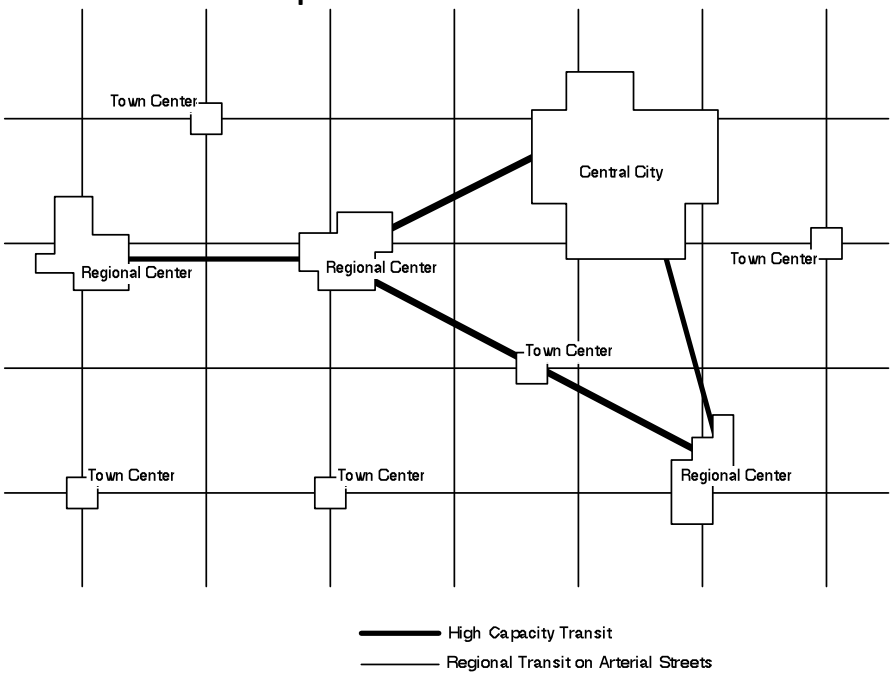
**Five policy areas form the foundation of this vision:**

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

The TriMet TIP is consistent with these policies. The policies aim to optimize the existing system, attract future riders 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.

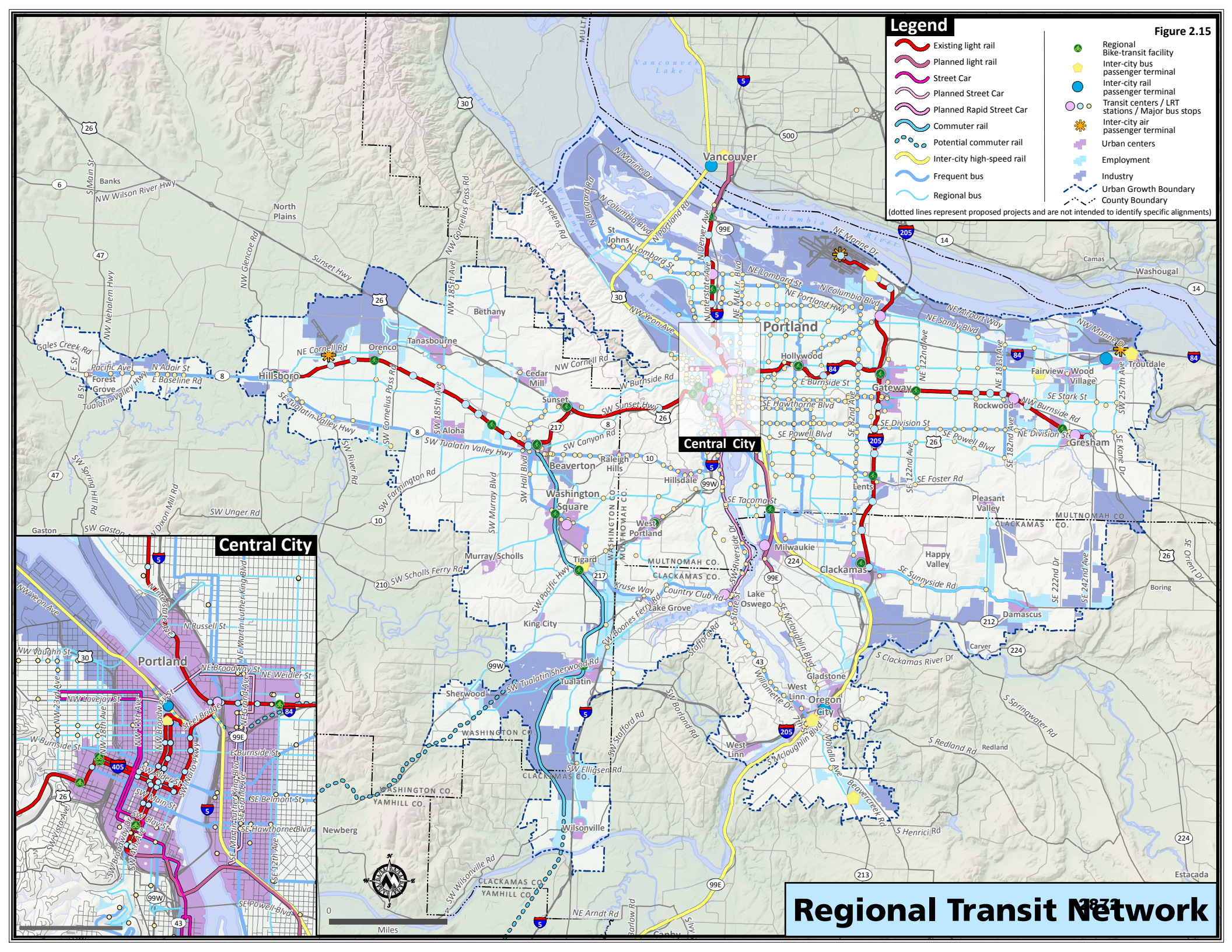
**Figure 2.14**
**Regional Transit Network Concept**




*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
Existing light rail
Planned light rail
Street Car
Planned Street Car
Planned Rapid Street Car
Commuter rail
Potential commuter rail
Inter-city high-speed rail
Frequent bus
Regional bus
Regional Bike-transit facility
Inter-city bus passenger terminal
Inter-city rail passenger terminal
Transit centers / LRT 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
Vancouver
Portland
Hillsboro
Beaverton
Washington Square
Tigard
Tualatin
Sherwood
Wilsonville
Milwaukie
Clackamas
Oregon City
Gresham
Troutdale
Gateway
Hollywood
Lents
Lake Oswego
Lake Grove
Tanasbourne
Orenco
Aloha
Sunset
Cedar Mill
Bethany
Hillsdale
Raleigh Hills
West Portland
Murray/Scholls
King City
Newberg
Gladstone
West Linn
Damascus
Happy Valley
Pleasant Valley
Fairview
Wood Village
Rockwood
Camas
Washougal
Boring
Carver
Redland
Estacada
Banks
North Plains
Forest Grove
Gaston
Miles
Regional Transit Network

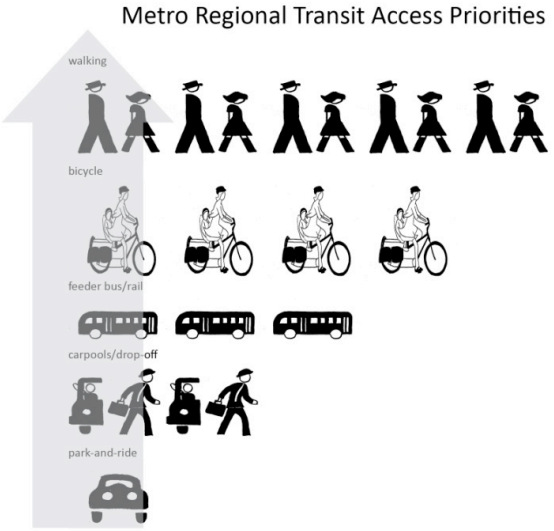
### Build the total transit system and transit-supportive land uses to leverage investments

Building the total transit system goes beyond providing frequent, reliable service during all times of the day, every day of the week. 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.

Regional transit access priorities are depicted in **Figure 2.16**.

**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[6]), comfortable places to wait for transit; and modern, well-maintained vehicles.

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**.

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

**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 | Long, winding streets |
| | Grid system | 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 | Narrow or no sidewalks |
| | Slow moving traffic | Fast moving traffic |
| | Street amenities (e.g., benches, street trees, pedestrian-scale lighting) | Poor lighting |
| | Well-marked intersections with signalized crossings | 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 | Abundant |
| | Fee-based parking | Free |

*Source: TriMet*

Transit-supportive development patterns include:

- 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.



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

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.

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[7], 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, complementary high quality community transit service to maximize access to those regional

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

services and transit-supportive land uses to maximize the ridership potential of these important transportation corridors.

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)
- 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



### *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 report and technical evaluation results is 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.

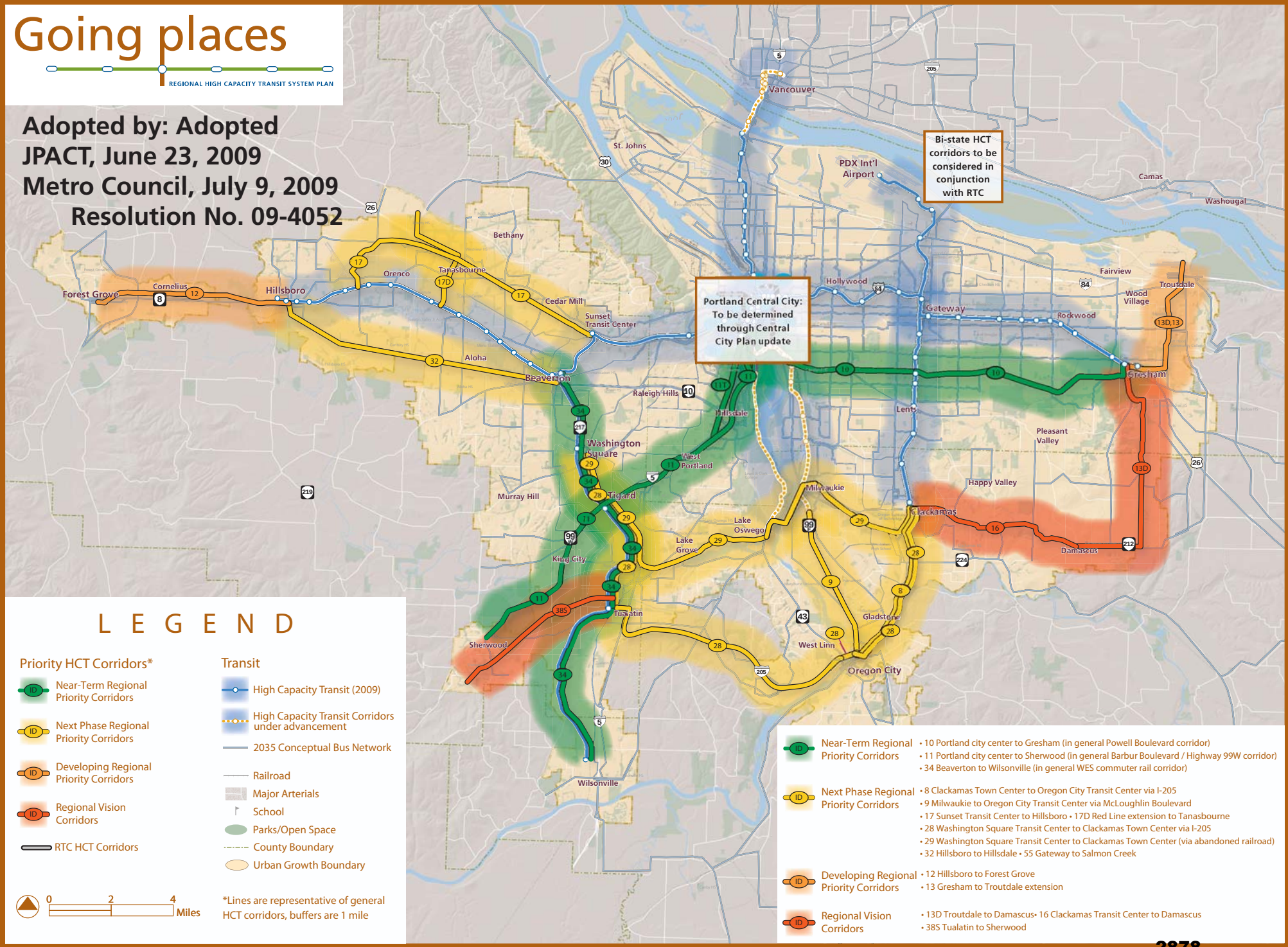
The HCT System Plan corridors are shown in **Figure 2.17.**

Figure 2.17

# Going places

REGIONAL HIGH CAPACITY TRANSIT SYSTEM PLAN

**Adopted by: Adopted**
**JPACT, June 23, 2009**
**Metro Council, July 9, 2009**
**Resolution No. 09-4052**




## 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

2878

***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.

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.

### 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).



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, 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 regional transit network.

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
- Tram
- Para-Transit
- Employer Shuttle Service



**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**

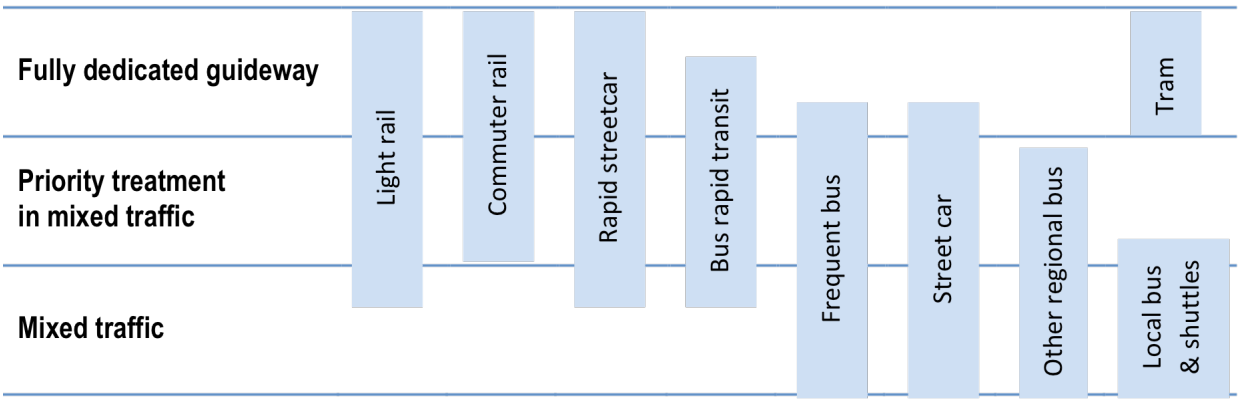



Table Notes:

- 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.

## 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:[8]

- **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.

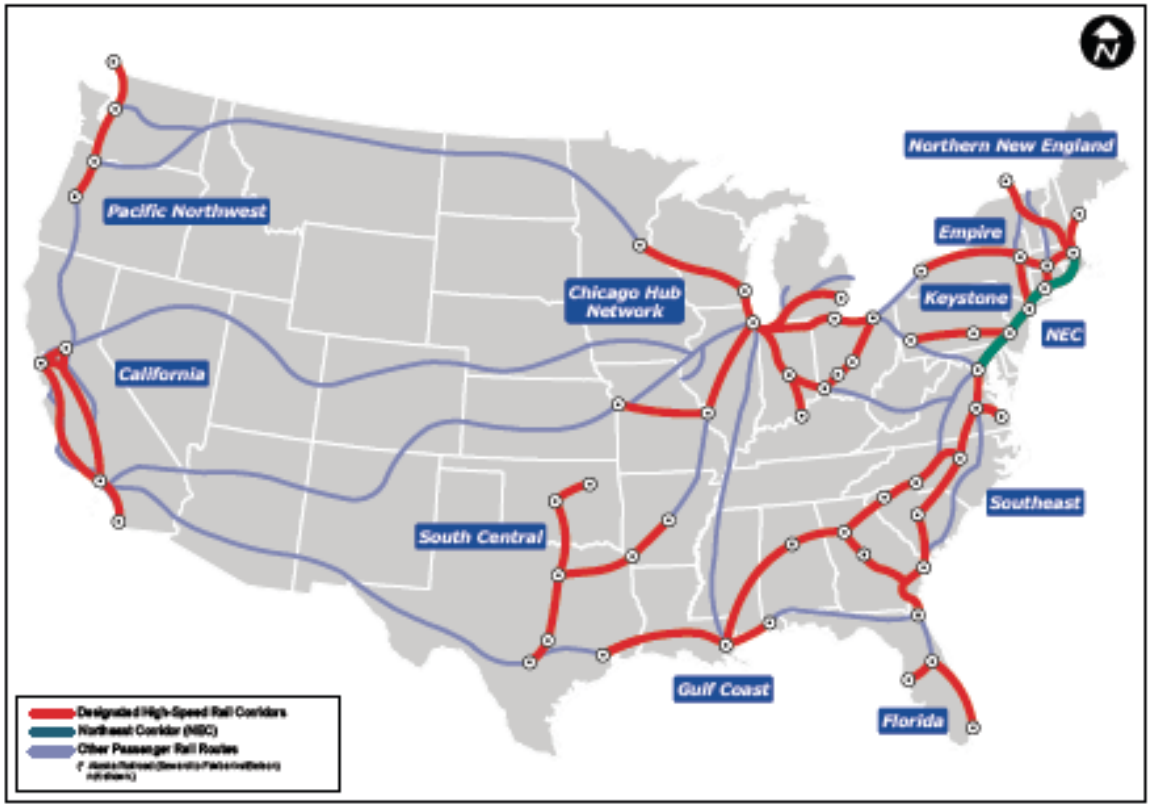
- **Potential corridor.** A potential future commuter rail line to Newberg may be feasible in the long term. Even though the riders per mile analysis looks favorable due to the relatively short distance of the line, the overall population in the rail shed is very low compared to other corridors, and 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 HB 2408, which directs ODOT to study the possible extension of commuter rail service from Wilsonville to Salem.

[8] 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 effective transportation network for operations**.** In 2008, 14,80 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 policy areas 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**

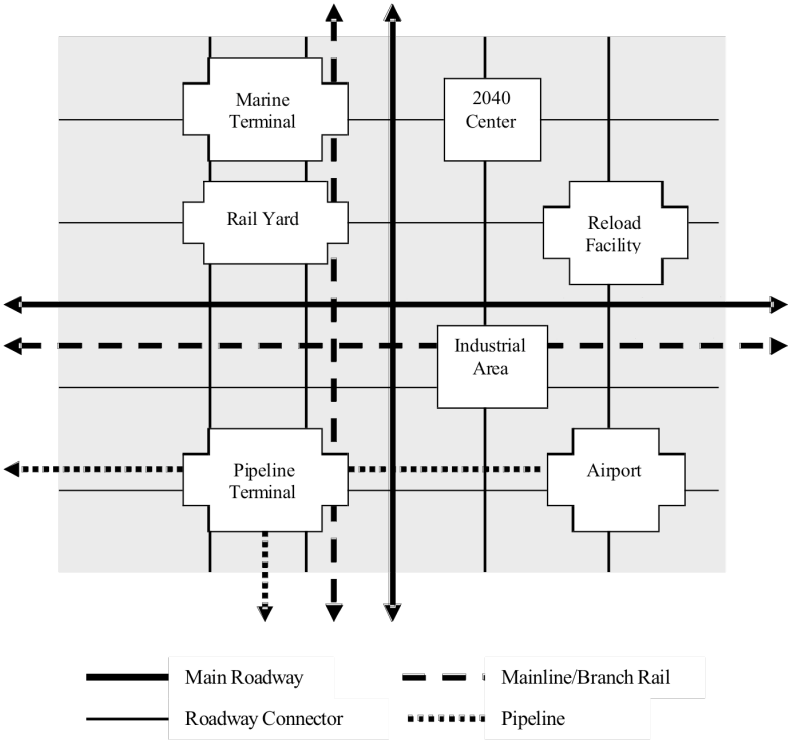


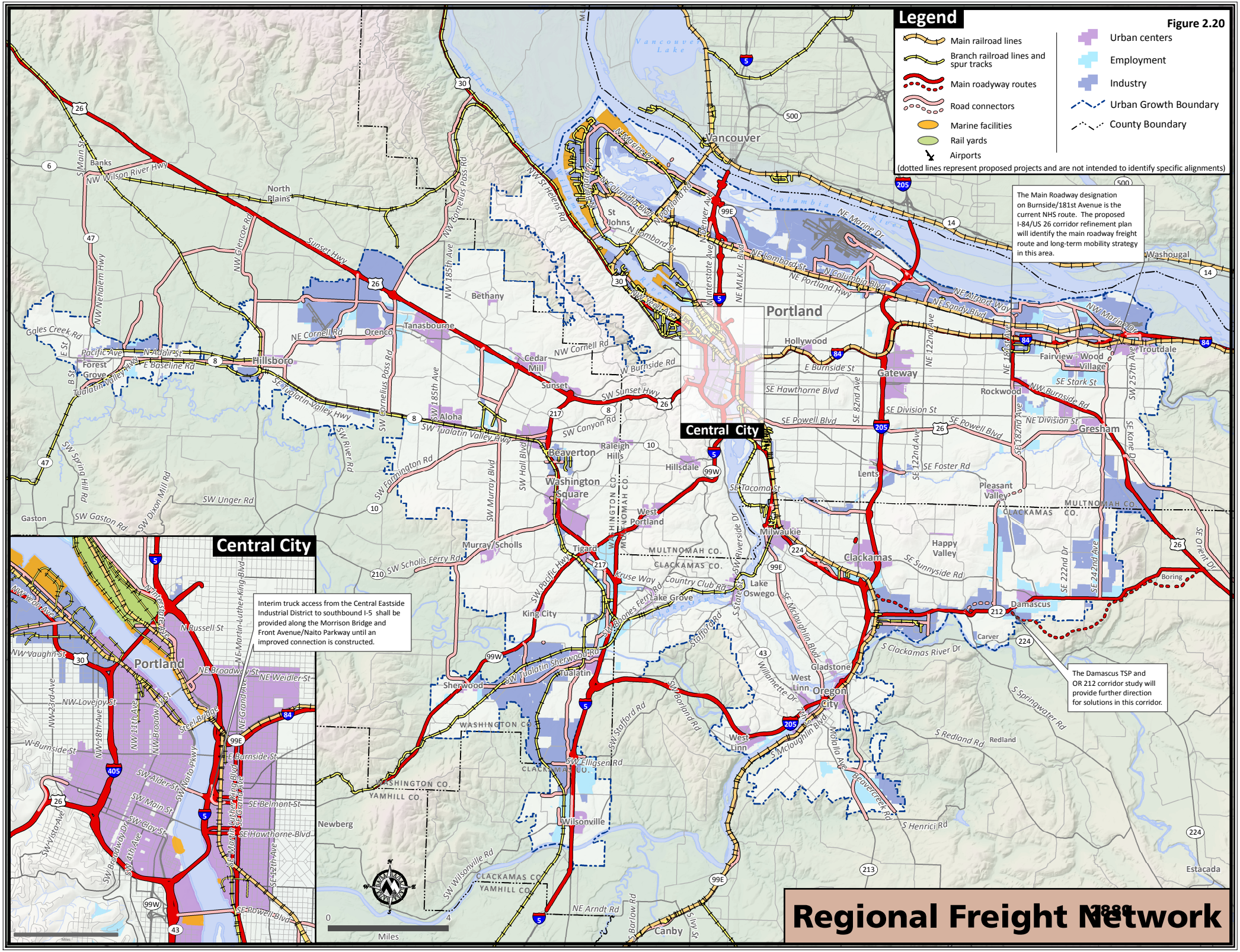

**Figure 2.20** applies the regional freight network concept on the ground to identify the transportation networks and facilities that serve our region and state's freight mobility needs.

## 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.
Central City
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.
The Damascus TSP and OR 212 corridor study will provide further direction for solutions in this corridor.
Vancouver
Portland
Beaverton
Hillsboro
Gresham
Tigard
Tualatin
Lake Oswego
Oregon City
West Linn
Wilsonville
Newberg
Sherwood
King City
Tanasbourne
Bethany
North Plains
Banks
Forest Grove
Cornelius
Aloha
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray/Scholls
Milwaukie
Clackamas
Happy Valley
Damascus
Boring
Estacada
Canby
Gladstone
Lents
Rockwood
Fairview - Wood Village
Troutdale
Washougal
Pleasant Valley
Gateway
Hollywood
Sunset
Cedar Mill
Orenco
Gaston
Redland
Miles
0
4
Regional Freight Network

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.[9] The region's forecasted population and job growth – an additional 1.13 million residents and 767,000 jobs by 2035[10] – 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.

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

[10] 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.[11] These constraints will worsen as freight volumes at the region's ports and intermodal facilities increase, and demand for passenger rail and pressure for expanded trails on rail right-of-way continues.

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.



[11] 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.

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 policy areas form the foundation of this vision:**

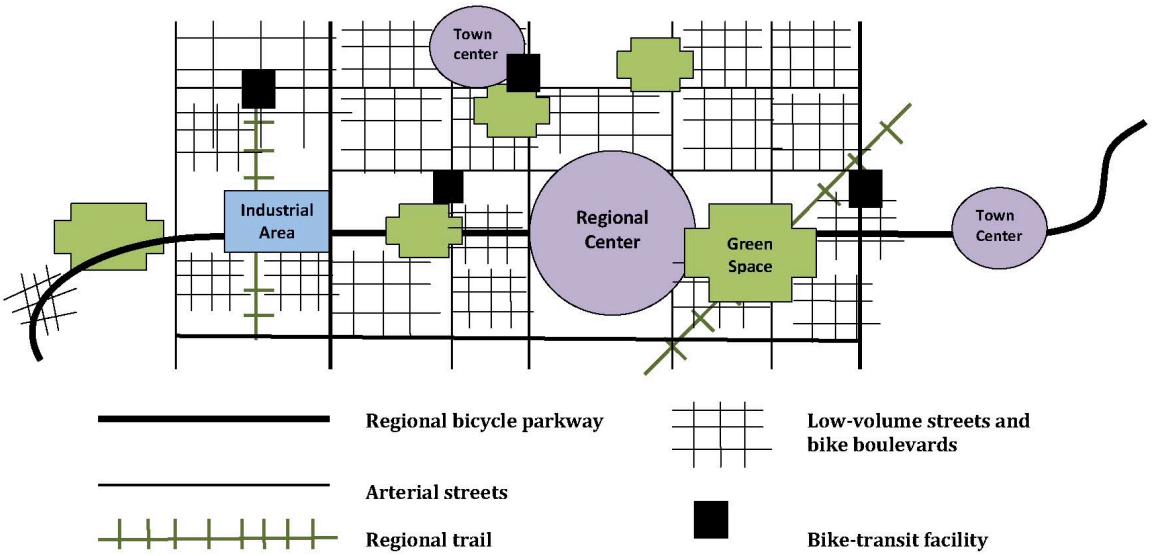
1. **Build an interconnected network of bicycle facilities that provides seamless travel between jurisdictions**
2. **Improve bike-transit connections**
3. **Build a green ribbon of bicycle parkways as part of the region's integrated mobility strategy**

#### 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.

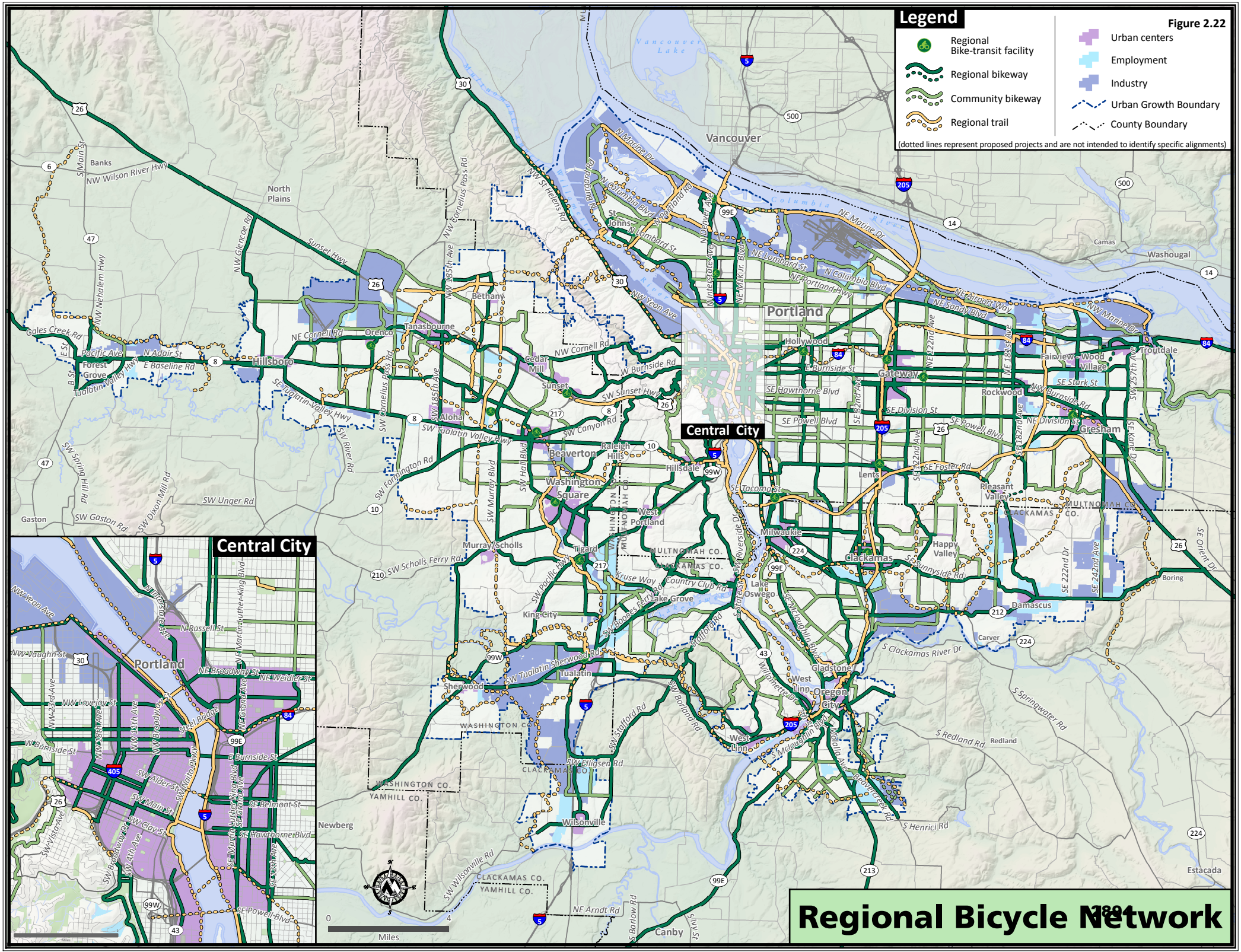
**Figure 2.21**
**Regional Bicycle Network Concept**




*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.




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)
Figure 2.22
Central City
Regional Bicycle Network
Map 1
Miles
Vancouver
Portland
Beaverton
Hillsboro
Gresham
Tigard
Tualatin
Lake Oswego
Oregon City
West Linn
Wilsonville
Milwaukie
Gladstone
Happy Valley
Damascus
Troutdale
Fairview
Wood Village
Camas
Washougal
North Plains
Banks
Forest Grove
Cornelius
Sherwood
King City
Newberg
Canby
Estacada
Boring
Carver
Redland
Aloha
Bethany
Cedar Mill
Sunset
Tanasbourne
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray/Scholls
Lake Grove
Rockwood
Gateway
Hollywood
Lents
Pleasant Valley
Glenn Otto Park
Willamette Park
Gaston
Columbia River
Willamette River
Vancouver Lake
Multnomah Co.
Washington Co.
Clackamas Co.
Yamhill Co.

The different functional elements of the regional bicycle network are:



- **Regional Bicycle Parkways**[12] 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.

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

[12] Regional Bicycle Parkways are not currently shown in Figure 2.22. A future Regional 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.

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 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.

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.

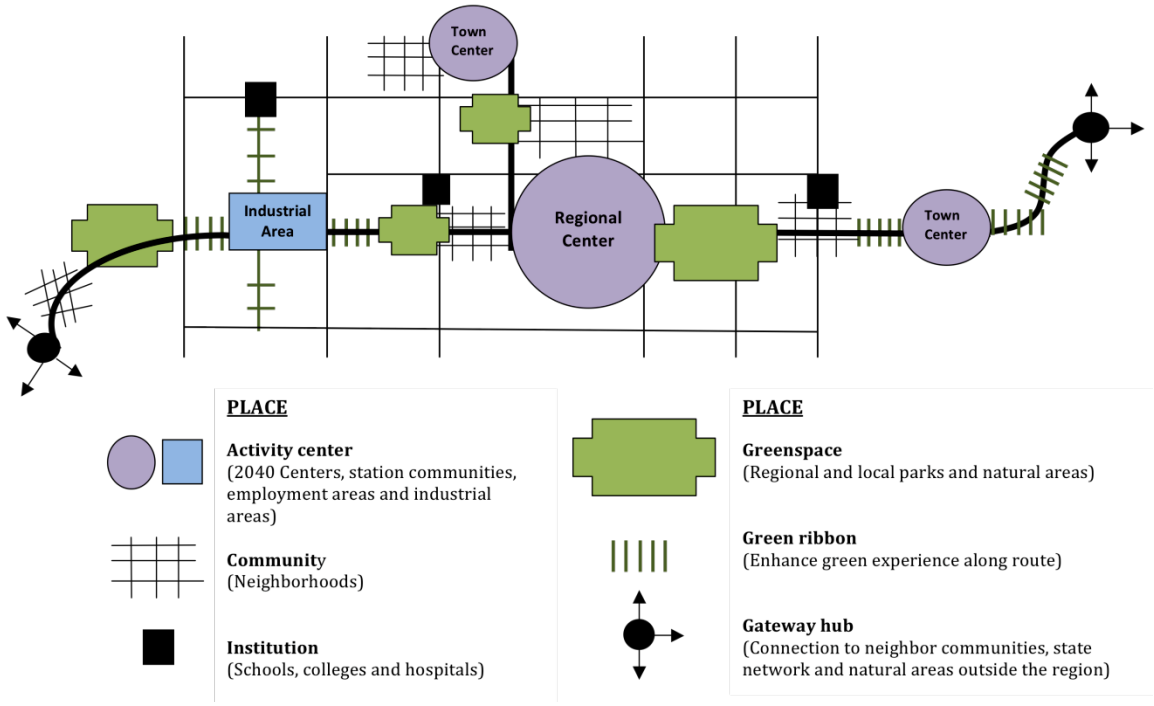
Key experiential aspects that bike parkways embody:

- 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




Walking is an activity that supports most other modes of travel as well as being its own mode. Whether it is accessing a parked car or transit, people walk places to get around even in combination with another mode.

The supportive role that walking plays to other modes is one reason the pedestrian system should be complete, direct, safe and enjoyable to use. It is important for the pedestrian system to 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. Combined with adequate sidewalks and curb ramps, pedestrian elements such as benches, curb extensions, marked street crossings, landscaping and wide planting strips make walking an attractive, convenient and safe mode of travel.

The term "walking" as used in this context includes traveling on foot as well as those pedestrians using mobility aids, such as wheelchairs. 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 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.

**Three policy areas form the foundation of this vision:**

1. **Build an well-connected network of pedestrian facilities that serves all ages and abilities**
2. **Create walkable downtowns, centers, main streets and station communities**
3. **Improve pedestrian access to transit**

### 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, crossings locations, 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.

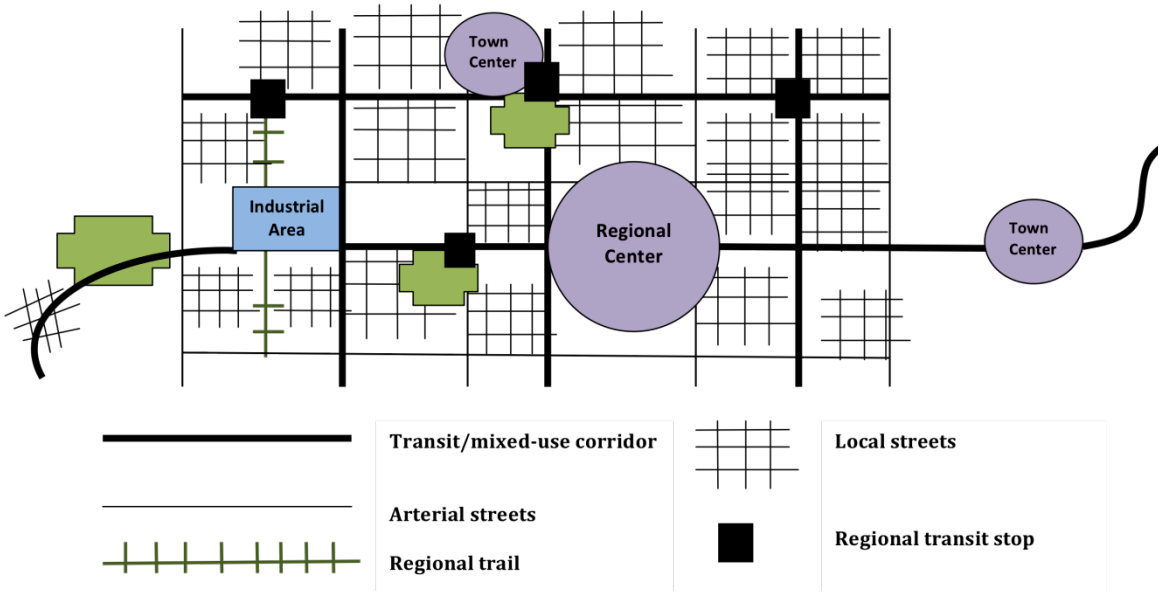
Public transportation use is enhanced by pedestrian improvements, especially those facilities that connect stations or bus stops to surrounding areas or that provide safe and attractive waiting areas. Improving walkway connections between office and commercial districts and surrounding neighborhoods provides opportunities for residents to walk to work, shopping or to run personal errands. 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. Pedestrian/bicycle-only bridges also are included in this designation. In high use areas, regional trails should be designed to provide separation between bicyclists and pedestrians.

**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**



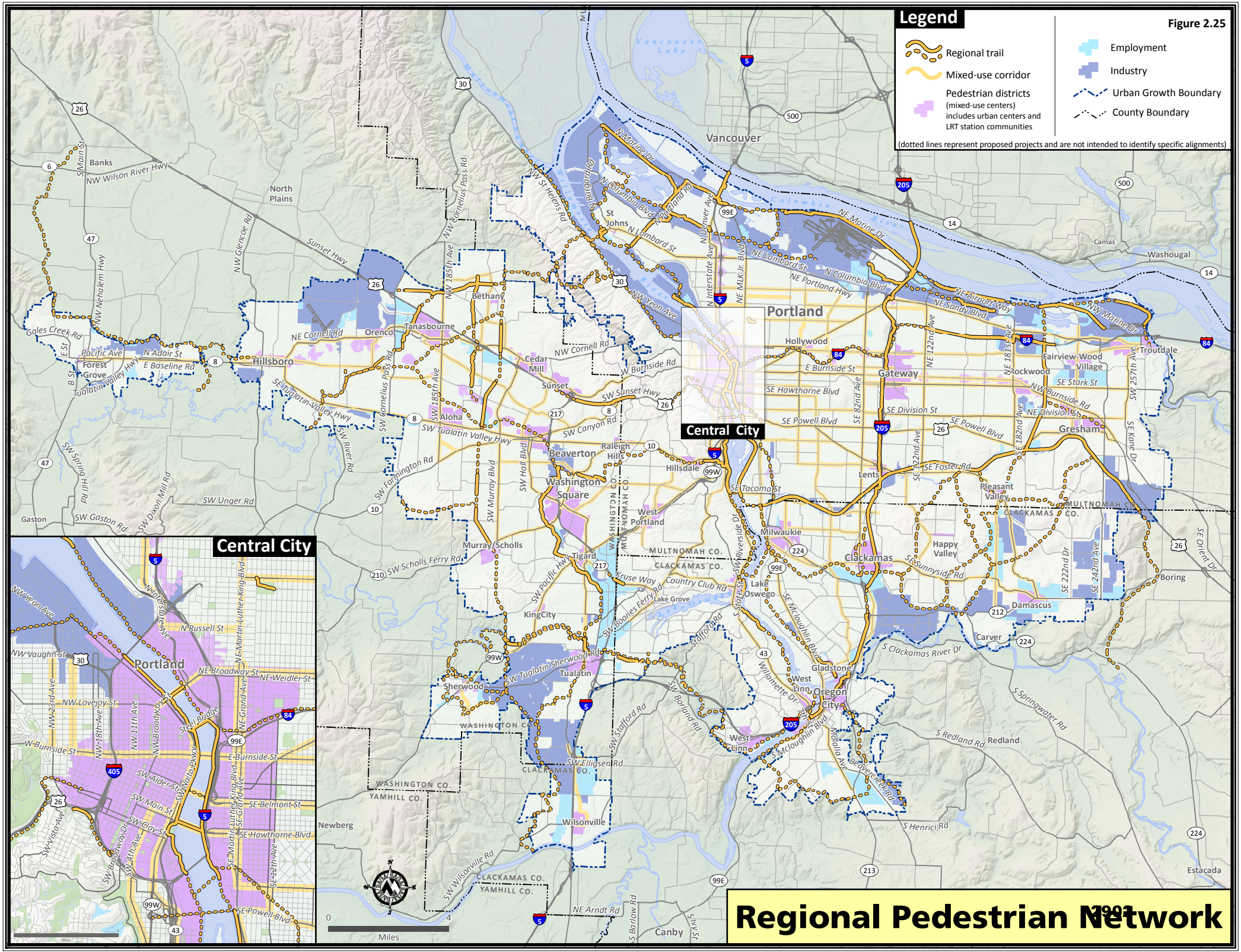

*The Region 2040 plan sets forth a vision for making walking safe, convenient and enjoyable to support walking as a legitimate travel choice for all people in the region. The RTP supports this vision with a region-wide network of on-street and off-street pedestrian facilities integrated with transit.*

**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.

### 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 more 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 least every 530 feet (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.


Legend
Figure 2.25
Regional trail
Mixed-use corridor
Pedestrian districts
(mixed-use centers)
includes urban centers and
LRT station communities
Employment
Industry
Urban Growth Boundary
County Boundary
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Central City
Central City
Vancouver
Portland
Beaverton
Hillsboro
Gresham
Tigard
Tualatin
Lake Oswego
Oregon City
West Linn
Wilsonville
Newberg
Sherwood
Forest Grove
Banks
North Plains
Camas
Washougal
Troutdale
Fairview-Wood Village
Happy Valley
Clackamas
Milwaukie
Damascus
Boring
Estacada
Canby
Redland
Gladstone
Carver
Lents
Rieasant Valley
Hollywood
Gateway
Sunset
Cedar Mill
Bethany
Tanasbourne
Orenco
Aloha
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray/Scholls
KingCity
Lake Grove
Willamette River
Columbia River
Vancouver Lake
Miles
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. Specifically, the central city, regional and town centers and light rail station communities are areas planned for the levels of compact mixed-use development served by transit needed to generate substantial walking. 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. All streets within pedestrian districts are important pedestrian connections.

Currently the regional pedestrian network is incomplete; 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.

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.




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 policy areas 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**

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. TSMO strategies also support many regional transportation goals:

- 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 policy areas.

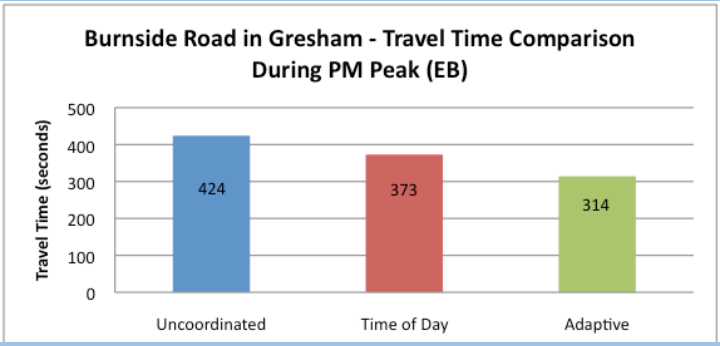
**Table 2.9**
**Examples of TSMO strategies by policy area**

| | |
|---|---|
| **Multimodal Traffic Management**<br>• Traffic signal coordination<br>• Transit signal priority treatment | **Traffic Incident Management**<br>• Improve surveillance<br>• Expand incident management teams and training |
| **Traveler Information**<br>• Real-time traveler information<br>• Expand to arterials | **Transportation Demand Management**<br>• Ridesharing<br>• Collaborative marketing (e.g., Drive Less Save more campaign) |

## 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.




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.

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.[13] 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.

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

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







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

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

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 TransitTracker data, which predicts next arrival times for vehicles, can now be accessed through a variety of different iPhone 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[14]

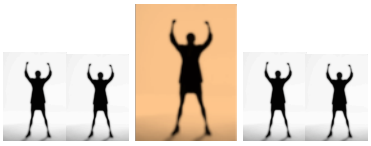
When implemented with active traffic management techniques, such as variable speed limits and lane management signs, the number and severity of crashes can be reduced.[15]

## Implement market-based incentives and programs to increase awareness 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. 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, travel behavior will adjust to create more space on roadways, resulting in improved travel times for other roadway users. 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.

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

## 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 4 formed the basis for identifying system needs and deficiencies 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.



# CHAPTER 3

# INVESTMENT STRATEGY:

# WHAT IS OUR STRATEGY FOR ACHIEVING OUR VISION?

## 3.1 INTRODUCTION

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.

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 given the 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 the plan period.[1]The second level, the "state" 2035 RTP Investment Strategy, will represent additional priority investments that would be considered for funding if new or expanded revenue sources are secured.[2]

**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] 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.
[2] 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.

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.

## 3.2 OVERVIEW OF STATE AND FEDERAL REQUIREMENTS

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.

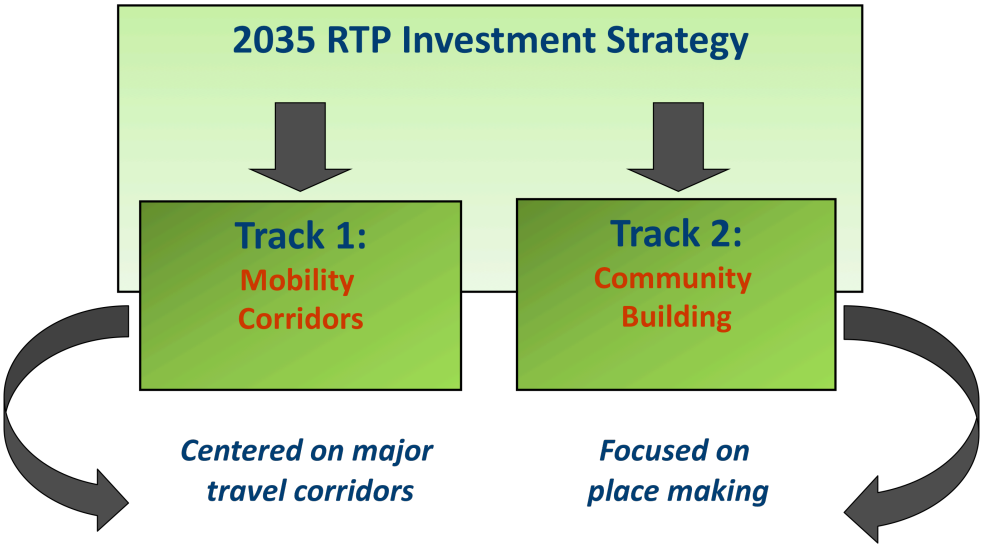
As the revenues identified to comply with the federal requirements of fiscal constraint do not provide enough financial capacity to meet the needs identified in the plan, it is necessary to identify more sources of revenue for the RTP to satisfy state requirements.

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

The RTP responds to the 2040 Growth Concept through an approach 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 3.1**.

**Figure 3.1**
**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.

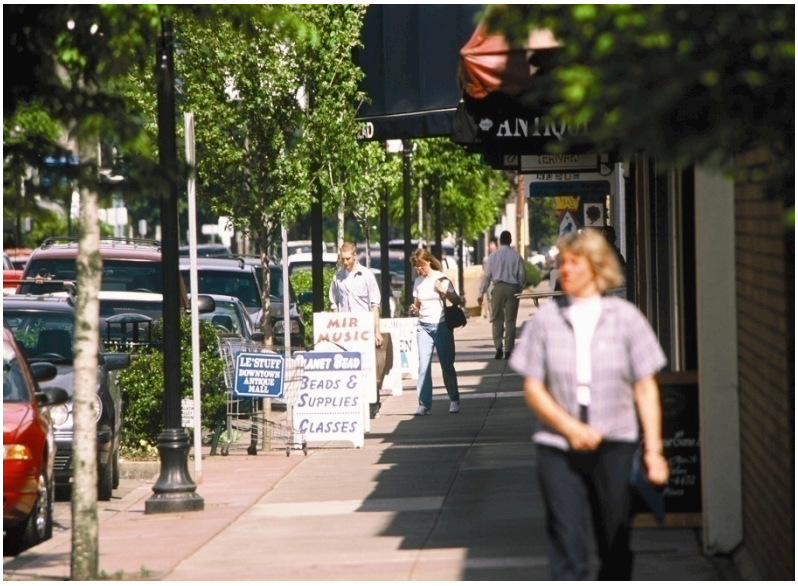
**Centers and mainstreets**

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. 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.



## 3.2 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). [3]

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 alternative mode 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.

[3] 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 alternative modes to the single occupant vehicle, 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 formula funds 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:

- Statewide gas taxes;
- Vehicle registration fees; and
- Weight mile taxes on trucks.

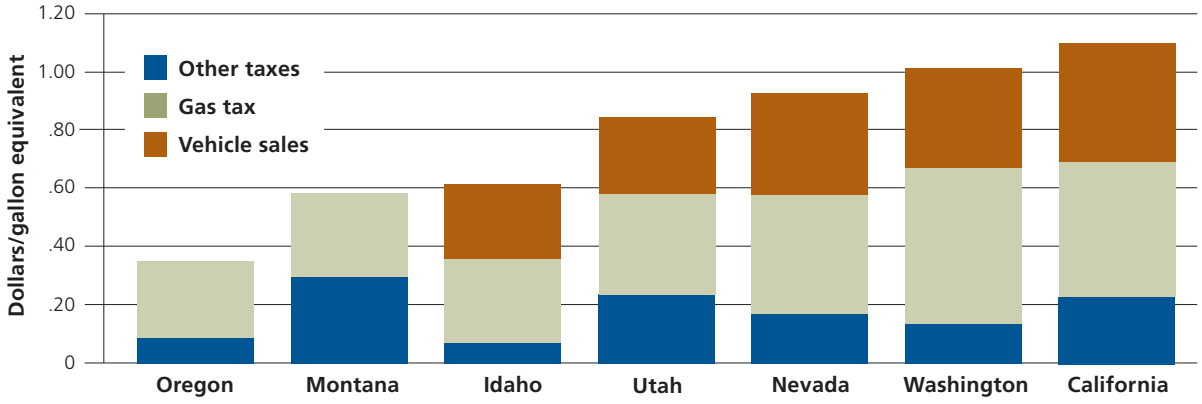
**State Sources of Revenue:**

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

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 3.2** 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 allocated about 28.8 percent of that money to the Metro region.

**Figure 3.2**
**Oregon ranks last compared to other western states in auto taxes and fees collected**




**Source:** Oregon Department of Transportation, 2006

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 raise other sources of revenue for the operation, maintenance and preservation (OMP) and new construction of the 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 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.

**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

- **Washington County Urban Road Maintenance District.** The County collects a $0.50 per $1,000 of assessed valuation fee in urban unincorporated Washington County for road maintenance within those areas.



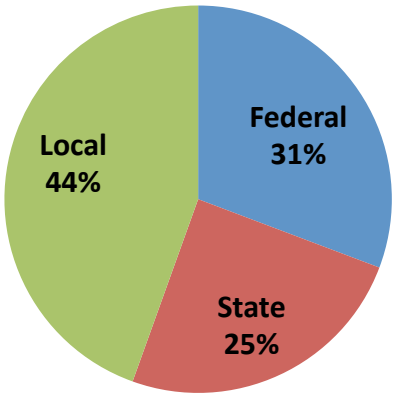
## 3.3 WHAT'S OUR BUDGET?

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 3.3** shows the breakdown of federal, state, and local revenue.

**Figure 3.3**
**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 Fund4 | | | ● |

[4] 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 |

## 3.4 WHAT INVESTMENT PRIORITIES ARE INCLUDED IN THE FINANCIALLY CONSTRAINED SYSTEM?

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.

**Figure 3.4** shows all of the financially constrained RTP projects broken out by modal category. These investments comprise the RTP federal priorities. More than fifty percent of all of the RTP projects fall into the road and bridge category. Less than twenty percent of the projects focus on the bicycle and pedestrian system. Freight, transit, and regional transit projects each account for seven percent of the total investments. Throughway projects are six percent of the total project list. See Appendix 1 for the recommended list of investments.

**Figure 3.4**
**RTP Federal Priorities by Mode** (percentages based on number of projects)

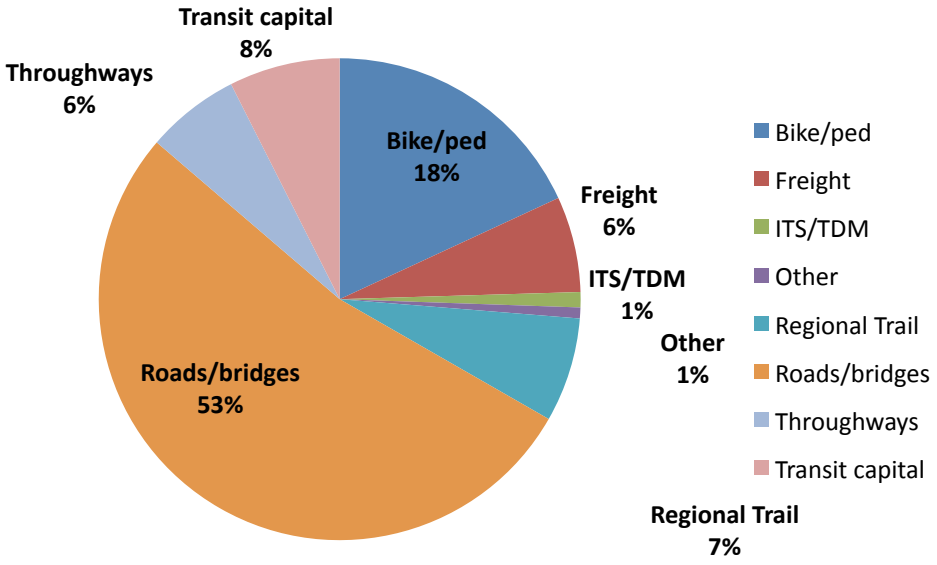
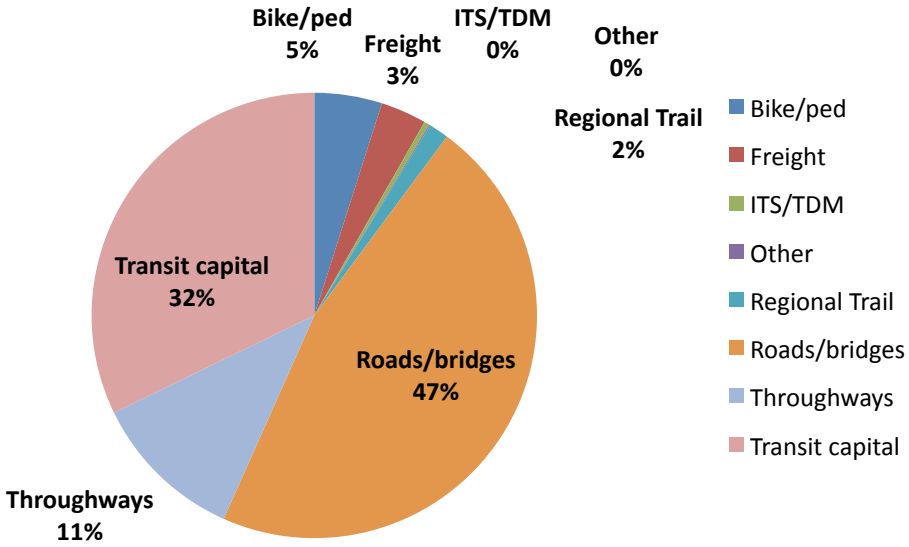


**Figure 3.5** shows the RTP projects broken down by mode and reflected as a percentage of the total cost of all of the financially constrained RTP projects.

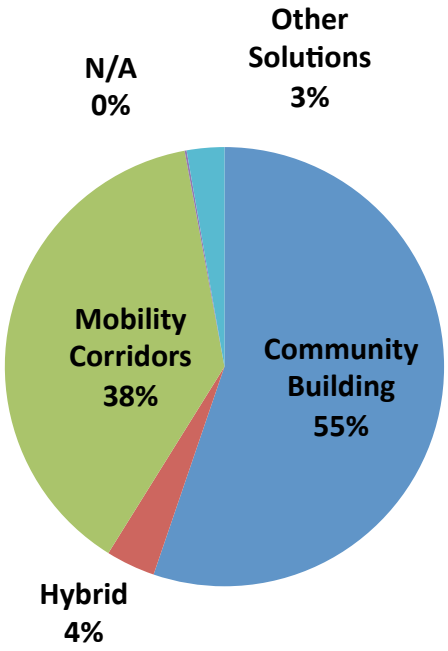
**Figure 3.5**
**RTP Federal Priorities by mode** (percentages based on share of total cost)




Road and bridge projects comprise both more than fifty percent of all of the projects and total cost. Transit projects, although only seven percent of the financially constrained projects comprise twenty seven percent of the total cost.

It is also important to look at the list of RTP projects as they relate to the mobility corridor and community building investment tracks. **Figure 3.6** shows the percentage of federal financially constrained RTP projects broken into the two investment tracks.

**Figure 3.6**
**RTP Federal Priorities by Investment Track**




Of the 688 financially constrained RTP projects, 55 percent are focused on community building and less than 40 percent on mobility corridor investments. Chapter 4 describes in detail how the financially constrained RTP projects meet the six desired outcomes, goals of the RTP, and JPACT-endorsed targets through the performance measurement system. The results of the performance measurement system for the financially constrained RTP system are not available at this time and will be incorporated into the RTP later this fall.

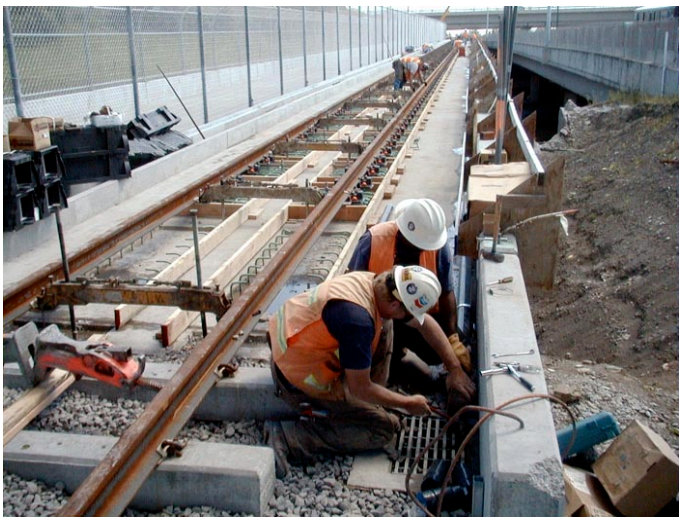
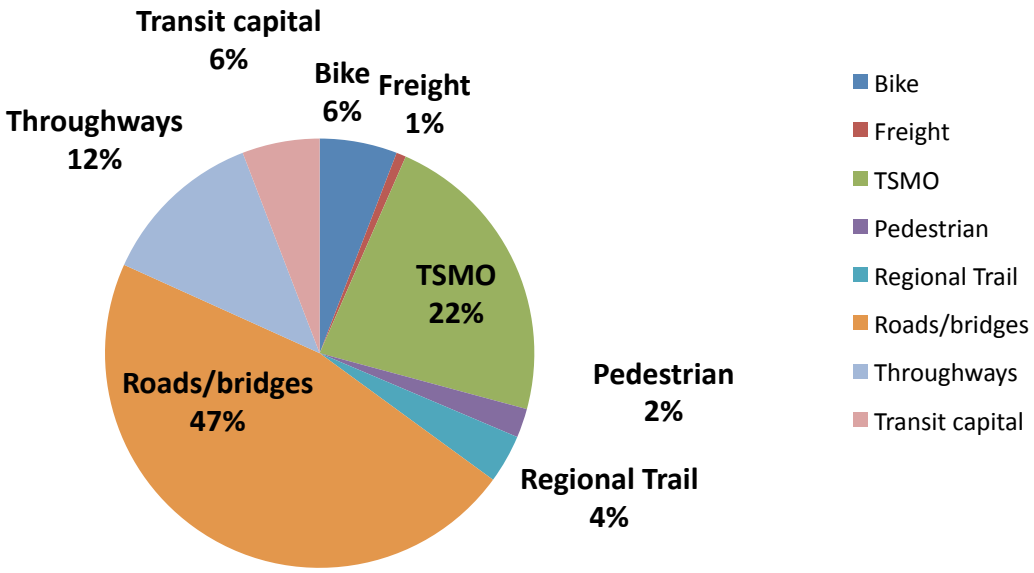


**Figure 3.7** shows the percentage of mobility corridor projects recommended for the federal priorities by mode.

**Figure 3.7**
**Federal Priorities Mobility Corridor Investments by Mode** (percentages based on number of projects)



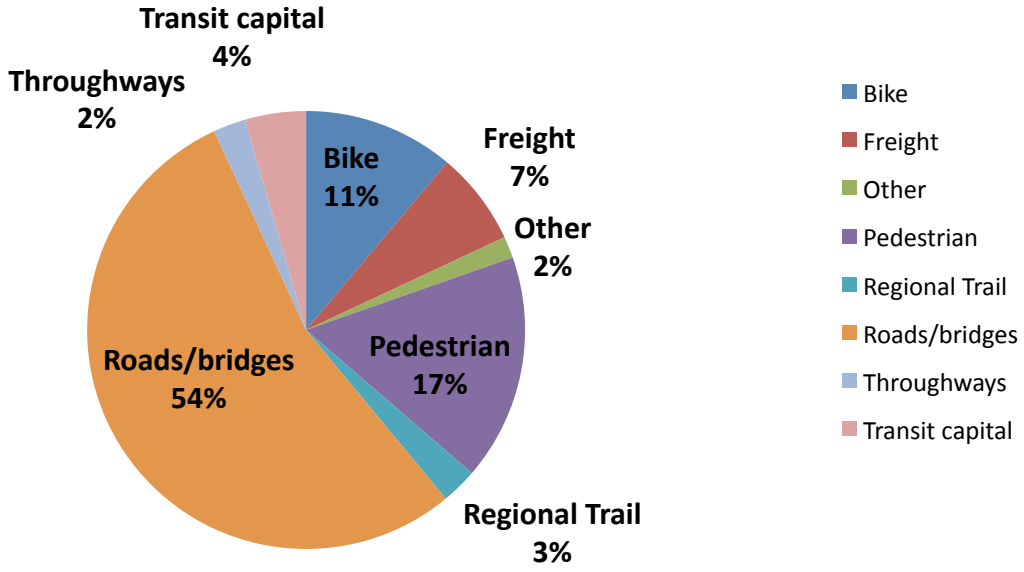

Road and bridge projects recommended in the mobility corridor investment strategy include: Arterial street expansions that are complemented by new connections to maintain access to the regional throughway system and provide circulation and access between the central city, regional centers and town centers. 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.

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. 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.

New high capacity transit connections to Milwaukie, from Portland to Lake Oswego and to Clark County are included along with expanded frequency bus service and other transit infrastructure investments to leverage service enhancements.

**Figure 3.8** shows the percentage of community building projects recommended for the federal priorities by mode.

**Figure 3.8**
**Federal Priorities Community Building Investments by Mode** (percentages based on number of projects)




Road and bridge projects in this category focused 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.

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.

## 3.5 WHAT IF WE ARE SUCCESSFUL IN RAISING MORE MONEY AT THE LOCAL AND STATE LEVELS?

Federal regulations require that the RTP be financially constrained based on identified federal, state and local revenue resources that the region can reasonably expect to receive from 2007 – 2035. As Chapter 4 shows, the 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.

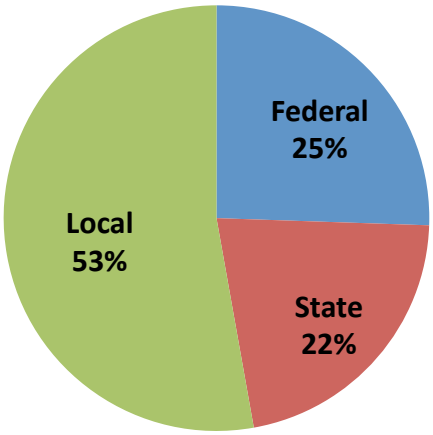
In 2009, JPACT participated policy discussions that focused on answering the question of what level of investments should be assumed for the state *2035 RTP Investment Strategy* and what potential increases in state and local revenue might be reasonable to pursue for this more aspirational level of investment.

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 3.9** shows the breakdown of federal, state, and local revenue.

**Figure 3.9**
**State RTP System Revenue by Federal, State and Local Sources**




Forecasts show $20.9 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 of 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 3.3** 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.

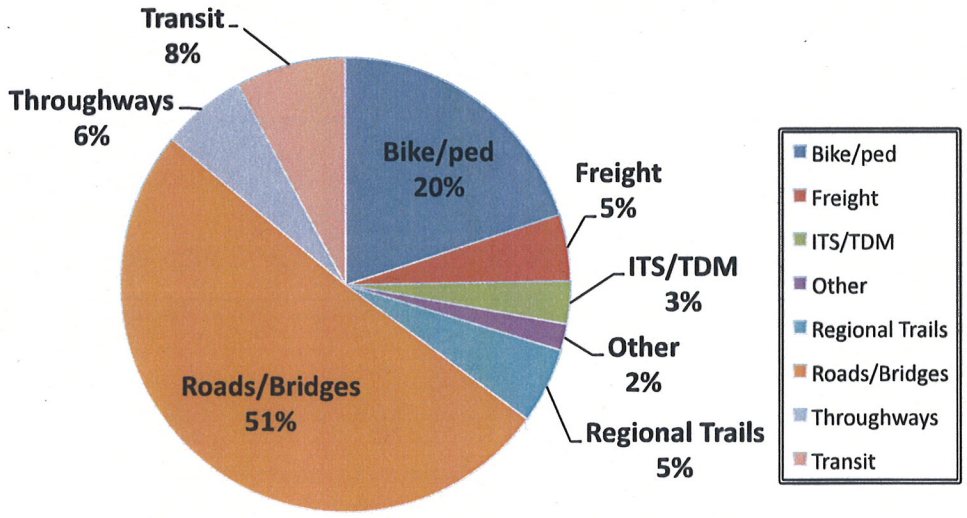
**Table 3.3**
**Total State RTP System Revenue by Funding Pool** (Millions of 2007 $)

| Funding Pool | Total Revenue |
|---|---|
| ODOT Modernization Funding Pool | $4,532.90 |
| Regional Transit and Programs Funding Pool | $6,656.96 |
| Clackamas County/Cities Modernization Funding Pool | $1,596.49 |
| Washington County/Cities Modernization Funding Pool | $4,126.82 |
| City of Portland & Port of Portland Modernization Funding Pool | $2,208.08 |
| Multnomah County/Cities (Excluding Portland) Modernization Funding Pool | $1,634.24 |
| Local Willamette River Bridges Modernization Funding Pool | $144.7 |
| **TOTAL** | **$20,900.19** |

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.

**Figure 3.10** shows all of the State System of RTP projects broken out by modal category.

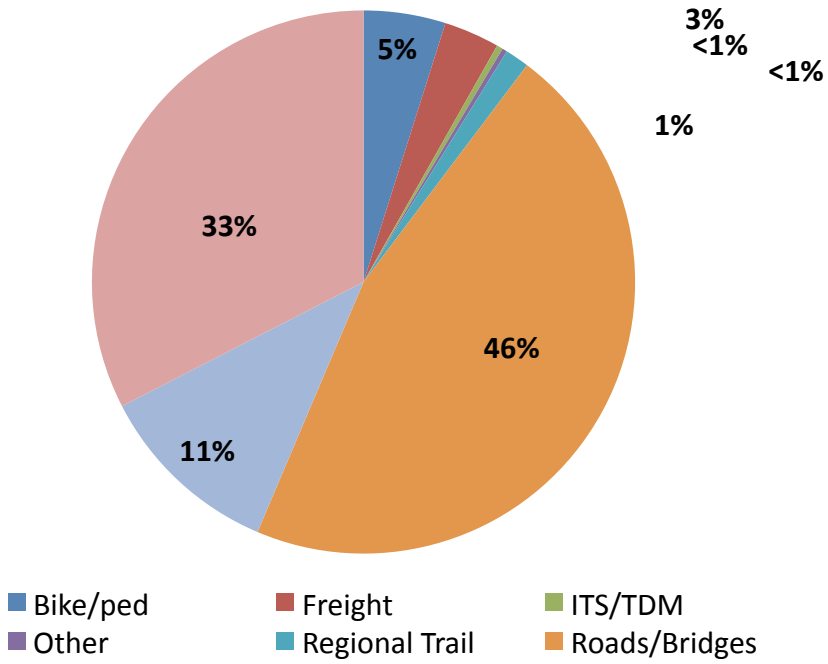
**Figure 3.10**
**State RTP Investment Strategy by Mode** (percentages based on number of projects)




More than fifty percent of all of the State RTP system projects fall into the road and bridge category. Twenty percent of the projects focus on the bicycle and pedestrian system, a slight increase over the financially constrained system. Freight and regional trails projects each account for five percent of the total investments, a slight decrease over the financially constrained system. Throughway projects are six percent of the total project list, remaining the same over both the state and federal RTP systems.

**Figure 3.11** shows the State RTP investment strategy broken down by mode and reflected as a percentage of the total cost of all of the state RTP investment strategy projects.

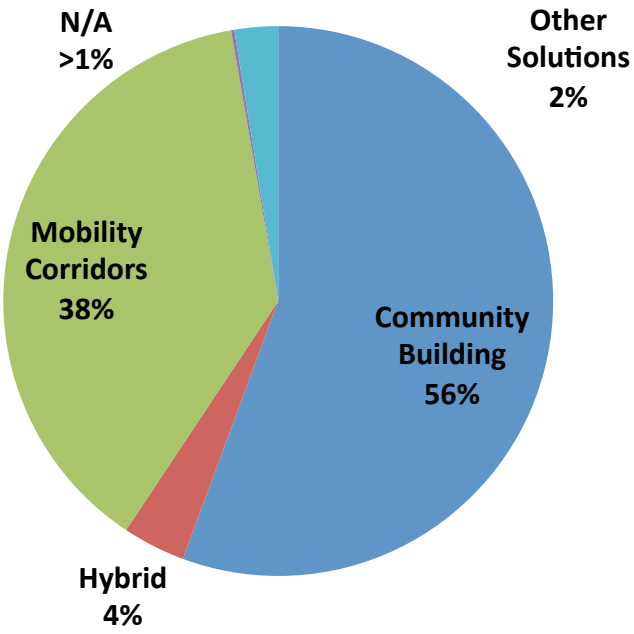
**Figure 3.11**
**State RTP Investment Strategy by Mode** (percentages based on share of total cost)




Road and bridge projects comprise more than fifty percent of all of the projects, but less than fifty percent of the total cost. Transit projects, although only eight percent of the State RTP system, comprise 33 percent of the total cost.

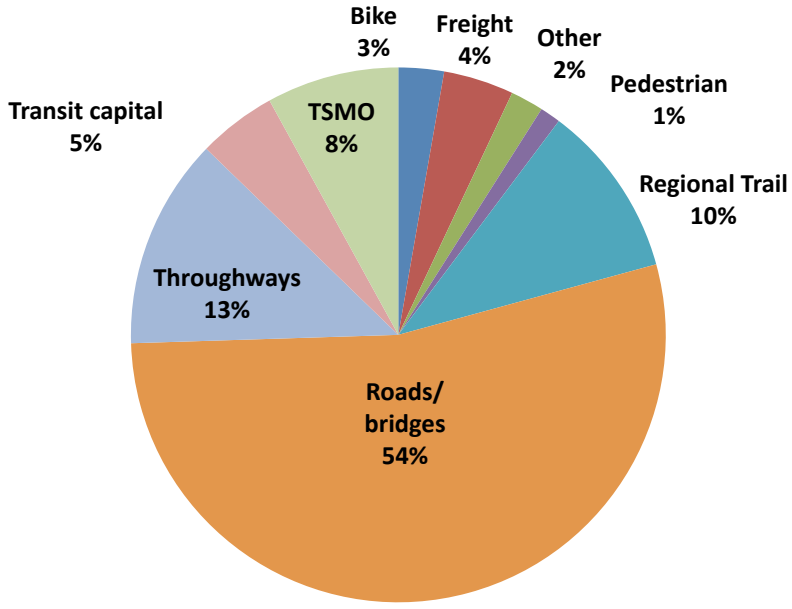
**Figure 3.12** shows the percentage of State RTP investment strategy projects broken into the two investment tracks.

**Figure 3.12**
**State RTP Investment Strategy by Investment Track**




Of the 1,055 State RTP projects, 56 percent are focused on community building and less than 40 percent on mobility corridor investments. **Figure 3.13** shows the percentage of mobility corridor projects recommended for the state RTP investment strategy by mode.

**Figure 3.13**
**State RTP Mobility Corridor Investments by Mode**



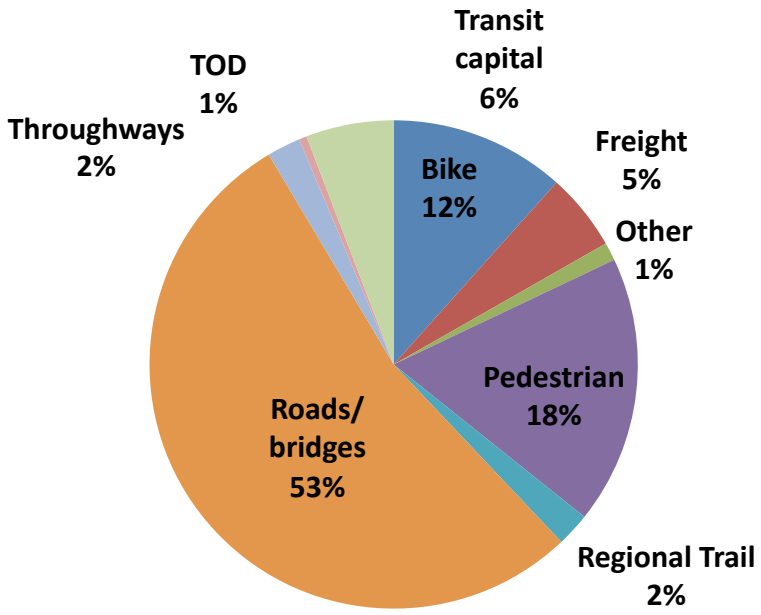
Road and bridge projects recommended in the mobility corridor investment strategy include: Arterial street expansions that are complemented by new connections to maintain access to the regional throughway system and provide circulation and access between the central city, regional centers and town centers. 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.

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. 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.

New high capacity transit connections to Milwaukie, Clark County and Tigard, and expanded streetcar service from Portland to Lake Oswego are also included along with expanded frequency bus service and other transit infrastructure investments to leverage service enhancements.

**Figure 3.14** shows the percentage of community building projects recommended for the state RTP investment strategy by mode.

**Figure 3.14**
**State RTP Community Building Investments by Mode**




Road and bridge projects in this category focused 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.

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.

## 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.[5]

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.

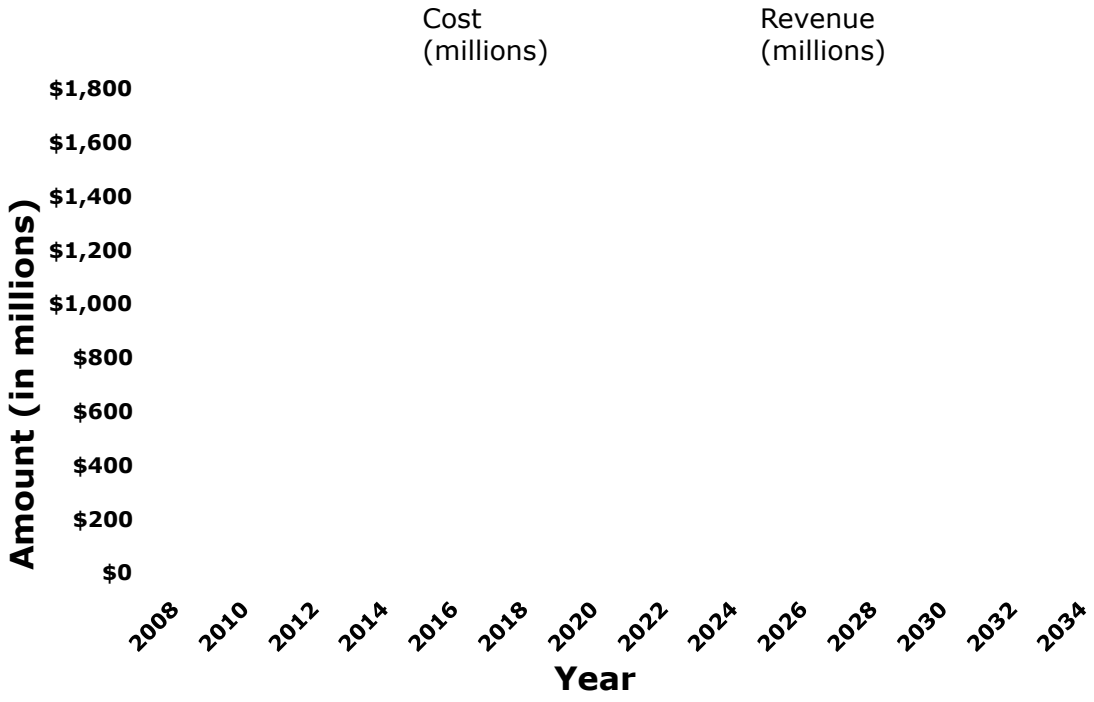
### 3.6.2 Highway and Street-Related Costs (Capital and OMP)

**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 3.15** 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.

[5] "Metropolitan transportation planning process: Transportation plan." 23 CFR 450.322(b)(11).

**Figure 3.15**
**State Highway Operations, Maintenance and Preservation Costs and Revenues**




ODOT estimates non-modernization needs and OM&P costs statewide 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, the I-5 to 99W connector, 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.

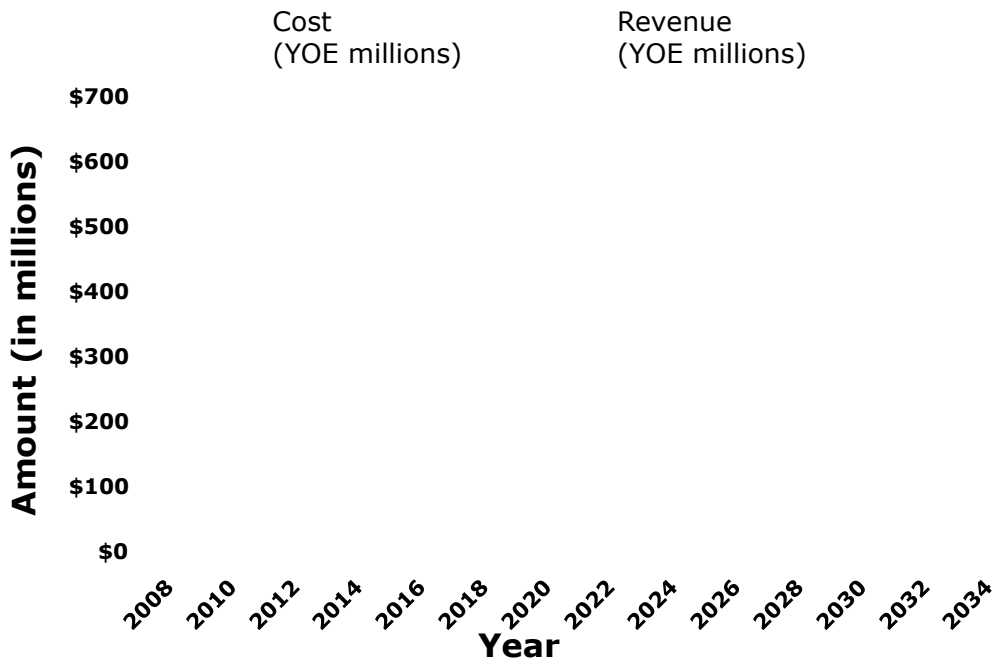
Forecasted revenues in the financially constrained plan available for local OMP expenditures fall short of this ideal level of OMP revenues, which range from approximately $171 million in 2008 to $450 million in 2035; roughly 70 percent of "ideal" levels. However, this level of investment is fairly steady 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 3.16** shows the roadway-related costs of OMP on the local roadway system against expected revenue from 2007 – 2035.

**Figure 3.16**
**Local Operations, Maintenance and Preservation Costs and Revenues**



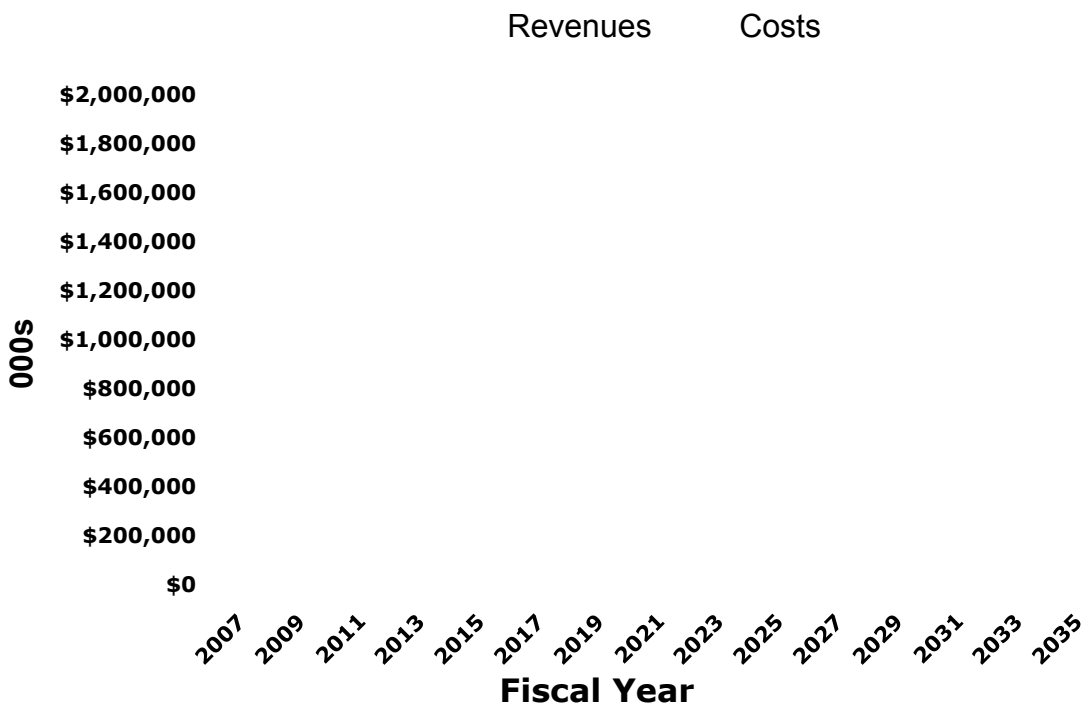
### 3.6.3 Transit-Related Costs

**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 3.17** below shows the transit costs of OMP against expected revenue from 2007 – 2035.

**Figure 3.17**
**Transit Operations, Maintenance and Preservation Costs and Revenues**



## 3.6 MOVING FORWARD TO FUND OUR REGION'S PRIORITIES



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 had not 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 needs identified 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

# PERFORMANCE EVALUATION AND MONITORING:

# HOW FAR DO WE GO TOWARD ACHIEVING OUR VISION?

## 4.1 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:

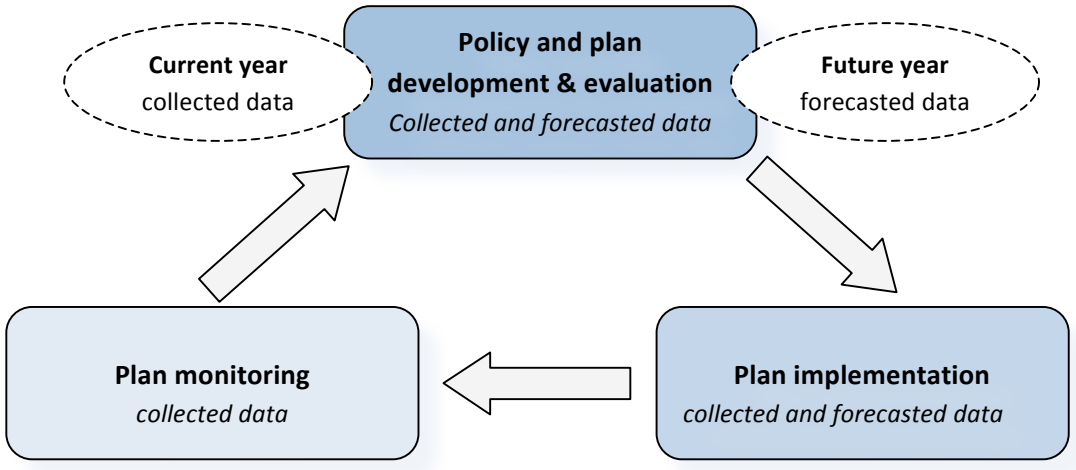
- Measurement of and feedback on the RTP policies and investment priorities submitted by ODOT, TriMet and local agencies;
- Improved communication of needs and priorities, which is especially important given the limited resources available for funding;
- Informed decision-making;
- Increased transparency 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.

## 4.2 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 4.1**.

***Figure 4.1 RTP Performance Measurement System***




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).

### 4.2.1 RTP Plan 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.

**Table 4.1** 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 4.1 RTP System Evaluation Performance Indicators**

| Recommended 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.** | Acres of regionally significant Goal 5 resources potentially affected by new transportation infrastructure | ● | | | | | ● | | | | |
| Additional land use-related measures to be developed as part of the *Making the Greatest Place.* | | | | | | | | | | | |

### 4.2.2 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. **Table 4.2** lists recommended performance monitoring measures.

**Table 4.2**
**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) |

## 4.3 2035 RTP PERFORMANCE EVALUATION FINDINGS

This section is under development. It includes findings for the base year of 2005 and the 2035 No Build as available. Data and findings for the 2035 RTP Federal Priorities and 2035 RTP Investment Strategy will be added upon completion of system modeling in fall 2009.

### 1. Vehicle miles traveled

*Data source:* Metro travel forecast model

*Description:* System-wide evaluation of total and per person vehicle miles traveled

*Target direction:* Reduce vehicle miles traveled

| VMT | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| Total | 20,044,778 | 27,084,711 | To be developed | To be developed |
| Per person | 14.23 | 13.28 | To be developed | To be developed |

### 2. Total delay and cost of delay on the regional freight network

*Data source:* Metro travel forecast model

*Description:* Evaluates delay and associate cost of delay for freight movement in the one-hour mid-day travel period and in the two-hour pm rush hour.

*Target direction:* Reduce growth of total delay and cost of delay on the regional freight network

| Travel period | 2005 Base Year | | 2035 No Build | | 2035 RTP Federal Priorities System | | 2035 RTP Investment Strategy | |
|---|---|---|---|---|---|---|---|---|
| | Hours of delay | Cost of delay | Hour of delay | Cost of delay | Hours of delay | Cost of delay | Hours of delay | Cost of delay |
| 1-hour mid-day | 434 | $6,895 | 3,810 | $65,030 | To be developed | | | |
| 2-hour pm peak | 6,520 | $100,620 | 34,233 | $539,826 | | | | |

### 3. Motor vehicle and transit 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 auto and transit travel times between key origin-destinations

| 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) | 16.89 | 18.53 | 20.06 | 22.53 | To be developed | | | |
| Central City to Hillsboro (Pioneer Square to First Main via Sunset/Shute) | 32.68 | 37.15 | 38.71 | 43.45 | | | | |
| Central City to Tigard (Pioneer Square to Main via Sunset/217) | 25.53 | 27.67 | 28.59 | 37.14 | | | | |
| Central City to Vancouver SOV* (Pioneer Square to Vancouver transit center via I-5) | 16.51 | 24.80 | 19.99 | 35.24 | | | | |
| Central City to Vancouver HOV* (Pioneer Square to Vancouver transit center via I-5) – No HOV mid-day | n/a | 19.20 | n/a | 26.70 | | | | |
| Central City to Gateway (Pioneer Square to Gateway transit center via I-84) | 14.55 | 18.81 | 16.61 | 22.09 | | | | |
| Central City to Gresham (Pioneer Square to City Hall via I-84/207th/223rd) | 26.30 | 32.73 | 28.68 | 38.83 | | | | |
| Gateway to Gresham (Gateway transit center to City Hall via 102nd/Division | 15.68 | 17.51 | 17.28 | 23.16 | | | | |
| Central City to Milwaukie (Pioneer Square to Milwaukie transit center via McLoughlin) | 15.16 | 21.08 | 17.16 | 25.24 | | | | |
| Milwaukie to Clackamas regional center (Milwaukie transit center to CTC via 224/82nd) | 8.53 | 10.11 | 9.61 | 13.20 | | | | |
| Washington Square to Oregon City (WS to Main in OC via 217/I-5/I-205) | 22.70 | 33.44 | 30.30 | 52.70 | | | | |

| 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 |
| Gateway to Oregon City (Gateway transit center to Main in OC via I-205) | 18.26 | 23.69 | 22.67 | 36.15 | | | | |
| Beaverton to Hillsboro (Beaverton Central to First/Main via TV Hwy) | 18.33 | 22.42 | 21.73 | 25.83 | | | | |
| Beaverton to Washington Square (Beaverton Central to WS via 217) | 6.90 | 8.40 | 8.26 | 11.62 | | | | |
| Terminal 6 to I-205 (via Marine/Portland Rd/Columbia/US 30 to I-205/Sandy interchange | 19.24 | 22.15 | 20.40 | 23.84 | | | | |
| Terminal 6 to St. Helens Rd (via Lombard/St. Johns Bridge to US 30) | 12.16 | 12.40 | 13.02 | 13.32 | | | | |
| PDX to Gateway (Airport Way/I-205 to Gateway transit center) | 9.02 | 9.98 | 10.23 | 12.57 | | | | |
| Milwaukie to Oregon City (via McLoughlin) | 12.72 | 15.67 | 14.84 | 24.47 | | | | |
| Sunset Industrial Area to PDX (US 26/Shute to I-405/I-84/I-205 to Airport Way | 40.48 | 47.37 | 47.50 | 58.96 | | | | |
| Clackamas Industrial Area to Rivergate (via I-205 to Columbia/Marine Dr) | 33.20 | 35.71 | 35.90 | 38.16 | | | | |



| Transit 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) | 24.00 | 24.00 | To be developed | | | | | |
| Central City to Hillsboro (Pioneer Square to First Main via Sunset/Shute) | 50.00 | 50.00 | | | | | | |
| Central City to Tigard (Pioneer Square to Main via Sunset/217) | 32.00 | 35.00 | | | | | | |
| Central City to Vancouver SOV* (Pioneer Square to Vancouver transit center via I-5) | 28.00 | 33.00 | | | | | | |
| Central City to Vancouver HOV* (Pioneer Square to Vancouver transit center via I-5) | n/a | n/a | | | | | | |
| Central City to Gateway (Pioneer Square to Gateway transit center via I-84) | 22.00 | 22.00 | | | | | | |
| Central City to Gresham (Pioneer Square to City Hall via I-84/207th/223rd) | 42.00 | 42.00 | | | | | | |
| Gateway to Gresham (Gateway transit center to City Hall via 102nd/Division | 20.00 | 20.00 | | | | | | |
| Central City to Milwaukie (Pioneer Square to Milwaukie transit center via McLoughlin) | 23.00 | 28.00 | | | | | | |
| Milwaukie to Clackamas regional center (Milwaukie transit center to CTC via 224/82nd) | 12.00 | 13.00 | | | | | | |
| Washington Square to Oregon City (WS to Main in OC via 217/I-5/I-205) | 89.00 | 102.00 | | | | | | |
| Gateway to Oregon City (Gateway transit center to Main in OC via I-205) | 79.00 | 85.00 | | | | | | |

| Transit 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 |
| Beaverton to Hillsboro (Beaverton Central to First/Main via TV Hwy) | 26.00 | 26.00 | | | | | | |
| Beaverton to Washington Square (Beaverton Central to WS via 217) | 9.00 | 10.00 | | | | | | |
| Terminal 6 to I-205 (via Marine/Portland Rd/Columbia/US 30 to I-205/Sandy interchange | n/a | 61.00 | | | | | | |
| Terminal 6 to St. Helens Rd (via Lombard/St. Johns Bridge to US 30) | n/a | 21.00 | | | | | | |
| PDX to Gateway (Airport Way/I-205 to Gateway transit center) | 13.00 | 13.00 | | | | | | |
| Milwaukie to Oregon City (via McLoughlin) | 17.00 | 20.00 | | | | | | |
| Sunset Industrial Area to PDX (US 26/Shute to I-405/I-84/I-205 to Airport Way | 84.00 | 84.00 | | | | | | |
| Clackamas Industrial Area to Rivergate (via I-205 to Columbia/Marine Dr) | n/a | 95.00 | | | | | | |



### 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 locations that exceed the interim regional mobility policy for mid-day and pm peak

*Target direction:* Reduce the number of locations that exceed the interim regional mobility policy thresholds.

Maps to be developed

### 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, by mobility corridor, central city and individual regional centers).

*Target direction:* Increase non-drive alone mode share

| Location | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| System-wide | 55% | 57% | | |
| Mobility corridors | | To be developed | | |
| Portland central city | 60% | 69% | | |
| Beaverton regional center | 54% | 57% | | |
| Clackamas regional center | 52% | 54% | | |
| Gateway regional center | 54% | 56% | | |
| Gresham regional center | 54% | 54% | | |
| Hillsboro regional center | 54% | 52% | | |
| Oregon City regional center | 49% | 52% | | |
| Vancouver, WA central business district | 50% | 49% | | |
| Washington Square regional center | 50% | 53% | | |

[2] See Chapter 2, Table 2.4

### 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

| Transit productivity | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| AWD transit boardings/ revenue hour | 34 | 87 | To be developed | |

### 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

| | 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 |
| Regional trail system | To be developed | | | | | | | |

### 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:* TBD

*Target direction:* TBD

| | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| High capacity transit | To be developed | | | |
| Frequent bus | | | | |

### 9. Tons of transportation-related air pollutants

*Data source:* DEQ and Metro

*Description:* Evaluates levels of carbon monoxide, nitrogen oxide, volatile organic compounds, and particulate matter

*Target direction:* Decrease pounds of air pollutants

| **Type of pollutant** (in pounds, measured in summer) | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| Carbon monoxide (CO) | 807,055 | 561,312 | | |
| Nitrogen oxide (NOX) | 127,947 | 30,982 | | |
| Volatile organic compounds (VOC) | 74,010 | 33,027 | | |
| Particulate matter 10 exhaust (PM10) | 1,739 | 163 | | |

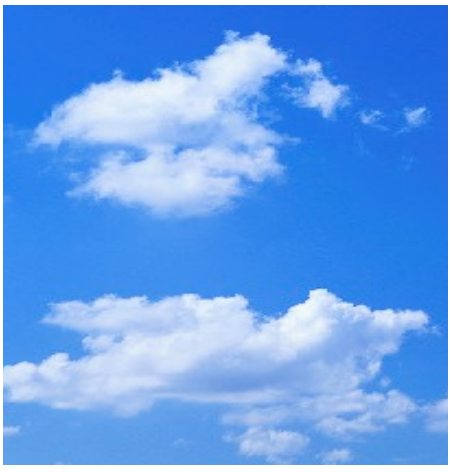
### 10. Tons of transportation-related greenhouse gas (GHG) emissions

*Data source:* DEQ and Metro

*Description:* Evaluates level of carbon dioxide, a primary greenhouse gas emissions

*Target direction:* Decrease pounds of $CO_2$

| **Carbon dioxide** (in pounds, measured in summer) | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| Transportation-source GHG emissions | 16,696 | 24,419 | | |



### 11. Acres of regionally significant Goal 5 resources potentially affected by new transportation infrastructure

*Data source:* RLIS

*Description:* Evaluates impact of transportation investments on regionally significant environmental areas

*Target direction:* Decrease impact on Goal 5 resource areas

| | 2005 Base Year | 2035 No Build | 2035 RTP Federal Priorities System | 2035 RTP Investment Strategy |
|---|---|---|---|---|
| Acres of Goal 5 areas impacted by new transportation investment | | To be developed | | |



# CHAPTER 5

# IMPLEMENTATION:

# HOW DO WE IMPLEMENT OUR STRATEGY?

## 5.1 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 req uirements.



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 a multi-pronged regional mobility corridor strategy 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 the extent of our performance we find we have some successes, but overall it 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:

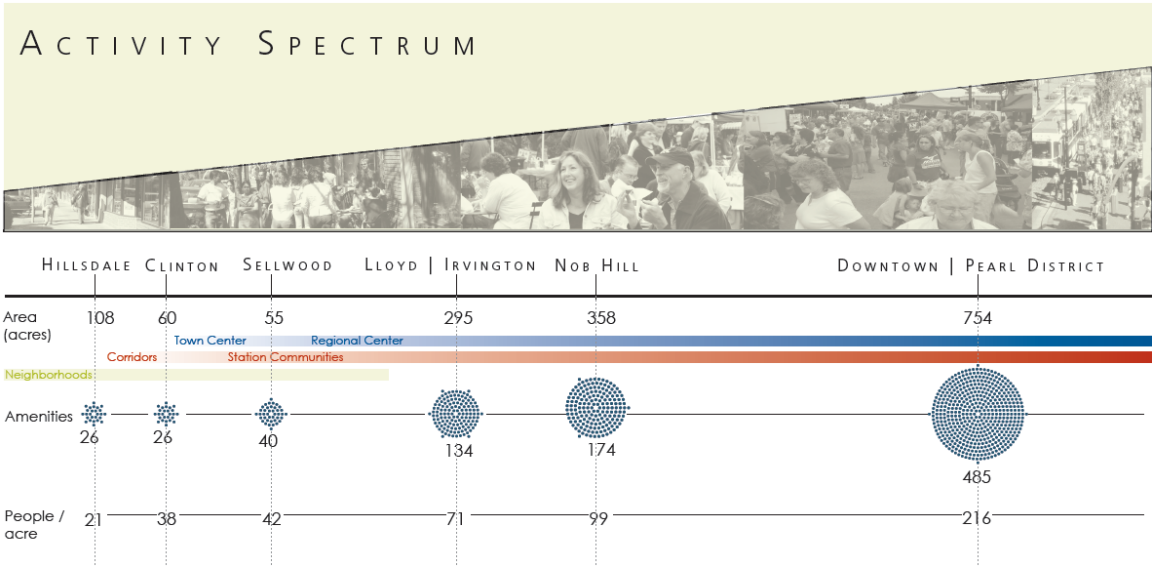
- Adoption of regional policies and strategies in local plans.

- 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 solutions identified in each mobility corridor strategy in local plans.
- Ongoing monitoring for consistency of changes to local transportation system plans (TSPs) with the RTP and other implementing agency plans, including the Oregon Department of Transportation's four-year State Transportation Improvement Program (STIP) and TriMet's Transit Implementation Plan (TIP).

## 5.2 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 downtowns, centers 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 downtowns 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 for 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 require 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.

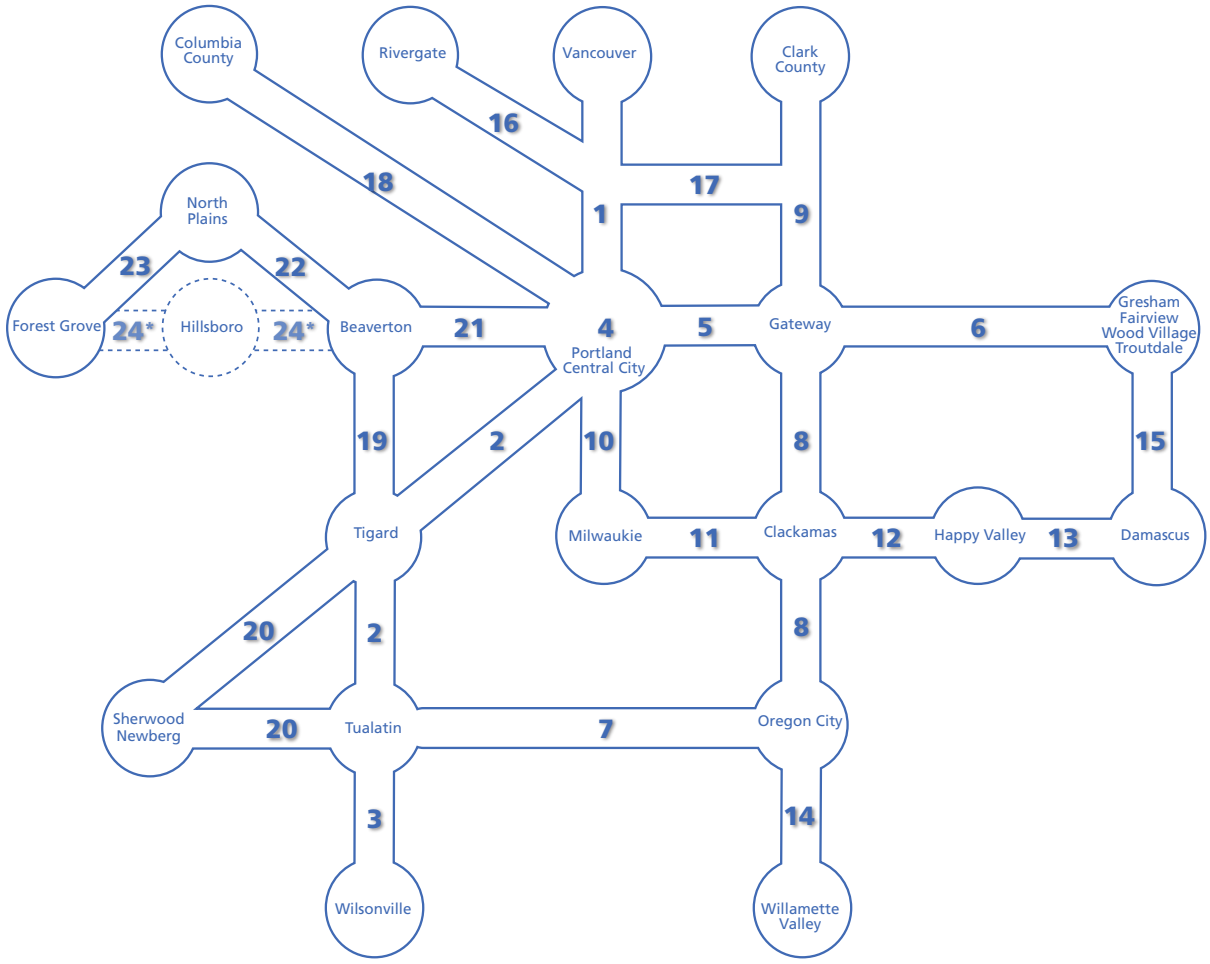
## 5.3 IMPLEMENTATION OF THE MOBILITY CORRIDOR STRATEGY

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 focuses on the region's network of freeways and highways and including parallel networks of arterial streets, regional 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 corridors have a significant influence on the development and function of land uses they serve.. The region's mobility corridors are shown in **Figure 5.1** and listed in **Table 5.1**.

**Figure 5.1**
**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 demonstrating the adequacy of the region's transportation system its planned land uses.

**Table 5.1**
**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 Damascus |
| 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 |

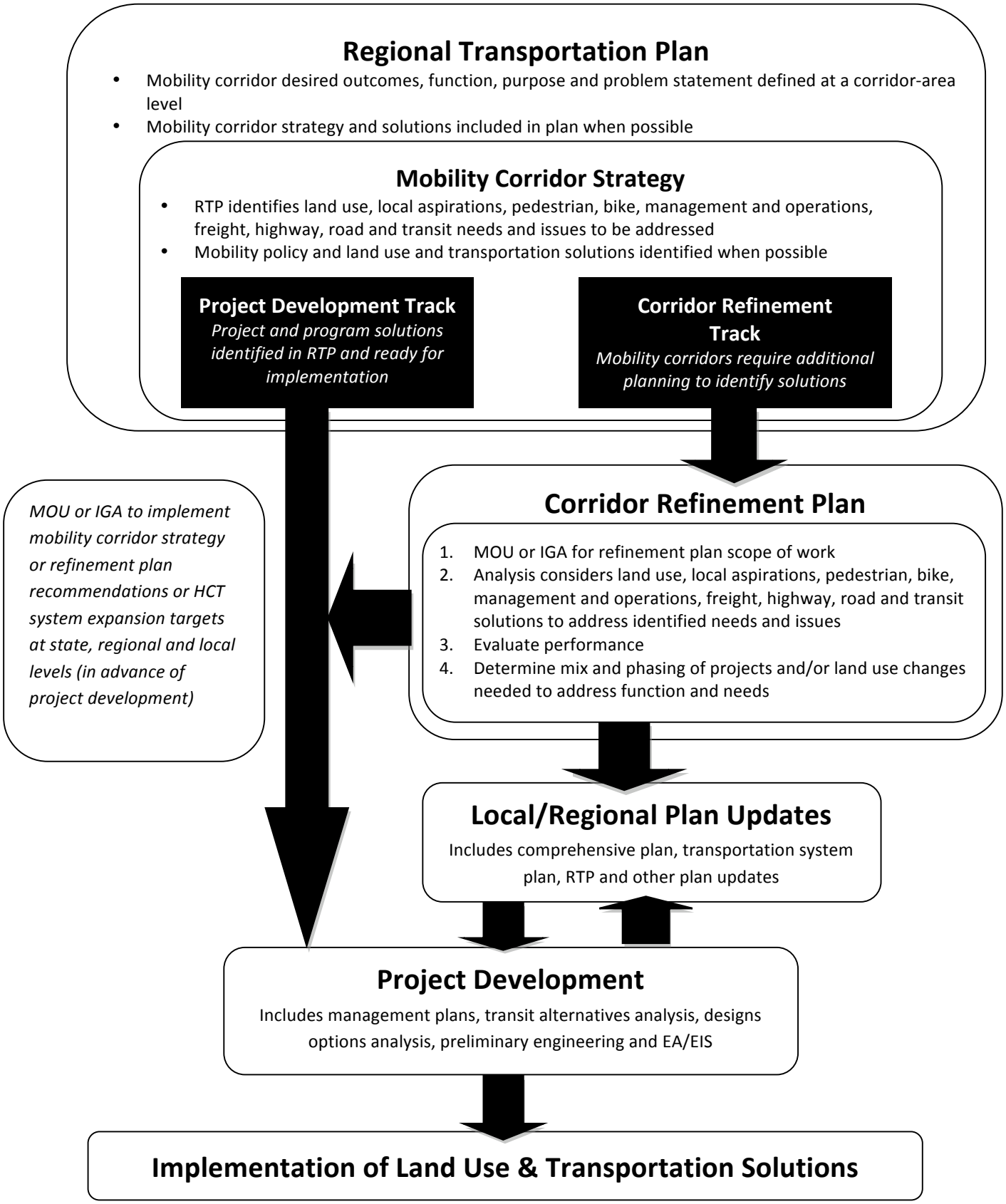
## 5.4 MOBILITY CORRIDOR STRATEGY

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.

A "Mobility Corridor Strategy" is recommended as an early scoping tool to document land use and transportation needs, function and potential solutions for each mobility corridor.

**Figure 5.2** shows the framework for how the mobility corridor strategy will be incorporated into the RTP or developed through a corridor refinement plan.

**Figure 5.2 – How A Mobility Corridor Strategy Is Developed and Implemented**



### 5.4.1 Documentation of mobility corridor strategy in RTP

A mobility corridor strategy will be developed for each of the 24 corridors that includes:

- Scoping analysis that identifies land use, local aspirations, pedestrian, bike, management and operations, freight, highway, road and transit needs and issues
- Integrated statement of mobility function and purpose defined at a corridor-area level where a concept was not included in RTP
- Potential land use and transportation solutions identified

This step would be documented in the RTP when possible and occur prior to initiating corridor refinement planning and project development activities. If the mobility corridor strategy is able to successfully document regional system needs, functions, solutions to address identified needs per the TPR, then individual project elements of the mobility corridor could move forward to project development at the state, regional or local level.

The strategy for these corridors would include a wide range of strategies and projects to progress through project development and implementation at the local, regional and/or state levels. Project development activities include: Environmental Assessment (EA)/Environmental Impact Statement (EIS) work, Design Options Analysis (DOA), management plans, and transit Alternatives Analysis (AA). Land use solutions may also be identified.

All 24 mobility corridor strategies will identify the relevant project development activities within each corridor. These strategies will be developed this fall in partnership with local agencies and will be incorporated in the final RTP to be adopted in June 2010.

### 5.4.2 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

- 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 would result a wide range of strategies and projects to progress through project development and implementation at the local, regional and/or state levels.

**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, and general location of facilities within each mobility corridor consistent with the TPR. The needs assessment was developed based on RTP policies and used to guide the identification of projects and programs during RTP system development phase.

Under the mobility corridor concept framework, when this determination 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 5.2**.

**Table 5.2**
**Mobility Corridors Recommended for Future Corridor Refinement Plans**

| |
|---|
| Mobility Corridors #2 & #3 - Portland Central City to Wilsonville, which includes I-5 South |
| 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 |

The following is language excerpted from the 2004 RTP and provides a starting for identifying needs and issues to be addressed future the corridor refinement plans. The language will be further refined to reflect the results of the system analysis that is currently underway.

The corridors are listed in order of the mobility corridor;
no priority has been established for completing these plans.

#### 5.4.2.1 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 Principle 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 creates traffic safety hazards and inhibits walking to local destinations and access to transit services.

A corridor refinement plan is proposed to address the following:

- Regional and local transit services and facilities needed to serve the Barbur 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.
- Facilities to improve bicycle and pedestrian safety along Barbur Boulevard and access to transit services and local destinations.
- Traffic management and intelligent transportation system improvements along I-5, Barbur Boulevard and other parallel arterials the corridor.
- Potential mainline freeway improvements including possible southbound truck climbing lanes.

#### 5.4.2.2 Tigard to Wilsonville (Mobility Corridor #3)

This corridor serves as the major southern access to and from the central city. The route also serves as an important freight corridor, where Willamette Valley traffic enters the region at the Wilsonville "gateway," and provides access to Washington County via Highway 217. Projections for this facility 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.

A joint ODOT and Wilsonville study[1] concluded that in 2030 widening of I-5 to eight lanes would be required to meet interstate freeway capacity standards set by Metro and ODOT and that freeway access capacity would not be adequate with an improved I-5/Wilsonville Road interchange. For these reasons, 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. A corridor refinement plan is proposed to address the following issues:

- Effects of widening I-205 on the I-5 South corridor
- Effects of the I-5 to 99W Connector study recommendations on the Stafford Road interchange and the resultant need for increased freeway access
- Effects of peak period congestion in this area on regional freight 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 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

[1] I-5/Wilsonville Freeway Access Study, DKS Associates, November 2002

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 overcrossings in West Portland town center to improve local circulation and interchange access
- Provide additional freeway access improvements in the I-5/Wilsonville corridor to improve freight mobility and local circulation, (e.g. a new Boeckman Road interchange)
- Add capacity to parallel arterial routes, including 72nd Avenue, Boones Ferry, Lower Boones Ferry and Carmen Drive
- Add overcrossings in vicinity of Tigard Triangle and City of Wilsonville to improve local circulation
- Extend commuter rail service from Salem to the central city, Tualatin transit center and Milwaukie, primarily along existing heavy rail tracks
- Additional I-5 mainline capacity (2030 demand on I-5 would exceed capacity)
- Provision of auxiliary lanes between all I-5 freeway on- and off-ramps in Wilsonville.

#### 5.4.2.3 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, the 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, the FLAG recommended that planning on I-84/I-5 interchange 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:

Scope

- Develop an overall Freeway Loop Master Plan that will guide public investment for improvements to the I-5/405Freeway Loop.
- Develop a phasing strategy for implementation of theMaster Plan. Include the currently approved Regional Transportation Plan improvements as well as new elements.
- Identify and pursue a funding strategy.

Proposed Purpose Statement

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 transit.
- 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, national, and international 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 Master Plan should include short- and long-term improvements to be built over the next 30 years.

#### 5.4.2.4 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 mobility 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

Potential transportation 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.

### 5.4.2.5 Gresham/Fairview/Wood Village/Troutdale to Damascus (Mobility Corridor #15)

There is 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 four east Multnomah County cities—Gresham, Troutdale, Wood Village and Fairview, entered a MOU that identifies North/South transportation improvements as their shared top transportation priority. A series of interim improvements to Hogan Road are adequate 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 Highway 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. A corridor refinement study is needed to identify a preferred alternative to serve statewide, regional, and local freight mobility and should include an analysis of 181st Avenue, Fairview Parkway, 242nd Avenue, and 257th Avenue.

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 intersections 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 the potential to link Mt. Hood Community College to the light rail system.

#### 5.4.2.6 Beaverton to Hillsboro (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 First Avenue in Hillsboro to the west, and from Farmington Road on the south to Baseline Road to the north. The following considerations should be addressed as part of a corridor study:

- 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 as part of the study to determine the most appropriate classifications for this route

**Next Steps for Corridor Refinement Plans**
Metro staff will develop a work program for determining the priorities for conducting future mobility corridor refinement plans later in 2009. The results of this work will be folded into the final 2035 RTP prior to adoption in summer 2010. In the interim, all corridor refinement plans identified in the RTP project list will be carried forward underneath the Metro RTP Project #11103, “Regional Planning." The process and next steps for defining corridor refinement priorities is described in Section 5.6.

### 5.4.3 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.

The region must also determine what planning activities are required in the mobility corridors where refinement plans have already been completed, or are not needed. Once corridors have established mode, function, general location, and identified potential solutions (typically through the corridor refinement plan) 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:

- Designs Option Analysis (DOA)
- Management plans
- Transit Alternatives Analysis (AA)
- Environmental Impact Statement/Environmental Assessment (EIS/EA)

All 24 of the mobility corridor strategies will identify the relevant project development activities within each corridor. These strategies will be developed this fall in partnership with local agencies and will be incorporated in the final RTP to be adopted in June 2010.



## 5.5 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).

The goal of the CMP is to develop a systematic approach that provides 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[2]

All of the 2035 RTP work on the mobility corridors and performance measures relates to this eight-step process. The RTP goals will serve as the overarching framework of the CMP. 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 supplemental strategies to reduce travel demand and get the most value from the investment.

Building upon the performance measures that are currently being tested, 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

[2] USDOT, "An Interim Guidebook on the Congestion Management Process in Metropolitan Transportation Planning." Pg. 1-1. Feb. 2008.

in those corridors. As strategies are implemented, a follow-up assessment will be conducted to determine the effectiveness of the improvements.

## 5.6 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.

### 5.6.1 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 Chapter 3, of this plan. The MTIP is approved by 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 5. Projects included in the financially constrained system are identified in Chapter 6. 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.

### 5.6.2 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).

### 5.6.3 RTP Implementation Benchmarks

The RTP establishes a general direction for implementation of needed improvements that reflects a wide variety of factors, including expected development trends, existing safety and operational deficiencies and anticipated revenue. The project timing proposed in the RTP also reflects an effort to create a balanced, multi-modal transportation system. As such, the projects are organized according to those needed during the first five, second five and final ten years of the planning period. To ensure that incremental funding decisions that occur through the MTIP follow this general RTP direction, benchmarks shall be established for monitoring RTP implementation over time, and:

1. The benchmarks shall be tied to Chapter 2 objectives and performance targets and shall address the relative performance of the system and the degree to which the various RTP projects are being implemented.

2. Findings for consistency with the benchmarks shall be developed as part of the biennial MTIP update, or as necessary in conjunction with other RTP monitoring activities.

In addition, benchmarks should be designed to track the following general information to the degree practicable for ongoing monitoring:

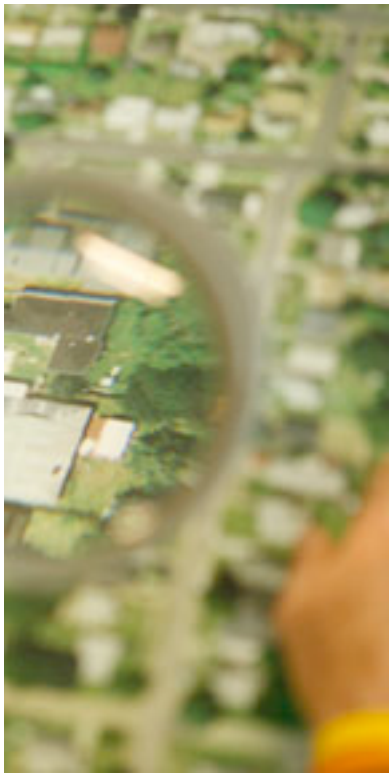
- Progress on financing the strategic system
- Progress in completing the modal systems described in Chapter 2
- Relative change in system performance measures
- Progress toward land use objectives related to the RTP
- Relative comparisons with similar metropolitan regions on key measures
- Progress toward performance targets in Chapter 2

## 5.7 UNRESOLVED ISSUES TO ADDRESS PRIOR TO FINAL RTP ADOPTION IN 2010

This draft plan does not address several issues, some of which have been noted throughout the documents. This section provides a brief description of the remaining work needed to finalize the plan. This work will be conducted with local, state and regional partners between fall 2009 and spring 2010.

### 5.7.1 Develop and conduct a process to prioritize completion of corridor refinement plans

Because there are more corridors requiring refinement plans than there are resources to accomplish studies, Metro will facilitate a credible and transparent corridor refinement plan prioritization process to evaluate the mobility corridors that need refinement plans. Building from lessons learned in previous corridor refinement planning prioritization processes, and consistent with revised RTP goals and policies, the following process is recommended:



- Engage the public, agencies and other stakeholders
- Review mobility corridor definitions and boundaries
- Review purpose and content of corridor plans (to aid in public understanding)
- Define criteria for evaluating the corridor refinement plans
- Develop scoring procedure and guidance
- Technical evaluation (apply criteria; interpret results)
- Select the next corridor(s) for refinement planning)
- Metro Council Adoption (as part of the RTP)
- Develop appropriate work program
- Initiate planning process for selected corridor(s) through the Unified Planning Work Program (UPWP)

It is important for stakeholders and the public to be able to raise issues and concerns, and to offer suggestions to guide selection of the next corridor refinement plan. In concert with ongoing RTP public review and engagement activities, Metro will solicit feedback from the public as well as partner agencies and other stakeholders on the evaluation criteria and factors relating to individual corridors. As part of the selection process, staff will consider balanced approaches, including qualitative factors such as jurisdictional interest, public opinion and support, project momentum and synergistic benefits within a mobility corridor.

Agency and stakeholder coordination would be accomplished primarily through Metro's standing committees. It is also possible that a short-term working group drawn from various committees (TPAC, JPACT, MTAC and MPAC) could also provide a forum for the more detailed work of developing and refining the screening process, and evaluating the results.

The process for conducting refinement plans would not begin until adoption of the 2035 RTP by ordinance in June 2010. Additionally, it will influence, but not affect the timeline for planning processes set to begin before the final RTP adoption. Two planning projects fall into this category:

- Tualatin Valley Highway Corridor Refinement Plan – The City of Hillsboro received ODOT TGM grant funds to conduct this study, but it only covers a portion of the mobility corridor from Beaverton to Hillsboro recommended for refinement.

- Near Term High Capacity Transit Alternatives Analysis (AA) – JPACT requested a federal earmark to begin a transit AA for the Central City to Tigard mobility corridor. If the earmark is awarded, this project development work could begin in 2010. The three near term HCT corridors are Portland Central City to Tigard (Barbur Blvd./99W Corridor), Portland Central City to Gresham (Powell Blvd. Corridor), and Beaverton to Wilsonville (upgrades to WES corridor).

### 5.7.2 High Capacity Transit System Expansion Policy (SEP)

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.

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 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.

More work is needed to define how the SEP policy will be implemented. This work will 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.

More work is needed to define how the SEP policy will be implemented. This work will is underway and will be brought forward for future policy discussion by JPACT, MPAC and the Metro Council.

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.

### 5.7.3 Develop alternate mobility standards

In August 2009, ODOT recommended that the Metro region request the Oregon Transportation Commission to consider adopting alternative mobility standards as part of the 2035 RTP. Additional work is needed to finalize the aggregate set of performance targets and indicators that will be used to make an "adequacy" determination per the Oregon Transportation Planning Rule. In the interim, the targets Table 2.3, the regional mobility policy identified in Table 2.4 and regional modal targets in Table 2.5 will serve as a starting point for this work.

The RTP and regional transportation functional plan must include all feasible actions. The plan must fully demonstrate the infeasibility of meeting the mobility policy in Table 2.4. Refinements to Table 2.4 and Table 2.5 and the regional transportation functional plan will be developed prior to final adoption of the RTP update in 2010.

### 5.7.4 Finalize RTP performance targets and performance measures to be included in the RTP

Additional work is needed to refine the performance targets in Table 2.3 and the measures listed in Chapter 4. Refinements will be informed by the system evaluation that is underway and future policy discussion by JPACT, MPAC and the Metro Council. A broader set of performance indicators that include land use as well as equity, economic and environmental measures will be developed as part of the Making the Greatest Place effort in 2010. The RTP work will inform this effort. In addition, other agencies and jurisdictions are currently considering or have adopted similar performance measure systems for use in informing the decision-making process. As the region increasingly shares similar desired outcomes, the need to use similar performance measures increases. To take advantage of this, Metro is embarking on an effort with PSU's Institute of Metropolitan Studies to develop a coordinated regional approach to develop and utilize performance measures. As this new regional approach is developed, the performance indicators identified in this RTP can be included into a broader, even more holistic performance measure system for the region.

### 5.7.5 Develop local plan implementation schedule and functional plan amendments

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. In some cases, it may be appropriate for local plan updates to take longer than one year, given where a jurisdiction is in the periodic review process, the length of time since the last TSP update or other factors. Metro will work with the cities and counties to develop a timeline for completing local TSP updates.

In addition, the RTP includes a number of new policies and strategies that are appropriate to include in the regional transportation function plan. Policies to be addressed include the RTP system concepts, HCT system expansion policy (SEP), parking management, mixed-use and transit-oriented development, and other policies that would help the region document compliance with State Transportation Planning Rule's standards for increasing the availability of transportation choices and reducing automobile reliance,[3] the Oregon Highway Plan Mobility Standards, including Actions 1F.3 and 1F.5[4] and level of analysis needed for state facilities in future RTP, local TSP and comprehensive plan amendments.

### 5.7.6 Prepare system analysis of projects and programs recommended in Chapter 3

Modeling of the recommended projects is underway. The results will be documented in Chapter 4.

[3] See 0060-012-035(4) and (5).
[4] Action 1F.3 refers to potential alternative highway mobility standards and Action 1F.5 refers to the performance standard to "avoid further degradation" when transportation improvements are not planned within the planning horizon to meet adopted performance standard(s).

### 5.7.7 Document mobility strategy for each mobility corridor

As described in Section 5.3.1, a mobility corridor strategy will be developed for each of the 24 corridors that includes:

- Scoping analysis that identifies land use, local aspirations, pedestrian, bike, management and operations, freight, highway, road and transit needs and issues
- Integrated statement of mobility function and purpose defined at a corridor-area level
- Potential land use and transportation solutions

### 5.7.8 Review and identify refinements to current rural arterial policy



The 2000 RTP also 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).

The traffic pressure on these rural routes continues to grow, and the current RTP update provides an opportunity to affirm the existing Rural Arterial designations, or consider fine-tuning where these designations have been applied (see Figure 2.12 in Chapter 2). There is a consensus that recent traffic safety issues that have emerged on some of these routes warrants a fresh look at whether urban traffic on Rural Arterials is being effectively addressed within the scope of the RTP.

To address concerns about the existing network of rural arterials, Metro will work with the Transportation Policy Alternatives Committee (TPAC) and local jurisdictions to:

- Evaluate Rural Arterials, and identify facilities that should be adjusted according to the "Farm-to-Market" or "Urban-to-Urban" classifications on the RTP Regional Streets and Throughways System map if it is possible and appropriate to make this change as part of the current RTP update.

- Identify Rural Arterials that may warrant a chance in designation, or dropping from the RTP, for further review as part of local Transportation System Plan (TSP) development (following the RTP update). In this instance, the facility would be retained in the RTP for the purpose of the current RTP update, and local TSP recommendations for the facility reflected in the next RTP update.

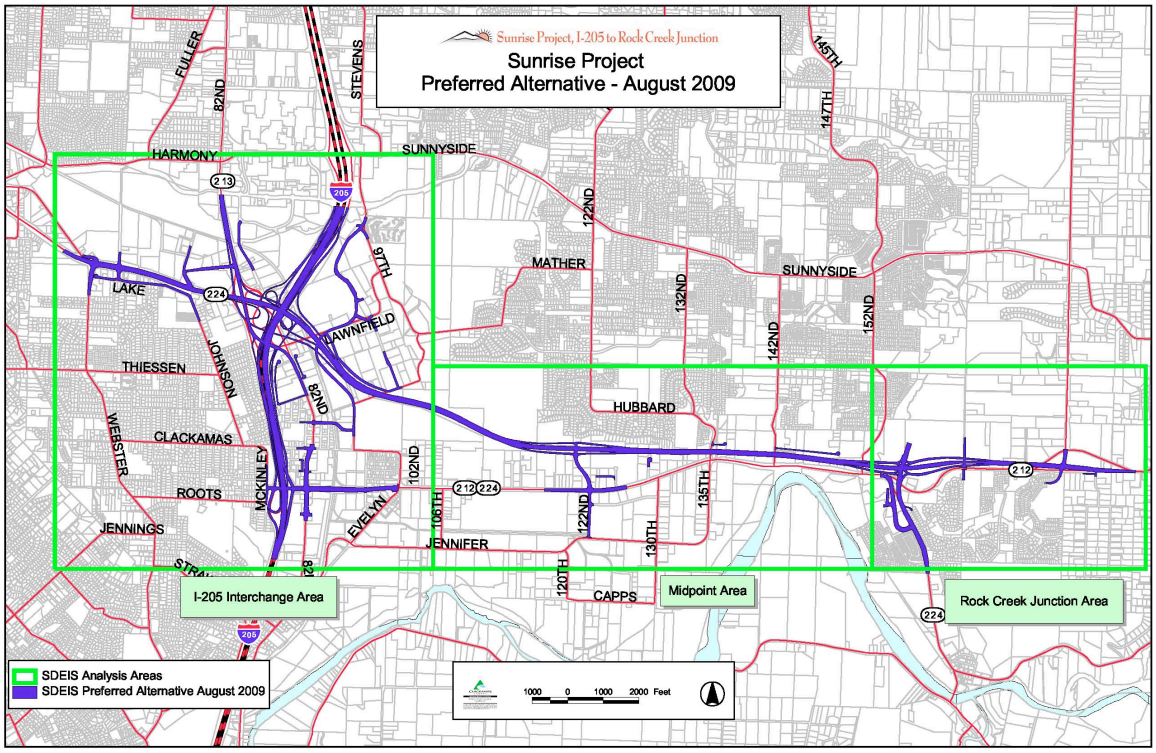
- Identify Rural Arterials that cross jurisdiction boundaries, and where a clear consensus cannot be reached on whether to retain or reclassify the facility to address unresolved traffic issues. For these facilities, Metro would work with the affected jurisdictions to coordinate a multi—agency process for further evaluating the classification as part of local TSP development, and finding a consensus recommendation for the next RTP update. The unresolved issues for the facility would be documented in the current RTP for reference in the interim.

- Identify Rural Arterials that clearly do not rise to this function of as part of the current RTP update, and drop these facilities from being designated in the plan.

### 5.7.9 Review and identify refinements RTP system map designations and mobility corridor strategy to incorporate recommendations related to the Sunrise Project and Damascus area, I-5/99W connector study area and 242nd Avenue/Hogan Road in Multnomah County

**Sunrise Project and Damascus TSP /OR 212 corridor study recommendations**
In July 2009, the Sunrise Project's Policy Review Committee (PRC) selected a Preferred Alternative, shown in **Figure 5.3**. 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.

**Figure 5.3**
**Sunrise Project Preferred Alternative (**as Recommended by the project's Policy Review Committee)




A detailed description of the Sunrise Project Preferred Alternative is included in Appendix 4.

The draft RTP includes some phases of the projects in the preferred alternative and updates Figures 2.10 and 2.12 in Chapter 2 to illustrate the conceptual Damascus parkway east of the Sunrise Project analysis area in place of the conceptual alignment developed for the Sunrise Corridor Draft Environmental Impact statement (DEIS) in 1993. The parkway reflects recommendations from the Damascus/Boring Concept Plan completed in 2005. 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.

### I-5/99W Connector study recommendations

In May 2009, the chair of the Washington County Board of Commissioners, on behalf of the Project Steering Committee, requested that the RTP be amended to incorporate the Committee's recommendations on the I-5/99W Connector study. The Committee's recommendation includes a package of arterial improvements, referred to as "Alternative 7" and set of conditions as the preferred alternative for addressing transportation needs in the southwest Washington County portion of the region. The study recommendations and conditions of approval can be found at http://www.i5to99w.org. The formal request and conditions are included in Appendix 5.

In response, the draft RTP includes projects and changes to Figures 2.10 and 2.12 in Chapter 2 to reflect the Committee's recommendations. The recommended transportation and land use solutions and conditions will also be documented in the mobility strategy to be developed prior to final adoption of the RTP in 2010.

**Fairview/Wood Village/Troutdale/Gresham to Damascus mobility corridor**

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/US 26 connectivity as their shared top transportation priority. Section 5.3.2.5 of the RTP recommends a corridor refinement plan be conducted for the Fairview/Wood Village/Troutdale/Gresham to Damascus mobility corridor (Mobility Corridor #15). 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 US 26, 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.

The RTP currently designates the 242nd Avenue/Hogan Road corridor as a principal arterial connection between I-84 and US 26, pending completion of the corridor refinement plan. This designation includes a dashed conceptual alignment north of Glisan Street that connects to I-84. Staff from Multnomah County and the cities of Troutdale and Wood Village have requested the removal of the dashed alignment north of 242nd so as to not bias the outcome of the corridor refinement plan.

## 5.8 UNRESOLVED ISSUES TO BE ADDRESSED POST-RTP ADOPTION

### 5.8.1 Climate Change

In 2008-09, a number of potential requirements for transportation agencies to integrate greenhouse gas considerations in the transportation planning process were being proposed and debated at the state and federal level. Some of would require future RTPs to include goals, targets and strategies to reduce greenhouse gas emissions. In anticipation of future requirements, this RTP includes specific CO2 reduction targets and policy objectives and actions that aim reduce the need 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 meet 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.

In summer of 2009, the Oregon Legislature passed House Bill 2001, containing a number of policy and financial changes affecting transportation planning in this region. One provision of the bill required Metro to conduct a series of "scenarios" aimed at demonstrating ways to reduce greenhouse gas emissions (GHGs) in the Portland region in order to meet targets that would be developed by state agencies. Metro is currently in the process of developing a work program and timeline for performing these scenarios. This also includes identifying enhancements and peer validations that would better support this technical analysis. The scenarios analysis is planned to begin summer in 2010 and the resulting preferred scenario, policies and strategies will be addressed in the next RTP update. This work will evaluate a full array of land use and transportation strategies.

### 5.8.2 Regional Funding 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.

### 5.8.3 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 2010 due to the significant construction in the downtown Portland transit mall area. 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.

### 5.8.4 Parking management

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. 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.

### 5.8.5 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 is 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.

### 5.8.6 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.

### 5.8.7 ODOT District and Regional Highways

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.

### 5.8.8 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.

### 5.8.9 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. A regional action plan could also be used to bolster regional pedestrian policies, which did not receive as much attention as other policies in the 2035 RTP update.

### 5.8.10 Best Design Practices in Transportation

Starting in October 2009, 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 outcomes of this process will be incorporated into the next RTP update.

### 5.8.11 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 5.4** 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 5.4**
**National Vision for High Speed Rail in America**



### 5.8.12 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).

### 5.8.13 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.

## 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** – The cost of housing as a percentage of household income. Housing is considered unaffordable when housing costs exceed a threshold percentage – nationally that standard ranges from 25 to 33 percent.

**Alternative transportation mode** – All passenger modes of travel except for single-occupancy vehicles, including bicycling, walking, public transportation, carpooling and vanpooling.

**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. Stops are generally spaced one-quarter mile apart or more. Most stops have significant passenger infrastructure, including waiting areas that are weather protected. Additional passenger amenities at stops can 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).

**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

[1] http://www.epa.gov/climatechange/basicinfo.html. Accessed on December 17, 2007.

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.

**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 3.16 (Regional Motor Vehicle Performance Measures) or 3.17 (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.

**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 that runs more frequently than bus rapid transit, but is slower because it makes more stops, providing corridor service rather than nodal service along selected arterial streets. This service typically runs at least every 10 minutes and includes 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 (CO2), nitrous oxide (N2), methane (CH4), hydrofluorocarbons (HFCs), perfluorocarbons (PFC s), and sulfur hexafluoride (SF6).

**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.
- 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.

[2] http://www.epa.gov/climatechange/basicinfo.html. Accessed on December 17, 2007.

**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.

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.

**Housing affordability** – The availability of housing such that no more than 30 percent of monthly household income need be spent on shelter.

**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

[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.

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)** – A frequent Light rail transit (LRT) is a system of modern passenger rail cars operating on a fixed guideway within an exclusive right-of-way, or in the street with mixed traffic, connecting the central city with regional centers. LRT also serves station communities and 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 during midday base periods with limited stops and operates at higher speed outside of downtown Portland. Light rail cars are commonly powered by overhead electric lines or 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 industrial areas, and often provide access to 2040 Target Areas and the regional transit system. Local transit services are characterized by frequent stops along the route. 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 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 tram, streetcar, local bus, mini-bus and para-transit.

**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.

**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.

**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.

**Interim 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.

**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 provide disincentives for commuting by single-occupancy vehicles.

**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 projectlevel, 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 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 bus** – Bus service that operates on arterial streets with typical frequencies of 15 minutes during most of the day, and may operate seven days per week with conventional stop spacing along the route. Transit preferential treatments and passenger infrastructure such as bus shelters, special lighting, transit signal priority and curb extensions are appropriate at high ridership locations.

**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 transit network** – The network of transit operates primarily on arterial streets. Service operates at intervals of 15-minute

frequencies or better (all day and weekends when possible) and is intended to operate at higher speeds to better serve longer trips. This network also includes preferential treatments, such as transit signal priority and queue bypasses. 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 or serve intermodal facilities, major 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** – A generally gravel or concrete- or asphalt-surfaced facility. The term collectively refers to an arterial.

**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-route 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 and streetcar routes may include transit preferential treatments, such as transit signal priority systems, and enhanced passenger infrastructure, such as covered bus shelters, curb extensions and special lighting.

**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.

**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

## ACKNOWLEDGEMENTS

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 three years to help develop the RTP.

Thanks to the following staff and consultants who contributed to the content and production of this report.

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*In memory of Ron Sarver, lead printer*

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# 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.

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Carlotta Collette, District 2
Carl Hosticka, District 3
Kathryn Harrington, District 4
Rex Burkholder, District 5
Robert Liberty, District 6

Auditor – Suzanne Flynn

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# Appendices

**APPENDIX 1 – DRAFT 2035 RTP INVESTMENT STRATEGY**

**APPENDIX 2 – AREA OF SPECIAL CONCERN DESIGNATIONS**

**APPENDIX 3 – SUNRISE PROJECT PREFERRED ALTERNATIVE**

**APPENDIX 4 – I-5/99W CONNECTOR STUDY RECOMMENDATIONS**

*Additional appendices will be included in the final draft.*

| Metro Project ID | Nominating Agency | Facility Owner / Operator | Project/Program Name | Project Start Location (Identify starting point of project) | Project End Location (Identify terminus of project) | Description | Estimated Cost ($2007) | 2040 Land Use | Time Period | Federal Priority |
|---|---|---|---|---|---|---|---|---|---|---|
| 10000 | Clackamas Co. | Clackamas Co. | Linwood/Harmony Rd./ Lake Rd. Overcrossing/ Intersection | Linwood/Harmony/ Lake Rd. | | Add NB right turn lane, add EB right turn lane, add WB left turn lane and grade separate UPRR. | $20,000,000 | Regional Center | 2008-2017 | X |
| 10001 | Clackamas Co. | ODOT | Johnson Creek Blvd. Interchange Improvements | JCB/I-205 interchange | | Add loop ramp and NB on-ramp; realign SB off-ramp. | $9,800,000 | Employment area | 2008-2017 | X |
| 10002 | Clackamas Co. | Clackamas Co. | Johnson Creek Blvd. Improvements | 45th Ave. | 82nd Ave. | Widen from three to five lanes and widen bridge over Johnson Creek. | $38,790,000 | Industrial area | 2018-2025 | X |
| 10003 | Clackamas Co. | Clackamas Co. | Harmony Rd. Improvements | Hwy 224 | SE 84th Ave. | Widen to five lanes, add bike lanes and sidewalks. | $23,400,000 | Regional Center | 2008-2017 | X |
| 10004 | Clackamas Co. | Clackamas Co. | Otty Rd. Improvements | 82nd Ave. | 92nd Ave. | Widen, add turn lanes, sidewalks, on-street parking, central median and landscaping. | $7,340,000 | Employment area | 2008-2017 | X |
| 10005 | Clackamas Co. | Clackamas Co. | West Monterey Extension | 82nd Ave. | Fuller Rd. | New two-lane extension. | $6,200,000 | Regional Center | 2018-2025 | X |
| 10006 | Clackamas Co. | Clackamas Co. | Monterey Improvements | 82nd Ave. | 90th Ave. | Widen to three lanes from 82nd to I-205, add main street amenities. | | Regional Center | 2008-2017 | |
| 10007 | Clackamas Co. | Clackamas Co. | Causey Ave. Overcrossing | over I-205 | Bob Schumacher Rd. | Extend new three-lane crossing over I-205. | $14,800,000 | Regional Center | 2018-2025 | X |
| 10008 | Clackamas Co. | Clackamas Co. | 79th Ave. Extension | Johnson Creek Blvd. | King Rd. | Build N-S collector west of 82nd Ave. | $12,780,000 | Employment area | 2008-2017 | X |
| 10009 | Clackamas Co. | Clackamas Co. | Fuller Rd. Improvements | Otty Rd. | Johnson Creek Blvd. | Widen street and add turn lanes, sidewalks, on-street parking, central median and landscaping. | $4,000,000 | Employment area | 2008-2017 | X |
| 10011 | Clackamas Co. | Clackamas Co. | 122nd/Hubbard/135th Improvement | Sunnyside Rd. | Hwy. 212 | Add bike lanes and sidewalk - complete gap. | $1,100,000 | Outer neighborhood | 2018-2025 | |
| 10013 | Clackamas Co. | Clackamas Co. | Boyer Dr. Extension | 82nd Ave. | Fuller Rd. | New two-lane extension. | $2,520,000 | Employment area | 2008-2017 | X |
| 10014 | Clackamas Co. | Clackamas Co. | 82nd Ave. Multi-Modal Improvements | Clatsop Ave. | Monterey Ave. | Widen to add sidewalks, lighting, central median, planting strips and landscaping. | $9,000,000 | Regional Center | 2026-2035 | X |
| 10015 | Clackamas Co. | Clackamas Co. | Causey Ave. Extension | Bob Schumacher Rd. | W.Otty Rd. | Construct new two lane extension. | | Regional Center | 2008-2017 | |
| 10016 | Clackamas Co. | Clackamas Co. | Fuller Rd. Extension | Otty Rd. | King Rd. | Construct new two lane extension. | $7,500,000 | Employment area | 2026-2035 | |
| 10017 | Clackamas Co. | Clackamas Co. | Clackamas Regional Center Bike/Pedestrian Corridors | Clackamas Regional Center area | | Provide bike and pedestrian connections in the Regional Center. | $5,775,000 | Regional Center | 2018-2025 | X |
| 10018 | Clackamas Co. | Clackamas Co. | 82nd Ave. Blvd. Design Improvements | Monterey Ave. | Sunnybrook Blvd. | Complete boulevard design improvements. | $5,400,000 | Regional Center | 2008-2017 | X |
| 10019 | Clackamas Co. | Clackamas Co. | West Sunnybrook Rd. Extension | 82nd Ave. | Harmony Rd. | Construct three-lane extension. | $6,970,000 | Regional Center | 2008-2017 | X |
| 10020 | Clackamas Co. | Clackamas Co. | Clackamas County ITS Plan | Countywide | | Deploy traffic responsive signal timing, ramp metering, traffic management equipment for better routing of traffic during incidents along the three key ODOT corridors - I-205, I-5, 99E. Install signal controller upgrades and update county ITS plan. | $6,500,000 | Regional Center | 2008-2017 | X |
| 10021 | Clackamas Co. | Clackamas Co. | 102nd Ave./Industrial Way Improvements | Hwy 212 | Lawnfield Rd. | Extend Industrial Way from Mather Road to Lawnfield Road. | $8,570,000 | Industrial area | 2008-2017 | X |
| 10022 | Clackamas Co. | Clackamas Co. | SE 82nd Dr. Improvements | Evelyn | Lawnfield Rd. | Widen to five lanes to accommodate truck movement, upgrade and improve intersection flow and operation | $34,000,000 | Industrial area | 2008-2018 | X |
| 10023 | Clackamas Co. | Clackamas Co. | SE 82nd Dr. Improvements | Hwy 212 | Gladstone PH2 | Widen to five lanes. | $17,627,801 | Industrial area | 2026-2035 | |
| 10024 | Clackamas Co. | ODOT | McLoughlin Blvd. Improvement | Milwaukie | Gladstone | Complete multi-modal improvements. Add better connections from adjacent neighborhoods to transit | $5,000,000 | 2040 Corridor | 2008-2017 | X |
| 10025 | Clackamas Co. | Clackamas Co. | Beavercreek Rd. Improvements Phase 2 | Hwy 213 | Clackamas Community College | Widen to 5 lanes with sidewalks and bike lanes. | $5,800,000 | Industrial area | 2008-2017 | X |

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| 10026 | Clackamas Co. | Clackamas Co. | Beavercreek Rd. Improvements Phase 3 | Clackamas Community College | Urban Growth Boundary | Widen to 4 lanes with sidewalks and bike lanes. | $12,920,000 | Industrial area | 2008-2017 | X |
| 10029 | Clackamas Co. | Clackamas Co. | Stafford Rd Improvements | I-205 | Rosemont Rd. | Widen to three lanes including bike lanes and sidewalks. | $45,300,000 | Outer neighborhood | 2018-2025 | X |
| 10030 | Clackamas Co. | Clackamas Co. | Stafford Rd. Improvements | I-205 | Boeckman Rd. | Reconstruct, widen and add turn lanes. | $26,759,562 | Outer neighborhood | 2018-2025 | |
| 10031 | Clackamas Co. | Clackamas Co. | Carmen Dr. Improvements | I-5 | Quarry | Reconstruct and widen to three lanes to include bike lanes. | $8,979,923 | Inner neighborhood, Town Center | 2026-2035 | |
| 10033 | Clackamas Co. | Clackamas Co. | 172nd Ave. Improvements | Foster Rd./190th | Sunnyside Road | Widen to five lanes including new bridge. Construct connection to 190th. | $37,480,000 | Industrial area | 2008-2017 | X |
| 10035 | Damascus | Damascus | Foster Rd. Improvements | Hwy 212 | 172nd Ave. | Widen to three lanes | $24,000,000 | 2040 Corridor | 2026-2035 | |
| 10036 | Happy Valley | Clackamas Co. | 145th Ave. | Clatsop St. | Monner Rd. | Widen to 3 lanes with sidewalks and bike lanes, add traffic signals. | $7,700,000 | Outer neighborhood | 2018-2025 | |
| 10037 | Happy Valley | Clackamas Co. | 162nd Ave. | Hagen Rd. | Palermo Ave. | Widen to 3 lanes with sidewalks and bike lanes, add traffic signals. | $2,600,000 | Outer neighborhood | 2018-2025 | |
| 10038 | Clackamas Co. | Clackamas Co. | 242nd | Multnomah County line | Hwy. 212 | Reconstruct 242nd and widen to three lanes. The Damascus/Boring Concept Plan identifies 242nd as a community bus transit classification. | $35,000,000 | Town Center | 2018-2025 | X |
| 10040 | Happy Valley | Clackamas Co. | 162nd Ave. Extension North | Hagen Rd. | Clatsop St. | Construct a new 3 lane roadway with traffic signals. | $27,970,000 | Outer neighborhood | 2018-2025 | X |
| 10041 | Happy Valley | Clackamas Co. | 162nd Ave. Extension South | 157th Ave. | Hwy. 212 | Construct a new 3 lane roadway with traffic signals, bridge over Rock Creek. | $22,610,000 | Employment area, Industrial area | 2008-2017 | X |
| 10042 | Clackamas Co. | Clackamas Co. | Lawnfield realignment | Lawnfield Rd. | Sunnybrook Blvd. | Realign the existing Lawnfield Rd. Road from 98th to 97th, reduce the grade from 18% to 8%. | $25,650,000 | Industrial area | 2008-2017 | X |
| 10043 | Clackamas Co. | Clackamas Co. | Borland Rd. | SW 65th Ave. | Stafford Rd. | Widen to 4 lanes with left-turn lanes. | $25,141,861 | Employment area, Outer neighborhood | 2018-2025 | |
| 10045 | Happy Valley | Clackamas Co. | Clatsop St. | 132nd Ave. | 162nd Ave. | Widen to 3 lanes with sidewalks and bike lanes, add traffic signals. | $7,800,000 | Outer neighborhood | 2018-2025 | |
| 10047 | Clackamas Co. | Clackamas Co. | Holcomb Blvd. | Abernethy Rd. | Bradley Rd. | Reconstruct & widen (urban). | $20,790,000 | Outer neighborhood | 2008-2017 | X |
| 10048 | Clackamas Co. | Clackamas Co. | Holly Lane | Redland Rd. | Maple Lane | Turn lanes, bike lanes, sidewalks, intersection improvements, bridge replacement. | $20,740,000 | Outer neighborhood | 2018-2025 | X |
| 10050 | Clackamas Co. | Clackamas Co. | Johnson Rd., Clackamas Rd., McKinley Rd. | Lake Rd. | Hwy 212 | Reconstruct & widen (urban). | $8,000,000 | Inner neighborhood | 2026-2035 | |
| 10052 | Clackamas Co. | Clackamas Co. | Tolbert Road | SE 82nd Dr. | Industrial Way | Extend Mather Rd. across railroad to SE 82nd Dr. | $17,250,000 | Industrial area | 2008-2017 | X |
| 10054 | Clackamas Co. | Clackamas Co. | Oatfield Rd. | Oatfield /Park Intersection | | Signal, left turn lanes. | $1,358,150 | Outer neighborhood | 2008-2017 | |
| 10055 | Clackamas Co. | Clackamas Co. | Oatfield Rd. | Oatfield / Hill Intersection | | Left turn lanes, signal if warranted. | $1,653,700 | Outer neighborhood | 2008-2017 | |
| 10056 | Clackamas Co. | Clackamas Co. | Oatfield Rd. | Oatfield/McNary Intersection | | Add turn lanes. | $1,043,510 | Outer neighborhood | 2008-2017 | |
| 10057 | Clackamas Co. | Clackamas Co. | Redland Rd. | Abernethy Rd. | UGB | Turn lanes, bike lanes, sidewalks, intersection improvements, bridge replacements (2). | $15,060,000 | Town Center | 2008-2017 | X |
| 10058 | Clackamas Co. | Clackamas Co. | River Rd. | River Rd./Courtney intersection | | Add turn lanes to four legs of the intersection. | $1,560,550 | Outer neighborhood | 2008-2017 | |
| 10059 | Clackamas Co. | Clackamas Co. | Roots Rd./McKinley Rd. | Webster Rd. | Hwy 212 | Bring to urban standards. | $10,426,862 | Outer neighborhood | 2026-2035 | |

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| 10060 | Happy Valley | Clackamas Co. | SE 132nd Ave. | King Rd. | Clatsop Rd. | Widen to 3 lanes. | $3,047,500 | Outer neighborhood | 2026-2035 | |
| 10061 | Clackamas Co. | Clackamas Co. | SE 142nd Ave. | Sunnyside Rd. | Hwy 212 | Widen to 3 lanes. | $10,374,007 | Inner neighborhood | 2026-2035 | |
| 10063 | Clackamas Co. | Clackamas Co. | Thiessen Rd. | Thiessen/Hill Intersection | | Widen, add left turn lane on Thiessen Rd. | $1,248,210 | Outer neighborhood | 2018-2025 | |
| 10064 | Clackamas Co. | Clackamas Co. | Webster Rd. | Webster/Jennings and Roots intersection | | Construct traffic signals, turn lanes. | $3,722,090 | Outer neighborhood | 2008-2017 | |
| 10065 | Clackamas Co. | Clackamas Co. | Webster Rd. | Webster/Strawberry Ln. intersection | | Traffic signal. | $1,102,850 | Outer neighborhood | 2018-2025 | |
| 10066 | Clackamas Co. | Clackamas Co. | 92nd/Johnson Creek Blvd. intersection | 92nd/JCB intersection | | Add turn lanes on 92nd (northbound left at JCB, and northbound right at Idleman). | $1,000,000 | Employment area | | X |
| 10067 | North Clackamas PRD | Clackamas Co. | Phillips Creek Trail | I-205 Trail | N Clackamas Greenway | Build trail through Clackamas Town Center for access to light rail. | $2,270,000 | 2040 Corridor | 2008-2017 | X |
| 10069 | Gresham | Gresham | East Buttes Powerline Trail | Springwater/Gresham-Fairview trail | Clackamas Greenway | Build trail linking Gresham and the Clackamas River. | $1,900,000 | 2040 Corridor | 2008-2017 | X |
| 10070 | North Clackamas PRD | | Mt. Scott Creek Trail | Mt. Talbert | Springwater corridor | Build trail to Mt. Talbert regional park. | $5,100,000 | 2040 Corridor | 2008-2017 | X |
| 10071 | North Clackamas PRD | | Scouter's Mt. Trail | Springwater/Powell Butte | Springwater corridor | Build trail to/on Scouter's Mt. | $9,070,000 | 2040 Corridor | 2008-2017 | X |
| 10072 | Damascus | | Sunnyside Rd. Frequent Bus | Clackamas TC | Damascus TC | Construct improvements that enhance Frequent bus service. | $1,000,000 | Town Center | 2008-2017 | X |
| 10073 | Damascus | ODOT | Hwy.-212 intersections | SE 162nd | Anderson Rd. | Existing Highway 212 remains two lanes with turn pockets from 162nd Ave. to Anderson Road south of limited access parkway. Design elements to be included are sidewalks, bike lanes, and a landscaped buffer. | $5,970,000 | Industrial area | 2008-2017 | X |
| 10074 | Damascus | | New Connection | 177th to 190th | Arterial #3 | new arterial from the Rock Creek Blvd interchange. This portion within Damascus. | $19,800,000 | Industrial area | 2018-2025 | X |
| 10076 | Damascus | Damascus | SE Sunnyside Rd East Extension | SE 172nd Ave. | SE 242nd Ave. | Extend Sunnyside Road east from 172nd Ave to 242nd Ave. Evaluate alignment options between Bohna Park Road and Tillstrom Road for the connection from Foster Road to 242nd Ave. | $101,500,000 | Town Center | 2018-2025 | X |
| 10078 | Damascus | ODOT | Hwy. 224 | Sunrise End | Carver Bridge | Widen Highway 224 to four lanes with turn pockets at intersections to Carver bridge. The Damascus/Boring Concept Plan identifies Highway 224 as a community bus transit classification. | $12,150,000 | Industrial area | 2018-2025 | X |
| 10081 | Happy Valley | Happy Valley | 122nd/129th Improvements | Sunnyside Rd. | King Rd. | Widen to three lanes, smooth curves. | $13,360,000 | Town Center | 2008-2017 | X |
| 10082 | Happy Valley | Happy Valley | Mt. Scott Blvd./King Rd. Improvements | Happy Valley City Limits | 145th Ave. | Widen to three lanes. | $20,820,000 | Town Center | 2026-2035 | X |
| 10084 | Happy Valley | Happy Valley | King Rd. | King Rd./145th Ave. intersection | | Traffic signal, realign, turn lanes. | $1,150,000 | Town Center | 2026-2035 | |
| 10085 | Lake Oswego | | Lake Oswego to Milwaukie Trail | Willamette Shoreline | Trolley Trail | Build trail linking Lake Oswego to Milwaukie. | | 2040 Corridor | 2009-2017 | X |
| 10086 | Lake Oswego | | Turf to Surf Rail with Trail | downtown Lake Oswego | Tualatin River Trail | Build trail linking Tualatin and Lake Oswego. | $6,800,000 | 2040 Corridor | 2009-2017 | |
| 10087 | Lake Oswego | | Lake Oswego to Portland Trail | Downtown Lake Oswego Hwy 43 | Portland | Build trail connecting Lake Oswego and Portland. | $70,000,000 | 2040 Corridor, Town Center | 2009-2017 | X |
| 10088 | Lake Oswego | | Lower Boones Ferry Rd. | Madrona Street | Kruse Way | Widen to include bike lanes, sidewalks, and turn lanes. | $20,720,000 | Town Center | 2009-2017 | X |

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| 10089 | Lake Oswego | | Lake Oswego Transit center | Lake Oswego downtown | Near street car | Move existing transit center closer to the street car for better connectivity. | $7,790,000 | Town Center | 2009-2017 | X |
| 10092 | Wilsonville | | Tonquin Trail | Washington/Clackamas County line | Boones Ferry Landing | Shared use path with some on-street portions. | $3,000,000 | Employment area | 2008-2017 | X |
| 10094 | Milwaukie | Milwaukie | Lake Rd. Improvements (Phase 2) | 21st Ave. | Hwy. 224 | Construct sidewalks, planter strips, medians, and bus stops. Add signal at Oatfield Road. | $8,000,000 | 2040 Corridor | 2018-2025 | X |
| 10095 | Milwaukie | Milwaukie | Railroad Ave. Bike/Ped Improvement | 37th Ave. | Linwood Ave. | Construct sidewalks and bike lanes. Key E-W connection parallel route for Highway 224 mobility corridor. | $11,897,000 | Town Center | 2008-2017 | X |
| 10096 | Milwaukie | Milwaukie | 37th Ave. Bike/Ped Improvement | Hwy. 224 | Harrison St. | Construct sidewalks and bike lanes. Key connection between Highway 224 and Harrison Street (Arterial). | $2,800,000 | Town Center | 2018-2025 | X |
| 10097 | Milwaukie | Milwaukie | Stanley N/S bike/ped route | Johnson Creek Blvd. | Railroad Ave. | Construct sidewalks and bike lanes. Key connection between Johnson Creek Boulevard, Harrison Street, and Harmony Road (Arterials). | $3,249,585 | Inner neighborhood | 2026-2035 | |
| 10098 | Milwaukie | Milwaukie | OR 99-E Blvd. | Kellogg Creek Bridge | River Rd. | Construct sidewalks and bike lanes, median strips, planter strips, and pedestrian scale lighting. Reconfigure or construct new signal for entrance to Riverfront Park. | $3,900,000 | Town Center | 2008-2017 | X |
| 10099 | Milwaukie | Milwaukie | Monroe Bike Boulevard | 21st Ave. | Linwood Ave. | Minor widening to allow shared lanes, improve signage, striping. Bicycle Boulevard treatment. | $2,400,000 | Town Center | 2008-2017 | X |
| 10100 | Milwaukie | Milwaukie | Downtown Station Area Streetscaping (21st & Main) | TBD | TBD | Reconstruct streetscape, including street trees, rain gardens, ADA ramps, street furniture, parking meters, and pedestrian-scale lighting. | $6,700,000 | Station community | 2008-2017 | X |
| 10101 | Milwaukie | Milwaukie | Kellogg Creek Dam Removal/Bridge Replacement/Milwaukie TC River Access Improvements | Washington | Adams | Remove dam and bridge; replace bridge with full bike and pedestrian facilities and a multi-use path undercrossing. | $12,400,000 | Town Center | 2008-2017 | X |
| 10102 | Milwaukie | Milwaukie | Linwood Ave. Pedestrian Improvements | Johnson Creek Blvd. | Harmony Rd. | Construct sidewalks and bike lanes. Key connection between Johnson Creek Boulevard, Harrison Street, and Harmony Road (Arterials). | $2,853,659 | Inner neighborhood | 2026-2035 | |
| 10104 | Milwaukie | Milwaukie | 17th Ave. Trolley Trail Connector | 17th Ave. & McLoughlin | 17th Ave. & Ochoco | Construct sidewalks; improve bus stops; and correct gaps in bike lanes on 17th Ave. to provide connection between Trolley Trail and Springwater Corridor. Alternative alignment: multi-use path along Johnson Creek from Lava Drive to Ochoco. | $3,750,000 | Town Center | 2008-2017 | X |
| 10106 | Milwaukie | Milwaukie | 224 Thruway/Local Access Preservation | 224 & Harrison | 224 & 37th | Convert some intersections to R in/R out; add turn pockets; improve ped crossing comfort through median islands and other measures as possible. Design option alternatives phase to consider interactions of 99-E/224 connections, and function of 99-E/17th/Harrison intersection. | $10,000,000 | Town Center | 2026-2035 | X |
| 10107 | Milwaukie | Milwaukie | Harrison/UPRR grade separation | Hwy. 224 | 32nd Ave. | Grade separate UP mainline from principal E-W arterial. | $25,000,000 | Town Center | 2026-2035 | |
| 10109 | Milwaukie | Milwaukie | Kellogg Creek Pedestrian Bridge/ Trail | 99-E | Miramonte Lodge | Construct low-impact trail-type sidewalk & ped bridge. | $3,057,000 | Town Center | 2008-2017 | X |
| 10112 | Milwaukie | Milwaukie | Ochoco Sidewalks | 19th Ave. | 17th Ave. | Construct sidewalks, reconstruct bridge over Johnson Creek. | $1,500,000 | Industrial area | 2026-2035 | X |
| 10113 | Milwaukie | Milwaukie | River Rd. Sidewalks | 99-E | City Limit | Construct sidewalks. | $2,400,000 | Town Center | 2026-2035 | X |
| 10114 | Clackamas Co. | ODOT | Sunrise Parkway | Rock Creek Junction | US 26 | Preliminary engineering and EIS. | $6,000,000 | Industrial area | 2008-2017 | |

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| 10118 | Oregon City | ODOT | McLoughlin Blvd. Improvements - Phase 3 | Railroad Tunnel | 10th St. | Complete boulevard design improvements and viaduct improvements. | $14,300,000 | Regional Center | 2018-2025 | X |
| 10119 | Oregon City | ODOT | Hwy. 213 - Phase 2 | Redland Rd. | Beavercreek Rd. | Add through lane in both directions. | $25,000,000 | Employment area | 2018-2025 | |
| 10120 | Oregon City | Oregon City | Washington St. Improvements | Abernethy Rd. | Hwy. 213 | Complete LID boulevard design improvements. | $5,000,000 | Regional Center | 2008-2017 | X |
| 10121 | Oregon City | Oregon City | Molalla Ave. Frequent Bus | Oregon City Transit Center | Clackamas Community College | Improve sidewalks, lighting, crossings, bus shelters and benches. | $1,000,000 | Regional Center | 2026-2035 | |
| 10122 | Oregon City | Oregon City | Oregon City TMA Startup Program | Oregon City Regional Center | | Implements a transportation management association program with employers. | | Regional Center | 2018-2025 | |
| 10123 | Oregon City | Oregon City | Willamette River Shared-Use Path | 10th St. | Blue Heron | Construct shared use path. | $2,000,000 | Regional Center | 2008-2017 | |
| 10124 | Oregon City | Oregon City | Molalla Ave. Streetscape Improvements Phase 3 | Holmes | Warner Milne | Streetscape improvements including widening sidewalks, sidewalk infill, ADA accessibility, bike lanes, reconfigure travel lanes, add bus stop amenities. | $2,200,000 | Regional Center | 2018-2025 | X |
| 10125 | Oregon City | Oregon City | Molalla Ave. Streetscape Improvements Phase 4 | Beavercreek | Hwy. 213 | Streetscape improvements including widening sidewalks, sidewalk infill, ADA accessibility, bike lanes, reconfigure travel lanes, add bus stop amenities. | $8,000,000 | Regional Center | 2008-2017 | |
| 10126 | Oregon City | Oregon City | Swan Extension | Livesay | UGB | Through lanes, sidewalks, bike lanes, turn lanes to serve UGB expansion area. | $41,000,000 | Regional Center | 2018-2025 | |
| 10127 | West Linn | ODOT | Hwy. 43 Improvements | Holly St. | Arbor Dr. | Although the project is now in the conceptual design stage (to be completed by June 30, 2007), the project should consist of roadway improvements such as widening, installation of medians, turn lanes, street trees, signal interconnections, bike lanes. | $21,400,000 | Town Center | 2008-2017 | X |
| 10128 | West Linn | West Linn | Willamette Falls Dr./bicycle lanes and streetlights | Hwy. 43 | 10th St. | Provide bike lanes, streetlights and sidewalks on a narrow roadway. This will provide a direct connection between three town center areas (including old-town Oregon City). Bicycle lanes will be 6' wide adjacent to 12' wide travel lanes. | $7,800,000 | Town Center | 2008-2017 | X |
| 10129 | West Linn | | Willamette River Greenway Trail | Willamette Park | Lake Oswego - Willamette River trail | Paved trail running parallel to the Willamette River from Willamette Park at the mount of the Tualatin River eventually to the Lake Oswego City Limits facilitating connection to the Willamette River Trail with neighboring cities as part of the Metro Region. | $2,000,000 | Town Center | 2018-2025 | X |
| 10130 | Wilsonville | Wilsonville | Kinsman Rd. Extension from Barber St. to Boeckman Rd. | Barber St. | Boeckman Rd. | Extend 3 lanes with sidewalks and bike lanes. | $10,365,000 | Employment area | 2008-2017 | X |
| 10131 | Wilsonville | Wilsonville | Tooze Rd. Improvements | 110th Ave. | Grahams Ferry Rd. | Widen Tooze Rd to 3 lanes, add bike/pedestrian connections to regional trail system. | $3,800,000 | Employment area | 2008-2017 | X |
| 10132 | Wilsonville | Wilsonville | Boeckman Rd./I-5 Overcrossing Improvements | Boberg Rd. | Parkway Ave. | Widen Boeckman Road bridge over I-5 to 3 lanes. Add bike/pedestrian connections to regional trail system. | $13,600,000 | Employment area, Industrial area | 2008-2017 | X |
| 10133 | Wilsonville | Wilsonville | French Prairie Bicycle/Pedestrian Bridge | Boones Ferry Rd. | Butteville Rd.. | New bicycle/pedestrian/emergency vehicle only bridge crossing the Willamette River. | $15,000,000 | Outer neighborhood | 2008-2017 | X |
| 10134 | Wilsonville | Washington Co. | 65th/Elligsen/Stafford Intersection Improvements | 65th, Elligsen, Stafford Rd. intersections | 65th, Elligsen, Stafford Rd. intersections | Improve turn radii, sight distance and grade differential by combining intersections | $3,000,000 | Other | 2008-2017 | X |
| 10135 | West Linn | West Linn | 19th St. Improvements | Blankenship Rd. | Willamette Falls Dr. | Improvements to include curb, gutter, pavement widening and sidewalks. | $1,200,000 | Town Center | 2008-2017 | X |
| 10136 | Clackamas Co. | Clackamas Co. | Kellogg Creek (Oatfield Rd.) Bridge Replacement | Kellogg Creek | n/a | Construct two lane bridge with sidewalks and bike lanes. | $4,702,881 | Inner neighborhood | 2018-2025 | |

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| 10137 | Damascus | Damascus | Multi-Use Local/Regional Trail and PRT Study | Damascus | N/A | Study for a multi-use path for bikes, pedestrians, horses that provides local access and connects with Happy Valley and Gresham. Study will also evaluate potential for personal rapid transit. | $2,000,000 | Town Center | 2008-2017 | X |
| 10138 | Damascus | Damascus | Hwy 212 widening to 5 lane boulevard | Sunrise Unit 1 Terminus | East City Limits | Widen Highway 212 to a 5 lane boulevard section through Damascus. | $58,500,000 | Town Center | 2018-2025 | X |
| 10140 | Oregon City | ODOT | Hwy. 213 - Phase 1 | Clackamas Community College | Conway Dr. | Add one SB and NB through lane, bike lanes, and sidewalks. | $5,000,000 | Other | 2018-2025 | |
| 10141 | Oregon City | ODOT | I-205/Hwy. 213 Interchange Phase 1 | Redland Road O'Xing | I-205 | Construct jug handle at Hwy 213/Washington Street with roundabout at Clackamas Drive; Hwy 213/Redland Road lane improvements. Improve access to regional center and enhance freeway operations and safety. | $33,000,000 | Regional Center | 2008-2017 | X |
| 10144 | Oregon City | ODOT | SB 99E/I-205 Interchange Access | Dunes Dr. | I-205 SB Ramp Terminus | Dual left turn lanes on 99E approach to SB I-205 ramp, ramp widening to accommodate approach. | $3,000,000 | Regional Center | 2008-2017 | |
| 10145 | Oregon City | ODOT | McLoughlin Blvd. Improvements - Phase 1 | 10th St. | I-205 | Complete boulevard design improvements. | $6,000,000 | Regional Center | 2008-2017 | |
| 10146 | Oregon City | ODOT | McLoughlin Blvd. Improvements - Phase 2 | Dunes Dr. | Clackamas River Bridge | Complete boulevard and gateway improvements. | $4,000,000 | Regional Center | 2008-2017 | X |
| 10147 | Oregon City | Oregon City | Newell Creek Canyon Trail (East) | Hwy 213 and Redland Rd. | Beavercreek Rd. | Project development and right-of-way acquisition for regional trail to follow the Oregon City-Molalla interurban railroad bench on the east side of Newell Creek Canyon. | $3,000,000 | Outer neighborhood | 2018-2025 | X |
| 10148 | Oregon City | Oregon City | Oregon City Loop Trail | Beavercreek Rd. | Hwy 213 | Regional trail would generally follow the Oregon City UGB on a collection of local roads, through new development, along Power line right-of-way, and down the bluff to link up with the Promenade in downtown Oregon City | $3,000,000 | Inner neighborhood, Outer neighborhood | 2008-2017 | X |
| 10149 | Oregon City | Oregon City | Beaver Lake Trail | Clackamas Community College | Oregon City UGB | Regional trail would travel from Clackamas Community College through the Oregon City High School campus to the airstrip area. The trail would skirt the golf course area and continue to Beaver Lake. | $500,000 | Employment area | 2008-2017 | X |
| 10150 | Oregon City | Oregon City | Barlow Rd. Trail | Abernethy Rd. | Oregon City limits | Regional trail would follow the perceptive alignment of the historic Barlow Road from Abernethy Green to the Oregon City UGB. The trail would primarily utilize existing and proposed roadways. | $1,000,000 | Regional Center | 2008-2017 | X |
| 10151 | Oregon City | Oregon City | Trolley Trail Bridge | Portland Ave. | Oregon City Clackamas R. Trail | Regional trail would connect the proposed regional Trolley Trail to the Clackamas River Trail via an old railroad bridge spanning the Clackamas River. | $5,000,000 | Regional Center | 2018-2025 | |
| 10152 | Wilsonville | ODOT | Wilsonville Rd./I-5 Interchange Improvements - Auxiliary Lanes | N. of Interchange | S. of Interchange | Provide auxiliary lanes for enhanced safety and capacity. | $12,500,000 | Town Center | 2008-2017 | |
| 10153 | Wilsonville | Wilsonville | Barber St. Extension from Kinsman Rd. to Villebois Village | Kinsman Rd. | Villebois Village | Extend 3 lanes with sidewalks and bike lanes. | $8,900,000 | Employment area | 2008-2017 | X |
| 10154 | Wilsonville | ODOT | Wilsonville Rd./I-5 Interchange Improvements - Setback Abutments & Widen Wilsonville Rd. | Town Center Loop W | Boones Ferry Rd. | Provide additional left-turn lanes, setback abutments, improves signal synchronization, fixes sight distance problems, and provides for enhanced bike/pad safety. | $11,000,000 | Town Center | 2008-2017 | X |
| 10155 | Wilsonville | ODOT | Wilsonville Rd./I-5 Interchange Improvements - On/Off Ramps | N. of Interchange | S. of Interchange | Widen and lengthen on/off ramps. | $12,000,000 | Town Center | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10156 | Wilsonville | Wilsonville | Boeckman Rd. at Boeckman Creek | Canyon Creek Rd. N | Stafford Rd. | Widen Boeckman Road to 3 lanes with bike lanes, sidewalks and connections to regional trail system, remove culvert and install bridge. | $5,800,000 | Inner neighborhood | 2008-2017 | |
| 10157 | Clackamas Co. | Clackamas Co. | Carver (Springwater Rd.) Bridge | Hattan Rd. | Hwy 224 | widen Carver bridge to 5 lanes, realign to Hattan Road. | $23,600,000 | Other | 2008-2017 | |
| 10159 | Portland | | Springwater [Trail Connection] - Sellwood Gap | SE Umatilla | SE 19th Ave. | Construct trail-with-rail shared use path between Springwater on the Willamette and Springwater Three Bridges. | $3,032,411 | Main street | 2008-2017 | X |
| 10160 | Portland | ODOT | Lloyd District Access Improvements | I-5 | | Add traffic signals and improve intersections at NE 2nd and Broadway and NE 2nd and Weidler Streets. | $998,243 | Portland Central City | 2008-2017 | X |
| 10162 | Portland | Portland | Willamette Greenway Trail - South Waterfront | Marquam Bridge (overhead) | SW Lowell | Provide two paths in order to separate bicyclists from pedestrians in remaining gaps (Marquam Bridge to SW Gibbs, SW Lowell to SW Lane, Benz Springs) of South Waterfront's Willamette Greenway trail. | $2,650,000 | Portland Central City | 2008-2017 | X |
| 10163 | Portland | ODOT | I-5 at Gibbs, SW: Pedestrian/Bike Overcrossing | | I-5/SW Gibbs Bridge | Construct a bike and pedestrian bridge of I-5 at SW Gibbs to connect the Corbett-Terwilliger-Lair Hill neighborhood to North Macadam. | $12,259,000 | Portland Central City | 2008-2017 | X |
| 10164 | Portland | | South Portal, Phase I & II | Intersection Bancroft/Hood/Macadam | Bancroft/Hood/Macadam | Improve SW Bancroft, SW Moody and SW Bond Streets. | $51,000,000 | Portland Central City | 2008-2017 | X |
| 10165 | Portland | | Moody/Bond Ave, SW (Sheridan to Gibbs) | River Parkway | SW Bancroft | Five lane street improvement from SW Sheridan to SW Gibbs Street. | $18,834,515 | Portland Central City | 2008-2017 | X |
| 10166 | Portland | | NW Burnside at Skyline Rd. | Intersection NW Burnside/ Skyline Rd. | | Intersection improvements. | $1,850,716 | Portland Central City | 2026-2035 | X |
| 10167 | Portland | | Central Eastside Bridgehead | SE Grand bridgehead | | Improve pedestrian and bicycle access to bridge approaches. | $4,100,000 | Portland Central City | 2008-2017 | X |
| 10169 | Portland | | Burnside/Couch, East [Blvd/Streetscape] | E 12th | Burnside Bridge | Implements a one-way couplet design including new traffic signals, widened sidewalks, curb extensions, bike lanes on-street parking and street trees. | $17,852,000 | Portland Central City | 2008-2017 | X |
| 10171 | Portland | | Burnside/Couch, West [Blvd/Streetscape] | Burnside Bridge | W 15th | Implements a one-way couplet design including new traffic signals, widened sidewalks, curb extensions, bike lanes on-street parking and street trees. | $75,895,353 | Portland Central City | 2008-2017 | X |
| 10173 | Portland/ODOT | | Macadam, SW (Bancroft - Sellwood Br): ITS | SW Bancroft | Sellwood Bridge | Install needed ITS infrastructure (communication network, new traffic controllers, CCTV cameras, and vehicle /pedestrian detectors). These ITS devices allow us to provide more efficient and safe operation of our traffic signal system. | $401,794 | Portland Central City | 2018-2025 | X |
| 10174 | Portland | | Going, N (Interstate - Greeley): ITS | Interstate | Greeley | Install needed ITS infrastructure (communication network, new traffic controllers, CCTV cameras, and vehicle /pedestrian detectors). These ITS devices allow us to provide more efficient and safe operation of our traffic signal system. | $950,024 | Employment area, Industrial area | 2008-2017 | X |
| 10175 | Portland/ODOT | | Yeon/St. Helens, NW (US 30): ITS | NW Yeon/St. Helens | | Install needed ITS infrastructure (communication network, new traffic controllers, CCTV cameras, and vehicle /pedestrian detectors). These ITS devices allow us to provide more efficient and safe operation of our traffic signal system. | $885,499 | Employment area, Industrial area | 2008-2017 | X |
| 10176 | Portland | | PSL - Eastside Extension | NW Lovejoy/10th | SE Water | Construct streetcar from NW Lovejoy/10th to SE Water | $147,000,000 | Portland Central City | 2008-2017 | X |
| 10177 | Portland | | PSL - OMSI to Riverplace or South Waterfront (close loop) | SE Water | SW Moody | Construct streetcar from SE Water to SW Moody after alternatives analysis has been completed. | $19,000,000 | Portland Central City | 2018-2025 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10178 | Portland | | Going St Bridge, N: Seismic Retrofit | Going St Overpass | n/a | Seismic retrofit project will include work to both the substructure and superstructure to help minimize the risk of a structural collapse in a major earthquake. | $4,000,000 | Employment area, Industrial area | 2008-2017 | X |
| 10179 | Portland | | Burnside/Sandy/12th, E: Intersection Improvements | Intersection E Burnside/Sandy/12th | | Redesign intersection to improve safety for all modes of travel. Relocate north-south crosswalk on east side of NE/SE 12th to eliminate safety hazards. | $6,481,860 | Town Center, Main street, Station community | 2018-2025 | |
| 10180 | Portland | | Sandy Blvd., NE (47th - 101st): Multi-modal Improvements, Phase II | NE 47th | NE 101st | Retrofit existing street with multi-modal street improvements including bike lanes, redesign of selected intersections to improve pedestrian crossings, streetscape, and safety improvements. | $6,481,860 | Town Center, Main street, Station community | 2018-2025 | |
| 10181 | Portland | | Fifties Bikeway, NE/SE (Tillamook to Woodstock) | SE Woodstock | NE Tillamook | Curb extensions, median refuges, signal modifications, and striping changes to create a north-south bicycle boulevard, along various interconnected portions of 52nd-57th streets between NE Thompson and SE Woodstock Blvd. | $1,595,049 | Inner neighborhood | 2026-2035 | X |
| 10182 | Portland/ODOT | | St. Johns Pedestrian District, N | | | Enhance pedestrian access to transit, improve safety, and enhance the streetscape such as better lighting and crossings. Improvements including realigning the "ivy" island, curb extensions, a new traffic signal at Richmond/Lombard, and pedestrian connections between St. Johns and the riverfront based on the St. Johns/Lombard Plan. | $5,000,000 | Town Center, Main street, Station community | 2008-2017 | X |
| 10183 | Portland | | Lents Pedestrian District, SE | | | Pedestrian facility improvements to key links accessing the Foster-Woodstock couplet. | $1,403,000 | Town Center, Main street, Station community | 2018-2025 | |
| 10184 | Portland | | Foster Rd., SE (Powell - 90th): Pedestrian/Bicycle/Safety Improvements | SE Powell | SE 90th | Improve sidewalks, lighting, crossings, bus shelters & benches on Foster and improve pedestrian crossing at Foster/82nd intersection to benefit pedestrian access to transit. | $5,401,550 | Town Center, Main street, Station community | 2026-2035 | |
| 10185 | Portland | | Foster & Woodstock, SE (87th - 94th): Street Improvements, Phase I | SE 87th | SE 94th | Implement Lents Town Center Business District Plan with new traffic signals, pedestrian amenities, wider sidewalks, pedestrian crossings, street lighting, increased on-street parking. | $13,812,000 | Town Center, Main street, Station community | 2008-2017 | X |
| 10186 | Portland | | Foster & Woodstock, SE (94th - 101st): Street Improvements, Phase II | SE 94th | SE 101st | Implement Lents Town Center Business District Plan with new traffic signals, pedestrian amenities, wider sidewalks, pedestrian crossings, and street lighting. | $11,510,000 | Town Center, Main street, Station community | 2008-2017 | X |
| 10187 | Portland | | Foster Rd., SE (82nd - 87th): Lents Town Center Street Improvements | SE 82nd | SE 87th | Implement Lents Town Center Business District Plan with new traffic signals, pedestrian amenities, wider sidewalks, pedestrian crossings, street lighting, and on-street parking as appropriate. | $4,625,000 | Town Center, Main street, Station community | 2008-2017 | X |
| 10188 | Multnomah Co./Portland | | Scholls Ferry, SW (Humphrey - County line): Multimodal Improvements | SW Humphrey | County Line | Add bicycle and pedestrian facilities; intersection improvements at Patton. | $3,226,900 | Outer neighborhood | 2026-2035 | |
| 10189 | Portland | | Capitol Hwy, SW | SW Multnomah Blvd | SW Taylors Ferry | Improve SW Capitol Highway from SW Multnomah Boulevard to SW Taylors Ferry Road per the 1996 Capitol Highway Plan. | $9,613,958 | Town Center, Main street, Station community | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10190 | Portland | | 23rd Ave., NW (Lovejoy - Burnside): Rd. Reconstruction | NW Lovejoy | W Burnside | Rebuild street. | $3,350,000 | Town Center, Main street, Station community | 2008-2017 | X |
| 10191 | Portland | | Garden Home Rd., SW (Capitol Hwy - Multnomah): Multi-modal Improvements | SW Capitol Hwy | SW Multnomah Blvd | Improve and signalize the intersection at SW Garden Home and SW Multnomah Blvd. | $1,931,033 | 2040 Corridor | 2008-2017 | X |
| 10192 | Portland | | Division Streetscape and Reconstruction | SE 6th Ave. SE 39th Ave. | SE 39th Ave. | The project will design and build streetscape and transportation improvements between SE 12th Ave and SE 39th Ave, complete base repair and pavement reconstruction between SE 6th Ave and SE 10th Ave, and grind and overlay asphalt in the area between SE 10th Ave and SE 39th Ave. | $5,848,135 | 2040 Corridor | 2008-2017 | X |
| 10193 | Portland | | Division St., SE (Grand - 60th): Multi-modal Improvements, Phase I | SE Grand | SE 60th | Construct improvements that enhance access to transit, improve safety and enhance streetscape such as traffic signals, alt lane and on-street parking configuration, stormwater mgmt, lighting, bus shelters, benches, and crossings. Add bike lanes (52nd - 60th). | $3,908,758 | 2040 Corridor | 2008-2017 | |
| 10194 | Portland | | Killingsworth, N (Interstate - MLK Jr Blvd): Street Improvements | N Interstate | MLK Jr Blvd | Construct street improvements to improve pedestrian connections to Interstate MAX LRT and to establish a main street character promoting pedestrian-oriented activities. Commentary: Update project to reflect recommendations in the Killingsworth Street Improvements Planning Project. | $4,900,000 | Town Center, Main street, Station community | 2008-2017 | X |
| 10196 | Portland | | Cully Blvd. Green St. | NE Prescott St. | NE Killingsworth | The project will plan, design and rebuild NE Cully Boulevard between NE Prescott Street and NE Killingsworth Street. Project planning and preliminary engineering will analyze alternatives for the roadway with public input and involvement. | $5,255,633 | Inner neighborhood | 2018-2025 | X |
| 10197 | Portland | | Russell St. Improvements, N | N Williams | N Interstate | Construct improvements to Russell (Williams - Interstate), Albina & Mississippi (Russell - Interstate) to enhance ped connections from Eliot neighborhood and Lower Albina dist to the LRT station. Improve the N Williams at N Stanton intersection. | $3,300,000 | Town Center, Main street, Station community | 2018-2025 | X |
| 10198 | Portland | | 122nd, NE/SE (NE Airport Way to SE Powell Blvd): ITS | Airport Way | SE Powell Blvd | Install needed ITS infrastructure (communication network, new traffic controllers, CCTV cameras, and vehicle /pedestrian detectors). These ITS devices allow us to provide more efficient and safe operation of our traffic signal system. | $515,703 | 2040 Corridor | 2018-2025 | X |
| 10199 | Portland | | SE 136th Ave. (Division to Powell) Bikeway | SE Division | SE Foster | From SE Division Street to SE Powell Boulevard: Improve to 36' curb-to-curb with 2-13' traffic lanes and 2-5' bike lanes; 6" curbs, 9' swales and 6' sidewalks on both sides. | $6,090,590 | Outer neighborhood | 2026-2035 | X |
| 10200 | Portland | | Killingsworth Pedestrian District, NE | | | Plan and develop improvements to the pedestrian environment including sidewalks, lighting, crossings, bus shelters and benches. | $1,403,000 | Town Center, Main street, Station community | 2018-2025 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10201 | Portland | | 102nd Ave., NE (Weidler - Glisan): Gateway Plan District Multi-modal Improvements, Phase I | NE Weidler | NE Glisan | Implement Gateway Regional Center plan with boulevard design retrofit, new traffic signals, improved pedestrian facilities and crossings, street lighting, bicycle lanes, and multi-modal safety improvements. | $3,234,000 | Regional Center | 2008-2017 | X |
| 10202 | Portland | | 102nd Ave, NE/SE (Glisan - Stark): Gateway Plan District Multi-modal Improvements, Phase II | NE Glisan | SE Stark | Implement Gateway regional center plan with boulevard design retrofit, new traffic signals, improved pedestrian facilities and crossings, street lighting and new bicycle facilities. | $4,500,000 | Regional Center | 2008-2017 | X |
| 10203 | Portland | | Glisan St, NE (122nd - City Limits): Multi-modal Improvements | NE 122nd | City Limits | Infill missing sidewalk, add curb ramps at corner, add 3 median island crossings, and add a signal. | $3,100,241 | 2040 Corridor | 2018-2025 | X |
| 10204 | Portland | | Gateway Regional Center, Local and Collector Streets | NE Weidler/97th | NE Glisan/102nd | High priority local and collector street and pedestrian improvements in the Gateway Regional Center. | $32,648,540 | Regional Center | 2008-2017 | X |
| 10205 | Portland | | Gateway Regional Center, Local and Collector Streets | | | High priority local and collector street and pedestrian improvements in the Gateway Regional Center. | $4,209,000 | Regional Center | 2018-2025 | |
| 10206 | Portland | | Marine Drive bike lanes 6th to 28th & off-street trail gaps between I-5 and 185th | I-5 | NE 185th Ave. | Close gaps in Marine Dr bike lanes (NE 6th to 28th);and trail (Bridgeton levee & one connector, 28th to 33rd, 112th to 122nd, gaps near 185th) | $2,130,835 | Industrial area | 2008-2017 | X |
| 10208 | Portland | | MLK O-Xing/Turn Lanes (Columbia-Lombard) | Intersections of MLK and NE Columbia Blvd/Lombard | | Intersection and signalization improvements with right turn lane. | $2,228,909 | Employment area, Industrial area | 2008-2017 | X |
| 10209 | Portland | | 92nd Dr. (Columbia Slough to Alderwood) | Columbia Slough | NE Alderwood | Improve NE 92nd Drive from Columbia Slough to Alderwood Rd. | $2,406,547 | Employment area, Industrial area | 2008-2017 | X |
| 10210 | Portland | | 47th, NE (Columbia - Cornfoot): Roadway & Intersection Improvements | NE 47th | NE Columbia Blvd | Widen and reconfigure intersections to better facilitate truck turning movements to the cargo area located within the airport area. Project includes sidewalk and bikeway improvements. | $5,541,678 | Employment area, Industrial area | 2008-2017 | X |
| 10212 | Portland | | Airport Way/122nd, NE: Intersection Improvement | NE Airport Way/122nd | | Add northbound left turn lane, modify traffic signal, and reconstruct island. | $1,100,000 | Employment area, Industrial area | 2008-2017 | X |
| 10213 | Portland | | Airport Way, NE (I-205 to NE 158th Ave.): ITS | I-205 | NE 158th | Install needed ITS infrastructure (communication network, new traffic controllers, CCTV cameras, and vehicle /pedestrian detectors). These ITS devices allow us to provide more efficient and safe operation of our traffic signal system. | $278,251 | Employment area, Industrial area | 2008-2017 | X |
| 10214 | Port of Portland | | Lombard, N (Rivergate - to T-6): Multi-modal Improvements | Rivergate | T-6 | Widen N Lombard to include two travel lanes, a non-continuous center turn lane, medians, bike lanes, sidewalks and planting strips. | $34,517,517 | Freight Intermodal Facility | 2008-2017 | X |
| 10215 | Portland | | Foster Rd., SE (136th - Jenne): Multi-modal Improvements | SE 136th | SE Jenne Rd. | Widen street to three lanes to provide two travel lanes, continuous turn lane, bike lanes, sidewalk, and drainage. | $16,963,856 | 2040 Corridor | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10216 | Portland | | Smart Trips Portland, a city-wide individualized marketing strategy | | | Smart Trips Portland is a comprehensive approach to reduce drive-alone trips and increase biking, walking and public transit in targeted geographic areas or key transportation corridors of the city. It incorporates the innovative and highly effective "individualized marketing" methodology, which hand delivers packets of information to residents who wish to learn more about transportation options. Success is tracked by evaluating qualitative and quantitative results from surveys and other performance measures. | $4,450,000 | Other | 2008-2017 | X |
| 10217 | Portland | | Lombard at Columbia Slough, N: Overcrossing | N Lombard/Columbia Slough Overcrossing | | Add sidewalk and bike lanes to strengthened bridge. | $9,767,000 | Industrial Area | 2008-2017 | X |
| 10218 | Portland | | Burgard-Lombard, N: Street Improvements | Intersection of N Burgard/Columbia | UPRR Bridge on N. Lombard | From UPRR Bridge to N Columbia Blvd. Widen street to include 2 12-foot travel lanes, continuous left turn lane, bike lanes and sidewalk. | $17,000,000 | Industrial area, Town Center | 2008-2017 | X |
| 10219 | Portland/ODOT | | Argyle on the Hill, N Columbia to N Denver Ave. | Columbia Blvd | N Denver | New N Argyle street connection, west of I-5. | $11,773,032 | 2040 Corridor | 2018-2025 | X |
| 10220 | Portland | | Seventies Greenstreet and Bikeway, NE | NE Killingsworth Ave. | Clatsop St. | Develop a combined pedestrian greenway and bike boulevard including crossing improvements at arterials, street lighting, and public art from Killingsworth to Clatsop. Develop a combined pedestrian greenway and bike boulevard including crossing improvements at arterials. | $4,120,727 | Inner neighborhood | 2018-2025 | X |
| 10221 | Portland | | Skyline, NW (Hwy 26 - City Limits): Shoulder Improvements | Hwy 26 | City Limits | Widen existing 22' of pavement to 32', and add 2' shoulders adjacent to lanes. | $8,088,812 | Outer neighborhood | 2026-2035 | X |
| 10222 | Portland | | Flavel Dr, SE | SE 45th | Clatsop | Fully improve street from SE 45th to Clatsop Street with travel lanes, curbs, swales, sidewalks, and some bike lanes. | $7,294,088 | 2040 Corridor | 2026-2035 | X |
| 10223 | Portland | | 122nd, SE (at Morrison): Pedestrian Overcrossing | | | Provide an at-grade improved pedestrian crossing on SE 122nd Ave.. | $1,993,000 | 2040 Corridor | 2026-2035 | X |
| 10224 | Portland | | Barbara Welch Rd., SE: Multimodal Improvements | SE Foster | City Limits | Widen existing 20' of pavement to new 34' roadway with travel lanes, bike lanes, curb and sidewalk. | $20,191,557 | Outer neighborhood | 2026-2035 | X |
| 10225 | Portland | | SE 122nd Ave Sidewalk Infill (Powellhurst/Gilbert Neighborhood) | SE Harold | SE Ramona | Add sidewalks to SE 122nd Ave. between SE Harold Street and SE Ramona Street/ Springwater Corridor Trail | $2,358,000 | 2040 Corridor | 2026-2035 | X |
| 10226 | Portland | | Hamilton St., SW | SW Dosch Rd. | SW Scholls Ferry Rd. | Improve SW Hamilton Street between SW Dosch and Scholls Ferry Road. | $12,420,360 | 2040 Corridor | 2026-2035 | X |
| 10227 | Portland | | Stephenson, SW (Boones Ferry - 35th): Multi-modal Improvements | SW Boones Ferry | SW 35th | Install bikeway, pedestrian facilities, and improve and signalize the intersection at SW Stephenson and SW Boones Ferry Road. | $3,813,000 | Outer neighborhood | 2026-2035 | X |
| 10228 | ODOT/Portland/Port | | 82nd Ave./Columbia, NE: Intersection Improvements | Intersection of NE 82nd/Columbia Blvd | | Widen and reconfigure intersection. | $3,408,000 | 2040 Corridor | 2008-2017 | X |
| 10229 | Portland | | Columbia Blvd./Portland Rd., N: Intersection Improvements | Intersection of Columbia Blvd/Portland Rd. | | Redesign intersection. | $1,214,000 | Industrial Area | 2008-2017 | X |
| 10230 | Portland | | Twenties Bikeway, NE/SE (Lombard - Clinton) | NE Lombard | SE Clinton | Design & implement bikeway along SE 29th,30th/NE 26th/28th / NE Oregon, Wasco, from SE Clinton to NE Lombard using bike blvds. & bike lanes. | $1,837,573 | 2040 Corridor | 2026-2035 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10231 | Region | | Union Station, NW: Facility Renovation | N/A | N/A | Renovate Union Station to meet seismic and functional requirements. | $24,000,000 | Freight and Passenger Intermodal Facility | | X |
| 10232 | Portland | | Flanders, NW (Steel Bridge to Westover): Bicycle Facility | Steel Bridge | NW Westover | Add bike boulevard from NW 24th Ave to the Steel Bridge, new bike/pedestrian bridge over I-405 on Flanders, connections to bikeways on Vista, 18th, 14th, 13th, Broadway, 3rd, 2nd, Glisan and Everett. | $2,392,337 | Portland Central City | 2008-2017 | X |
| 10234 | Portland | | Columbia Slough Trail system | Confluence of Columbia Slough and North Slough | NE 158th Ave. | Close gaps in Columbia Slough Trail: North Slough to North Portland Rd; Landfill to Pier Park; I-5 to NE Elrod; NE Elrod to NE 82nd Ave; NE 82nd Ave to 92nd Ave; I-205 to approx. NE 128th; NE 145th to 158th, Peninsula Canal, Cross-Levee, Delta Park Trail. | $8,460,000 | Freight and Passenger Intermodal Facility | 2008-2017 | X |
| 10235 | Portland/ODOT | | South Portland Improvements, SW | SW Naito Parkway | SW Barbur | Reconstruct Naito Pkwy as two-lane road w/bike lanes, sidewalks, left turn pockets, & on-street parking. Includes realignment/regrading at intersecting streets; removal of Barbur tunnel, Ross Is Br ramps, Arthur/Kelly viaduct & Grover ped bridge. | $39,695,079 | Portland Central City | 2018-2025 | |
| 10236 | Portland | | Water Ave., SE (Caruthers - Division Pl): Street Extension Phase II | Caruthers | Division Pl | Provide new roadway connection with sidewalks, bike lanes, landscaping, access to Willamette Greenway, & reconstruction of existing roadway. | $405,116 | Employment area, Industrial area | 2026-2035 | |
| 10237 | Portland | | Southern Triangle Circulation Improvements, SE | Powell (12th/Ross Island Bridge) | Hawthorne Bridge (railroad mainline) | Improve local street network and regional access routes in the area between the Powell/12th, Willamette River, railroad mainline and Hawthorne Bridge. Improve freeway access route from CEID to I-5 SB via the Ross Island Bridge. | $4,051,163 | Employment area, Industrial area | 2026-2035 | |
| 10239 | Portland | | 11th/12th/Railroad Crossing, SE (West of Division): Intersection Improvements | Railroad Crossing | 12th | Reconstruct intersection to upgrade traffic signalization and establish bike and ped routes. | $561,200 | Portland Central City | 2018-2025 | |
| 10240 | Portland | | Belmont Ramp, SE (Eastside of Morrison Bridge): Ramp Reconstruction | SE Belmont Ramp at Morrison bridge | | Reconstruct ramp to provide better access to the Central Eastside. | $2,104,500 | Portland Central City | 2018-2025 | |
| 10241 | Portland | | Clay/MLK Jr, SE: Intersection Improvements | Intersection of SE Clay/MLK | | Geometric, signalization and channelization improvements to allow transit and general traffic access to westbound Clay street from southbound MLK. | $1,296,372 | Portland Central City | 2026-2035 | |
| 10242 | Portland | | N. Interstate Ave. Ramp | N Interstate/Larrabee Bridge | | Replacement of the existing N. Interstate to Larrabee flyover ramp with a new structure. | $20,592,147 | Portland Central City | 2026-2035 | |
| 10243 | Portland | | 12th, NE (Bridge at Lloyd Blvd): Seismic Retrofit | NE 12th/Lloyd Blvd Bridge | | Seismic retrofit. | $583,367 | Portland Central City | 2026-2035 | |
| 10244 | Portland | | Kittridge, NW (Bridge at Yeon): Seismic Retrofit | NW Kittridge/Yeon Bridge | | Seismic retrofit. | $1,403,000 | Portland Central City | 2026-2035 | |
| 10245 | Portland | | Steel Bridge, NE (East Ramps): Seismic Retrofit | Steel Bridge | | Seismic retrofit. | $1,403,000 | Portland Central City | 2026-2035 | |
| 10246 | Portland | | 7th/8th Ave., SE: New Street Connection | SE 7th | SE 8th | Construct new street connection from SE 7th to 8th Ave. at Division Street. | $810,233 | Employment area, Industrial area | 2008-2017 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10247 | Portland | | Corbett/Hood/Sheridan, SW: Pedestrian and Bike Improvements | SW Sheridan | SW Sheridan/I-5 | Construct bike and pedestrian improvements under I-5 to the CTLH neighborhood at SW Sheridan St. | $210,450 | Portland Central City | 2008-2017 | |
| 10248 | Portland/ODOT | | South Waterfront District, SW: Bicycle and Pedestrian Improvements | | | Implement pedestrian and bicycle district access improvements identified in the North Macadam Framework Plan. | $3,250,050 | Portland Central City | 2008-2017 | |
| 10249 | Portland | | South Waterfront Transit Improvements, SW | | | Implement transit improvements identified in the North Macadam Framework Plan, including central city transit hub and local bus service improvements. | $2,806,000 | Portland Central City | 2018-2025 | |
| 10250 | Portland | | Burnside, W (NW 15th to NW 23rd): Blvd. Improvements | NW 15th | NW 23rd | Boulevard design improvements including pavement reconstruction, wider sidewalks, curb extensions, safer crossings, traffic signals at 20th Plan and 22nd, and traffic management to limit motorist delays. | $14,030,000 | Portland Central City | 2008-2017 | |
| 10251 | Portland | | Bancroft St., SW (River Parkway - Macadam): Street Improvements | River Parkway | Macadam | Widen SW Bancroft in conformance with district street standards. | $1,403,000 | Portland Central City | 2008-2017 | |
| 10253 | Portland | | Arthur, Gibbs & Lowell, SW (River Parkway - Moody): Street Improvements | River Parkway | SW Moody | Arthur, Gibbs, and Lowell are the primary connectors between Moody-Bond and River Parkway and will be constructed in phases as development occurs in North Macadam District. | $5,261,250 | Portland Central City | 2008-2017 | |
| 10254 | Portland | | River Parkway, SW: New Street | SW (new St.) | | New north-south local access street in the emerging North Macadam District. This street will have an enhance pedestrian environment and will be built to accommodate future streetcar. It will constructed in four phases beginning FY00/01. | $4,910,500 | Portland Central City | 2008-2017 | |
| 10255 | Portland/ODOT | | Macadam/Curry, SW: Intersection Improvements | Intersection Macadam/Curry | SW Macadam/Curry | Design and construct improvements to the Macadam/Curry intersection. | $1,403,000 | Portland Central City | 2008-2017 | |
| 10256 | Portland | | Broadway/Weidler, NE (15th - 28th): Multi-modal Improvements, Phases II & III | NE 15th | NE 28th | Boulevard retrofit of street including street trees, traffic signals, curb extensions, and wider sidewalks (15th - 24th) and stripe bike lanes (24th-28th). | $9,058,399 | Portland Central City | 2008-2017 | |
| 10257 | Portland | | Grand/MLK Jr, SE/NE: CEID/Lloyd District Streetscape Improvements | | | Complete boulevard design improvements including street trees, tree grates, ornamental lighting, and curb extensions. | $4,861,395 | Portland Central City | 2018-2025 | |
| 10258 | Portland | | DivisionSt/9th, SE (7th - Center): Bikeway | SE 7th | SE Center | Retrofit bike lanes to existing street. | $27,548 | Portland Central City | 2026-2035 | |
| 10259 | ODOT/Portland | | Powell, SE (Ross Island Bridge - 92nd): Multi-modal Improvements | Ross Island Bridge | SE 50th | Retrofit existing street with multimodal and safety improvements including enhanced pedestrian and bicycle crossings, pedestrian and bike activated signals, median islands with trees, redesign of selected intersections and stormwater management facilities. | $7,997,100 | Town Center, Main street, Station community | 2008-2017 | |
| 10260 | Portland | | Clay/2nd, SW: Pedestrian/Vehicle Signal | Intersection Clay/2nd | | New signal installation. | $162,047 | Portland Central City | 2026-2035 | |
| 10261 | Portland/TriMet | | Central City Streetcar Phase 3b, SW (Riverplace to Gibbs) | Riverplace | Gibbs | Extend streetcar from Riverplace to Gibbs, into the emerging South Waterfront District. | $28,060,000 | Portland Central City | 2008-2017 | |
| 10262 | Portland | | 14/16th Connections, NW | W Burnside | Yeon | Improve or create connections to W. Burnside, Yeon, and Vaughn and provide directional signage to route non-local traffic to 14th/16th couplet. | $280,600 | Employment area, Industrial area | 2026-2035 | |
| 10263 | Portland | | Naito Parkway (Broadway Br - north of Terminal One): Street and Pedestrian Improvements | Broadway Bridge | North of Terminal One | Construct streetscape improvements include pedestrian amenities. | $4,559,750 | Portland Central City | 2008-2017 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10264 | Portland | | Central City Traffic Management, N, NW, NE, SE, SW: Transportation System Management improvements | | | Implement Central City TSM improvements to arterials. | $3,240,930 | Portland Central City | 2026-2035 | |
| 10265 | Portland | | 18th/Jefferson St., SW: ITS | Intersection of 18th/Jefferson | | Communications infrastructure including closed circuit TV cameras, variable message signs for remote monitoring and control of traffic flow at SW 18th/Jefferson intersection. | $112,240 | Portland Central City | 2026-2035 | |
| 10266 | Portland | | 14th/16th, NW/SW & 13th/14th, SE, (Glisan - Clay): ITS | SW Clay | NW Glisan | Six signals between Clay and Glisan including communications infrastructure; closed circuit TV cameras, variable message signs for remote monitoring and control of traffic flow. | $505,080 | Portland Central City | 2026-2035 | |
| 10267 | Portland | | Going, N (Interstate - Basin): Bikeway | N Interstate | N Basin | Design & implement bike lanes. | $126,270 | Employment area, Industrial area | 2026-2035 | |
| 10268 | Portland | | Hollywood Pedestrian District, NE: Multi-modal Improvements | | | Multi-modal street improvements including traffic signals, restriping, improved pedestrian crossings and connections to transit center. | $10,776,092 | Town Center, Main street, Station community | 2018-2025 | |
| 10270 | Portland | | Ellis St, SE (92nd - Foster): Bikeway | SE 92nd | SE Foster | Retrofit bike lanes to existing street. | $648,186 | Town Center, Main street, Station community | 2026-2035 | |
| 10271 | Portland | | 92nd Ave., SE (Powell - City Limits): Bicycle & Pedestrian Improvements | SE Powell | City Limits | Construct sidewalks, crossing improvements and bike lanes. | $4,910,500 | Town Center, Main street, Station community | 2008-2017 | |
| 10272 | Portland | | Capitol Hwy, SW (Vermont - Florida): Intersection Improvements | SW Vermont | SW Florida | Realign the Capitol/Vermont/30th intersection and provide sidewalks, bike lanes, and drainage improvements. | $1,898,314 | Town Center, Main street, Station community | 2018-2025 | X |
| 10273 | Portland | | Capitol Hwy, SW (Terwilliger - Sunset): Multi-modal Improvements | SW Terwilliger | SW Sunset | Construct sidewalks, crossing improvements for access to transit and bike improvements, and install left turn lane at the Capitol/Burlingame intersection. | $1,403,000 | Town Center, Main street, Station community | 2018-2025 | X |
| 10274 | Portland | | Beaverton-Hillsdale /Bertha/Capitol Hwy, SW: Intersection Improvements | Intersection B-H Hwy/Bertha/Capitol Hwy | B-H Hwy/Bertha/Capitol Hwy | Redesign intersection to improve safety. | $1,403,000 | Town Center, Main street, Station community | 2008-2017 | |
| 10275 | Portland | | Vermont St., SW, (45th - Oleson): Bicycle and Pedestrian Improvements | SW 45th | SW Oleson | Multi-modal street improvements including bicycle and pedestrian facilities. | $7,909,800 | Town Center, Main street, Station community | 2018-2025 | |
| 10276 | Portland | | 30th Ave., SW (Vermont to B-H Hwy): Bicycle & Pedestrian Improvements | SW Vermont | B-H Hwy | Retrofit bike lanes to existing street, construct sidewalks, and improve pedestrian crossing at Beaverton-Hillsdale Hwy/30th. | $1,839,333 | Town Center | 2018-2025 | |
| 10277 | Portland | | Bertha, SW (B-H Hwy - Barbur): Multi-modal Improvements | B-H Hwy | Barbur Blvd | Design and implement bike lanes on missing piece of Bertha Blvd (Vermont-B-H Hwy), construct walkway for pedestrian travel and access to schools (Barbur-B-H Hwy); and improve street to City standards (Vermont-Capitol). | $2,104,500 | Town Center, Main street, Station community | 2018-2025 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10278 | Portland | | Hillsdale Pedestrian District, SW | | | Pedestrian improvements on town center streets including Capitol, Beaverton-Hillsdale Hwy, Bertha, and neighborhood streets. Provide a Bike Central facility. | $4,861,395 | Town Center, Main street, Station community | 2018-2025 | |
| 10279 | Portland | | Beaverton-Hillsdale Hwy, SW (Capitol Hwy - 65th): Multi-modal Improvements | SW Capitol Hwy | SW 65th | Retrofit existing street to include better sidewalks and crossings, bike lanes and other improvements to enhance access to transit. Install median refuge to improve pedestrian crossing at SW 62nd. | $3,565,023 | Town Center, Main street, Station community | 2026-2035 | |
| 10280 | Portland | | Sunset Blvd., SW (Dosch - Capitol): Bicycle & Pedestrian Improvements | SW Dosch | SW Capitol Hwy | Construct bike lanes, sidewalks and crossing improvements. | $1,683,600 | Town Center | 2026-2035 | |
| 10281 | Portland | | Beaverton-Hillsdale Hwy, SW: ITS | SW Terwilliger | Shattuck | CCTV at Terwilliger, Berth, Shattuck; changeable signs. | $315,675 | Town Center, Main street, Station community | 2008-2017 | |
| 10282 | Portland/ODOT | | Barbur/Capitol/Huber/Taylors Ferry, SW: Intersection Improvements | Intersection of Barbur/Capitol/Huber/Taylors Ferry | | Construct safety improvements, including traffic signals, at the intersection of Capitol Hwy, Taylors Ferry, Huber, and Barbur. Provide better sidewalks and crossings. | $1,403,000 | Town Center, Main street, Station community | 2018-2025 | |
| 10283 | Portland/ODOT | | Barbur Blvd, SW (3rd - Terwilliger): Multi-modal Improvements | SW 3rd | SW Terwilliger | Construct Improvements for transit, bikes and pedestrians. Transit improvements include preferential signals, pullouts, shelters, left turn lanes and sidewalks. | $6,594,100 | Town Center, Main street, Station community | 2018-2025 | |
| 10284 | Portland | | Taylors Ferry, SW (Capitol Hwy - City Limits): Bicycle & Pedestrian Improvements | SW Capitol Hwy | City Limits | Provide bicycle lanes, including shoulder widening and drainage, and construct sidewalk for access to transit (40th - 60th). | $4,209,000 | Town Center, Main street, Station community | 2018-2025 | |
| 10285 | Portland/ODOT | | Barbur Blvd, SW (Terwilliger - City Limits): Multi-modal Improvements | SW Terwilliger | City Limits | Complete boulevard design improvements including sidewalks and street trees, safe pedestrian crossings, enhance transit access and stop locations, traffic signal at Barbur/30th, and bike lanes (Bertha - City Limits). | $24,833,100 | Town Center, Main street, Station Community | 2008-2017 | |
| 10286 | Portland/ODOT | | Pedestrian Overpass near Markham School, SW | | | Construct pedestrian path and bridge over Barbur Blvd. and I-5 to connect SW Alfred and SW 52nd to the rear of Markham School. | $4,861,395 | Town Center | 2026-2035 | |
| 10287 | Portland | | West Portland Town Center, SW: Pedestrian Improvements | | | Improve sidewalks, lighting, crossings, bus shelters & benches on Barbur, Capitol Hwy & neighborhood streets. | $7,015,000 | Town Center, Main street, Station community | 2026-2035 | |
| 10288 | Portland | | Parkrose Connectivity Improvements, NE | | | Supplement access route for commercial properties in Parkrose by creating a loop road connection (102nd and 109th, NE, Killingsworth - Sandy; Killingsworth, NE, 109th - 102nd) serving truck access functions, pedestrian, and bike connections. | $1,403,000 | Town Center, Main street, Station community | 2026-2035 | |
| 10289 | Portland | | Division St., SE (60th - I-205): Multimodal Improvements, Phase II | SE 60th | I-205 | Construct improvements that enhance access to transit, improve safety and enhance the streetscape such as traffic signals, lighting, bus shelters, benches, and crossings. Add bike lanes (60th - 73rd). | $2,806,000 | 2040 Corridor | 2026-2035 | |
| 10290 | Portland | | Division St., SE (I-205 - 174th): Multimodal Improvements, Phase II | I-205 | SE 174th | Improve sidewalks, lighting, crossings, bus shelters & benches. Add bike lanes (148th - 162nd). | $5,710,912 | 2040 Corridor | 2018-2025 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10291 | Portland/ODOT | | 82nd Ave., SE (Schiller - City Limits), SE: Street Improvements | SE Schiller | City Limits | Expand into fully curbed, 4-lane, 60-foot wide roadway w/ continuous left-turn lane, sidewalks, street trees, storm drainage improvements, street lighting, & ROW acquisition. | $7,015,000 | 2040 Corridor | 2018-2025 | |
| 10292 | Portland | | Belmont St., SE (25th - 43rd): Street and Pedestrian Improvements | SE 25th | SE 43rd | Identify improvements along Belmont to enhance pedestrian access to transit, improve safety, and enhance streetscape such as traffic signals, lighting, bus shelters, benches, and crossings. | $3,240,930 | Town Center, Main street, Station community | 2008-2017 | |
| 10293 | Portland | | Fremont St., NE (42nd-52nd): Pedestrian and Safety Improvements | NE 42nd | NE 52nd | Construct streetscape and transportation improvements (42nd to 52nd). | $405,116 | Town Center, Main street, Station community | 2018-2025 | |
| 10294 | Portland | | Killingsworth, N ( Denver to Greeley): Pedestrian Improvements | N Denver | N Greeley | Plan and develop streetscape and transportation improvements. | $1,851,960 | 2040 Corridor | 2026-2035 | |
| 10295 | Portland | | Milwaukie, SE (Yukon - Tacoma): Bicycle & Pedestrian Improvements | SE Yukon | SE Tacoma | Plan and develop streetscape and pedestrian/bike improvements. | $1,403,000 | Town Center, Main street, Station community | 2018-2025 | |
| 10296 | Portland | | Killingsworth Bridge, N (at I-5): Bridge Improvements | N Killingsworth/I-5 Bridge | | Improvements to bridge to create a safe and pleasant crossing for pedestrians and bicyclists over I-5. | $3,788,100 | Town Center, Main street, Station community | 2026-2035 | |
| 10297 | Portland | | Spokane & Umatilla, SE (7th - Tacoma Overcrossing): Bikeway | SE 7th | Tacoma Overcrossing | Implement bike boulevard improvements. | $350,750 | Town Center, Main street, Station community | 2026-2035 | |
| 10298 | Portland | | Tacoma, SE (Sellwood Bridge - 45th/Johnson Creek): ITS | Sellwood Bridge | SE 45th | Communications infrastructure; closed circuit TV cameras, variable message signs for remote monitoring and control of traffic flow for four signals. | $231,495 | Inner neighborhood | 2018-2025 | |
| 10299 | Portland | | Lombard, N (I-5 - Denver): Street Improvements | I-5 | N Denver | Establish a landscaped boulevard to promote pedestrian-oriented uses and to create a safe, pleasant pedestrian link over I-5 w/ new traffic light and road access to Fred Meyer development. | $1,703,242 | Town Center, Main street, Station community | 2008-2017 | |
| 10300 | Portland | | Prescott Station Area Street Improvements, N | | | Construct improvements to Prescott & Skidmore (Interstate-Maryland) & Maryland (Interstate-Prescott) to provide neighborhood focal point at LRT. | $4,770,200 | Town Center, Main street, Station community | 2018-2025 | |
| 10301 | Portland | | Sandy Blvd., NE (82nd - Burnside): ITS | NE 82nd | E Burnside | CCTV at various locations; variable signs, changeable signs; monitoring stations. | $519,110 | Town Center, Main street, Station community | 2026-2035 | |
| 10302 | Portland | | MLK Jr, N (Columbia Blvd. - CEID): ITS | Columbia Blvd | CEID | CCTV at various locations & traffic monitoring stations at Clay and Burnside. | $989,115 | Portland Central City | 2018-2025 | |
| 10303 | Portland | | Capitol Hwy, SW (West Portland Town Center - 49th): Pedestrian Improvements | West Portland Town Center | SW 49th | Complete curb extensions and medians recommended in the Capitol Hwy Plan. | $1,403,000 | Town Center, Main street, Station community | 2018-2025 | |
| 10304 | Portland | | Klickitat/Siskiyou, NE (7th - Rocky Butte Rd.): Bikeway | NE 7th | Rocky Butte Rd. | Design & implement bike boulevard on Klickitat (7th-67th) and Siskiyou (67th-Rocky Butte) including traffic calming and intersection improvements. | $105,330 | Inner neighborhood | 2018-2025 | |
| 10305 | Portland | | Holgate Blvd., SE (52nd - I-205): Bikeway, Phase I | SE 52nd | I-205 | Retrofit bike lanes to existing street. | $42,090 | 2040 Corridor | 2026-2035 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10306 | Portland | | Holgate Blvd., SE (39th - 52nd): Street Improvements | SE 39th | SE 52nd | Reconstruct SE Holgate pavement structure, stormwater drainage facilities, corner curb ramps to ADA standards, improve pedestrian crossings, and add bike lanes. | $1,118,191 | 2040 Corridor | 2008-2017 | |
| 10307 | Portland | | Holgate Blvd., SE (McLoughlin - 39th): Bikeway, Phase II | McLoughlin | SE 39th | Retrofit bike lanes to existing street. | $27,548 | 2040 Corridor | 2018-2025 | |
| 10308 | Portland | | Boones Ferry Rd., SW (Terwilliger - City Limits): Bikeway | SW Terwilliger | City Limits | Retrofit bike lanes to existing street. | $7,015,000 | 2040 Corridor | 2026-2035 | |
| 10309 | Portland/ODOT | | Macadam, SW (Bancroft - County line): Multi-modal Improvements | SW Bancroft | County Line | Complete bikeway connection in the N. Macadam corridor and improve pedestrian crossings (Bancroft, Boundary, Hamilton, Nebraska, and Nevada), and address circulation at west approach to Sellwood Bridge. | $3,549,590 | Portland Central City | 2018-2025 | |
| 10310 | Portland | | Prescott, NE (47th - I-205): Pedestrian and Bicycle Improvements | NE 47th | I-205 | Construct bike lanes, sidewalks, and crossing improvements for pedestrian and bike safety and to improve access to transit. | $1,403,000 | Regional Center | 2018-2025 | |
| 10311 | Portland | | Skidmore, N/NE, (Interstate - Cully): Bikeway | N Interstate | NE Cully | Design & implement bike boulevard including traffic calming techniques and intersection improvements. | $105,330 | Town Center, Main street, Station community | 2018-2025 | |
| 10312 | Portland | | Banfield LRT Stations, NE/SE: Pedestrian Improvements | | | Retrofit existing streets along eastside MAX and at intersecting streets to include better sidewalks and crossings, curb extensions, bus shelters, and benches at 82nd, 148th, and 162nd stations. | $3,156,750 | Town Center, Main street, Station community | 2018-2025 | |
| 10313 | Portland | | Ventura Park Pedestrian District, NE/SE | | | Improve sidewalks, lighting, crossings, bus shelters & benches to improve ease of crossing and install curb extensions at transit stops. | $1,403,000 | Town Center, Main street, Station community | 2018-2025 | |
| 10314 | Portland | | 99th & 96th, NE/SE (Glisan-Market: Gateway Plan District Street Improvements, Phase II & III | NE Glisan | SE Market | Reconstruct primary local main street in Gateway Regional Center. Phase II - 99th (Glisan - Washington). Phase III - 96th (Washington to Market). | $4,910,500 | Regional Center | 2018-2025 | |
| 10315 | Portland | | 39th Ave., NE/SE (Sandy - Woodstock): Safety & Pedestrian Improvements | NE Sandy Blvd | SE Woodstock | Reconstruct street (Burnside-Holgate). Construct sidewalks and crossing improvements (Stark - Schiller). Upgrade three pedestrian signals to full signals, remodel two full signals, and provide channelization improvements to three other signals to improve safety at high accident locations. | $3,086,600 | 2040 Corridor | 2008-2017 | |
| 10316 | Portland/ODOT | | Halsey, NE (Bridge at I-84): Seismic Retrofit | NE Halsey/I-84 | | Seismic retrofit bridge. | $129,637 | Town Center, Main street, Station community | 2026-2035 | |
| 10317 | Portland | | Halsey/Weidler, NE (I-205 - 114th): Multi-modal Improvements | I-205 | NE 114th | Implement Gateway Regional Center Plan boulevard design including new traffic signals, improved pedestrian facilities and crossings and street lighting. | $17,014,883 | Regional Center | 2026-2035 | |
| 10318 | Portland | | Glisan St, NE (I-205 - 106th): Gateway Plan District Multi-modal Improvements | I-205 | NE 106th | Implement Gateway regional center plan with boulevard design retrofit, new traffic signals, bike facilities, improved pedestrian facilities and crossings, and street lighting. | $3,240,930 | Regional Center | 2026-2035 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10319 | Portland | | Stark & Washington, SE (92nd - 111th): Gateway Plan District Street Improvements | SE 92nd | SE 111th | Implement Gateway regional center plan with boulevard design retrofit including new traffic signals, improved pedestrian facilities and crossings, and street lighting. | $6,157,767 | Regional Center | 2026-2035 | |
| 10320 | Portland | | Halsey, NE (39th - I-205): Bikeway | NE 39th | I-205 | Retrofit bike lanes to existing street. | $161,345 | Regional Center | 2008-2017 | |
| 10321 | Portland | | Stark, SE (111th - City Limits): Bikeway | SE 111th | City Limits | Retrofit bike lanes to existing street (excluding 92nd - 111th). | $243,070 | Regional Center | 2018-2025 | |
| 10322 | Portland | | Stark, SE (75th - I-205): Bikeway | SE 75th | I-205 | Retrofit bike lanes to existing street. | $243,070 | 2040 Corridor | 2008-2017 | |
| 10323 | Portland | | 111th/112th Ave., SE (Market - Mt. Scott Blvd.): Bicycle & Pedestrian Improvements | SE Market | Mt. Scott Blvd | Retrofit bike lanes to existing street (Market - Mt. Scott Blvd.) and construct sidewalks (Holgate - Mt. Scott Blvd.). | $2,070,127 | 2040 Corridor | 2026-2035 | |
| 10324 | Portland | | Glisan St., NE (106th - 122nd): Bikeway | NE 106th | NE 122nd | Retrofit bike lanes to existing street. | $81,023 | Regional Center | 2018-2025 | |
| 10325 | Portland | | Glisan St., NE (47th - I-205): Bikeway | NE 47th | I-205 | Retrofit bike lanes to existing street. | $81,023 | 2040 Corridor | 2008-2017 | |
| 10326 | Portland | | Gateway Regional Center, NE/SE: Local Street Improvements, Phase II | | | High priority local street and pedestrian improvements in regional center. | $8,418,000 | Regional Center | 2018-2025 | |
| 10327 | Portland | | Gateway District Plan, NE/SE: Traffic Management | | | Implement a comprehensive traffic management plan throughout the regional center to reduce cut-through traffic on residential streets and improve traffic flow on regional streets. Project includes utility improvements. | $1,944,558 | Regional Center | 2008-2017 | |
| 10328 | Portland | | Gateway Regional Center, NE/SE: Local Street Improvements, Phase III | | | High priority local street and pedestrian improvements in regional center. | $8,418,000 | Regional Center | 2026-2035 | |
| 10329 | Portland | | Marine Dr./122nd, NE: Intersection Improvements | NE Marine Dr/122nd | | Signalize and widen dike to install left turn lane on Marine Drive. | $2,361,249 | Employment area, Industrial area | 2008-2017 | |
| 10330 | Portland | | 148th, NE (Marine Dr - Glisan): Bicycle & Pedestrian Improvements | NE Marine Dr | NE Glisan | Retrofit bike lanes to existing street (Marine Dr - I-84) and construct sidewalk and safety improvements including signal/ intersection improvements at 148th/Sandy (Airport Way-Glisan). | $2,568,893 | Employment area, Industrial area | 2018-2025 | |
| 10331 | Portland | | Columbia Blvd, N (Bridge at Taft): Seismic Retrofit | | | Seismic retrofit of bridge. | $583,367 | Inner neighborhood | 2026-2035 | |
| 10332 | Portland/ODOT | | Lombard, N/NE (MLK Jr - Philadelphia) (US 30): ITS | MLK Jr. Blvd | Philadelphia | Communications infrastructure including closed circuit TV camera, variable message signs for remote monitoring and control of traffic flow at the intersections with MLK Jr, Interstate, Greeley, Portsmouth, Philadelphia/Ivanhoe. | $673,440 | Employment area, Industrial area | 2018-2025 | |
| 10334 | Portland | | 11th/13th, NE (at Columbia Blvd.): Crossing Elimination | NE Columbia Blvd | NE Lombard | If feasible, eliminate the at-grade crossing and improve alternate roadway access. | $1,000,000 | Industrial Area | 2008-2017 | X |
| 10335 | Portland/ODOT | | 42nd Bridge, NE (at Lombard): Bridge Replacement | NE 42nd at Lombard | | Replace 42nd bridge over Lombard to remove weight restriction. | $4,209,000 | Employment area, Industrial area | 2026-2035 | |
| 10336 | Portland | | Alderwood/Columbia Blvd/Cully, NE: Intersection Improvements | Intersection of NE Alderwood/Columbia Blvd/Cully | | Reconstruct intersection to provide signalization, left turn pockets, enhancing turning radii and improving circulation for trucks serving expanding air cargo facilities south of Portland. | $1,460,000 | Employment area, Industrial area | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10337 | Portland | | 33rd/Marine Dr., NE: Intersection Improvements | 33rd/Marine Dr. | | Signalize intersection for freight movement. | $350,750 | Employment area, Industrial area | 2018-2025 | |
| 10338 | Portland/Port | | Alderwood St., NE, (Alderwood Trail - Columbia Blvd.): Bikeway | Alderwood Trail | Columbia Blvd | Provide bike lanes. Project includes some shoulder widening. | $561,200 | Employment area, Industrial area | 2018-2025 | |
| 10339 | Portland | | Columbia Blvd., N/NE (MLK Jr BL - Lombard): Bikeway | MLK Jr. Blvd | N Lombard | Retrofit bike lanes to existing street. | $153,944 | Employment area, Industrial area | 2018-2025 | |
| 10340 | Portland | | Cornfoot, NE (47th - Alderwood): Road Widening & Intersection Improvements | NE 47th | NE Alderwood | Road widening project including lighting and landscaping, left turn lanes, and bike lanes (47th - AirTrans Way). Signalize Cornfoot/AirTrans intersection and reconfigure traffic flow. Stripe bike lanes (AirTrans - Alderwood). | $2,806,000 | Employment area, Industrial area | 2008-2017 | |
| 10341 | Portland | | Columbia Blvd, N (Swift - Portland Rd. & Argyle Way - Albina): Pedestrian Improvements, Phase I & II | N Swift | N Argyle Way | Construct sidewalk and crossing improvements. | $4,213,209 | Industrial Area | 2026-2035 | |
| 10342 | Portland | | Columbia Blvd, N/NE(I-205 - Burgard): ITS | I-205 | N Burgard | Communications infrastructure including closed circuit TV cameras, variable message signs for remote monitoring and control of traffic flow for six signals. | $589,260 | Industrial Area | 2008-2017 | |
| 10343 | Portland/Port | | West Hayden Crossing, N | N Marine Dr. | Hayden Island | New four-lane bridge between Marine Drive to Hayden Island. | $99,258,000 | Industrial area | 2008-2017 | X |
| 10344 | Portland | | Force/Broadacre/Victory, N: Bikeway | N Marine Dr. | N Whitaker | Signed bikeway connection to I-5 river crossing. | $28,060 | Industrial area | 2026-2035 | |
| 10346 | Portland | | Marine Dr, N/NE (Portland Rd. to 185th): ITS | N Portland Rd. | NE 185th | CCTV at N Portland Rd. Changeable message signs at Portland Rd, Vancouver and 185th. | $238,510 | Industrial Area | 2018-2025 | |
| 10347 | Portland/Gresham | | Foster Rd., SE (162nd - Giese Rd.): Multi-modal Street Improvements | SE 162nd | SE Giese Rd. | Multimodal improvements based on PV Implementation Plan. | $2,525,400 | Town Center | 2026-2035 | |
| 10348 | Portland | | Foster Rd., SE (102nd - Foster Pl): Pedestrian Improvements | SE102nd | SE Foster Pl | Construct walkway and crossing improvements to facilitate pedestrian travel and access to transit. | $1,403,000 | Town Center, Main street, Station community | 2018-2025 | |
| 10349 | Portland | | 174th & Jenne Rd. , SE (Foster - Powell): Multi-modal Improvements | SE Powell | SE Foster Rd. | Roadway improvements to increase safety and capacity to accommodate increased residential development. Widen roadway to 3 lanes and provide bike lanes, sidewalks to provide better transportation links in this vital north/south link. | $7,155,300 | Outer neighborhood | 2018-2025 | |
| 10350 | Clackamas Co./Portland | | Clatsop, SE (162nd - City Limits): Street Extension | SE 162nd | City Limits | Extend street east into PV based on PV Implementation Plan. | $5,429,610 | Outer neighborhood | 2026-2035 | |
| 10351 | Portland | | Wildwood Bridge at West Burnside | Wildwood Trail north of W Burnside | Wildwood Trail south of W Burnside | Provide pedestrian bridge over W Burnside instead on dangerous at-grade crossing. | $2,126,948 | Portland Central City | 2008-2017 | |
| 10354 | Portland | | Fanno Creek Greenway (Red Electric) Trail | SW Dover near Multnomah County line | Willamette Park | Provide east-west route for pedestrians in cyclists in SW Portland that connects and extends the existing Fanno Creek Greenway Trail to Willamette Park. | $17,653,000 | Town Center | 2008-2017 | X |
| 10355 | Portland | | North Portland Willamette Greenway Study | N Burlington Ave. | Steel Bridge | Study mostly off-street trail near the river for both bicycle and pedestrian commuting and recreational use. | $200,000 | Portland Central City | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10356 | Portland | | Willamette Greenway - St Johns segment [previous called Willamette Greenway Trail Extension'] | Cathedral Park | Pier Park | Provide trail route from Willamette Greenway at Cathedral Park to future Columbia Slough Trail at St. Johns Landfill. | | Town Center | 2018-2025 | |
| 10358 | Port of Portland | | Airport Way Terminal Entrance Roadway Relocation | PDX Terminal Area | | Relocate and widen Airport Way northerly at Terminal entrance (to be scoped by PDX Master Plan). | $12,818,000 | Employment area | 2008-2017 | X |
| 10360 | Port of Portland | | Airport Way Return and Exit Roadways | PDX Terminal Area | | Relocate Airport Way exit roadway and construct new return roadway (Terminal Access Study, projects R4 and R5; to be scoped by PDX Master Plan). | $6,400,900 | Employment area | 2008-2017 | X |
| 10362 | Port of Portland | | 82nd Ave./Airport Way Grade Separation | | | Construct grade-separated overcrossing. | $92,000,000 | Employment area | 2008-2017 | X |
| 10363 | Port of Portland | | SW Quad Access | NE 33rd Ave. | SW Quad | Provide street access from 33rd Ave. into SW Quad. | $5,917,500 | Employment area | 2008-2017 | X |
| 10364 | Port of Portland | | PDX Light Rail Station/Track Realignment | | | Realign light rail track into terminal building. | $16,330,700 | Passenger Intermodal Facility | 2008-2017 | X |
| 10366 | Port of Portland | | Airtrans Way and Cornfoot Road Intersection Improvements | | | Add signals and improve turn lanes at AirTrans Way/Cornfoot Rd. | $650,000 | Freight Intermodal Facility | 2018-2025 | X |
| 10367 | Port of Portland | | CS/PIC Access Improvements | | | Intersection improvements (installation of stop signs, signalization and/or channelization) at Sandy Blvd/105th Ave, Airport Way/Holman St, Alderwood Rd/Holman St, Alderwood Rd/Cascades Pkwy. | $1,217,000 | Freight and Passenger Intermodal Facility | 2008-2017 | X |
| 10368 | Port of Portland | | PIC Ped/Bike Network | | | Construct bike and pedestrian facilities as shown in the CS/PIC Plan District. | $1,163,835 | Freight and Passenger Intermodal Facility | 2008-2017 | X |
| 10370 | Port of Portland | | PDX ITS | | | Intelligent Transportation Systems in the PDX area. | $3,000,000 | Freight and Passenger Intermodal Facility | 2008-2017 | X |
| 10371 | Port of Portland | | Airport Way Braided Ramps | | | Construct braided ramps between the I-205 interchange and Mt. Hood Interchange. | $59,000,000 | Employment area | 2018-2025 | X |
| 10373 | Port of Portland | | Rivergate ITS | | | Intelligent Transportation System in Rivergate. | $480,000 | Freight Intermodal Facility | 2008-2017 | X |
| 10374 | Port of Portland | | Terminal 4 Second Access | | | Regrade hillslope to provide two-lane truck access. | $7,000,000 | Freight Intermodal Facility | 2008-2017 | X |
| 10375 | Port of Portland | | Cathedral Park Quiet Zone | | | Address rail switching noise related to the Toyota operations at T-4 by improving multiple public rail crossings in the St. Johns Cathedral Park area. | $8,200,000 | Industrial area | 2008-2017 | X |
| 10376 | Portland/Port | | Columbia Blvd. Widening | 60th Ave. | 82nd Ave. | Widen Columbia Blvd. to five lanes between 60th Ave and 82nd Ave. | $14,859,000 | Employment area, Industrial area | 2008-2017 | X |
| 10377 | Port of Portland | | PSU ITS Expansion, incl. freight data repository | | | Expand PSU's existing web based ITS "count sensor" program beyond the freeway to some key arterials throughout the region. Create a repository of freight data (primarily truck data) from the region's Freight Data Collection project. | | Other | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10378 | Port of Portland | | T-6 Internal Overcrossing | Marine Dr. | Terminal 6 | Construct an elevated roadway between Marine Dr. and Terminal 6. | $3,649,084 | Freight Intermodal Facility | 2008-2017 | X |
| 10379 | Port of Portland | | Marine Dr. Improvement Phase 2 | | | Construct rail overcrossing on Marine Dr. | $13,644,200 | Freight Intermodal Facility | 2018-2025 | X |
| 10380 | Port of Portland | | PDX Transportation Demand Management (TDM) | | | Implement strategies at PDX and PIC properties that reduce auto trips in the airport area. Programs to be undertaken with other area businesses/developers to maximize effectiveness; possible administration through a transportation management association. | | Freight and Passenger Intermodal Facility | 2008-2017 | X |
| 10382 | Multnomah Co. | Multnomah Co. | Reconstruct Stark St. to arterial standards | 257th Ave. | Troutdale Rd. | Reconstruct Stark St. to minor arterial standards by widening the existing 2 lanes to provide for 4 traffic lanes, a continuous left-turn lane, bike lanes, sidewalks, and intersection improvements. | $3,150,000 | Outer neighborhood | 2008-2017 | X |
| 10383 | Multnomah Co./Gresham | To be determined | I-84 to US26 Connection(s) | I-84 | US 26 | Implement recommendations of I-84/US 26 Corridor Refinement Plan conducted in accordance with the Cities 2007 MOU. | $35,000,000 | Other | 2008-2017 | |
| 10384 | Multnomah Co. | Multnomah Co. | Reconstruct Scholls Ferry Rd. | US 26 | Washington County | Reconstruct Scholls Ferry Rd. to provide for bicycle and pedestrian travel; includes SW Patton intersection improvements. | $5,800,000 | Outer neighborhood | 2008-2017 | X |
| 10385 | Multnomah Co. | Multnomah Co. | Reconstruct Halsey St. with Improvements | 238th Ave. | Historic Columbia River Hwy | Widen Halsey St to 3 lane minor arterial with center turn lane/median, sidewalk and bicycle lanes, consistent with Halsey Street Conceptual Design Plan | $1,080,900 | Town Center | 2008-2017 | X |
| 10386 | Multnomah Co./Gresham | Multnomah Co./Gresham | Glisan St. Multi-modal Improvements | 202nd Ave./Gresham-Fairview Trail | 207th Ave./Salish Ponds Natural Area | Reconstruct Glisan Street to provide multimodal connection between Gresham-Fairview Trail and Salish Ponds Natural Area. Include bike lanes, sidewalks, two travel lanes in each direction, and on-street parking. Design green-street treatment for drainage improvements, including Fairview Creek culvert replacement. South side of Glisan St is in Gresham, north is City of Fairview. | $11,500,000 | Employment area | 2008-2017 | X |
| 10387 | Multnomah Co. | Multnomah Co. | Reconstruct Arata Rd. | 223rd Ave. | 238th Ave. | Construct to 3 lane collector standards with center turn lane/median, sidewalks, bicycle lanes. | $2,300,000 | Town Center | 2008-2017 | X |
| 10388 | Multnomah Co. | Multnomah Co. | Reconstruct 223rd Ave. | Halsey St. | Sandy Blvd | Reconstruct 223rd Ave to major collector standards with 2 travel lanes, center turn lane/median, sidewalks and bicycle lanes. Requires reconstruction of RR bridge under another project. | $1,400,000 | Inner neighborhood | 2008-2017 | X |
| 10389 | Multnomah Co. | Multnomah Co. | Reconstruct 223rd Ave. | Sandy Blvd | Marine Dr. | Improve 223rd Ave to major collector standards including 2 travel lanes, center turn lane/median, sidewalks, bicycle lanes. Possible culvert replacement for fish passage could add $120,000 to cost. Requires replacement of RR bridge not included in this proposal. | $2,267,000 | Industrial area | 2018-2025 | X |
| 10390 | Multnomah Co. | Multnomah Co. | Reconstruct Troutdale Rd. | Stark St. | Division Dr. | Reconstruct with 2 travel lanes; construct center turn lane/median, sidewalks, bicycle lanes between Stark and Strebin. Reconstruct Troutdale Rd/Division Dr. intersection including new fish culverts. | $8,297,000 | Outer neighborhood | 2026-2035 | X |
| 10391 | Multnomah Co. | Multnomah Co. | Reconstruct Historic Columbia River Hwy. | 244th Ave. | Halsey St. | Reconstruct Historic Columbia River Hwy and NE 244th Ave to minor arterial standards with 2 travel lanes, center turn lane/median, bicycle lanes and sidewalk. Reconstruction of railroad bridge on HCRH is not included in this project. | $6,151,000 | Industrial Area, Town Center | 2026-2035 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10394 | Multnomah Co. | Multnomah Co. | Replace RR Over-crossing on 223rd Ave. | 2000' north of I-84 | | Reconstruct railroad bridge on 223rd Ave, 2000' north of I-84 to accommodate wider travel lanes, sidewalks and bike lanes. | $7,000,000 | Industrial area | 2018-2025 | X |
| 10395 | Multnomah Co. | Multnomah Co. | Replace RR over crossing at Historic Columbia River Hwy | Half mile east of 244th Ave. | | Reconstruct railroad bridge to accommodate wider travel lanes, sidewalks and bike lanes. | $7,000,000 | Employment area | 2026-2035 | X |
| 10396 | Multnomah Co. | Multnomah Co. | Reconstruct Cornelius Pass Rd. | Mile Post 2.8 | Mile Post 3.5 | Reconstruct Cornelius Pass Road including passing lane, safety, shoulder and drainage improvements. | $45,000,000 | Other | 2018-2025 | X |
| 10398 | Multnomah Co. | Multnomah Co. | Wood Village Blvd Extension | Arata Rd. | Halsey St. | Construct new extension of Wood Village Blvd as a major collector with 2 travel lanes, center turn lane/median, sidewalks and bicycle lanes. | $1,573,000 | Town Center | 2008-2017 | X |
| 10399 | Multnomah Co. | Multnomah Co. | Reconstruct Sandy Blvd. | 207th Ave. | 238th Ave. | Reconstruct Sandy Blvd to minor arterial standards with bike lanes, sidewalks and drainage improvements, utilizing recommendations from TGM grant. | $7,438,000 | Industrial area | 2008-2017 | X |
| 10401 | Multnomah Co. | Multnomah Co. | Reconstruct Marine Dr. | Interlachen | I-84 | Reconstruct Marine Drive between Intelachen and the frontage roads in Troutdale. | $14,000,000 | Industrial area | 2018-2025 | X |
| 10402 | Multnomah Co. | Multnomah Co. | Construct new road north of I-84, Exit 16 | Sandy Blvd | Marine Dr. | Conduct design options alternatives (DOA) study for new connection between Sandy Blvd and Marine Dr. Construct new connector linking industrial sites with I-84 | $13,000,000 | Industrial area | 2008-2017 | X |
| 10403 | Multnomah Co. | Multnomah Co. | 257th Ave. Pedestrian improvements at intersections and mid-block crossings | Stark St. | Cherry Park Rd. north | Improve sidewalks, crossings, lighting and bus stops. | $1,600,000 | 2040 Corridor | 2008-2017 | X |
| 10404 | Multnomah Co. | Multnomah Co. | Beaver Creek Culvert Replacement | Troutdale Rd. | Cochran Rd. | Replace culverts with fish friendly structures allowing for passage to federally endangered species | $6,000,000 | Other | 2008-2017 | X |
| 10405 | Multnomah Co. | Multnomah Co. | Pedestrian Improvements | Various streets | | Install pedestrian improvements--crossings, lighting, sidewalks. | $1,940,000 | Various | 2018-2025 | X |
| 10406 | Multnomah Co. | Multnomah Co. | Reconstruct Stark St. to arterial standards | Troutdale Rd. | Hampton Rd. | Reconstruct road to arterial standards with 1 travel lanes in each direction, center turn lane/median, sidewalks and bicycle lanes. | $1,810,000 | Outer neighborhood | 2018-2025 | X |
| 10407 | Multnomah Co. | Multnomah Co. | Fish passage culvert replacement | Fairview and Arata Creeks | | Replace 5 culverts with fish friendly structures allowing for passage to federally endangered species. | $1,511,000 | Other | 2026-2035 | X |
| 10408 | Multnomah Co. | Multnomah Co. | 40 Mile Loop Trail | Gresham/Fairview Trail | Graham Rd | Complete gaps in 40-Mile Loop Trail within CCRD, and construct trailhead. | $3,500,000 | Other | 2008-2017 | X |
| 10409 | Multnomah Co. | Multnomah Co. | Beaver Creek Trail | Mt. Hood Comm. Coll. | Historic Columbia River Hwy | Constructs new trail adjacent to Beaver Creek. | $1,400,000 | Other | 2018-2025 | X |
| 10410 | Multnomah Co. | Multnomah Co. | Broadway Bridge Rehabilitation | | | Rehabilitate mechanical system, approach structure, corrosion control, phase 1 seismic. | $22,700,000 | Portland Central City | 2008-2017 | X |
| 10411 | Multnomah Co. | Multnomah Co. | Burnside Bridge Rehabilitation - Phase 1 | | | Rehabilitate mechanical system, approach structure, corrosion control, phase 1seismic. Phase 1. | $25,000,000 | Portland Central City | 2008-2017 | X |
| 10412 | Multnomah Co. | Multnomah Co. | Morrison Bridge Rehabilitation - Phase 1 | | | Rehabilitate mechanical system, approach structure, corrosion control, phase 1 seismic. (Phase 1) | $25,700,000 | Portland Central City | 2008-2017 | X |
| 10413 | Multnomah Co. | Multnomah Co. | Hawthorne Bridge Rehabilitation | | | Rehabilitate mechanical system, approach structure, corrosion control, phase 1 seismic. | $13,300,000 | Portland Central City | 2008-2017 | X |
| 10414 | Multnomah Co. | Multnomah Co. | Sellwood Bridge Replacement | S.E. Tacoma St. | Hwy. 43 | Final Engineering and ROW acquisition phase of bridge replacement. | $58,000,000 | Main street | 2008-2017 | X |
| 10416 | Gresham | Gresham | Hogan Corridor Improvements | Stark | Burnside | Interim capacity improvements and access controls. | $19,140,461 | 2040 Corridor | 2008-2017 | |
| 10417 | Gresham | Gresham | Hogan Corridor Improvements | Palmquist | Springwater Trail | Complete study and construct new principal arterial connection. | $7,507,673 | 2040 Corridor | 2018-2025 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10419 | Gresham | Gresham | Civic Neighborhood. LRT station plaza | Max line west of City Hall | 728' to the northwest | Constructs new light rail station to max blue line. | $5,600,000 | Regional Center | 2008-2017 | X |
| 10420 | Gresham | Gresham | Palmquist Rd. Improvements | 242nd Ave. | US 26 | Improves to five lane collector standards, intersection improvements. | $7,784,844 | Employment area | 2018-2025 | X |
| 10421 | Gresham | Gresham | Burnside Rd. Blvd Improvements | 181st | 197th | Complete boulevard improvements. | $7,873,990 | Town Center | 2008-2017 | X |
| 10422 | Gresham | Gresham | Division St. Improvements | 257th Ave. | 268th Ave. | Improve to community street standards, including bikelanes. | $3,945,711 | Employment area | 2018-2025 | |
| 10423 | Gresham | Gresham | Cleveland St. Reconstruction. | Powell | Burnside | Reconstructs street from Burnside to Powell. | $1,100,000 | Regional Center | 2008-2017 | X |
| 10424 | Gresham | Gresham | Wallula St. Reconstruction, + intersections | Division | Stark | Widen road, add curb/gutter, sidewalks. At Burnside, add northbound, southbound, left turn lanes. Signalize Stark. | $8,347,988 | Regional Center | 2018-2025 | X |
| 10425 | Gresham | Gresham | Bull Run Rd.. Reconstruction | 242nd Ave. | 257th Ave. | Brings to standards, adds pedestrian, bicycle facilities. | $4,466,312 | Employment area | 2018-2025 | X |
| 10427 | Gresham | Gresham | Regner Rd. Reconstruction | Roberts | Southern City Limits | Brings to standards, adds pedestrian, bicycle facilities, improves Regner/Butler intersection by adding NB left-turn pocket and signalizing intersection. | $29,265,570 | Outer neighborhood | 2018-2025 | X |
| 10429 | Gresham | Gresham | Powell Valley Imps. | Burnside | 282nd. Ave. | Improve Powell Valley w. ped and bike facilities. | $14,645,408 | Regional Center | 2018-2025 | X |
| 10430 | Gresham | Gresham | Orient Dr. Imps. | South City Limits | 257th Ave. | Upgrades to arterial 4 lane standards. | $9,000,000 | Industrial area | 2018-2025 | X |
| 10431 | Gresham | Gresham | Highland/190th Rd. Widening | 200' south of SW 11th | Ending at the intersection of Pleasant View Dr./SE 190th and Butler | Reconstruct and widen street to five lanes with sidewalks and bike lanes. Widen and determine the appropriate cross-section for Highland Drive and Pleasant View Drive from Powell Boulevard to 190th Ave.. | $19,646,521 | Employment area | 2008-2017 | X |
| 10432 | Gresham | Gresham | Division St. Improvements | Birdsdale | Wallula | Complete boulevard design improvements. | $12,162,471 | Regional Center | 2018-2025 | |
| 10433 | Gresham | Gresham | Division St. Improvements | Kelly | Burnside | Complete boulevard design improvements. | $10,331,749 | Regional Center | 2008-2017 | |
| 10434 | Gresham | Gresham | Burnside St. Improvements | NE Wallula St. | Hogan | Complete boulevard design improvements Wallula to Hogan (2004 RTP 2048), also improve intersection of Burnside at Division (2002 TSP #15) by adding eastbound RT and signal, and also improve the intersection of Burnside and Hogan (2004 RTP #2032). | $32,545,601 | Regional Center | 2008-2017 | X |
| 10436 | Gresham | Gresham | Max Trail | Cleveland | Ruby Junction | Construct new shared use path. | $1,897,279 | Regional Center | 2008-2017 | X |
| 10437 | Gresham | Gresham | Gresham/Fairview Trail | Halsey | Marine Dr. | Springwater trail connect. incl. Trailhead @ Marine Dr. | $4,608,799 | Town Center | 2018-2025 | X |
| 10438 | Gresham | Gresham | Springwater Trail Connections | Pl. View/190th | N/A | Provide ped, bike and equestrian access to regional trail. | $271,562 | Town Center | 2018-2025 | X |
| 10439 | Gresham | Gresham | Main City Park Trailhead | Main City Park | | Improves parking lot, facilities (MTIP project). | $570,299 | Regional Center | 2008-2017 | X |
| 10440 | Gresham | Gresham | Division St. Multimodal Improvements | Wallula | west city limits | Retrofit street to add bicylce facilities, sidewalks, and explore other multimodal facilities and connections. | $4,939,693 | 2040 Corridor | 2008-2017 | X |
| 10441 | Gresham | Gresham | Gresham RC Ped and Ped to Max | all stations | | Improve sidewalks, lighting, crossings, bus shelters, benches. | $584,820 | Regional Center | 2008-2017 | X |
| 10442 | Gresham | Gresham | Phase 3 Signal Optimization | System Wide | | Optimize signals, provide message boards. | $6,227,280 | Regional Center | 2008-2017 | X |
| 10443 | Gresham | Gresham | Sandy Blvd. Widening | 181st Ave. | 202nd | Widens Sandy Blvd. to 5 lanes with sidewalks, bikelanes from 181st to 202nd Ave. | $10,000,000 | Industrial area | 2018-2025 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10444 | Gresham | Gresham | 181st Ave. Widening | Halsey St. | EB on-ramp to I-84 | Widens street to three lanes southbound. | $1,797,270 | 2040 Corridor | 2008-2017 | X |
| 10445 | Gresham | Gresham | 181st Ave. Intersection Improvement (181st/Glisan) | 181st/Glisan | | Improve Intersection. | $1,041,867 | 2040 Corridor | 2018-2025 | X |
| 10446 | Gresham | Gresham | 181st Ave. Intersection Improvement (181st/Burnside) | 181st/Burnside | | Improve Intersection. | $831,210 | 2040 Corridor | 2018-2025 | X |
| 10447 | Gresham | Gresham | 162nd Ave. Imps. Plus TIF project | Glisan | Halsey | Reconstruct, widen to 5 lanes, plus EB RT at Glisan. | $7,915,303 | Outer neighborhood | 2018-2025 | X |
| 10448 | Gresham | Gresham | 201st: Glisan to Halsey | Glisan | Halsey | Improve to collector standards. | $6,100,075 | Industrial area | 2008-2017 | |
| 10449 | Gresham | Gresham | 201st: Halsey to Sandy | Halsey | Sandy | Improve to collector standards, signalize 201st/Sandy Blvd. | $8,335,400 | Industrial area | 2008-2017 | X |
| 10450 | Gresham | Gresham | 2 Birdsdale Projects, at Division, | at Division | at Stark | Division: SB, EB turn lanes. At Stark: add 2nd NB LT lane and exclusive RT lane. | $1,375,500 | Industrial area | 2008-2017 | X |
| 10451 | Gresham | Gresham | 202nd: Burnside to Powell | Burnside | Powell | Upgrade to collector standards. | $10,174,125 | Employment area | 2008-2017 | |
| 10452 | Gresham | Gresham | 202nd Projects: Stark to Glisan | Stark | Glisan | Improve to collector standards. | $8,028,609 | Town Center | 2008-2017 | |
| 10454 | Gresham | Gresham | 181st Ave. Improvements | Glisan | Yamhill | Complete boulevard design improvements. | $11,440,061 | Town Center | 2008-2017 | X |
| 10455 | Gresham | Gresham | Rockwood TC Ped and Ped to Max:188th LRT Stations and Ped to Max | | | Improve sidewalks, lighting, crossings, bus shelters, benches. | $8,919,615 | Town Center | 2018-2025 | X |
| 10457 | Gresham | Gresham | 223rd Ave. Improvements | Glisan | Stark | Improve sidewalks, lighting, crossings, bus shelters, benches. | $102,229 | Industrial area | 2008-2017 | |
| 10458 | Gresham | | Halsey St. Improvements | 190th | 201st | Widen to 4 lanes w. sidewalks and bikelanes. | $4,430,961 | Town Center | 2008-2017 | X |
| 10459 | Gresham | Gresham | Burnside SC Pedestrian Imps. | 172nd, 197th, Glisan, Stark & intersecting streets | | Improve sidewalks, lighting, crossings, bus shelters, benches. | $1,192,669 | Regional Center | 2018-2025 | X |
| 10460 | Gresham | Gresham | SE 174th N/S Improvements | Giese | 174th/Jenne | Construction of new roadway that adds n/s capacity in vicinity of 174/Jenne. This facility will have two travel lanes in each direction (total 4 travel lanes), and a median/turn lane which will be primarily a median, with left turn pockets at the intersection of the New Road/Giese, and also New Road/McKinley. | $27,498,638 | Town Center | 2008-2017 | X |
| 10461 | Gresham | Gresham | Towle Ave. Improvements | Butler | Eastman Parkway | Construct sidewalks, bike lanes and intersection improvements. | $3,302,775 | Outer neighborhood | 2008-2017 | |
| 10462 | Gresham | Gresham | Butler Rd. Improvements | 190th | Towle Rd. | Improve Butler Rd. in new alignment to collector standards, at intersection, add northbound and westbound turn pockets and signalize. | $13,166,455 | Outer neighborhood | 2008-2017 | X |
| 10463 | Gresham | Portland/Gresham | Foster Rd. Extension (north) | Jenne | 172nd | New north extension of Foster. | $15,417,627 | Town Center | 2008-2017 | X |
| 10464 | Gresham | N/A | Giese Rd. Extension | 182nd | 172nd | New ext. of Giese Rd. to Foster Road. | $17,987,232 | Town Center | 2018-2025 | X |
| 10465 | Gresham | N/A | 172nd Ave. Improvements | Giese Rd. | Foster Rd. | Upgrade street to urban standards w. sidewalks, bikelanes. | $11,520,364 | Town Center | 2018-2025 | X |
| 10466 | Gresham | N/A | 172nd Ave. Improvements | Butler Rd. | Cheldelin Rd. | Upgrade street to urban standards w. sidewalks, bikelanes, and add roundabout or traffic signal at 172nd/Foster. | $7,112,978 | Town Center | 2018-2025 | X |
| 10468 | Gresham | Gresham | Giese Rd. Improvements | 182nd Ave. | 190th Ave. | Upgrade street to urban standards w. sidewalks, bikelanes. | $5,430,469 | Town Center | 2018-2025 | X |
| 10469 | Gresham | N/A | Foster Rd. Bridge | Foster Rd. | | Construct bridge crossing. | $2,642,220 | 2040 Corridor | 2018-2025 | X |
| 10470 | Gresham | N/A | Giese Rd. Extension Bridge | Giese Rd. | | Construct bridge crossing. | $2,642,220 | Town Center | 2018-2025 | X |

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| 10471 | Gresham | N/A | Butler Rd. Extension and Bridge | Binford | Rodlun | Construct new Butler road extension and bridge crossing. | $12,268,899 | Town Center | 2008-2017 | X |
| 10472 | Gresham | Gresham | Eastman at Division | | | Add 2nd NB and SB LT lanes. | $912,928 | Regional Center | 2008-2017 | X |
| 10473 | Gresham | Gresham | Eastman at Stark | | | Add EB and NB RT lanes and 2nd NB and SB LT lanes. | $1,196,756 | Regional Center | 2008-2017 | X |
| 10474 | Gresham | N/A | Rugg Rd. Ext. | Orient Dr. | US 26 | Construction of new roadway that adds e/w capacity in vicinity Rugg Rd and connects Springwater Industrial area to Highway 26. | $30,672,208 | Industrial area | 2008-2017 | X |
| 10475 | Gresham | N/A | Rugg Rd. Ext. | US 26 | 252nd Ave. | Construction of new roadway that adds e/w capacity in vicinity Rugg Rd and connects Springwater Industrial area to Highway 26. | $39,329,973 | Industrial area | 2008-2017 | X |
| 10476 | Gresham | N/A | Rugg Rd. | 252nd Ave. | 242nd. Ave. | Construction of new roadway that adds e/w capacity in vicinity Rugg Rd and connects Springwater Industrial area to Highway 26. | $12,770,187 | Industrial area | 2008-2017 | X |
| 10477 | Gresham | Gresham | Springwater Road Section 4 | 242nd Ave. | 252nd Ave. | Construction of new street for implementation of Springwater Plan. | $13,148,679 | Industrial area | 2008-2017 | X |
| 10478 | Gresham | Gresham | 252nd Ave. | Palmquist Rd. | 10 | Construction of new street for implementation of Springwater Plan. | $26,162,462 | Industrial area | 2008-2017 | X |
| 10479 | Gresham | Gresham | 252nd Ave. | 10 | Rugg Rd. | Construction of new street for implementation of Springwater Plan. | $9,808,690 | Industrial area | 2008-2017 | X |
| 10480 | Gresham | Gresham | Springwater Road Section 7 | 242nd Ave. | 9 | Construction of new street for implementation of Springwater Plan. | $8,008,421 | Industrial area | 2008-2017 | X |
| 10481 | Gresham | Gresham | Springwater Road Section 8 | 242nd Ave. | 9 | Construction of new street for implementation of Springwater Plan. | $5,519,551 | Industrial area | 2008-2017 | X |
| 10482 | Gresham | Gresham | Springwater Road Section 9 | 7 | 252nd Ave. | Construction of new street for implementation of Springwater Plan. | $8,008,421 | Industrial area | 2008-2017 | X |
| 10483 | Gresham | Gresham | Springwater Road Section 10 | 252nd Ave. | Telford Rd. | Construction of new street for implementation of Springwater Plan. | $12,202,421 | Industrial area | 2008-2017 | X |
| 10484 | Gresham | Gresham | Springwater Road Section 11 | Telford Rd. | Orient Dr. | Construction of new street for implementation of Springwater Plan. | $21,031,280 | Industrial area | 2008-2017 | X |
| 10485 | Gresham | Gresham | Hogan | Palmquist Rd. | Rugg Rd. | Improvement of existing roadway to arterial 4 lane standards. | $47,291,190 | Industrial area | 2008-2017 | X |
| 10486 | Gresham | Gresham | Telford Rd. | Springwater Boundary | 252nd Ave. | Improvement of existing roadway to collector standards, add bike and ped facilities, intersection improvements. | $29,419,888 | Industrial area | 2008-2017 | X |
| 10488 | Gresham | Gresham | 282nd Ave. | Springwater Boundary | 20 | Improvement of existing roadway to collector standards, add bike and ped facilities, intersection improvements. | $7,146,436 | Industrial area | 2008-2017 | X |
| 10490 | Gresham | Gresham | 201st RR Bridge at I-84 | 201st/I-84 | " | Construct new RR bridge to accommodate alternative modes. | $2,359,125 | Industrial area | 2008-2017 | X |
| 10492 | Gresham | Gresham | 162nd RR bridge@I-84 | 162nd/I-84 | N/A | Reconstruct RR bridge to accommodate alternative modes. | $2,621,250 | Employment area | 2008-2017 | |
| 10493 | Gresham | Gresham | 181st Ave. Sandy to I-84 | Sandy | I-84 | Add southbound aux lane & widen RR overcrossing. | $827,659 | Industrial area | 2018-2025 | X |
| 10494 | Gresham | Gresham | 162nd at Stark St. | | | Exclusive southbound and eastbound right turns at Stark. | $888,209 | Employment area | 2008-2017 | X |
| 10495 | Gresham | Gresham | 181st Ave. at Halsey | 181st/Halsey | | add 2nd LT lane to N & S legs, add RT lane to EB WB SB. | $1,025,038 | Industrial area | 2008-2017 | X |
| 10496 | Gresham | Gresham | 181st at I-84 | 181st/I-84 | | Freight mobility improvements subject to refinement study. | $250,000 | 2040 Corridor | 2018-2025 | X |
| 10497 | Gresham | Gresham | 181st at Sandy, at Stark | | | At Sandy: Northbound right turn, 2nd westbound left turn. Overlap eastbound right turn. At Stark, add 2nd left turn lane on east and west legs. | $1,884,390 | 2040 Corridor | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10498 | Gresham | Gresham | 181st (182nd) at Division/Powell Intersections | 181st at Division, Powell | | At Division: add second westbound left turn lane (TIF P1). At Powell, add northbound and southbound double left turn lanes (TIF P2 and TSP8).At Powell add SB and NB lanes. | $1,682,670 | 2040 Corridor | 2008-2017 | X |
| 10499 | Gresham | Gresham | 192nd Ave. Wilkes to Halsey | 192/Wilkes | 192/Halsey | Improve to collector street standards. | $3,833,031 | Industrial area | 2008-2017 | X |
| 10501 | Gresham | Gresham | Barnes Rd.: Powell Valley to southern City Limits | Powell Valley | Orient Dr. | Widen road and add improvements. | $7,135,229 | Industrial area | 2018-2025 | X |
| 10502 | Gresham | Gresham | Bike signs | various locations | | Add directional signs to bike network. | $1,400,000 | Other | 2008-2017 | X |
| 10503 | Gresham | Gresham | Burnside at Powell | | | At Powell: eliminate EB and WB left turn lanes. | $683,517 | 2040 Corridor | 2008-2017 | X |
| 10504 | Gresham | Gresham | Ped to Max: Hood St. | Powell | Division | Improve ped access/multi-modal on Hood St. | $986,467 | Regional Center | 2008-2017 | X |
| 10505 | Gresham | Gresham | Civic Neighborhood TOD | 16th and NW Norman | | Support construction of street infrastructure improvements. | $4,765,219 | Regional Center | 2008-2017 | X |
| 10506 | Gresham | Gresham | Transit: Columbia Corridor TMA | | | Transit/bus service improvements, 2 locations. | $185,258 | Industrial area | 2008-2017 | X |
| 10507 | Gresham | Gresham | Glisan, 181st to 202 | 181st | 202nd | Retrofit bikelanes. | $52,425 | Employment area | 2008-2017 | X |
| 10509 | Gresham | Gresham | Safe walking routes, missing links | various locations | | Construct missing links and safe routes to school. | $4,089,150 | Other | 2008-2017 | X |
| 10510 | Gresham | Gresham | Hillyard, Palmblad to Anderson | Palmblad | Anderson | Widen roadway and construct curb and gutter, sidewalks, bike lanes, streetlights, storm drainage and intersection improvements. | $9,628,553 | Outer neighborhood | 2018-2025 | |
| 10511 | Gresham | Gresham | Hogan Rd. at Stark St. | Stark | | Add right turn lanes on all approaches and second northbound and southbound left turns. | $1,908,431 | 2040 Corridor | 2018-2025 | X |
| 10512 | Gresham | Gresham | Hogan: Powell to Burnside boulevard improvements plus three intersection improvements | Powell | Burnside | Improve to boulevard standards, and intersection improvements at Burnside, Division and Powell. | $8,739,328 | Regional Center | 2018-2025 | X |
| 10514 | Gresham | Gresham | Powell: Burnside to Kane | Burnside | Kane | Construct to arterial standards, 4 travel lanes, center turn lane, bike lanes and pedestrian facilities. | $5,294,917 | 2040 Corridor | 2018-2025 | |
| 10515 | Gresham | Gresham | Riverside Dr. ext. to Sandy Blvd | 190th | Sandy | Extend collector from 190th to Sandy to improve industrial access. | $10,975,110 | Industrial area | 2008-2017 | |
| 10516 | Gresham | Gresham | San Rafael, 181st to 201st | 181st | 201st | Complete collector and remove frontage road. | $9,990,952 | Industrial area | 2008-2017 | X |
| 10517 | Gresham | Gresham | Welch Rd., Anderson to 282nd | Anderson Rd. | 282nd | Widen roadway and construct improvements. | $9,507,235 | Industrial area | 2008-2017 | |
| 10518 | Gresham | Gresham | Wilkes St., 181st to 192nd | 181st | 192nd | Improve Wilkes to collector standards and provide slip ramp connection from Eastbound I-84 on ramp. | $6,781,698 | Industrial area | 2018-2025 | X |
| 10519 | Gresham | Gresham | Pedestrian enhancements | 162nd/Bside, and | 181st Burnside | Pedestrian enhancements. | $75,492 | Regional Center | 2008-2017 | X |
| 10520 | Gresham | Gresham | 184th Ave., Wilkes to San Rafael | Wilkes | San Rafael | Construct new collector street. | $7,353,375 | Industrial area | 2018-2025 | |
| 10521 | Gresham | Gresham | Signalize intersections | | | Signalize intersections. | $768,590 | Other | 2018-2025 | X |
| 10522 | Gresham | Gresham | Burnside, Hogan to Powell | Hogan | Powell | Safety improvements and reconstruction. | $8,807,400 | Regional Center | 2018-2025 | |
| 10523 | Gresham | Gresham | Chase Rd., Orient Dr. to 282nd | Orient | 282nd | Widen road and construct improvements. | $2,494,006 | Industrial area | 2018-2025 | |
| 10524 | Gresham | Gresham | Cleveland Ave., Glisan to Stark | Glisan | Stark | Construct new collector street. | $15,277,585 | Employment area | 2018-2025 | |
| 10525 | Gresham | Gresham | Clyde, Glisan to Stark | Glisan | Stark | Construct new collector street. | $16,277,585 | Employment area | 2018-2025 | |
| 10526 | Gresham | Gresham | Heiney St./14th, Pl View Dr. to 18th Court | Pl View/Binford | 18th Court | Widen road and construct improvements. | $3,583,249 | Outer neighborhood | 2018-2025 | |

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| 10527 | Gresham | Gresham | Hogan, Powell Blvd to Palmquist | Powell | Palmquist | Improve to arterial standards. | $8,444,619 | Industrial area | 2018-2025 | X |
| 10529 | Gresham | Gresham | Salquist Rd. / Barnes Rd. to 282nd Ave. | Barnes Rd. | 282nd Ave. | Widen road and construct improvements. | $5,528,671 | Industrial area | 2018-2025 | |
| 10530 | Gresham | Gresham | Towle Ave. Butler Rd. to Binford Lake | Butler Rd. | Binford Lake Parkway | Improve to collector standards. Add roundabout at Towle/Binford. | $11,897,840 | Outer neighborhood | 2018-2025 | X |
| 10532 | Gresham | Gresham | Williams Rd., Powell Valley to Div. | Powell Valley Rd. | Division St. | Widen road and construct improvements. | $7,202,147 | Industrial area | 2018-2025 | |
| 10533 | Gresham | Gresham | 190th:30th to So. Boundary of Pleasant Valley | 30th | Southern boundary of Pleasant Valley | Improve existing road to major arterial standards, signalize 190th @ Giese, Butler, Richey, Cheldelin. | $28,644,245 | Town Center | 2008-2017 | X |
| 10534 | Gresham | Gresham | Cheldelin: 172nd to 190th | 172nd | 190th | Improve existing road to minor arterial standards, signalize Cheldelin at 172nd, 182nd, and Foster. | $19,795,513 | Town Center | 2008-2017 | X |
| 10535 | Gresham | Gresham | Clatsop: New extension | 162nd | 172nd | Extend Clatsop into Pleasant Valley, and construct bridge. | $20,163,595 | Town Center | 2008-2017 | X |
| 10536 | Portland | Portland | Clatsop: Improvements | 162nd | Portland Boundary | Improve Clatsop to minor arterial standards, and signalize Clatsop at 162nd. | $4,202,582 | Town Center | 2008-2017 | |
| 10537 | Gresham | Gresham | Richey | 182nd | 190th | Improve to collector standards, and signalize 190th/Richey. | $7,925,735 | Town Center | 2008-2017 | X |
| 10538 | Gresham | Gresham | Sager | 162nd | Foster | Improve to collector standards, and signalize Sager @172nd. | $15,794,720 | Town Center | 2008-2017 | X |
| 10539 | Gresham | Gresham | Foster South: new road | County Line | Sager | Build new road section to collector standards. | $7,120,992 | Town Center | 2008-2017 | X |
| 10540 | Gresham | Gresham | 162nd | Foster | southern boundary of Pleasant Valley | Improve 162nd to collector standards, add signal at Foster @ 162nd. | $21,236,546 | Town Center | 2008-2017 | X |
| 10541 | Gresham | Gresham | 182nd | Giese | Cheldelin | Improve 182nd to collector standards. | $11,797,690 | Town Center | 2008-2017 | X |
| 10542 | Portland | Portland | Foster Rd. Improvements | 162nd | Jenne Rd. | Improve Foster Rd. to Minor Arterial (Parkway) standards, 2 lanes, with turn pockets where appropriate. | $3,014,698 | Town Center | 2008-2017 | |
| 10543 | Gresham | Gresham | 172nd: Cheldelin south to Pleasant Valley boundary | Cheldelin | So. Boundary of Pleasant Valley | Improve 172nd Ave. to major arterial standards. | $8,651,396 | Town Center | 2008-2017 | X |
| 10544 | Gresham | Gresham | Butler Rd. Bike and Ped Improvements | Towle | Regner | Construct bikelanes and sidewalks. | $5,705,413 | Outer neighborhood | 2018-2025 | X |
| 10545 | Washington Co. | | OR 10: Oleson Rd. Improvement | Oleson Rd. south of OR10 | Oleson Rd. at Scholls Ferry | Realign Oleson Rd. 500 feet to east and reconfigure Oleson intersections with OR10 and Scholls Ferry Rd. | $30,888,000 | Town Center | 2018-2025 | X |
| 10546 | Washington Co. | Washington Co. | 170th Ave. Improvements | Alexander St. | Merlo Rd. | Widen roadway to 4 lanes with left turn lanes at major intersections and bike lanes and sidewalks. | $28,093,000 | Outer neighborhood | 2018-2025 | X |
| 10547 | Washington Co. | Washington Co. | 173rd/174th Under Crossing Improvement | Cornell Rd. | Bronson Rd. | Construct three-lane under crossing of Hwy. 26 with bike lanes and sidewalks. | $58,641,000 | Town Center | 2018-2025 | X |
| 10548 | Washington Co. | Washington Co. | 174th Ave. Improvements | Bronson Rd. | Meadowgrass Ln. | Add turn lanes, bike lanes and sidewalks | $16,232,000 | Inner neighborhood | 2018-2025 | X |
| 10549 | Washington Co. | Washington Co. | Cornell @ 143rd Improvements | Science Park Dr. | 143rd Ave. | Realign 143rd with Science Park Dr. @ Cornell as a 4-way signalized intersection. | $12,400,000 | Town Center | 2008-2017 | X |
| 10550 | Washington Co. | Washington Co. | 185th to Springville Improvement | West Union Rd. | Springville Rd. | Widen 185th Ave from two to five lanes with bike lanes and sidewalks. | $11,893,000 | Outer neighborhood | 2018-2025 | X |
| 10551 | Washington Co. | Washington Co. | 185th to West Union Improvement | North of Westview H.S. | West Union Rd. | Add 1 thru-lane in each direction with continuous center turn lane, bikelanes and sidewalks. | $6,794,000 | Outer neighborhood | 2008-2017 | X |
| 10552 | Washington Co. | Washington Co. | Cornell/Cornelius Pass Interchange | N/A | N/A | Grade separate Cornell at Cornelius Pass | $21,200,000 | Industrial area | 2026-2035 | |
| 10553 | Washington Co. | Washington Co. | 209th Improvements | T.V. Hwy. | Farmington Rd. | Widen and realign to three lanes with bike lanes and sidewalks. | $29,700,000 | Outer neighborhood | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10554 | Washington Co. | Washington Co. | Bethany Blvd. Improvements | Kaiser Rd. | West Union Rd. | Widen to 5 lanes with bikelanes and sidewalks. | $22,046,000 | Town Center | 2018-2025 | X |
| 10555 | Hillsboro | Washington Co. | Baseline Rd. Improvements | 185th Ave. | Brookwood Ave. | Widen roadway to 5 lanes with bike lanes and sidewalks. | $22,000,000 | 2040 Corridor | 2026-2035 | X |
| 10556 | Washington Co. | Washington Co. | Tualatin-Sherwood/Boones Ferry Intersection | N/A | N/A | Grade separate Tualatin-Sherwood/Boones Ferry intersection | $25,000,000 | Town Center | 2026-2035 | |
| 10557 | Washington Co. | Washington Co. | Murray/TV Hwy. Intersection | Farmington Rd. | TV Hwy. | Grade separate the intersections of TV Hwy. and Farmington with Murray Blvd. | $25,000,000 | 2040 Corridor | 2026-2035 | |
| 10558 | Washington Co. | Washington Co. | Cornell Rd. Improvements | 113th Ave. | 107th Ave. | Widen from two to three lanes with bike lanes and sidewalks. | $9,941,000 | Outer neighborhood | 2018-2025 | X |
| 10559 | Washington Co. | Washington Co. | Cornell to Murray Improvements | Murray Blvd. | Hwy. 26 | Widen Cornell from three to five lanes with bike lanes and sidewalks. | $40,620,000 | Town Center | 2018-2025 | X |
| 10560 | Washington Co. | Washington Co. | Farmington Rd. Improvements | 170th Ave. | 185th Ave. | Widen roadway from 2/3 lanes to 5 lanes with bike lanes and sidewalks. | $17,676,000 | 2040 Corridor | 2008-2017 | X |
| 10561 | Washington Co. | Washington Co. | Jenkins Rd. Improvements | Murray Blvd. | 158th Ave. | Widen roadway from three to five lanes with bike lanes and sidewalks. | $15,530,000 | Station community | 2018-2025 | X |
| 10562 | Washington Co. | Washington Co. | Johnson St. Extension | West of 170th Ave. | 170th Ave. | Construct two-lane extension to 170th Ave. with bike lanes and sidewalks. | $6,158,000 | Town Center | 2026-2035 | X |
| 10563 | Washington Co. | Washington Co. | Kaiser/143rd Ave. Improvements | Bethany Blvd. | Cornell Rd. | Widen from two to three lanes with bike lanes and sidewalks. | $38,357,000 | Outer neighborhood | 2018-2025 | X |
| 10564 | Washington Co. | Washington Co. | Kaiser to Springville Improvements | Springville Rd. | Bethany Blvd. | Widen from two to five lanes with bike lanes and sidewalks. | $9,674,000 | Town Center | 2018-2025 | X |
| 10565 | Washington Co. | Washington Co. | Springville Rd. Improvements | 185th Ave. | Joss St. | Widen from 3 to five lanes with bike lanes and sidewalks. | $10,876,000 | 2040 Corridor | 2008-2017 | X |
| 10566 | Washington Co. | Washington Co. | Springville to Kaiser Rd. Improvements | Joss St. | Kaiser Rd. | Widen from two to three lanes with bike lanes and sidewalks. | $6,659,000 | 2040 Corridor | 2018-2025 | X |
| 10567 | Washington Co. | Washington Co. | Taylors Ferry Extension | Oleson Rd. | Washington Dr. | Construct new two lane extension with bike lanes and sidewalks | $4,390,000 | Inner neighborhood | 2026-2035 | X |
| 10568 | Washington Co. | Washington Co. | Tualatin-Sherwood Rd. Improvements | Hwy. 99W | Teton Ave. | Widen from three to five lanes with bike lanes and sidewalks. | $49,150,000 | Industrial area | 2018-2025 | X |
| 10569 | Washington Co. | Washington Co. | Walker Rd. Improvements | Amberglen | 185th | Widen from two to five lanes with bike lanes and sidewalks. | | Town Center | 2018-2025 | X |
| 10571 | Washington Co. | Washington Co. | West Union Rd. Improvements | 185th Ave. | 143rd Ave. | Widen from two to three lanes with bike lanes and sidewalks. | $34,870,000 | Outer neighborhood | 2026-2035 | X |
| 10572 | Washington Co. | Washington Co. | Barnes Rd. Improvements | St. Vincent's Hosp. entrance | Leahy Rd. | Widen from two to five lanes with bike lanes and sidewalks. | $8,933,000 | Station community | 2018-2025 | X |
| 10573 | Washington Co. | Washington Co. | Barnes Rd. to Multnomah Co. Line Improvements | Leahy Rd. | Multnomah. Co. Line | Widen from two to three lanes with bike lanes and sidewalks. | $17,326,000 | Outer neighborhood | 2026-2035 | |
| 10574 | Washington Co. | Washington Co. | Farmington to 198th Improvements | 185th Ave. | 198th Ave. | Widen from two to three lanes with bike lanes and sidewalks. | $17,326,000 | Outer neighborhood | 2026-2035 | X |
| 10576 | Washington Co. | Washington Co. | Saltzman Rd. Improvements | Cornell Rd. | Burton Rd. | Widen from two to three lanes with bike lanes and sidewalks. | $12,550,000 | Town Center | 2008-2017 | X |
| 10577 | Washington Co. | Washington Co. | Scholls Ferry Improvements | Allen Blvd. | Beaverton-Hillsdale Hwy. | Widen roadway from two to three lanes with bike lanes and sidewalks | $22,587,000 | Town Center | 2026-2035 | |
| 10578 | Washington Co. | Washington Co. | Merlo/158th Improvements | 170th Ave. | Walker Rd. | Widen roadway to five lanes with bike lanes and sidewalks | $24,735,000 | Station community | 2018-2025 | X |
| 10579 | Washington Co. | Washington Co. | Barnes to 119th Improvements | Hwy. 217 | 119th ~~(future)~~ | Widen to five lanes with bike lanes and sidewalks. Add double turn lanes. | $4,000,000 | Station community | 2008-2017 | X |
| 10580 | Washington Co. | Washington Co. | Butner Rd. Improvements | Murray Blvd. | Cedar Hills Blvd. | Widen to 3 lanes with bike lanes and sidewalks. | $18,515,000 | Outer neighborhood | 2026-2035 | |
| 10582 | Washington Co. | Washington Co. | 185th Ave. Improvements | T.V. Hwy. | Farmington Rd. | Widen to five lanes with bike lanes and sidewalks | $26,435,000 | Town Center | 2026-2035 | |

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| 10584 | Washington Co. | Washington Co. | Alexander St. Improvements | 170th Ave. | 209th Ave. | Widen to three lanes with bike lanes and sidewalks. | $26,233,000 | Outer neighborhood | 2026-2035 | |
| 10585 | Washington Co. | Washington Co. | Johnson St. Improvements | 185th Ave. | Cornelius Pass Rd. | Widen to three lanes with bike lanes and sidewalks. | $24,333,000 | Town Center | 2026-2035 | |
| 10586 | Washington Co. | Washington Co. | 198th Ave. Improvements | T.V. Hwy. | Baseline Rd. | Widen to three lanes with bike lanes and sidewalks. | $24,194,000 | Outer neighborhood | 2026-2035 | |
| 10587 | Washington Co. | Washington Co. | Cornelius Pass Rd. Improvements | Aloclek | T.V. Hwy. | Widen to five lanes with bike lanes and sidewalks | $31,800,000 | Outer neighborhood | 2008-2017 | X |
| 10588 | Washington Co. | Washington Co. | Grahams Ferry Rd Improvements | Helenius St. | Washington/Clackamas County line | Widen Grahams Ferry Rd to 3 lanes, add bike/pedestrian connections to regional trail system and fix undersized railroad overcrossing. | $28,000,000 | Industrial area | 2008-2017 | X |
| 10589 | Washington Co. | Washington Co. | 95th Ave. Extension | Barnes Rd. | Leahy Rd. | Extend two lane road with bike lanes and sidewalks. | $11,546,000 | Station community | 2018-2025 | X |
| 10590 | Washington Co. | Washington Co. | Tonquin Rd. Improvements | Grahams Ferry Rd. | Oregon St. | Realign and widen to three lanes with bike lanes and sidewalks. | $28,406,000 | Outer neighborhood | 2018-2025 | X |
| 10591 | Washington Co. | Washington Co. | Glencoe Rd. Improvements | Evergreen Rd. | Jackson Ave. | Widen to three lanes with bike lanes and sidewalks. | $26,016,000 | Regional Center | 2018-2025 | |
| 10592 | Washington Co. | Washington Co. | 205th Ave. Improvements | Quatama Rd. | Baseline Rd. | Widen road to 5 lanes with bike lanes and sidewalks. Widen bridge over Beaverton Creek to four lanes with bike lanes and sidewalks. | $18,061,000 | Station community | 2008-2017 | X |
| 10593 | Washington Co. | Washington Co. | Kinnaman Rd. Improvements | Farmington Rd. | 209th Ave. | Widen to three lanes with bike lanes and sidewalks. | $24,793,000 | Outer neighborhood | 2026-2035 | X |
| 10595 | Washington Co. | | Hall Blvd. Improvements | Scholls Ferry Rd. | Durham Rd. | Widen to five lanes with bike lanes and sidewalks. | $85,401,000 | Regional Center | 2018-2025 | |
| 10596 | Washington Co. | | Scholls Ferry Rd. Improvements | Hwy. 217 | 121st Ave. | Widen to seven lanes with bike lanes and sidewalks. | $19,749,000 | 2040 Corridor | 2018-2025 | X |
| 10597 | Washington Co. | | Evergreen Rd. Improvements | 253rd Ave. | Sewell Ave. | Widen to 5 lanes with bike lanes and sidewalks. | $11,242,000 | Employment area | 2008-2017 | X |
| 10598 | Washington Co. | | I-5/99W Southern Arterial ROW | Hwy. 99W | I-5 | Purchase ROW | $90,000,000 | Industrial area | 2018-2017 | X |
| 10599 | Washington Co. | ODOT | Hwy. 217/72nd Ave. Interchange Improvements | N/A | N/A I-5 | Complete interchange reconstruction with additional ramps and overcrossings. | $19,537,000 | Industrial area | 2018-2025 | |
| 10600 | Washington Co. | ODOT | Hwy. 26/Shute Interchange Improvements | Hwy. 26/Shute Rd./Helvetia Rd. | N/A | Add westbound to southbound loop ramp, additional northbound through lane and relocate Jacobsen intersection. | $17,000,000 | Industrial area | 2008-2017 | X |
| 10601 | Washington Co. | ODOT | Hwy. 26/Bethany Interchange Improvements | Cornell Rd. | Bronson Rd. | Rebuild overpass to accommodate additional northbound thru-lane. | $8,720,000 | Employment area | 2018-2025 | X |
| 10602 | Washington Co. | Washington Co. | Scholls Ferry ATMS | Hall Blvd. | Murray Blvd. | Install integrated surveillance and management equipment. | $1,109,000 | 2040 Corridor | 2008-2017 | X |
| 10603 | Washington Co. | Washington Co. | Tualatin-Sherwood Rd. ATMS | I-5 | Teton Ave. | Install integrated surveillance and management equipment. | $1,594,000 | Industrial area | 2008-2017 | X |
| 10604 | Washington Co. | Washington Co. | 185th Ave. ATMS | Baseline Rd. | Hwy. 26 | Install integrated surveillance and management equipment. | $1,095,000 | 2040 Corridor | 2008-2017 | X |
| 10605 | Washington Co. | Washington Co. | Cornell Rd. ATMS | Cornelius Pass Rd. | Wash. Co. TOC | Install integrated surveillance and management equipment. | $2,043,000 | 2040 Corridor | 2008-2017 | X |
| 10606 | Washington Co. | Washington Co. | Washington Square Regional Center Pedestrian Improvements | Wash. Sq. Regional Center | | Complete 7400 feet of sidewalk improvements. | $8,954,000 | Regional Center | 2008-2017 | X |
| 10607 | Washington Co. | Washington Co. | Sunset TC Station Community Pedestrian Improvements | Sunset TC Station Community | | Complete 9100 feet of sidewalk improvements. | $6,006,000 | Station community | 2008-2017 | X |
| 10608 | Washington Co. | Washington Co. | Aloha TC Pedestrian Improvements | Aloha Town Center | | Complete23,500 feet of sidewalk improvements. | $10,105,000 | Town Center | 2008-2017 | X |

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| 10609 | Washington Co. | Washington Co. | Science Park Dr. Bike | Murray Blvd. | Cornell Rd. | Complete 3600 feet of bike lanes in town center. | $2,124,000 | 2040 Corridor | 2008-2017 | |
| 10610 | Washington Co. | Washington Co. | Saltzman Rd. Bike | Cornell Rd. | Barnes Rd. | Complete 950 feet of bike lanes in town center. | $823,000 | Regional Center | 2008-2017 | X |
| 10611 | Washington Co. | Washington Co. | Locust Ave. Bike | Hall Blvd. | 80th Ave. | Completes 1650 feet of bike lanes in regional center. | $3,417,000 | Station community | 2008-2017 | X |
| 10612 | Washington Co. | Washington Co. | Greenburg Rd. Bike | Hall Blvd. | Hwy. 217 | Completes 3400 feet of bike lanes in regional center. | $3,610,000 | Town Center | 2008-2017 | X |
| 10613 | Washington Co. | Washington Co. | Cornell Rd. Bike | Saltzman Rd. | 119th Ave. | Completes 1750 feet of bike lanes in town center. | $1,036,000 | Town Center | 2008-2017 | X |
| 10614 | Washington Co. | Washington Co. | Butner Rd. Bike | Cedar Hills Blvd.. | Park Way | Completes 7800 feet of bike lanes to transit corridor. | $3,524,000 | 2040 Corridor | 2008-2017 | X |
| 10615 | Washington Co. | Washington Co. | Bronson Rd. Bike | 185th Ave. | Bethany Blvd. | Completes 7500 feet of bike lanes to transit corridor. | $5,490,000 | 2040 Corridor | 2008-2017 | X |
| 10616 | Beaverton | Beaverton | Rose Biggi Ave.: Crescent Street to Hall Blvd. Complete right-of-way and construction of multimodal street extension with Boulevard Design | Crescent St. | Hall Blvd. | Extend 2-lane Rose Biggi Ave. to Hall Blvd. (via Westgate Drive) to fill a gap; boulevard design; add sidewalks, bikeway (PE funded STIP Key #14400). | $3,500,000 | Regional Center | 2008-2017 | X |
| 10617 | Beaverton | Washington Co. | Farmington Rd.: Murray Blvd. to Hocken Ave. Safety, turn lanes, bicycle, and pedestrian improvements | Murray Blvd. | Hocken Ave. | Construct turn lanes and intersection improvements; signalize where warranted; add bike lanes and sidewalks in gaps. | $8,700,000 | Regional Center | 2008-2017 | X |
| 10618 | Beaverton | Beaverton | Dawson/Westgate multimodal extension from Rose Biggi Ave. to Hocken Ave. | Rose Biggi Avenue | Hocken Ave. via Dawson to Westgate at Rose Biggi | Extend 2 lane street from Hocken via Dawson and Westgate at Rose Biggi to fill a gap; realign Dawson/Westgate at Cedar Hills; add turn lanes at intersections, sidewalks, bikeway. | $8,900,000 | Regional Center | 2008-2017 | X |
| 10619 | Beaverton | Beaverton | Crescent St. multimodal extension to Cedar Hills Blvd. | Rose Biggi Ave. | Cedar Hills Blvd. | Extend 2 lane Crescent from Cedar Hills to Rose Biggi Ave. to fill a gap; add sidewalks, bikeway. | $3,500,000 | Regional Center | 2008-2017 | X |
| 10620 | Beaverton | Beaverton | Millikan Way multimodal extension from Watson Ave. to 114th Ave. | Watson Ave. | 114th Ave. | Extend 2 lane Millikan Way to 114th to fill a gap; add turn lanes at intersections, sidewalks, bikeway. | $13,800,000 | Regional Center | 2018-2025 | X |
| 10621 | Beaverton | Beaverton | New street connection from Broadway to 115th Ave. | Broadway | 115th Ave. | Construct new 2 lane street with bikeway and sidewalks. | $4,500,000 | Regional Center | 2018-2025 | X |
| 10622 | Beaverton | Beaverton | Electric to Whitney to Carousel to 144th multimodal street connections | Electric | 144th Ave. | Connect existing streets and improve to standard with bikeways and sidewalks. | $7,200,000 | Station community | 2018-2025 | X |
| 10623 | Beaverton | Beaverton | Hall Blvd. multimodal street extension to Jenkins Rd. | Hall Blvd. | Jenkins Rd. | Construct new 4 lane street (2 lane boulevard design if all other Regional Center street connections are complete) with bike lanes and sidewalks. | $14,400,000 | Regional Center | 2026-2035 | |
| 10624 | Beaverton | Beaverton | 120th Ave.: new 2 lane multimodal street | Center St. | Canyon Rd. | Construct new multimodal street with bikeways and sidewalks; turn lanes and signals as needed. | $8,900,000 | Regional Center | 2018-2025 | X |
| 10625 | Beaverton | Beaverton | Rose Biggi Ave.: 2 lane multimodal street extension | Tualatin Valley Hwy | Broadway | Construct 2 lane boulevard extension with bikeways and sidewalks. | $3,000,000 | Regional Center | 2008-2017 | X |
| 10626 | Beaverton | Beaverton | 114th Ave./115th Ave. 2 lane multimodal street | LRT | Beaverton Hillsdale Hwy/Griffith Drive | Construct 2 lane street with bike and pedestrian improvements. | $10,000,000 | Regional Center | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10627 | Beaverton | Beaverton | Tualaway 2 lane multimodal street extension | Electric | Millikan | Extend existing street to Millikan with bikeways and sidewalks. | $3,900,000 | Station community | 2018-2025 | X |
| 10628 | Beaverton | Beaverton | Center Street and 113th Ave. safety, bike, and pedestrian improvements | Hall Blvd. | Cabot Street | Add sidewalks and bikelanes; add turn lanes where needed. | $5,800,000 | Regional Center | 2008-2017 | X |
| 10629 | Beaverton | Beaverton | Hocken Ave. multimodal improvements | Tualatin Valley Hwy | Farmington Rd. | Widen existing street from 3 to 5 lanes, add bike lanes and sidewalks. | $1,600,000 | Regional Center | 2018-2025 | X |
| 10630 | Beaverton | Beaverton | Hall Blvd. multimodal extension from Cedar Hills Blvd. to Hocken Ave. | Hocken Ave. | Cedar Hills Blvd. | Extend Hall Blvd. from Cedar Hills to Hocken to fill a gap; add turn lanes at intersections, sidewalks and bikeway. | $5,500,000 | 2040 Corridor | 2008-2017 | X |
| 10631 | Beaverton | Beaverton | 141st/142nd/144th multimodal street extension connections | 141st Ave. | 144th Ave. | Connect streets, add bikeways, sidewalks, turns lanes and signalize as warranted. | $6,700,000 | Station community | 2008-2017 | X |
| 10632 | Beaverton | Beaverton | Allen Blvd. safety, bicycle and pedestrian improvements | Highway 217 | Murray Blvd. | Widen street adding turn lanes and signals where needed, construct bike lanes and sidewalks. | $41,600,000 | 2040 Corridor | 2026-2035 | X |
| 10633 | Beaverton | Beaverton | Allen Blvd. safety, bicycle and pedestrian improvements | Highway 217 | Western Ave. | Widen street to 4/5 lanes adding turn lanes and signals where needed, construct bike lanes and sidewalks. | $6,300,000 | Industrial area | 2018-2025 | X |
| 10634 | Beaverton | Beaverton | Cedar Hills Blvd. safety, bicycle and pedestrian improvements | Farmington Rd. | Walker Rd. | Add turn lanes, bike lanes and sidewalks. | $19,000,000 | 2040 Corridor | 2018-2025 | X |
| 10635 | Beaverton | Beaverton | 125th Ave. multimodal extension Brockman to Hall Blvd. | Brockman St. | Hall Blvd. | Construct new multimodal street with bike lanes and sidewalks. | $13,900,000 | Outer neighborhood | 2008-2017 | X |
| 10636 | Beaverton | Beaverton | Millikan Way safety, bike and pedestrian improvements | 141st Ave. | Hocken Ave. | Add turn lanes as needed, bike lanes and sidewalks, signalize as warranted. | $2,600,000 | Station community | 2018-2025 | X |
| 10637 | Beaverton | Beaverton | Millikan Way safety, bicycle and pedestrian improvements and 4/5 lanes from Murray to 141st | Tualatin Valley Hwy | 141st Ave. | Add bikelanes in gaps, vehicle and turn lanes as needed, and signals as warranted. | $17,100,000 | Station community | 2018-2025 | |
| 10638 | Beaverton | Beaverton | Davies Rd. multimodal street extension | Scholls Ferry Rd. | Barrows Rd. | Extend 2 lane street with turn lanes, bike lanes and sidewalks. | $4,900,000 | Town Center | 2008-2017 | X |
| 10639 | Beaverton | Beaverton | Weir Rd. safety, bicycle and pedestrian improvements | 155th Ave. | 175th Ave. | Add turn lanes, bikelanes and sidewalks in gaps, turn lanes. | $4,100,000 | Outer neighborhood | 2018-2025 | X |
| 10640 | Beaverton | Beaverton | Nimbus Ave. 2 lane multimodal street extension from Hall Blvd. to Denney Road | Hall Blvd. | Denney Rd. | Extend 2 lane street with turn lanes, bikelanes and sidewalks. | $15,400,000 | Regional Center | 2018-2025 | X |
| 10641 | Washington Co. | | 102nd/103rd 2 lane multimodal connection | Western Ave. | Walker Rd. | Connect streets and construct bike lanes and sidewalks. Realign intersection at BH Hwy and Western. | $16,500,000 | 2040 Corridor | 2026-2035 | |
| 10642 | Beaverton | Beaverton | Adaptive Traffic Signal Systems | Adaptive Traffic Signal Systems | Allen Blvd., Cedar Hills Blvd., Hall Blvd., Farmington Road | New signals and signal upgrades. | $10,000,000 | Regional Center | 2018-2025 | X |
| 10643 | Beaverton | ODOT | Hall Blvd. sidewalk gaps at Hwy 217 | 217 SB ramp | 740' w/o ramp | Construct sidewalks. | $400,000 | Regional Center | 2008-2017 | X |
| 10644 | Beaverton | Washington Co. | 110th Ave. sidewalk gaps | Beaverton Hillsdale Hwy | Canyon Rd | Construct sidewalks. | $1,400,000 | Regional Center | 2018-2025 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10646 | Beaverton | Beaverton | Hall Blvd. / Watson Ave. pedestrian improvements | Cedar Hills Blvd.. | Allen Blvd. | Add pedestrian improvements at intersections and amenities (lighting, plazas). | $2,400,000 | Regional Center | 2008-2017 | X |
| 10648 | Beaverton | Beaverton | Denney Rd. sidewalks | Nimbus Rd. | Scholls Ferry Rd. | Construct sidewalks. | $2,200,000 | Industrial area | 2026-2035 | X |
| 10649 | Beaverton | Beaverton | Allen Blvd sidewalks | Western Ave. | Arctic Dr. | Construct sidewalks. | $200,000 | Industrial area | 2018-2025 | X |
| 10653 | Beaverton | Beaverton | Sexton Mountain Drive multimodal street extension from 155th Ave. to Sexton Mtn. across the Powerline | 155th Ave. | Sexton Mountain Drive | Extend 2 lane street with bikelanes and sidewalks | $2,500,000 | Outer neighborhood | 2018-2025 | X |
| 10654 | Beaverton | Beaverton | Nora Road sidewalks and bike lanes | 175th Ave. | 155th Ave. | Construct sidewalks and bike lanes. | $2,000,000 | Inner neighborhood | 2018-2025 | X |
| 10656 | Beaverton | Beaverton | Jamieson Rd. sidewalks | Pinehurst/Cypress | Woodlands Dr. | Construct sidewalks. | $1,100,000 | Inner neighborhood | 2018-2025 | X |
| 10661 | Beaverton | Beaverton | 155th Ave. sidewalks | Beard Rd. | Weir Rd. | Construct sidewalks. | $2,700,000 | Inner neighborhood | 2008-2017 | X |
| 10662 | Beaverton | Beaverton | 155th Ave. sidewalks | Davis Rd. | Beverly Beach Ct | Construct sidewalks. | $1,800,000 | Inner neighborhood | 2008-2017 | X |
| 10663 | Beaverton | Beaverton | Hall Blvd. bike lanes & turn lanes to Cedar Hills | Farmington Road | Cedar Hills Blvd. | Construct bike lanes and turn lanes. | $5,200,000 | Regional Center | 2018-2025 | X |
| 10664 | Beaverton | Beaverton | Watson Ave. bike lanes | Hall Blvd. | Cedar Hills Blvd. | Construct bike lanes. | $4,500,000 | Regional Center | 2018-2025 | X |
| 10665 | Beaverton | Beaverton | 6th Ave. bikelanes | Murray Blvd. | Erickson Ave. | Construct bike lanes. | $3,600,000 | Regional Center | 2018-2025 | X |
| 10666 | Beaverton | Beaverton | Greenway Dr. bike lanes | Hall Blvd. | 125th Ave. | Construct bike lanes. | $3,700,000 | Regional Center | 2018-2025 | X |
| 10667 | Beaverton | Beaverton | 155th Ave. bike lanes | Davis Rd. | Weir Rd. | Construct bike lanes in gaps. | $5,400,000 | Inner neighborhood | 2018-2025 | X |
| 10668 | Beaverton | Beaverton | Farmington Rd Bike lane retrofit | Hwy 217 | Hocken Ave. | Construct bike lanes. | $12,600,000 | Regional Center | 2018-2025 | X |
| 10669 | Beaverton | Beaverton | Hall Blvd. bike lanes & turn lanes | 12th St. | s/o Allen Blvd. | Construct bike lanes and turn lanes. | $5,200,000 | Regional Center | 2018-2025 | X |
| 10670 | Beaverton | Beaverton | Denney Rd. bike lanes | Hall Blvd. | Scholls Ferry Rd. | Construct bike lanes. | $6,100,000 | Inner neighborhood | 2018-2025 | X |
| 10671 | Beaverton | Beaverton | Allen Blvd. bike lanes | 200' e/o Western | Scholls Ferry Rd. | Construct bike lanes. | $4,300,000 | Industrial Area | 2018-2025 | X |
| 10672 | Beaverton | Beaverton | Western Ave. bike lanes | Beaverton Hillsdale Hwy | Allen Blvd. | Construct bike lanes. | $5,600,000 | Industrial Area | 2018-2025 | X |
| 10674 | Sherwood | Sherwood | Oregon-Tonquin Intersection & Street Improvements | Oregon St. | at Tonquin | Intersection improvements (consider roundabout) on Oregon at Tonquin Road; sidewalks and bike access through the intersection. | $1,945,000 | Industrial area | 2018-2025 | X |
| 10675 | Sherwood | | Adams Ave Signal & Interconnect on T-S Rd. | T-S Rd. | at Adams | Install traffic signal at Adams Ave. and interconnect the signals along T-S road between Cipole and Borchers. | $1,875,000 | Town Center | 2008-2017 | |
| 10676 | Sherwood | Sherwood | Adams Ave Phase 1 | Oregon/Ash | T-S Rd. | Construct 3 lane road, landscaping and multi-use path. | $8,012,000 | Employment area | 2008-2017 | X |
| 10677 | Sherwood | Sherwood | Adams Ave Phase 2 | T-S Rd. | 99W | Construct 3 lane road, landscaping and multi-use path to connect Town Center to 99W & National Wildlife Refuge. | $8,580,000 | Employment area, Industrial area | 2008-2017 | X |
| 10678 | Sherwood | Sherwood | Century Dr. | Adams Ave | T-S Rd. | Construct 3 lane road and sidewalks. | $5,170,000 | Industrial area | 2008-2017 | |
| 10680 | Sherwood | Sherwood, WaCo, ODOT | Elwert Rd & 99W Intersection Improvements | 99W | Kruger Rd | Intersection safety improvements. | $2,700,000 | Employment area | 2018-2025 | X |
| 10681 | Sherwood | | Elwert Rd | 99W | Edy Rd | Upgrade road to arterial standards. | $11,430,000 | Employment area | 2018-2025 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10682 | Sherwood | Sherwood | Brookman Rd | 99W | Ladd Hill Rd | Reconstruct road to collector standards. | $20,510,000 | Outer neighborhood | 2018-2025 | X |
| 10683 | Sherwood | Sherwood | Galbreath Dr | T-S Rd/Gerda Lane | Cipole Rd | Construction of 2 lane road. | $4,180,000 | Industrial area | 2018-2025 | |
| 10684 | Sherwood | Sherwood | Cedar Brook Way | 99W | 99W | Construction of 2 lane road. | $2,640,000 | Employment area | 2008-2017 | |
| 10686 | Sherwood | Sherwood | Smith Ave | Meinecke | Woodhaven Dr | Construction of 2 lane road. | $2,090,000 | Outer neighborhood | 2018-2025 | |
| 10688 | Sherwood | Sherwood | Villa Rd. | Park St | Stellar Dr | Construction of 2 lane road. | $5,010,700 | Outer neighborhood | 2026-2035 | |
| 10689 | Sherwood | Sherwood | Cannery Arterials | | | Phase 2 of Downtown Streetscapes Master Plan. | $6,667,000 | Main street | 2008-2017 | |
| 10691 | Sherwood | | Edy Rd/Sherwood Blvd | Borcher Dr | 3rd St. | Reconstruct road to arterial standards; add sidewalks. | $7,740,000 | 2040 Corridor | 2018-2025 | X |
| 10692 | Sherwood | | Edy Rd | Borcher Dr | City limits | Reconstruct road to collector standards w/ sidewalks and bike lanes. | $8,760,000 | 2040 Corridor | 2018-2025 | X |
| 10693 | Sherwood | Sherwood | Ladd Hill Rd. | Sunset Blvd | UGB | Upgrade street to arterial standards. | $6,340,000 | Outer neighborhood | 2026-2035 | X |
| 10694 | Sherwood | Sherwood | Murdock | UGB | Oregon St | Add bike lanes. | $1,340,000 | Outer neighborhood | 2018-2025 | X |
| 10695 | Sherwood | Sherwood | Meinecke | 99W | 1st | Add bike lanes. | $1,150,000 | Employment area, Main street | 2018-2025 | X |
| 10696 | Sherwood | Sherwood | Town Center Pedestrian Improvements | | | Pedestrian upgrades in town center: 12th St., Century, 99W cross streets, Main St, Washington, Langer, Baler, Borchers. | $1,590,600 | Town Center | 2018-2025 | |
| 10698 | Sherwood | Sherwood | Sunset Blvd. | Aldergrove | Eucalyptus | Reconstruct road to 3 lane arterial standards; address vertical crest sight distance issue near Pine St. | $8,316,000 | Inner neighborhood | 2026-2035 | |
| 10699 | Sherwood | Sherwood | Oregon Street | Murdock | Railroad Crossing | Construct road to 3 lane collector standards. | $6,712,000 | 2040 Corridor | 2018-2025 | X |
| 10700 | Sherwood | Sherwood | Arrow Street (Herman Road) | Adams Ave | Gerda Ln/Herman Road Extension | Construct road to collector standards. | $8,190,000 | Industrial area | 2018-2025 | X |
| 10701 | Sherwood | Sherwood | Regional Trail System / West fork of Tonquin Trail | West fork of Tonquin Trail | Wildlife Refuge | Construct regional trail along the Cedar Creek corridor to connect existing trail at Stella Olson Park & Old Town to Wildlife Refuge Trail on Roy Rogers Rd. Possible over or undercrossing at 99W. | $2,465,000 | Various | 2008-2017 | X |
| 10702 | Sherwood | Sherwood | Town Center Signal & Intersection Improvements | Borcher Dr | Century | Improve 3-leg intersection at Edy & Borchers; remove traffic signal at Baler; remove traffic signal at Langer; add traffic signal at Century. | $2,812,000 | Town Center | 2018-2025 | X |
| 10703 | Sherwood | Sherwood | Pedestrian Links to Schools & Town Center | | | Pedestrian upgrades, new sidewalks, sidewalk infill at: Sunset, Division, Edy, Elwert, Meinecke, Pine, Roy, Ladd Hill, Timbrel, Washington, Willamette, Old Pacific Hwy. | $6,983,000 | Inner neighborhood | 2018-2025 | X |
| 10706 | Sherwood | ODOT | 99W Pedestrian Improvements | UGB South | UGB North | Pedestrian upgrades. | $1,090,000 | 2040 Corridor | 2018-2025 | |
| 10707 | Sherwood | ODOT | 99W - Sherwood TC Bicycle/Ped Bridges | Sunset Blvd | Edy Rd | Ped/bike bridges over 99W at Sunset, Meinecke, Edy. | $13,300,000 | 2040 Corridor | 2026-2035 | |
| 10708 | Washington Co. | Washington Co. | Roy Rogers Rd. | 99W | Borchers Dr | Construct road to 5 lane collector standard. | $1,900,000 | Town Center | 2018-2025 | X |
| 10709 | Tualatin | Tualatin | Sagert | Martinazzi | N/A | Signalize intersection and change grades to provide better sight distance. | $1,700,000 | Town Center | 2008-2017 | X |
| 10710 | Tualatin | Tualatin | Cipole | Herman | N/A | Signalize intersection & realign railroad crossing. | $5,600,000 | Industrial area | 2018-2025 | |
| 10711 | Tualatin | Tualatin | Teton | Tualatin Rd | N/A | Signalize intersection. | $307,000 | Inner neighborhood | 2018-2025 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10712 | Tualatin | Tualatin | Boones Ferry | Martinazzi | Lower Boones Ferry | Reconstruction/widen from Martinazzi to Lower Boones Ferry Road. | $12,300,000 | Town Center | 2018-2025 | |
| 10713 | Tualatin | Tualatin | Leveton | 130th | Cipole Rd | Extension. | $9,070,000 | Industrial Area | 2018-2025 | |
| 10714 | Tualatin | Tualatin | 105th Ave/Avery Street | Blake | 105th | Realign curves, signalize intersection of Avery/105th, sidewalks on 105th from Avery to 108th. | $5,000,000 | Industrial Area | 2008-2017 | X |
| 10715 | Tualatin | Tualatin | Herman | Teton | Tualatin | Reconstruct and widen to 3 lanes from Teton to Tualatin. | $2,500,000 | Industrial Area | 2008-2017 | X |
| 10716 | Tualatin | Tualatin | Myslony | 112th | 124th Ave | Reconstruct/widen from 112th to 124th to fill system. | $9,400,000 | Industrial Area | 2008-2017 | X |
| 10717 | Tualatin | Tualatin | Cipole | ORE 99W | Tualatin-Sherwood | Reconstruct/widen to 3 lanes from 99W to Tualatin-Sherwood Road. | $13,000,000 | Industrial Area | 2018-2025 | |
| 10718 | Tualatin | Tualatin | Herman | Cipole | 124th Ave | Reconstruction from Cipole to 124th. | $4,100,000 | Industrial Area | 2008-2017 | X |
| 10719 | Tualatin | Tualatin | Leveton Ind. Area | 108th | 118th | Widen Leveton Drive to 5 lanes, signalize the 108th/Leveton intersection, signalize 108th/Tualatin intersection. | $10,400,000 | Industrial Area | 2018-2025 | |
| 10720 | Tualatin | Tualatin | Boones Ferry | Tualatin-Sherwood | Ibach | Widen to 5 lanes from Tualatin-Sherwood to Ibach. | $16,500,000 | Inner neighborhood | 2026-2035 | X |
| 10721 | Tualatin | Tualatin | McEwan | 65th | Lake Oswego | Widen to 3 lanes from 65th to Lake Oswego. | $3,520,000 | Industrial Area | 2026-2035 | X |
| 10722 | Tualatin | Tualatin | 65th | Nyberg | Childs Rd | Extension across the Tualatin River from Nyberg to Childs Road. | $15,000,000 | Outer neighborhood | 2026-2035 | X |
| 10723 | Tualatin | Tualatin | ORE 99W | Cipole | River | Widen to 6 lanes from Cipole to the Tualatin River. | $14,400,000 | 2040 Corridor | 2026-2035 | |
| 10725 | Tualatin | Tualatin | 65th | Sagert | Nyberg | Widen to 5 lanes from Sagert to Nyberg. | $19,000,000 | Employment Area | 2026-2035 | X |
| 10726 | Tualatin | Tualatin | Sagert | Martinazzi | 65th | Widen to 5 lanes from Martinazzi to 65th, signalize 65th/Sagert intersection & sidewalks on overpass. | $40,000,000 | Employment area, Inner neighborhood | 2026-2035 | |
| 10727 | Tualatin | Tualatin | 90th | Tualatin | Tualatin-Sherwood | Widen to 5 lanes from 90th to Tualatin-Sherwood. | $36,250,000 | Town Center | 2026-2035 | |
| 10728 | Tualatin | Tualatin | Boones Ferry | N/A | N/A | Interconnect signals on Boones Ferry Road from Tualatin-Sherwood Road to Ibach (6 signals). | $78,000 | Inner neighborhood | 2008-2017 | X |
| 10729 | Tualatin | Tualatin | Loop Rd | Martinazzi | Boones Ferry | Construct street from Tualatin-Sherwood to Boones Ferry Rd to Martinazzi. | $6,900,000 | Town Center | 2026-2035 | X |
| 10730 | Tualatin | Tualatin | E-W connection | 108th | 112th | Construct new street. | $18,200,000 | Industrial Area | 2008-2017 | X |
| 10731 | Tualatin | Tualatin | Tualatin Rd/Lower Boones Ferry Rd | Herman Rd/ Tualatin Rd intersection | Exit 290 at I-5 | Complete project development and begin construction of the connection of Tualatin Road from Herman Rd intersection to I-5 at Lower Boones Ferry Road (Exit 290). Consider alternative alignments including the existing route and bridge accross the Tualatin River and potential new routes and bridges across the Tualatin River. Consider additional freeway crossing capacity in the vicinity of the I-5/Lower Boones Ferry Road interchange. | $44,900,000 | Employment area, Industrial area | 2018-2025 | |
| 10732 | Tualatin | Tualatin | Boones Ferry | Norwood | Day | Widen to 5 lanes from Norwood to Day Rd. | $40,050,000 | Industrial area, Outer neighborhood | 2018-2025 | |
| 10734 | Tualatin | ODOT | I205 SB - I5 SB | I205 | I5 | Merge lane to I-5 south. | | 2040 Corridor | 2008-2017 | |
| 10735 | Tualatin | Tualatin | Herman | 108th | Teton | Widen to 5 lanes from 108th to Teton. | $1,250,000 | Industrial Area | 2018-2025 | X |

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| 10736 | Tualatin | Tualatin | 124th Ave | Tualatin-Sherwood | Tonquin | Construct new street from Tualatin-Sherwood to Tonquin Rd - 5 lanes. | $82,500,000 | Industrial Area | 2008-2017 | X |
| 10737 | Tualatin | Tualatin | Central Design District Pedestrian Improvements | | | Pedestrian improvements & bike lanes. | $10,600,000 | Other | 2008-2017 | X |
| 10738 | Tualatin | Tualatin | Teton | Herman | Tualatin-Sherwood | Add bikelanes to Teton from Avery to Tualatin Rd. | $3,800,000 | Industrial Area | 2026-2035 | X |
| 10739 | Tualatin | Tualatin | Nyberg | Tualatin-Sherwood | 65th | Add bikelanes on Nyberg from I-5 to 65th. | $7,000,000 | Employment Area | 2026-2035 | X |
| 10740 | Tualatin | Tualatin | 65th Ave. | Borland | Childs Rd | Add bikelanes on 65th Ave from Sagert to Nyberg. Construct a pedestrian bridge over the River from Tualatin to Childs Rd. | $8,000,000 | Employment Area | 2026-2035 | X |
| 10741 | Tualatin | Tualatin | 95th Ave. | Avery | Tualatin-Sherwood | Add bikelanes from Avery to Tualatin-Sherwood Rd. | $2,400,000 | Industrial Area | 2026-2035 | X |
| 10742 | Tualatin | Tualatin | 108th Ave. | | | Pedestrian bridge over Tualatin River and connecting paths. | $2,000,000 | Inner neighborhood | 2026-2035 | X |
| 10743 | Tualatin | Tualatin | 99W | City Limits | City Limits | Install sidewalks from Cipole to Tualatin River. | $10,400,000 | 2040 Corridor | 2026-2035 | |
| 10744 | Tualatin | Tualatin | Tualatin River Pathway | | | | $8,600,000 | Other | 2018-2025 | X |
| 10745 | Tualatin | Tualatin | Pedestrian Trail | 65th | Martinazzi | Pedestrian trail from 65th to Martinazzi. | $1,600,000 | Employment area, Industrial area | 2018-2025 | X |
| 10746 | Tigard | | Washington Square Connectivity Improvements | Washington Square local street connections | Washington Square local street connections | Increase local street connections at Washington Square Center based on recommendations in regional center plan. | $3,000,000 | Regional Center | 2018-2025 | X |
| 10748 | Tigard | | Greenburg Road Improvements, South | Shady Lane | North Dakota | Widen to 5 lanes with bikeways and sidewalks. Includes bridge replacement. | $4,000,000 | Regional Center | 2008-2017 | X |
| 10749 | Tigard | | Washington Square Regional Center Pedestrian Improvements | Various | Various | Improve sidewalks, lighting, crossings, bus shelters, and benches at Washington Square. | $3,900,000 | Regional Center | 2018-2025 | X |
| 10750 | Tigard | | Greenburg Road Improvements | Tiedeman Ave. | Hwy. 99W | Widen to 5 lanes. | $15,017,000 | Town Center | 2018-2025 | |
| 10751 | Tigard | ODOT | Hwy. 217 Overcrossing | Hunziker Road | 72nd Ave. | Realign Hunziker Road to meet Hampton Street at 72nd Ave. and removes existing 72nd/Hunziker Road intersection. | $9,635,000 | Employment area, Station community | 2018-2025 | X |
| 10752 | Tigard | Tigard | Bonita Road Improvements | Hall Blvd. | Bangy Road | Widen to 4 lanes. | $36,000,000 | Employment Area | 2008-2017 | |
| 10753 | Tigard | Tigard | Durham Road Improvements | Upper Boones Ferry Road | Hall Blvd. | Widen to 5 lanes. | $21,093,000 | Employment Area | 2008-2017 | X |
| 10754 | Tigard | Tigard | Walnut Street Extension | 99W | Ash Ave. | Extend street east of 99W to connect to Downtown Tigard (PE Phase only) | $3,770,000 | Town Center | 2008-2017 | X |
| 10755 | Tigard | Tigard | 72nd Ave. Improvements | 99W | Hunziker Road | Widen to 5 lanes with bikeways and sidewalks. | $25,000,000 | Employment area | 2008-2017 | X |
| 10756 | Tigard | Tigard | 72nd Ave. Improvements | Hunziker Road | Bonita Road | Widen to 5 lanes with bikeways and sidewalks | $28,166,850 | Employment Area | 2008-2017 | |
| 10757 | Tigard | Tigard | 72nd Ave. Improvements | Bonita Road | Durham Road | Widen to 5 lanes with bikeways and sidewalks | $15,425,000 | Employment Area | 2008-2017 | |
| 10758 | Tigard | Tigard | Dartmouth Street Extension | Durham Road | Hunziker Road | 3 lane extension; new Highway 217 overcrossing. | $58,690,500 | Employment Area | 2018-2025 | |
| 10759 | Tigard | Tigard | Dartmouth Street Improvements | 72nd Ave. | 68th Ave. | Widen to 4 lanes with turn lanes and sidewalks. | $4,412,000 | Employment area | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10760 | Tigard | Tigard | Tigard Town Center Pedestrian Improvements | Tigard Town Center | Throughout TC area | Improve Sidewalks, lighting, crossings, bus shelters and benches throughout the Town Center including: Highway 99W, Hall Blvd, Main Street, Hunziker, Walnut and neighborhood streets. | $4,882,000 | Town Center | 2018-2025 | X |
| 10762 | Tigard | | Nimbus Ave. Extension | Nimbus Ave. | Greenburg Road | 2 lane extension with sidewalks and bike lanes. | $30,000,000 | Regional Center | 2018-2025 | X |
| 10763 | Tigard | | Washington Square Regional Center Greenbelt Shared Use Path | Hall Blvd. | Hwy. 217 | Complete shared-use path construction. | $1,821,000 | Regional Center | 2008-2017 | X |
| 10764 | Tigard | Tigard | Durham Road Improvements | Hall Blvd. | 99W | Widen to 5 lanes with bikeways and sidewalks. | $20,000,000 | Town Center | 2018-2025 | X |
| 10765 | Tigard | Washington Co. | Hall Blvd. Extension | Durham Road | Tualatin | Extend Hall Boulevard across Tualatin River. | $87,220,000 | Town Center | 2018-2025 | |
| 10766 | Tigard | | Regional Trail Gap Closure | multiple sections on Fanno, Wash Sq Loop, and Westside Trails | Multiple sections on Fanno, Wash Sq Loop, and Westside Trails | Infill gaps in regional trail network. Affected trails include Fanno Creek, Washington Square Loop and Westside Trails. | $6,890,000 | Regional Center, Town Center | 2008-2017 | X |
| 10768 | Tigard | Tigard | Upper Boones Ferry Intersection Improvements | Durham Road | I-5 | Reconfigure intersection of Durham & Upper Boones Ferry to create a through route between Durham & I-5/Carmen Interchange; 2nd Northbound Turn Lane at 72nd/Carmen; 72nd/Boones Ferry assuming Boones Ferry/72nd widened to 5 lanes; eastbound right turn lane at Carman/I-5 southbound. | $9,630,000 | Employment area | 2008-2017 | X |
| 10769 | Tigard | Tigard | Greenburg Intersection Improvements | Hall | Tiedeman Ave | 2nd Northbound turn lane, modify signal timing at Greenburg/Oleson/Hall; install boulevard treatment at Greenburg/Washington Square Road; improve geometry/alignment and extend cycle length at intersection of Greenburg/Tiedeman. | $7,000,000 | Regional Center | 2008-2017 | X |
| 10770 | Tigard | ODOT | Hwy. 99W Intersection Improvements | 64th Ave. | Durham Rd. | Provide increased capacity at priority intersections, including bus queue bypass lanes in some locations, improved sidewalks, priority pedestrian crossings, and an access management plan, while retaining existing 4/5-lane facility from I-5 to Durham Road. | $50,000,000 | 2040 Corridor, Town Center | 2008-2017 | X |
| 10771 | Forest Grove | TriMet | High Capacity Transit: Blue Line west : Hwy. 8 extension | Hillsboro | Forest Grove | The Cities of Forest Grove, Cornelius, Hillsboro, and Washington County have identified a need to extend the MAX system to Forest Grove. The proposed line would run from the end of the existing HCT system in Hillsboro to downtown Forest Grove. | $1,500,000 | Regional Center | 2008-2017 | X |
| 10772 | Forest Grove | Forest Grove | David Hill | HWY 47 | Brook St. | Extend easterly from Thatcher Road to Sunset Drive (Highway 47) as a arterial facility with left-turn lanes at major intersections, traffic signal and turn lanes at Hwy47. | $5,000,000 | Outer neighborhood | 2008-2017 | |
| 10773 | Forest Grove | | Thatcher/Gales Creek | Thatcher | Gales Creek | Re-align Thatcher Road at its intersection with Gales Creek Road. | $3,600,000 | Employment area | 2008-2017 | X |
| 10774 | Forest Grove | Forest Grove | 23rd/24th | Hawthorne | Quince | Construct collector level roadway between Hawthorne Ave. and Quince Street. | $10,000,000 | Industrial area | 2008-2017 | X |
| 10775 | Forest Grove | Forest Grove | E/Pacific/19th Intersection | E | Pacific | Extend 19th west and connect up to E and Pacific with a round-about. | $4,800,000 | Inner neighborhood | 2008-2017 | X |
| 10777 | Forest Grove | Forest Grove | Forest Grove-Cornelius Industrial Connector | Yew | Holladay | Construct east-west industrial collector from Yew Street to connect to Holladay in Cornelius. | $3,000,000 | Industrial area | 2008-2017 | |
| 10778 | Forest Grove | Forest Grove | Heather Industrial Connector | Mountain View | HWY 47 | Extend westerly from existing terminus to connect to Hwy 47 and the City of Cornelius. | $5,800,000 | Industrial area | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10779 | Forest Grove | Forest Grove | Hwy 8/Pacific/19th | Cornelius City Limits | B | Retrofit the street with a boulevard design from Quince Street to B Street including wider sidewalks, curb extensions, safer street crossings, bus shelters and benches. Includes intersection improvements at Yew/Adair/19th. | $16,500,000 | 2040 Corridor | 2008-2017 | X |
| 10780 | Forest Grove | Forest Grove | Hwy 47 Intersection Improvements | Purdin | B St. | Various intersection improvements including signalization, turning lanes, widening, and access improvements (Purdin/Verborrt, David Hill, Porter, Oak, Martin/24th, Quince/Pacific, 19th, Fern Hill/Oak, B Street). | $8,300,000 | Employment area | 2008-2017 | |
| 10781 | Forest Grove | Forest Grove | West UGB Trail | Ritchey | David Hill | Multi-use trail. | $3,100,000 | Outer neighborhood | 2008-2017 | X |
| 10782 | Forest Grove | Forest Grove | Thatcher / Willamina / B St Pedestrian and Bicycle Improvements | Gales Creek-David Hill /Gales Creek - Sunset / 26th-Willamina | Gales Creek-David Hill /Gales Creek - Sunset / 26th-Willamina | Bike lanes and sidewalks. | $5,600,000 | Inner neighborhood | 2008-2017 | X |
| 10783 | Forest Grove | Forest Grove | A Bicycle / Pedestrian | Pacific | HWY 47 | Multi-use trail. | $1,000,000 | Inner neighborhood | 2008-2017 | |
| 10784 | Forest Grove | Forest Grove | David Hill Bicycle Pedestrian | Thatcher | Forest Gale Dr. | Multi-use trail. | $4,900,000 | Inner neighborhood | 2008-2017 | X |
| 10785 | Cornelius | Cornelius | 14th Ave | Dogwood | Holladay | Regulate OR8 traffic flow; widen local collector to improve Main Street/Industrial Area north/south connectivity. | $2,800,000 | Main street | 2008-2017 | X |
| 10786 | Cornelius | | Susbauer Rd | TV Hwy | Zion Church Rd | Improve County Freight Connector route to urban standard w/in City (sidewalks & bike lanes); widen rural road with shoulder bike lane, reconstruct Dairy Creek Bridge to eliminate frequent road flooding. | $1,000,000 | Main street | 2008-2017 | X |
| 10787 | Cornelius | | 10th Ave/Cornelius-Schefflin Rd | TV Hwy | Verboort Circle | Improve to urban standard w/in City (sidewalks & bike lanes); widen rural road with shoulder bike lane, reconstruct Council Creek Bridge. | $9,000,000 | Main street | 2008-2017 | X |
| 10788 | Cornelius | Cornelius | 10th Ave | Holladay St. | Golf Course Rd | Improve to urban standard w/in City (sidewalks & bike lanes); widen rural road with shoulder bike lane, increase turning radii at Adair | $2,600,000 | Main street | 2008-2017 | X |
| 10795 | Cornelius | Cornelius | Holladay St Extension | 4th | Yew | Construct new collector. | $2,500,000 | Main street | 2018-2025 | X |
| 10796 | Cornelius | Cornelius | Holladay St Extension | 10th | Gray | Construct new collector. | $1,300,000 | Main street | 2008-2017 | X |
| 10797 | Cornelius | Cornelius | Holladay St Extension | Gray | 19th | Construct new collector. | $1,300,000 | Main street | 2018-2025 | X |
| 10798 | Cornelius | Cornelius | Davis St. Extension | 4th Ave | 10th Ave | Construct new collector. | $2,500,000 | Main street | 2018-2025 | X |
| 10799 | Cornelius | Cornelius | Davis St. Extension | 19th Ave | 29th Ave | Construct new collector. | $4,500,000 | Main street | 2018-2025 | X |
| 10800 | Cornelius | Cornelius | Dogwood St. Extension | E. City Limits | 345th Ave. | Construct new collector. | $1,500,000 | Main street | 2008-2017 | X |
| 10801 | Cornelius | Cornelius | 29th Ave. | TV Hwy | 345th Ave. | Construct new collector. | $4,200,000 | Main street | 2008-2017 | X |
| 10802 | Cornelius | Cornelius | 29th Ave | TV Hwy | | Signalize intersection. | $600,000 | Main street | 2008-2017 | X |
| 10803 | Cornelius | Cornelius | TV Hwy | 4th Ave | 29th Ave | Interconnect OR 8 signal system in Cornelius. | $450,000 | Main street | 2008-2017 | X |
| 10804 | Cornelius | Cornelius | Collector Bike Lanes | | | Sign & stripe about 50 blocks of collectors. | $350,000 | Main street | 2008-2017 | X |
| 10805 | Cornelius | ODOT | TV Hwy Ped Infill | | | Build out sidewalk gaps on TV Hwy. in Cornelius. | $1,020,000 | Main street | 2008-2017 | X |
| 10806 | Forest Grove | Forest Grove | Council Creek Regional Trail | Banks | Hillsboro | PE: multi-use trail from the end of the Westside MAX light-rail line in Hillsboro, through Washington County, the City of Cornelius, the City of Forest Grove, the City of Banks, connecting to the Banks-Vernonia State Trail, with an additional short trail extension south connecting to the Tualatin River. | $5,000,000 | 2040 Corridor | 2008-2017 | X |
| 10807 | Cornelius | Cornelius | HCT Park & Ride | 26th Ave | N/A | Build station area and park & ride facilities. | $850,000 | Main street | 2018-2025 | X |
| 10808 | Cornelius | Cornelius | HCT Park & Ride | 10th Ave | N/A | Build station area and park & ride facilities. | $850,000 | Main street | 2018-2025 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10809 | THPRD | THPRD | Bronson Creek Trail (Regional) | Bronson Creek Park Cornell Rd. (THPRD) | Laidlaw Rd. | To design and construct a community trail segment in a greenway corridor, 8'-10' wide paved. | $3,500,000 | Inner neighborhood | 2018-2025 | X |
| 10810 | THPRD | THPRD | Westside Trail (Regional) | Hwy 26 | THPRD Nature Park | To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved. | $4,000,000 | Employment area, Outer neighborhood | 2008-2017 | X |
| 10811 | THPRD | THPRD | Beaverton Creek Trail (Regional) | SW 194th Ave. | Fanno Creek Trail | To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved. | $7,000,000 | Employment area, Industrial area, Outer neighborhood, Regional Center | 2018-2025 | X |
| 10812 | THPRD | THPRD | Fanno Creek Trail (Regional) | Greenwood Inn | Scholls Ferry Rd. | To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved. | $1,700,000 | Industrial area, Outer neighborhood | 2008-2010 | X |
| 10813 | THPRD | THPRD | Westside Trail (Regional) | Farmington Rd. | Scholls Ferry Rd. | To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved. | $4,150,000 | Inner neighborhood, Town Center | 2009-2014 | X |
| 10815 | Hillsboro | Hillsboro | Cornell Rd Signal Coordination | 185th | Cornelius Pass | Interconnect Traffic Signals (Extends County ATMS). | $1,000,000 | Town Center | 2008-2017 | X |
| 10817 | Hillsboro | Hillsboro | Aloclek | Amberwood | Cornelius Pass | Extend 3 lane road with bike lanes/sidewalks. | $2,000,000 | Employment area | 2018-2025 | X |
| 10818 | Hillsboro | Hillsboro | 231st Ave./Century Blvd | Baseline | Lois | Bridge and 3 lanes with bike lanes and sidewalks. | $16,500,000 | 2040 Corridor | 2018-2025 | X |
| 10819 | Hillsboro | Hillsboro | 231st Ave./Century Blvd | Baseline | Dogwood | Widen to 3 lanes with bike lanes and sidewalks. | $6,800,000 | 2040 Corridor | 2008-2017 | X |
| 10820 | Hillsboro | Hillsboro | Brookwood (247th) | Alexander | South UGB | Widen to two lanes with onstreet parking and sidewalks Alexander to Davis; widen to 3 lanes with bike lanes and sidewalks Davis to South UGB | $1,700,000 | Outer neighborhood | 2008-2017 | X |
| 10821 | Hillsboro | Hillsboro | Huffman | Shute | West UGB (Sewell) | Build 3 lane with bike lanes and sidewalks. | $7,890,000 | Industrial area | 2008-2017 | X |
| 10822 | Hillsboro | Hillsboro | 253rd | Evergreen | Huffman Extn | Build 3 lane with bike lanes and sidewalks. | $6,162,000 | Industrial area | 2008-2017 | X |
| 10823 | Hillsboro | Hillsboro | Amberwood | 206th | Cornelius Pass | Complete gap and Improve to 3 lane with bike lanes and sidewalks. Modify signal phasing at Corn Pass | $1,500,000 | Town Center | 2018-2025 | X |
| 10824 | Hillsboro | Hillsboro | Cornell Rd | Arrington | Main Street | Improve to 5 lane with bike lanes and sidewalks. | $9,248,000 | Regional Center | 2018-2025 | X |
| 10825 | Hillsboro | Hillsboro | Amberglen Parkway | Wilkins | Stucki Extn | Extend 3 lane road with bike lanes/sidewalks. | $1,800,000 | Future Regional Center | 2008-2017 | |
| 10826 | Hillsboro | Hillsboro | Jackson School Road | Evergreen | Grant | Widen to 3 lane with bike lanes/sidewalks. | $7,000,000 | Outer neighborhood | 2018-2025 | X |
| 10827 | Hillsboro | Hillsboro | Quatama Road | LRT | Cornelius Pass | Widen to 3 lane with bike lanes/sidewalks. | $1,800,000 | Station community | 2008-2017 | X |
| 10828 | Hillsboro | Hillsboro | Edgeway | Holly St. | Walker Rd | Extend as 2/3 lane with bike/sidewalks. | $4,000,000 | Station community | 2018-2025 | |
| 10829 | Hillsboro | Hillsboro | Wilkins Extension | 206th | 185th | Extend as 2/3 lane with bike/sidewalks. | $16,000,000 | Town Center | 2026-2035 | |
| 10830 | Hillsboro | Hillsboro | Johnson | Cornelius Pass | Century Blvd | Widen to 3 lanes with bike/sidewalks. | $8,000,000 | 2040 Corridor | 2026-2035 | X |
| 10831 | Hillsboro | Hillsboro | Century Blvd | Bennett | West Union Rd | Extend 2/3 lane with US 26 Overpass, connect existing segments. | $12,920,000 | Industrial area | 2018-2025 | X |
| 10832 | Hillsboro | Hillsboro | Quatama Road | Cornelius Pass | 227th/69th Ave | Widen and extend 2/3 lane with bike/sidewalks. | $1,800,000 | Outer neighborhood | 2018-2025 | X |
| 10833 | Hillsboro | Hillsboro | Grant Street Extension | 28th | Brookwood | Extend 3 lane road with bike lanes/sidewalks. | $11,300,000 | Station community | 2018-2025 | X |
| 10834 | Hillsboro | Hillsboro | 28th Ave. | Main | 25th | Widen to 3 lanes with bike/sidewalks. | $3,750,000 | Main street | 2018-2025 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10835 | Hillsboro | Hillsboro | 185th Ave. | Cornell Rd | Walker Rd | Widen to 7 lanes. | $10,000,000 | Town Center | 2018-2025 | X |
| 10836 | Hillsboro | Hillsboro | Evergreen Rd | Glencoe Rd | 25th | Widen to 5 lanes with bike lanes and sidewalks. | $5,440,000 | 2040 Corridor | 2026-2035 | X |
| 10837 | Hillsboro | Hillsboro | Campus Court Extension | W. end Campus Ct | Ray Circle | Extend 3 lane road with bike lanes/sidewalks. | $1,500,000 | Town Center | 2026-2035 | X |
| 10838 | Hillsboro | Hillsboro | Davis Road | Brookwood | 234th (Century) | Extend 3 lane road with bike lanes/sidewalks. | $2,700,000 | Outer neighborhood | 2008-2017 | X |
| 10839 | Hillsboro | Hillsboro | Century Blvd (234th) | Alexander | South UGB | Extend 3 lane road with bike lanes/sidewalks. | $4,000,000 | Outer neighborhood | 2008-2017 | X |
| 10840 | Hillsboro | Hillsboro | Regional Center Improvements | N/A | N/A | Miscellaneous Improvements to maintain capacity. | $2,000,000 | Regional Center | 2018-2025 | X |
| 10841 | Hillsboro | Hillsboro | Other Traffic Signals | N/A | N/A | Future Traffic Signals (Town Centers, 2040 Corridors). | $5,000,000 | 2040 Corridor, Town Center | 2008-2017 | X |
| 10842 | Hillsboro | Hillsboro | Other Collector Reconstruction | N/A | N/A | Miscellaneous locations. | $4,000,000 | Other | 2018-2025 | X |
| 10843 | Hillsboro | Hillsboro | Intersection Improvements | N/A | N/A | Miscellaneous locations. | $10,000,000 | Other | 2018-2025 | X |
| 10846 | Hillsboro | ODOT | TV Hwy. | 196th Ave. | Brookwood | Expand capacity including access management, bike/sidewalks and intersection improvements | $42,000,000 | 2040 Corridor | 2026-2035 | X |
| 10847 | Hillsboro | Hillsboro | Regional Center Ped Improvements | N/A | N/A | Infill and enhance missing pedestrian sidewalks, improve lighting | $4,550,000 | Regional Center | 2018-2025 | X |
| 10848 | Hillsboro | Hillsboro | Tanasbourne/Amberglen Ped Improvements | N/A | N/A | Infill missing pedestrian sidewalks. | $5,000,000 | Future Regional Center | 2018-2025 | X |
| 10849 | Hillsboro | Hillsboro | Regional Center- Bike Improvement | N/A | N/A | Infill missing bike lane connections. | $2,000,000 | Regional Center | 2018-2025 | X |
| 10850 | Hillsboro | Hillsboro | Beaverton Ck Trail, Bronson Ck Trail, | Baseline Rd, 185th | Rock Creek Trail | Construct bike/ped trail. | $1,000,000 | 2040 Corridor | 2018-2025 | X |
| 10851 | Hillsboro | Hillsboro | Rock Ck Trail - Multi Use | River Road | Orchard Park (East of Cornelius Pass Rd) | Construct bike/ped trail. | $5,520,000 | 2040 Corridor | 2018-2025 | X |
| 10852 | Wilsonville | ODOT | 95th/Boones Ferry/Commerce Circle Intersection Improvements | 95th Ave. | Southbound off-ramp of I-5/Stafford Interchange | Construct dual left-turn and right-turn lanes; improve signal synchronization, access manaagement & sight-distance | $2,500,000 | Industrial Area | 2008-2017 | X |
| 10853 | Wilsonville | Wilsonville | Kinsman Rd. Extension | Ridder Rd. | Day St. | Construct three lane road extension with sidewalks & bike lanes | $6,500,000 | Industrial Area | 2008-2017 | X |
| 10854 | Metro | To be determined | Tonquin Trail | Tualatin-Sherwood Rd. | Clackamas Co. Line | Construct mult-use trail with some on-street segments connecting multiple communities in Washington and Clackamas County. Targeted as Metro Strategic Investment priority. | $3,000,000 | Various | 2008-2017 | X |
| 10856 | Gresham | | Richey/Foster Connection | Intersection Richey/Foster | | Construct roundabout and related improvements to Foster. | $656,452 | Employment area | 2018-2025 | X |
| 10857 | Portland | Portland | Jenne/Foster | Intersection Jenne/Foster | | Add second EB left turn lane. Requires widening of Jenne North. | $540,780 | Employment area | 2018-2025 | |
| 10858 | Portland | Portland | 174th/Powell | Intersection of 174th/Powell | | Improve intersection to 5 lane section. | $1,860,824 | Employment area | 2018-2025 | |
| 10859 | Gresham | Gresham | Pleasant View Dr., Powell Loop to Binford Parkway | Powell Loop | Binford Parkway | Widen roadway and construct curb and gutter, sidewalks, bike lanes and storm drainage. | $8,965,420 | Employment area | 2008-2017 | |
| 10860 | Gresham | Gresham | Collector 72 (Knapp) | 172nd | 182nd | Build new road to green street collector standards. | $10,703,002 | Town Center | 2008-2017 | X |
| 10861 | Gresham | Gresham | Collector 72 (Knapp) | 182nd | 190th | Build new road to green street collector standards. | $10,368,393 | Town Center | 2008-2017 | X |
| 10862 | Gresham | Gresham | Community Street 72 | 190th | Binford Parkway | Build new road to green street community standards. | $9,991,393 | Employment area | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 10863 | ODOT | ODOT | Troutdale Interchange (Exit 17) Improvements | Troutdale interchange (Exit 17) | N/A | Improve eastbound off-ramp, widen South Frontage Road, , improve intersection at Graham Road. Also includes initial reconstruction of west end of interchange (NW Marine Dr.) | $32,200,000 | Town Center | 2018-2025 | X |
| 10864 | ODOT | ODOT | New interchange on US 26 to serve industrial area. | Callister Road | 267th Ave. | New interchange on US 26 to serve industrial area. | $29,500,000 | Industrial area | 2018-2025 | X |
| 10865 | ODOT | ODOT | I-205/Airport Way interchange | I-205 and Airport Way | | Implement recommendations consistent with I-205/Airport Way Study. | $10,500,000 | Employment area, Industrial area | 2008-2017 | X |
| 10867 | ODOT | ODOT | I-5 from I-405 to I-84 (Rose Quarter/Lloyd District) Planning and PE | I-84 | Greeley St. | Conduct planning, preliminary engineering and environmental work to improve safety and operations on I-5, connection between I-84 and I-5, and access to the Lloyd District and Rose Quarter. | $30,000,000 | Portland Central City | 2008-2017 | X |
| 10869 | ODOT | ODOT | Sunrise Project: Construct improvements in the Sunrise Corridor consistent with the supplemental EIS | I-205 | 122nd Ave. | Construct improvements consistent with the supplemental EIS. | $150,000,000 | 2040 Corridor | 2008-2017 | X |
| 10872 | ODOT | ODOT | Add lane: SB I-205 to SB I-5 interchange ramp and extend acceleration lane and add auxiliary lane on SB I-5 to Elligsen Road. | I-205 | Elligsen Road | Add lane to SB I-205 to SB I-5 interchange ramp and extend acceleration lane and add auxiliary lane on SB I-5 to Elligsen Road. | $9,700,000 | 2040 Corridor | 2008-2017 | X |
| 10873 | ODOT | ODOT | US 26W: Widen highway to 6 lanes | 185th Ave. | Cornelius Pass Road | Widen highway to 6 lanes. | $36,119,034 | Employment area | 2008-2017 | X |
| 10874 | ODOT | ODOT | I-5 Delta Park Phase 2 | Victory | Lombard | Construct highest priority improvements consistent with the Delta-Lombard Environmental Assessment. | $46,000,000 | 2040 Corridor | 2008-2017 | X |
| 10875 | ODOT | ODOT | OR 217: Braid OR 217 ramps between Beaverton-Hillsdale Hwy. and Allen Blvd. in both directions. | Beaverton-Hillsdale Hwy. | Allen Blvd. | Braid OR 217 ramps between Beaverton-Hillsdale Highway and Allen Boulevard in both directions. | $79,600,000 | Regional Center | 2008-2017 | X |
| 10876 | ODOT | ODOT | I-84: Extend Halsey exit lane to I-205 NB exit | Halsey exit | I-205 NB exit | I-84 Lane Extension: Halsey to I-205 NB ramp. | $13,000,000 | Regional Center | 2008-2017 | X |
| 10884 | ODOT | ODOT | I-5 from I-405 to I-84 (Rose Quarter/Lloyd District) Right-of-way | I-84 | Greeley St. | Acquire right-of-way to improve safety and operations on I-5, connection between I-84 and I-5, and access to the Lloyd District and Rose Quarter. | $20,000,000 | Portland Central City | 2018-2025 | X |
| 10890 | ODOT | ODOT | Sunrise Project: Acquire right-of-way: I-205 to SE 172nd Ave | I-205 | 172nd Ave. | Acquire right-of-way: I-205 to SE 172nd Ave. | $145,000,000 | 2040 Corridor | 2008-2017 | X |
| 10893 | ODOT | ODOT | Improve I-5/Columbia River bridge | Victory Blvd. | Washington state line | Replace I-5/Columbia River bridges and improve interchanges on I-5. | $2,982,000,000 | Portland Central City | 2008-2017 | X |
| 10894 | ODOT | ODOT | Sunrise Hwy. PE: I-205 to SE 172nd Ave | I-205 | SE 172nd Ave | Preliminary engineering and EIS from I-205 to 172nd. | $25,000,000 | 2040 Corridor | 2008-2017 | X |
| 10899 | TriMet | | Washington County Commuter Rail spare DMUs | N/A | N/A | 1 powered and 2 trailer DMUs for spares and service reliability. | $14,000,000 | Other | 2008-2017 | X |
| 10900 | TriMet | | Washington County Commuter Rail Frequency improvements | N/A | N/A | Beaverton to Wilsonville frequency and span of service improvements. Will require capital improvements including DMUs. | $250,000,000 | Other | 2008-2017 | |
| 10901 | TriMet | | MAX light rail: South Corridor Ph 2: Portland to Milwaukie | N/A | N/A | Portland, N Macadam, OMSI, Brooklyn, Milwaukie, (Park Ave.). | $1,148,000,000 | 2040 Corridor | 2008-2017 | X |

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| 10902 | TriMet | | MAX light rail: Yellow Line: CRC / I-5 North extension | N/A | N/A | CRC - Expo to Vancouver, north on Main to Lincoln. | $755,600,000 | 2040 Corridor | 2008-2017 | X |
| 10905 | TriMet | | MAX light rail: Blue Line east : station upgrades | N/A | N/A | Refurbish older MAX station platforms along Banfield / Burnside. | $15,000,000 | Other | 2008-2017 | |
| 10907 | TriMet | | High Capacity Transit: Barbur / 99W Corridor | N/A | N/A | Portland to Tigard/King City HCT Line. Assumes expansion of existing bases or 3rd LRT operating base as part of project. | $1,656,250,000 | 2040 Corridor | 2008-2017 | |
| 10909 | TriMet | | Powell / Division On-Street BRT | N/A | N/A | On-Street BRT on Powell/Division from Portland CBD to Gresham TC. | $20,000,000 | 2040 Corridor | 2008-2035 | |
| 10912 | TriMet | | Streetcar Extension: Portland to Lake Oswego via Willamette Shore | N/A | N/A | Portland to Lake Oswego extension of Portland Streetcar. | $221,700,000 | 2040 Corridor | 2008-2017 | X |
| 10916 | TriMet | | Bus Improvements: SE McLoughlin to Oregon City and CCC | N/A | N/A | Bus improvements along McLoughlin Blvd in Milwaukie, Galdstone, Oregon City, and CCC to improve access in corridor and connect to PMLR | $6,000,000 | 2040 Corridor | 2008-2017 | X |
| 10920 | TriMet | | MAX LRT: Rose Quarter junction track and intersection improvements | N/A | N/A | Improve operations, possible grade separation, bike accommodation. | $25,000,000 | Other | 2008-2017 | |
| 10921 | TriMet | | MAX LRT on Steel Bridge: Capacity and operations improvements | N/A | N/A | Possible additional tracks, bridge rehabilitation, seismic upgrade. | $60,000,000 | Other | 2008-2017 | X |
| 10922 | TriMet | | MAX LRT: Gateway junction restructuring | N/A | N/A | Track reconfiguration to provide direct N/S operations and eliminate single track section. | $70,000,000 | Other | 2018-2025 | |
| 10923 | TriMet | | MAX LRT: Downtown Portland speed and capacity improvements | N/A | N/A | Train speed and station spacing study, signal upgrades. | $5,000,000 | Other | 2008-2035 | |
| 10926 | TriMet | | Transit dispatch center upgrade | N/A | N/A | To accommodate increasing operating complexities. Part of the work is incorporated in Portland to Milwaukie Light Rail Project | $4,000,000 | Other | 2008-2017 | X |
| 10927 | TriMet | | MAX LRT: Operational upgrades | N/A | N/A | Sidings, powered turnouts, block and signal control infill. | $19,000,000 | Other | 2008-2035 | X |
| 10928 | TriMet | | New MAX LRT vehicles | N/A | N/A | fleet expansion to meet growing demand | $49,000,000 | Other | 2008-2017 | X |
| 10979 | Portland | | Burnside/Couch Streetcar, East & West [NW 23rd to E 14th] | NW 23rd | E 14th | Construct streetcar from NW 23rd Avenue to E 14th Avenue after an alternatives analysis study is completed. | $118,500,000 | Portland Central City | 2008-2017 | X |
| 10980 | Portland | | Streetcar Master Plan | N/A | N/A | Planning program for future Portland streetcar lines. | | Other | 2008-2017 | |
| 10981 | TriMet | | Regional Bus: North Macadam / Line 35 realignment | N/A | N/A | Shift of Line 35 through this fast-growing area until Lake Oswego Streetcar is complete | $100,000 | Other | 2008-2017 | X |
| 10984 | TriMet | | Reconfiguration of Millikan Way Park & Ride | N/A | N/A | Reconfigure lot in response to lease expiration. | $2,000,000 | Station community | 2008-2017 | X |
| 10985 | TriMet | | Sunset Park & Ride rework to match Peterkort redevelopment | N/A | N/A | Redesign to expand park & ride lot and integrate station with pending site development. | $6,000,000 | Station community | 2008-2017 | |
| 10986 | TriMet | | Fuller Rd Park & Ride reconfiguration | N/A | N/A | Reconfigure / structure Fuller P&R for TOD opportunity. | $10,000,000 | Station community | 2018-2025 | |
| 10987 | TriMet | | Gresham City Hall Park & Ride reconfiguration | N/A | N/A | Reconfigure / structure City Hall P&R for TOD opportunity. | $3,000,000 | Station community | 2008-2017 | |
| 10988 | TriMet | | Incremental increases in park & ride lots and capacities | N/A | N/A | 50-space +/- lots (or additions to existing lots) in communities. 20 lots region-wide. | $20,000,000 | Station community | 2008-2017 | |
| 10989 | TriMet | | 181st park & ride lot | N/A | N/A | Redevelop site in conjunction with TOD opportunity. | $4,000,000 | Station community | 2008-2017 | X |

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| 10990 | TriMet | | Park & Ride management strategy implementation | N/A | N/A | Convert major park & ride lots for shared use and/or pay lots. | $1,000,000 | Other | 2008-2035 | X |
| 10991 | TriMet | | Gateway Phase 2 TOD development | N/A | N/A | Coordinate with development and garage expansion. | $3,724,000 | Station community | 2008-2017 | |
| 10992 | TriMet | | Gateway Phase 3 TOD development | N/A | N/A | Reconfigure bus TC function alongside P&R structure per master plan. | $3,500,000 | Station community | 2008-2017 | |
| 10993 | TriMet | | Milwaukie bus layover facility | N/A | N/A | Modification to Milwaukie Park & Ride. | $627,000 | Other | 2008-2017 | X |
| 10995 | TriMet | | Rose Quarter Bike Improvements | N/A | N/A | Modify Rose Quarter to accommodate through bike traffic. | $250,000 | Portland Central City | 2008-2017 | X |
| 10996 | TriMet | | Rose Quarter Transit Center reconstruction | N/A | N/A | Reconstruct TC to better suit circulation and redevelopment needs. | $8,000,000 | Portland Central City | 2008-2017 | |
| 10997 | TriMet | | Willow Creek Transit Center | N/A | N/A | Reconstruct TC portion of MAX/bus facility for TOD opportunity (PCC). | $6,000,000 | Station community | 2008-2017 | X |
| 10998 | TriMet | | Bus replacements | N/A | N/A | Approximately 40 buses annually to keep fleet to fleet age standards | $368,160,000 | Other | 2008-2035 | X |
| 10999 | TriMet | | Bus purchases for congestion and expansion | N/A | N/A | fleet expansion to meet growing demand | $46,020,000 | Other | 2008-2035 | X |
| 11016 | TriMet | | LIFT vehicle replacement and expansion of fleet | N/A | N/A | Replace and expand fleet. Starting at approximately 40 LIFT vehicles annually in early years and expanding. | $106,250,000 | Other | 2008-2035 | X |
| 11032 | TriMet | | Ruby Junction light rail operating base expansion | N/A | N/A | LRV maintenance and storage facility, including expansion on west side of Eleven-Mile Ave. Capital cost is included in Milwaukie and CRC projects. | | Other | 2008-2017 | X |
| 11035 | TriMet | | Powell bus operating base expansion | N/A | N/A | Expand bus operations, maintenance and storage facility to accommodate larger fleet. | $11,637,609 | Other | 2008-2017 | X |
| 11036 | TriMet | | Merlo fuel / service house replacement | N/A | N/A | Over due replacement, creates new entrance. | $6,411,300 | Other | 2008-2017 | X |
| 11037 | TriMet | | Merlo bus operating base expansion | N/A | N/A | Pave graveled property for bus parking expansion. | $1,000,901 | Other | 2018-2025 | |
| 11038 | TriMet | | Center Street bus operating base expansion | N/A | N/A | Includes upgrades to bus facilities and responses to some changes needed to accommodate Portland to Milwaukie Light Rail | $10,000,000 | Other | 2008-2017 | X |
| 11039 | TriMet | | Center Street bus operating base expansion | N/A | N/A | Phase 2 to include administrative offices. | $11,997,000 | Other | 2008-2017 | |
| 11041 | TriMet | | 4th bus base | N/A | N/A | Land acquisition and construction of a 4th bus base. | $77,000,000 | Other | 2026-2035 | |
| 11042 | TriMet | | Bus priority treatment | N/A | N/A | Traffic signal priority treatments, jump lanes, etc. regionwide. Including adding bus priority when other signal improvements are made. | $5,029,837 | Other | 2008-2035 | X |
| 11043 | TriMet | | Pedestrian access improvements | N/A | N/A | Sidewalks, crosswalks and ADA improvements to transit access. | $5,000,000 | Other | 2008-2035 | X |
| 11045 | Washington Co. | | Baseline @ 185th Improvement | 185th Ave. | Baseline | Grade separate intersection. | $24,700,000 | Employment area | 2018-2025 | |
| 11056 | Tualatin | Tualatin | 108th Ave. | Leveton Dr | Herman Rd | Widen 108th Ave from one travel lane in each direction to two travel lanes in each direction with a continuous left turn lane. | $5,600,000 | Industrial Area | 2018-2025 | |
| 11071 | ODOT | ODOT | I-5/Wilsonville Road Interchange | Hubbard cut-off | Wilsonville Road | Reconstruct all interchange ramps and improve Wilsonville Road at interchange. Add NB auxiliary lane from Hubbard cut-off to Wilsonville Rd. | $21,200,000 | 2040 Corridor, Town Center | 2008-2017 | X |
| 11074 | Gresham | Gresham | East Buttes Loop Trail: From Springwater Trail to Rodlun Road | Springwater Trail | Rodlun Road | Construct new shared use trail (12' wide pervious asphalt) | $8,300,000 | Outer neighborhood | 2008-2017 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 11075 | Gresham | Gresham | East Buttes Loop Trail (S) (Informally known as "Kelly Creek Trail" | East Buttes Loop Trail approx. 0.7 mile south of the | South of Kelley Creek approx. 2.2 miles then back to the | Construct 8' wide "soft surface" trail | $1,450,527 | Outer neighborhood | 2008-2017 | |
| 11081 | Lake Oswego | | Boones Ferry Rd bike lanes | Country Club | North City Limits | Add bike lanes | $5,710,000 | 2040 Corridor | 2009-2017 | X |
| 11082 | Lake Oswego | | Carman Dr. sidewalks & bike lanes | Meadows Rd | I-5 | Add bike lanes and pedestrian pathway | | Town Center | 2009-2017 | |
| 11083 | Lake Oswego | | Iron Mountain / Upper Drive | 10th St. | Bryant Rd. | Add bike lanes | $3,900,000 | Outer neighborhood | 2009-2017 | |
| 11084 | Lake Oswego | | Pilkington Rd bike lanes/ sidewalk | Boones Ferry Rd | Childs Rd | Widen and improve to provide bike//ped facility | $1,510,000 | Outer neighborhood | 2009-2017 | |
| 11085 | Lake Oswego | | Kerr Parkway bike lanes | Stephenson | Boones Ferry Rd | Add bike lanes and reconstruct roadway | $3,000,000 | Outer neighborhood | 2009-2017 | |
| 11087 | Lake Oswego | | Bryant Rd bike lanes/pathway | Childs Rd | Boones Ferry Rd | Add bike lanes | $4,295,000 | Outer neighborhood | 2009-2017 | |
| 11088 | Oregon City | Clackamas Co. | Holly Lane | Redland Rd. | Holcomb Rd. | Through lanes, sidewalks, bike lanes, turn lanes to serve UGB expansion area. | $21,000,000 | Other | 2018-2025 | X |
| 11089 | Washington Co. | Washington Co. | 92nd Ave. Ped. | Garden Home Blvd. | Allen Blvd. | Completes 3800 feet of sidewalk improvements to transit corridor | $3,922,000 | Outer neighborhood | 2008-2017 | X |
| 11090 | Washington Co. | Washington Co. | 10th Ave/Cornell Bike | Baseline Rd. | 25th Ave. | Completes 2100 feet of bike lanes in transit corridor | $4,740,000 | 2040 Corridor | 2008-2017 | X |
| 11091 | Portland/Port | Portland/Port | Columbia Blvd./I-205 Interchange: SB On-Ramp Improvement | | | Expand the on-ramp to three lanes, including for truck/HOV | $750,000 | Employment Area | 2008-2017 | X |
| 11093 | Washington Co. | Washington Co. | Flashing Yellow Arrow Program (ITS) | Various locations in urban Washington Co. | | Install flashing yellow arrow signal phase at more than 200 intersections | | 2040 Corridor | 2008-2017 | X |
| 11094 | Cornelius | | Baseline Boulevard Improvement | 10th | 19th | Build sidewalks & other pedestrian amenities | $3,600,000 | Main street | 2008-2017 | X |
| 11095 | Cornelius | | 11th-17th Avenue | Baseline | Adair | Ped improvement of Main Street Dist local streets | $3,400,000 | 2040 Corridor | 2008-2017 | X |
| 11096 | Gresham | Gresham | Cleveland St. Reconstruction. | Burnside | Stark | Reconstructs street from Stark to Burnside. | $13,838,103 | Regional Center | 2008-2017 | |
| 11097 | Gresham | Gresham | Orient Dr. Imps. | South City Limits | East to 282nd Ave. | Upgrades to arterial 4 lane standards. | $9,000,000 | Industrial area | 2018-2025 | |
| 11098 | Gresham | Gresham | Rockwood TC 181st LRT station and Ped Enhancements | | | Improve sidewalks, lighting, crossings, bus shelters, benches at 181st LRT station, on Stark St. and other intersecting streets. | $8,919,615 | Town Center | 2018-2025 | |
| 11099 | Gresham | Gresham | Barnes Rd.: Orient to south city limits | Orient | South City limit | Widen road and add improvements. | $7,135,229 | Outer neighborhood | 2018-2025 | X |
| 11100 | Gresham | Gresham | East Buttes Loop Trail: From Rodlun Road to 190th | Rodlun | 190th | Construct new shared use trail (12' wide pervious asphalt) | $2,800,000 | Outer neighborhood | 2008-2017 | X |
| 11101 | Gresham | Gresham | East Buttes Loop Trail: 190th west to Springwater Trail | 190th | Springwater Trail | Construct new shared use trail (12' wide pervious asphalt) | $5,515,000 | Outer neighborhood | 2008-2017 | |
| 11102 | Portland | | Burnside/Couch Streetcar Extension to Hollywood via Sandy Blvd | E 14th | Hollywood District | Extend streetcar from E 14th Avenue to the Hollywood District after an alternatives analysis study is completed. | $70,000,000 | Town Center | 2008-2017 | X |
| 11107 | SMART | | Extension of transit service from Wilsonville to downtown Portland | | | Additional Service hours for new services and related bus stop and ROW improvements | $1,152,000 | Other | 2008-2017 | X |

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| 11108 | SMART | | New Service to West Wilsonville Developments | | | Additional Service hours for new services and related bus stop and ROW improvements | $1,550,000 | Town Center | 2008-2017 | X |
| 11109 | SMART | | Bus Replacements | | | Purchase buses to replace those that are no longer safe or reliable. | $14,000,000 | Other | 2008-2035 | X |
| 11110 | SMART | | Wilsonville Park & Ride Expansion | | | Design & construct an additional 250 spaces of parking at the Wilsonville Stations | $4,500,000 | Station community | 2008-2017 | X |
| 11111 | SMART | | SMART Administrative Building | | | Design and construct SMART offices near the Wilsonville commuter rail station | $4,000,000 | Other | 2008-2017 | X |
| 11112 | SMART | | Wilsonville SMART Fleet Services Facility | | | Design and construct a transit fleet services facility near the Wilsonville commuter rail station | $8,000,000 | Other | 2008-2017 | X |
| 11113 | SMART | | Transportation Management Association (TMA) | | | Form a transportation management association (TMA) to provide transportation services and information on alternatives to local employers and employees | $1,190,000 | Employment area, Industrial area | 2018-2035 | X |
| 11116 | Portland | | Garden Home Rd., SW (Capitol Hwy - Multnomah): Multi-modal Improvements | SW Capitol Hwy | SW Multnomah Blvd | Reconstruct road with drainage, bike lanes, sidewalks, and curbs. | $15,396,476 | Inner neighborhood | 2008-2017 | |
| 11117 | Portland | | St. Helens Rd. (US 30), (in vicinity of NW Balboa) Connectivity Improvements | NW Balboa | | Provide an alternative crossing of the BNSF Railroad to improve connectivity and safety between US 30 and the industrial properties served by NW Front Avenue in the Willbridge area of the NW Industrial District. | $23,113,022 | Industrial Area | 2008-2017 | |
| 11118 | Washington Co. | | 185th Ave. to Kinnaman Improvements | TV Hwy. | Kinnaman Rd. | Widen to 3 lanes with bike lanes and sidewalks. | $5,820,000 | 2040 Corridor | 2008-2017 | X |
| 11120 | Washington Co. | | Bethany Blvd. to Bronson Improvements | West Union Rd. | Bronson Rd. | Widen to 5 lanes with bike lanes and sidewalks. | $14,328,000 | 2040 Corridor | 2008-2017 | X |
| 11121 | ODOT | ODOT | I-5 Delta Park Phase 1 | Victory | Lombard | Widen I-5 to 3 lanes and realign ramps. | $50,000,000 | 2040 Corridor | 2008-2017 | X |
| 11122 | ODOT | ODOT | OR 217: Sunset Hwy to TV Hwy | US 26 | OR 8 | Widen OR 217 and structures. | $37,676,000 | 2040 Corridor | 2008-2017 | X |
| 11123 | ODOT | ODOT | I-5 North Macadam | I-5/Macadam interchange | N/A | Construct improvements in North Macadam/South Waterfront area to enhance safety and access. | $15,000,000 | Portland Central City | 2008-2017 | X |
| 11124 | ODOT | ODOT | US 26W Cornell to 185th | Cornell Rd | 185th Ave. | Widen US 26 to 6 lanes from Cornell Rd. to 185th Ave. | $20,000,000 | 2040 Corridor | 2008-2017 | X |
| 11125 | ODOT | ODOT | US 26E Springwater at grade intersection | N/A | N/A | Construct at-grade intersection connecting Springwater area to US 26. | $2,000,000 | Industrial area | 2008-2017 | X |
| 11126 | Milwaukie | Milwaukie | Milwaukie Town Center: Main/Harrison/21st | SE Scott and SE Main | SE Jackson and SE Main | Improvements include renovated block faces, two travel lanes, bike lanes, 15 foot sidewalks, planter strips, lighting, benches and ADA-compliant sidewalks. | $501,505 | Town Center | 2008-2017 | X |
| 11127 | Portland | Portland | School Access Safety Improvements: various locations | N/A | N/A | Pedestrian safety enhancements at 11 elementary schools. | $499,600 | Inner neighborhood, Outer neighborhood | 2008-2017 | X |
| 11128 | Multnomah Co. | Multnomah Co. | Morrison Bridge Rehabilitation - Phase 2 | | | Rehabilitate mechanical system, approach structure, corrosion control, phase 1 seismic. (Phase 2) | $19,300,000 | Portland Central City | 2008-2017 | |
| 11129 | Multnomah Co. | Multnomah Co. | Burnside Bridge Rehabilitation - Phase 2 | | | Rehabilitate mechanical system, approach structure, corrosion control, phase 1seismic. (Phase 2) | $16,600,000 | Portland Central City | 2008-2017 | |
| 11130 | Troutdale/Port | Troutdale | Graham Road Reconstruction Phase 2 | I-84 North Frontage Road | Sundial Road | Reconstruct and widen Graham Road | $8,500,000 | Industrial area | 2008-2017 | |
| 11131 | Portland | | Vermont St., SW, (30th - 45th): Bicycle and Pedestrian Improvements | SW 30th | SW 45th | Multi-modal street improvements including bicycle and pedestrian facilities. | $1,350,000 | Town Center, Main street, Station community | 2018-2025 | X |

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| 11132 | Clackamas Co. | Clackamas Co. | Clackamas Industrial area muli-modal improvements | area wide improvements | | Complete bike and pedestrian connections within the Clackamas Industrial area. | $5,000,000 | Industrial area | 2008-2018 | X |
| 11133 | Portland | | NEW St. Johns Truck Strategy Implementation Phase II | | | Addresses pedestrian safety, bicycle safely and neighborhood livability impacts associated with cut-through truck traffic on N. Fessenden St. The project will construct pedestrian crossing safety and traffic calming improvements, such as curb extensions and median islands. | $1,000,000 | Inner neighborhood | | X |
| 11134 | THPRD | | Westside Trail (Regional) | Bronson Creek Trail (Kaiser Ridge Park) | Rock Creek Trail (Kaiser Woods Park) | To design and construct a regional trail multi-use segment in a utility corridor, 10'-12' wide paved. | $2,675,000 | Outer neighborhood | 2011-2013 | X |
| 11135 | Happy Valley | Happy Valley | Rock Creek Blvd. improvements | Hwy. 212/224 (planned Sunrise Corridor Rock Creek Interchange) | 177th Ave. | Construct a new 5 lane roadway with sidewalks, bike lanes and traffic signals | $34,347,149 | Employment area, Industrial area | 2008-2017 | X |
| 11136 | Hillsboro | Hillsboro | TV Hwy/209th Intersection | N/A | N/A | Add eastbound right turn lane, widen crossing for second northbound to westbound left turn lane, add second southbound lane, protected N-S turn phasing | $3,800,000 | 2040 Corridor | 2008-2017 | X |
| 11137 | Hillsboro | Hillsboro | TV Hwy/Century Blvd Intersection | N/A | N/A | Add second southbound lane, Add northbound left turn lane, widen rail crossing, add offroad bike lanes on Century from TV Hwy to Alexander | $1,800,000 | 2040 Corridor | 2008-2017 | X |
| 11138 | Hillsboro | Hillsboro | 206th Ave | LRT | Von Neumann Rd. | Widen roadway to add sidewalks and bike lanes | $1,200,000 | Future Regional Center | 2008-2017 | X |
| 11139 | Hillsboro | Hillsboro | Baseline at Brookwood Intersection Improvements | Ihly Way | 500' south of Baseline Rd | Widen for second northbound and southbound thru the intersection | $1,000,000 | 2040 Corridor | 2008-2017 | X |
| 11140 | Hillsboro | Hillsboro | Brookwood Parkway | Ihly Way | Cornell Rd. | Widen to five lanes with offstreet sidewalk and bikeway | $9,000,000 | Industrial area | 2018-2025 | X |
| 11141 | Hillsboro | Hillsboro | Brodgen Ave | 28th Ave | Brookwood Ave. | Widen to provide sidewalks and Bikeway network signage access to LRT and parks. New traffic signal at Brookwood. | $3,000,000 | Station Area | 2018-2025 | X |
| 11142 | Hillsboro | Hillsboro | 37th Ave | Main St | Brogden Ave | Widen to provide sidewalks and Bikeway Network signage access to LRT and Fairgrounds | $1,000,000 | Station Area | 2008-2017 | X |
| 11143 | Hillsboro | Hillsboro | Holly Street Extension | Edgeway | 185th | Construct 3 lane roadway with sidewalks and signal at 185th | $1,000,000 | Station Area | 2008-2017 | X |
| 11144 | Hillsboro | Hillsboro | Edgeway (Salix) | Heritage | Holly Street | Construct 3 lane roadway with bike lanes and sidewalks | $1,000,000 | Station Area | 2008-2017 | X |
| 11145 | Hillsboro | Hillsboro | Airport Rd | 48th Ave | Brookwood Pkwy | Widen to 2/3 lanes with bike lanes and sidewalks | $1,500,000 | Industrial area | 2018-2025 | X |
| 11146 | Hillsboro | Hillsboro | Shute Rd (renamed Brookwood Pkway) | Evergreen Rd. | Meek Rd (realigned) | Construct off street combined bike/ped paths | $1,000,000 | Industrial area | 2008-2017 | X |
| 11147 | Hillsboro | Hillsboro | Schaaf Rd | Pinefarm Pl | Century | Construct 3 lane roadway with bike lanes and sidewalks. | $2,500,000 | Industrial area | 2018-2025 | X |
| 11148 | Hillsboro | Hillsboro | Westmark Dr. | Croeni Rd. | West Union Rd. | Construct 3 lane roadway with bike lanes and sidewalks. | $1,700,000 | Industrial area | 2018-2025 | X |
| 11149 | Hillsboro | Hillsboro | Helvetia Rd. | Schaaf Rd | West Union Rd. | Construct 3 lane roadwy with bike lanes and sidewalks | $4,000,000 | Industrial area | 2018-2025 | X |
| 11150 | Hillsboro | Hillsboro | Jacobson Rd. | Century Blvd | Helvetia Rd | Complete 3 lane roadway with bike lanes and sidewalks | $2,500,000 | Industrial area | 2008-2017 | X |
| 11151 | Hillsboro | Hillsboro | Bentley St. | 32nd Ave. | Brookwood Ave. | Construct sidewalks and bike lanes. | $3,000,000 | Outer neighborhood | 2018-2025 | X |
| 11152 | Hillsboro | Hillsboro | Cedar St. | 32nd Ave. | Brookwood Ave. | Construct sidewalks | $1,000,000 | Outer neighborhood | 2018-2025 | X |

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| 11153 | Hillsboro | Hillsboro | Golden Rd. | Brookwood Ave. | Imlay Ave. | Widen to provide bike lanes and sidewalks | $2,000,000 | Outer neighborhood | 2018-2025 | X |
| 11154 | Hillsboro | Hillsboro | Francis St. | Imlay Ave. | Cornelius Pass Rd. | Widen to provide bike lanes and sidewalks | $1,000,000 | Outer neighborhood | 2008-2017 | X |
| 11155 | Hillsboro | Hillsboro | Drake St. | Imlay Ave. | 67th Ave. | Widen to provide 2/3 lanes with bike lanes and sidewalks | $1,800,000 | 2040 Corridor | 2018-2025 | X |
| 11156 | Hillsboro | Hillsboro | Drake St. | Brookwood Ave. | Imlay Ave. | Widen to provide 2/3 lanes with bike lanes and sidewalks | $1,500,000 | 2040 Corridor | 2018-2025 | X |
| 11157 | Hillsboro | Hillsboro | Imlay Ave. | TV Hwy | Lois St. | Widen to provide bike lanes and sidewalks | $2,000,000 | Outer neighborhood | 2018-2025 | X |
| 11158 | Hillsboro | Hillsboro | 206th Ave. | Baseline | Rock Rd. | Widen to provide bike lanes and sidewalks | $3,000,000 | Outer neighborhood | 2018-2025 | X |
| 11159 | Hillsboro | Hillsboro | Alexander St. | Brookwood (247th) | 56th Ct. | Widen to provide bike lanes and sidewalks | $1,000,000 | 2040 Corridor | 2008-2017 | X |
| 11160 | Hillsboro | Hillsboro | Witch Hazel Rd. | River Road | Brookwood (247th) | Widen to provide sidewalks | $1,000,000 | 2040 Corridor | 2018-2025 | X |
| 11161 | Hillsboro | Hillsboro | Rood Bridge Rd | River Road | South UGB | Widen to provide bike lanes and sidewalks | $2,500,000 | Outer neighborhood | 2026-2035 | X |
| 11162 | Hillsboro | Hillsboro | 24th Ave | Maple | Main Street | Widen to provide bike lanes and sidewalks, bridge over Dawson Creek | $4,000,000 | Outer neighborhood | 2026-2035 | X |
| 11163 | Hillsboro | Hillsboro | Sunrise Lane | Jackson School | 25th | Widen to provide sidewalks | $1,700,000 | Inner neighborhood | 2018-2025 | X |
| 11164 | Hillsboro | Hillsboro | 17th Ave | Cornell Rd | Sunrise Ln | Widen to provide sidewalks | $1,000,000 | Inner neighborhood | 2018-2025 | X |
| 11165 | Hillsboro | Hillsboro | 15th Ave. | Sunrise Ln | Evergreen Rd | Widen to provide bike lanes and sidewalks | $1,500,000 | Outer neighborhood | 2018-2025 | X |
| 11166 | Hillsboro | Hillsboro | 25th Ave. | Intel Jones Farm (north end) | Evergreen | Widen to provide bike lanes and sidewalks | $1,500,000 | Outer neighborhood | 2018-2025 | X |
| 11167 | Hillsboro | Hillsboro | Garibaldi | Ebberts | Connell | Widen to provide sidewalks. Bike network Wayfinding signage | $500,000 | Outer neighborhood | 2008-2017 | X |
| 11168 | Hillsboro | Hillsboro | Connell | Garibaldi | Darnielle | Widen to provide sidewalks. Bike boulevard Wayfinding signage | $500,000 | Outer neighborhood | 2008-2017 | X |
| 11169 | Hillsboro | Hillsboro | Cornell/25th Ave Intersection Improvements | N/A | N/A | Widen 25th Ave for double southbound to eastbound left turn lanes, second northbound lane within 500 feet of intersection | $2,800,000 | 2040 Corridor | 2008-2017 | X |
| 11170 | Hillsboro | Hillsboro | Cornell/Brookwood Prkwy Intersection Improvements | N/A | N/A | Widen Cornell Rd to provide double left turn lanes eastbound and westbound | $3,300,000 | 2040 Corridor | 2008-2017 | X |
| 11171 | Lake Oswego | | Tryon Creek Bridge - Willamette River Shoreline regional trail | Mouth of Tryon Creek | Mouth of Tryon Creek | Construct new bridge over the mouth of Tryon Creek | $1,700,000 | Outer Neighborhood | 2009-2017 | X |
| 11172 | Lake Oswego | | Hwy 43 Bike Connection | Terwilliger Blvd | McVey Ave | Add bike facility for safety improvement | $2,500,000 | 2040 Corridor, Town Center | 2009-2017 | X |
| 11173 | Lake Oswego | | McNary/ Royce Stimulus | Kerr to Kerr and Bryant Rd to Westview | see note in the previous box | Overlay Roads | $800,000 | Outer neighborhood | 2009-2010 | X |
| 11174 | Milwaukie | Milwaukie | 29th/40th/42nd Bike Boulevard Intersection Improvements | Monroe | Springwater Trail | Construct street improvement from Springwater Trail to 28th; signage & striping improvements at minor intersections; major intersection improvements, such as bulbouts/medians at Harvey/32nd, Olsen/42nd, Harrison/40th; traffic calming along full corridor. | $2,742,000 | Town Center | 2008-2017 | X |
| 11175 | Milwaukie | Milwaukie | Downtown Parking Structure | n/a | n/a | Provide public contribution to private and/or wholly-owned public structured parking in downtown. | $4,000,000 | Town Center | 2026-2035 | X |

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| 11176 | ODOT | ODOT | I-5 from I-405 to I-84 (Rose Quarter/Lloyd District) Construction | I-84 | Greeley St. | Construct improvements to enhance safety and operations on I-5, connection between I-84 and I-5, and access to the Lloyd District and Rose Quarter. | $85,704,966 | Portland Central City | 2008-2017 | X |
| 11177 | ODOT | ODOT | I-5 northbound auxiliary lane from Elligsen Road interchange to I-205 interchange | Elligsen Rd | I-205 | Construct northbound auxiliary lane on I-5 between Elligsen Road interchange and I-205 interchange. | $11,000,000 | 2040 Corridor | 2008-2017 | X |
| 11178 | ODOT | ODOT | US Highway 26 at Shute Road interchange improvements | US 26 and Shute Road | N/A | Interchange improvements to improve operations and construct a new westbound-southbound loop ramp to serve Shute Road. | $45,000,000 | Industrial area | 2008-2017 | X |
| 11179 | ODOT | ODOT | I-5 to 99W replacement projects | N/A | N/A | Construct improvements consistent with recommendations from I-5/99W connector process. | $10,000,000 | 2040 Corridor | 2008-2017 | X |
| 11180 | ODOT | ODOT | I-205/Hwy. 213 Interchange | Washington St. | I-205 | Improve and widen OR 213, including reconstruction of intersection of OR 213 and Washington Street. | $22,000,000 | Regional Center | 2008-2017 | X |
| 11181 | ODOT | ODOT | OR 43 Sellwood Bridge Interchange | OR 43 at Sellwood Bridge | N/A | Improve connection at the west end (OR 43) of the Sellwood Bridge, including the interchange influence area. | $30,000,000 | Main street | 2008-2017 | X |
| 11182 | Oregon City | Oregon City | Molalla Ave. Roundabout | Taylor | Division | Reconfigure intersection for safety and LOS into roundabout | $3,000,000 | 2040 Corridor | 2008-2017 | X |
| 11183 | Oregon City | Oregon City | Leland Road Sidewalk and Bike Infill (active transportation project) | Warner Milne | Meyers Road | Construct sidewalks and bike lanes or multi-use path for safety and to connect pedestrian generators. | $5,000,000 | Outer neighborhood | 2008-2017 | X |
| 11184 | Oregon City | Oregon City | Main Street Extension Ped and Bike Imp. | 15th Street | Dunes Drive | Construct separated multi-use path or sidewalks and bike lanes on both sides | $5,000,000 | Regional Center | 2008-2017 | X |
| 11185 | Oregon City | Oregon City | Downtown Pedestrian Improvements | 5th Street | 15th Street | Sidewalk, ramp, and streetscape improvements | $2,500,000 | Regional Center | 2008-2017 | X |
| 11186 | Oregon City | Oregon City | McLoughlin Blvd. Ped and Bike Improvements | S. 2nd Street | UGB | Provide pedestrian and bike access through Canemah | $10,000,000 | Regional Center | 2018-2025 | X |
| 11187 | Oregon City | Oregon City | Abernethy Road Sidewalk Infill | Redland Rd. | Washington Street | Sidewalk infill improvements | $3,500,000 | Regional Center | 2018-2025 | X |
| 11188 | Oregon City | Oregon City | Warner Milne Road/Molalla Intersection Imp. | Beavercreek Rd. | Molalla Ave. | Realign intersection per TSP, pavement preservation, integrate with utility upgrades | $1,400,000 | 2040 Corridor | 2008-2017 | X |
| 11189 | Oregon City | Oregon City | McLoughlin Promenade Historic Restoration | Singer Hill | Tumwater | Rehabilitate rails, sidewalk portions, basalt columns, Grand Staircase, tunnel walls | $1,100,000 | Town Center | 2008-2017 | X |
| 11190 | Port of Portland | Multnomah Co. | Sundial Road Improvements | Sundial Road | North of Marine Drive | Widen north of Swigert Way and construct signal and turn lanes at Graham Road. | $3,200,000 | Industrial area | 2008-2017 | X |
| 11191 | Portland | | Citywide Bicycle Boulevards | N/A | N/A | Develop 100 miles of the new bicycle boulevards, and bring our existing bicycle boulevards up to a higher standard of operation | $31,250,000 | Other | | X |
| 11192 | Portland | | Streetcar Planning/ Alternatives Analysis | N/A | N/A | This project will perform follow up and alternatives analysis of the Streetcar System Plan (SSP) for up to three of its highest rated corridors. | $6,250,000 | Other | | X |
| 11193 | Portland | | Citywide Sidewalk Infill Program | N/A | N/A | | $12,500,000 | Other | | X |
| 11194 | Portland | Portland | South Auditorium Lighting Phase 2 | | | Green infrastructure lighting replacement. Replace foundation, poles, and lighting fixtures to a maintainable status as green infrastructure. Install conduit and power wire to a standard depth. Project will produce significant energy savings, increase lamp life by at least 400% and produce less up light. | $1,641,000 | Other | 2010 | X |
| 11195 | Portland | Portland | SE Water Realignment | | | Realign temporary Water Avenue to permanent alignment to facilitate freight traffic, streetcar, bicycle, pedestrian and light rail improvements in the Central Eastside Industrial District | $9,000,000 | Industrial Area | 2010-2012 | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 11196 | Portland | | East Portland Advisory Bicycle Lane Network | NE and SE Portland | NE and SE Portland | Build out the proposed network of advisory bicycle lanes in East Portland (28 miles). This project is the East Portland equivalent of the bicycle boulevard project. Advisory bicycle lanes are the shared roadway facility type best adapted to conditions in East Portland. This 28 miles is currently mapped and the projects can be listed with specific "from-to" information. | $12,000,000 | Inner neighborhood | 2010-2015 | X |
| 11197 | Portland | | Swan Island Active Transportation Access and Mobility Improvements | Various roadways on Swan Island | Various roadways on Swan Island | Improve access and mobility on Swan Island by constructing recommended bikeway network. This includes separated bikeways on: N Basin Ave (N Going to Greenway Trail), N Channel and N Lagoon (N Dolphin to N Going), N Anchor St (N Basin to N Channel); Shared Roadway Bikeway on: N Ballast and N Commerce (N Channel to N Lagoon); and pathway connections from Willamette to Basin and Lagoon to Channel. | $9,000,000 | Industrial Area | 2010-2015 | X |
| 11198 | Portland | | Portland-Milwaukie Light Rail Active Transportation Enhancements Project | Various roadways following the PMLR alignment | Various roadways following the PMLR alignment | This project includes the following elements: Pathway extension of SW Moody to Montgomery Avenue, two-way cycle track on SW Moody between Gibbs Street and Marquam Bridge, bicycle-pedestrian path between SE 11th & Clinton and SE Division Place & 9th following the rail alignment, shared-use path in the McLoughlin right-of-way between 17th Avenue and the Springwater Corridor Trail, and a bicycle parking center at the Tacoma/Springwater light rail station. | $34,000,000 | 2040 Corridor | 2010-2015 | X |
| 11199 | Portland | | N Ivanhoe (St. Johns) | N Richmond | N St. Louis | | $2,100,000 | Town Center | 2008-2017 | X |
| 11200 | Portland | | Bicycle Boulevards (signage and striping) | citywide | | Striping and Signage - Wayfinding | $1,000,000 | Other | 2008-2017 | X |
| 11201 | Portland | | SW Columbia & SW Jefferson Bus Pads: Naito - 14th | SW Naito | SW 14th | Concrete Bus Pads on SW Columbia and SW Jefferson | $325,000 | Portland Central City | | X |
| 11202 | Portland | | SW 3rd & SW 4th Reconstruction (Portland) | 3rd: Glisan 4th: Glisan | 3rd: Market 4th: Lincoln | Base repair and paving on areas of 3rd and 4th damaged by bus loads. Preservation of arterial, transit, bicycle. | $325,000 | Portland Central City | | X |
| 11203 | Portland | | SW Yamhill & SW Morrison brick intersections | intersection | - | Replacement of brick intersections on SW Yamhill & SW Morrison | $1,000,000 | Portland Central City | | X |
| 11204 | Portland | | Sullivan's Gulch Trail Master Plan | Eastbank Esplanade | 122nd | Study to provide off-street trail next to I-5 that crosses under bridges over freeway. | $224,000 | 2040 Corridor | | X |
| 11205 | Portland | | SW and E Portland Sidewalk Infill | | | Infill several missing sidewalk segments on SW Barbur Blvd, 82nd Ave and NE Glisan east of 122nd Ave. Target locations where curbs currently exist and include ADA corner curb ramps. | $2,000,000 | 2040 Corridor | | X |
| 11206 | Portland | | Active Corridor Management Projects on I-84/Powell/Glisan/Sandy | | | This project expands traveler information and enables incident management techniques that reduce traveler delay and improve safety through the I-84 corridor. The project provides real-time traveler information along I-84 and parallel facilities so travelers can make informed route decisions. It also implements incident management strategies such as variable speed limits and event signal timing plans. | | 2040 Corridor | | X |

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|---|---|---|---|---|---|---|---|---|---|---|
| 11207 | Port of Portland | | T6 Modernization | Terminal 6 | | Provide improvements to container terminal. Seismic retrofits and crane modernization to the container terminal. Add crane rail to allow service to two post-panamax ships at once. | | Freight Intermodal Facility | 2008-2017 | X |
| 11208 | Port of Portland | | T4 Modernization | Terminal 4 | | Renovate operation areas at T4 to create intermodal processing areas. Rail spur relocation, grain elevator demolition, wharf removal | | Freight Intermodal Facility | 2008-2017 | X |
| 11209 | Port of Portland | | Airport Way East Terminal Access Link Roadway | PDX Terminal Area | | Construct Airport Way East Terminal access link roadway. Facilitates direct East Terminal Access, preventing failure of Main Terminal Roadway | $19,092,300 | Employment area | 2008-2017 | X |
| 11210 | THPRD | THPRD | Separated Grade Crossing of Tualatin Valley Highway by the Westside Trail | | | Would avoid out-of-direction bike/ped trips on a major regional trail that is otherwise complete in this area. | $4,000,000 | 2040 Corridor, Employment area | 2008-2017 | X |
| 11211 | THPRD | THPRD | Bridge crossing of Hwy. 26 by the Westside Trail | | | Would avoid out-of-direction bike/ped trips on a major regional trail | $4,000,000 | Employment area | 2008-2017 | X |
| 11212 | THPRD | THPRD | Bridge crossing of Farmington Rd. by the Westside Trail | | | Would avoid out-of-direction bike/ped trips on a major regional trail that is otherwise complete in this area. | $3,000,000 | 2040 Corridor, Inner neighborhood | 2008-2017 | X |
| 11213 | THPRD | THPRD | Bridge crossing of Scholls Ferry Road by the Westside Trail | | | Would avoid out-of-direction bike/ped trips on a major regional trail that is otherwise complete in this area. | $3,000,000 | Outer neighborhood, Town Center | 2008-2017 | X |
| 11214 | THPRD | THPRD | Westside /Waterhouse Trail Connection | Westside Trail @ Westside MAX tracks | southern terminus of Waterhouse Trail @ Merlo Rd. | To design and construct a multi-use regional trail segment 10'-12' wide paved. | $1,500,000 | Station Community | 2008-2017 | X |
| 11215 | THPRD | THPRD | Waterhouse Trail Segments #1, 5, West Spur | Merlo Road | Springville Rd. | To design and construct multi-use community trail segments 8'-10' wide paved. | $3,700,000 | Station community, Outer neighborhood | 2008-2017 | X |
| 11216 | THPRD | THPRD | Rock Creek Trail Segments #5, Allenbach | 185th | Westside Trail | To design and construct multi-use regional trail segments 10'-12' wide paved. | $1,400,000 | 2040 Corridor, Outer neighborhood | 2008-2017 | X |
| 11217 | Tigard | Tigard | McDonald Street Improvements | Hall | 99W | Construct turn lanes & intersection improvements; add bike lanes & sidewalks in gaps | $8,000,000 | Outer neighborhood | 2018-2025 | X |
| 11220 | Tigard | Tigard | Hall Blvd. Improvements | Locust | Durham | Widen to 3 lanes; build sidewalks & bike lanes; safety improvements | $13,000,000 | Inner neighborhood, Town Center | 2008-2017 | X |
| 11221 | Tigard | Tigard | Regional Bikeway Improvements | Multiple locations | Various | Make spot improvements on key low-volume, low speed through-routes to facilitate bike & pedestrian travel; identify them as bike/pedestrian routes | $4,000,000 | Other | 2008-2017 | X |
| 11222 | Tigard | TriMet | High Capacity Transit Planning | Downtown Portland | Sherwood | Identify potential alignments, station locations etc. | $5,000,000 | 2040 Corridor | 2008-2017 | X |
| 11223 | Tigard | Tigard | Hall/Hunziker/Scoffins Intersection Realignment | Hall Blvd. | Intersection with Hunziker & Scoffins | Realign offset intersection to cross intersection to alleviate congestion and safety issues | $5,000,000 | Town Center | 2008-2017 | X |
| 11224 | Tigard | Tigard | Greenburg/Tiedeman/N. Dakota Reconfiguration | Tiedeman Ave. | N. Dakota St. | Realign one or more streets to improve intersection configurations, railroad crossings & creek crossings | $10,000,000 | Regional Center | 2008-2017 | X |
| 11225 | Tigard | Tigard | Downtown Circulation Plan Implementation | Downtown Tigard | Between Hwy. 99W, Hall & Fanno Creek | Acquire ROW, construct streets and streetscape improvements in downtown Tigard | $4,000,000 | Town Center | 2008-2017 | X |
| 11226 | Tigard | Tigard | Pedestrian Improvements | Multiple locations | | Fill gaps in sidewalk & pedestrian network | $5,000,000 | Various | 2008-2017 | X |
| 11227 | Tigard | Tigard | Neighborhood Trails & Regional Trail Connections | Multiple locations | | Construct high priority neighborhood trails to regional trails, sidewalks & transit | $5,000,000 | Various | 2008-2017 | X |

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| 11228 | Tigard | P&W RR | Portland & Western Rail Trail | Tiedeman Ave. | Main Street | Construct trail along portion of abandoned rail line | $1,000,000 | Town Center | 2008-2017 | X |
| 11229 | Tigard | Tigard | Walnut Street Improvements | 99W | 116th Ave. | Widen to 3 lanes; build sidewalks & bike lanes; safety improvements | $12,000,000 | Outer neighborhood | 2008-2017 | X |
| 11230 | TriMet | | Frequent Service Bus Capital Improvements - Phase 2 | | | Bus stop and ROW improvements to support expansion of frequent service bus | $15,000,000 | Other | 2008-2017 | X |
| 11231 | Troutdale/Port | Troutdale | Swigert Way Extension | Existing terminus | Graham Road | Extend Swigert Way from its existing terminus to Graham Road | $2,500,000 | Industrial area | 2008-2017 | X |
| 11232 | Troutdale/Port | Troutdale | Graham Road Reconstruction Phase 1 | I-84 North Frontage Road | Sundial Road | Reconstruct and widen Graham Road | $5,000,000 | Industrial area | 2008-2017 | X |
| 11233 | Washington Co. | Washington Co. | Walker Rd. Improvements | 185th | 158th Ave. | Widen from two to five lanes with bike lanes and sidewalks. | | 2040 Corridor | 2018-2025 | X |
| 11234 | Washington Co. | Washington Co. | Walker Rd. Improvements | 158th | Murray Blvd. | Widen from two to five lanes with bike lanes and sidewalks. | | Station community | 2018-2025 | X |
| 11235 | Washington Co. | Washington Co. | Walker Rd. Improvements | Murray Blvd. | Hwy. 217 | Widen from two to five lanes with bike lanes and sidewalks. | | 2040 Corridor | 2018-2025 | X |
| 11236 | Washington Co. | Washington Co. | Cedar Hills Blvd. Improvements | Butner Rd | Celeste Ln | Widen to five lanes thru Barnes, turn lane improvements at US26, signalize US26 EB | $4,000,000 | Station community | 2008-2017 | X |
| 11237 | Washington Co. | Washington Co. | Barnes Rd Improvements | Lois Lane | St. Vincent east access | Add turn lane improvements, Hwy 217 offramp improvements | $4,000,000 | Station community | 2008-2017 | X |
| 11238 | Washington Co. | Washington Co. | Cedar Mill Local Street Connectivity | Cedar Mill Town Center | | Connect local streets to reduce out of direction travel and use of arterial roads for local trips | $10,000,000 | Town Center | 2008-2017 | X |
| 11239 | Washington Co. | Washington Co. | Aloha Bike Blvd. | Westside Trail | Brookwood Ave. | Grade-separate bicycle and pedestrian crossings of major roads in the Aloha area | $16,000,000 | 2040 Corridor | 2008-2017 | X |
| 11240 | Washington Co. | Washington Co. | Murray Blvd. Bikelane & sidewalk | Farmington Rd. | TV Hwy. | Construct a six-foot wide bikelane on west side of Murray & replace existing asphalt path with six-foot wide concrete sidewalk & five-foot wide planting strip | $1,500,000 | 2040 Corridor | 2008-2017 | X |
| 11241 | Washington Co. | Washington Co. | Evergreen Rd. Bike Lanes | NW 215th Ave. | Cornelius Pass Rd. | Construct six-foot wide bike lanes east and westbound & correct vertical alignment | $2,000,000 | Employment area | 2008-2017 | X |
| 11242 | West Linn | ODOT | I-205 / 10th Street Improvements | Willamette Falls Drive | Blankenship Rd / Salamo Road | Construct a long-term interchange improvement (SPUI or Split Diamond) | $20,000,000 | Town Center | 2018-2017 | X |
| 11243 | Wilsonville | Washington Co. | Day Street | Grahams Ferry Rd. | Boones Ferry Rd. | Reconstruct road to accommodate increasing volumes of heavy trucks | $3,200,000 | Industrial Area | 2008-2017 | X |
| 11245 | Cornelius | Cornelius | Davis St. | 10th Ave | 19th Ave | Widen street and add sidewalks | $750,000 | Main street | 2008-2017 | |
| 11246 | Cornelius | Cornelius | Dogwood St. | 12th Ave | 20th Ave | Build out sidewalk gaps. | $210,000 | Main street | 2008-2017 | |
| 11247 | Cornelius | Cornelius | Heather St. | 8th Ave | 10th Ave | Build out sidewalk gaps. | $75,000 | Main street | 2018-2025 | |
| 11248 | Cornelius | Cornelius | 4th Ave | 3F Railroad | Barlow | Build out sidewalk gaps. | $75,000 | Main street | 2008-2017 | |
| 11249 | Cornelius | Cornelius | 19th/20th Ave | N.City Limits | S. City Limits | Build out sidewalk gaps. | $225,000 | Main street | 2008-2017 | |
| 11250 | Cornelius | Cornelius | 26th Ave | Holladay St | S. City Limits | Build out sidewalk gaps. | $110,000 | Main street | 2008-2017 | |
| 11251 | Cornelius | Cornelius | 29th Ave | 3F Railroad | Baseline | Improve to collector standards including sidewalks. | $750,000 | Main street | 2008-2017 | |
| 11252 | Gresham | Gresham | Halsey St.: Arterial Corridor Management (ACM) | 162nd | 181st Ave | Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $4,900,000 | 2040 Corridor | 2018-2025 | |

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| 11253 | Gresham | Gresham | Stark St.: Arterial Corridor Management (ACM) | 162nd | 190th | Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $3,600,000 | 2040 Corridor | 2008-2017 | |
| 11254 | Gresham | Gresham | Glisan St.: Arterial Corridor Management (ACM) | 162nd | 242nd. Ave. | Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $4,500,000 | 2040 Corridor | 2008-2017 | |
| 11255 | Gresham | Gresham | Division St.: Arterial Corridor Management (ACM) - Signal equipment upgrade | 160th | 190th | Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $700,000 | 2040 Corridor | 2008-2017 | |
| 11256 | Gresham | Gresham | Division St.: ACM - Auto-Adaptive Signal Timing and Transit Priority Treatment | Birdsdale | US 26 | Includes the ACM with both adaptive signal timing and transit priority treatment. | $1,400,000 | 2040 Corridor | 2008-2017 | |
| 11257 | Gresham | Gresham | SE Division: ACM - Traveler Information | 182nd | Birdsdale | Provide real time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $250,000 | 2040 Corridor | 2008-2017 | |
| 11258 | Gresham | Gresham | Powell Blvd.: Arterial Corridor Management (ACM) - Signal equipment upgrade | Birdsdale | US 26 | Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. | $1,900,000 | 2040 Corridor | 2008-2017 | |
| 11259 | Gresham | Gresham | SE Powell Blvd.: ACM - Traveler Information | 190th | Birdsdale | Provide real time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $200,000 | 2040 Corridor | 2008-2017 | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 11260 | Gresham | Gresham | 223rd Ave.: Arterial Corridor Management (ACM) | Glisan | Burnside | Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $1,200,000 | 2040 Corridor | 2008-2017 | |
| 11261 | Gresham | Gresham | NE 181st/182nd Ave.: ACM with Transit Priority Treatment | Glisan | Powell | Includes the ACM project with transit signal priority added to traffic signals along a facility. | $2,000,000 | 2040 Corridor | 2008-2017 | |
| 11262 | Gresham | Gresham | NE 181st Ave: ACM with Adaptive Signal Timing and Transit Priority Treatment | I-84 | Glisan | Provide real time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $1,700,000 | 2040 Corridor | 2008-2017 | |
| 11263 | Gresham | Gresham | Burnside: Traveler Information Only | 223rd Ave | Powell | Adaptive signal timing is in place along this segment, traveler information will be added. | $950,000 | 2040 Corridor | 2008-2017 | |
| 11264 | Gresham | Gresham | US 26 Roadside Travel Time Information | Portland | Gresham | Provide real time traveler information on westbound US 26 for different routes (arterial and freeway) between Portland and Gresham. | $100,000 | 2040 Corridor | 2008-2017 | |
| 11265 | Gresham | Gresham | Transportation Management Associations | Gresham Regional Center | | Support public private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. | $675,000 | 2040 Corridor | 2008-2017 | |
| 11266 | Gresham | Gresham | Travel Options - Individualized Marketing | Gresham Civic Station neighborhood | | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | $1,170,000 | Regional Center | 2008-2017 | |
| 11267 | Gresham | Gresham | Transportation Management Associations | Gresham Regional Center | | Support public/private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. | $675,000 | Regional Center | 2008-2017 | |
| 11268 | Gresham | Gresham | Parking management | Gresham Regional Center | | Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions. | $900,000 | Regional Center | 2008-2017 | |
| 11269 | Gresham | Gresham | Bike Sharing | Transit oriented developments, large employers, colleges, hotels and significant transit stops. | | Provide funding to implement bikes for loan or rent. | $550,000 | Regional Center | 2008-2017 | |
| 11270 | Gresham | Gresham | Car share operations | Gresham Regional Center | | Support 3 or more carsharing vehicles in developing centers. | $1,800,000 | Regional Center | 2008-2017 | |
| 11271 | Happy Valley | Happy Valley | Misty Drive | 162nd Ave. | 177th Ave. | Construct a new 3 lane roadway with sidewalks, bike lanes, traffic signals and a bridge over Rock Creek | $27,849,847 | Employment area | 2018-2025 | |
| 11272 | Hillsboro | Hillsboro | Kinnaman Rd. Extension | 209th | Century Blvd. Extension | Construct 3 lane with bike lanes and sidewalks | $7,900,000 | Future Town Center | 2008-2017 | |
| 11273 | Hillsboro | Hillsboro | Alexander St. Extension | 229th | 209th at Blanton | Construct 3 lane with bike lanes and sidewalks | $7,000,000 | Future Town Center | 2008-2017 | |
| 11274 | Hillsboro | Hillsboro | Century Blvd Extension | Area 71 UGB | 229th | Construct 3 lane with bike lanes and sidewalks | $3,000,000 | Future Town Center | 2008-2017 | |

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| 11275 | Hillsboro | Hillsboro | Walker Rd. Extension | Stucki | Amberwood Dr. | Construct 3 lane with bike lanes and sidewalks | $2,500,000 | Future Regional Center | 2008-2017 | |
| 11276 | Hillsboro | Hillsboro | Stucki Ave. Extension | Walker Rd | 206th/LRT | Construct 3 lane with off-street bike lanes and sidewalks, Realign intersection of Walker and Stucki | $10,000,000 | Future Regional Center | 2008-2017 | |
| 11277 | Hillsboro | Hillsboro | 194th Ave. Extension | Cornell Rd | Amberglen Pkwy | Construct 2/3 lane with sidewalks and LRT in part or all of new segment | $3,000,000 | Future Regional Center | 2008-2017 | |
| 11278 | Hillsboro | TriMet | Red Line LRT Extension | Quatama LRT | Evergreen TC | Provide local match funding to leverage federal funds for LRT extension thru Amberglen | $25,000,000 | Future Regional Center | 2018-2025 | |
| 11279 | Hillsboro | Hillsboro | US-26 at 185th/Stucki Interchange Capacity Improvements | N/A | N/A | Improvements to interchange access to and from the south. | $25,000,000 | Future Regional Center | 2018-2025 | |
| 11280 | Hillsboro | Hillsboro | East-West Connector | 229th/Century | Aloclek | Construct 2/3 lane roadway with sidewalks | | Industrial area | 2017-2025 | |
| 11282 | Hillsboro | Hillsboro | Minter Bridge Rd | River Road | South UGB | Widen to provide sidewalks and bike lanes | $2,000,000 | Outer neighborhood | 2018-2025 | |
| 11283 | Hillsboro | Hillsboro | Brookwood (247th) | South UGB | River Road | Extend 3 lanes with sidewalks and bike lanes South UGB to River Rd with culvert crossing Gordon Creek | $13,000,000 | Outer neighborhood | 2018-2025 | |
| 11284 | Hillsboro | Hillsboro | Farmington Rd | 185th | 198th | Widen to 5 lanes with bike lanes and sidewalks. | $24,000,000 | Outer neighborhood | 2018-2025 | |
| 11285 | Hillsboro | Hillsboro | Farmington Rd | 198th | 209th | Widen to 3 lanes with bike lanes and sidewalks. | $18,000,000 | Outer neighborhood | 2018-2025 | |
| 11286 | Lake Oswego | | Hwy 43 / Terwilliger Tryon Creek Bridge | G Ave | 500-feet North of Terwilliger intersection | Replace existing box culvert with new bridge over Tryon Creek | $12,000,000 | 2040 Corridor, Town Center | 2009-2017 | |
| 11287 | Multnomah Co. | Multnomah Co. | Halsey St Improvements | 223rd Ave | 238th Ave. | Improve Halsey St to 3 lane minor arterial with center turn lane/median, sidewalk and bicycle lanes, consistent with Halsey Street Conceptual Design Plan | $6,000,000 | Town Center | 2008-2017 | |
| 11289 | Multnomah Co. | Multnomah Co. | Cornelius Pass Road Safety Improvements - ITS | US 30 | Washington County | Implement ITS improvements recommended in FHWA Safety Audit; i.e., electronic messaging signs, photo radar/ticketing. | $2,000,000 | Other | 2008-2017 | |
| 11290 | Multnomah Co. & East Co. Cities | | Transportation Management Associations | CCRD | | Support public/private partnerships in CCRD that assist employees and/or residents increase use of travel options. | $675,000 | Industrial area | 2008-2017 | |
| 11291 | Multnomah Co. & East Co. Cities | To be determined | CCRD Employee Shuttle | CCRD | | Initiate transit/shuttle to regional transit system. | $100,000 | Industrial area | 2008-2017 | |
| 11292 | Multnomah Co. & East Co. Cities | To be determined | Rideshare incentives - for East Multnomah County | I-84 | | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters. $50k annually | $450,000 | 2040 Corridor | 2008-2017 | |
| 11293 | Multnomah Co. & East Co. Cities | To be determined | Locate efficient living | | | Support programs and strategies that promote and advance location efficient living strategies. | $450,000 | Industrial area, Town Center | 2008-2017 | |
| 11294 | Multnomah Co. & East Co. Cities | To be determined | Travel Options: Individualized Marketing | Fairview, Troutdale, Wood Village | | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | $450,000 | Regional Center, Town Center | 2008-2017 | |
| 11295 | Multnomah Co. | Multnomah Co. | Cornelius Pass Road Reconstuction (north) | US 30 | Mile Post 2.8 | Widen road segments to provide shoulder, new box culvert, possible passing lane segments. | $22,000,000 | Other | 2018-2025 | |

| Metro Project ID | Nominating Agency | Facility Owner / Operator | Project/Program Name | Project Start Location (Identify starting point of project) | Project End Location (Identify terminus of project) | Description | Estimated Cost ($2007) | 2040 Land Use | Time Period | Federal Priority |
|---|---|---|---|---|---|---|---|---|---|---|
| 11296 | Multnomah Co. | Multnomah Co. | Cornelius Pass Road Reconstuction (south) | Skyline Rd | Washington County line (MP 4.9) | Widen road segments to provide shoulder, possible passing lane, improve intersection of CPR/Skyline | $20,000,000 | Other | 2018-2025 | |
| 11297 | Multnomah Co. | Multnomah Co. | NE 207th Ave.: Arterial Corridor Management (ACM) | Sandy | Glisan | Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $850,000 | 2040 Corridor | 2008-2017 | |
| 11298 | Multnomah Co. | Multnomah Co. | Cornelius Pass Road Safety Improvements - TSM | US 30 | Washington County line (MP 4.9) | Implement system management improvements recommended in FHWA Safety Audit; i.e., targeted shoulder widening, new/additional guard rails. | $6,000,000 | Other | 2008-2017 | |
| 11299 | Multnomah Co./Gresham | Multnomah Co./Gresham | 257th/Kane Dr.: Arterial Corridor Management (ACM) w/ Adaptive Signal Timing | I-84 | Orient Dr. | Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | $2,800,000 | 2040 Corridor | 2008-2017 | |
| 11300 | Multnomah Co./Gresham | Multnomah Co./Gresham | 238th/242nd Ave/Hogan Dr.: ACM with Adaptive Signal Timing | Sandy | Palmquist | Includes the ACM project with signal systems that automatically adapt to current arterial that automatically adapt to current arterial roadway conditions. | $3,600,000 | 2040 Corridor | 2008-2017 | |
| 11301 | ODOT | ODOT | Sunrise Project Phase 2 Construction | I-205 | 172nd Ave. | Construct improvements in the Sunrise corridor consistent with the supplemental EIS | $110,000,000 | 2040 Corridor | 2008-2017 | |
| 11302 | ODOT | ODOT | I-5/OR 217 Interchange Phase 2 | I-5/OR 217 Interchange | N/A | I-5/OR 217 Interchange Phase 2 - southbound OR 217 to SB I-5 ramp; southbound I-5 to Kruse Way loop ramp. | $50,000,000 | Employment area | 2008-2017 | |
| 11303 | ODOT | ODOT | OR 99W Transportation System Management and Operations | N/A | N/A | Implement new Transportation System Management and Operations projects on OR 99W. | $24,700,000 | 2040 Corridor | 2008-2017 | |
| 11304 | ODOT | ODOT | I-5 South operational improvements | N/A | N/A | Construct improvements to address recurring bottlenecks on I-5 south of the central city. Specific improvements as identified in operational analysis, Mobility Corridor analysis and refinement planning. | $220,000,000 | 2040 Corridor | 2008-2017 | |
| 11305 | ODOT | ODOT | I-205 operational improvements | N/A | N/A | Construct improvements to address recurring bottlenecks on I-205. Specific improvements as identified in operational analysis, Mobility Corridor analysis and refinement planning. | $170,000,000 | 2040 Corridor | 2008-2017 | |
| 11306 | Port of Portland | | T6 Second Entrance from Marine Drive | | | Construct 2nd entrance and rail overcrossing to improve capacity and safetyat Terminal 6. | $12,000,000 | Freight Intermodal Facility | 2008-2017 | |
| 11307 | Port of Portland | | T6 Suttle Road entrance | Terminal 6 | | Access to T6 off the terminus of Suttle Road, improvements to existing Suttle Road. | $3,000,000 | Freight Intermodal Facility | 2008-2017 | |

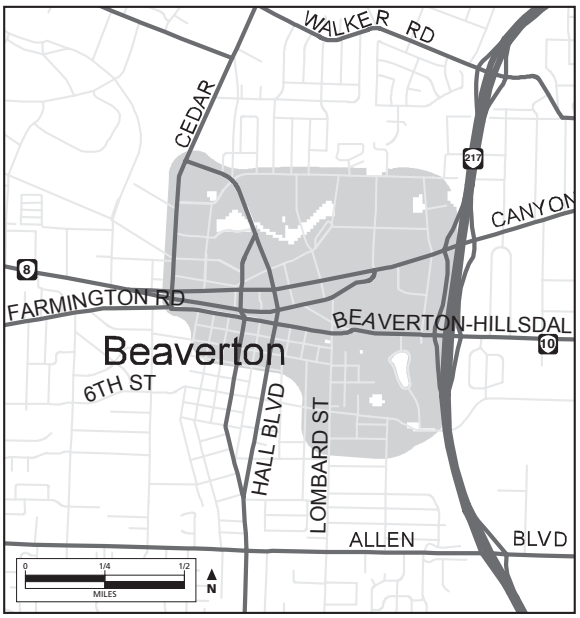
| Metro Project ID | Nominating Agency | Facility Owner / Operator | Project/Program Name | Project Start Location (Identify starting point of project) | Project End Location (Identify terminus of project) | Description | Estimated Cost ($2007) | 2040 Land Use | Time Period | Federal Priority |
|---|---|---|---|---|---|---|---|---|---|---|
| 11308 | Port of Portland | | 11th/13th Grade separation | Columbia | Lombard | Construct roadway overcrossing at NE 11th/13th over Kenton line. | $35,000,000 | Freight Intermodal Facility | 2008-2017 | |
| 11309 | Port of Portland | | Cully Blvd. Grade separation | Columbia | Lombard | Construct roadway overcrossing at NE Cully Blvd. over Kenton line. | $35,000,000 | Employment area | 2008-2017 | |
| 11316 | Portland | | Lents Town Center Active Transportation Demonstration Project | Various roadways in SE Portland | Various roadways in SE Portland | Expand from existing 26 miles of developed bikeway to 53 miles, including improvements of existing facilities. Construct 4 miles of new sidewalks and undertake encouragement programs in support of new infrastructure. | $57,000,000 | Town Center | | |
| 11317 | Portland | | Broadway Wielder Streetcar Corridor | | | Corridor Alternatives Analysis, public outreach, planning, design, engineering, and construction for future streetcar extension from Lloyd District to Hollywood Town Center. The new extension intended to provide streetcar service from Northwest Portland to Hollywood. | $65,000,000 | 2040 Corridor | | |
| 11318 | Portland | | MLK (Broadway Killingworth) Streetcar Corridor | | | Corridor Alternatives Analysis, public outreach, planning, design, engineering, and construction for future streetcar extension from Lloyd District to NE Portland. The new extension intended to provide streetcar service from South Waterfront District to Northeast Portland neighborhoods. | $65,000,000 | 2040 Corridor | | |
| 11319 | Portland | | NW 18th/19th (Burnside to Saiver/Thurman Streetcar Corridor | | | Corridor Alternatives Analysis, public outreach, planning, design, engineering, and construction for future streetcar extension from western Central City to Hollywood Town Center. The new extension intended to provide streetcar service from Northwest Portland to Hollywood. | $35,000,000 | Portland Central City | | |
| 11320 | Portland | | NE 60th & Glisan LRT Station Area | Various roadway improvements as defined in the Transportation Plan for the 60th & Glisan Station Area | Various roadway improvements as defined in the Transportation Plan for the 60th & Glisan Station Area | LRT station area as the focu for Active Transportation. Improvements are defined by the Transportation Plan included in the Eastside MAX Station Area Communities Project | $7,570,723 | Station community | 2010-2012 | |
| 11322 | Portland | | North Portland Greenway Active Transportation Project | Willamette Cove | to Columbia Slough in Smith & Bybee NA | The proposed trail alignment takes riders and walkers north along the river from Willamette Cove natural area.The trail parallels the active UPRR railroad line, crosses Lampros Steel property and the BES water lab before entering Cathedral Park. The trail segment then travels the Baltimore Woods corridor and turns east along industrial property before it crosses Lombard St. into Pier Park. A new bridge over the UPRR (Union Pacific Railroad) connects Pier with Chimney Park. Finally, the trail safely crosses Columbia Blvd into the Smith and Bybee Wetland Natural Area. The trail section proposed for this grant will terminate at the Columbia Slough. | $7,900,000 | Industrial Area | 2010-2015 | |

| Metro Project ID | Nominating Agency | Facility Owner / Operator | Project/Program Name | Project Start Location (Identify starting point of project) | Project End Location (Identify terminus of project) | Description | Estimated Cost ($2007) | 2040 Land Use | Time Period | Federal Priority |
|---|---|---|---|---|---|---|---|---|---|---|
| 11323 | Portland | | Sullivan's Gulch | Eastbank Esplande | NE 21st | Sullivan's Gulch Trail is envisioned as a five mile commuter and recreational trail that will provide a vital east-west link in the Portland Metropolitan area's bike network. A critical section of this proposed trail corridor in Northeast Portland is being submitted as a 2009 Metro Active Demonstration Transportation Project. The proposed trail section for this grant begins at Eastbank Esplanade and runs to NE 21st Street. The Sullivan's Gulch Trail is on the State RTP list. The project has been chosen to fit Metro's criteria and principles of an urban project that serves a large and significant city population "commute shed". | $7,700,000 | 2040 Corridor | 2010-2015 | |
| 11324 | Portland | | Barbur Bridges | City Limits | I-405 | For seismic upgrades, reconstruction and bike and ped. facilities. | $32,000,000 | Portland Central City | 2010-2015 | |
| 11325 | Portland/Port | | Alderwood/82nd Avenue | | | | $1,000,000 | Employment area, Industrial area | | |
| 11326 | Portland/Port | | NE 82nd/Columbia NB Ramp | Intersection of Columbia Blvd. And 82nd Ave NB Ramp | | Signalize intersection | $250,000 | Employment area, Industrial area | | |
| 11327 | SMART | | Commuter Service to Tualatin/Sherwood | | | Additional Service hours for new services and related bus stop and ROW improvements | $600,000 | Employment area, Industrial area | 2017-2035 | |
| 11328 | SMART | | New Service to Clackamas TC | | | Additional Service hours for new services and related bus stop and ROW improvements | $3,000,000 | Employment area, Regional Center | 2017-2035 | |
| 11329 | TriMet | | Capital Projects to support TOD | N/A | N/A | Reconfigure / structure P&R and other TriMet-owned and -controlled land for TOD opportunity when market conditions or development partnerships allow. | $10,000,000 | Other | 2018-2035 | |
| 11330 | TriMet | | College Station TOD | N/A | N/A | | $1,000,000 | Other | 2008-2017 | |
| 11331 | TriMet | | Frequent Service Bus Capital Improvements - Phase 1 | N/A | N/A | Bus stop and ROW improvements to support expansion of frequent service bus | $16,000,000 | Other | 2008-2017 | |
| 11332 | TriMet | | I-205 BRT | N/A | N/A | Non/Exclusive / In-lane BRT on I-205 between Clackamas and Tualatin | $30,000,000 | 2040 Corridor | 2008-2036 | |
| 11333 | TriMet | | Local and Regional Bus Improvements | N/A | N/A | Bus stop and ROW and other related transit improvements to support improvement of bus system including new and existing lines | $14,000,000 | Other | 2018-2035 | |
| 11334 | TriMet | | LRT Ops and Maintenance of Rail System | N/A | N/A | additional capital ops/maintence costs to support existing LRT system, including additional service, LRV and track replacement | $98,500,000 | Other | 2008-2035 | |
| 11335 | TriMet | | Operations and Maintenance of Bus System | N/A | N/A | additional capital ops/maintence costs to support existing bus system | $227,000,000 | Other | 2008-2035 | |
| 11336 | TriMet | | Parkrose Park & Ride reconfiguration for TOD | N/A | N/A | Reconfigure / structure Parkrose P&R for TOD opportunity. | $2,000,000 | Other | 2018-2025 | |
| 11337 | TriMet | | Pedestrian access improvements: Phase 2 | N/A | N/A | Phase 2: Sidewalks, crosswalks and ADA improvements to transit access. | $6,846,598 | Other | 2008-2035 | |
| 11338 | TriMet | | Rail Operations and Maintenance Base Improvements | N/A | N/A | Improvements and capacity expansions at Light Rail Operations and maintenance bases | $26,000,000 | Other | 2025-2035 | |

| Metro Project ID | Nominating Agency | Facility Owner / Operator | Project/Program Name | Project Start Location (Identify starting point of project) | Project End Location (Identify terminus of project) | Description | Estimated Cost ($2007) | 2040 Land Use | Time Period | Federal Priority |
|---|---|---|---|---|---|---|---|---|---|---|
| 11339 | Washington Co. | | I-5/99W Southern Arterial Improvements | Hwy. 99W | 124th Ave. Extension | Construct 2/3 lane arterial with bike lanes and sidewalks | $130,000,000 | Industrial area | 2018-2025 | |
| 11340 | Washington Co. | | I-5/99W Southern Arterial Improvements | Hwy. 99W | I-5 | Widen road to 5 lanes and extend to I-5 | $80,000,000 | Industrial area | 2026-2035 | |
| 11341 | Hillsboro | Hillsboro | West Union Rd. | Helvetia Rd. | Cornelius Pass | Construct 3 lane roadway with bike lanes and sidewalks | $25,000,000 | Industrial area | 2018-2025 | |
| 11342 | Washington Co. | ODOT | I-5/99W Connector Southern Arterial/I-5 Interface | Hwy. 99W@ I-5 | | Connect the Southern Arterial to I-5 or other surface arterials in the vicinity of the N. Wilsonville interchange. | $50,000,000 | 2040 Corridor | 2026-2035 | |
| 11343 | SMART | | Pedestrian Improvements | | | Design & construct a variety of pedestrian improvements to enhance access to transit | $7,000,000 | Town Center | 2010-2017 | |

## Appendix 2

### Beaverton Regional Center
# Area of Special Concern Findings




Beaverton has historically been defined as a crossroads of transportation, with both the advantages and limitations that heavy through traffic brings. While the level of access has helped make the Beaverton regional center a focus of commerce in Washington County, it also presents barriers to local circulation where congested through-streets isolate some parts of the area. These congestion problems persisted in the RTP analysis, despite an aggressive strategy to improve connectivity in the Beaverton regional center as identified in Beaverton's updated 2015 Transportation System Plan.

In particular, Beaverton-Hillsdale Highway from Highway 217 to Cedar Hills Boulevard, Canyon Road from Highway 217 to Cedar Hills Boulevard and Farmington Road from 170th Avenue to Cedar Hills Boulevard are expected to exceed the RTP level of service standard, and act as barriers to local travel in the district. Sections of Murray Boulevard are also expected to exceed the LOS standard from Allen Boulevard to Cornell Road. The Beaverton TSP should include a specific action plan and benchmarks for these facilities to ensure that traffic growth is managed in a way that is consistent with overall regional center goals.

As local TSPs are developed, this information will be expanded to provide more detailed findings to support the Area of Special Concern designation.

**Beaverton Regional Center Area of Special Concern Action Plan**

The Beaverton Regional Center was designated an Area of Special Concern because it experiences some future localized congestion due to its high density, transit oriented, mixed-use functions. The Regional Center includes two light rail stations, one of which is a transit transfer center. Local land use designations and zoning are addressed in Beaverton's Comprehensive Plan and Development Code. Transportation impacts of these designations are specifically addressed in Beaverton's 2020 Transportation System Plan and the Comprehensive Plan and Development Code.

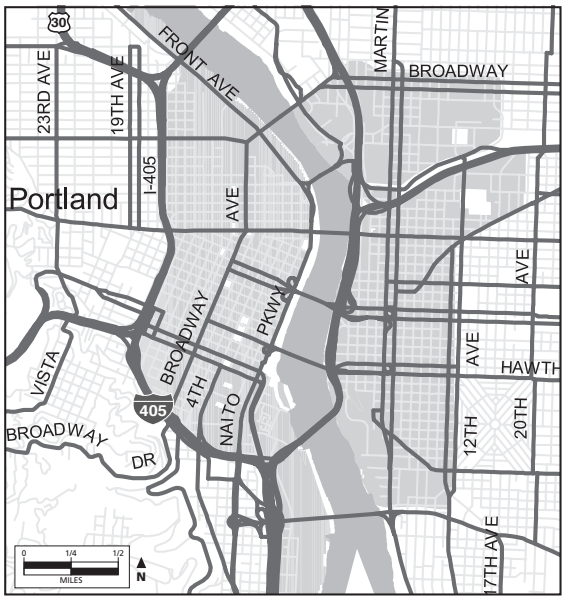
Specifically, Beaverton's 2020 Transportation System Plan addresses the transportation impacts of the land use designations through planned implementation of the Bicycle, Pedestrian, Transit, and Motor Vehicle Master Plans, as well as demand and system management policies and actions.

The following Action Plan for Beaverton's Regional Center Area of Special Concern is identified in the 2020 TSP and implemented through the Comprehensive Plan Transportation Element, Development Code requirements, and Engineering Design Manual and Standards:

1. Adoption of non-single occupant vehicle modal targets. [Goal 6.2.4 Policy (a)]
2. Parking ratios consistent with Title 2 requirements. [Goal 6.2.4. Policy (b) and Development Code Section 60]
3. Comprehensive Plan Transportation Element. [Bicycle, Pedestrian, Transit, and Motor Vehicle Master Plans, and Functional Classification Map]
4. Land Use Element of the Comprehensive Plan that includes mixed-use at densities consistent with the Regional Functional Plan.
5. Comprehensive Plan Policies and Actions: These address all aspects of providing and maintaining a balanced multimodal transportation system that serves all users. These include street design and classifications, safety, connectivity, traffic calming, coordinated actions with the State, Washington County, Tri-Met, neighboring cities and counties, school districts, Tualatin Hills Parks and Recreation District, neighborhoods, freight users, and emergency providers.
6. Land use and transportation provisions that anticipate development impacts and require mitigation: Development Code Traffic Impact Analysis Requirements mandate mitigation that is reasonably related to and roughly proportional to identified impacts, multimodal street standards consistent with Metro Regional Street Designs, level of service standards consistent with regional and State standards, connectivity requirements, access management requirements, street plans that recommend additional connections with development, parking ratio provisions, transportation system management and demand management strategies and actions, zoning designations, and land use related requirements.

*References*:
2020 Transportation System Plan
Comprehensive Plan Chapter Six – Transportation Element
Comprehensive Plan Chapter Three – Land Use Element
Beaverton Development Code Section 60 Transportation Facilities
Beaverton Zoning Map
Beaverton Engineering Design manual and Standards

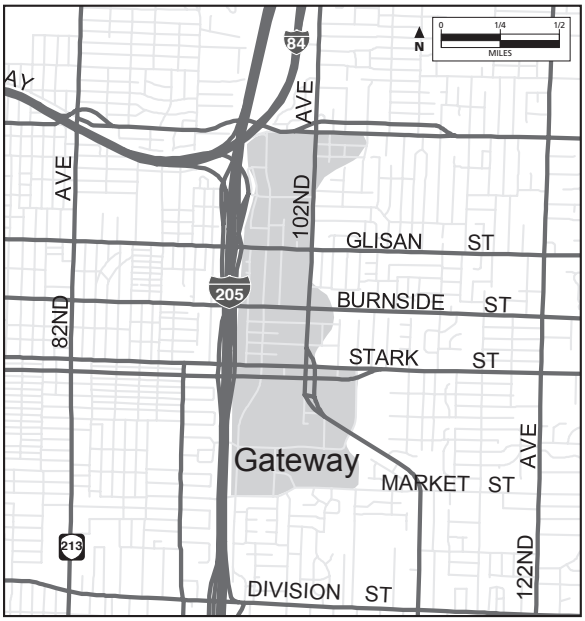
## Portland Central City
# Area of Special Concern Findings




The Portland central city area east of the Willamette River and generally within the I-405 freeway ring has an extensive grid of well-connected arterial, collector and local streets. The Willamette River bridges are a key part of the transportation system, connecting the central city and adjacent neighborhoods to the region. The hilly topography has constrained much of the transportation system in the Northwest and Southwest portions of the central city. Despite these limitations, this area is expected to continue to be served by high-quality transit and be conducive to bicycle and pedestrian travel.

As local TSPs are developed, this information will be expanded to provide more detailed findings to support the Area of Special Concern designation.

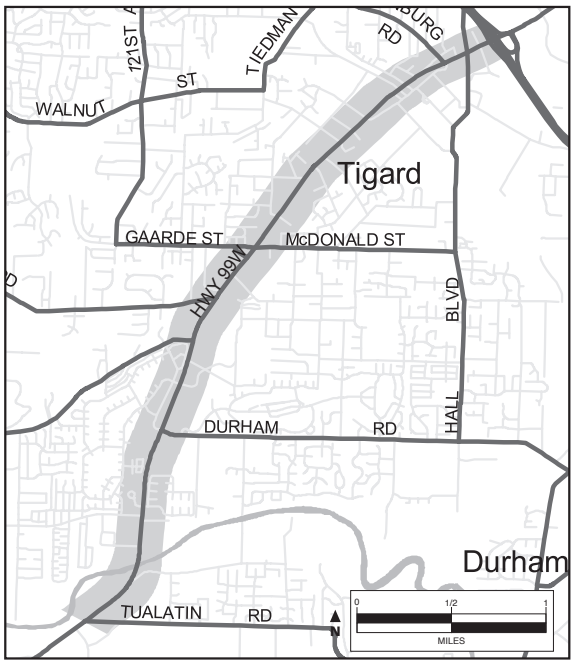
## Gateway Regional Center
# Area of Special Concern Findings




Gateway regional center is defined as a major crossroads of transportation that is impacted by through traffic that is not destined for the regional center such and which presents barriers to local circulation where congested through-streets isolate some parts of the regional center. The Preferred System analysis shows that from the perspective of employers looking at labor markets, the Gateway area is the most accessible place in the Metro region. At the same time, spillover traffic from the Banfield Freeway corridor exceeds the LOS policy established in Table 2.4 on a number of east/west corridors in the Gateway area, including Halsey, Glisan, Burnside, Stark and Division streets.

As local TSPs are developed, this information will be expanded to provide more detailed findings to support the Area of Special Concern designation.

## Highway 99W
# Area of Special Concern Findings




The Highway 99W corridor between Highway 217 and Durham Road is designated as a mixed-used corridor in the 2040 Growth Concept, and connects the Tigard and King City town centers. This route also experiences heavy travel demand. The City of Tigard has already examined a wide range of improvements that would address the strong travel demand in this corridor.

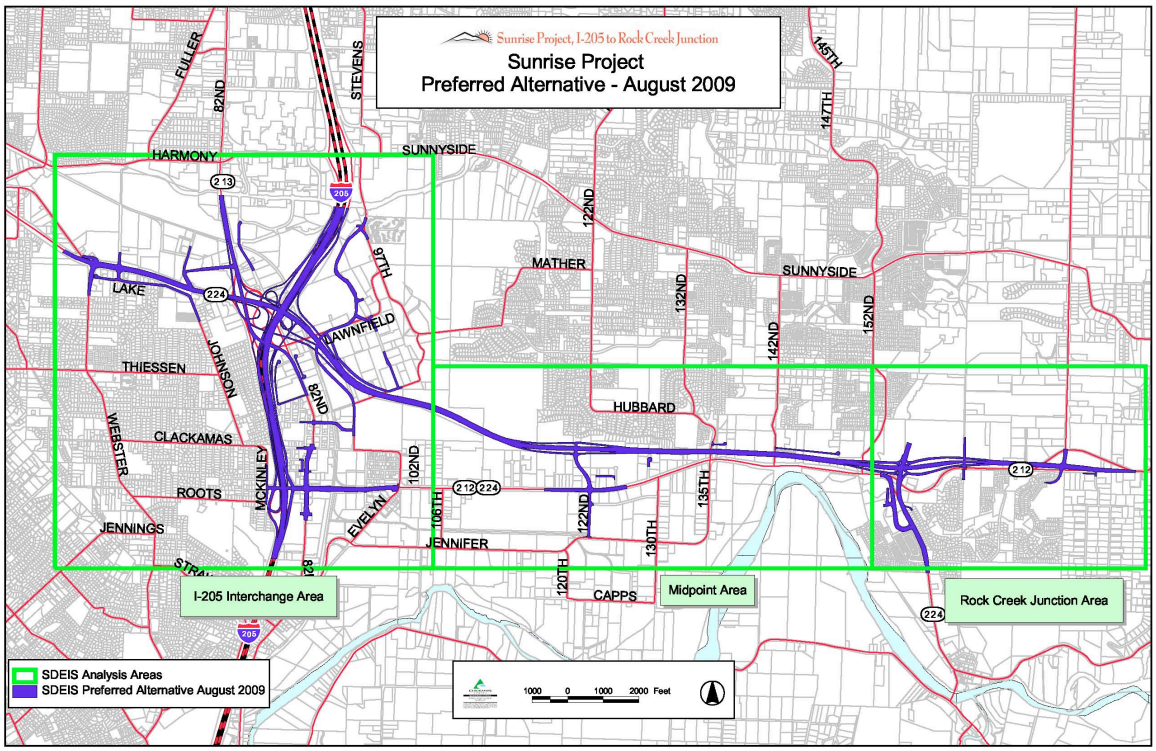
However, for much of Washington County, Highway 99W will still be a major connection, linking Sherwood and Tigard to the rest of the County and linking the rest of the County to the Highway 99W corridor outside of the region. A number of alternatives for relieving congestion have been tested as part of the RTP update, and by the City of Tigard in earlier planning efforts. These efforts led to the common conclusion that latent travel demand in the Highway 99W corridor is too great to be reasonably offset by capacity projects alone. While the RTP proposed new capacity on 99W between I-5 and Greenburg Road, no specific capacity projects are proposed south of Greenburg Road, due to latent demand and the impacts that a major road expansion would have on existing development. As a result, this section of Highway 99W is not expected to meet the region's motor vehicle level of service policies during mid-day and peak demand periods in the future, and an alternative approach to managing traffic in the corridor is needed.

As local TSPs are developed, this information will be expanded to provide more detailed findings to support the Area of Special Concern designation.

# Sunrise Preferred Alternative

In July 2009, the project's Policy Review Committee (PRC) selected the Preferred Alternative for the Sunrise Project.

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.




The following more completely describes the Preferred Alternative from west to east:

In the **I-205 Interchange Area**, the Preferred Alternative consists of:

- Alternative 2 with the addition of the Tolbert Crossing from Design Option A-2
- The Sunrise Project western transition to the Milwaukie Expressway is widened within the existing right-of-way for OR 224 and extended farther to the west past Webster Road.
- The Lake Road intersection with Webster Road is closed and traffic re-routed eastward to the revised OR 224 / Pheasant Court intersection;

- Access from Johnson Road (south of OR 224) to OR 224 is re-routed westward along Lake Road to a new connection at the existing OR 224 / Pheasant Court intersection.
- The southern leg of the existing OR 224 / Johnson Road intersection is closed.
- The Deer Creek Lane / Johnson Road connection is relocated to the west at the existing intersection.
- The Lawnfield North extension alignment is shifted to avoid impacts to the KEX site historic resource (copper ground wire mat) and other cultural and natural resources in the area between the existing Lawnfield Road and 97th Avenue.
- The additional of the Tolbert Overcrossing (Design Option A-2) to Alternative 2.
- 3rd Westbound Lane on OR 212 / 224 from I-205 to 102nd Avenue with the dedicated right turn lane at 82nd Drive.
- 82nd Drive and its intersection with OR 212/224 are expanded to improve overall mobility by:
    - Restricting all left-turns at this intersection and adding a raised median both north and south of the existing intersection.
    - 82nd Drive is widened and a new signalized intersection at 82nd Drive and Clackamas Road is created to accommodate U turns including trucks.
    - 82nd Drive is widened and the existing signalized intersection at 82nd Drive and the northern Fred Meyer access point is reconfigured to accommodate U turns including trucks.

In the ***Midpoint Area***, the Preferred Alternative consists of:

- Alternative 2, the narrow diamond interchange at 122nd Avenue with a connection to OR 212/224 at 122nd Avenue.
- Design Option C-2, the southern-most alignment between the mid-point and Rock Creek interchanges -.
- The multi-use path that was planned between I-205 and the Midpoint Area will be extended along OR 212/224 to the Rock Creek interchange based on stakeholder and agency input.

In the **Rock Creek Junction Area**, the Preferred Alternative consists of:

- Design Option D-3, a Single Point Urban Interchange (SPUI)
- The eastern leg of the Goosehollow Drive / OR 224 intersection would be closed.
- A right-out-only access end of Orchard View Lane to northbound OR 224 will be created from the as an access mitigation measure.
- A 162nd Avenue connection to OR 212 will be created at the NE corner of the Orchard Lake neighborhood as an access mitigation measure.
- Existing OR 212 will become a cul-de-sac just east of 162nd Avenue.
- The Sunrise Project eastern transition reconnects with OR 212 east of the 172nd Intersection with OR 212.
- The Sunrise Project southern transition reconnects with OR 224 at Eckert Lane

WASHINGTON COUNTY
OREGON

MAY 6 2009

May 1, 2009

Carlotta Collette, JPACT Chair
Metro
600 NE. Grand Ave.
Portland, OR 97232-2736

COPY

Dear Councilor Collette:

As you may recall, the I-5/99W Connector Project Steering Committee met for the last time on February 25, 2009. At that meeting, the committee members voted on a package of improvements for the study area along with some important conditions regarding future improvements. While the final vote was not unanimous (6-2), there seems to be a general agreement that the package of arterial improvements, referred to as "Alternative 7", is preferred to a single freeway like facility through the study area. The attached materials summarize the Committee's decision.

Since some of the projects proposed for the study area are different than what is in the current Regional Transportation Plan (RTP), we believe the next step in the process is to amend the RTP to reflect the work of the Committee. We understand that work is currently underway to amend the RTP later this year with final adoption scheduled for 2010. On behalf of the Project Steering Committee, I am requesting that the RTP be amended to incorporate the Committee's decision. We look forward to cooperatively working with Metro on the RTP update. If the Metro staff needs additional information, please have them contact Mark Brown at 503-846-3406.

Sincerely,

Tom Brian

Tom Brian, Chairman
Washington County Board of Commissioners

Attachments

1. Recommendation memorandum
2. Alternative 7 Cost Estimate
3. Alternative 7 Map
4. Table summarizing environmental impacts
5. Feb. 25, 2009 PSC meeting summary
6. Recommended Conditions

**Board of County Commissioners**
155 North First Avenue, Suite 300, MS 22, Hillsboro, OR 97124-3072
phone: (503) 846-8681 • fax: (503) 846-4545

# MEMORANDUM

I-5 TO 99W Connector Project

**DATE:** February 17, 2009

**TO:** Project Steering Committee (PSC)

**FROM:** **Executive Management Team (EMT)**

**SUBJECT:** I-5 to 99W Connector, Recommended Alternative for RTP Amendment

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## Alternative 7 Recommendation for RTP Amendment

The majority of the EMT recommends that on February 25, 2009 the PSC select Alternative 7, the Three Arterial Corridors Alternative, as the Portland metropolitan region's southwest quadrant transportation solution-concept for Metro's consideration and adoption into the Regional Transportation Plan (RTP). A conceptual representation of Alternative 7 is shown in Figure 1 and the project's elements are described in Table 1.

This recommendation is based on the following advantages of Alternative 7:

1. Alternative 7 would address the project's purpose by providing an enhanced transportation network of multi-modal improvements that can effectively serve regional and intrastate access to the area's highways while also enhancing local access and circulation in the southwest quadrant of the Metro region.

2. Alternative 7 draws from the best elements of the build alternatives studied in the Alternatives Analysis (AA) and incorporates additional actions to enhance mobility. In general, Alternative 7's performance would be most similar to Alternative 6 and generally better than Alternatives 3, 4, and 5 while having fewer adverse effects on the human and natural environment and lower overall cost than Alternatives 3, 4, 5, and 6.

3. A significant advantage of Alternative 7 over the connector Alternatives 4, 5, and 6, is it could be more easily implemented in phases over time. This would provide jurisdictions flexibility to strategically adapt to funding availability, and to protect livability and economic viability of communities as increased system capacity commensurate with development in this part of the Metro region is warranted. Smaller, more affordable individual projects may be advanced with independent utility under the integrated multi-modal framework of Alternative 7. Strategic measures to protect the affordability of right-of-way for future construction elements of Alternative 7 could also occur.

## Conditions of Recommendation

As with any large-scale system of transportation improvements, a number of issues will need to be dealt with in the course of advancing a planning level transportation concept to construction projects and other implementation actions. While the corridor level alternative selected on February 25th is the final decision milestone for the PSC, additional work will continue in collaboration with stakeholder entities in advancing Alternative 7. The conditions listed below serve as a roadmap for this work.

For Alternative 7, the EMT recommends the following conditions accompany the RTP recommendation of Alternative 7:

1. **Future phasing plans for implementing Alternative 7 projects must take into consideration the transportation, environmental, and economic impacts of advancing some improvements sooner than others.** The sequencing of affordable improvements should be done in a manner that does not create new transportation problems or liabilities for the vitality of affected jurisdictions.
2. **The timing and priority of an I-5 corridor study must be considered in the RTP adoption process for Alternative 7.** The connector project development process emphasized the need for a corridor study along I-5 from Portland to the Willamette River. The results of this study may affect the timing and designs of some improvements within Alternative 7.
3. **Access between I-5 and the southern arterial must be resolved.** The alternatives development and analysis process determined the general corridor location for the new southern arterial. However, additional preliminary engineering work is needed to determine the optimal access option and configuration for connecting the southern arterial to I-5. Construction of the southern arterial should be conditioned on defining the I-5 improvements needed to accommodate it. Options to be explored include modifying the I-5/North Wilsonville Interchange into a tight split-diamond interchange, or extending a new arterial over I-5 and connecting to Elligsen Road on the east side of I-5.
4. **Completion and construction of major project elements is subject to compliance with the National Environmental Policy Act (NEPA) and design refinement.** The Alternative 7 concept provides only the general locations and functional characteristics of new transportation facilities. A fully collaborative public/agency involvement and environmental analysis process must be conducted in developing the design details of any major construction element of Alternative 7. Subsequent project development work will need to define the actual alignments and designs of each of these facilities within the framework of these general parameters. On-going coordination with the Tualatin River National Wildlife Refuge must also occur to ensure optimum compatibility of Alternative 7 elements with refuge objectives.
5. **Land Use Concept Planning will have to be completed by local governments to conform to the Alternative 7 decision.** Local governments need to complete concept plans that incorporate Alternative 7 elements for lands that are: a) within the Metro UGB, and b) within the project area and are not incorporated, and c) in areas where concept planning has not yet commenced.
6. **The design of the southern arterial; must incorporate any conditions that may come out of land use goal exceptions processes (if required) by Metro, Washington County, and Clackamas County.** Portions of Alternative 7 may require exceptions under state land use goals in order to be adopted in the RTP and to achieve needed federal and jurisdictional approvals. The extent of this issue may be affected by Metro's coming decisions on rural/urban land use reserves. Portions of proposed new transportation facilities are outside Metro's jurisdictional boundaries and will require coordination of actions between Metro and other affected jurisdictions. Possible design requirements may include forms of access management and land use control measures.
7. **State highway system routing and ODOT mobility standards must be key considerations in the design and future ownership of improvements within Alternative 7.** Current RTP assumptions are that a new limited-access connector would be built between I-5 and 99W, and that this roadway would become the new state route, possibly replacing OR 99W through Tigard. Alternative 7 does not result in a limited-access connector, which may result in OR 99W remaining the designated state highway route through Sherwood, King City and Tigard.

8. **Strategic protection of right-of-way should be considered by agencies for the Alternative 7 elements within the UGB and along potential alignments where land development could conflict with the future implementation of corridor improvements.** Protective measures could include property setbacks, dedication of right-of-way, specific acquisition(s), and/or right-of-way purchases consistent with NEPA process.

## The Development of Alternative 7

The June 2008 I-5 to 99W Connector Project Alternatives Analysis (AA) evaluated a range of six alternatives including a No-Build. A series of public hearings were held following the AA document's release. Based on consideration of input from the public hearings and subsequent direction from the PSC, a seventh alternative was identified for study. This alternative (Alternative 7) is a combination of key features represented in the original five build alternatives.

The PSC direction to the project team was, in a broad sense, to look for a hybrid solution drawing from elements of the Build Alternatives considered in the AA but creating a transportation network rather than relying on a single expressway corridor to address the project purpose and need. The PSC was also concerned about the magnitude and cost of collector/distributor improvements along I-5 to support an expressway connection. The project team's response to this direction led to a strategy of creating three arterial-level corridors that would disperse regional travel between I-5 and OR 99W rather than concentrating it in one connector corridor. The distribution of traffic between these east-west arterial corridors was further enhanced by adding a new north-south arterial (124$^{th}$ Extension). By dispersing the east-west traffic to the three existing interchanges on I-5, the need for an extensive collector/distributor system on I-5 is no longer essential to the performance of this project.

Alternative 7 draws from the five build alternatives studied in the AA and incorporates many projects already identified in the RTP and local Transportation System Plans (TSPs). All of the Transportation Demand Management/Transportation System Management (TDM/TSM) measures contained in Alternative 2 are incorporated in Alternative 7. Many of the roadway improvements as well as the commuter rail extension between Tualatin and Sherwood in Alternative 3 and in adopted plans are also included. Although the expressway-type approaches of Alternatives 4, 5, and 6 were not included, the respective alignments of these facilities and some of their functional characteristics were adapted for use in Alternative 7.

## Analysis of Alternative 7

At the direction of the PSC, Alternative 7 was analyzed to compare its transportation performance and effects on the natural and built environments with the other build alternatives studied in the AA. The results of these evaluations are summarized in the attached matrix (Table 2).

Alternatives 1 (No Build) and 2 (TDM/TSM) would not effectively address the project purpose. In general, Alternative 7 addresses the project's purpose as well or better than Alternatives 3, 4, 5, and 6 while having less adverse effects on the human and natural environment. The reduced environmental effects are generally attributed to Alternative 7's smaller area of potential impact (API) or spatial footprint. The main reasons for the reduced footprint are:

- Additional roadways and structures along I-5 would be minimized compared to Alternatives 4, 5, and 6 (the connector alternatives). Alternative 7 would include auxiliary lanes, built within the existing ODOT right-of-way (as modeled for Alternative 3). In contrast, the connector alternatives included an extensive collector-distributor system along I-5 as well as improvements to existing interchanges.
- The southern arterial modeled for Alternative 7 was developed under the assumption that there would be signalized, surface intersections rather than more spatially-intensive grade-separated interchanges.
- The connector alternatives were modeled under the assumption that they would be compatible with expressway design requirements. By changing to an arterial, narrower design widths may be possible.
- Alternative 7 would have a smaller total footprint than Alternative 3, which may seem counter-intuitive since it includes a southern arterial alignment. However, a majority of the 15 road extension and/or widening projects assumed for Alternative 3 are not included in Alternative 7 (e.g., Avery Street, Adams Street, Sagert Street, and OR 99W improvements) and the collective impact area of these elements would exceed that of the southern arterial.

Attachments (3)

**Table 1. Alternative 7 Project Elements with Planning-Level Cost Estimates**

| Road | Location and General Description of Action | Conceptual Costs in $ millions (2008 dollars) |
|---|---|---|
| | Northern Arterial Project Elements | |
| Tualatin Road/Lower Boones Ferry Road | Extend Tualatin Rd. as 5-lane arterial east across the Tualatin River from Herman Rd. to Lower Boones Ferry Rd. (LBFR). Widen LBFR to 5 lanes from extension to 72nd Ave. | $95 |
| SW Herman Road | Construct 3-lane extension of Herman Rd. between Tualatin Rd. and OR 99W | $30 |
| SW Bradbury Court | Construct new east-west connection across I-5 to 72nd Ave. on Bradbury Ct. alignment | $20 |
| | Central Arterial Project Elements | |
| Tualatin–Sherwood and Roy Rogers Road | • Widen Tualatin-Sherwood Rd. (TSR) to 5 lanes from OR 99W to SW 124th Ave. | $25 |
| | • Widen Roy Rogers Rd. between Borchers Rd. and OR 99W to 5-lanes | $5 |
| Tualatin–Sherwood Road | Widen TSR to 5 lanes from SW 124th Ave. to Teton Ave. | $20 |
| | Southern Arterial | |
| Southern Arterial/Interstate 5 interface | Complete either a tight split diamond N. Wilsonville Interchange or a new I-5 over-crossing with 2-lane road connecting southern arterial to Elligsen Rd. east of I-5 and associated connection improvements | $50 |
| Boones Ferry Road | • Widen Boones Ferry Rd. to 5-lanes between new southern arterial and Day Rd. | $5 |
| Southern Arterial | • Purchase ROW for 5-lane arterial (OR 99W to I-5) | $100 |
| | • Construct a new 2-3 lane arterial (OR 99W to I-5) | $120 |
| | • Widen arterial to 5-lanes (OR 99W to I-5) | $70 |
| | • Improve Commerce Circle/95th Ave. and Boones Ferry Rd. intersection | $5 |
| | Other Alternative 7 Elements | |
| TSM / TDM | Regional Trail System, Bike Lanes, Sidewalks & Bus Stops | $30 |
| Commuter Rail | Commuter rail extension to Sherwood | $40 |
| Interstate 5 | Add auxilliary lanes to I-5 between I-205 and Elligsen Interchange (assumes Norwood over-crossing replacement) | $30 |
| SW 124th Avenue | • Purchase ROW for 5-lane arterial (TSR to southern arterial) | $5 |
| | • Extend 124th Avenue as a 2-3 lane roadway between TSR and Tonquin Road | $45 |
| | • Widen and extend 124th Avenue as a 4-5 lane roadway between TSR and the southern arterial | $20 |
| | **Total Costs** | **$715** |

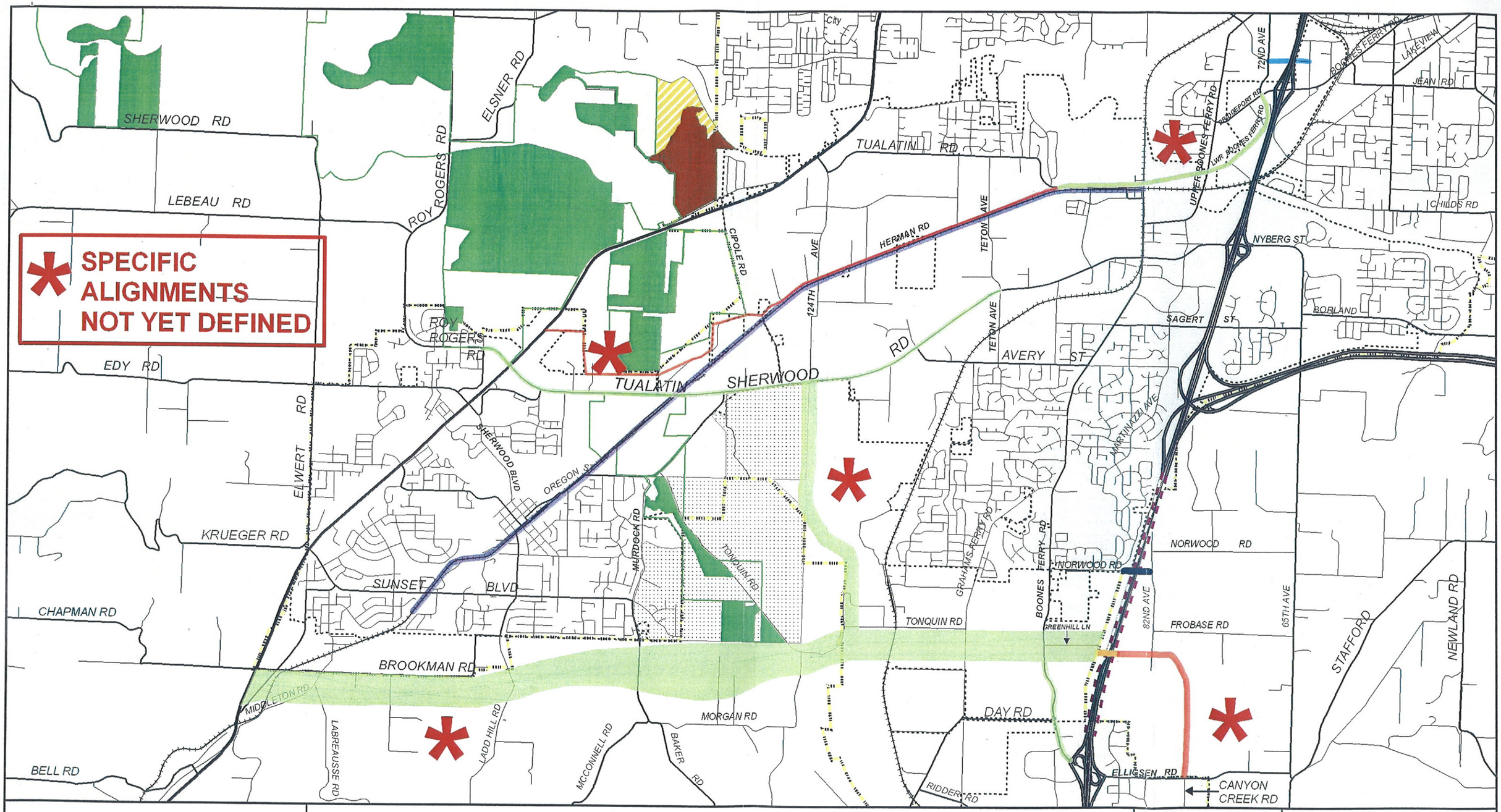
At their meeting on February 25, 2009, the PSC agreed on the following conditions as amended from those presented to them in the Alternative 7 Recommendation Memorandum dated February 17, 2009 to accompany the RTP recommendation of Alternative 7:

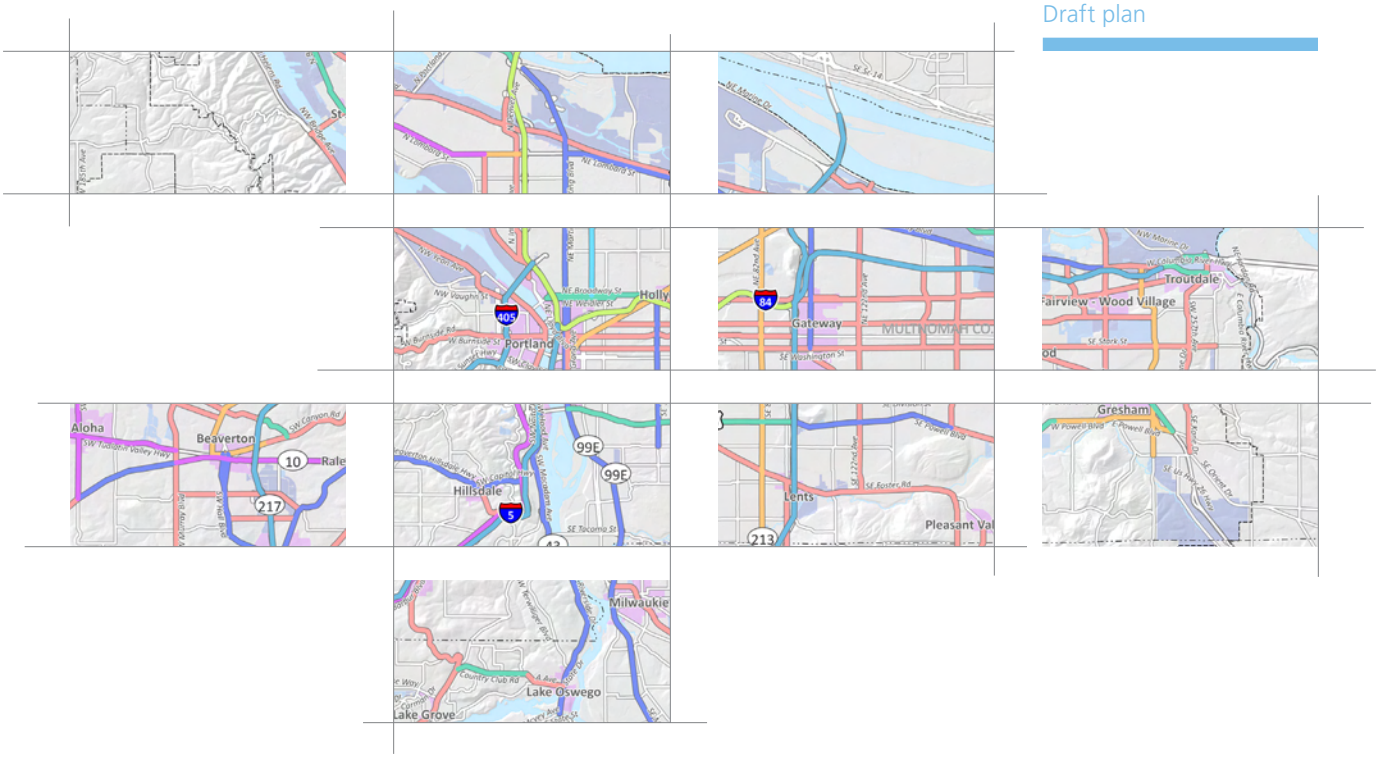
1. **Future phasing plans for implementing Alternative 7 projects must take into consideration the transportation, environmental, and economic impacts of advancing some improvements sooner than others.** The sequencing of affordable improvements should be done in a manner that does not create new transportation problems or liabilities for the vitality of affected jurisdictions.
2. **The timing and priority of an I-5 corridor study must be considered in the RTP adoption process for Alternative 7.** The connector project development process emphasized the need for a corridor study along I-5 from Portland to the Willamette River. The results of this study may affect the timing and designs of some improvements within Alternative 7.
3. **Access between I-5 and the southern arterial must be resolved.** Additional study is required to fully understand the impacts and trade offs between transportation solutions and land use, economic and environmental consequences of a new southern arterial. The impacts on rural lands are of particular importance and must be further evaluated before pursuing an exceptions process. The study area may need to be expanded to include connections to Stafford Road and additional areas along the OR 99W corridor that were not included in the alternatives analysis. The alternatives analysis process determined the general corridor location for the new southern arterial. However, additional preliminary engineering and planning work is needed to determine the optimal access option and configuration for connecting the southern arterial to I-5, OR 99W, and other arterials in the expanded study area. Construction of the southern arterial should be conditioned on defining the I-5 improvements needed to accommodate it and ensuring no negative impacts to I-5 and I-205 occur beyond the forecast No-Build condition as a result of Alternative 7. Options to be explored include modifying the I-5/North Wilsonville Interchange into a tight split-diamond interchange, or extending a new arterial connection crossing over I-5 and connecting to Stafford Road and/or Elligsen Road on the east side of I-5 for regional traffic benefits.
4. **Completion and construction of major project elements is subject to compliance with the National Environmental Policy Act (NEPA) and design refinement.** The Alternative 7 concept provides only the general locations and functional characteristics of new transportation facilities. A fully collaborative public/agency involvement and environmental analysis process must be conducted in developing the design details of any major construction element of Alternative 7. Subsequent project development work will need to define the actual alignments and designs of each of these facilities within the framework of these general parameters. On-going coordination with the Tualatin River National Wildlife Refuge must also occur to ensure optimum compatibility of Alternative 7 elements with refuge objectives.
5. **Land Use Concept Planning for UGB expansion areas should be coordinated with the refinement of these transportation recommendations.**
6. **The design of the southern arterial; must incorporate any conditions that may come out of land use goal exceptions processes (if required) by Metro, Washington County, and Clackamas County.** Portions of Alternative 7 may require exceptions under state land use goals that have not yet been studied or approved in order to be adopted in the RTP and to achieve needed federal and jurisdictional approvals. The extent of this issue may be affected by Metro's coming decisions on rural/urban land use reserves. Portions of proposed new transportation facilities are outside Metro's jurisdictional boundaries and will require coordination of actions between Metro and other affected jurisdictions. Possible design requirements may include forms of access management and land use control measures.
7. **State highway system routing and ODOT mobility standards must be key considerations in the design and future ownership of improvements within Alternative 7.** Current RTP assumptions are that a new limited-access connector would be built between I-5 and 99W, and that this roadway would become the new state route, possibly replacing OR 99W through Tigard. Alternative 7 does not result in

a limited-access connector, which may result in OR 99W remaining the designated state highway route through Sherwood, King City and Tigard.

8. **Strategic protection of right-of-way should be considered by agencies for the Alternative 7 elements within the UGB and along potential alignments where land development could conflict with the future implementation of corridor improvements.** Protective measures could include property setbacks, dedication of right-of-way, specific acquisition(s), and/or right-of-way purchases within the UGB consistent with NEPA process.

Following agreement on the above conditions, PSC representatives of Washington County, ODOT, Metro, and the cities of Tualatin and Sherwood voted in favor of recommending Alternative 7 with the conditions as amended above. PSC representatives of the City of Wilsonville and Clackamas County voted against this recommendation.


SPECIFIC ALIGNMENTS NOT YET DEFINED
SHERWOOD RD
LEBEAU RD
ROY ROGERS RD
ELSNER RD
TUALATIN RD
CIPOLE RD
124TH AVE
HERMAN RD
TETON AVE
UPPER BOONES FERRY RD
LWR BOONES FERRY RD
72ND AVE
BOONES FERRY RD
LAKEVIEW
JEAN RD
CHILDS RD
NYBERG ST
BORLAND
SAGERT ST
AVERY ST
MARTINAZZI AVE
EDY RD
ROY ROGERS RD
TUALATIN SHERWOOD RD
SHERWOOD BLVD
OREGON ST
ELWERT RD
KRUEGER RD
MURDOCK RD
TONQUIN RD
SUNSET BLVD
CHAPMAN RD
BROOKMAN RD
MIDDLETON RD
LABREAUSSE RD
LADD HILL RD
MCCONNELL RD
BAKER RD
MORGAN RD
BELL RD
GRAHAMS FERRY RD
BOONES FERRY RD
NORWOOD RD
82ND AVE
65TH AVE
FROBASE RD
GREENHILL LN
DAY RD
RIDDER RD
ELLIGSEN RD
CANYON CREEK RD
STAFFORD
NEWLAND RD
1 inch equals 3,000 feet
0 1,500 3,000 6,000
Feet
N
Source Info:
GIS data from Metro - Portland. Oregon. 2005-08.
Legend:
Tonquin Scablands
UGB
Wildlife Refuge
Acquisition Boundary
Refuge (Owned by USFWS)
Metro Property
Metro Property (Managed by USFW)
Alternative 7 Corridors
2-3-Lane Arterial
4-5-Lane Arterial
I-5 Auxiliary Lanes
Commuter Rail
New Bridge Over I-5
Replacement Bridge Over I-5
New Crossing of I-5
I-5 TO 99W Connector Project
Alternative 7
January 9, 2009




REGIONAL TRANSPORTATION
SYSTEM MANAGEMENT AND OPERATIONS

# 2010 – 2020

## Draft plan

September 2009

Metro | *Joint Policy Advisory Committee on Transportation*

**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

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), local government, and State of Oregon funds. The contents of this document do not necessarily reflect views or policies of the State of Oregon.

*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.*

## NONDISCRIMINATION NOTICE TO THE PUBLIC

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# REGIONAL TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS

## 2010 – 2020 • DRAFT PLAN • September 2009

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), local government, and State of Oregon funds. The contents of this document do not necessarily reflect views or policies of the State of Oregon.

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Metro | *People places. Open spaces.*

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# I. Introduction

Transportation is so critical to our daily lives. We move between places and activities using an extensive network of roads, transit lines, bikeways, and sidewalks; billions of our tax dollars invested to ensure mobility for people and goods. As the 21st century unfolds, a new paradigm is emerging - brought on by concerns over the social, environmental and fiscal costs of traditional transportation solutions – that supports an integrated approach to the provision of transportation infrastructure and services where better management of the existing system has a prominent role.

The Portland region is in an enviable position; a penchant for regional coordination and openness to new ideas has placed the region on the leading edge for "smart" investments in both transportation system and demand management. The Regional Transportation System Management and Operations (TSMO) Plan takes the next step by integrating these complementary elements of system management to better link opportunities for coordinated investments that maximize the efficiency of the existing transportation system.

## What is TSMO?

TSMO is a set of integrated transportation solutions intended to improve the performance of existing 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.

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.

The Regional TSMO plan identifies four functional areas of investment:

1. multimodal traffic management
2. traveler information
3. traffic incident management
4. transportation demand management

Each of these four functional areas is further detailed in the action plan segment of this document.

## What are the benefits of TSMO?

The region's experience with TSMO as well as that of agencies in other parts of the country demonstrates that TSMO strategies support many regional transportation goals, including:

- Improve travel time reliability
- Reduce crashes
- Improve transit on-time arrival
- Reduce travel delay
- Reduce fuel consumption Reduce air pollution and greenhouse gas (GHG) emissions
- Reduce drive alone trips
- Reduce vehicle miles traveled

Following are example benefits specific to the Portland region that can be achieve in each of the functional areas.

### Multimodal traffic management

- An adaptive signal timing project installed in Gresham in 2007 reduced average travel times by 10 percent and saves over 74,000 gallons of fuel every year.
- A typical signal timing project in Portland saves over 300 metric tons of CO2 annually per retimed traffic signal[1].
- The transit signal priority project in the Portland metro area has the ability to reduce transit delay by 30 to 40% and improve travel time by 2 to 16% based on previous studies.[2]

### Traffic incident management

- The ODOT incident response program responds to over 12,700[3] incidents each year in the Portland metro area. Based on 2001 data, if all delay-causing incidents in the Portland region were reduced by 5 minutes, over 270,000 hours of delay would be saved annually.[4]

### Traveler Information

- In 2008 the TripCheck web site was visited over 23 million times, and that number has grown steadily since 2002 when data was first collected. The record month for visits was

[1] DKS. Monitoring and Verification Report: Estimated Project CO2 Savings. Portland Climate Trust Traffic Signal Optimization Project. December 27, 2009

[2] ITS Benefits and Costs databases (http://www.itsbenefits.its.dot.gov

[3] 2006 incidents as noted on ODOT's website: http://www.oregon.gov/ODOT/HWY/ITS/project_COMET.shtml

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[1] DKS. Monitoring and Verification Report: Estimated Project CO2 Savings. Portland Climate Trust Traffic Signal Optimization Project. December 27, 2009

[2] ITS Benefits and Costs databases (http://www.itsbenefits.its.dot.gov

[3] 2006 incidents as noted on ODOT's website: http://www.oregon.gov/ODOT/HWY/ITS/project_COMET.shtml

[4] Bertini, Robert L. Rose, Michael W. El-Geneidy, Ahmed M. Portland State University. Using Archived Data to Measure Operational Benefits of ITS Investments: Region 1 Incident Response Program. June 2004.

December 2008 with almost 6 million visits. Surveys show that TripCheck information influences travel decisions for up to 80 percent of survey respondents.

- In 2009, TriMet's transit tracker phone service received an average of 1.4 Million calls every month and 360,000 trips were planned online using the agency's online trip planning tool.
- The CarpoolMatchNW.org ride-matching web site has more than 11,000 registered users.

### Transportation demand management

- An individualized marketing project in North and Northeast Portland during the opening of MAX Yellow Line reduced auto trips by 9% and transit ridership grew 44% while ridership in a control group grew only 24%.
- Employer transportation programs are in place at 1,139 worksites in the region, and 924 of those include an employer-provided transit subsidy for employees. Surveys of employees indicate that the non-SOV mode share at these worksites exceeds 35%.
- A survey of residents in the Portland metro area found that nearly one out of five (19%) took action to reduce car trips because of what they saw, read or heard about the Drive Less/Save More campaign.

## Why does the region need a TSMO Plan?

The Oregon Transportation Plan and the 2035 Regional Transportation Plan (RTP) emphasize the importance of TSMO as a cost effective way to achieve plan goals including mobility, accessibility, safety and sustainability. However, these plans lack detail as to how TSMO will be used in pursuit of plan goals. Outstanding questions include:

- What are the available opportunities?
- Among the identified problems and challenges, which are best suited for TSMO solutions?
- What are the regional priorities for investment in TSMO?

In the past decade, many agencies across the region have completed intelligent transportation system (ITS) plans to guide advanced technology investments. A strategic plan for regional travel options programming was also completed. While these efforts have benefited efficiency, safety, and improved traveler information and options, they have been largely isolated from the development of long-range transportation plans.

There is a paradigm shift both regionally and nationally regarding how best to address transportation challenges. With raising costs for traditional infrastructure solutions and declining transportation budgets, agencies are looking for ways to better manage existing systems. There is also a growing acknowledgement that building to address congestion is

inconsistent with other goals like reducing GHG emissions, decreasing our dependence on the automobile, encouraging more walking and biking, and developing in ways that are consistent with desired land use goals.

Lastly, there is a critical need for regionalism in implementing TSMO strategies. Coordination and collaboration is needed between cities, counties, regional service providers and the state so that our transportation system operates seamlessly.

## How Was the TSMO Plan Developed?

Developing the TSMO Plan was a joint effort among key stakeholders. Throughout the course of this project, several committees joined efforts to create, review, and revise the plan. Figure 1 shows the general advisory committee structure for the TSMO Plan. Three advisory committees guided the planning effort.

TransPort, the operations subcommittee to the Transportation Policy Alternatives Committee (TPAC), served as the TSM technical advisory committee. TransPort members include operations professional from transportation agencies across the region. TransPort met monthly to review the technical aspects of the plan.

The Regional Travel Option (RTO) Subcommittee, the TDM subcommittee to TPAC, joined efforts in the development of the TSMO plan and provided key information for the transportation demand management solutions. The RTO Subcommittee includes public agency and private stakeholders interested in TDM. The committee meets bi-monthly.

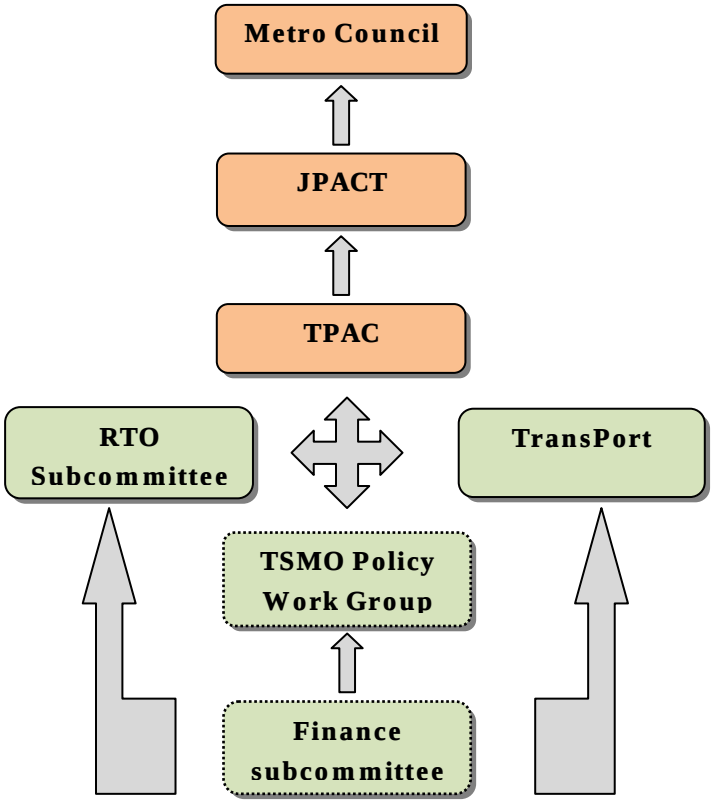



**Figure 1: Advisory committee structure for TSMO Plan**

The TSMO Policy Work Group (PWG) was formed to provide high-level policy guidance for the plan. The group consisted of TPAC members, key private sector stakeholders, and other transportation professionals that participate in, or oversee TSMO activities. The PWG met four

times over the course of the plan to review and comment on and provide recommendations for vision and goals, strategies, and implementation actions.

A finance subcommittee, comprised of members from all three advisory groups, also convened during the course of this project to address funding challenges and non-capital actions for successful implementation.

Presentations were made to TPAC, the Joint Policy Advisory Committee on Transportation (JPACT), the Metropolitan Policy Advisory Committee (MPAC), and Metro Council at critical milestones including the creation of visions, goals, and objectives for TSMO, and the TSMO Action Plan.

Together, all of these advisory groups provided feedback and reached consensus as the plan progressed. The key steps involved:

1. Creating a vision statement with supporting goals, guiding principles and objectives to guide the course of the TSMO plan.
2. Identifying transportation needs and existing conditions of the transportation network.
3. Developing and prioritizing projects that encompass the TSMO action plan.
4. Addressing implementation and finance challenges and recommending actions necessary for successful implementation of the regional TSMO plan.
5. Recommending a set of projects for the first funding allocation.
6. Establishing a method for future project selection and funding.

## II. Traffic congestion and TSMO

TSMO solutions address transportation congestion problems, which are a growing concern in the Portland region. This section presents a brief overview of congestion in the Portland area. For more information about Portland congestion issues, please refer to Appendix B.

Traffic congestion generates longer and often unreliable travel times, reduces mobility, increases operational and delivery costs, wastes fuel, increase vehicle emissions and is the cause of many crashes. Congestion has intensified steadily along with the growth in population and today costs the region more than $600 million annually in lost time and wasted fuel – an increase of more than 450 percent since 1985.[5]

[5] Congestion Data for Your City. *Texas Transportation Institute. http://mobility.tamu.edu/ums/congestion_data/. Accessed Dec. 1, 2008.*

## Sources of roadway congestion

Congestion is the direct result of the demand exceeding the available capacity. Capacity is either limited by a physical constraint in the transportation network or by an unpredictable event that reduces the available roadway capacity – an incident, special event, poor signal timing, weather or work zones. The root sources of roadway congestion are shown in Figure 2.[6] These six sources account for two types of congestion, recurring and non-recurring. Recurring congestion is generally predictable and occurs on most days because the typical source – a physical bottleneck – always exists in the absence of a capacity building project. Accounting for 40 percent of congestion, bottlenecks are areas where physical capacity does not meet vehicle demand. A well-known bottleneck in the Portland area is I-5 Northbound at the Columbia River, where congestion is predictable every day.

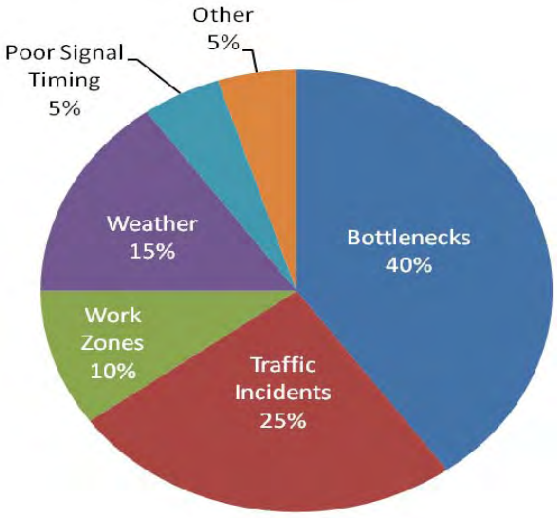


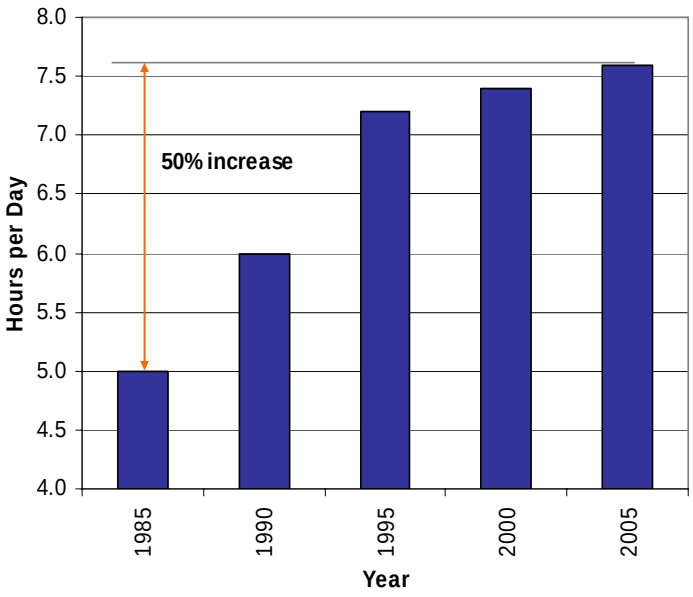

**Figure 2: Sources of Congestion**

Non-recurring congestion is less predictable and results from the other five sources – traffic incidents, work zones, weather, poor signal timing and special events. These events do not recur in the same location, but when they do roadway capacity is reduced. Congestion results when the demand exceeds the reduced capacity.

## Hours of congested travel

Congestion on Portland's roadways is a growing problem. Auto and truck traffic has increased steadily and the region has not been able to keep pace with roadway expansion projects. The total hours of congested travel increased 50% from an average of 5.0 hours per day in 1985 to over 7.5 hours per day in 2005 as shown in Figure 3.

6 Describing the Congestion Problem. *Federal Highway Administration.* *http://www.fhwa.dot.gov/congestion/describing_problem.htm. Accessed Dec. 22, 2008.*




*Data Source: Texas Transportation Institute*

**Figure 3: Congested Travel Hours Each Day in Portland (1985 - 2005)**

## Capacity is not constant

It is commonly assumed that roadway capacity is a constant when, in fact, incidents, work zones, poor signal timing, weather and special events all reduce existing capacity in the roadway network. Another assumption is that closing a single lane of a two lane roadway reduces the capacity by 50 percent. Seems logical, but research suggests this assumption is not correct. Closing a single lane of a two lane highway reduces the available capacity by 65 percent. Even closing a shoulder reduces capacity by as much as 19 percent. Table 1 shows the percentage of capacity lost when lanes are closed.[7]

TSMO strategies seek to restore the capacity lost from non-recurring events, manage the demand through bottlenecks and reduce demand overall.

**Table 1: Impact of Incidents on Highway 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

**Key congestion findings for the Portland region include:**

- Population is projected to increase from 1.7 million in 2005 to 3.0 million in 2030[8]. At that rate, the daily hours of congested travel and number of incidents will increase further unless something is done to manage demand and operations.

[7] Highway Capacity Manual 2000. *Transportation Research Board, National Research Council, Washington, D.C., 2000.*

[8] *Economic Report to the Metro Council, Proposed Final Draft*. Metro, Data Resource Center, Sept. 2002.

- In 2005 congestion in Portland cost the average driver over $700 per year today, a 450 percent increase since 1985.[9]
- Average peak period travel times are 20 percent longer today than in 1985[10].
- Over 25,000 incidents are reported annually on Portland region roadways.[11]
- Traffic incidents increase during peak congested hours[12], which cause further delay.
- Population is projected to increase from 1.7 million in 2005 to 3.0 million in 2030[13]. At that rate, the daily hours of congested travel and number of incidents will increase further unless something is done to better manage demand and operations.

Although roadway capacity building projects will still be constructed, demand far exceeds the available funding needed to build our way out congestion. Non-recurring events will continue to rob the facility of existing capacity. Because capacity building projects alone are not sustainable, improving the region's ability to manage non-recurring events, restore lost capacity quickly and reduce demand is essential.

TSMO provides cost effective tools and strategies to restore lost capacity quickly, promote and support effective non-drive alone travel options that can reduce demand, and control traffic approaching physical bottlenecks to manage demand. Congestion will continue to increase, but TSMO provides alternatives to building more physical capacity into the system. It allows the region to manage its existing transportation system at maximum efficiency, while improving the safety and quality of life for the region's residents.

# III. TSMO policy framework

The TSMO plan is guided by a policy framework that includes a regional vision, planning goals and objectives, and guiding principles and aims to support implementation.

## Vision Statement

*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.*

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[9] *Congestion Data for Your City*. Texas Transportation Institute. http://mobility.tamu.edu/ums/congestion_data/. Accessed Dec. 1, 2008.
[10] *Congestion Data for Your City*. Texas Transportation Institute. http://mobility.tamu.edu/ums/congestion_data/. Accessed Dec. 1, 2008.
[11] ODOT ATMS data, 2005-2007.
[12] ODOT ATMS data, 2005-2007.
[13] *Economic Report to the Metro Council, Proposed Final Draft*. Metro, Data Resource Center, Sept. 2002.

## Goals & Objectives

The goals and objectives direct how the region plans to achieve its vision for TSMO.

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

**Objective 1.1** Expand traffic incident and event management capabilities to restore roadway capacity reduced by incidents, weather and construction.

**Objective 1.2** Enhance regional traffic signal coordination systems and support systems that respond to current conditions.

**Objective 1.3** Implement and expand systems that improve reliability for transit, pedestrians and bicycles.

**Objective 1.4** Implement systems that reduce delays through known bottlenecks.

**Objective 1.5** Integrate arterial and freeway roadway systems and operate the transportation system from the overall system perspective.

**Objective 1.6** Market and provide travel options services to employers and commuters.

### Goal 2: Safety and Security
### Enhance transportation safety and security for all modes.

**Objective 2.1** Reduce crashes at signalized intersections.

**Objective 2.2** Reduce crashes resulting from weather, construction and secondary crashes from incidents.

**Objective 2.3** Reduce crashes involving vulnerable road users (pedestrians and bicycles).

**Objective 2.4** Provide a safe environment for transit, bicycling and walking.

**Objective 2.5** Encourage transit ridership by providing safe and secure public transportation facilities.

**Objective 2.6** Improve communication and coordination between transportation agencies and emergency management agencies.

**Objective 2.7** Protect physical infrastructure and transportation communication networks from harm or misuse.

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

**Objective 3.1** Encourage transit ridership by improving transit travel times and services.

**Objective 3.2** Improve connections between modes to enhance traveler mobility and reduce reliance on the automobile.

**Objective 3.3** Support initiatives to reduce greenhouse gas emissions from vehicles.

**Objective 3.4** Support equitable distribution of transportation services and investment.

**Objective 3.5** Support systems that implement future pricing strategies (e.g., congestion, tolls, parking).

**Objective 3.6** Continue a regional collaborative marketing campaign to increase awareness and use of travel options and reduce drive-alone trips.

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

**Objective 4.1** Provide current information that may affect roadway users and travel choices across all modes.

**Objective 4.2** Enhance pre-trip and en-route traveler information tools.

**Objective 4.3** Enhance regional multi-modal trip planning tools.

**Objective 4.4** Expand traffic surveillance and transportation system condition data collection capabilities.

## Guiding Principles & Aims

While the goals and objectives direct investment in TSMO, the guiding principles and aims steer implementation.

**Guiding Principle 1: Regional Partnerships**

**Enhance regional partnerships that support collaborative investment and implementation of management and operations strategies that benefit the region.**

**Aim 1.1** Regularly update regional transportation systems architecture documents to ensure system compatibility amongst agencies.

**Aim 1.2** Support collaboration and coordination of TSMO and RTO partner activities.

**Aim 1.3** Encourage opportunities for public-private collaboration and partnerships that support transportation system management and operations goals.

**Guiding Principle 2: System Performance**

**Monitor transportation system performance and evaluate system management strategies to aid equitable policy and sustainable investment decisions.**

**Aim 2.1** Apply appropriate measures to support investment in cost-effective strategies.

**Aim 2.2** Support maintenance and upgrades to the regional data warehouse.

**Aim 2.3** Include an automated data collection component with all systems management projects.

**Guiding Principle 3: Investment in Ongoing Operations**

**Provide on-going maintenance and operations to support the transportation network.**

**Aim 3.1** Provide financial and staff resources to effectively manage, operate and maintain transportation management systems.

**Aim 3.2** Develop regional investment strategies to develop, operate, and implement transportation system management and operation strategies.

**Aim 3.3** Establish systems management and operations as a core program – equal in importance to systems development and preservation.

# IV. TSMO Action Plan

The TSMO action plan is the region's road map for carrying out transportation system and demand management strategies to improve travel for people and goods. It builds upon previously completed Intelligent Transportation System (ITS) plans completed by ODOT and local transportation agencies, and the 2008-2013 RTO Strategic Plan.

Full (10 year) implementation of the region-wide and corridor specific transportation demand management projects will mean investing approximately $23 million in capital improvements and up to $44 million a year for operations and maintenance.[14] Full implementation of the systems management and operation projects will mean investing approximately $330 million for capital improvements and annual operation and maintenance costs of up to approximately $11 million.[15]

TSMO investments include capital improvements using intelligent transportation system (ITS) infrastructure and service strategies that provide traveler information and assistance, or respond to unexpected events. They also include programmatic investments to promote alternatives to driving alone, collect and analyze system operations data, and measure performance. In most cases, TSMO services require ongoing investment in personnel to operate incident response vehicles, staff operations centers, or maintain travel information and public outreach programs.

An effective TSMO program requires a managed program on an equal level to construction and maintenance programs. This presents public agencies with significant policy, organizational and budget challenges to successful implementation.

## Action plan organization

The action plan is organized into two distinct sections: regional investments and corridor investments. Regional investments include strategies that cross agency boundaries, benefit multiple agencies and/or require a shared commitment to ongoing system management. An

[14] The annual operation and maintenance expense will reach $44 million after full implementation of the TDM projects; however, the average cost over the 10-year period is estimated at $30.5 million a year since not all projects will be implemented during the first year of the plan.
Total cost = $23M + (10 x $30.5M) = $328M

[15] The annual operation and maintenance expense will reach $11 million after full implementation of the TSMO projects; however, the average cost over the 10-year period is estimated at $7.4 million a year since not all projects will be implemented during the first year of the plan.
Total Cost = $327M + (10 x $7.4M) = $401M

example of regional investment is traffic incident management. Traffic incident management includes integration of emergency response and traffic management systems, and partnerships between transportation agencies and emergency services to provide a coordinated response to identify, respond to and clear incidents quickly. The system interfaces benefit both transportation and emergency service agencies, but traditional public agency budgets make it difficult to determine who should be responsible for the initial investments and ongoing system enhancements.

Corridor investments include both capital improvements and services that can be targeted and provided to a specific transportation corridor. For example, many arterials in the region lack the traffic detection and communications infrastructure to provide data and video images for a traveler information web site.

## Functional area analysis

The stakeholders and project team considered a wide range of TSMO strategies covering the broad spectrum of transportation operations and demand management including transit operations, multimodal traffic control, traffic incident management, congestion pricing, traveler information, intelligent vehicle initiatives, pedestrian/bicycle safety enhancements, and transportation demand management. The following near term priority investments should be considered in the first implementation phase. These priorities are based on analysis of the strategies, a comparison of benefit-cost and the current state of TSMO investment in the region.

### Multimodal traffic management

- Provides arterial and freeway multimodal traffic management and operations functions including signal timing, access management, arterial performance monitoring and data collection, active traffic management

### Traveler information

- Provides current and forecasted travel conditions information via a variety of sources including web site, mobile devices, phone systems, dynamic message signs, highway advisory radio and via private sources for in-vehicle navigation systems to help people make better informed travel decisions.

### Traffic incident management

- Provides resources and builds partnerships to foster a coordinated, timely and efficient response to incidents. The strategies are aimed at reducing overall incident duration to restore capacity quickly and reduce secondary crashes.

### Transportation demand management (TDM)

- Maximizes investments in the transportation system and relieves traffic congestion by managing travel demand, particularly during peak commute hours. Supports and leverages capital investments in transit, trails, and other infrastructure by marketing travel options to potential riders and users and increasing the share of trips made by transit, walking, cycling and other travel options.

## Ongoing funding

The collection of TSMO strategies in this action plan requires a moderate investment in up front capital and continued funding for operations and maintenance for most of the projects. Total capital investment for the 10-year plan for the Portland metropolitan area is valued at approximately $378.5 million. However, it is important to consider the necessary operation and maintenance investment in addition to the capital investment. A commitment to sustaining an ongoing operating program that will provide quality service to the traveling public requires an ongoing and stable funding source. A successful transportation system operations program must be treated like a capital and/or maintenance program with a dedicated funding source. The annual operations and maintenance cost, if all of the TDM and TSMO projects in this plan are implemented, is estimated to reach about $39 million. However, the annual operations and maintenance budget will not begin at $39 million. The annual investment will grow gradually as projects are implemented, and could reach up to $39 million with full implementation.

## TSMO region-wide action plan

This section outlines the TSMO strategies that apply region-wide. These projects extend across agency boundaries and benefit multiple jurisdictions. Following this section, are the corridor specific projects which apply to particular geographic areas. The section is organized by the four functional areas: regional multimodal traffic management, traveler information, incident management and transportation demand management.

## Functional area: multimodal traffic management

The Multimodal Traffic Management projects improve metropolitan mobility by applying 21st century technology solutions to actively manage the transportation network. It is clear that the existing network can be used more efficiently to improve mobility for people and goods while reducing the capital and social costs of large-scale infrastructure investments. This program area invests in highly congested transit, freight and emergency response corridors to improve on-time performance for buses, travel-time reliability for trucks, and response times for emergency responders. The program also builds the infrastructure for performance data that can supply traveler information such as real-time corridor travel times and congestion maps.

This data will be further used by agencies to promote more efficient use of the transportation system.

The following bullets describe the projects identified in this functional area, as well as preliminary cost estimates and timeframes.

- **Operate and maintain regional ITS communications network**
  Improved coordination is necessary to insure effective management of the regional transportation system. Maintaining the regional ITS network allows for more efficient use of available resources and sharing of resources can reduce overall costs and increase project efficiencies. The first step in facilitating regional coordination is to enhance the operation and maintenance of the regional ITS communications network. As the existing ITS network is expanded to include additional facilities and functions, the early projects will need reinvestment to insure that these critical links are adequate.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Operate and Maintain Regional ITS Communications Network | Ensure ITS capital investments are used as efficiently and effectively as possible. | High | Ongoing | $0 | $100K | TransPort |

- **Active traffic management regional concept of transportation operations (RCTO)**
  Active traffic management consists of a combination of strategies which vary in cost and capabilities. Active traffic management may include variable speed limit signs, lane control, reversible lanes, advanced signal systems, etc. Given the relatively high costs, lack of local implementation, and the limited number of national implementations of active traffic management, it is prudent to first conduct a preliminary study of the technology and potential locations or corridors where the technology benefits seem to be a good fit to the challenges.

  The first effort for active traffic management is to conduct a study to review the various strategies and determine those feasible. The next step is to identify the potential corridors for implementing active traffic management strategies based on current operational and safety challenges that could be addressed by active traffic management. Subsequent study(s) should focus on development of an active traffic management implementation plan and identifying specific elements appropriate for each of these corridors.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Active Traffic Management RCTO | Identify potential corridors for active traffic management implementation, and develop an implementation plan | High | 1-5 years | $350K | $0 | Metro |

- **Transit priority treatment performance measurement**
  Transit signal priority (TSP) is used by TriMet and the City of Portland along key arterials with major transit routes. TSP enhances transit schedule reliability and thus encourages transit ridership. However, the field performance of TSP has not been thoroughly studied. It is therefore necessary to establish a set of performance measures which will apply across all corridors with TSP implemented, and regularly monitor and evaluate the performance of TSP. This evaluation is necessary to determine the cost-effectiveness of expanding TSP to other corridors.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Transit Priority Treatment Performance Measurement | Enhance regional traffic signal coordination systems and support systems that respond to current conditions. | High | 1-5 years | $200K | $200K | TriMet |

- **Region-wide access management strategies**
  *Regional Concept of Transportation Operations (RCTO)*
  Access management consolidates or restricts access points to provide a safer environment for vehicles, pedestrians and bicycles. Access management can be expensive depending on access rights and right-of-way acquisition. Strategy plans are necessary to guide the implementation of access management and better allocate the limited resources spent on access management. Currently, ODOT does have access management regulations and standards, however, these standards only apply to state highways. This project aims to incorporate non-state highways into the access management strategy and generate stronger regional policy regarding access management. The first step of the process is to develop overall access management goals and objectives and to identify potential corridors for access management implementation. The next step is to develop a corridor specific access management strategy that provides a toolbox of techniques that may be applied as road

improvement projects, development, or redevelopment occurs within the roadway corridor. The strategy is intended to be adopted by the jurisdictions that have responsibility for the roadway, permitting of driveways, land use regulations, local ordinances and site development requirements.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Region-wide Access Management Strategies | Improve safety and preserve capacity on regional facilities | Medium | 6-10 years | $500K | $0 | ODOT |

- **Enhance regional traffic signal system**

  Software upgrades or enhancements can provide new functionalities and provide a low cost solution to increasing system capabilities. Software updates can be implemented in various transportation elements including advanced signal operations, supportive GIS databases, incident management timing plans, etc. Additionally, capabilities in traffic signal systems such as automation of turn movement counts collection and automated collection of arterial travel times requires additional equipment and hardware upgrades of the signal system.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Enhance Regional Traffic Signal System | Enhance regional traffic signal coordination systems and support systems that respond to current conditions. | High | 1-5 years | $12M | $50K | TransPort |

- **Expand PSU ITS freight data collection**

  Expand Portland State University's existing web based ITS "count sensor" program beyond the freeway to some key arterials throughout the region. Create a repository of freight data (primarily truck data) from the region's Freight Data Collection project.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Implement Freight Data Collection System | Collect region wide freight data | Medium | 6-10 years | $50K | $100K | Port of Portland |

- **Congestion pricing/high occupancy toll lanes**
  *pilot project*
  Congestion pricing is one of the effective ways to reduce traffic congestion. It works by shifting rush hour highway travel to other transportation modes or to off-peak periods. High occupancy toll (HOT) lane is one form of congestion pricing, which carries additional benefits compared to traditional tolling methods. HOT lanes encourage carpooling and at the same time utilize unused capacity of carpool lanes. On top on that, implementing dynamic pricing would have the effect of diverting traffic across different modes, time and space. A pilot project will develop and implement congestion pricing and study the effect it may have on reducing traffic congestion.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Congestion Pricing/ High Occupancy Toll Lanes | Support systems that implement future pricing strategies (e.g., congestion, tolls, parking). | High | 1-5 years | $5 M | n/a | ODOT |

- **Active traffic management pilot project**
  This pilot project is the second step following the development of regional concepts and implementation plans for active traffic management. Based on the results of the preliminary study, this step includes field implementation of active traffic management on the priority corridor identified as a part of the study.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Active Traffic Management Pilot Project | Field prove ATM concept and show system benefit | Medium | 6-10 years | $5M | $100K | ODOT |

- **Next generation transit signal priority system**
  After evaluating existing transit signal priority (TSP) system, the next step is to develop new standards for buses communicating to the traffic signal system. This brings TSP to the next level, giving new capabilities and increasing the operational efficiency of TSP system.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Next Generation Transit Signal Priority System | Enhance regional traffic signal systems to support efficiency goals. | Medium | 6-10 years | $500K | $100K | TriMet/ TransPort |

- **24-Hour transportation operations coverage**

  Following the improvement in operation and maintenance of the regional ITS communications network, the next step is to implement 24-hour transportation operations centers (TOC) coverage. Providing 24-hour staff coverage across the entire Portland Metro area will allow quicker identification of traffic issues, expansion of traffic surveillance and facilitation of communication at all hours of the day.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| 24-Hour Transportation Operations Coverage | Expand traffic surveillance and facilitation of communication during late night/early morning hours. | Low | Beyond 10 years | $0 | $100K | ODOT/ TransPort |

- **Automated speed enforcement**

  Speeding can negatively affect the safety of other road users, transit, pedestrians and bicyclists. The use of technology to help enforce speeds can reduce needed manpower as well as result in increased vehicle operator obedience. To achieve automated ticketing of vehicle speeding, the first step is to identify and install speeding cameras along corridors with common speeding problems. The information for vehicle speeding would be matched with the vehicle registration database to achieve automated ticketing of speeding. This would be achieved through software and hardware upgrades.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Automated Speed Enforcement | Provide a safe environment for transit, bicycling and walking | Low | Beyond 10 years | $1M | $100K | ODOT or others |

## Functional area: traveler information

Real-time traveler information provides travelers more accurate and comprehensive information for their route, mode, and time of day choice decision making. The information system may include system components transmitted via internet, radio, cell phone, or physically on the roadside. Currently, real-time traveler information system in the Portland Metro area includes dynamic message signs, highway advisory radio, traffic surveillance cameras, Tripcheck.com, TriMet trip planning tools and PORTAL.

The following bullets describe the projects identified in this functional area, as well as preliminary cost estimates and timeframes.

- **Portland Oregon Regional Transportation Data Archive Listing (PORTAL) enhancements**
  PORTAL is a traffic information system developed by Portland State University. The purpose of the system is to implement the U.S. National ITS Architecture's Archived Data User Service (ADUS) for the Portland Metro area. PORTAL shares U.S. Department of Transportation's vision to improve transportation decisions through the archiving and sharing of ITS generated data. As the regional traffic information data warehouse for the Portland Metro area, PORTAL requires continuous support, maintenance and upgrades. The next stage in PORTAL development is to link GIS data with PORTAL to provide more capabilities.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Portland OR Regional Transportation Data Archive Listing (PORTAL) Enhancements | Expand traffic surveillance and transportation system condition data collection capabilities. | High | Ongoing | n/a | $100K | PSU |

- **Multi-modal traveler data and tools**
  Provide and/or maintain data and tools to encourage and ease the use of travel options. While some Traveler Information shares real-time data with the travelling public, this action provides data and tools to the travelling public to pre-plan their mode and route. Examples include CarpoolMatchNW.org, and roadway bike-suitability data maintenance for bike maps and online trip planning tools.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Multi-modal traveler data and tools | Provide and/or maintain data and tools to encourage and ease the use of travel options. | High | Ongoing | $0 | $150K | Metro |

- **Park&Ride traveler information**
  Add Park&Ride feature to route planning tools such as TriMet's Trip Planner. The feature incorporates Park&Rides into transit and rideshare travel, forecasts the best times to find parking based on historical data, estimates travel times and provides real-time information on parking space availability. Capital cost will install parking censors to collect and share data.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Park&Ride Traveler Information | Add Park&Ride feature to route planning tools | High | Ongoing | $500K | $150K | Metro or TriMet |

- **TripCheck Travel Information Portal (TTIP) enhancement**
  TripCheck Travel Information Portal (TTIP) is a data exchange system that allows ODOT and other public jurisdictions to share traveler information data as well as provides an access point for private companies, which in turn repackage this travel information data. Currently, regional freeways are the main roadways with traveler information available on TTIP. The data exchange is capable of incorporating arterial roadways; however, equipment needs to be installed on arterial roadways to connect with the data exchange system. With this project, arterial travel information will be integrated into TTIP and region-wide coverage will be provided for incident, construction, traffic and weather information for both freeways and key arterials. ODOT's TripCheck website is the direct product of TTIP. It is envisioned that regional real-time traveler information could be accessed via one single central website for the entire region.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| TripCheck Travel Information Portal (TTIP) Enhancement | Provide current information that may affect roadway users and travel choices across all modes. | High | 1-5 years | $3M | $2M | ODOT |

- **Arterial performance measure**

  *Regional Concept of Transportation Operations (RCTO)*

  A natural expansion of the region's performance measurement capabilities, beyond PORTAL and other freeway-based facilities, is to the major arterials across the region. Arterial performance measurement in the form of travel times, travel speeds, and potentially origin-destination data will support engineering and planning decision-makers, enabling more efficient investments of limited funds. Provision of this data in real-time or near real-time makes the data even more useful for transportation professionals and the traveling public.

  The first project using this TSMO strategy is envisioned to make use of media access control address (MAC) reading technology at strategic locations to cover the major arterials region wide. This data will be stored and used in a similar fashion to PORTAL. The arterial performance data, such as real-time speeds, will be made available to the public in an easy to use end format, such as ODOT's TripCheck website. The data could be used to help predict travel times under recurring or non-recurring events.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Arterial Performance Measure | Expand traffic surveillance and transportation system condition data collection capabilities across all modes. | High | 1-5 years | $750K | $100K | Metro |

- **Transit performance measurement system**

  Following the expansion of arterial performance measure capabilities, the next step is to develop tools to improve data collection from TriMet's automated vehicle locator (AVL)system. This system will be used for comparisons with arterial performance measurement system. The transit data can be compared with vehicle data collected from the arterial performance measurement system to evaluate transit performance and the competitiveness of transit compared to other transportation modes.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Transit Performance Measurement System | Provide effective information to decision makers and agency staff to affect the investments that are made on the system. | High | 1-5 years | $350K | $50K | TriMet |

## Functional area: incident management

Effective incident management can reduce the effects of incident-related congestion by decreasing the time to detect incidents, the time for responding vehicles to arrive, and the time required for traffic to return to normal conditions. Efficient incident detection, communication and information exchange between various agencies and incident responders is critical.

The following bullets describe the projects identified in this functional area, as well as preliminary cost estimates and timeframes.

- **Incident management**
  Incident management comprises various strategies and elements to facilitate incident and emergency response. Incident management includes (but is not limited to) expanding designated incident response routes, installing surveillance equipment to provide improved incident detection, establishing target clearance goals, contracting with towing services for paid "dry-runs", adding vehicles and staff to the incident response fleet, and expanding incident training teams.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Incident Management | Expand traffic incident and event management capabilities to restore roadway capacity reduced by incidents, weather and construction | High | 1-5 years | $2M | $200K | ODOT |

- **Expand incident management teams/training**
  Together with implementing incident management strategies, it is necessary to expand incident management teams and provide training in order to enhance partnerships with transportation and emergency management agencies. Members of the incident management teams may include emergency responders, traffic operation center staff, non-transportation agencies associated with traffic incident management, private sector personnel, and others. The incident management teams would be responsible for coordinating traffic incident response, providing joint training, sharing lessons learned, and other functions to improve traffic incident management capabilities.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Expand Incident Management Teams/Training | Provide a coordinated response to traffic incidents | High | 1-5 years | $0 | $500K | TransPort |

- **Integrate voice and data networks**
  An improvement to inter-agency communication systems is a key element in incident management. This project enables emergency information sharing between responders and integrates communications between transportation agencies and emergency management agencies. The information sharing would be facilitated by upgrading communication network (including video feed) between transportation operation centers (TOCs) and installing hardware equipment for incident and emergency responders. By implementing this project, better support and information exchange are possible in times of incidents and emergencies.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Integrate Voice and Data Networks | Improve communication and coordination between transportation agencies and emergency management agencies | Medium | 6-10 years | $10M | $500K | TransPort |

- **Emergency responder GIS system upgrades**
  GIS system upgrades allow emergency responders to access up to date roadway information while en-route. This project potentially includes responder equipment installation, central system upgrades, and sharing of surveillance or performance measurement data between

agencies to speed response times and increase incident understanding prior to emergency response arrival.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Emergency Responders GIS System Upgrades | Provide better information and support for emergency management | Medium | 6-10 years | $200K | $50K | Metro |

- **Dynamic routing and preemption pilot project**
  Dynamic routing and preemption pilot project enables emergency responders to establish a response route and enact signal preemption along the route before arriving at signals.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Dynamic Routing and Preemption Pilot Project | Enable emergency responders to establish a response route and enact signal preemption along the route before arriving at signals. | Low | Beyond 10 years | $500K | $75K | TVF&R |

## Functional area: transportation demand management

Transportation Demand Management for the Portland region is coordinated through the Regional Travel Options (RTO) Program. RTO carries out regional strategies to increase use of travel options, reduce pollution and improve mobility.

Regional travel options include all of the alternatives to driving alone – carpooling, vanpooling, riding transit, bicycling, walking and telecommuting. The program maximizes investments in the transportation system and relieves traffic congestion by managing travel demand, particularly during peak commute hours.

The following bullets describe the priority projects in this functional area, as well as preliminary cost estimates and timeframes.

- **Collaborative marketing**
  Continue the Drive Less/Save More regional collaborative marketing campaign that increases awareness and use of travel options and reduces drive-alone trips. Update regional Bike There! map and other collateral materials. Provide sponsorships for partner events and activities. Conduct outreach to the public. Support partner collaboration and coordination.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Collaborative Marketing | Continue regional collaborative marketing campaign that increases awareness and use of travel options and reduces drive-alone trips. | High | Ongoing | $0 | $975K | Metro |

- **Employer services**
  Implement and/or support outreach and technical support in a collaborative manner with RTO partners to help employers increase non drive-alone travel modes.*

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Employer Services | Implement and/or support outreach and technical support in a collaborative manner with RTO partners to help employers increase non drive-alone travel modes. | High | Ongoing | $0 | $1M | Metro |

*Additional investment in this strategy is appropriate in some corridors.

- **Rideshare services**
  Implement and/or support marketing, outreach, vanpool fare incentives, and services directed at residents and employees to encourage and incentivize ridesharing.*

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Rideshare Services | Implement and/or support marketing, outreach, vanpool fare incentives, and services directed at residents and employees to encourage and incentivize ridesharing. | High | Ongoing | $0 | $360K | Metro |

*Additional investment in this strategy is appropriate in some corridors.

- **Measurement**
  Implement and/or support strategies that support investment in cost-effective strategies by measuring program effectiveness and easing data sharing among partners.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Measurement | Implement and/or support strategies that support investment in cost-effective strategies by measuring program effectiveness and easing data sharing among partners. | High | Ongoing | $0 | $150K | Metro |

- **Regional Transportation System Management & Operations program**
  Support strategic and collaborative program oversight. Support meetings and activities of the RTO and TransPort Subcommittees of TPAC, administer RTO and TSMO grant programs. Develop equitable and sustainable funding plans, seek additional funds to leverage federal grants. Track and support the development of regional, state and local policies that advance TDM and TSM strategies.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| TSMO Program | Support strategic and collaborative program oversight. | High | Ongoing | $0 | $335K | Metro |

- **Parking management region-wide strategy incentive pilot program**
  Implement a pilot program that provides incentives for jurisdictions to implement parking strategies in urban areas. This could incorporate a "best practices" type of policy or case studies within the jurisdiction to determine optimal parking strategies. Parking strategies can include time restrictions (maximums), paid parking areas, limiting parking to encourage alternative transportation modes, as well as other strategies.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Parking Management Pilot Program | Provide incentives for jurisdictions to manage parking | High | 1-5 years | $0 | $100K | Metro |

- **Smartcard fare system regional concept of operations (RCTO)**
  A smartcard fare system will improve transit operating efficiency by accelerating boarding and fare payment and enhance attractiveness of the system by providing customers with more convenient and flexible payment options. This project develops the approach and lays out the processes to support implementation of the smartcard fare system.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Smartcard fare system RCTO | Improve transit operating efficiency | High | 1-5 years | $100K | $0 | TriMet |

- **Smartcard fare system pilot project**
  A smartcard fare system will improve transit operating efficiency by accelerating boarding and fare payment and enhance attractiveness of the system by providing customers with more convenient and flexible payment options.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Smartcard fare system pilot project | Improve transit operating efficiency | High | 1-5 years | $12M | $n/a | TriMet |

- **Youth transit pass program – development stage**
  Overcome barriers to youth transit trips and increase the demand for transit region-wide in order to reduce miles driven by parents and among youth who have vehicles for their use. Develop agreements between TriMet, schools, and local governments to provide youth transit passes. This project could be incorporated with the development of a smart card fare

system that can account the exact amount youth take transit trips. Work with schools to develop methods and agreements so that youth transit cards can be issued to students.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Youth transit pass program | Overcome barriers to youth transit trips and increase the demand for transit region-wide. | Medium | 6-10 years | $0 | $100K | Metro |

- **Youth transit pass program**
  Implement a the youth transit pass project that was developed in the project above. The project focuses on one or multiple schools across the region. The implementation component will be further defined as part of the development stage.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Youth transit pass program | Implement the youth transit pass program. | Medium | 1 year (6-10 years) | $0 | $15M | Metro |

- **Regional incentive system**
  Provide a method for incentives that can be used regionally or by local partners to manage demand with individuals. Creating a regional system would allow seamless incentive delivery and management.

| TSMO Project | Goal / Objective | Priority | Time-frame | Capital Cost | O&M Cost | Potential Lead Agency |
|---|---|---|---|---|---|---|
| Regional Incentive/Disincentive System | Provide a method for incentives used to manage demand with individuals. | Low | Beyond 10 years | $9M | $200K | Metro |

## Investment costs for region-wide projects

Table 2 shows the total costs if all the region-wide projects were to be implemented. The operations and maintenance cost is on an annual basis.

### Table 2: Estimate of Region-Wide Investment Costs

| Functional Area | 1-5 Year Timeframe | | 6-10 Year Timeframe | |
|---|---|---|---|---|
| | Capital Cost | Annual O&M Cost | Capital Cost | Annual O&M Cost** |
| Regional Multimodal Traffic Management | $18M | $250K | $7M | $850K |
| Traveler Information | $4M | $2.5M | $500K | $2.6M |
| Incident Management | $2M | $700K | $11M | $1.3M |
| Transportation Demand Management | $12M | $3M | $9M | $18M* |
| **Overall Cost (Region-wide Projects Only)** | **$36M** | **$6.5M** | **$27.5M** | **$23M*** |

*This assumes a one-time annual operations and maintenance cost of $15 million for the youth transit pass pilot project.

**The annual O&M cost for the 6 to 10 year timeframe includes those projects started in the 1 to 5 year time frame and continued through the 6 to 10 year timeframe.

## Corridor specific projects

In addition to the region-wide projects identified in this plan, several projects apply to specific facilities and are detailed in the corridor action plans that follow. The corridor mobility concept was developed by Metro as a new way to think about an integrated transportation system. The Portland area was divided into 23 unique corridors, see Figure 4. Each corridor focuses on the region's network of freeway and highways, and includes parallel networks of arterial streets, regional multi-use paths, high capacity transit and frequent bus service.

In following Metro's mobility corridor concept (which was in part designed to help planners and decision-makers understand existing conditions, identify needs and prioritize mobility investments) the projects in this action plan are allocated by mobility corridor.

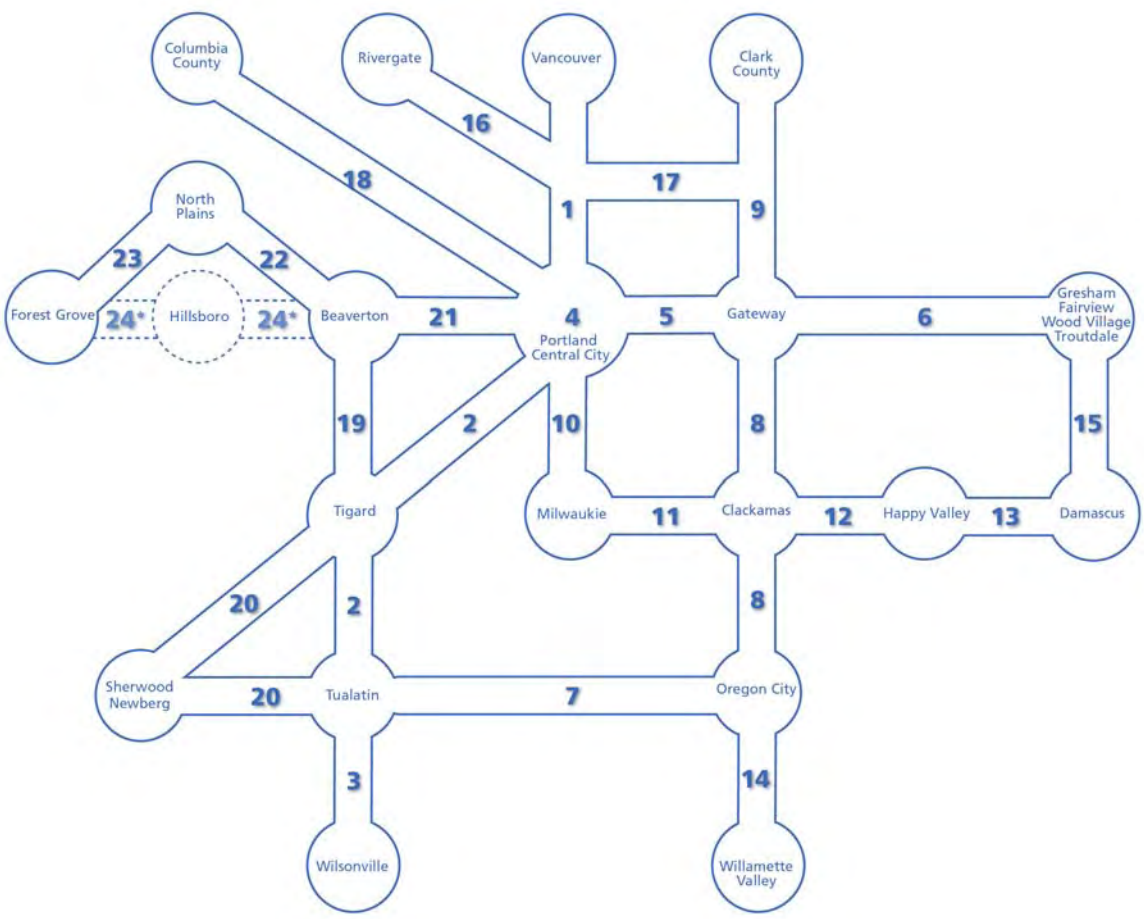



**Figure 4: Corridor index map**

*Corridor 24 will be added in the future, in this plan facilities in corridor 24 are incorporated in corridors 22 and 23.

## Maps of projects

For the corridor specific projects, maps were created to help illustrate project locations. The maps are broken into two categories: transportation system management (TSM) which includes the regional multimodal traffic control, traveler information, and traffic incident management related projects, and transportation demand management (TDM). Each category has its own set of maps to help illustrate the project locations and also show how the Portland region has developed, and will continue to develop in the future with respect to TSM and TDM investments.

There are three maps that illustrate TSM projects in the Portland region:

- Past - A map of TSM investments around the Portland region in 2000 (Figure 5).
- Present - A map of current (2009) TSM investments (Figure 6).

- Future - And a map of the region in 2020 illustrating all the planned TSM investments (Figure 7). This future map incorporates all of the projects listed in the corridor action plans on the following pages. For more information about the project types shown in the legend of this map, the corridor action plans can be referenced.

Then the next four maps illustrate the TDM projects in the Portland region, both existing and planned:

- Existing (2009) map of rideshare efforts such as carpool and vanpool (Figure 8).
- Existing (2009) map of employer services and resulting drive-alone rates (Figure 9).
- Existing (2009) map of collaborative marketing efforts (Figure 10).
- A map of the region in 2020 showing all the planned TDM projects (Figure 11). Similar to the TSMO projects, all of the TDM projects in this map are also detailed in the corridor action plans and can be referenced for more information.

## Corridor Project Cost Estimate

Table 3 shows the cost estimate of implementing all of the corridor projects. The operations and maintenance cost is on an annual basis, depending when a project is implemented, that operations and maintenance cost is allocated from that point forward. The primary cost of the transportation system management (TSM) projects is the capital cost (installing equipment and software) whereas the primary cost of TDM projects is the annual operations and maintenance budget (running programs and marketing).

### Table 3: Estimate of Corridor Investment Costs

| Project Type | 1-5 Year Timeframe | | 6-10 Year Timeframe | |
|---|---|---|---|---|
| | Capital Cost | Annual O&M Cost | Capital Cost | Annual O&M Cost* |
| TSM Projects - Regional Multimodal Traffic Management/Traveler Information/ Traffic Incident Management | $89M | $2M | $196M | $6M |
| Transportation Demand Management | $200K | $14M | $2M | $24M |
| **Overall Cost** | **$89.2M** | **$16M** | **$198M** | **$30M** |

*The annual O&M cost for the 6 to 10 year timeframe includes those projects started in the 1 to 5 year time frame and continued through the 6 to 10 year timeframe.

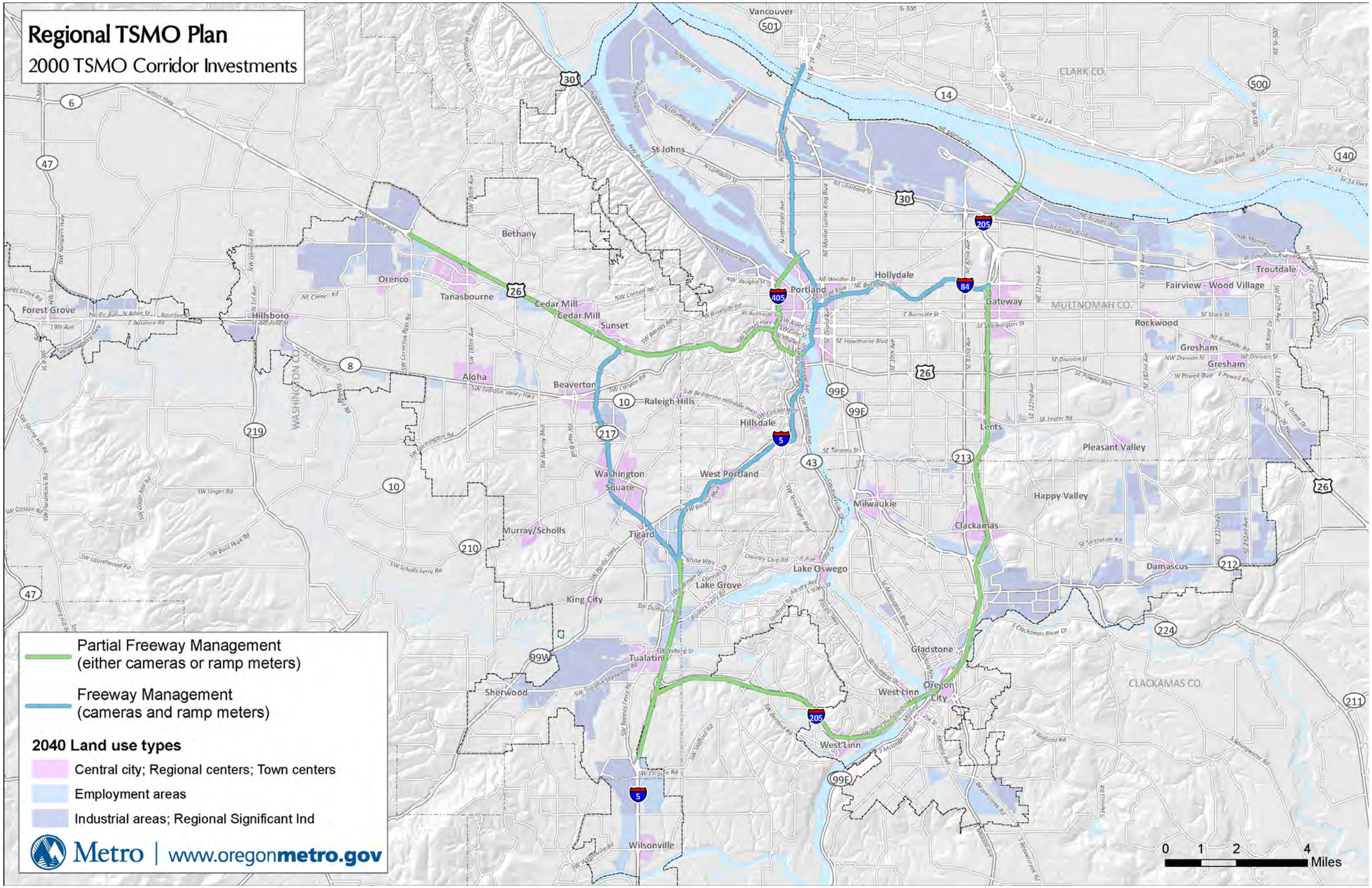



**Figure 5: Map of the Portland region and TSM investments in 2000**

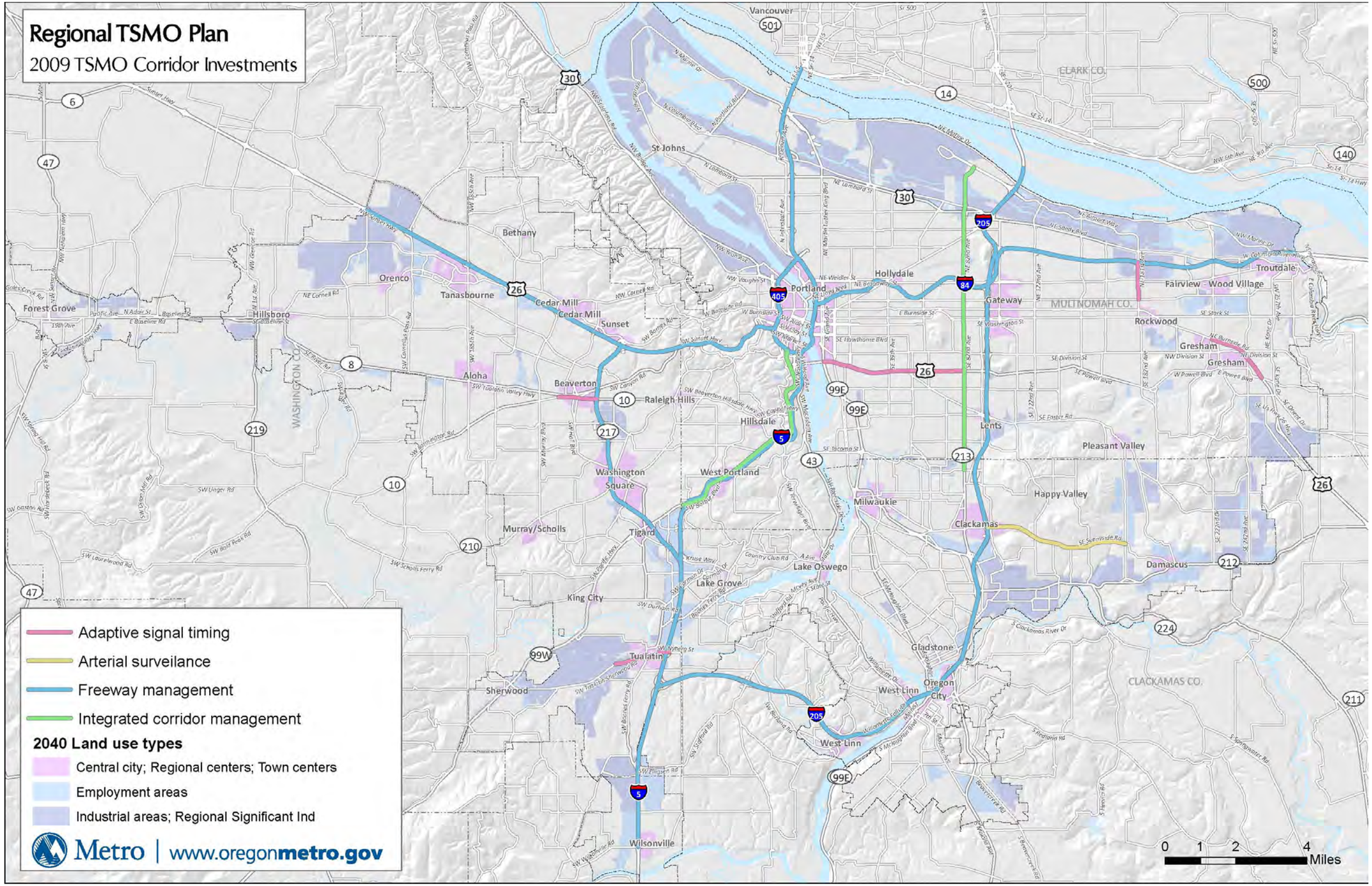



**Figure 6: Map of Existing TSM investments in the Portland Region in 2009**

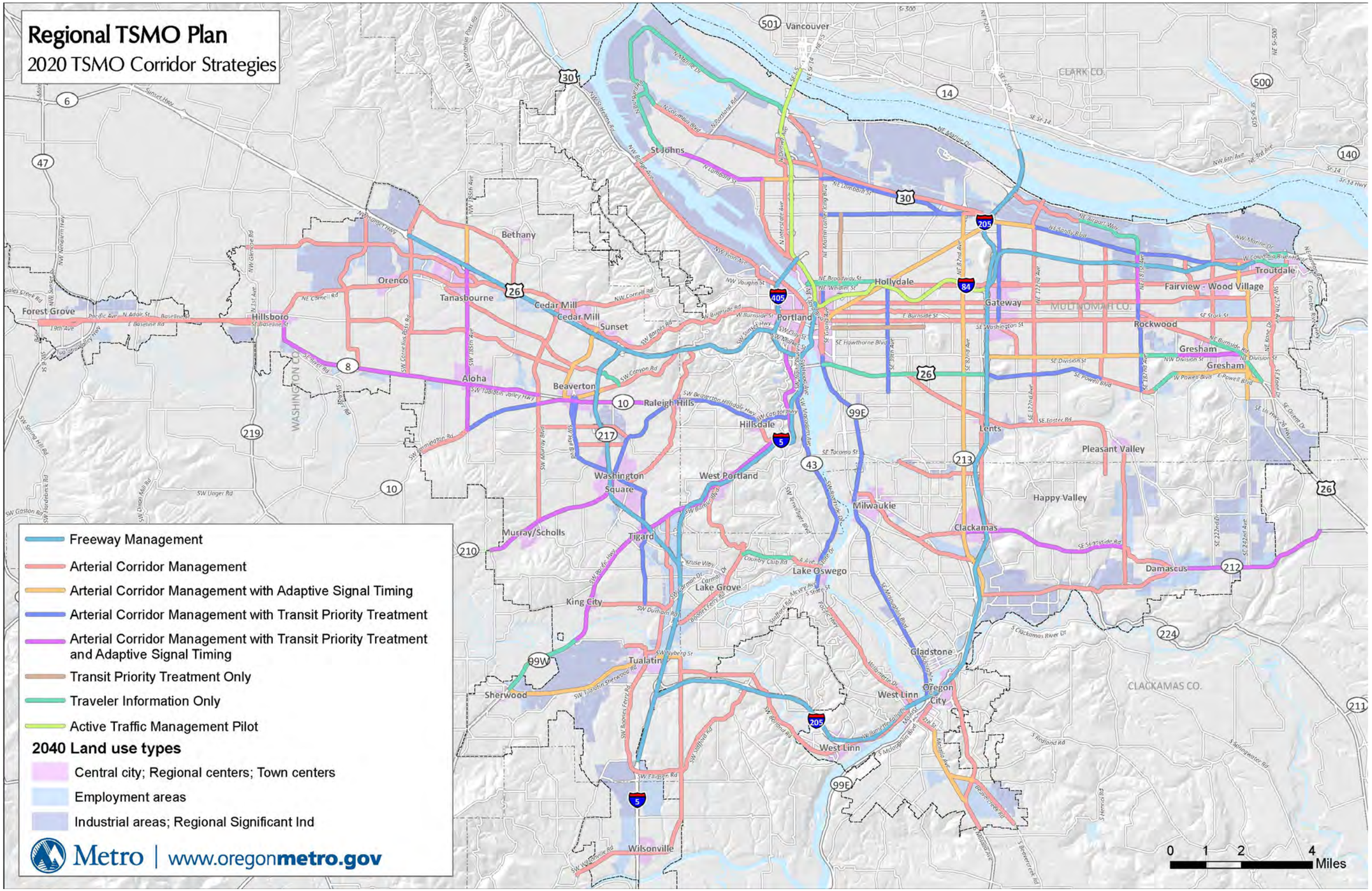



**Figure 7: Map of planned TSM investments in the Portland region for 2020**

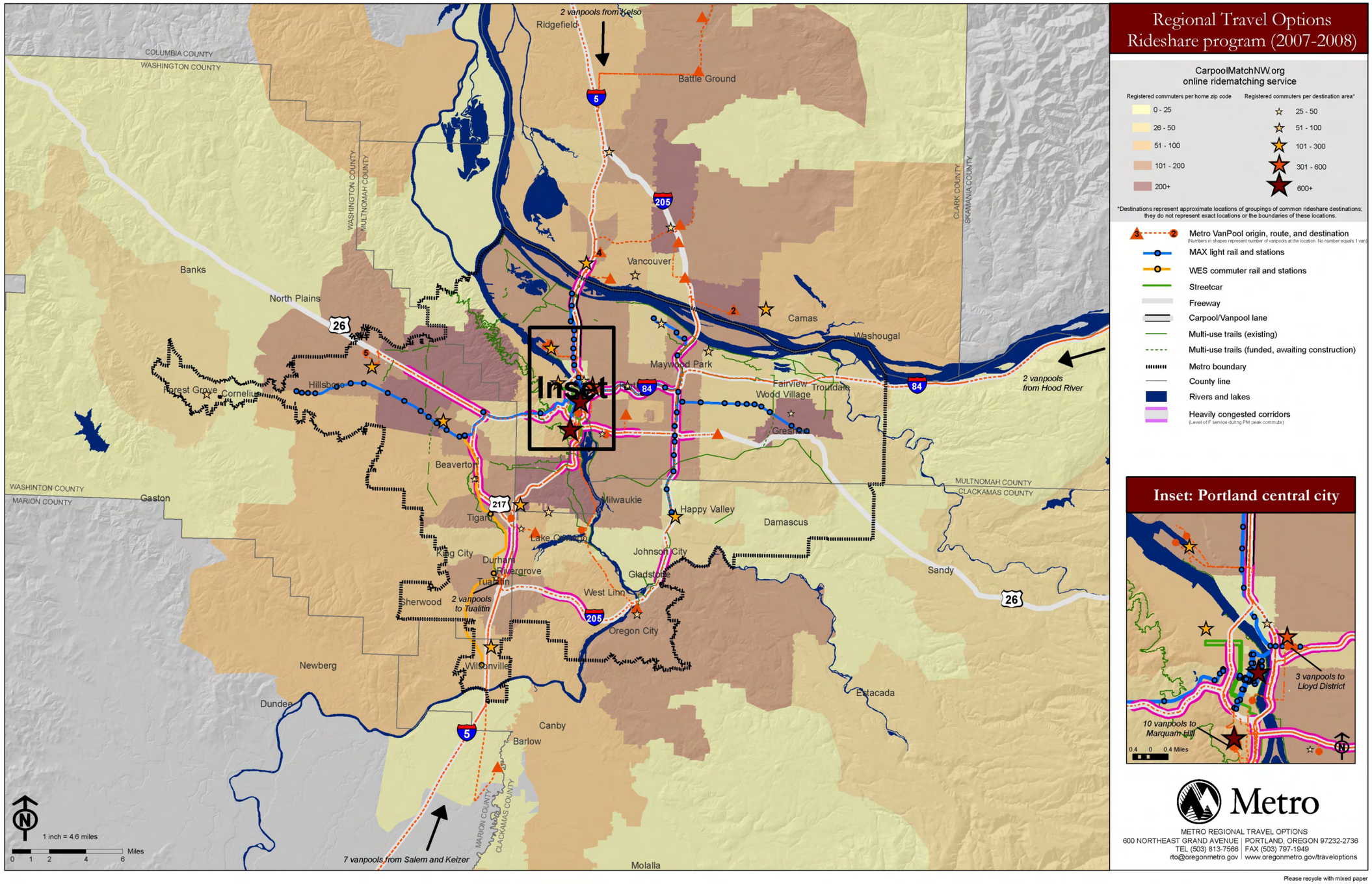



**Figure 8: Map of existing (2009) TDM rideshare efforts (carpool and vanpool) in the Portland region.**

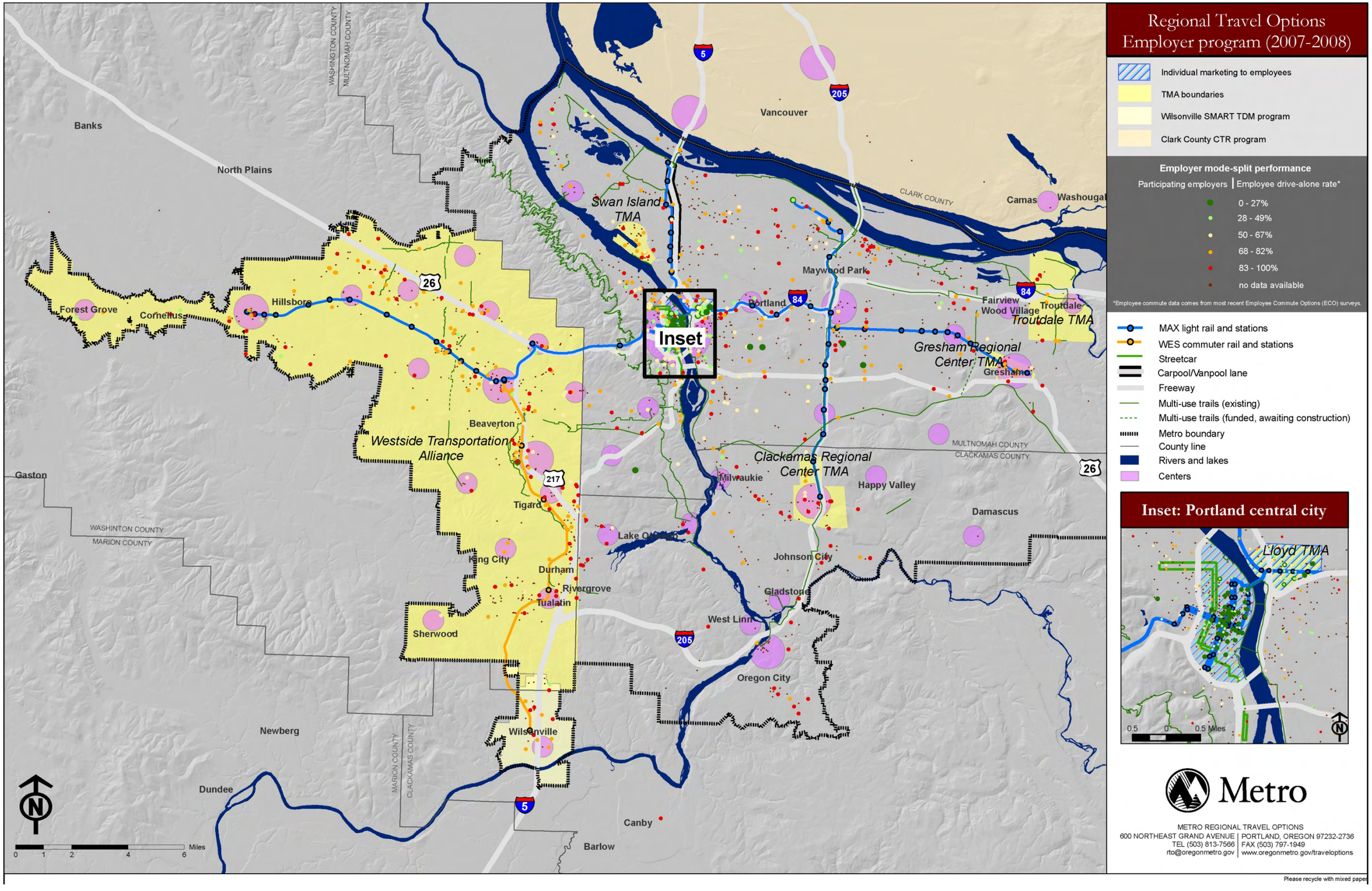



**Figure 9: Map of existing (2009) TDM related employer services and resulting drive-alone rates in the Portland region.**

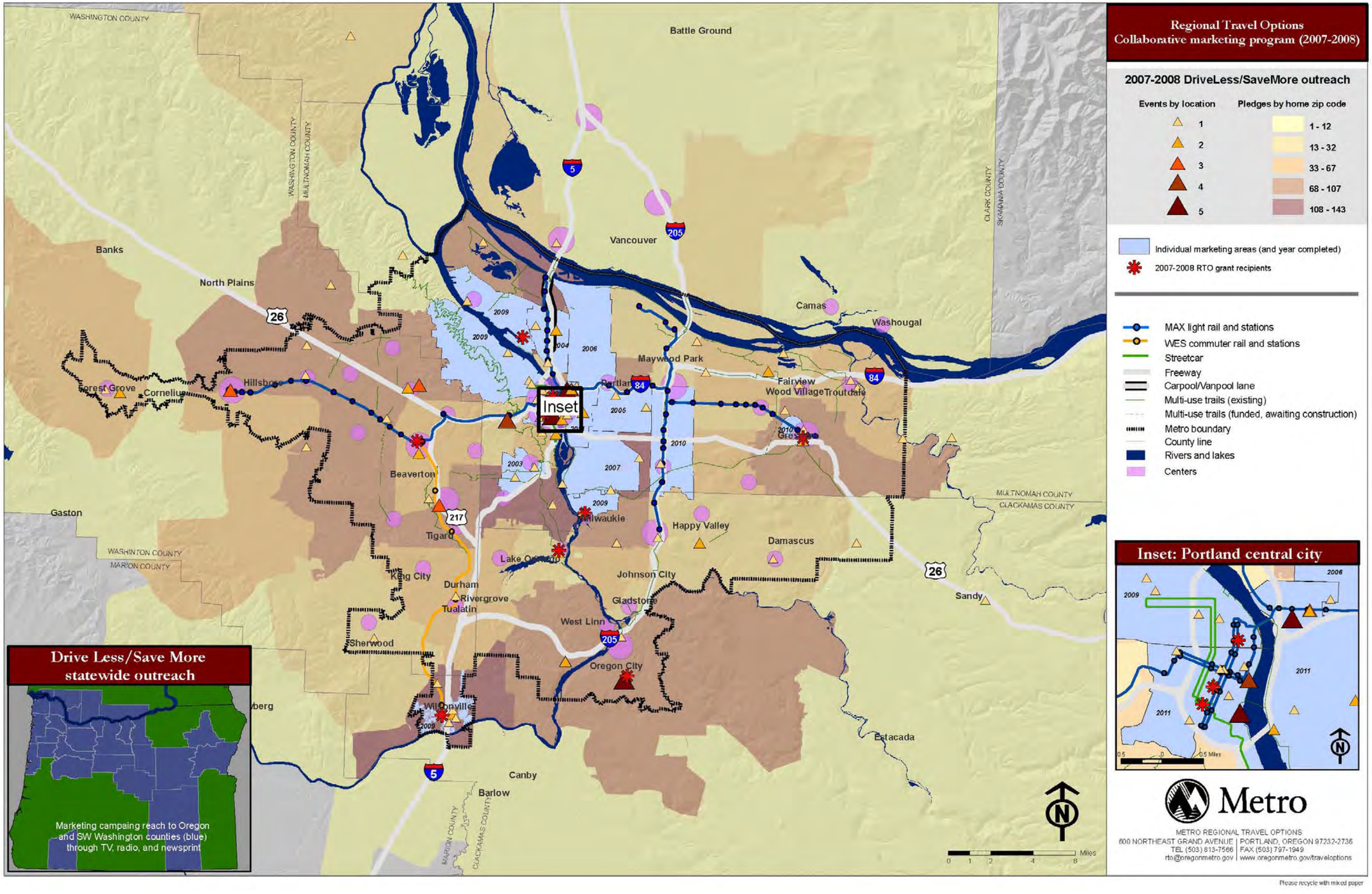



**Figure 10: Map of existing (2009) TDM related collaborative marketing efforts in the Portland region.**

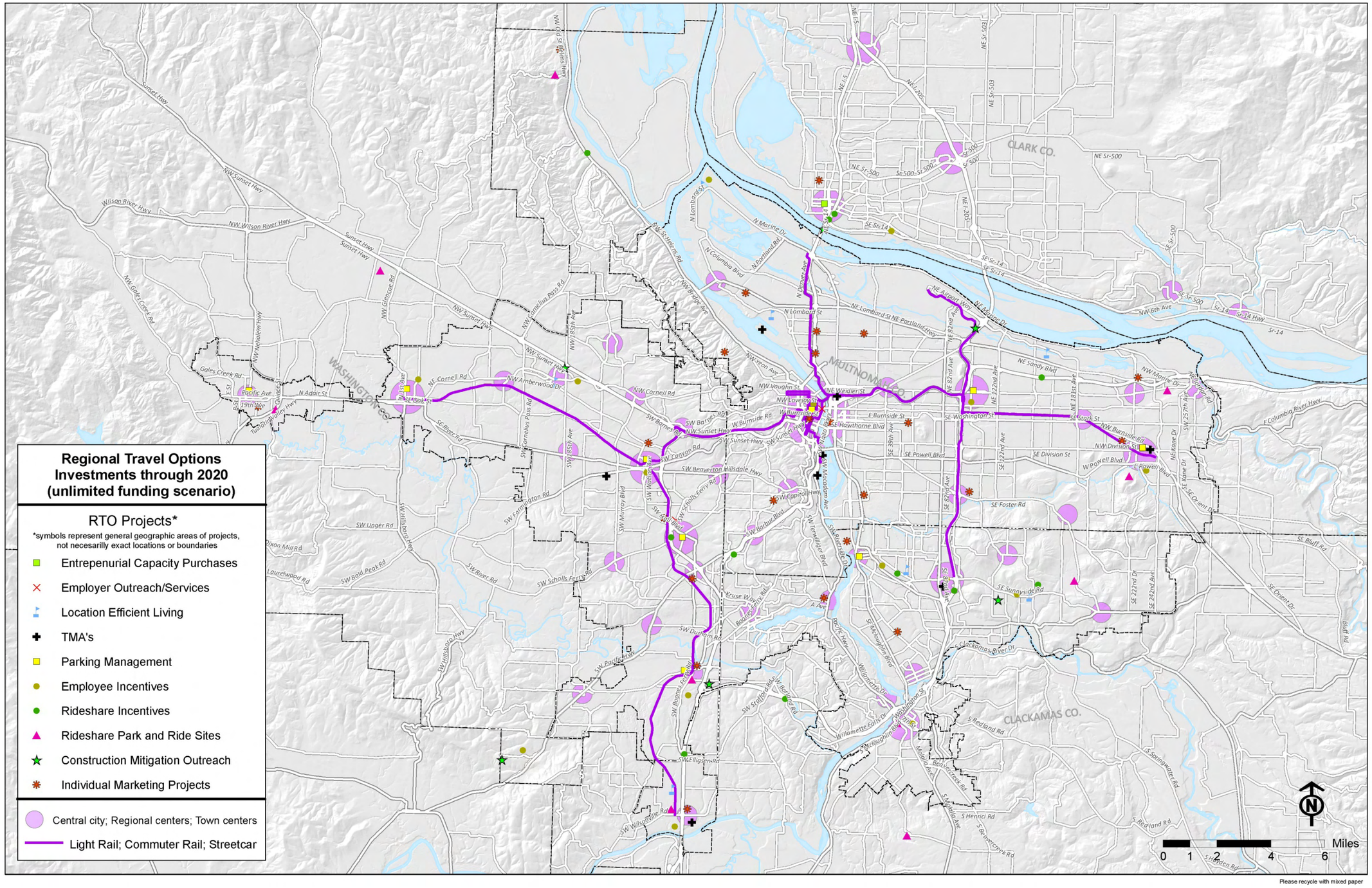
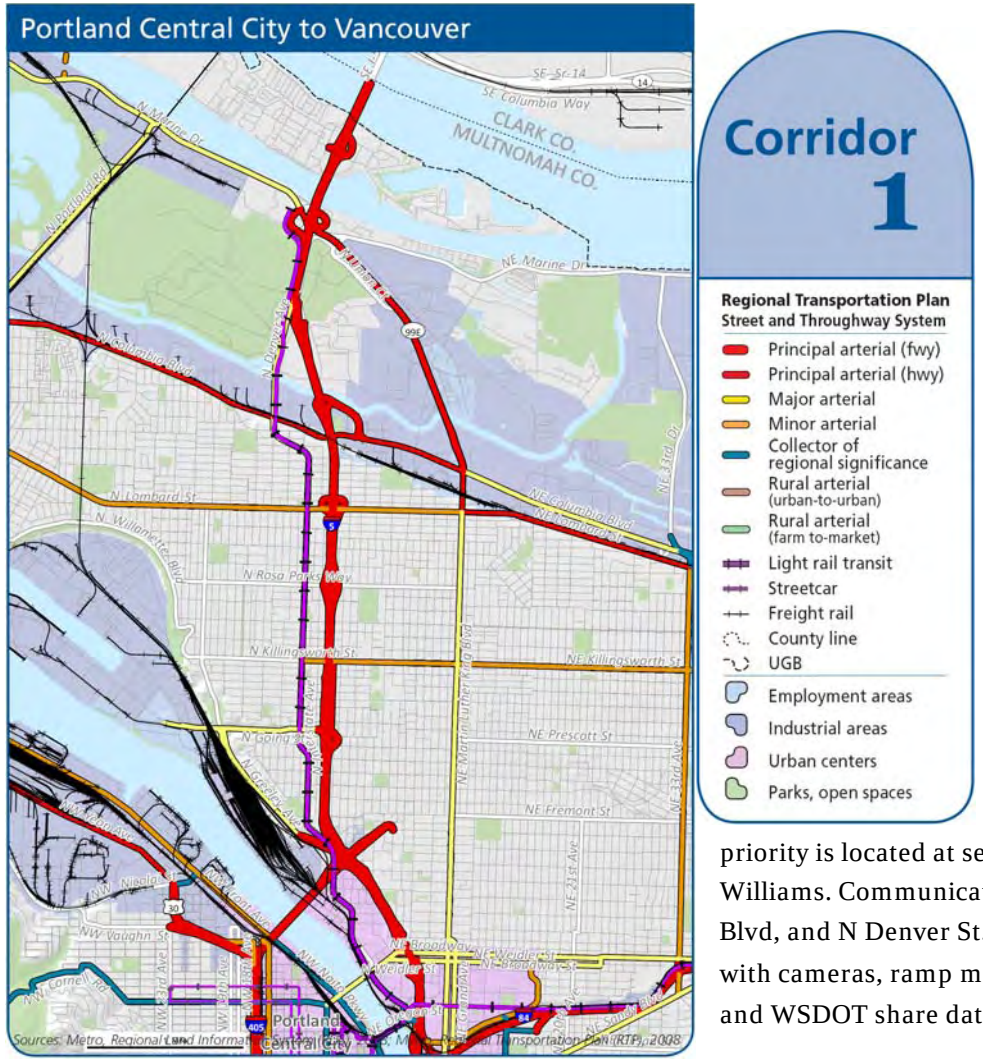



**Figure 11: Map of planned TDM projects for implementation by the year 2020 in the Portland region**

## Mobility Corridor 1: Portland Central City to Vancouver




### *Corridor Summary*

The Portland Central City to Vancouver mobility corridor encompasses I-5**,** MAX light rail, and several parallel facilities that support auto, truck, transit and bicycle travel.. I-5 is a principal arterial freeway that accommodates both interstate and interregional travel. The key parallel arterials include **N Greeley Ave, N Denver Ave, N Interstate Ave, NE Martin Luther King Jr. Blvd, NE Vancouver Ave/NE Williams Ave**. This corridor combines residential, commercial, parks, and industrial areas. In the commercial and residential areas, the street network is well-connected; however, industrial areas are served by a discontinuous street network.

### *Where Are We Now?*

Currently three regional facilities in this corridor have coordinated signal timings updated within the last five years: N Interstate, NE Vancouver and NE Williams. Transit signal priority is located at select traffic signals along NE MLK, NE Vancouver, and NE Williams. Communications infrastructure exists along N Interstate Ave, NE MLK Blvd, and N Denver St. The segment of I-5 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment. Also, ODOT and WSDOT share data, cameras and coordinate on freeway operation.

There are programs in place on both the Oregon and Washington sides of the Columbia River to improve mobility in the corridor. On the Washington side, C-TRAN helps subsidize commuter vanpools going through the area, and Clark County coordinates TDM marketing and services to employees through the Southbound Solutions program. In Oregon, the Swan Island TMA and Lloyd TMA work with employers to reduce drive-alone rates among employees. Additionally, the Lloyd TMA offers the Lloyd Links individualized marketing program to district employees who live close to work, while the Swan Island TMA has developed a Location-Efficient Living program to help Swan Island employees and N/NE Portland residents live closer to where they work and work closer to where they live. Finally, the City of Portland sponsors Sunday Parkways events in North Portland to encourage biking and walking.

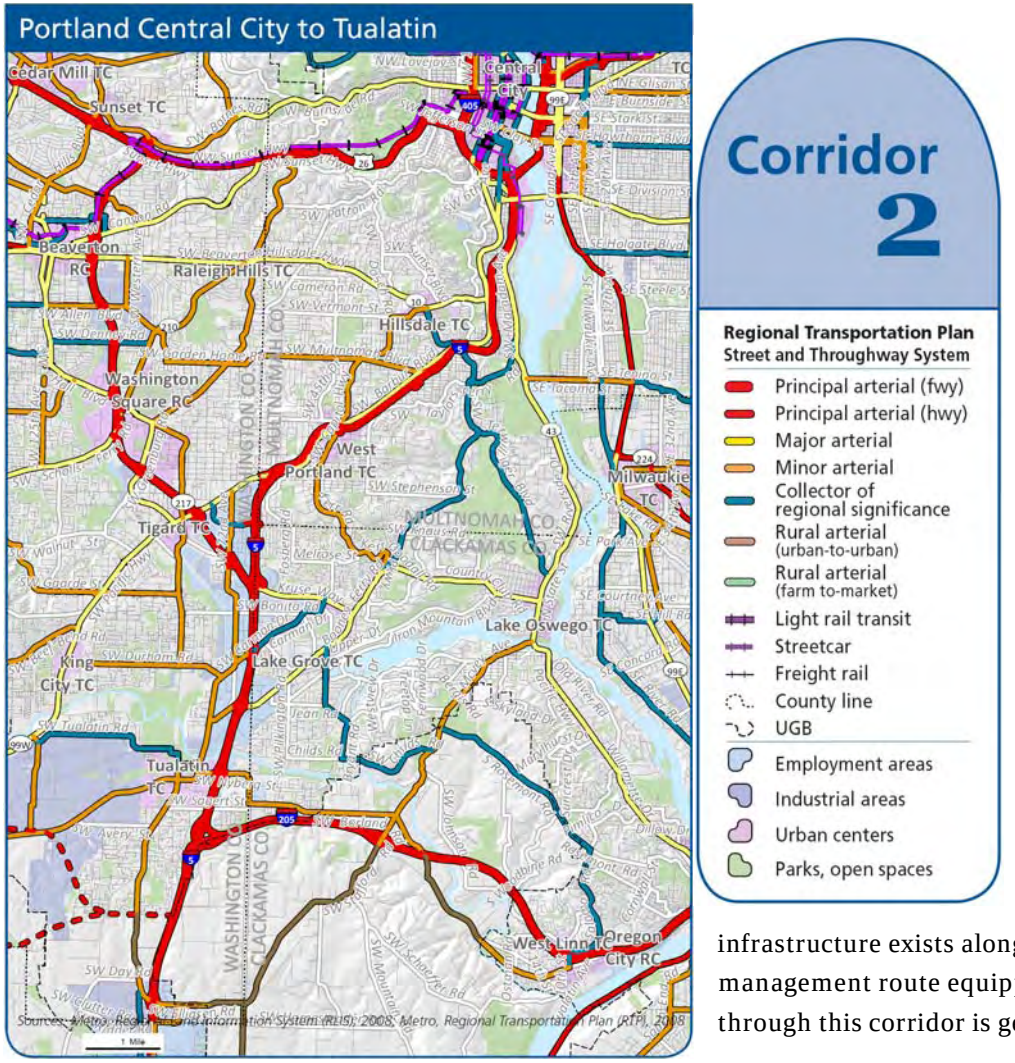
| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | NE Vancouver Ave | Reliability & Traveler Information | 11+ yrs | $1,000,000 | $21,000 |
| | | | NE Williams Ave | | 11+ yrs | $950,000 | $19,000 |
| | | | N Greely/Denver Ave | | 11+ yrs | $1,900,000 | $40,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | ACM with Transit Priority Treatment | Includes the ACM project with transit signal priority added to traffic signals along a facility. | NE MLK (Line 6) | Reliability, Traveler Information, & Quality of Life | 1-5 yrs | $3,100,000 | $60,000 |
| | Transit Priority Treatment Only | Install/Expand transit signal priority capabilities at traffic signals. | NE 15th (Line 8) | Quality of Life & Reliability | 6-10 yrs | $280,000 | $6,000 |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | I-5 | Reliability, Traveler Information, & Safety | 1-5 yrs | $400,000 | $8,000 |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Residential Individualized Marketing | (same as above) | City of Portland N/NE SmartTrips (Chautauqua to 82nd, N of I-84) | Quality of life | 1-5 years | $0 | $1,000,000 |
| | Residential Individualized Marketing | (same as above) | TBD (location based on relative impact on I-5 bridge | Quality of life | 6-10 years | $0 | $600,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Employer Individualized Marketing | (same as above) | employers in Oregon with high number of employees living in Clark County, WA | Quality of life | 6-10 years | $0 | $200,000 |
| | Construction mitigation campaign | Public awareness campaign using Drive Less/Save More brand, leveraging existing campaign resources, focused on CRC construction, operation. | I-5 bridge | Quality of life | 1-5 years | $0 | $250,000 |
| | Rideshare incentives | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters. | I-5 bridge | Quality of life | 6-10 years | $0 | $100,000 |
| | Rideshare incentives | Vanpool program (operated by C-TRAN) | I-5 bridge | Quality of life | 1-5 years | $3,150,000 | $930,000 |
| | Rideshare incentives | Vanpool program (operated by C-TRAN) | I-5 bridge | Quality of life | 6-10 years | $0 | $930,000 |
| | Employer Services | Implement and/or support outreach and technical assistance in a collaborative manner with RTO partners to help employers increase non drive-alone travel modes. | employers with high number of employees living in Vancouver, WA | Quality of life | through 10 years | $0 | $110,000 |
| | Transportation Management Associations | Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. | Swan Island TMA | Quality of life | through 10 years | $0 | $75,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Transportation Management Associations | Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. | Lloyd TMA | Quality of life | through 10 years | $0 | (recorded under corridor 4) |
| | Location-efficient living | Support programs and strategies that promote and advance location-efficient living strategies. | north Portland/Swan Island | Quality of life | currently funded RTO grant | $0 | $25,000 |
| | Entrepreneurial Capacity Purchases | Provide funding to regional or town centers to reduce drive-alone auto trips. Incentive based - centers earn additional funding for exceeding performance goals. (WSDOT program - GTEC) | Vancouver city center | Quality of life | 1-5 years | $0 | $920,000 |
| | Bike Sharing | Provide funding to implement bikes for loan or rent. | Transit oriented developments, large employers, colleges, hotels and significant transit stops. | Quality of life | 6-10 years | $100,000 | $50,000 |

## Mobility Corridor 2: Portland Central City to Tualatin







### *Corridor Summary*

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

### *Where Are We Now?*

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

communication equipment.

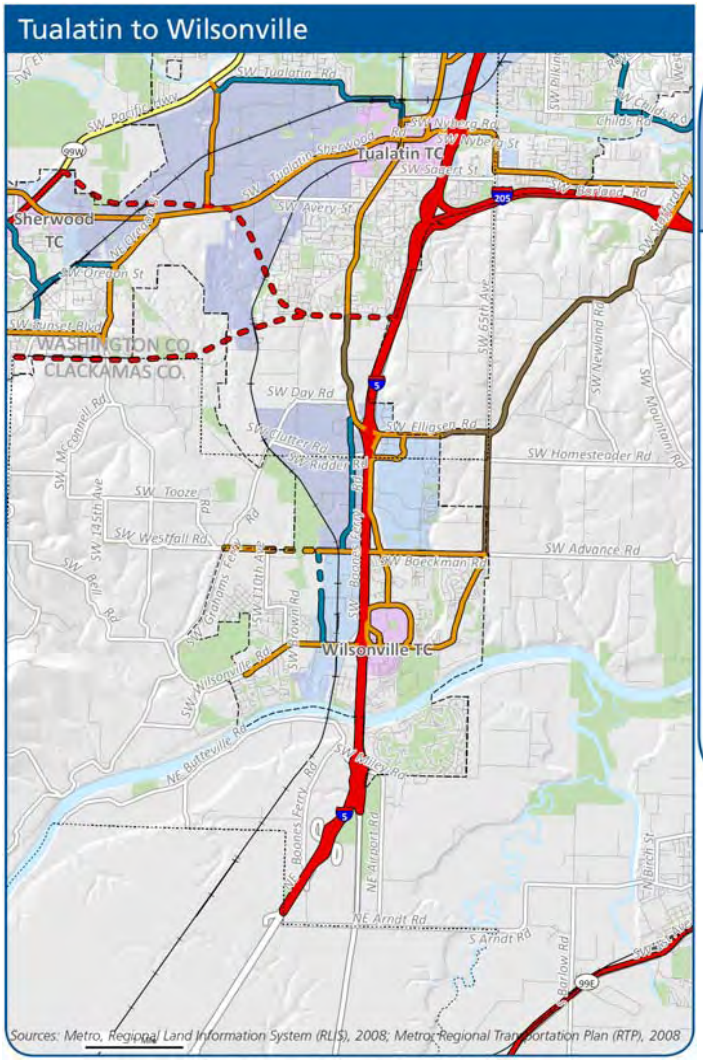
The Westside Transportation Alliance (WTA) works with employers in Tigard and Tualatin (in addition to other Washington County areas) and the Lloyd TMA works with employers in the Lloyd District. Both work to reduce employee drive-alone trips. Additionally, a study has been funded to assess the potential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

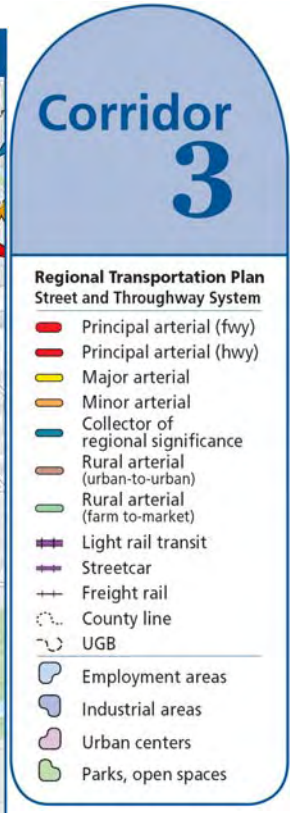
| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding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

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

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

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




### *Corridor Summary*

The Tualatin to Wilsonville corridor supports mostly north-south movement with I-5 as the major through facility. Other transportation elements in this corridor include Westside Express Service (WES) commuter rail, several parallel facilities that support not only auto and truck travel, but also bus service and bicycle facilities. I-5 is a principal arterial freeway that supports interstate and interregional travel. It also provides access to the Sherwood, Tualatin, and Wilsonville town centers, employment areas and industrial areas. The key parallel arterials include **SW Boones Ferry Rd, SW Grahams Ferry Rd, SW Stafford Rd,** and **SW 65th Ave**. East-west mobility in this corridor is limited with few overcrossings of I-5. The land use is mainly rural, however, in the urbanized areas there is significant employment and industry. The roadway network is a mix of farm-to-market roads and discontinuous residential streets.

### *Where Are We Now?*

Currently one regional facility in this corridor, SW Stafford Rd, has coordinated signal timing updated within the last five years. There is no transit signal priority installed and no communications infrastructure exists along the regional arterials.

The segment of I-5 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

A limited amount of TDM services are available. The City of Wilsonville runs the Wilsonville SMART Options program to encourage citizens to take transit, walk more, and they are hiring a bike/pedestrian coordinator to improve and expand their walking and biking programs.

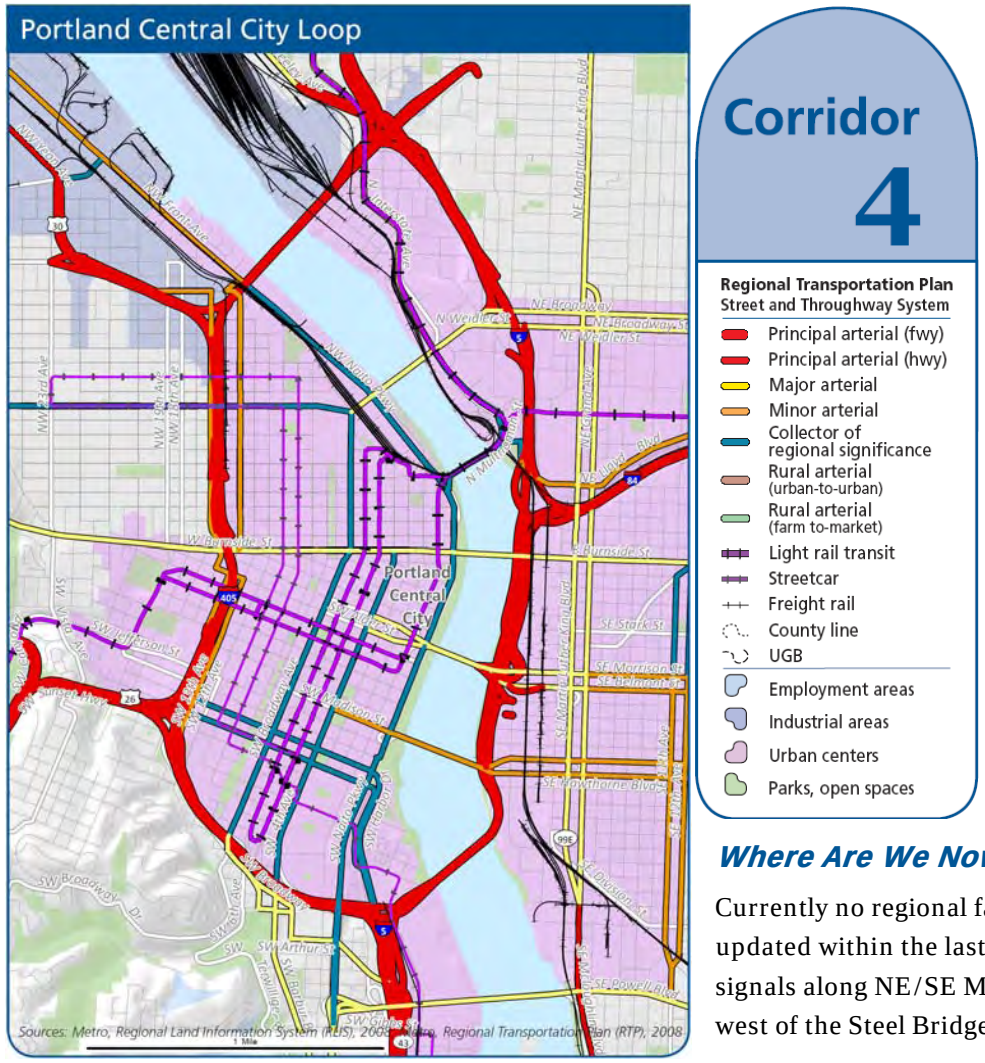
| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | SW Boones Ferry Rd | Reliability & Traveler Information | 6-10 yrs | $2,400,000 | $50,000 |
| | | | SW 65th Ave | | 11+ yrs | $1,000,000 | $20,000 |
| | | | Wilsonville Rd (west of I-5) | | 11+ yrs | $700,000 | $14,000 |
| | | | SW Stafford Rd | | 11+ yrs | $1,300,000 | $30,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | I-5 | Reliability, Traveler Information, & Safety | 1-5 yrs | $500,000 | $10,000 |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Individualized Marketing | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | Wilsonville (RTO Subcommittee funded this project) | Quality of life | 1-5 years (starts 2010) | $0 | $278,100 |
| | Individualized Marketing | (same as above) | Residents served by frequent transit service, other travel options and near commercial zoning. | Quality of life | 6-10 years | $0 | $500,000 |
| | Rideshare incentives | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters. | I-5 | Quality of life | 1-5 years | $0 | $25,000 |
| | Rideshare incentives | (same as above) | I-5 | Quality of life | 6-10 years | $0 | $25,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | I-5 | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | I-5 | Quality of life | 6-10 years | $0 | $4,800 |
| | Construction mitigation campaign | Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects. | Areas impacted by I-5 to I-205 additional merge lane construction. | Quality of life | 1-5 years | $0 | $100,000 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Wilsonville SMART Options | The City of Wilsonville SMART Options Outreach Program works with Wilsonville area employers and residents to promote transit and other transportation options. The primary goals of the program are to increase awareness of transportation options available in Wilsonville and the region, reduce drive alone trips and increase communication between the City of Wilsonville, local businesses of all sizes, community organizations and regional partners. | Wilsonville | | through 10 years | $0 | $62,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Car-share operations | Support 3 or more carsharing vehicles in developing centers. | Wilsonville Town Center | Quality of life | 1-5 years | $0 | $200,000 |

## Mobility Corridor 4: Portland City Central Loop




### *Corridor Summary*

The Portland City Central Loop encompasses **I-5** and **I-405**, as well as **key throughway interchanges with I-84, US 26,** and **US 30**. The main parallel facilities in this corridor include **NW Front/SW Naito Parkway** and **NE Grand Ave/Martin Luther King Jr. Blvd**. There are seven freeway and arterial bridges crossing the Willamette River. MAX light rail, bus service and bicycle facilities support movement in and through the corridor. Additionally, streetcar connects between NW Portland and the South Waterfront District, with expansion to the eastside planned for 2011. On the west side of the Willamette, the primary land uses are high density office development, mid-rise residential and mixed use commercial. On the east side, warehouse and commercial uses are abundant. The street network in this corridor is compact, with abundant multi-modal access.

### *Where Are We Now?*

Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years. Transit signal priority is located at select traffic signals along NE/SE MLK Blvd, NE/SE Grand Ave, SE 11th Ave, and NW Glisan St just west of the Steel Bridge. Communications infrastructure exists along the main parallel

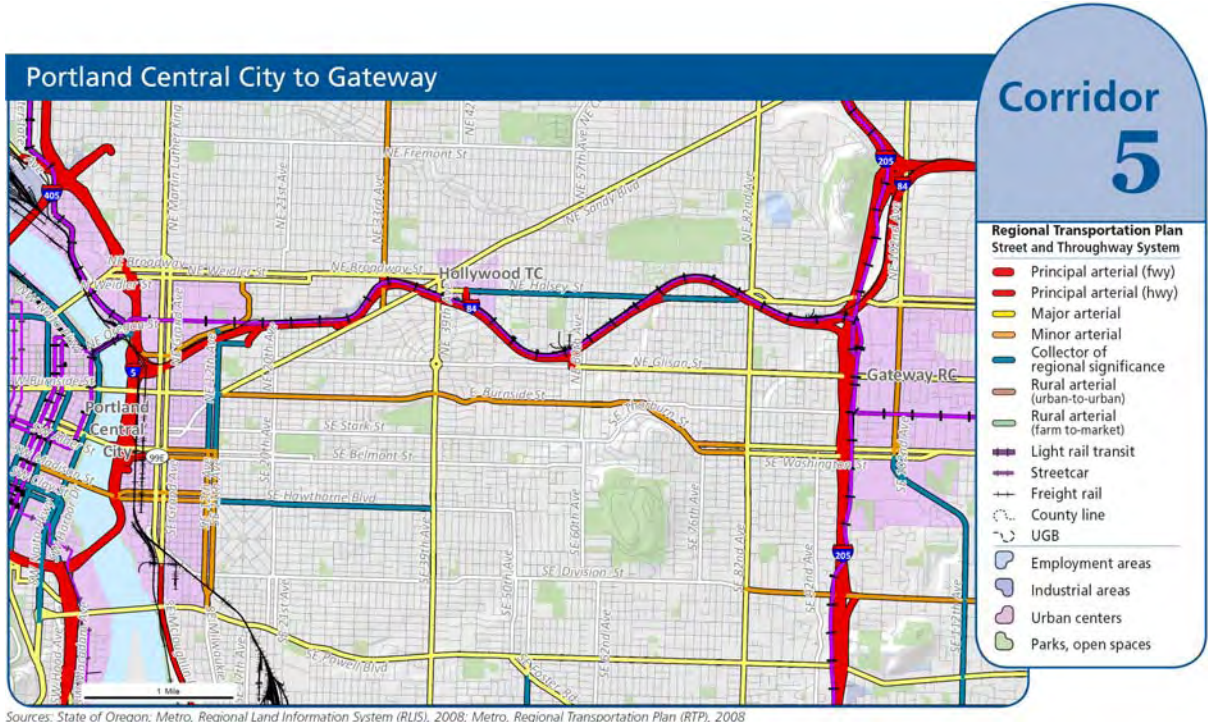
facilities as well as several additional roadways in this corridor, with most traffic signals connected to the central signal system. The segment of I-5 and I-405 through this corridor are generally equipped with cameras, detectors, ramp meters, and communication equipment. The Lloyd TMA works with employers and employees to reduce drive-alone trips. Additionally, a study has been funded to assess the potential for a new TMA in the South Waterfront. The City of Portland's Smart Trips Downtown program and the Lloyd TMA's Lloyd Links program offer individualized marketing to employees. Finally, Portland State University is currently building a new long-term bike storage facility.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | SW/NW Naito Pkwy | Reliability & Traveler Information | 6-10 yrs | $1,900,000 | $40,000 |
| | | | SE/NE MLK Blvd | | 6-10 yrs | $2,360,000 | $50,000 |
| | | | NE/SE Grand (south of I-84) | | 6-10 yrs | $1,400,000 | $30,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | ACM with Transit Priority Treatment | Includes the ACM project with transit signal priority added to traffic signals along a facility. | NE Grand Ave (north of I-84) | Reliability, Traveler Information, & Quality of Life | 1-5 yrs | $1,200,000 | $25,000 |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | I-5 | Reliability, Traveler Information, & Safety | 1-5 yrs | $240,000 | $5,000 |
| | | | I-405 | | 6-10 yrs | $240,000 | $5,000 |
| **Traveler Information** | | | | | | | |
| | Railroad Crossing Information System | Implement communications between the at-grade railroad crossing and the traffic operations center and emergency management centers to inform emergency responders and general travelers when service will be interrupted. | SE Division St/8th Ave | Reliabilty, Traveler Information, & Safety | 6-10 yrs | $75,000 | $2,000 |
| **Transportation Demand Management** | | | | | | | |
| | Individualized Marketing | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | Neighborhoods along Portland Streetcar Loop (RTO Subcommittee funded this project) | Quality of life | 1-5 years | $0 | $726,090 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Transportation Management Associations (TMA) | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | Lloyd District | Quality of life | through 10 years | $0 | $51,000 |
| | Transportation Management Associations (TMA) | TMA start-up | South Waterfront or another Central City area. | Quality of life | 1-5 years | $0 | $300,000 |
| | Parking management | Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions. | To be determined | Quality of life | 1-5 years | $0 | $100,000 |
| | Parking management | (same as above) | To be determined | Quality of life | 6-10 years | $0 | $100,000 |
| | Bike Sharing | Provide funding to implement bikes for loan or rent. | Transit oriented developments, large employers, colleges, hotels and significant transit stops. | Quality of life | 6-10 years | $100,000 | $50,000 |
| | End-of-trip bike facilities | Bike parking (short term and/or long term), bike stations, related bike services | Central City | Quality of life | 6-10 years | $100,000 | $100,000 |

## Mobility Corridor 5: Portland Central City to Gateway




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

### *Corridor Summary*

The Portland Central City to Gateway mobility corridor encompasses **I-84,** MAX light rail, parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. I-84 supports interstate and interregional travel and connects with both I-205 and I-5. The key parallel arterials include **Broadway St, Halsey St, Weidler St, Sandy Blvd, Glisan St, Burnside St,** and **Powell Blvd**. The roadway network in this corridor is dense and serves a diverse land use pattern.

### *Where Are We Now?*

Currently one regional facility in this corridor, NE Glisan St, has coordinated signal timings updated within the last five years. SE Powell Blvd is in the process of converting to adaptive signal timing. Transit signal priority is located at select traffic signals along SE Powell Blvd, SE Division St, SE Hawthorne Blvd, NE Sandy Blvd, NE Weidler St, and NE Broadway St. Communication infrastructure exists along segments of NE Sandy Blvd, SE Powell Blvd, NE Glisan St, NE Halsey St, and NE Broadway St, as well as some non-regional roadways in this corridor. The segment of I-84 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

The Lloyd TMA works with employers and employees to reduce drive-alone trips, and they offer the Lloyd Links individualized marketing program to district employees who live close to work. Also, the City of Portland runs a Sunday Parkways event in Southeast and Northeast Portland to encourage use of alternative modes for all trips.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | NE Halsey St | Reliability & Traveler Information | 11+ yrs | $2,000,000 | $40,000 |
| | | | NE Glisan St | | 6-10 yrs | $180,000 | $35,000 |
| | | | SE Stark St | | 11+ yrs | $2,700,000 | $55,000 |
| | | | NE Burnside St | | 6-10 yrs | $3,100,000 | $60,000 |
| | ACM with Adaptive Signal Timing | Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions. | NE Sandy Blvd | Reliability & Traveler Information | 1-5 yrs | $5,000,000 | $100,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Transit Priority Treatment Only | Install/Expand transit signal priority capabilities at traffic signals. | SE Belmont St | Quality of Life & Reliability | 11+ yrs | $1,700,000 | $35,000 |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | I-84 | Reliability, Traveler Information, & Safety | 1-5 yrs | $450,000 | $9,000 |
| | Active Traffic Management Pilot Project | Install active traffic management devices such as variable speed limit signs, lane use devices, and other ATM equipment, as a pilot project for the Portland region. | I-84 | Reliability, Traveler Information, & Safety | 6-10 yrs | $5,000,000 | $100,000 |
| **Traveler Information** | | | | | | | |
| | Traveler Information Only | Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | SE Powell Blvd (Ross Island Bridge to I-205) | Traveler Information | 1-5 yrs | $400,000 | $8,000 |
| | | | NE Weidler St | | 6-10 yrs | $1,500,000 | $30,000 |
| | | | NE Broadway St | | 6-10 yrs | $2,100,000 | $40,000 |
| **Transportation Demand Management** | | | | | | | |
| | Individualized Marketing | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | NE Portland along North side of I-84 | Quality of life | 1-5 years | $0 | $333,333 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Parking management | Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions. | To be determined - likely commercial areas along corridors parallel to I-84 | Quality of life | 1-5 years | $0 | $100,000 |
| | Parking management | (same as above) | (same as above) | Quality of life | 6-10 years | $0 | $100,000 |
| | Parking management | Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions. | Gateway Regional Center | Quality of life | 1-5 years | $0 | $100,000 |
| | Parking management | (same as above) | Gateway Regional Center | Quality of life | 6-10 years | $0 | $100,000 |
| | Bike Sharing | Provide funding to implement bikes for loan or rent. | Transit oriented developments, large employers, colleges, hotels and significant transit stops. | Quality of life | 6-10 years | $100,000 | $50,000 |

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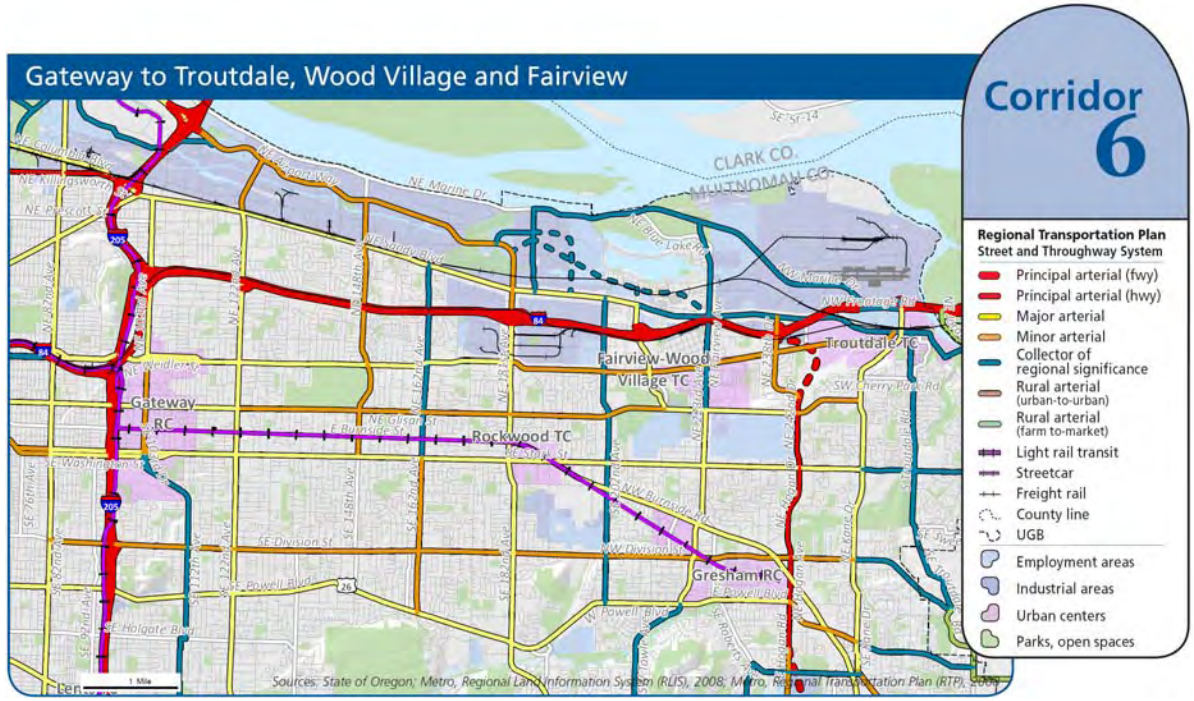


### *Corridor Summary*

The Gateway to Troutdale mobility corridor follows sections of **I-84,** and MAX light rail. I-84 provides both interstate travel and interegional access to the Portland International Airport, the Columbia Gorge, and points beyond. The MAX blue line connects Gateway regional center and Portland central city to Gresham regional center. The key parallel arterials include **Marine Dr, Sandy Blvd, Halsey St, Glisan St, Division St,** and **Powell Blvd**. However, the local street network is generally discontinuous, with many cul-de-sac and dead end streets.

### *Where Are We Now?*

Currently three regional facilities in this corridor have coordinated signal timings updated within the last five years: SE Division St, SE Powell Blvd and NE Sandy Blvd. Transit signal priority is located at select traffic signals along SE Division St and SE Powell Blvd. Communications infrastructure exists along segments of SE Division St, SE Powell Blvd, NE Airport Way, and E Burnside St. The segment of I-84 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

The Gresham Regional Center TMA works with employers, employees, and residents to reduce drive-alone trips. Additionally, the TMA runs a Bike Program which conducts safety outreach, gives away helmets and installs bike racks. The City of Gresham has begun to implement a city-wide bicycle way-finding program.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | NE Halsey St | Reliability & Traveler Information | 11+ yrs | $4,900,000 | $100,000 |
| | | | SE Stark St | | 1-5 yrs | $3,600,000 | $70,000 |
| | | | NE Glisan St | | 6-10 yrs | $4,500,000 | $90,000 |
| | | | SE Division St (160th to 190th) | | 1-5 yrs | $700,000 | $14,000 |
| | | | Airport Way I-205 to 158th | | 6-10 yrs | $1,500,000 | $30,000 |
| | ACM with Adaptive Signal Timing | Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions. | SE Division St (I-205 to 160th) | Reliability & Traveler Information | 6-10 yrs | $1,000,000 | $20,000 |
| | | | SE Powell Blvd (Birdsdale to US 26) | | 6-10 yrs | $1,900,000 | $40,000 |
| | ACM with Transit Priority Treatment | Includes the ACM project with transit signal priority added to traffic signals along a facility. | NE Sandy Blvd (east of 122nd) | Reliability, Traveler Information, | 6-10 yrs | $3,200,000 | $60,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | | | SE Powell Blvd (I-205 to 160th) | & Quality of Life | 1-5 yrs | $1,500,000 | $30,000 |
| | ACM with Adaptive Signal Timing and Transit Priority Treatment | Includes the ACM with both adaptive signal timing and transit priority treatment. | Division (Birdsdale to US 26) | Reliability, Traveler Information, & Quality of Life | 6-10 yrs | $1,400,000 | $30,000 |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | I-84 | Reliability, Traveler Information, & Safety | 6-10 yrs | $700,000 | $14,000 |
| **Traveler Information** | | | | | | | |
| | Traveler Information Only | Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | SE Powell Blvd (190th to Birdsdale) | Traveler Information | 6-10 yrs | $200,000 | $40,000 |
| | | | SE Division (182nd to Birdsdale) | | 6-10 yrs | $250,000 | $5,000 |
| | | | Airport Way (158th to Sandy) | | 11+ yrs | $1,100,000 | $20,000 |
| **Transportation Demand Management** | | | | | | | |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Individualized Marketing | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | Gresham Civic Station neighborhood (RTO Subcommittee funded this project) | Quality of life | 1-5 years | $0 | $130,000 |
| | Individualized Marketing | (same as above) | East Portland | | 1-5 years | $0 | $500,000 |
| | Individualized Marketing | (same as above) | Fairview / Gresham | | 6-10 years | $0 | $500,000 |
| | Rideshare incentives | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters. | I-84 | Quality of life | 1-5 years | $0 | $50,000 |
| | Rideshare incentives | (same as above) | I-84 | Quality of life | 6-10 years | $0 | $50,000 |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | I-84 | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | I-84 | Quality of life | 6-10 years | $0 | $4,800 |
| | Transportation Management Associations | Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. | Gresham Regional Center | | through 10 years | | $75,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Parking management | Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions. | Gresham Regional Center | Quality of life | 1-5 years | $0 | $100,000 |
| | Parking management | (same as above) | Gresham Regional Center | Quality of life | 6-10 years | $0 | $100,000 |
| | Location-efficient living | Support programs and strategies that promote and advance location-efficient living strategies. | Match industrial/employment area north if I-84 with housing opportunities to the south. | Quality of life | through 10 years | $0 | $50,000 |
| | Bike Sharing | Provide funding to implement bikes for loan or rent. | Transit oriented developments, large employers, colleges, hotels and significant transit stops. | Quality of life | 6-10 years | $100,000 | $50,000 |
| | Park&Ride Management | Implement parking management elements such as time limits, fees or changing spaces to carpool-only. | Gateway Transit Center | Quality of life | 1-5 years | $100,000 | $10,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Car-share operations | Support 3 or more carsharing vehicles in developing centers. | Gresham Regional Center | Quality of life | 1-5 years | $0 | $200,000 |



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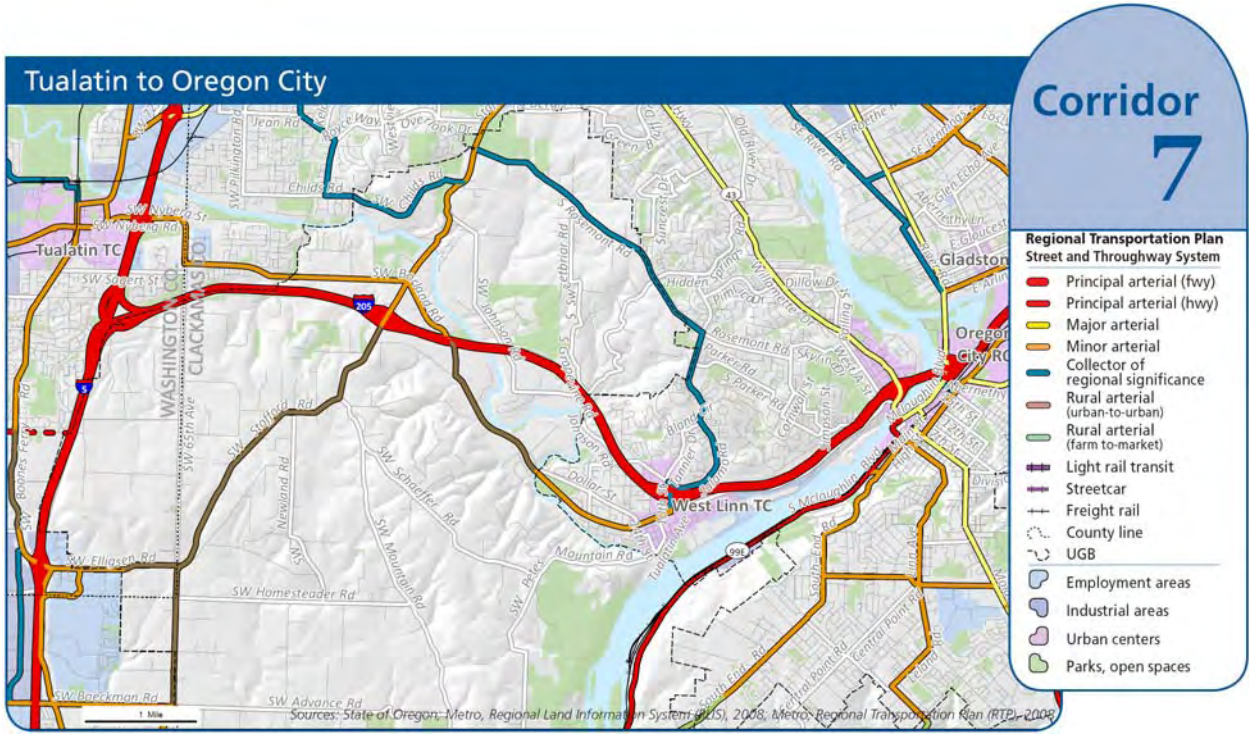
## Mobility Corridor 7: Tualatin to Oregon City




### *Corridor Summary*

The Tualatin to Oregon City corridor encompasses **I-205,** as well as parallel arterials, some bus service and bicycle routes. I-205 supports interstate, interregional, and intraregional travel and provides access to Oregon City, West Linn and Tualatin town centers. The key parallel arterials are **Willamette Falls Dr/Borland Rd**. North-south mobility is limited due to few overcrossings of I-205 and the Tualatin River. This corridor is mostly undeveloped with a mix of farm-to-market and discontinuous residential streets.

### *Where Are We Now?*

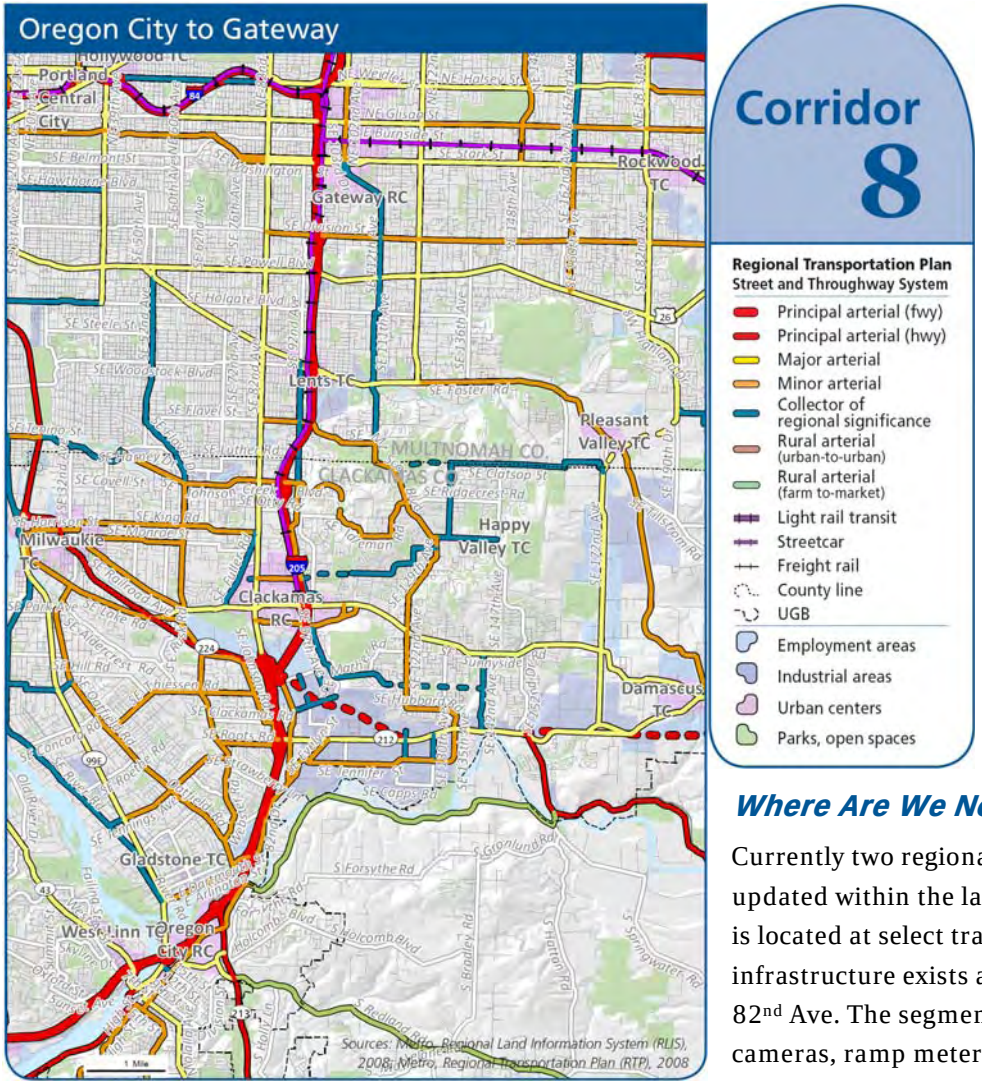
Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years, and no facilities are equipped with transit signal priority or communications infrastructure. The segment of I-205 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

The Westside Transportation Alliance (WTA) works with employers and employees in the Tualatin area (in addition to other Washington County areas) to reduce drive-alone trips, and, runs a program to install free bike racks for area businesses. Also, Clackamas County updated and is distributing their bicycle map.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | Borland Rd | Reliability & Traveler Information | 11+ yrs | $2,000,000 | $40,000 |
| | | | Willamette Falls Dr | | 11+ yrs | $1,600,000 | $30,000 |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | I-205 | Reliability, Traveler Information, & Safety | 6-10 yrs | $650,000 | $13,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Traveler Information** | | | | | | | |
| | | no projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Rideshare incentives | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters. | I-5 | Quality of life | 1-5 years | $0 | $25,000 |
| | Rideshare incentives | (same as above) | I-5 | Quality of life | 6-10 years | $0 | $25,000 |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | I-5 | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | I-5 | Quality of life | 6-10 years | $0 | $4,800 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Transportation Management Associations (TMA) | Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance serves employers. | Tigard, Tualatin and other parts of Washington County | Quality of life | through 10 years | $0 | (annual amount recorded in corridor 19) |

## Mobility Corridor 8: Oregon City to Gateway







### *Corridor Summary*

The Oregon City to Gateway corridor provides access between Oregon City, Clackamas, and Gateway regional centers. The main freeway through this corridor is **I-205** which supports interstate and intraregional travel. In 2009, a new MAX light rail line opens to connect the Clackamas and Gateway regional centers with the Portland central city. The main parallel arterials through this corridor are **82nd Ave, 92nd Ave, 122nd/132nd Ave** and **Bob Schumacher Rd**. The area is largely urbanized, with a diverse mix of residential, commercial and industrial land uses. Many north-south arterial and collector streets move people and goods through and to local destinations; although topography and land use patterns lead to circuitous travel in some areas. The local street network is a blend of well-connected and discontinuous streets.

### *Where Are We Now?*

Currently two regional facilities in this corridor have coordinated signal timings updated within the last five years: SE 82nd Ave, and Foster Rd. Transit signal priority is located at select traffic signals along SE 82nd Ave, and Foster Rd. Communications infrastructure exists along segments of SE 92nd Ave/Bob Schumacher Rd, and SE 82nd Ave. The segment of I-205 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

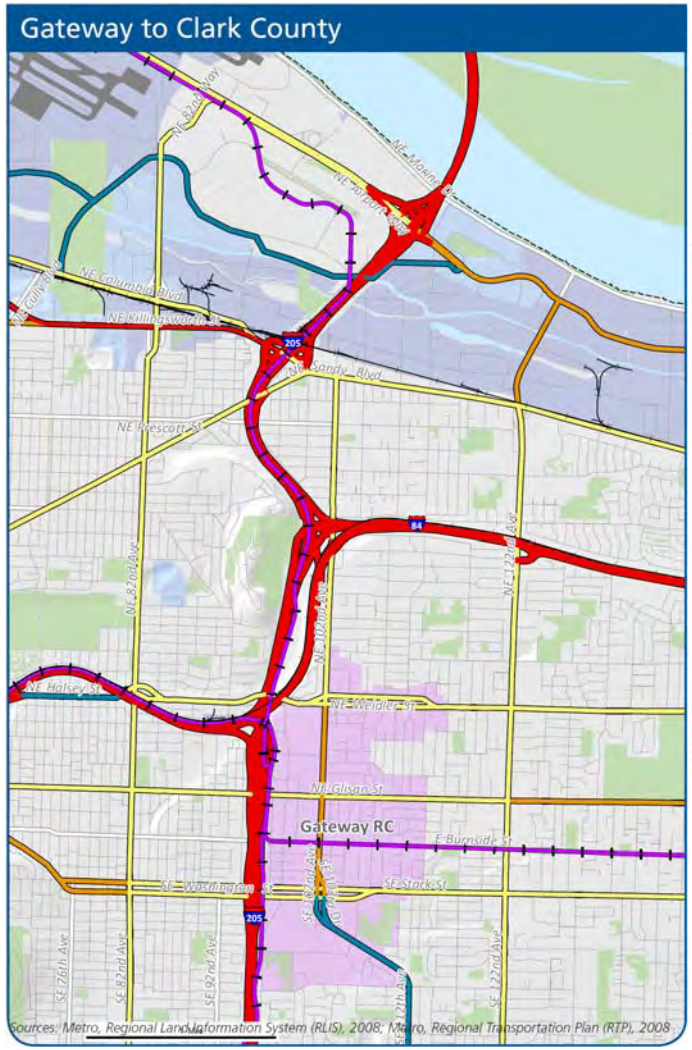
The Clackamas Regional Center TMA works with employers and employees to reduce drive-alone trips. Additionally, Clackamas County updated and is distributing their bicycle map. Finally, the City of Portland is beginning a SmartTrips individualized marketing program for the residents and businesses surrounding the MAX Green Line in east Portland.

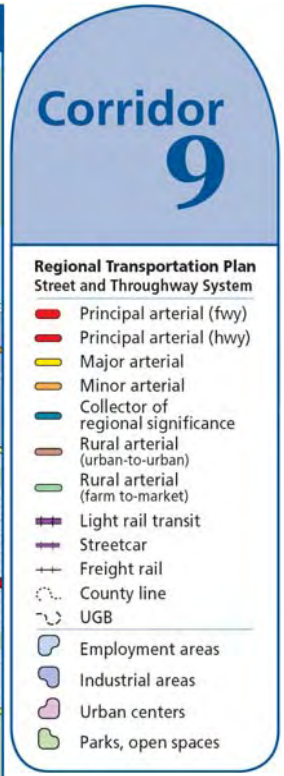
| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | NE 148th Ave (I-84 to Stark) | Reliability & Traveler Information | 11+ yrs | $950,000 | $19,000 |
| | | | SE 92nd Ave/Stevens Way/Bob Schumacher | | 1-5 yrs | $1,300,000 | $30,000 |
| | | | SE 172nd (Foster to Hwy 212) | | 11+ yrs | $2,000,000 | $40,000 |
| | | | SE Foster Rd/SE 162nd | | 6-10 yrs | $4,500,000 | $90,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | ACM with Adaptive Signal Timing | Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions. | SE 82nd Ave | Reliability & Traveler Information | 1-5 yrs | $6,500,000 | $120,000 |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | I-205 | Reliability, Traveler Information, & Safety | 6-10 yrs | $1,000,000 | $20,000 |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Individualized Marketing | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | Neighborhoods adjacent MAX Greenline alignment from Gateway south to Portland city limits. (RTO Subcommittee funded this project) | Quality of life | 1-5 years | $0 | $1,000,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Individualized Marketing | (same as above) | Residents served by frequent transit service, other travel options and near commercial zoning. | Quality of life | 6-10 years | $0 | $500,000 |
| | Rideshare incentives | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters. | I-205 | Quality of life | 1-5 years | $0 | $25,000 |
| | Rideshare incentives | (same as above) | I-205 | Quality of life | 6-10 years | $0 | $25,000 |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | I-205 | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | I-205 | Quality of life | 6-10 years | $0 | $4,800 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Transportation Management Associations | Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. | Clackamas Regional Center | | through 10 years | | $75,000 |
| | Bike Sharing | Provide funding to implement bikes for loan or rent. | Transit oriented developments, large employers, colleges, hotels and significant transit stops. | Quality of life | 6-10 years | $100,000 | $50,000 |
| | Last-mile services | Provide shuttles or demand-responsive transit to connect transit stops with significant destinations one to two miles away, especially at hours not served by current transit service. | MAX Green Line and Oregon City | Quality of life | 6-10 years | $500,000 | $500,000 |
| | Car-share operations | Support 3 or more carsharing vehicles in developing centers. | Clackamas Regional Center and Oregon City Town Center | Quality of life | 1-5 years | $0 | $200,000 |




## *Corridor Summary*

The Gateway to Clark County Corridor focuses on north-south travel with access to the Gateway, Clackamas, and Oregon City regional centers. The freeway through this corridor is **I-205** and the key parallel arterials are **NE 82nd Ave and NE 122nd Ave**. MAX light rail connects Gateway regional center to Portland central city, the Portland International Airport and Cascade Station area. Bus service and bicycle routes also support movement through this corridor. The corridor is largely urbanized with a diverse mix of residential, commercial and industrial land uses. A well-connected grid of arterial and collector streets move people and goods through the corridor and to local destinations. The local street network is a blend of well-connected and discontinuous streets.

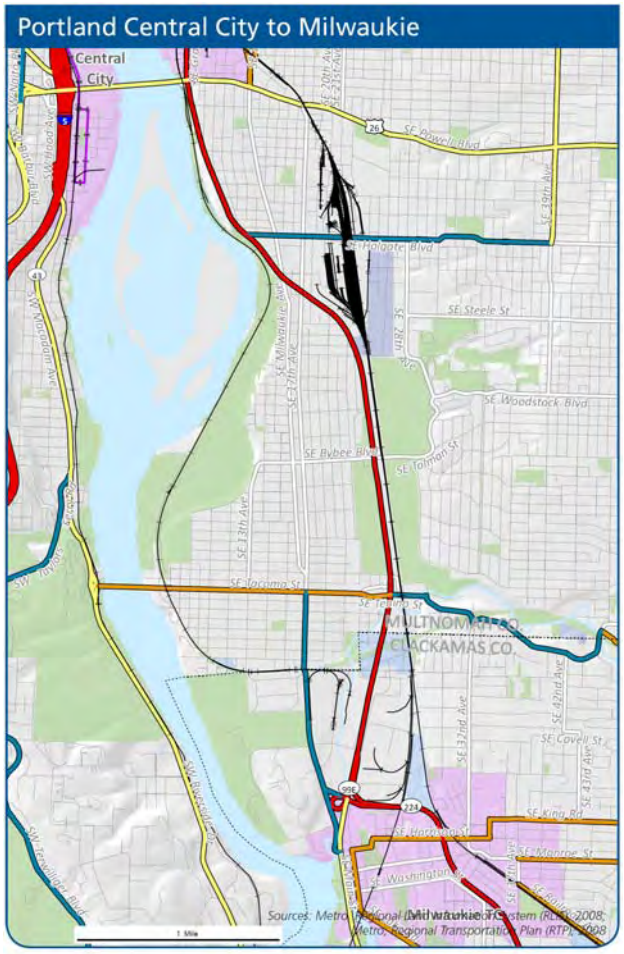
## *Where Are We Now?*

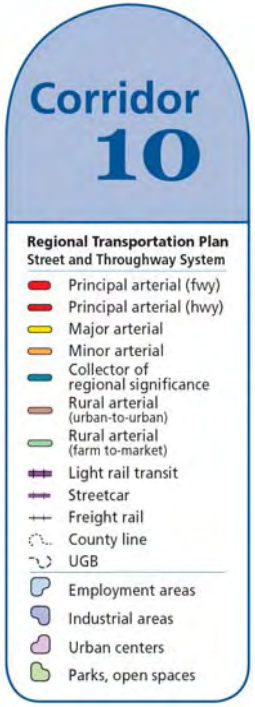
Currently NE 82nd Ave is the only regional facility in this corridor to update coordinated signal timings in the last five years. Transit signal priority is located at select traffic signals along NE 82nd Ave. Communications infrastructure exists along segments of NE 102nd and NE 82nd Ave. The segment of I-205 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment. Also, ODOT and WSDOT share data, cameras and coordinate on freeway operation. C-TRAN subsidizes commuter vanpools in the area, and Clark County coordinates TDM marketing and services to employees through the Southbound Solutions program.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | NE/SE 122nd Ave | Reliability & Traveler Information | 6-10 yrs | $2,600,000 | $50,000 |
| | | | SE 112th Ave | | 11+ yrs | $550,000 | $11,000 |
| | ACM with Adaptive Signal Timing | Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions. | NE 82nd Ave | Reliability & Traveler Information | 1-5 yrs | $3,300,000 | $70,000 |
| | ACM with Transit Priority Treatment | Includes the ACM project with transit signal priority added to traffic signals along a facility. | NE 102nd Ave | Reliability, Traveler Information, & Quality of Life | 11+ yrs | $1,800,000 | $35,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | I-205 | Reliability, Traveler Information, & Safety | 1-5 yrs | $320,000 | $6,000 |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Construction mitigation campaign | Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects. | I-205 interchange with Airport Way | Quality of life | 1-5 years | $0 | $100,000 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Bike Sharing | Provide funding to implement bikes for loan or rent. | Transit oriented developments, large employers, colleges, hotels and significant transit stops. | | 6-10 years | $100,000 | $50,000 |
| | End-of-trip bike facilities | Bike parking (short term and/or long term), bike stations, related bike services | PDX | | 6-10 years | $100,000 | $100,000 |

## Mobility Corridor 10: Portland Central City to Milwaukie




### *Corridor Summary*

The Portland Central City to Milwaukie mobility corridor encompasses **99E** (McLoughlin Blvd), parallel facilities, transit and bicycle routes that support movement in and through the corridor. 99E accommodates mostly intraregional travel between Beaverton, Portland, and Milwaukie/Clackamas. The key parallel arterial is **Milwaukie Ave/17th Ave.** East-west mobility in this corridor is limited by lack of crossings of 99E and the Union Pacific Railroad that parallels 99E . The corridor has a very diverse land use pattern with a well-connected local street network.

### *Where Are We Now?*

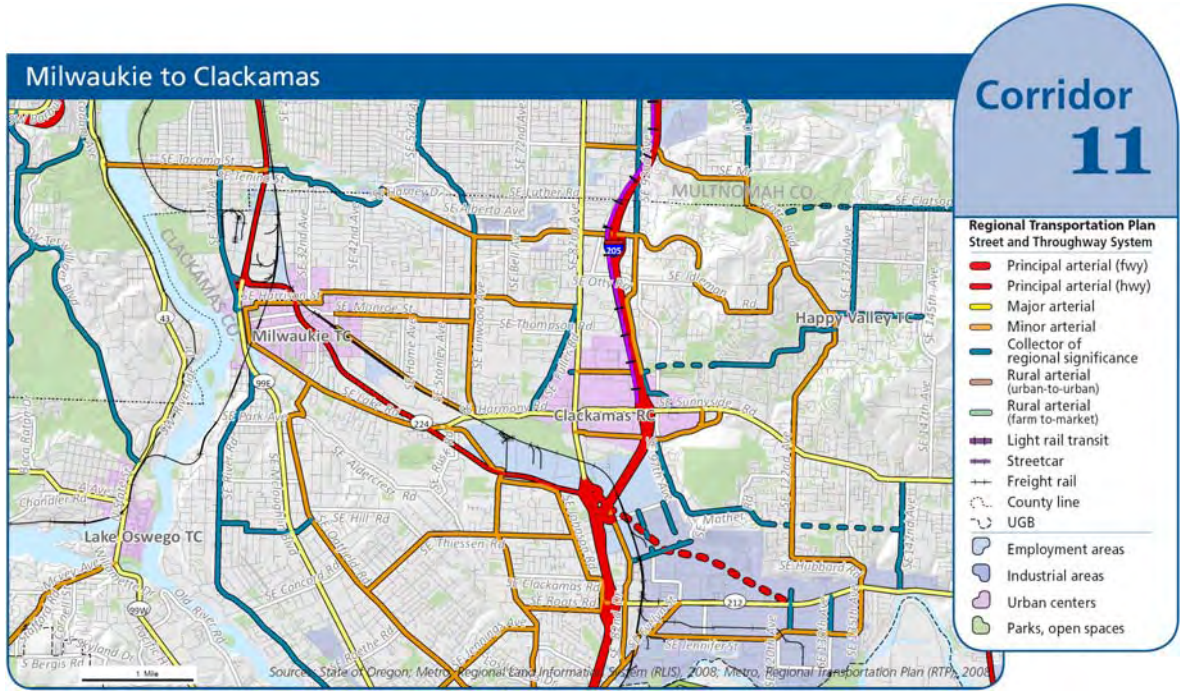
Currently two regional facilities in this corridor have coordinated signal timings updated within the last five years: a segment of SE McLoughlin Blvd, and SE 39th Ave. Transit signal priority is located at one traffic signal along SE McLoughlin Blvd, and at select traffic signals along SE 39th Ave. Communications infrastructure exists along SE McLoughlin Blvd, and a section of SE 17th Ave.

The City of Milwaukie recently completed an individualized marketing program for residents of the Ardenwald neighborhood.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | SE 17th (south of Tacoma) | Reliability & Traveler Information | 6-10 yrs | $480,000 | $10,000 |
| | | | NE/SE 39th Ave | | 6-10 yrs | $1,200,000 | $25,000 |
| | ACM with Transit Priority Treatment | Includes the ACM project with transit signal priority added to traffic signals along a facility. | SE McLoughlin Blvd | Reliability, Traveler Information, & Quality of Life | 1-5 yrs | $2,700,000 | $50,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Individualized Marketing | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | Neighborhoods near Portland/Milwaukie light rail. | Quality of life | 1-5 years | $0 | $500,000 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Parking management | Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions. | (write in center) | Quality of life | 6-10 years | $0 | $100,000 |
| | Bike Sharing | Provide funding to implement bikes for loan or rent. | Transit oriented developments, large employers, colleges, hotels and significant transit stops. | Quality of life | 6-10 years | $100,000 | $50,000 |
| | Car-share operations | Support 3 or more car-sharing vehicles in developing centers. | Milwaukie Town Center | Quality of life | 1-5 years | $0 | $200,000 |

## Mobility Corridor 11: Milwaukie to Clackamas




### *Corridor Summary*

The Milwaukie to Clackamas corridor encompasses **Hwy 224** and provides intraregional travel and access to the Clackamas regional center, Milwaukie town center and industrial/employment lands located along its length. The key parallel arterials include **Johnson Creek Blvd and Lake Rd**. North-south access is limited due to the lack of crossings of Hwy 224 and the Union Pacific rail mainline. Bus service and bicycle routes also support movement through this corridor. The local street network is generally discontinuous, with many cul-de-sac and dead-end streets, reflecting the largely suburban residential land use pattern in this corridor.

### *Where Are We Now?*

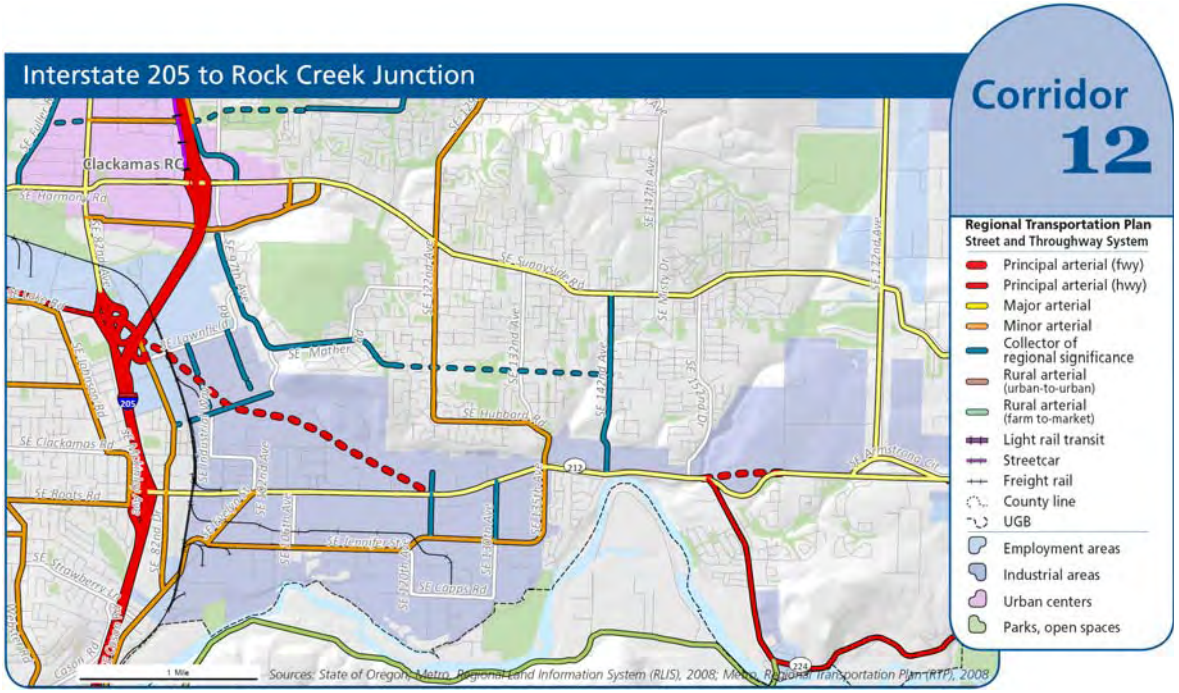
McLoughlin Blvd is the only regional facility in this corridor to have coordinated signal timings updated within the last five years. No facilities in have transit signal priority. Communications infrastructure exists along Hwy 224, and radio interconnect exists along McLoughlin Blvd.

The Clackamas Regional Center TMA works with employers and employees to reduce drive-alone trips. Additionally, the City of Milwaukie is beginning an individualized marketing program for residents of the Ardenwald neighborhood.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | Johnson Creek Blvd | Reliability & Traveler Information | 6-10 yrs | $1,400,000 | $30,000 |
| | | | Lake Rd | | 11+ yrs | $45,000 | $1,000 |
| | | | Hwy 224 | | 11+ yrs | $1,600,000 | $30,000 |
| | | | Harmony Rd | | 11+ yrs | $8,200,000 | $160,000 |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Individualized Marketing | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | Residents served by frequent transit service, other travel options and near commercial zoning. | Quality of life | 6-10 years | $0 | $500,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Rideshare incentives | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters. | Hwy 224, 99E, I-205 | Quality of life | 1-5 years | $0 | $25,000 |
| | Rideshare incentives | (same as above) | Hwy 224, 99E, I-205 | Quality of life | 6-10 years | $0 | $25,000 |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | Hwy 224, 99E, I-205 | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | Hwy 224, 99E, I-205 | Quality of life | 6-10 years | $0 | $4,800 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Location-efficient living | Support programs and strategies that promote and advance location-efficient living strategies. | Area in-between Milwaukie TC and Clackamas RC | Quality of life | through 10 years | $0 | $50,000 |

## Mobility Corridor 12: Interstate 205 to Rock Creek Junction




### *Corridor Summary*

The I-205 to Rock Creek Junction corridor encompasses the existing **Hwy 212** and **future Sunrise Corridor** limited access facility. Hwy 212 supports interregional travel to central and eastern Oregon, intraregional travel for neighboring communities, and access between Clackamas industrial area and I-205. The only parallel arterial along this corridor is **SE Sunnyside Rd**. Transit service and bicycle routes also support movement in and through the corridor. North-south access is limited by topography and development patterns. Local streets are discontinuous, with many cul-de-sac and dead-end industrial and residential streets.

### *Where Are We Now?*

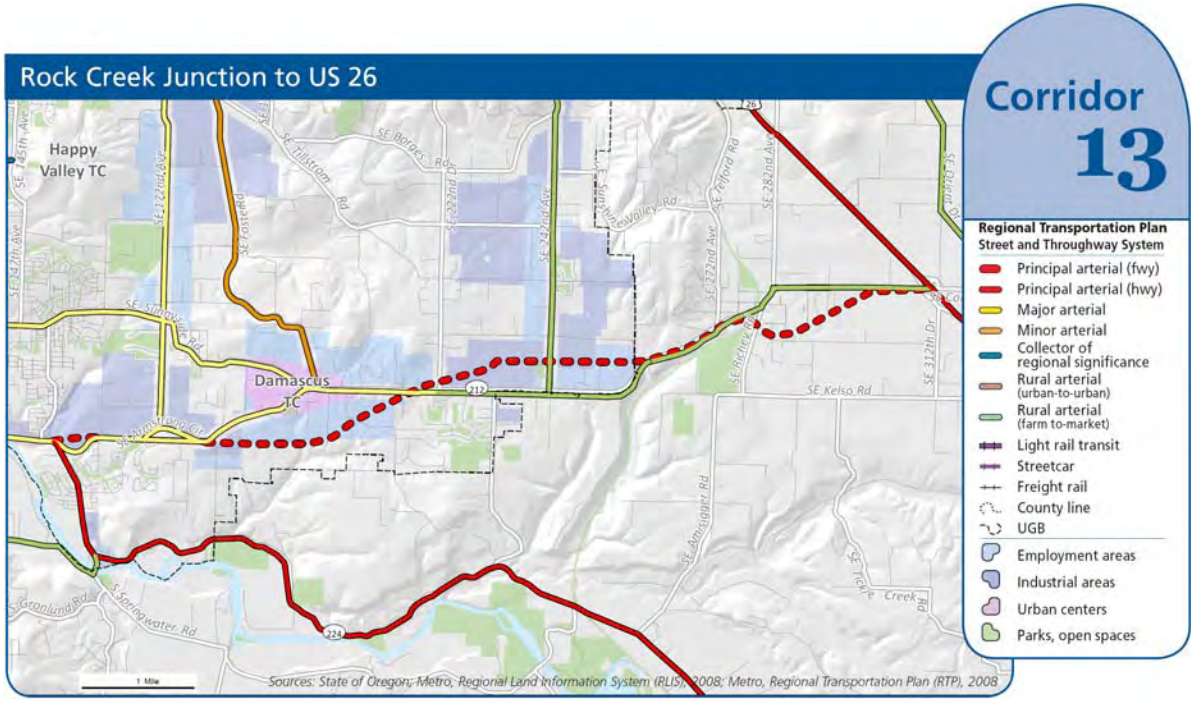
Traffic signals along SE Sunnyside Rd were upgraded to responsive signal timing within the last five years. There is no transit signal priority located in this corridor. Communications infrastructure exists along SE Sunnyside Rd, SE Sunnybrook Rd, and Hwy 212/224. Also, cameras are located along SE Sunnyside Rd between SE 82nd Ave and SE 162nd Ave.

The Clackamas Regional Center TMA works with employers and employees to reduce drive-alone trips. Additionally, Clackamas County updated and is distributing their bicycle map.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | Hwy 212/224 | Reliability & Traveler Information | 6-10 yrs | $2,600,000 | $50,000 |
| | ACM with Adaptive Signal Timing and Transit Priority Treatment | Includes the ACM with both adaptive signal timing and transit priority treatment. | Sunnyside Rd (82nd to 122nd) | Reliability, Traveler Information, & Quality of Life | 6-10 yrs | $1,560,000 | $30,000 |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Rideshare incentives | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to | Hwy 212, Sunnyside Rd., | Quality of life | 1-5 years | $0 | $25,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | | commuters. | | | | | |
| | Rideshare incentives | (same as above) | Hwy 212, Sunnyside Rd., | Quality of life | 6-10 years | $0 | $25,000 |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | Hwy 212, Sunnyside Rd., | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | Hwy 212, Sunnyside Rd., | Quality of life | 6-10 years | $0 | $4,800 |
| | Construction mitigation campaign | Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects. | I-205 to Hwy 212 construction | Quality of life | 1-5 years | $0 | $100,000 |
| | Construction mitigation campaign | (same as above) | Sunrise Hwy | Quality of life | 1-5 years | $0 | $100,000 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Location-efficient living | Support programs and strategies that promote and advance location-efficient living strategies. | Match industrial/employment area along corridor with nearby housing opportunities. | Quality of life | through 10 years | $0 | $50,000 |

## Mobility Corridor 13: Rock Creek Junction to US 26




### *Corridor Summary*

Rock Creek to US 26 corridor encompasses the existing **Hwy 212** and **future Sunrise Corridor** limited access facility. Hwy 212 supports interregional travel to central and eastern Oregon, intraregional travel for neighboring communities, and access to I-205. There are **no parallel arterials** along this corridor. Once the Sunrise limited access facility is built, it will provide primary mobility and Hwy 212 will become a parallel arterial. Transit service and bicycle routes also support movement in and through the corridor. Land use is a mix of low density residential and farmland with mobility provided by a farm-to-market street network.

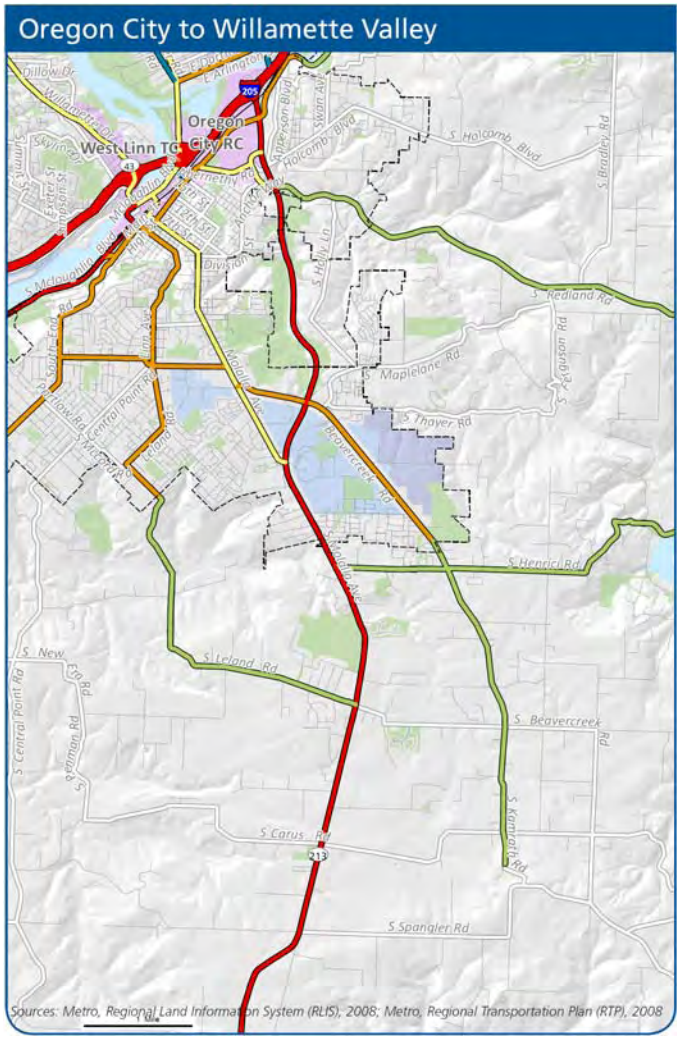
### *Where Are We Now?*

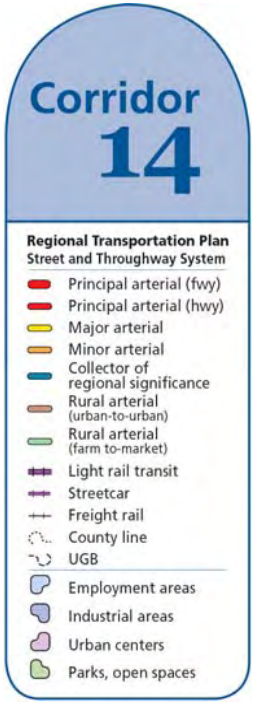
Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years. And there are no transit signal priority locations or communications infrastructure in this corridor.

Clackamas County updated and is distributing their bicycle map.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | ACM with Adaptive Signal Timing and Transit Priority Treatment | Includes the ACM with both adaptive signal timing and transit priority treatment. | Hwy 212, east of Damascus | Reliability, Traveler Information, & Quality of Life | 6-10 yrs | $3,400,000 | $70,000 |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | Hwy 212, US 26 | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | Hwy 212, US 26 | Quality of life | 6-10 years | $0 | $4,800 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |

## Mobility Corridor 14: Oregon City to Willamette Valley




### *Corridor Summary*

The Oregon City to Willamette Valley encompasses **Hwy 213** south of I-205, parallel arterials as well as bus service and bicycle routes that support movement in and through the corridor. Hwy 213 supports both intraregional and interregional travel between Oregon City and neighboring communities. The key parallel arterials are **Beavercreek Rd** and **Mollala Ave**. Land use in this corridor is both urban and rural. Within the urban area, the corridor has a diverse mix of land uses including commercial areas, institutional, and residential. The corridor outside the urbanized area is a mix of low density residential and farmland; its mobility provided by a farm-to-market street network. The local streets are well connected in the historic sections of Oregon City and discontinuous in the more recently developed sections.

### *Where Are We Now?*

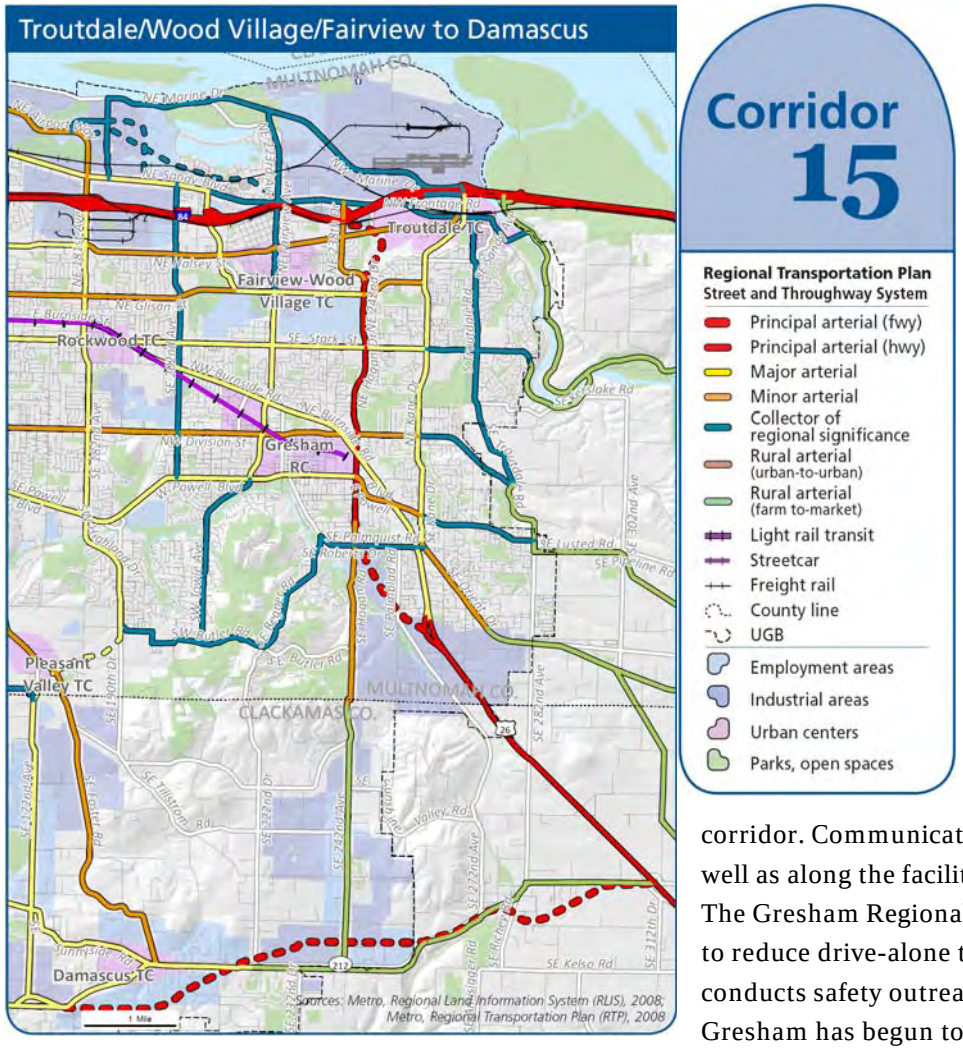
Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years. There are no transit signal priority locations in this corridor. Communications infrastructure exists along sections of Beavercreek Rd, Hwy 213, and Molalla Ave.

Clackamas County updated and is distributing their bicycle map.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | Hwy 213 | Reliability & Traveler Information | 6-10 yrs | $2,500,000 | $50,000 |
| | | | Beavercreek Rd (south of Hwy 213 | | 11+ yrs | $950,000 | $19,000 |
| | | | Molalla Ave/Hwy 213 (to Henrici) | | 11+ yrs | $600,000 | $12,000 |
| | | | Washington St | | 6-10 yrs | $550,000 | $11,000 |
| | | | 7th Ave | | 6-10 yrs | $200,000 | $4,000 |
| | ACM with Adaptive Signal Timing | Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions. | Molalla Ave (7th to Hwy 213) | Reliability & Traveler Information | 1-5 yrs | $1,700,000 | $35,000 |
| | | | Beavercreek Rd (between Molalla and Hwy 213) | | 6-10 yrs | $440,000 | $9,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | Hwy 213 | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | Hwy 213 | Quality of life | 6-10 years | $0 | $4,800 |

## Mobility Corridor 15: Troutdale/Wood Village/Fairview to Damascus







### *Corridor Summary*

The Troutdale/Wood Village/Fairview to Damascus mobility corridor encompasses the arterials and collector streets that provide access between I-84 and US 26, as well as transit and bicycle routes that support movement in and through the corridor. There are no freeways included within this corridor. The key arterials in this corridor include **SE 181st Ave, SE 202nd Ave, SE 238th/242nd/Hogan Dr** and **SE 257th/Kane Dr**. Although the corridor has a well-connected arterial and collector street grid, the local street network is generally discontinuous with many cul-de-sac and dead end streets. The majority of land use in this area is considered rural. The urbanized area has a mix of commercial and industrial uses.

### *Where Are We Now?*

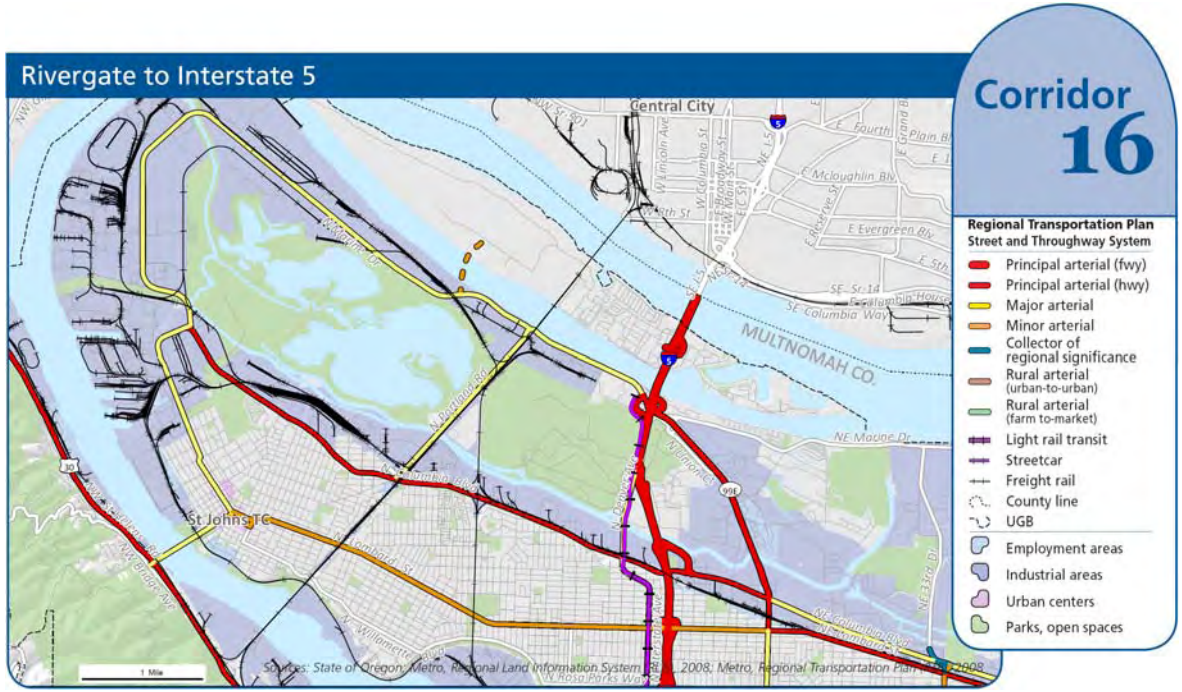
Currently one regional facility in this corridor has coordinated signal timings updated within the last five years, NE 242nd; and sections of Burnside Rd and 181st are equipped with adaptive signal timing. There is no transit signal priority located in this corridor. Communications infrastructure exists along 257th Ave, Glisan St, and 223rd as well as along the facilities with coordinated and adaptive signal timing.

The Gresham Regional Center TMA works with employers, employees, and residents to reduce drive-alone trips. Additionally, the TMA runs a Bike Program which conducts safety outreach, gives away helmets, and installs bike racks. The City of Gresham has begun to implement a city-wide bicycle way-finding program.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | 160th/162nd Ave | Reliability & Traveler Information | 6-10 yrs | $2,100,000 | $40,000 |
| | | | Burnside (122nd to 223rd) | | 6-10 yrs | $1,200,000 | $25,000 |
| | | | NE 207th Ave (Sandy to Glisan) | | 6-10 yrs | $850,000 | $17,000 |
| | | | 223rd Ave | | 6-10 yrs | $1,200,000 | $25,000 |
| | | | 257th/Kane Dr | | 6-10 yrs | $2,800,000 | $60,000 |
| | ACM with Adaptive Signal Timing | Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions. | 238th/242nd Ave/Hogan Dr (Sandy to Palmquest) | Reliability & Traveler Information | 1-5 yrs | $3,600,000 | $70,000 |
| | ACM with Transit Priority Treatment | Includes the ACM project with transit signal priority added to traffic signals along a facility. | NE 181st/182nd Ave (Glisan to Powell) | Reliability, Traveler Information, & Quality of Life | 6-10 yrs | $2,000,000 | $40,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | ACM with Adaptive Signal Timing and Transit Priority Treatment | Includes the ACM with both adaptive signal timing and transit priority treatment. | NE 181st Ave(I-84 to Glisan) | Reliability, Traveler Information, & Quality of Life | 6-10 yrs | $600,000 | $12,000 |
| **Traveler Information** | | | | | | | |
| | Traveler Information Only | Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | Burnside (223rd to Powell) - Adaptive signal timing is in place along this segment, traveler information will be added. | Traveler Information | 1-5 yrs | $950,000 | $19,000 |
| | Roadside Travel Time Information | Provide real-time traveler information on westbound US 26 for different routes (arterial and freeway) between Portland and Gresham. | US 26 | Traveler Information | 6-10 yrs | $100,000 | $15,000 |
| **Transportation Demand Management** | | | | | | | |
| | Transportation Management Associations | Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. | Gresham Regional Center | Quality of Life | through 10 years | $0 | (annual cost recorded under corridor 6) |

## Mobility Corridor 16: Rivergate to Interstate 5




### *Corridor Summary*

The Rivergate to I-5 corridor encompasses **N Columbia Blvd**, parallel arterials as well as bus service and bicycle routes the support movement in and through the corridor. The key parallel arterials are **N Lombard/St John's Bridge** and **N Marine Dr**. The corridor includes a combination of marine-dependant industrial activities, nature reserves, mixed used commercial and residential uses. Due to the industrial and marine port uses, this corridor carries high volumes of heavy vehicle traffic. In the residential and commercial areas the local network is dense and well-connected. The local street network in the industrial and open space areas provides accessibility to large lots and tends to be discontinuous.

### *Where Are We Now?*

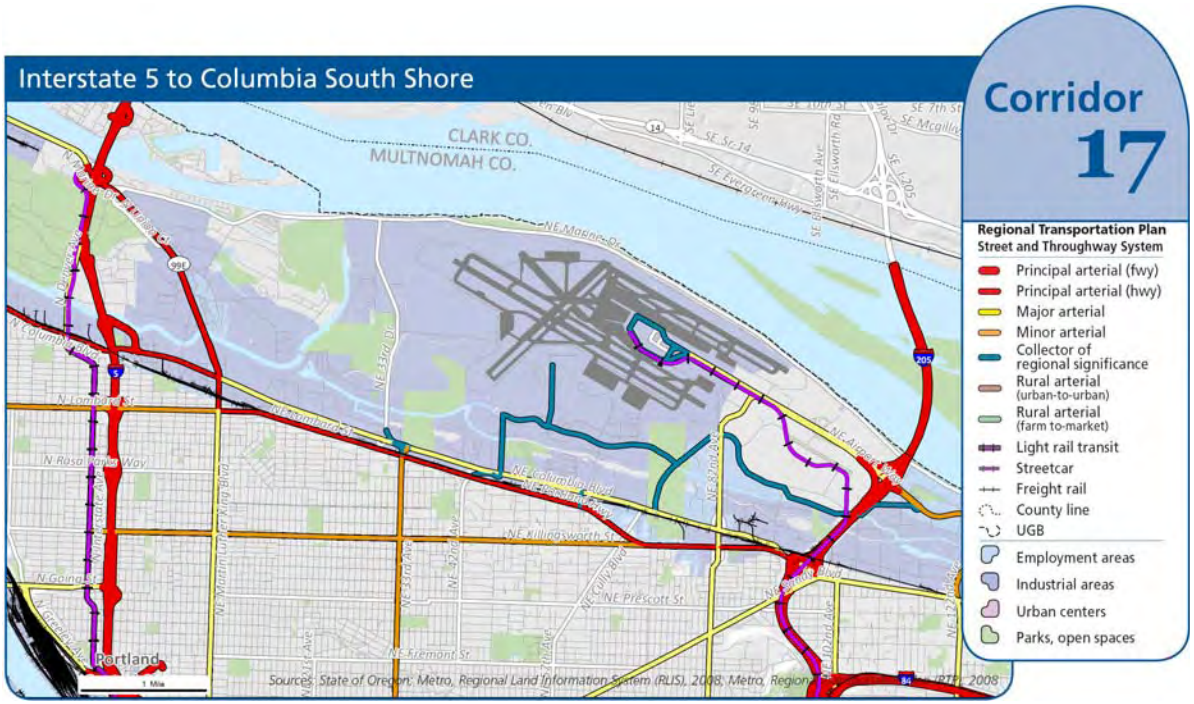
Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years. Transit signal priority is located at select traffic signals along N Lombard St. Communications infrastructure exists along the St John's Bridge, N Oswego Ave/N Smith St/N Columbia Way/N Portland Rd, and N Marine Dr.

The City of Portland SmartTrips program began an individualized marketing program for residents of the N/NW Portland area. Also, the City of Portland sponsors Sunday Parkways events in North Portland to encourage use of biking and walking for all trips.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | N Columbia Blvd | Reliability & Traveler Information | 6-10 yrs | $2,300,000 | $45,000 |
| | ACM with Adaptive Signal Timing | Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions. | N Lombard St (Greeley to I-5) | Reliability & Traveler Information | 11+ yrs | $750,000 | $15,000 |
| | ACM with Adaptive Signal Timing and Transit Priority Treatment | Includes the ACM with both adaptive signal timing and transit priority treatment. | N Lombard St (Richmond to Greeley) | Reliability, Traveler Information, & Quality of Life | 6-10 yrs | $3,200,000 | $60,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Traveler Information** | | | | | | | |
| | Traveler Information Only | Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | N Lombard St (north of St Johns Bridge) | Traveler Information | 6-10 yrs | $2,200,000 | $45,000 |
| | | | Marine Dr | | 6-10 yrs | $2,200,000 | $45,000 |
| | Railroad Crossing Information System | Implement communications between the at-grade railroad crossing and the traffic operations center and emergency management centers to inform emergency responders and general travelers when service will be interrupted. | Marine Dr | Reliabilty, Traveler Information, & Safety | 6-10 yrs | $75,000 | $2,000 |
| **Transportation Demand Management** | | | | | | | |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Location-efficient living | Support programs and strategies that promote and advance location-efficient living strategies. | Rivergate industrial/employment area with nearby housing opportunities. | Quality of life | through 10 years | $0 | $50,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Last-mile services | Provide shuttles or demand-responsive transit to connect transit stops with significant destinations one to two miles away, especially at hours not served by current transit service. | Rivergate | Quality of life | 6-10 years | $500,000 | $500,000 |




## *Corridor Summary*

The I-5 to Columbia South Shore corridor encompasses **N/NE Columbia Blvd** and **N/NE Lombard St,** parallel arterials as well as bus service and bicycle routes the support movement in and through the corridor. The key parallel arterials through this corridor are **NE Marine Dr** and **NE Killingsworth St**. Land use is primarily industrial with the Portland International Airport (PDX) occupying a substantial portion of acreage. The MAX Red line connects between PDX and Beaverton town center. South of N/NE Lombard St is primarily residential. In the residential area, the local street network is dense and well-connected. The local street network in the industrial area provides accessibility to large lots and is discontinuous.

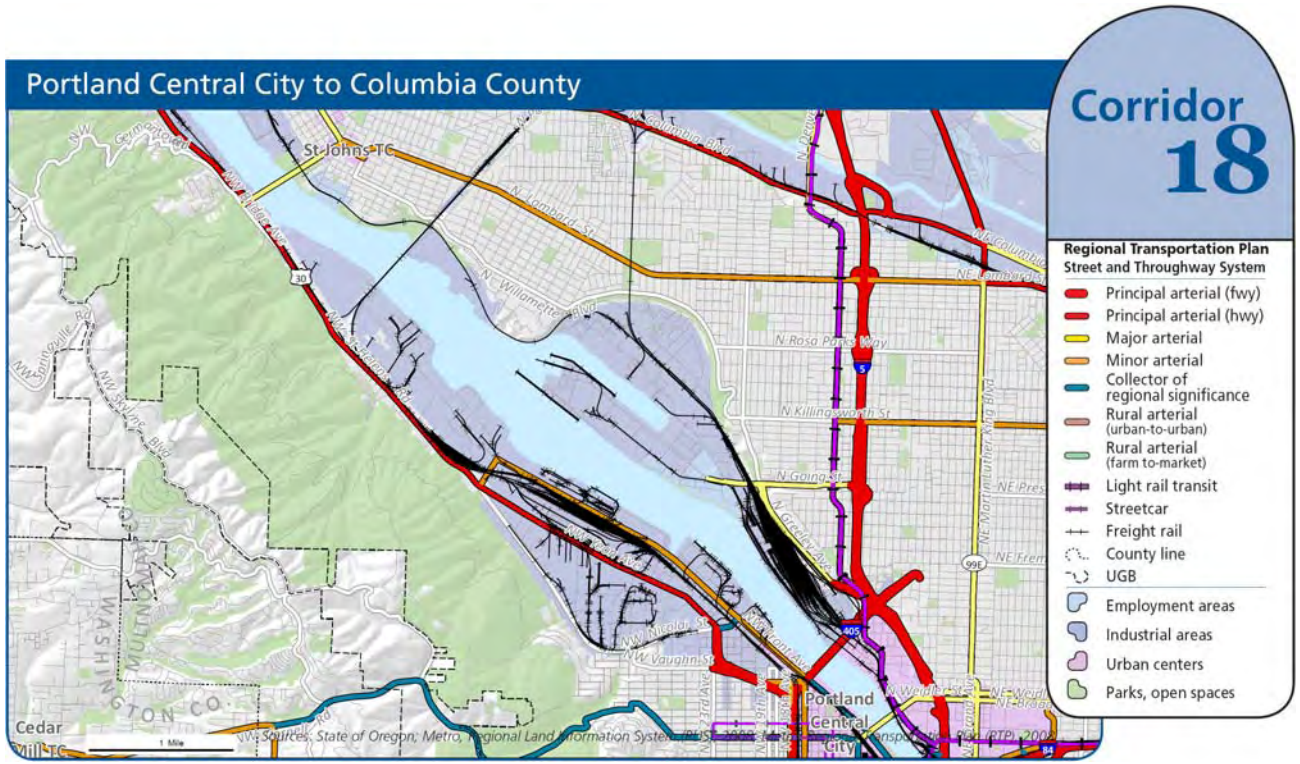
## *Where Are We Now?*

Currently two regional facilities in this corridor have coordinated signal timings updated within the last five years: NE Lombard St/NE Portland Hwy and NE Columbia Blvd. Transit signal priority is located at select traffic signals along NE Killingsworth St. Communications infrastructure exists along a segment of NE Killingsworth St.

The City of Portland sponsors Sunday Parkways events in Northeast Portland to encourage use of biking and walking for all trips. Additionally, the Community Cycling Center has been awarded a grant to reduce barriers for bicycling for historically under-represented populations.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | N/NE Columbia Blvd | Reliability & Traveler Information | 1-5 yrs | $3,100,000 | $60,000 |
| | ACM with Transit Priority Treatment | Includes the ACM project with transit signal priority added to traffic signals along a facility. | N/NE Lombard St/NE Portland Hwy | Reliability, Traveler Information, & Quality of Life | 6-10 yrs | $2,600,000 | $50,000 |
| | | | N/NE Killingsworth St | | 6-10 yrs | $2,600,000 | $50,000 |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Individualized Marketing | City of Portland SmartTrips will reach N/NE Portland residents between Chautauqua and NE 82nd Ave. Consider 1/3rd of the project will impact Corridor 5. The action is to implement and/or support intensive outreach to targeted neighborhoods or demographics that encourages travel options through delivery of local travel options information and services to interested residents. | NE Portland along North side of I-84 | Quality of life | 1-5 years | $0 | $333,333 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |




## *Corridor Summary*

The Portland Central City to Columbia County corridor encompasses **US 30,** parallel arterials as well as bus service and bicycle routes that support movement in and through the corridor. US 30 provides interregional travel between the Willamette Valley, Portland and Astoria. It also serves intraregional travel, particularly between Portland, Beaverton and Hillsboro. The key parallel facilities include **NW Front St/NW Naito Pkwy, NW Nicolai, N Lombard St,** and **NW Yeon Ave**. This corridor is home to heavy industrial uses including petroleum tank farms, manufacturing, warehouse/distribution, BNSF Lake Yard intermodal terminal, the Port of Portland/s Terminal 2 and Metro Council waste transfer station.

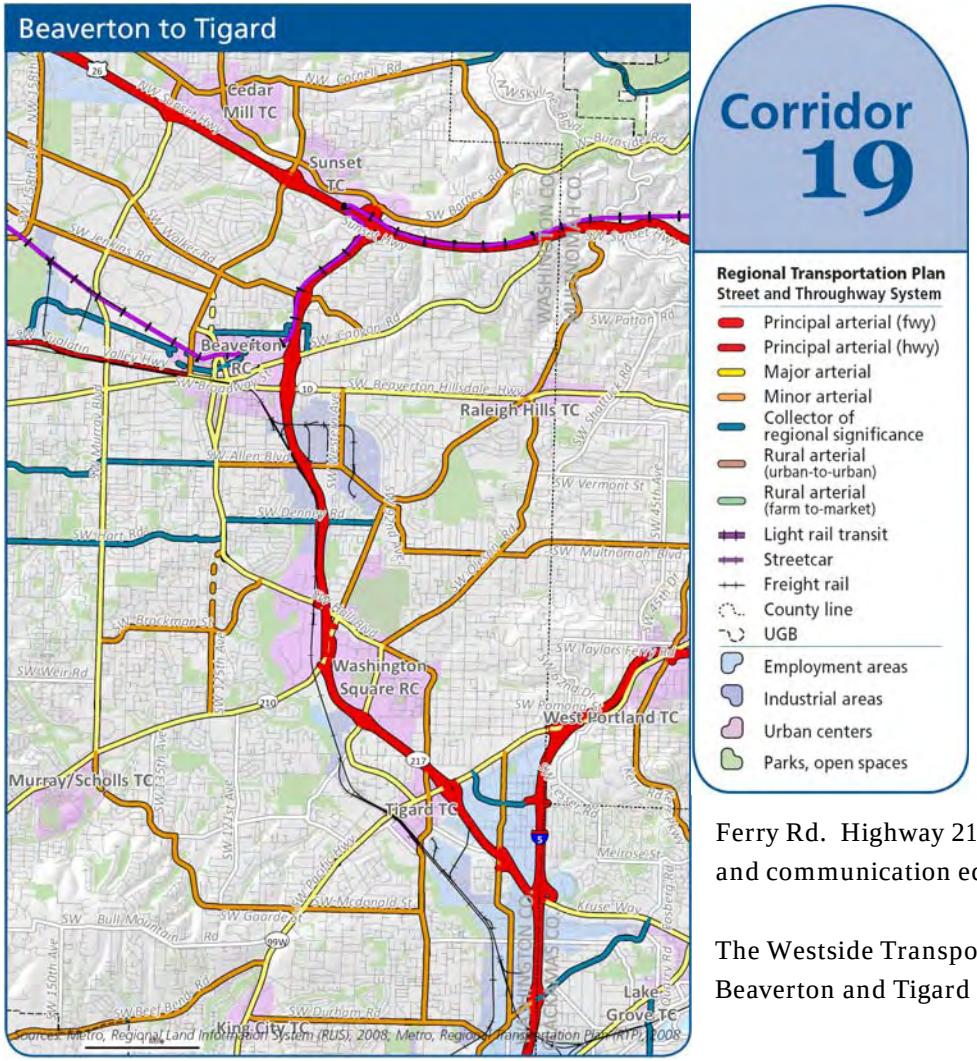
## *Where Are We Now?*

Currently NW Naito Parkway/NW Front St is the only regional facility in this corridor to have coordinated signal timings updated within the last five years. Transit signal priority is located at select traffic signals along NW Vaughn St. Communications infrastructure exists along US 30 (St Helens Rd) NW Naito Parkway/NW Front St, and NW 29th Ave.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | Hwy 30/St Helens Rd | Reliability & Traveler Information | 6-10 yrs | $600,000 | $11,000 |
| **Traveler Information** | | | | | | | |
| No projects in this corridor | | | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Individualized Marketing | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | Residents served by frequent transit service, other travel options and near commercial zoning. | Quality of life | 6-10 years | $0 | $500,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Rideshare incentives | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters. | US 30 | Quality of life | 1-5 years | $0 | $25,000 |
| | Rideshare incentives | (same as above) | US 30 | Quality of life | 6-10 years | $0 | $25,000 |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | US 30 | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | US 30 | Quality of life | 6-10 years | $0 | $4,800 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |

## Mobility Corridor 19: Beaverton to Tigard




### *Corridor Summary*

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

### *Where Are We Now?*

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

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

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

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

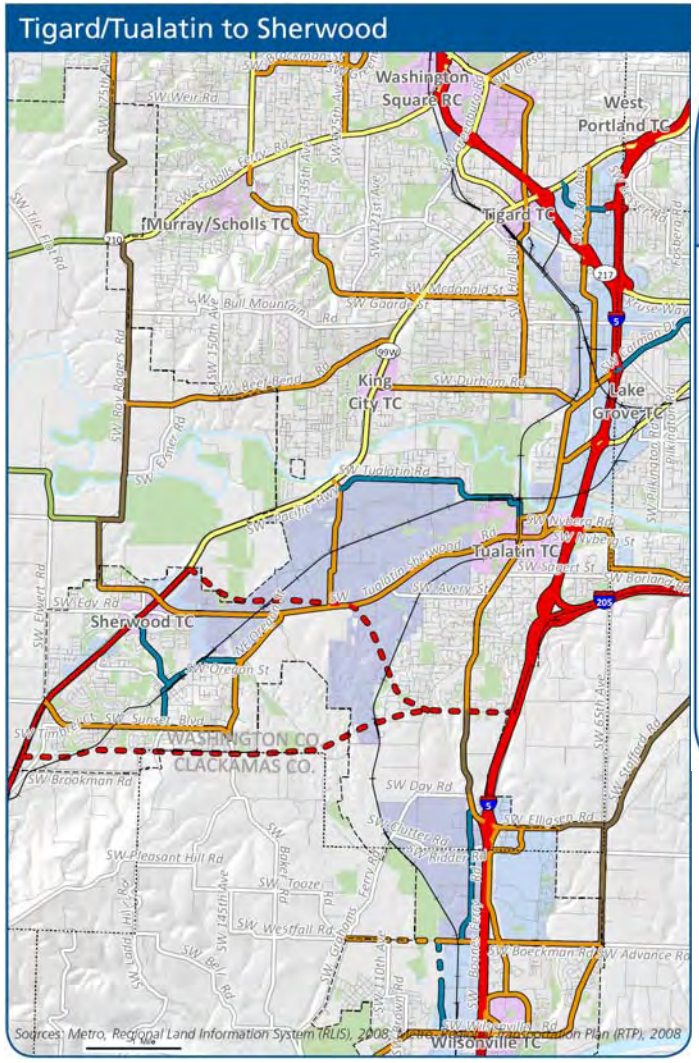
| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | | | Scholls Ferry Rd (Hall to BH Hwy) | & Quality of Life | 1-5 yrs | $1,700,000 | $35,000 |
| | Freeway Management | Expand freeway vehicle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

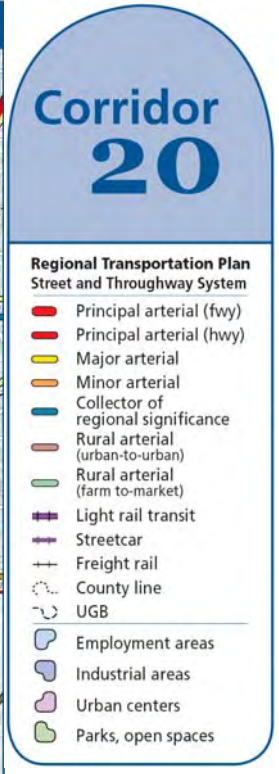
| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Rideshare incentives | Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial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

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

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

## Mobility Corridor 20: Tigard/Tualatin to Sherwood




### *Corridor Summary*

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

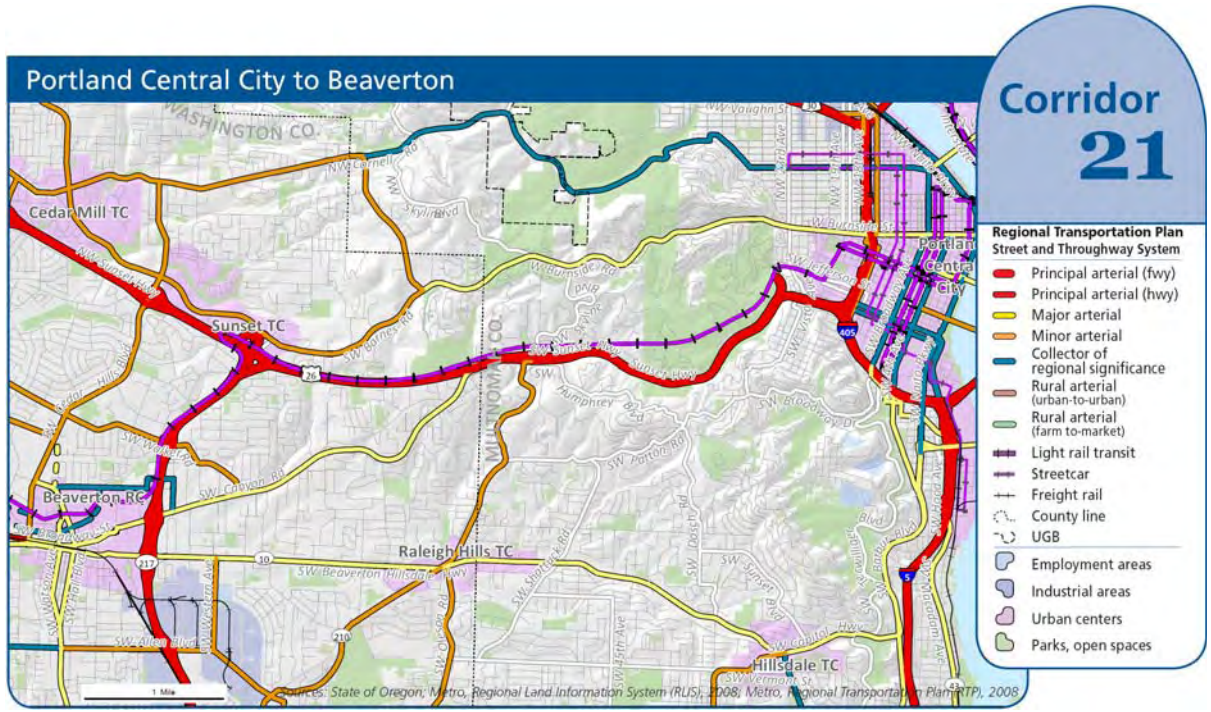
### *Where Are We Now?*

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

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

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

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




### *Corridor Summary*

The Portland to Beaverton corridor encompasses **US 26,** MAX light rail, parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. US 26 supports intraregional travel between Beaverton, Gresham, Hillsboro, Milwaukie, Portland, Tigard and Vancouver. The key parallel facilities include **SW Beaverton-Hillsdale Hwy, W Burnside/SW Barnes Rd, SW Canyon Rd, and SW Cornell Rd/SW Miller Rd.** North-south mobility is limited due to few overcrossings of US 26, rugged topography and large areas of parkland. Land use in this corridor is mainly residential with a relatively high percentage of land dedicated to parks and open space. The local street network is discontinuous with many cul-de-sac and dead end streets.

### *Where Are We Now?*

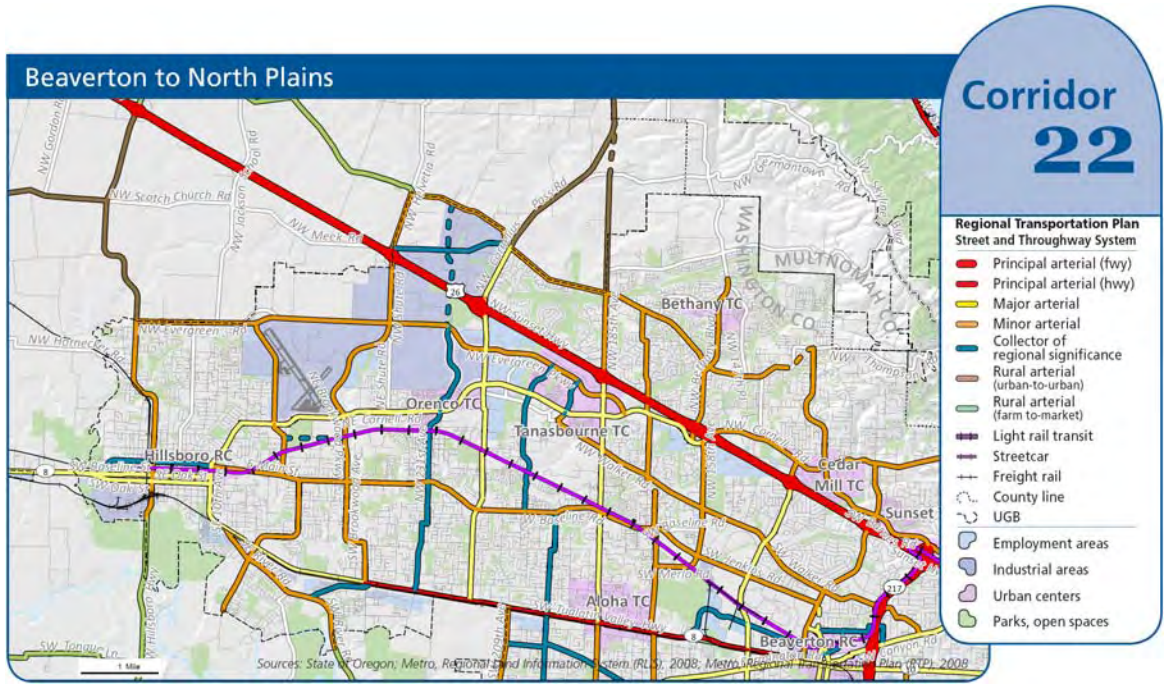
Currently three regional facilities in this corridor have coordinated signal timings updated within the last five years: Beaverton Hillsdale Hwy (BH Hwy) Canyon Rd, and sections of Cornell Rd. Additionally, an adaptive signal timing project is underway for a segment of BH Hwy. Transit signal priority is located at select traffic signals along BH Hwy. Communications infrastructure exists along BH Hwy, Canyon Rd, and SW Allen Blvd. The segment of US 26 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

The Westside Transportation Alliance (WTA) works with employers in Beaverton (in addition to other Washington County areas) to reduce employee drive-alone trips. The City of Portland's Smart Trips Downtown program offers individualized marketing to employees in their service areas. There are several bike-specific projects in the corridor as well, with a WTA program to install free bike racks for area businesses, Portland State University currently building a new long-term bike storage facility, and TriMet installing E-Access Bike Lockers at several transit facilities in the area.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | Canyon Rd (north of Walker) | Reliability & Traveler Information | 6-10 yrs | $1,600,000 | $30,000 |
| | | | Walker Rd (west of Hwy 217) | | 6-10 yrs | $700,000 | $14,000 |
| | | | Barnes Rd/Burnside | | 6-10 yrs | $2,100,000 | $43,000 |
| | | | Bertha | | 11+ yrs | $700,000 | $13,000 |
| | | | Allen Rd | | 11+ yrs | $2,300,000 | $45,000 |
| | | | Denny Rd | | 11+ yrs | $950,000 | $19,000 |
| | | | Cornell Rd | | 6-10 yrs | $1,700,000 | $35,000 |
| | | | Scholls Ferry Rd | | 6-10 yrs | $750,000 | $15,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | ACM with Adaptive Signal Timing | Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions. | Canyon Rd (near Walker to Cedar Hills) | Reliability & Traveler Information | 6-10 yrs | $1,500,000 | $30,000 |
| | ACM with Transit Priority Treatment | Includes the ACM project with transit signal priority added to traffic signals along a facility. | Beaverton Hillsdale Hwy (Barbur Blvd to Scholls Ferry Rd) | Reliability, Traveler Information, & Quality of Life | 6-10 yrs | $3,700,000 | $70,000 |
| | ACM with Adaptive Signal Timing and Transit Priority Treatment | Includes the ACM with both adaptive signal timing and transit priority treatment. | Beaverton Hillsdale Hwy (Scholls Ferry Rd to Murray Blvd) | Reliability, Traveler Information, & Quality of Life | 1-5 yrs | $2,500,000 | $50,000 |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | US 26 | Reliability, Traveler Information, & Safety | 6-10 yrs | $400,000 | $8,000 |
| **Traveler Information** | | | | | | | |
| | Traveler Information Only | Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. | Walker Rd (east of Hwy 217) | Traveler Information | 6-10 yrs | $460,000 | $9,000 |
| **Transportation Demand Management** | | | | | | | |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Individualized Marketing | Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. | Residents served by frequent transit service, other travel options and near commercial zoning. | Quality of life | 1-5 years | $0 | $500,000 |
| | Individualized Marketing | (same as above) | Residents served by frequent transit service, other travel options and near commercial zoning. | Quality of life | 6-10 years | $0 | $500,000 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |




## *Corridor Summary*

The Beaverton to North Plains corridor encompasses **US 26,** MAX light rail, Westside Express Service (WES), parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. US 26 supports intraregional travel between Beaverton, Gresham, Hillsboro, Milwaukie, Portland, Tigard and Vancouver. The key parallel facilities include **NW Barnes Rd/Cornell Rd, NW Evergreen Pkwy, SW Jenkins Rd/Walker Rd, NW Union Rd, W Baseline Rd, and SW Tualatin Valley Hwy**. The corridor is a diverse mix of urban and rural land uses, with several commercial centers, employment and industrial areas in the urbanized sections. The local street network is a patchwork of well-connected and discontinuous streets. Farm-to-market roads provide mobility outside the urbanized areas.

## *Where Are We Now?*

Currently two regional facilities in this corridor have coordinated signal timings updated within the last five years: Cornelius Pass and Cornell Rd. There are no transit signal priority locations in this corridor. Communications infrastructure exists along segments of Cornell Rd, Baseline St and Oak St. The segment of US 26 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment. The Westside Transportation Alliance (WTA) works with employers and employees in Beaverton (in addition to other Washington County areas)

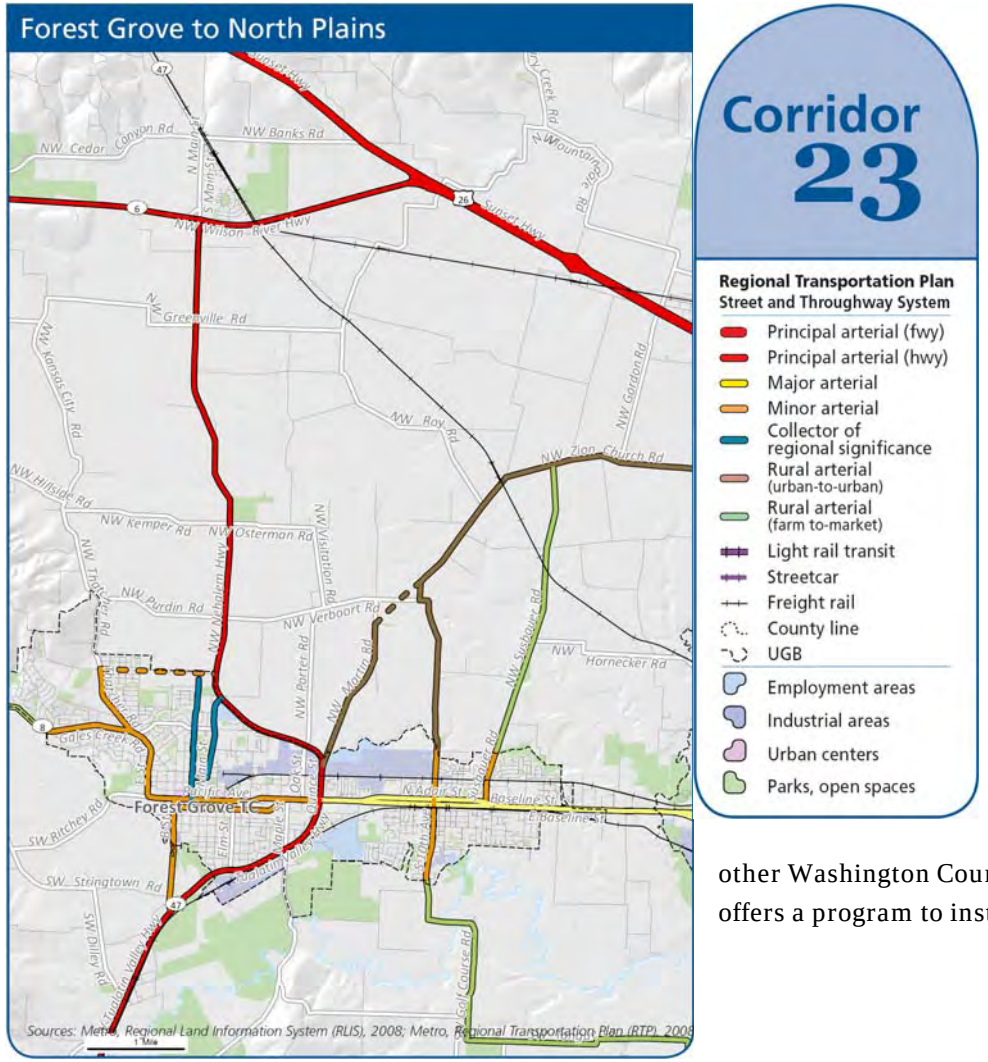
to reduce drive-alone trips. There are several bike-specific projects in the corridor including a WTA program to install free bike racks for area businesses and TriMet installation of E-Access Bike Lockers at several transit facilities in the area.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | Jenkins/ Baseline | Reliability & Traveler Information | 11+ yrs | $3,300,000 | $70,000 |
| | | | Walker Rd | | 11+ yrs | $2,600,000 | $50,000 |
| | | | Cornell Rd | | 1-5 yrs | $6,800,000 | $140,000 |
| | | | Evergreen | | 11+ yrs | $4,700,000 | $90,000 |
| | | | Cornelius Pass | | 6-10 yrs | $3,500,000 | $70,000 |
| | | | Brookwood | | 11+ yrs | $2,800,000 | $60,000 |
| | | | Shute Rd | | 11+ yrs | $9,300,000 | $180,000 |
| | | | Farmington (185th to 209th) | | 6-10 yrs | $800,000 | $16,000 |
| | ACM with Adaptive Signal Timing | Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions. | 185th Ave (US 26 to Union Rd) | Reliability & Traveler Information | 6-10 yrs | $1,200,000 | $25,000 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | ACM with Transit Priority Treatment | Includes the ACM project with transit signal priority added to traffic signals along a facility. | Farmington (Murray to 185th) | Reliability, Traveler Information, & Quality of Life | 6-10 yrs | $1,800,000 | $35,000 |
| | ACM with Adaptive Signal Timing and Transit Priority Treatment | Includes the ACM with both adaptive signal timing and transit priority treatment. | 185th Ave (US 26 to BH Hwy) | Reliability, Traveler Information, & Quality of Life | 1-5 yrs | $4,500,000 | $90,000 |
| | | | Farmington (Western to Murray) | | 1-5 yrs | $2,500,000 | $50,000 |
| | | | Tualatin Valley Hwy (Murray to Baseline) | | 1-5 yrs | $7,300,000 | $140,000 |
| | Freeway Management | Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions. | US 26 | Reliability, Traveler Information, & Safety | 6-10 yrs | $650,000 | $13,000 |
| **Traveler Information** | | | | | | | |
| No projects in this corridor | | | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | US 26 | Quality of life | 1-5 years | $0 | $4,800 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Rideshare Park&Ride | (same as above) | US 26 | Quality of life | 6-10 years | $0 | $4,800 |
| | Construction mitigation campaign | Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects. | Hwy 26 near Amberglen | Quality of life | 1-5 years | $0 | $100,000 |
| | Employee incentives | Targeted investment to add to employer services to incentivize non-SOV commutes. | to be determined | Quality of life | 1-5 years | $0 | $50,000 |
| | Employee incentives | (same as above) | to be determined | Quality of life | 6-10 years | $0 | $50,000 |
| | Transportation Management Associations (TMA) | Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance (WTA) provides employer services in Washington County, including this corridor. | Beaverton and other parts of Washington County | Quality of life | through 10 years | $0 | (annual cost recorded under corridor 19) |
| | Location-efficient living | Support programs and strategies that promote and advance location-efficient living strategies. | Industrial/employment area with nearby housing | Quality of life | through 10 years | $0 | $50,000 |
| | Park&Ride Management | Implement parking management elements such as time limits, fees or changing spaces to carpool-only. | Sunset Transit Center | Quality of life | 1-5 years | $100,000 | $10,000 |

## Mobility Corridor 23: Forest Grove to North Plains




### *Corridor Summary*

The Beaverton to North Plains corridor encompasses **Hwy 47,** parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. Hwy 47 supports intraregional travel between Forest Grove, Hillsboro and Beaverton. The key parallel facilities include **NW Martin Rd/Cornelius-Schefflin Rd, Kerkman/Dersham Rd, and Zion Church/Glencoe Rd.** The corridor is mostly rural farmland, with urban/suburban development tightly contained in the city of Forest Grove. The street network is a mix of farm-to-market roads and well-connected urban streets in the urbanized area.

### *Where Are We Now?*

No regional facilities in this corridor have coordinated signal timing updated within the last five years. Additionally, there are no transit signal priority locations nor communications infrastructure.

The Westside Transportation Alliance (WTA) works with employers and employees in Forest Grove (in addition to other Washington County areas) to reduce drive-alone trips. Additionally, the WTA offers a program to install free bike racks for area businesses.

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| **Regional Multimodal Traffic Management** | | | | | | | |
| | Arterial Corridor Management (ACM) | Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement. | TV Hwy | Reliability & Traveler Information | 6-10 yrs | $950,000 | $19,000 |
| **Traveler Information** | | | | | | | |
| | | No projects in this corridor | | | | | |
| **Transportation Demand Management** | | | | | | | |
| | Rideshare Park&Ride | Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration. | US 26 | Quality of life | 1-5 years | $0 | $4,800 |
| | Rideshare Park&Ride | (same as above) | US 26 | Quality of life | 6-10 years | $0 | $4,800 |

| Proj No. | Project Name | Description | Facility | Goal/Obj | Time-frame | Cost | |
|---|---|---|---|---|---|---|---|
| | | | | | | Capital | Annual O&M |
| | Transportation Management Associations (TMA) | Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance (WTA) provides employer services in Washington County, including this corridor. | Forest Grove and other parts of Washington County | Quality of life | through 10 years | $0 | (annual cost recorded under corridor 19) |
| | Parking management | Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions. | Forest Grove Town Center | Quality of life | 6-10 years | $0 | $100,000 |
| | Car-share operations | Support 3 or more carsharing vehicles for large student populations. | Forest Grove | Quality of life | 1-5 years | $0 | $200,000 |

# V. Implementation

The purpose of this section is to identify steps that partner agencies need to take to ensure successful implementation of TSMO strategies. This component of the TSMO plan includes the description of non-capital actions necessary to compliment capital investments.

Because TSMO is different than traditional transportation engineering and construction activities, it is imperative that partner agencies carefully coordinate its implementation The TSMO Plan identifies new practices or modifications to existing practices and procedures that are needed to ensure success and achieve the operations objectives. A desired outcome of the Regional TSMO Plan is for local agencies to modify existing practices as needed to support the TSMO solutions. This section presents organizational, policy and finance recommendations necessary for implementation of TSMO strategies.

## Organization and policy recommendations

Implementation of specific projects must consider the institutional relationships necessary to achieve the operation objectives. Institutional arrangements have not been a significant issue for many of the projects completed to date because of the nature of informal relationships within TransPort and a separate structure for Regional Travel Options. However, as additional efforts proceed, institutional relationships will be a key component determining success or failure. While engineers are able to overcome most technical challenges, developing and maintaining relationships (including intergovernmental agreements) are often challenging aspects of a project, especially when competing goals or agency policies exist. Table 4 identifies recommendations related to institutional relationships to achieve successful implementation of TSMO projects. Metro will lead the effort to implement these actions.

### Table 4: Organization and Policy Measure Recommendations

| Item | Action | Descriptions | Year 1 | Year 1-5 | Long Term |
|---|---|---|---|---|---|
| 1 | TSMO Policy Committee (TSMO-PC) | Metro will form a TSMO Policy Committee to include representatives from Regional Travel Options (RTO), TransPort, Regional Freight TAC, TPAC, and other private sector stakeholders. TSMO-PC will primarily advise TPAC on TSMO investment priorities and governance/service delivery issues. An example of this is the update of signal timing plans funded by the federal stimulus program, where Metro led the effort to submit an application and the signal timing plans were developed by member agencies. The RTO subcommittee and TransPort will continue to act on transportation demand management and ITS program coordination, respectively. | √ | | |
| 2 | Inclusion in Regional | TSMO will use RTP and Functional Plan to leverage results through local policies, codes and Capital Improvement | | √ | |

| Item | Action | Descriptions | Year 1 | Year 1-5 | Long Term |
|---|---|---|---|---|---|
| | Transportation Plan (RTP) and Functional Plan requirements of local Transportation System Plans (TSPs) related to TSMO in RTP | Project (CIP) investment decisions. TSMO policies will take affect incrementally as local TSPs are updated, and Metro would provide guidance and support to local governments during the TSP update process. | | | |
| 3 | Public-private partnerships for TSMO projects | The TSMO PC will explore barriers and opportunities for use of public-private partnerships for TSMO projects and identify a process for supporting and funding new ideas. However, before public-private partnerships can be implemented, it is necessary to address issues related to the sale and use of public information to private entities, shared risk on investment outcomes, use/disclosure of proprietary information, privacy concerns, capital purchased with federal funds, maintenance, and more. | | √ | |
| 4 | Formalization of TSMO implementation roles and relationships | Formal relationships through intergovernmental agreements and memorandums of understanding as necessary. For example, this will occur when setting up incident management teams. It is necessary to realize economy of scale benefits while recognizing intra-regional political and institutional differences that vary across geographic and programmatic boundaries (e.g., cities may be ready to integrate ITS operational platforms but not incident response teams). A good example is the Cooperative Telecommunications Infrastructure Committee (CTIC), which brings technical staff together who are dedicated to planning and operating the communication systems. | | √ | |
| 5 | Development of corridor management associations | The TSMO PC will explore the development of corridor management associations to guide on-going implementation of system and demand management strategies. It will need both to recognize differential levels of investment by the region in some corridors over others and that integrating corridor management solutions is affected by political factors | | √ | |
| 6 | Support TSMO staff/institutional development | The TSMO PC will be responsible to develop a best management practices for operations, staff training/workforce development through higher education institutions, coordinate peer exchanges, implement certification programs, cost accounting systems, and common performance/benefit measures. Both public agencies as well as private concerns need all these to build capacity in the region to sustain TSMO investment and ensure it delivers benefits to its full potential. | | √ | |
| 7 | Tie TSMO to regional climate action plan | In the longer term, Metro will tie TSMO to a regional climate action plan. This could be done, for example, by tapping Cap and Trade resources and including TSMO in cost/benefit analysis. Metro will also assess TSMO's role in meeting greenhouse gas (GHG) reduction goals. | | | √ |
| 8 | Joint operating agreements | Set up joint operating agreements to allow more efficient allocation of resources and properly define roles and | √ | | |

| Item | Action | Descriptions | Year 1 | Year 1-5 | Long Term |
|---|---|---|---|---|---|
| | | responsibilities of agencies. As an example, the City of Portland already operates several ODOT traffic signals throughout the system. This allows ODOT to focus on issues more consistent with its goals of maintaining mobility on key facilities within the service area of Region 1. As another example, ODOT established a multi-agency freeway management system with open coordination and contributions from several stakeholder groups, allowing access to cameras for local purposes. Furthermore, statewide and regional signal system procurement and ITS on-call consulting services contracts exist that allow multiple agencies to procure ITS equipment through a common procurement effort. | | | |
| 9 | Regular TSMO reports | Publish regular reports documenting the implementation of TSMO projects. In order to follow the progression of the TSMO Refinement Plan, annual reports need to document implemented projects and performance outcomes. | √ | | |
| 10 | Focus on 24/7 customer service provision | A Transportation Management Center (TMC) requires 24/7 operations to allow for fast response to transportation incidents and emergencies, even during midnight. Support of 24/7 operations would need staff resources. | | | √ |
| 12 | Operations and management accounted for in formal planning process | This allows transportation systems to be efficiently utilized from the beginning of construction. It is also more cost-effective to discuss TSMO in the early stage of the planning process than if it was to be integrated later as an added feature. | √ | | |

## Finance recommendations

Addressing funding needs and barriers is also an important step to ensure successful implementation of TSMO strategies. Funding will continue to come from a variety of sources at the federal, state, regional, and local levels. The challenge is to increase funding for TSMO solutions and maintain a consistent funding stream. The Regional TSMO Plan identifies operations-oriented projects that the Metropolitan Transportation Improvement Program (MTIP) should include or that agencies can pursue through future initiatives like the ODOT Operations Innovation Grant Program. The MTIP provides an opportunity to include specific projects that will offer measurable, operational benefits. Stakeholder agencies recognize that coming together to coordinate management of the of the transportation system provides advantages to acquiring highly competitive MTIP funds for TSMO Plan initiatives. Multi-agency programs, such as those identified through the RCTO process, are seen as high priorities across the region. Table 5 list recommended actions to advance funding objectives.

## Table 5: Fiscal Measure Recommendations

| Item | Action | Year 1 | Year 1-5 | Long Term |
|---|---|---|---|---|
| 1 | Work to increase use of federal funds for TSMO (both capital and operations) | √ | √ | √ |
| 2 | Develop TSMO funding strategy to support regional systems like traveler information, rideshare matching, ITS network, PORTAL | | √ | |
| 3 | Tie operations capital to on-going Operations & Maintenance funding – establish MTIP review criteria for on-going O&M support of TDM/TSM capital investments | | √ | |
| 4 | Work with finance managers in partner agencies to adopt outcomes-focused budgeting | | √ | |
| 5 | Request separate RTO and TSMO funds for program and capital infrastructure funds in MTIP process | | √ | |
| 7 | Identify and develop new funding sources for TSMO capital and operations | | √ | |
| 8 | Investigate regional and sub-regional opportunities for group purchasing agreements | | √ | |
| 9 | Continually align regional TSMO priorities with regional policies to make the case of additional funding | | √ | |
| 11 | Work with regional partners to gain commitment for funding ongoing operations | | √ | |
| 12 | Consider operations and management as separate and sustainable budget category | | √ | |

## ACKNOWLEDGEMENTS

### Metro

Robin McArthur, Planning Director
Tom Kloster, Transportation Planning Manager
Pam Peck, Regional Travel Options Program Manager
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With much assistance from Liz Adams, Rian Amiton, Pamela Blackhorse, Heath Brackett, Anthony Butzek, Kim Ellis, Pat Emmerson, Matthew Hampton, Dan Kaempff, Huan Li, Josh Naramore, Sean Tevlin, Marlon Warren and Caleb Winter.

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JLA Public Involvement – Stacy Thomas

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RTO Subcommittee, the Transportation Policy Alternatives Committee subcommittee on Transportation Demand Management (TDM)

TSMO Policy Work Group
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Marie Dodds – AAA Oregon/Idaho
Patty Fink – Coalition for a Livable Future
Bob Hart – Southwest Regional Transportation Commission
Eric Hesse - TriMet
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Tom Kloster - Metro
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Wilda Parks – North Clackamas Chamber of Commerce
Pam Peck - Metro
Nathaniel Price – Federal Highway Administration
Paul Smith – City of Portland
Tom Tushner – Washington County
Ron Weinman – Clackamas County

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.

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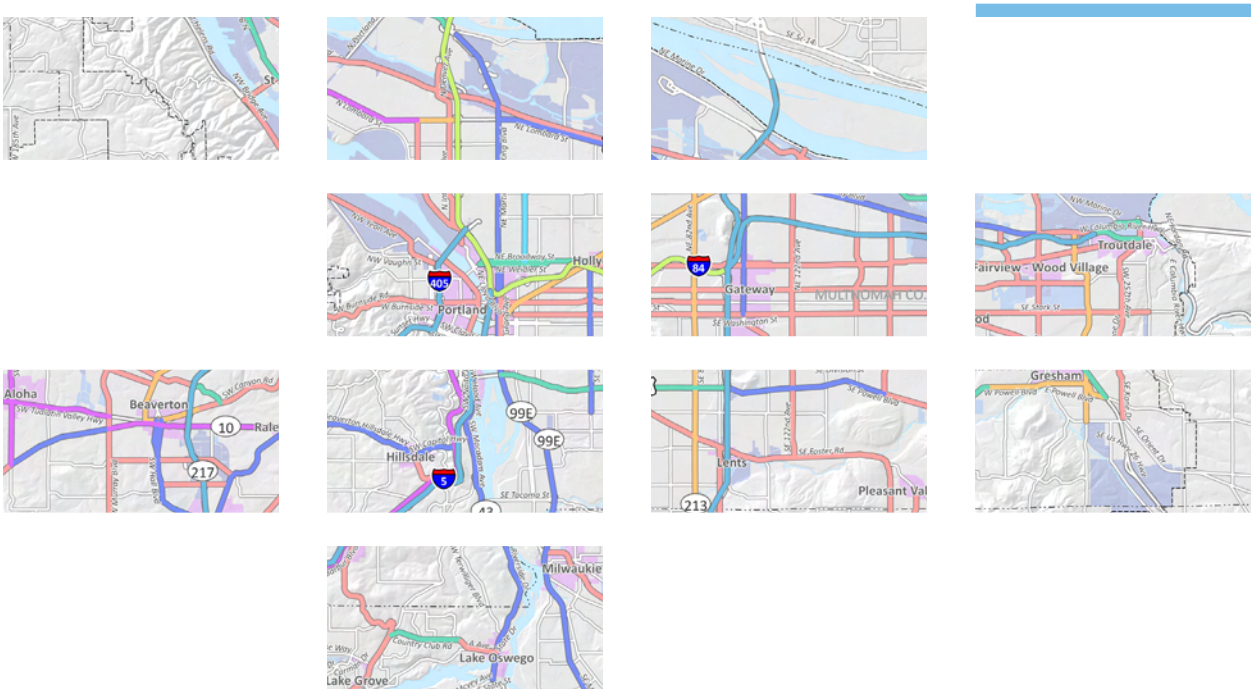


REGIONAL TRANSPORTATION
SYSTEM MANAGEMENT AND OPERATIONS

# 2010 – 2020

## Draft Executive Summary

September 2009

Metro | *Joint Policy Advisory Committee on Transportation*

**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 federal transportation funds.

**NONDISCRIMINATION NOTICE TO THE PUBLIC**

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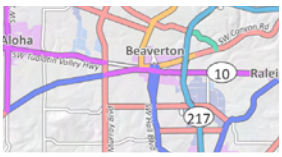









# REGIONAL TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS

## 2010 – 2020 • DRAFT EXECUTIVE SUMMARY • September 2009

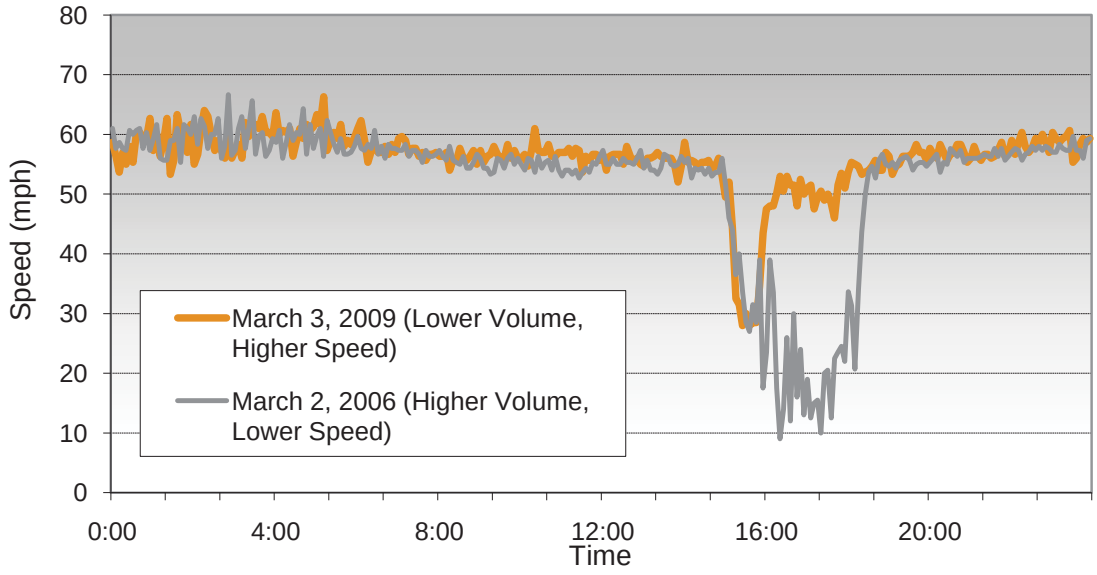
This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), local government, and State of Oregon funds. The contents of this document do not necessarily reflect views or policies of the State of Oregon.

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.

Metro | *People places. Open spaces.*

## Transportation System Management and Operations (TSMO) strategies provide money saving multimodal solutions that relieve congestion, optimize infrastructure investments, promote travel options and reduce greenhouse gas (GHG) emissions.

Traditionally, improvements to transportation mobility, reliability, safety and accessibility are achieved through capital intensive infrastructure investments. But transportation infrastructure is expensive and cost estimates for the region's 25-year needs runs into the billions of dollars. Transportation system management and operations (TSMO) use past and future transportation investments to their utmost potential through system and demand management solutions that enhance overall system performance. Compared to traditional capital investments such as new roads or additional lanes, TSMO solutions offer high returns on comparatively low cost projects and can delay or remove the need for additional capital intensive infrastructure. This TSMO plan focuses on less intensive traffic operation improvements; delivery of multimodal traveler information; promotions and programs to increase walking, biking, transit use, carpooling, and telecommuting; and ongoing investments to optimize the existing transportation system operations and performance.




*Source: PORTAL data, 2009*

**Figure 1: I-5 Northbound Speed Comparison**

A comparison between 2006 and 2009 traffic flow on I-5 northbound near Rosa Parks Boulevard demonstrates that reducing demand reduces congestion. While the reduced demand in 2009 was likely due to the economy, TSMO strategies target system and demand management to achieve improvements in traffic flow.

Both recurring and non-recurring congestion can be addressed using system management and operation solutions.

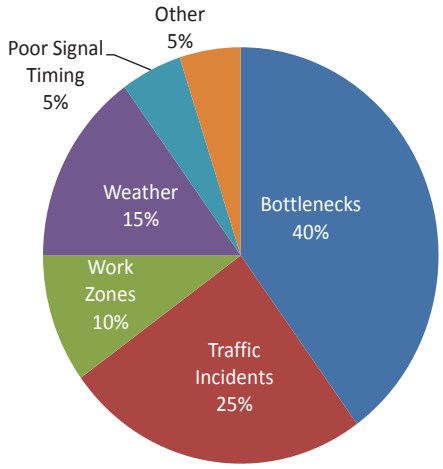



**Figure 2: Sources of Congestion**

A range of TSMO projects already completed in the Portland region proves the cost effectiveness of these solutions with a benefit to cost ratio of at least 2:1. For every dollar spent:

- Burnside Road adaptive signal system provides a benefit of $6.50 (after five years)[1]
- Traffic incident detection provides about $6.00 of benefit[2]
- Freeway service patrols range between a benefit of $2.00 to $42.00[2]

TSMO solutions help reduce transportation's contribution to greenhouse gas (GHG) emissions, a driving force in climate change. In Oregon, transportation represents 34 percent of the state's total greenhouse gas emissions.[3] The amount of greenhouse gas produced is directly proportional to the amount of fuel consumed by vehicles. TSMO solutions tackle the problem in two ways: by optimizing traffic flow for fuel economy and by reducing the number of miles driven.

## TSMO Vision, Goals and Guiding Principles help to keep Portland a great place to live, work and play.

The Portland region's TSMO plan is part of a broader strategy for achieving regional values and goals, which are presented in two key regional plans – the 2040 Growth Concept and the 2035 Regional Transportation Plan (RTP). The 2040 Growth Concept guides how the region develops. The 2035 RTP implements the growth concept through strategic transportation investments. The 2035 RTP goals are:

**Goal #1** Foster Vibrant Communities and Efficient Urban Form – TSMO solutions improve demand and encourage travel behaviors that support efficient urban form.

**Goal #2** Sustain Economic Competitiveness and Prosperity – TSMO solutions improve system reliability, increase safety and promote transportation choices and traveler information projects to help make the region more accessible and prosperous.

**Goal #3** Expand Transportation Choices – TSMO solutions promote the use of travel options and provide multi-modal traveler information.

1 *DKS Associates. City of Gresham - Burnside Road Adaptive signal timing project (Division to Powell). 2007*
2 *US DOT, Intelligent Transportation Systems Joint Program Office. Investment Opportunities for Managing Transportation Performance through Technology. January 16, 2009.*
3 *ODOT, Potential Effects of Tolling and Pricing Strategies on Greenhouse Gas Emissions, 2009.*

**Goal #4 Emphasize Effective and Efficient Management of the Transportation System** – TSMO solutions optimize operations of existing infrastructure, which is more cost effective than building new capital infrastructure and achieves substantial benefits.

**Goal #5 Enhance Transportation Safety and Security** – TSMO solutions reduce crashes and decrease the severity of crashes. By addressing safety concerns, the cost of incidents and the delays to travelers due to incidents is reduced.

**Goal #6 Promote Environmental Stewardship** – TSMO solutions manage congestion, provide traveler information and promote travel options resulting in reduced vehicle emissions, energy consumption and reliance on oil.

**Goal #7 Enhance Human Health** – TSMO solutions support and promote use of active transportation modes, including biking, walking and transit, all of which have demonstrated health benefits.

**Goal #8 Ensure Equit**y – TSMO solutions benefit the entire Portland region and travelers from all geographic, income, and cultural backgrounds.

**Goal #9 Fiscal Stewardship** – TSMO solutions optimize the operations of existing infrastructure and offer a good return on public investment.

**Goal #10 Deliver Accountability** – The TSMO plan emphasizes open communication and coordination between partner agencies. Additionally, TSMO solutions deliver accountability through performance monitoring and evaluation requirements.

In compliance with federal guidelines established by the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and subsequent laws, TSMO strategies must be incorporated in the Regional Transportation Plan (RTP). Previous RTPs emphasize the use of TSMO strategies; the 2035 RTP will be the first to include a comprehensive regional strategy for transportation system and demand management.

The Oregon Transportation Plan (OTP) adopted in September of 2006 also calls for the use of operational solutions as a priority, but does not provide the necessary detail to follow through with TSMO type projects. This TSMO plan fills that role. It identifies and recommends TSMO projects that will benefit the Portland region.

## Regional partners create a vision for TSMO.

Starting in the fall of 2008, key stakeholders from across the region, including public agency staff, transportation operations professionals and private representatives of the traveling public, convened to develop the regional TSMO plan. Throughout the project, these regional partners worked together to reach consensus on each aspect of the plan. At the outset of plan development, the partners collaborated on the vision, goals and guiding principles of the TSMO plan.

**Vision Statement:**

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 transportation system.

## GOALS

1. **Reliability** – Provide reliable travel times for people and goods movement.
2. **Safety and security** – Enhance transportation safety and security for all modes.
3. **Quality of life** – Enhance the environment and quality of life by supporting state and regional greenhouse gas reduction and air quality goals.
4. **Traveler information** – Provide comprehensive multimodal traveler information to people and businesses.

## GUIDING PRINCIPLES

1. **Regional partnerships** – Enhance regional partnerships that support collaborative investment and implementation of management and operations strategies that benefit the region.
2. **System performance** – Monitor system performance and evaluate management strategies to aid equitable policy and sustainable investment decisions.
3. **Investment in ongoing operation**s – Provide on-going maintenance and operations to support the transportation network.

## The TSMO Action Plan identifies investments to achieve safe, reliable, accessible and seamless travel for people and goods.

The action plan is organized into four functional areas.

- Multimodal traffic management
- Traveler information
- Traffic incident management
- Transportation demand management (TDM)

Projects in each functional area target strategies that improve operations of the existing infrastructure and manage demand on the transportation system.

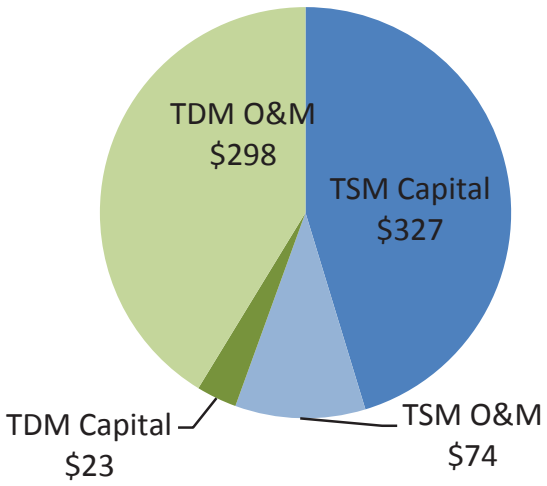



**Figure 3: Total 10-year TSMO Plan Cost in Millions**

The TSMO plan is designed with a 10-year planning horizon. Full implementation of the plan means investing approximately $725 million over the next 10 years. Of that $725 million, about $400 million funds transportation system management (TSM) projects, and about $325 funds transportation demand management (TDM) projects. Funding for both TSM and TDM projects support capital and ongoing operations and maintenance costs.

The TSMO plan is aspirational and benefits will materialize even from partial investment and implementation. Also, some of the TSMO projects may qualify for funding through alternate sources such as capital improvement projects or public-private partnerships.

Example strategies in the **four functional areas:**

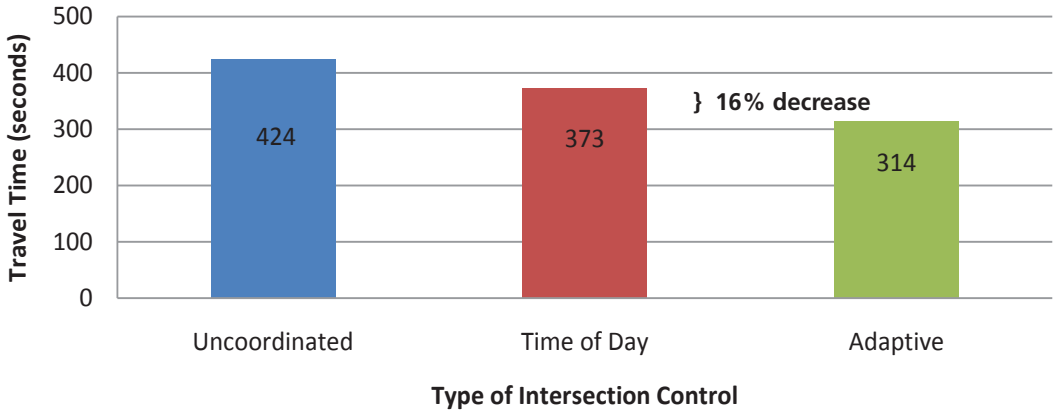
| | |
|---|---|
| **Multimodal Traffic Management**<br>• Traffic signal coordination<br>• Transit signal priority treatment | **Traveler Information**<br>• Real-time traveler information<br>• Expand to arterials |
| **Traffic Incident Management**<br>• Improve surveillance<br>• Expand incident management teams and training | **Transportation Demand Management**<br>• Ridesharing<br>• Collaborative marketing |

## Multimodal Traffic Management strategies reduce travel times, decrease vehicle emissions and improve transit performance.

Multimodal Traffic Management strategies improve metropolitan mobility by applying 21st Century technology solutions to actively manage the transportation network. Projects in this functional area seek to improve arterial traffic management (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.

### Responsive traffic signal systems reduce delays and travel times.

The City of Gresham upgraded traffic signals along East Burnside Road to adaptive signal timing, which adjusts to real-time traffic flow. As a result, average travel time along the corridor decreased by 16 percent, benefiting automobiles, trucks and buses.

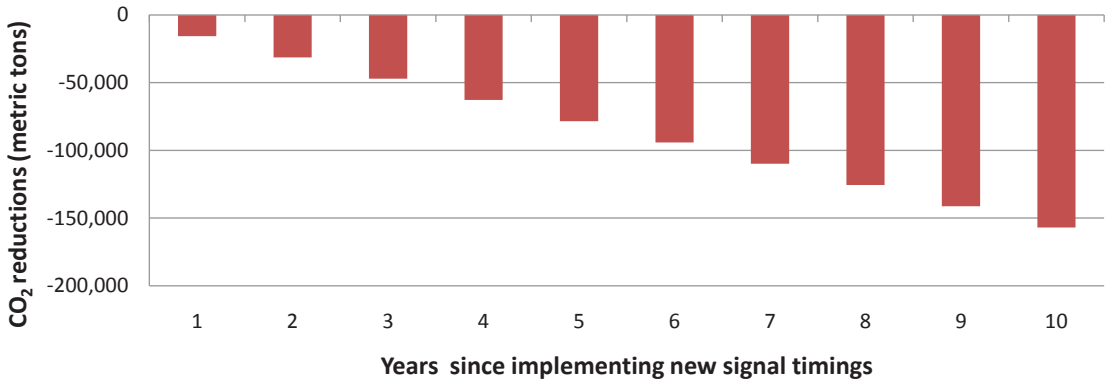



*Source: DKS Associates. Burnside Road Adaptive Signal Timing Project, 2007*

**Figure 4: Burnside Road in Gresham - Travel Time Comparison during PM Peak (EB)**

### Coordinated traffic signals decrease vehicle emissions and fuel consumption.

The City of Portland updated signal timings for 145 traffic signals and realized significant CO2 reductions, resulting in health and environmental benefits across the region.

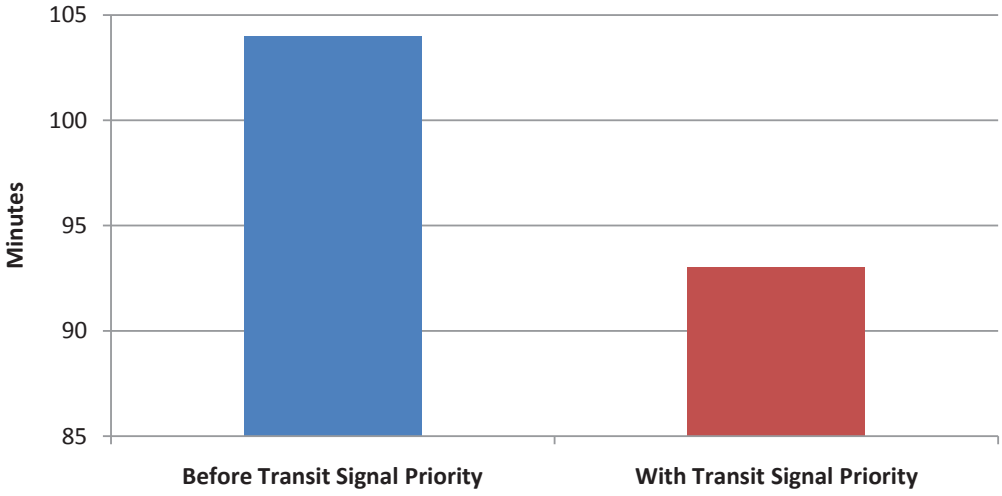



*Source: DKS Associates, Climate Trust Signal Timing Project, 2005.*

**Figure 5: CO2 Savings from Climate Trust Signal Timing Projects (145 total signals)**

### Transit signal priority treatments lead to improved on-time transit performance.

A study of transit signal priority performance showed that transit signal priority improved on-time performance by 14 percent and reduced route run time by 11 minutes (TriMet's Line 12 from Sandy to Barbur).




*Source: Kittelson and Associates, 2009.*

**Figure 6: Route Run Time (Line 12)**

### Bicyclists and pedestrians benefit from improved detection and countdown pedestrian timers.

Projects that upgrade traffic signal timing and equipment also benefit bicyclists and pedestrians. Bicycle detection can be installed with signal upgrades along facilities classified as bike routes. This helps reduce delay for bicyclists. Pedestrian countdown timers can also be installed to provide better crossing information.










Examples of bicycle detection at traffic signals and countdown pedestrian timers in the Portland area.

The TSMO Plan recommends the following projects within the area of **Multimodal Traffic Management:**

**Table 1: Multimodal Traffic Management Project List**

| | Project | Timeframe | Cost | |
|---|---|---|---|---|
| | | | Capital | O&M/year |
| REGION WIDE PROJECTS | Operate and maintain the regional intelligent transportation system (ITS) network | Ongoing | $0 | $100K |
| | Develop an active traffic management regional concept of transportation operations (RCTO) | 1-5 years | $350K | $0 |
| | Create a transit priority treatment performance measurement system | 1-5 years | $200K | $200K |
| | Enhance the regional traffic signal system | 1-5 years | $12M | $50K |
| | Study and implement congestion pricing/high occupancy toll lanes | 1-5 years | $5M | n/a |
| | Develop and implement region-wide access management strategies | 6-10 years | $500K | $0 |
| | Expand Portland State University's ITS freight data collection | 6-10 years | $50K | $100K |
| | Implement an active traffic management pilot project | 6-10 years | $5M | $100K |
| | Install next generation transit signal priority system | 6-10 years | $500K | $100K |
| | Provide 24-hour transportation operations coverage | 11+ years | $0 | $100K |
| | Institute automated speed enforcement | 11+ years | $1M | $100K |
| CORRIDOR ROJECTS | Invest in active corridor management (updating signal timing and installing cameras and communication equipment) | See corridor action plans. | | |
| | Upgrade signals to adaptive traffic signal timing | | | |
| | Install transit priority treatments | | | |

## Traveler information helps users make informed decisions and avoid congestion.

Providing centralized real-time and forecast traveler information is one of the main goals of this TSMO plan. Accurate and comprehensive real-time traveler information allows system users to make informed decisions about their route, mode of transportation and time of day they travel. Ideally this will lead 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, which benefits all modes of travel. Drivers and freight haulers can make alternate route choices and avoid congestion; transit users can plan and make their transit trip with more certainty; and the information will show travelers walking or biking routes for that meet their preferences.

Traveler information projects expand traveler information to arterial roadways, centralize all real-time data, continue to 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 the Internet, radio, cell phone, in-vehicle navigation devices or variable message signs.

Currently, real-time traveler information system 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 Portland Oregon Regional Transportation Data Archive Listing (PORTAL). Recently TriMet and ODOT began allowing open access to transit and traffic data. TriMet provides 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 TransitTracker data, which predicts next arrival times for vehicles, can now be accessed through a variety mobile phone applications. Traveler information is one area where public-private partnerships can flourish with benefits to all transportation system uses.

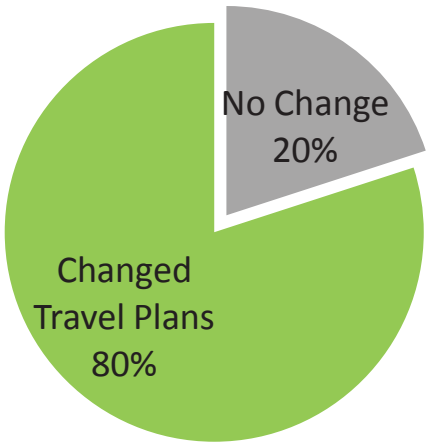


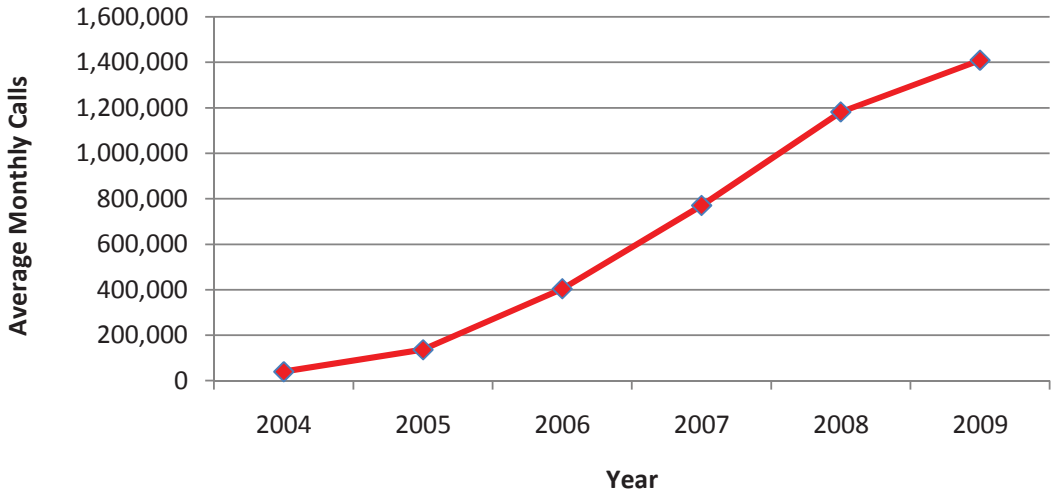

**Figure 7: Resulting Traveler Behavior after Visiting the TripCheck Website.**

### Providing real time-information allows travelers to alter decisions.

A 2007 survey found that almost 80% of respondents change their travel plans, such as taking a different route, taking a different mode, going at a different time or canceling the trip because of information on the website.

### Increased visits to the Transit Tracker demonstrate widespread use of traveler information.

TriMet's Transit Tracker service is available online and by phone. Customer use of the Transit Tracker website has expanded from an average of 10,000 visits per month in 2002, its first year of operation, to an average of 100,000 visits per month in 2009. Growth in average monthly use of Transit Tracker by phone has increased by 3432% from its inception in 2004 and 2009.

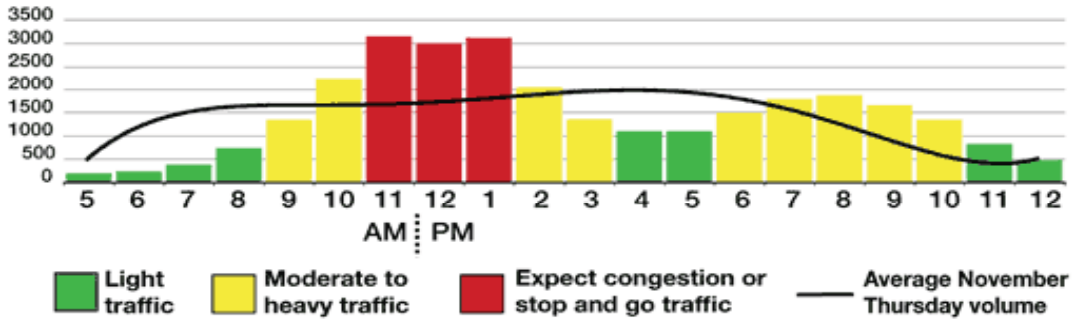



*Source: TriMet, 2009.*

**Figure 8: Transit Tracker by Phone Customer Usage**

### Forecasting traveler information enhances traveler experience.

By forecasting traveler information, people can plan ahead and avoid traveling during peak periods. For example, the Washington State Department of Transportation used a forecasting tool to show travelers what conditions to expect around the Thanksgiving holiday.




*Source: WSDOT website, 2009.*

**Figure 9: I-5 Northbound Thursday, Thanksgiving Day**

Typical Traffic Volume near Lewis and Thurston Counties

The TSMO Plan recommends the following projects within the area of **Traveler Information:**

**Table 2: Traveler Information Project List**

| | Project | Timeframe | Cost | |
|---|---|---|---|---|
| | | | Capital | O&M/year |
| REGION WIDE PROJECTS | Upgrade and enhance Portland Oregon Regional Transportation Data Archive Listing (PORTAL) | Ongoing | n/a | $100K |
| | Provide and maintain multi-modal traveler data and tools | Ongoing | $0 | $100K |
| | Add Park &Ride traveler information to route planning tools | Ongoing | $500K | $150K |
| | Enhance and centralized all real-time roadway traveler information to TripCheck Travel Information Portal (TTIP)s | 1-5 years | $3M | $2M |
| | Develop the arterial performance measure regional concept of transportation operations (RCTO) | 1-5 years | $750K | $100K |
| | Develop a transit performance measurement system | 1-5 years | $750K | $50K |
| CORRIDOR ROJECTS | Install traveler Information devices on arterial roadways | See corridor action plans. | | |

## Traffic Incident Management strategies reduce crashes, delay, costs and improve traveler safety.

Efficient incident management is critical to reducing incident-related congestion and restoring capacity as quickly as possible. Strategies enhance incident management capabilities, increase surveillance for faster incident detection, improve inter-agency communications and implement active traffic management.

Incident management targets safety and reliability. By clearing incidents quickly, the chance of secondary incidents decreases and safety is improved. The primary transportation modes that benefit from incident management strategies are automobiles, buses and trucks.

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

### Managing traffic incidents improves traveler safety.

Once an incident occurs, it can be a roadway hazard that leads to secondary crashes. Managing incidents quickly and efficiently can prevent additional injury and property damage. Also, implementing active traffic management techniques, such as variable speed limits and lane management signs, can help to reduce the number and severity of crashes.[4]

4 *Research and Innovative Technology Administration (RITA) Intelligent Transportation Systems Benefits Database. Website: http://www.benefitcost.its.dot.gov/its/benecost.nsf/BenefitsHome (June 2009)*

### Detecting and clearing incidents quickly restores lost capacity.

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

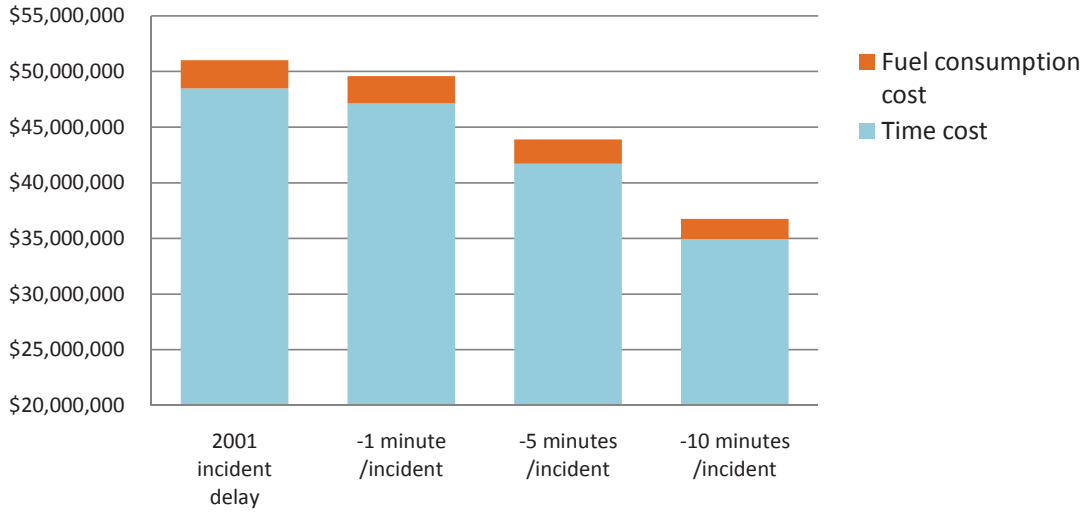
**Table 3: Lost Capacity by Blockage Type**

| 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*[5]

### Improving incident clearance times reduces incident delay and cost.

In a study conducted by Portland State University, the cost of incident delay was related to incident duration. Every one minute of incident delay, for all Portland region incidents, costs approximately $1.5 million annually. By improving incident management and reducing incident duration, the region can substantially reduce costs associated with incident delay.




*Source: Portland State University, 2004*[6]

**Figure 10: Cost of ODOT Region1 Incidents and the Effect of Decreasing Incident Durations**

5 *Highway Capacity Manual 2000. Transportation Research Board, National Research Council, Washington, D.C., 2000.*

6 *Robert L. Bertini, Michael W. Rose, Ahmed M. El-Geneidy (Portland State University). Using Archived Data to Measure Operational Benefits of ITS Investments: Region 1 Incident Response Program. Sponsored by Oregon Department of Transportation Northwest with US DOT and FHWA. June 2004.*

The TSMO Plan recommends the following projects within the area of **Traffic Incident Management:**

**Table 4: Traffic Incident Management Project List**

| | Project | Timeframe | Cost | |
|---|---|---|---|---|
| | | | Capital | O&M/year |
| REGION WIDE PROJECTS | Expand and improve incident management (expanding routes, adding surveillance, establishing target clearance goals and expanding staffing and training) | 1-5 years | $2M | $200K |
| | Expand incident management teams/training | 1-5 years | $0 | $500K |
| | Integrate voice and data networks | 1-5 years | $10M | $500K |
| | Upgrade emergency responder geographic information system (GIS) system | 6-10 years | $200K | $50K |
| | Initiate dynamic routing and preemption pilot project | 11+ years | $500K | $75K |

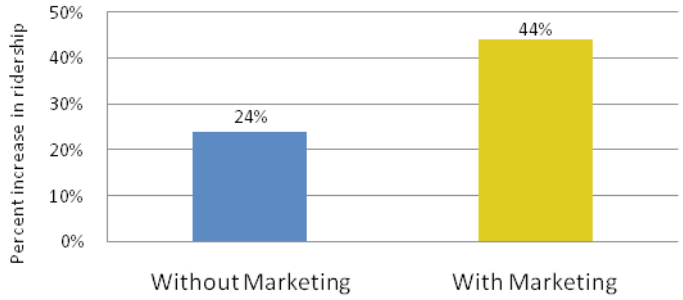
## Transportation Demand Management (TDM) strategies reduce vehicle miles traveled, and increase the share of transit, bicycle, walk and carpool trips.

TSMO also manages transportation from the demand side to help residents and employees of the region increase their use of travel options and reduce the number of trips made while driving alone. TDM increases 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.

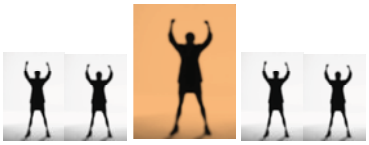
All modes benefit from TDM projects. TDM projects raise general awareness about walking, bicycling and transit use, which in turn increases safety for all users. TDM projects encourage travelers with flexibility to use non-drive alone options or travel during off-peak hours. By providing travel information and option incentives like employer or youth passes, travel behavior will adjust to create more space on roadways, resulting in improved travel times for other roadway users.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.

### Marketing travel options encourages travel choices.

Regional Travel Options (RTO) partners market several programs that increase bicycling, walking, ridesharing and transit use. In neighborhoods targeted by individualized marketing for the opening of the MAX Yellow Line, ridership was nearly double compared to the control group that received no targeted marketing. The 2009 tracking survey for the Drive Less/Save More campaign found that one out of every five Portland residents took action to reduce their drive-alone car trips.




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

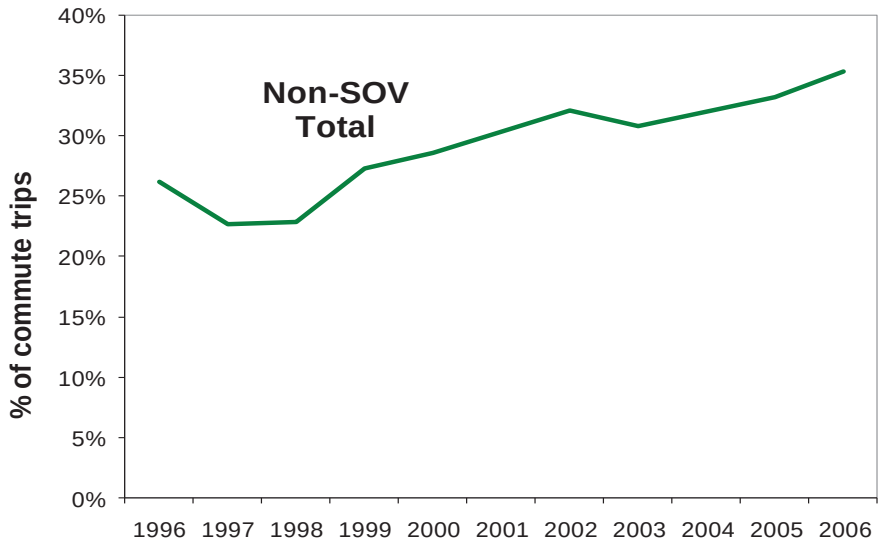


*Source: Socialdata America, March 2006 (left), Moore Information, Inc., January 2009 (right)*

**Figure 11: 2004 TriMet Capital and Service Improvements in N/NE Portland (left), the Drive Less/Save More Campaign (right)**

### Providing employer services increases non-drive-alone mode split.

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 average to over 35 percent average among participating employers.

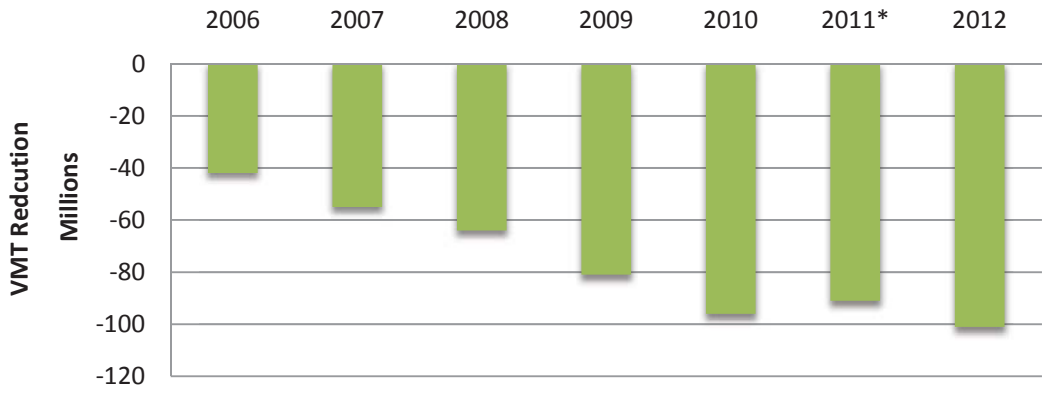



*Source: RTO 2005-06 Program Evaluation, Portland State University Center for Urban Studies, July 2007*

**Figure 12: Key Finding: Outcomes -** Non-SOV mode share continues to rise

### Promoting travel options reduces vehicle miles traveled

Based on current, steady funding levels, the RTO program and its partners plan to reduce even more vehicle miles annually.




*Source: 2008-2013 RTP Strategic Plan, March 2008*

**The dip in expected VMT in 2011 is related to the timing of individualized marketing projects*

**Figure 13: Expected Reduction in Vehicle Miles Traveled (VMT) by RTO Strategies for Fiscal Years 2005-2013**

The TSMO Plan recommends the following **Transportation Demand Management Strategies:**

**Table 5: Transportation Demand Management Strategies Project List**

| | Project | Timeframe | Cost | |
|---|---|---|---|---|
| | | | Capital | O&M/year |
| REGION WIDE PROJECTS | Continue collaborative marketing | Ongoing | $0 | $975K |
| | Implement and support employer services | Ongoing | $0 | $1M |
| | Implement and support rideshare services | Ongoing | $0 | $360K |
| | Measure program effectiveness to facilitate decision making | Ongoing | $0 | $150K |
| | Support strategic and collaborative TSMO program oversight. | Ongoing | $0 | $335K |
| | Provide incentives for jurisdictions to manage parking | 1-5 years | $0 | $100K |
| | Develop and implement a smartcard fare system regional concept of transportation operations (RCTO) and pilot project | 1-5 years | $12M | $0 |
| | Develop and implement a regional youth transit pass program | 1-5 years | $100K | $15M |
| | Provide a regional incentive system for demand management | 11+ years | $0M | $200K |
| CORRIDOR PROJECTS | Support outreach and individualized marketing for travel options | See corridor action plans. | | |
| | Invest in TDM to mitigate impacts during construction of large transportation projects | | | |
| | Encourage rideshare and employee incentives | | | |
| | Support transportation management associations | | | |
| | Provide funding for a bike sharing program | | | |
| | Support location-efficient living | | | |
| | Pursue entrepreneurial capacity purchases | | | |
| | Negotiate shared parking agreements for rideshare Park &Ride and manage parking | | | |
| | Support car-share operations | | | |
| | Build beginning- and end-of-trip bike facilities | | | |
| | Provide first and last-mile services connecting transit stops with significant destinations (shuttles or demand responsive transit) especially for hours not served by transit | | | |
| | Encourage rideshare and employee incentives | | | |

## Successful implementation of the regional TSMO plan will require enhancing partnerships and increasing funding.

Successful implementation of the regional TSMO plan depends on continued commitment and cooperation by regional partners, both public and private. The regional partners recommended many non-capital actions that are needed to support implementation.

### Recommended organizational and policy actions include:

- Establish a regional TSMO policy group from members of TransPort, the RTO Subcommittee of the Transportation Policy Alternatives Committee (TPAC), the Regional Freight Technical Advisory Committee (TAC) and other public and private stakeholders to address joint funding and project development.
- Leverage TSMO results through local policies, codes and Capital Improvement Project (CIP) investment decisions.
- Explore opportunities for public-private partnerships.
- Formalize roles and relationships between agencies in order to continue the effective communications that exist today with informal agreements.
- Explore the development of a corridor management association to guide on-going implementation of system and demand management strategies.
- Support best management practices for operations, staff training/workforce development. Reevaluate staffing needs at agencies in order to support expansion of on-going operations.
- Tie TSMO to regional climate action plan.
- Continue to pursue cooperative purchasing agreements and joint operating agreements to save resources.
- Publish regular reports documenting the implemented TSMO projects, performance outcomes and key agency functions that need to be maintained throughout the life of the TSMO plan.
- Pursue interagency agreements for region-wide 24-hour traffic operation center coverage.
- Account for operations and management in the formal planning process.

### Recommended funding actions include:

- Work to increase use of federal funds for TSMO.
- Develop a TSMO funding strategy to support regional systems such as traveler information, carpool match, ITS network and PORTAL.
- Tie operations capital to on-going operations and maintenance funding.
- Work with finance managers in partner agencies to have outcome-focused budgeting.
- Request separate RTO/TSM program and capital infrastructure funds in Metropolitan Transportation Improvement Program (MTIP) process.
- Link availability of funding for on-going operations and maintenance as a review criteria for MTIP funding.

- Identify and develop new funding sources for TSMO capital and operations.
- Investigate regional and sub-regional opportunities for group purchasing agreements.
- Align regional TSMO priorities with regional policies to make the case for additional funding.
- Expand MTIP funds available for TSMO projects.
- Work with regional partners to gain commitment for funding ongoing operations.

## The TSMO plan recommends programming regional funds to target travel options, traveler information and arterial traffic management.

Implementation of the TSMO plan is smoother when regional programs are dedicated to advancing TSMO actions. The Regional Mobility program focuses on TSM solutions and is supported by Metro and Regional Flexible Funds. The Regional Travel Options program implements TDM solutions and is supported by Metro, Regional Flexible Funds, Oregon Department of Energy Business Energy Tax Credit (BETC) and other project-specific grants.

### The Regional Mobility program will receive $6 million over the next four years to fund TSM solutions.

The Regional Flexible Fund program allocation for TSM investment is $3 million for 2010-2011 and an additional $3 million for 2012-2013. Since the 10-year regional TSMO plan is estimated at $725 million, careful deliberation was used to recommend the first set of projects. These projects were chosen based on equitable distribution, dependencies, readiness and agency input.

TransPort recommends the following projects from the action plan for the 2010-2013 funding with approximate allocations shown.

**Table 6: TransPort Project List**

| Project | Allocation |
|---|---|
| PORTAL enhancements and support | $450K |
| ITS network – operate and maintain | $100K |
| Active traffic management regional concept of transportation operations (RCTO) | $300K |
| Arterial performance measure regional concept of transportation operations (RCTO) | $150K |
| Arterial traveler information for TripCheck Traveler Information Portal (TTIP) enhancement – Phase 1 | $500K |
| Tualatin Sherwood Rd/99W – active corridor management with adaptive signal timing and transit priority treatments | $1.85M |
| Canyon Rd – adaptive signal timing | $750K |
| I-84/Powell/Glisan/Sandy - active corridor management projects | $1.9M |
| **TOTAL** | **$6M** |

This list contains five regional and three corridor-specific projects. The corridor-specific projects, although defined by a geographic area, do provide a regional benefit as system users travel across the Portland region. The following project descriptions detail how the funding allocation should be used, and why each project is recommended for inclusion under the 2010-2013 funding allocation. Future funding will be allocated to projects using the selection criteria in Appendix G.

## Regional Projects

The regional projects focus on programs and studies that are not geographically based. These projects benefit all modes of travel by improving traveler information, supporting necessary transportation operations and laying the groundwork for future projects.

- **PORTAL enhancements and support** – Supporting the PORTAL system provides new tools and an upgraded interface to archive transportation data. This data can be used to make decisions to improve the transportation system.
- **Operate and Maintain the ITS network** – This project funds replacement parts and new equipment to enable new agencies to access the ITS network.
- **Active Traffic Management Regional Concept of Transportation Operations (RCTO)** – The active traffic management RCTO evaluates the potential effectiveness of variable speeds and managed lanes. It analyzes the regional corridors and prioritizes investments in active traffic management.
- **Arterial Performance Measure RCTO** – The arterial performance measure RCTO identifies performance measures for the region's arterial roadways and develops standards for data collection and dissemination to travelers. The RCTO lays the groundwork for all future arterial system management projects and guides selection of data collection equipment and design.
- **Arterial traveler information for TTIP enhancement– Phase 1** – This project focuses on updating software and in-field systems on arterial roadways necessary to capture and transfer data to ODOT's TripCheck Travel Information Portal (TTIP) data exchange system. In many cases, existing field equipment is capable of gathering information such as traffic counts, travel times and speeds; however, software upgrades are necessary to actually collect and distribute the data.

## Corridor projects

The corridor projects target highly congested areas across the Portland region. These corridor projects benefit travel by freight, bicycles, pedestrians and transit in addition to automobiles. By implementing a focused group of corridor projects, results can be collected to determine more accurate benefit-cost analysis and lead the way for similar projects in other corridors.

- **Tualatin Sherwood Rd and 99W improvements** – This project addresses facilities that currently operate below jurisdictional standards during mid-day and peak hours. It builds on two current projects and provides a complete traveler information and arterial management system on 99W and Tualatin Sherwood Road connecting Sherwood, Tualatin, and Tigard.
- **Canyon Road Adaptive Signal Timing** – The Canyon Road project provides adaptive signal timing on Canyon Road through downtown Beaverton. It builds on the current adaptive signal timing project on Beaverton Hillsdale Highway. Due to the close proximity

of the two facilities and the several cross streets that intersect the two, optimal operations occur when both are equipped with adaptive signal timing systems.

- **Active Corridor Management Projects on I-84, Powell, Glisan, and Sandy** – This project extends traveler information and supports incident management techniques that reduce traveler delay and improve safety through the I-84 corridor. Real-time traveler information along I-84 and parallel facilities allows travelers to make informed route decisions. The project also implements incident management strategies such as variable speed limits and event signal timing plans.

### The Regional Travel Options (RTO) Program will receive $9.7 million over the next four years to fund TDM solutions.

The Regional Flexible Fund program allocation for the RTO program investment is $4.3 million for 2010-2011 and $4.3 million for 2012-2013. The program anticipates receiving an additional $1 million in funds from other sources. Project priorities for 2010-2013 were developed through a strategic planning process that involved RTO partners and stakeholders. The Joint Policy Advisory Committee on Transportation (JPACT) and the Metro Council adopted the plan in March 2008.

**Table 7: Regional Travel Options Project List**

| Project | Allocation |
|---|---|
| Employer and commuter outreach program | $2.9M |
| Transportation Management Association program | $1.3M |
| Regional Travel Options grants to local jurisdictions and non-profits | $1.2M |
| Collaborative marketing program | $860K |
| Rideshare services | $1.1M |
| Individualized marketing grant program | $750K |
| Evaluation and measurement | $800K |
| Program coordination and policy development | $770K |
| **TOTAL** | **$9.7M** |

## Regional Projects

Metro manages and administers the RTO program, measures results and provides assistance to partners. Public and private partners carry out local strategies through grant agreements. Collaboration among partners is emphasized to leverage resources, avoid duplication and maximize program impacts.

- **Employer services** – The purpose of this project is to implement and/or support outreach and technical support in a collaborative manner with RTO partners to help employers increase non-drive-alone travel modes. Employer services are provided by Metro, TriMet,

the Oregon Department of Environmental Quality (DEQ), Wilsonville South Metro Area Regional Transit (SMART), the city of Portland, and area Transportation Management Associations.

- **Collaborative marketing** – This campaign continues the Drive Less/Save More regional marketing campaign, which increases awareness and use of travel options and reduces drive-alone trips; promotes active transportation by updating and distributing the regional Bike There! map, Walk There! guidebook and other collateral materials; provides sponsorships for RTO partner events and activities; conducts outreach to the public; and develops additional partnerships and support partner collaboration and coordination.
- **Rideshare services** – Services are intended to implement and/or support marketing, outreach, vanpool fare incentives, and other services directed at residents and employees to encourage ridesharing and to provide customer service for CarpoolMatchNW.org.
- **RTO grant program for regional projects** – The grant program provides federal Congestion Mitigation and Air Quality (CMAQ) funds to support travel options projects and programs that reduce transportation-related emissions in an effort to meet and maintain national air quality standards. Projects must show an air quality improvement and must include an evaluation component. The RTO Subcommittee of the Transportation Policy Advisory Committee (TPAC) selects projects through a competitive process and has selected projects to be carried out in 2009 to 2011. The group will accept applications for 2011 to 2013 projects in 2010.
    - **TriMet, Multi-Modal Trip Planner, $68,930 –** The project will test the usability of an Open Source Multi-Modal Trip Planner System that is expected to increase mode share for bike, walk and transit trips during peak commute hours while decreasing drive-alone trips.
    - **Bicycle Transportation Alliance (BTA), Bike Commute Challenge, $25,000 –** The program challenges employers/workplaces to see who can get the most people biking in September. Any business, non-profit or public agency is eligible to participate. Individual cyclists may also participate on their own.
    - **Westside Transportation Alliance (WTA), Carefree Commuter Challenge, $38,000 –** The Carefree Commuter Challenge creates excitement, competition and camaraderie at the workplace to reduce auto trips. WTA staff presents a turn-key trip reduction program to worksite transportation coordinators to help them motivate employees to use transit, bike, walk, carpool, vanpool and telecommuting instead of driving alone.
- **Measurement** – This project implements and/or supports strategies that invest in cost-effective strategies by measuring program effectiveness and easing data sharing among partners.
- **Program coordination and policy development** – The purpose of this project is to support strategic and collaborative program oversight; support meetings and activities of the RTO Subcommittee of TPAC, administer RTO grant programs; develop equitable and sustainable funding plans, seek additional funds to leverage federal grants; and track and support the development of regional, state and local policies that advance TDM strategies.

## Corridor/local projects

Projects at the local and/or corridor level are carried out by local jurisdictions and agencies and by non-profit organizations. The RTO Subcommittee of TPAC selects grant projects and programs through a competitive application process, establishes performance measures and provides oversight for transportation management association funding. Metro administers the funds for local projects.

- **Transportation management associations** – RTO supports public-private partnerships including transportation management associations (TMAs) in regional or town centers that assist employees and/or residents to increase use of travel options. The RTO program provides grants to Clackamas Regional Center TMA, Gresham Regional Center TMA, Lloyd TMA (serves Lloyd District in NE Portland), Swan Island TMA (serves Swan Island Business District in N Portland), and Westside Transportation Alliance (WTA) (serves Washington County businesses).
- **Individualized marketing grants** – Implement and/or support intensive outreach to interested residents in targeted neighborhoods to encourage use of travel options through delivery of local travel options information and services. The RTO Subcommittee has selected the following individualized marketing projects to be carried out from 2009 to 2011:
    - City of Portland, North/Northwest SmartTrips, $200,000, 2009
    - City of Gresham, Civic Drive MAX Station, $100,000, 2010-2011
    - City of Portland, Green Line SmartTrips, $300,000, 2009-2010
    - Wilsonville SMART, Wilsonville Residential Areas, $228,480, 2010-2011
    - City of Portland, Street Car Loop SmartTrips, $171,520, 2011-2012
- **RTO grant program for local/corridor projects** – The grant program provides federal Congestion Mitigation and Air Quality (CMAQ) funds to support travel options projects and programs that reduce transportation-related emissions in an effort to meet and maintain national air quality standards. Projects must show an air quality improvement and must include an evaluation component. The RTO Subcommittee of TPAC selects projects through a competitive process and has selected projects to be carried out in 2009 to 2011. The group will accept applications for 2011 to 2013 projects in 2010.
    - **TriMet, Bike Parking at Beaverton Transit Center, $50,000 –** Electronic-access bike lockers will be installed at Beaverton Transit Center and their effectiveness evaluated as a strategy for encouraging bicycling to transit. Evaluation will include the controlled-access bike parking facility at the Portland State University light rail station.
    - **Lloyd TMA, Lloyd Links, $41,445 –** The program links Lloyd District employees from the residence to their Lloyd work sites via personal contact and direct one-on-one assistance. This is coupled with education, promotion, incentives and evaluation.
    - **City of Portland, Sunday Parkways, $30,000 –** Three Sunday Parkways events will be held in 2009. Sunday Parkways provide a car-free environment where families, cyclists, walkers and others can enjoy streets and parks. Sunday Parkways reduce auto trips, improve air quality, increase the health and activity levels of residents and promote the awareness and acceptability of bicycling and walking as modes of travel in Portland.

- **City of Tigard, Bike Map, $20,000 –** The Tigard-area bike map published in 1983 will be upgraded and enhanced. The bike-route map will include grades, key neighborhood trails and access ways, bus stops, transit and how to access transit, including commuter rail, and will make it easier for people to use their bicycles for all types of transit trips.
- **Westside Transportation Alliance (WTA) Bike Racks for Commuters, $15,000 –** Stable bike racks will be made available to businesses that participate in the WTA's Westside Commuter Club. There will be assistance for fees associated with installing racks.
- **Wilsonville SMART, Bike/Pedestrian Coordinator, $80,000 –** A Bike/Pedestrian Coordinator will be hired to implement the City of Wilsonville's Bicycle and Pedestrian and Transit Master Plan priorities. The coordinator will develop maps and brochures and engage the community in walking and biking programs.
- **City of Gresham, Wayfinding, $50,000 –** The program will install a network of pedestrian and bicycle way-finding signs to aid travelers in finding local amenities and facilities. The signs will include arrows and distance markers. The City of Gresham will also produce a map for the Gresham area that will show bicycle routes and amenities.
- **Community Cycling Center, Diverse Cultures Cycling Needs Assessment and Pilot Project, $78,625 –** The project aims to increase the awareness and acceptability of bicycling as a transportation option among minority and low-income participants in North and Northeast Portland by creating a culturally-specific program to meet the unique needs of a diverse community. The project includes a culturally-appropriate needs assessment and development of a pilot program to increase bicycle trips and reduce car trips among target audiences.
- **Swan Island TMA, TNT (Trip Not Taken), $28,000 –** The project seeks to reduce vehicle miles traveled by encouraging Swan Island employees to relocate to adjacent neighborhoods in North and inner Northeast Portland and by helping residents of those neighborhoods find job and career opportunities on Swan Island.

## There is more to learn about the future of TSMO in the Portland metropolitan area.

The executive summary provides an overview of the regional plan for TSMO. The Regional TSMO Plan provides more detailed information about the planning process, policy framework and the 10-year list of projects and implementation strategies. Technical appendices include the background research and development memos supporting the recommendations.

Visit www.oregonmetro.gov/rtp to download the full plan and technical appendices.

# ACKNOWLEDGEMENTS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With much assistance from Liz Adams, Rian Amiton, Pamela Blackhorse, Heath Brackett, Anthony Butzek, Kim Ellis, Pat Emmerson, Matthew Hampton, Dan Kaempff, Huan Li, Josh Naramore, Sean Tevlin, Marlon Warren and Caleb Winter.

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# 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.

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*Printed on recycled content paper. 09298 July 2009*




REGIONAL FREIGHT PLAN

# 2035

## Draft plan

**September 15, 2009**

Metro | *Joint Policy Advisory Committee on Transportation*

**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/freight

*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.*

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# EXECUTIVE SUMMARY

## Investment in efficient freight transportation improves mobility and creates jobs

Our region is a great place to live, work and play, and we've worked hard to keep it that way. But whether we are harvesting the fruits of sustainable economic growth, or facing tough times together, it's important to understand that much of our prosperity is directly tied to the investments we make in our regional freight infrastructure, by making consumer goods readily available to us, providing multimodal systems that help our businesses efficiently reach global and domestic marketplaces and developing high-quality regional jobs. This Regional Freight Plan defines goals, strategies and actions designed to guide the stewardship of our critical multimodal regional freight infrastructure and industrial land supply, to support a sustainable, balanced and prosperous tomorrow.

Our natural and built resources – and our people – also make the Portland-Vancouver region a globally competitive international gateway and domestic hub for commerce. Since 1994, every study that has examined the Portland-Vancouver area (and the Oregon and Washington economies in general) has found a much higher-than-average link between economic health, creation and retention of family wage jobs, and infrastructure that helps goods move more quickly to destinations through our multimodal freight

### Trade-dependent economies

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

**Exports:** 2007 Oregon exports totaled $16.5 billion; 2007 Portland/Vancouver exports totaled $15.8 billion.

**Businesses:** Thousands of 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 effective transportation network for operations**.** In 2008, 14,80 direct jobs and $530 million in direct income were tied to marine and air terminals at 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. Thousands more indirect jobs were also created in the region, along with associated millions of dollars in income.

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

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.

network.[1] Increased transportation capacity, efficiency, flexibility and travel time reliability reduce transportation costs for firms (improving access to markets and inputs) and individuals (reducing travel costs and time). A multimodal system, with connections between modes, also means more competitive shipping rates for our local businesses. By increasing productivity, our investments increase this region's ability to compete in the global marketplace. That advantage facilitates retention or expansion of existing businesses, supports homegrown startups and attracts new businesses to the region. Regional benefits of the resulting increase or retention of employment include direct, indirect and induced jobs, income, taxes and spending; in fact, one in ten regional jobs are associated with transportation, distribution or the logistics industry.

## The Regional Freight Plan positions us for the economic rebound

This Regional Freight Plan is an element of the RTP update and has been guided by the Metro Council-appointed 33-member private-public sector Regional Freight and Goods Movement (RFGM) Task Force and a technical advisory committee. The plan is built on a foundation of technical work, including research on the region's freight transportation systems and facilities, needs and issues.

It may seem counterintuitive to focus on freight and goods movement issues during the depths of a severe global recession.[2] Why should the region focus attention on freight planning when volumes are down, wholesale and consumer demand is stagnant, shippers aren't shipping, and rail cars are mothballed? Because we know from experience that our challenging global and regional economic downturn is only a temporary retreat from a generally upward trend line. Recovery – even this one, which is likely to include significant structural changes – will again put pressure on the functional capacity of the intermodal freight system and its ability to deliver local goods and services, link regional suppliers and producers to domestic and global trading partners, and provide efficient access to industrial lands and employment areas. This downturn is an opportunity to catch our collective breath and collect data, implement needed projects as funding and other priorities permit. And it's an opportunity to sharpen our planning and analysis methods, to better define

### Logistics supplies family wage jobs

Logistics provides living wage jobs and a career path for workers without a college education, picking up the slack as manufacturing jobs continue to decline. The mean annual income for logistics jobs (2006) was about $47,000 which is $5,000 per year higher than construction jobs.

Source: Portland/Vancouver international and domestic trade capacity analysis, executive summary, page 6.

[1] Studies include the *Portland/Vancouver International and Domestic Trade Capacity Analysis* (Port of Portland, 2006); *Profile of the Regional Freight Transportation System* (Metro, 2007); *The Cost of Congestion to the Economy of the Portland Region* (2005);*Comprehensive Economic Development Strategy for the Portland-Vancouver Metropolitan Region* (ECONorthwest, June 2005); *The Cost of Highway Limitations and Traffic Delay to Oregon's Economy* (EDR Group, March 2007); *Use of Freight and Business Impact Criteria for Evaluating Transportation Investments* (EDR Group, 2008); *Freight Moves the Economy* (ODOT, 1999).

[2] Oregon Department of Transportation is updating the state's commodity flow forecast through 2035, taking into account the effects of the recent economic downturn. This work, which can be disaggregated to identify county level impacts and trends, will be available in late 2009.

future projects that we'll need to manage post-recovery growth.

The region's goods movement system must improve and adapt if the region is to maintain its economic competiveness in the global economy and its status as an international freight gateway. Immediate action is required to meet the economic opportunities of the 21st century. This Regional Freight Plan highlights the key issues for the regional freight transportation system and suggests policies and investments to address them.

## The Importance of a regional plan for freight and goods movement

> "Regions – not states or cities – are the essential geography for economic development and competition… Leaders in both the public and private sectors realize they must work together to keep the region competitive."
>
> Source: *Portland-Vancouver Region Comprehensive Economic Development Strategy* (2005), page i.

Currently, the Oregon Department of Transportation (ODOT) is examining all freight modes (highway, rail, port, airport, pipeline and intermodal) to create a comprehensive freight plan at the state level. And within the Metro region, the City of Portland has recently completed a Freight Master Plan for the City of Portland (adopted 2006). The Southwest Washington Regional Transportation Council in Clark County, Wash. is preparing its own regional freight transportation plan, to be completed by spring 2010. Between the statewide scale of issues, concerns and solutions and those associated with the scale of the City of Portland and Clark County lies the metro region. A freight plan at the regional level is important because the movement of freight and goods transcends local jurisdictional boundaries, and includes multiple modes, employment and industrial centers, economic clusters and major regional access points. A region has a larger scope of reference and more resources to direct appropriate attention and funding to tackle these problems than a city, and its focus on interstate and inter-regional movements is more refined than are the view taken from the statewide level. This region also functions as the trade and transportation gateway for Oregon and provides market access for many southwest Washington businesses. In that regard, the Metro region can take Clark County dynamics, trip patterns and commodity flows into consideration in a way that the state cannot. Finally, through federally established metropolitan planning organization functions, prioritizing among competing modes and subregions is also an important function to be handled regionally.

## Freight goals reinforce other important regional goals

The freight and goods movement community shares some common goals with advocates of other transportation modes. Our desired outcomes are not so very different. Under business as usual, we are all impacted by traffic congestion. Just as individuals need to get places in a reasonable time at a reasonable cost, so too do our regional employers need to service electric lines, meet airline schedules and receive and ship goods on a reliable multimodal network. Shippers often have fewer good travel choices than do passengers – especially in the Portland area where good alternatives to the automobile abound. Again, a multimodal approach to freight mobility means shippers will have a choice of cost-effective shipping options, which reduces their reliance on any single mode of transport. By more closely matching each trip purpose to the optimal mode, we can reduce freight's environmental and community footprints as well.

**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.

Preservation of urban, rural and industrial lands, protection of public investment in infrastructure for its intended purpose, innovation in reducing waste, energy use, pollutants and greenhouse gases – all these are important to businesses and communities alike. The "traded sector" aids in realizing this common vision by bringing in money from outside the region through robust exports with our domestic and international trading partners.

## Regional freight goals and outcome-driven action

The RFGM Task Force described six goals or outcomes, concerns and needs associated with the desired outcomes listed below:

- We must use a systems approach to plan and manage our multimodal freight transportation infrastructure, recognizing and coordinating both regional and local decisions to maintain seamless flow and access for freight movement that benefits all of us.
- We must adequately fund and sustain investment in our multimodal freight transportation system to ensure that the region and its businesses stay economically competitive.
- We must create first-rate multimodal freight networks that reduce delay, increase reliability, improve safety and provide choices.
- We must 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.
- We must ensure that our multimodal freight transportation system supports the health of the economy and the environment.

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- We must enlighten our region's citizens and decision-makers about the importance of freight movement on our daily lives and economic well-being.

In addition, the RFGM Task Force has highlighted the need for better emergency planning to consider the freight component associated with natural or manmade disasters. Another issue that is costly to overlook is the need to preserve access routes for occasional, but critical, oversize and overweight loads for a variety of public and private construction and maintenance purposes as well as for disaster response.

A set of specific actions designed to move the region closer to these outcomes is described in Section 10 of this document.

### RFGM Task Force targets top freight focus areas

In line with sound regional planning practice in the area, the task force believes that a systems approach must be taken in order to produce important outcomes such as reduced delay, better travel time reliability, safer travel across all modes and trip types, and broader shipping choices and better customer service to help area businesses remain competitive. Such an approach must also consider the economic context in which projects are built, using measures such as return on investment to link transportation investment decisions to the local, regional and national economy. The task force targeted the following top issues:

**Metro's RFGM Task Force calls for comprehensive data collection, robust analysis and modeling**

"Despite the wealth of information on transportation's contribution to the economy, debate continues on the linkages between transportation improvements and economic performance and the relative strength of these links… Decision-makers need detailed information and analytical tools to prioritize projects and determine spending levels."

Source: *Freight Transportation Improvements and the Economy* (FHWA, 2004), page iii.

- congestion and hotspots – chronic road and rail network bottlenecks that impede regional freight/goods movement
- reliability – as distinct from congestion, unpredictable travel time due to crashes, construction, special events and weather (often exacerbated by capacity constraints)
- capacity constraints due to physical and operational issues as well as lack of capacity in critical corridors
- network barriers – safety concerns and out of direction travel resulting from weight-limited bridges, low bridge clearances, steep grades, at-grade rail crossings and poorly designed turns or intersections
- land use – system capacity and land for industrial uses that is being lost to other activities
- impacts – managing adverse impacts including diesel emissions, greenhouse gas emissions, water quality, noise and land use conflicts.

## Invest now to boost the triple bottom line: People, planet, profit

With nearly 1.2 million more people[3] expected in the Portland metro region by 2035, family wage job creation is going to be of paramount importance. If the Portland metro region is to fairly share expanded economic opportunities across a broad spectrum of the population, and maintain the economic engine that sustains the health of our communities and environment, it must fully utilize its unique location and transportation infrastructure that keeps the traded sector competitive. In addition to smaller scale, phased system management and operational fixes, this will require medium and larger-scale strategic investment in the multimodal regional freight and goods movement system. Regional infrastructure investment discussions should consider impacts to the local, regional and national economy, in addition to looking for cost-effective solutions. Identified benefits—including those accruing to freight—must be conserved over time through regional policy and system management and monitoring.

**The cost of doing nothing**

"Failure to invest adequately in transportation improvements will result in a potential loss valued at $844 million annually by 2025 –that's $882 per household—and 6,500 jobs [emphasis original]."

Source: The Cost of Congestion to the Economy of the Portland Region, Executive Summary (2005), page 1.

To maximize the return on public investment, these freight-oriented preservation, management and investment priorities should focus on:

- more carefully evaluating what, where and when the freight problems occur (noting, for example, that they do not always coincide with the commute peaks)
- addressing core throughway system bottlenecks with substantial freight impacts, to improve truck mobility in and through the region. Examples include the Columbia River Crossing influence area, the I-5/I-405 loop with connection to US 26, 99W through Tigard, and the I-5 corridor south to Wilsonville
- improving and protecting the throughway interchanges that provide access to major industrial areas, particularly: I-5/Marine Drive and I-5/Columbia Blvd serving the Columbia Corridor and Rivergate industrial areas, I-205/Hwy 212 serving the Clackamas and Milwaukie industrial areas, and I-205/Airport Way serving Portland International Airport and east Columbia Corridor industrial areas
- improving arterial connections to current and emerging industrial areas. Examples include Sunrise Corridor phased improvements recommended by the Sunrise Project Policy Committee and last mile local industry connectors, e.g., Columbia/Cascade River District projects, including the I-84/257th Avenue Troutdale interchange and SW 124th from Tualatin-Sherwood Road to the I-5/North Stafford interchange

[3] *2035 Regional Transportation Plan* (January 2008, Chapter 2, Tables 2.2).Population forecasts of 58% increase from 2005 levels include Multnomah, Clackamas, Washington counties in Oregon, and Clark County in southwest Washington.

- ensuring safe transport of hazardous loads with a regional routing strategy
- looking beyond the roadway network to address critical marine and freight rail transportation needs such as completing the Columbia River channel deepening and upgrading main line and rail yard infrastructure

## Going forward: from freight goals to implementation

Section 9 of this Regional Freight Plan includes a "tool kit" of freight strategies designed to address the broad range of needs and issues clustered around the six goals articulated by the RFGM Task Force. Section 10 constitutes the action plan, with specific improvements and, in some cases, general timeframes for implementation and responsibilities identified. Between September and December 2009, as the region refines and finalizes the RTP project list (including projects important to freight and economic development stakeholders) the large list of possible actions identified in Section 10 will be prioritized, with some selected for refinement and inclusion in a work program for the 2010 to 2013 time period.

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# 1 INTRODUCTION

## 1.1 Trade, transportation and economic health

Portland and Vancouver were founded and grew on the basis of vibrant and profitable statewide, regional and international trade. Access to the Pacific Ocean via the Columbia River from the inland empire to the east created the region's original economic engine. The Willamette River delivered the wealth of the various river valleys south and west of the Portland metro region in much the same way. It was through this trade that the Portland metro region established itself as a trade hub and prospered.

In 2005 *The Cost of Congestion to the Economy of the Portland Region* reported that the region has a higher than average dependency on traded sector industries, particularly computer and electronic products, wholesale distribution services, metals, forestry, wood and paper products, and publishing. These business sectors 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.

**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.

As an international gateway and domestic freight hub, the region is particularly influenced by the dynamic trends affecting distribution and logistics. The 2002 commodity flow survey projected an overall doubling of freight tonnage moved in the region by 2030. The region's forecasted population and job growth – an additional 1.13 million residents and 767,000 jobs by 2035[4] – along with the associated boost in the consumption of goods and services are significant drivers of projected increases in local freight volume. Much of the projected doubling of freight tonnage passing through the Portland metropolitan region doesn't terminate here but instead moves well beyond the region's boundaries to the rest of the country.

Today, notwithstanding the current downturn, the Portland-Vancouver area boasts an underlying foundation for a strong and diverse regional economy that will continue to support an enviable quality of life. The local economy is still very dependent upon an efficient, reliable and safe freight transportation system that recognizes the region's role as an international gateway and key domestic freight hub.

[4] 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).

## 1.2 Jobs and infrastructure

One critical element of sustaining the region's high quality of life is ensuring that residents have access to family wage employment. As the region grows, the health of residents and communities will depend on decision-makers who appreciate the interdependence of economic, transportation and land use goals.

The logistics and (freight) transportation sectors provide 46,000 jobs to the region by facilitating the transport or trans-shipment of goods entering the region via various modes and routes to intermediate or end users. These firms also perform the vital task of distributing the myriad goods that Oregonians consider essential to the maintenance of our households, businesses and communities. Transportation system and service owners and operators have a responsibility to provide a goods movement system that functions effectively.

## 1.3 Regional competitiveness requires regional cooperation across jurisdictions and sectors

The Portland-Vancouver area is a globally competitive international gateway and domestic hub for commerce. While Portland's status as Oregon's economic crossroads permits the region to have a vibrant, diverse and flourishing economy, it also carries certain responsibilities. The multimodal freight transportation system is a foundation for economic activities and we must strategically maintain, operate and expand it in a timely manner to ensure a vital and healthy economy.

This Regional Freight Plan identifies mode-specific issues, policies, strategies and investments designed to meet those responsibilities and support a truly multimodal, sustainable freight network within the Portland metro region. A systems approach to planning and managing our multimodal freight transportation infrastructure must recognize and coordinate both regional and local transportation and land use decisions to maintain seamless freight and goods flow and access that benefit us all.

The recommended actions will necessarily require collaboration between public and private sectors, the coordination of freight modes that are often competitors, and the reconciliation of institutional, jurisdictional and political perspectives. Yet stakeholders have shown a strong interest in and commitment to improving freight mobility and access and reducing freight's impacts on the communities it serves. In a volatile economy that demands a thoughtful and dynamic response, that level of engagement will be needed to move strategic projects along the path to implementation.[5]

[5] Freight volumes are down—temporarily, but substantially, since the draft *Regional Freight Plan* was completed in the early fall of 2008. Although most observers expect a turnaround to result in an increase in those volumes, the timeline and robustness of the recovery is not known. The downturn does offer the region an opportunity to plan and implement vital freight projects in time for the eventual transition to a healthier economy over the long term.

## 1.4 Portland is a global gateway

The ports of Portland and Vancouver processed over 20 million U.S. tons of cargo in 2007. Another to 8 to 10 million tons of inland barge cargo also moves through these facilities. In addition to being the leading grain and mineral bulk harbor on the West Coast, the ports processed nearly 500,000 automobiles in 2007. In total, $12 billion in foreign trade moved through Portland Harbor in 2007. Most of this cargo is transported beyond the Portland metro region, generally by truck and rail. There is also a huge support industry located in Portland associated with moving this freight.

- The Port of Portland also operates the largest international airport in Oregon. Portland International Airport acts as the air freight hub for much of Oregon and Southwest Washington. Approximately 288,000 tons of domestic and international air freight shipped through Portland International during 2005.
- The 2002 commodity flow survey projects an overall doubling of freight tonnage moved in the region by 2030. Currently one in 10 jobs in Oregon are transportation related. Though the Port of Portland is sufficiently diversified to bear this downturn better than some, there are many hard-hit employers, large and small, who make up the Port of Portland's customer base.
- Mounting congestion and capacity issues on several freight modes could impede the region's ability to compete globally. Regional congestion and capacity issues already impact several national goods movement corridors traversing the region, including freight rail and trucking corridors.

**Made in Oregon: the ninth most trade-dependent state**

The Portland metro region is home to several traded sector industries that help drive the regional economy by serving as an economic pump, bringing in money from outside the region. Traded sector businesses in our region include Nike, Adidas, Columbia Sportswear, Intel, Lattice Semiconductor, FLIR, Genentech, Precision Cast Parts, Boeing, Oregon Steel Mills and Boise Cascade.

If the region is to maintain its status as an international freight gateway, immediate steps must be taken to ensure that a flexible, adaptable, efficient and reliable goods movement system is in place. Cooperation with agencies and stakeholders across the state border with Washington is critical to make sure that freight throughways and access to primary hubs are seamless and that needed improvements are coordinated.

### Deliveries of daily necessities increase with population and jobs

Modern urban life would be impossible without local goods movement. Nearly all the foodstuffs, clothing, housing materials, medical supplies, etc. that residents rely on daily come from outside the region.

The region is forecast to have an additional 1.13 million residents (a 58 percent increase) and 767,000 jobs (up 74 percent) by 2035, which should drive a proportional increase in local freight volumes.

Local suppliers and retailers require good connections to regional, national and international goods movement systems. They also need reasonably sized lane widths, curve and curb radii and loading zones.

Roadway congestion and deteriorated system reliability within the region heavily impact the productivity of local parcel, store and fuel delivery firms. This leads to decreases in equipment productivity, inefficient use of fuel, increased pollution and higher operating costs.

Shippers and distributors also operate in a more time sensitive production environment, with each operating under a unique set of parameters. System failure costs these firms significant sums of money and can also result in a loss of customers over time. This can drive these firms to reevaluate their choice of location.

## 1.5 Congestion's costs

Traded sector industries require well-integrated and highly efficient international and domestic transportation connections to stay competitive in the global economy. These firms have historically located in the region to take advantage of the pipeline, rail, marine, aviation and highway connections it offers.

Increased roadway congestion and decreased system reliability have adversely impacted the productivity of traded sector firms throughout the region. This has led to decreases in equipment productivity, increased labor costs and inefficient use of fuel, leading to increased pollution for combined air cargo, trucking, pipeline, marine and rail carriers. Each of these modes relies on the regional road system for some portion of their operations, and all are impacted by congestion.

Manufacturers, shippers and distributors in the region operate in a time sensitive production environment, with each operating under a unique set of parameters. Missing critical connections due to transportation system failure costs these firms significant sums of money and can also result in a loss of customers over time. This can drive companies to consider relocating outside the region or prevent companies from starting up operations in the region.

## 1.6 Land supply

Preserving essential industrial lands in the Portland metro region has proven difficult over time. The region's industrial areas are also experiencing diminished access to rail infrastructure and deteriorating performance on freight route connections. Road and rail freight corridors, and the industrial lands they serve, need buffers from residential land uses surrounding them. Further, the types of industries being accommodated in industrial areas are changing. Many new industries are better characterized as light industrial or distribution operations, with very different operational requirements than their heavy industrial predecessors. Redevelopment of existing industrial lands for modern industrial uses should be studied and supported.

Additionally, in order to be fully utilized, industrial land must be correctly located. For shipping access, this often means competing with residential, commercial, tourist, recreational and environmental users for highly sought and environmentally sensitive waterfront acreage.

## 1.7 Freight trends

The global economy is in the midst of a profound change. Twenty-first century innovations in trade policy, communications and transportation have altered the sourcing, production and marketing of products on a global scale. Some of the most important trends are identified below:

- Due to open trade policies, more freight than ever before is moving across international boundaries.
- The rise of worldwide communications networks allow for the inexpensive and instantaneous transfer of information around the globe. These networks have allowed businesses to expand operations and markets and have given rise to new business models like e-commerce, leading to a higher volume of smaller, demand-responsive shipments.
- Access to good transportation services has allowed businesses to develop increasingly complex supply chains that are longer and far more specialized, yet increasingly fragile.

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.[6] This is expected to have a profound effect on shippers and the infrastructure they depend upon.

West Coast ports have been struggling to keep pace with the increasing volumes of marine and air cargo coming from Pacific Rim trading partners like Japan, China, South Korea and Taiwan. While 2008 and 2009 witnessed a temporary slowing of this trend nationally, Portland Harbor still posted an overall increase in volumes for 2008 and will likely return to the longer-term trend of growth in freight volumes as the economic recovery proceeds. In addition, the ports of Portland and Vancouver are not as constrained by dockside capacity as a number of other West Coast ports, so additional growth here can be handled at the ports.

In total, Pacific Rim trade amounted to $359.2 billion in 2002. Much of the Pacific Rim freight processed by West Coast ports is destined for the rest of the country. However, the financial burden of maintaining and expanding the publicly owned transportation system serving this national need falls to local West Coast trade gateway jurisdictions.

The North America Free Trade Agreement has also generated large volumes of trade between the U.S., Canada and Mexico on the West Coast, amounting to $73.4 billion in 2002 and growing annually. Trade between major West Coast cities within the U.S. amounted to $182 billion in 2002, for a total of approximately $255 billion in north-south coastal trade. This number has continued to expand rapidly since 2002.

The goods movement industry has responded to this capacity crunch by employing larger trucks, rail cars, ships and planes. This trend places new demands on the goods movement

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

infrastructure and reinforces the need to reconsider our approach to providing goods movement infrastructure. Government and industry must also work together to address increasingly stringent safety and security requirements being placed on the goods movement system.

Against this backdrop of sustained expansion in global trade the region must prepare to compete globally. The viability of the regional and state economy, and the ability to attract and sustain business investment in both, depend on it. Industry needs tangible and continuous improvements in the operating efficiency, capacity, modal redundancy and reliability of the regional goods movement system to remain competitive globally. Government must do its best to work with private sector stakeholders to accomplish this in a sustainable, environmentally sensitive and cost effective manner. Recent fluctuations in fuel prices have merely underscored the importance to industry of having an efficient, reliable and redundant regional goods movement system.

The regional goods movement system is failing certain large shippers: several traded sector firms in the region must truck loads to San Francisco or Seattle/Tacoma to achieve satisfactory international aviation or marine connections. Other resource based industries in, or served by, the Portland metropolitan region's goods movement system are very sensitive to transportation costs and can easily lose global market share with shipping cost increases measured in pennies per pound. Still other area manufacturers have had to repeatedly adjust production schedules to compensate for congestion on the region's runways, roads and rail lines, leading to increased production costs and reduced productivity.

As shippers' supply chain logistics evolve, the definition of "state of the art" warehousing and distribution centers continues to change dramatically. Larger, increasingly truck-biased cross dock facilities are becoming the new standard. Higher fuel costs could lead to decentralization of regional distribution centers nationally, in an effort to reduce the distance trucks need to move to their final destinations. The Portland metro region is well positioned to take advantage of this opportunity.

The local component of the goods movement system is also critically important to the economy and daily life. The local movement of goods and services is focused primarily on trucks. The ability to maneuver on local streets and to park to unload freight is vital for those trying to deliver goods and services to local communities.

The region's goods movement infrastructure and unique geographic location are competitive advantages that have created transportation sector jobs for more than a century. These jobs, in turn, serve the industrial and local freight needs of the Portland metro region, the state, the Pacific Northwest, the West Coast and the nation.

## 1.8 Ready for the rebound

It is true that the world economy is currently strained. However, current and future economic stimulus package components, including funds to reduce the backlog of long-deferred infrastructure maintenance, are coming on line. And though the reauthorization of the surface

transportation act may be delayed for 18 months, early indications are that key freight corridors and infrastructure will be targeted for special consideration. It is in this context that the region's freight plan will operate and for which regional partners must prepare.

In the post-recovery world economy, strong growth in international, national and regional trade will once again drive the need for a flexible, adaptable, high performance multimodal freight transportation system. Efforts must consider these new stresses on marine, air, road, rail and pipeline networks and facilities. The region's goods movement system will need to absorb a doubling of freight volumes by 2035, with approximately 75 percent of that dependent on trucks to link producers and consumers, or to reach intermodal nodes for import and export.

Many local manufacturing firms that trade internationally, and who could locate globally, have chosen to make the greater Portland-Vancouver area their home because of its connections as an international transportation hub. These firms require a smoothly functioning goods movement system to operate efficiently and maintain profitability. In the absence of such a system, they will consider relocating to an area that meets these requirements.

And as the global economy recovers and grows, the Portland metro region will be called upon to address vastly expanded regional, national and international shipping needs reliably, safely, efficiently and sustainably. We have a responsibility to the region, the state and the nation to maintain an efficient and flexible goods movement system of sufficient capacity to meet future needs.

## 1.9 Invest now to boost the triple bottom line: People, planet, profit

The Portland-Vancouver area is a globally competitive international gateway and domestic hub for commerce. The multimodal freight transportation system is a foundation for economic activities and we must strategically maintain, operate and expand it in a timely manner to ensure a vital and healthy economy. And with so many new residents expected in the Portland metro region by 2035, family wage job creation is going to be of paramount importance. Policies and programs designed to take advantage of the opportunities hidden in the downturn should begin to be refined and implemented, to ensure that the Portland metro region is flexibly and securely positioned for the future of freight and goods movement.

However, in addition to regional policy and program development and implementation, concrete freight-related projects must be built to ensure that the goals of the Regional Freight Plan are met. Maintaining the Portland region's historic preeminence as a goods movement and industrial hub must remain a regional priority; our economic future depends on it. Regional infrastructure investment discussions should consider impacts to the local, regional and national economy, in addition to looking for cost-effective solutions. Identified benefits—including those accruing to freight—must be conserved over time through regional policy and system management and monitoring. Investment in smart, strategic and green freight system improvements now can help Portland secure not only its economic future by increasing its share of family wage jobs but also support development of a green economy that is the Portland area's trademark.

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## Engaging stakeholder to develop a regional freight plan

The center point for the engagement of stakeholders was the Metro Council appointed Regional Freight and Goods Movement Task Force. The 33-member task force included representatives from the multimodal freight industry, community and government agencies. The group was charged with guiding the formation of policy and strategy recommendations for the region's multimodal freight transportation system. Metro Councilor Rod Park served as chairperson for the task force. The list of members included:

| | | | |
|---|---|---|---|
| **Steve Akre**<br>OIA Global Logistics | **Tom Dechenne**<br>Norris, Beggs & Simpson | **Susie Lahsene**<br>Port of Portland | **Paul Smith**<br>City of Portland |
| **Grant Armbruster**<br>Columbia Sportswear | **John Drew**<br>Far West Fibers | **Brian McMullen**<br>WSDOT | **John Speight**<br>Portland & Western RR |
| **Steve Bates**<br>Redmond Heavy Haul | **Ann Gardner**<br>Schnitzer Steel Industries | **Jeanne Morgan**<br>Xerox | **Paul Thalhofer**<br>City of Troutdale |
| **Scott Bricker**<br>Bicycle Transportation Alliance | **Pete George**<br>PW George Consulting | **James Nave**<br>Union Pacific RR | **Jason Tell**<br>ODOT |
| **Katy Brooks**<br>Port of Vancouver | **Cam Gilmour**<br>Clackamas County | **Rod Park**<br>Metro | **Elizabeth Wainwright**<br>Merchants Exchange |
| **Gary Cardwell**<br>NW Container Service | **Van Hooper**<br>Sysco Foods | **Michael Powell**<br>Powell's Books | **Tracy Ann Whalen**<br>ESCO Corporation |
| **Terry Cleaver**<br>Columbia Grain | **Tom Hughes**<br>City of Hillsboro | **Warren Rosenfeld**<br>Calbag Metals | **Rick Williams**<br>Lloyd District TMA |
| **Lynda David**<br>Southwest Washington RTC | **Monica Isbell**<br>Starboard Alliance | **Robert Russell**<br>Oregon Trucking Association | |

The RFGM Task Force met 11 times between July 2006 and October 2007. Additionally, the task force worked in ad hoc subcommittees to tackle specific issues, such as a regional vision for freight, freight-related RTP goals and objectives, and project prioritization criteria, and brought back recommendations to the full task force. Task Force members also participated in a combined Metropolitan Policy Advisory Committee and Joint Policy Advisory Committee on Transportation meeting held in October 2007.

The long-standing Metro committee on regional freight coordination, the Regional Freight Advisory Committee, served as the technical advisory committee on this plan, providing data, input on analysis, and review of memorandums and reports. The committee is loosely comprised of transportation agencies in the region with an interest in freight issues. Active participants include:

| | |
|---|---|
| Oregon Department of Transportation | Washington County |
| Washington Department of Transportation | Multnomah County |
| Metro | City of Gresham |
| Southwest Washington Regional Transportation Council | City of Milwaukie |
| Port of Portland | City of Portland |
| Port of Vancouver | City of Tualatin |
| FHWA | City of Wilsonville |
| Clackamas County | |

The Regional Freight Advisory Committee met monthly during the course of the planning effort. Some members participated in RFGM Task Force subcommittee meetings.

Targeted stakeholder workshops and presentations were conducted within the 2035 Regional Transportation Plan outreach process. A series of targeted workshops were held in Fall 2006 with various stakeholder groups, including one specifically targeted to the business community, to gather needs and issues. The role of freight in the transportation system was address in each of these targeted workshops. Additionally, several Metro Councilors and key Metro staff were enlisted to talk with business groups in the region about the role of transportation in Portland's economy. Metro spoke with 29 business and advisory groups over the course of the project.

Collectively, these outreach efforts and strategies have educated stakeholders and informed the technical and policy development work on community values, desired outcomes and transportation needs, investment priorities and implementation strategies.

# 2 REGIONAL FREIGHT POLICY FRAMEWORK

## 2.1 Freight goals within a regional policy framework

Informing the regional framework for freight policy is the understanding that the Portland-Vancouver region is a globally competitive international gateway and domestic hub for commerce. The multimodal freight transportation system is a foundation for economic activities and we must strategically maintain, operate and expand it in a timely manner to ensure a vital and healthy economy. After much deliberation, the RGFM Task Force developed the following goal statement to elaborate a policy framework that would protect and improve the cost-effective functioning of the critical regional freight network:

- We must use a systems approach to plan and manage our multimodal freight transportation infrastructure, recognizing and coordinating both regional and local decisions to maintain seamless flow and access for freight movement that benefits all of us.
- We must adequately fund and sustain investment in our multimodal freight transportation system to ensure that the region and its businesses stay economically competitive.
- We must create first-rate multimodal freight networks that reduce delay, increase reliability, improve safety and provide choices.
- We must 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.
- We must ensure that our multimodal freight transportation system supports the health of the economy and the environment.
- We must enlighten our region's citizens and decision makers about the importance of freight movement on our daily lives and economic well-being.

## 2.2 Integration with the Metro planning process

The Regional Freight Plan is being developed along with broader Metro initiatives evaluating implementation of the regional growth concept (a set of activities under the umbrella of "Making the Greatest Place," was developed earlier under the name "New Look") and the update of the region's overall transportation system plan (2035 Regional Transportation Plan Update). This project has coordinated both its technical analysis and public participation elements with these other efforts to ensure a consistent and integrated planning approach.

The work program included a New Look (Making the Greatest Place)/RTP coordinated public involvement process that established desired outcomes specific to the regional freight transportation system. It has provided a common base of knowledge about the different elements of the system and has identified issues, needs and deficiencies within the system. The project has also refined existing regional freight policies and updated the multimodal freight

network map. Infrastructure improvements for freight have been called out and prioritized. Implementation strategies for addressing environmental and community impacts, system management, economic development and financing have been reviewed and recommended. The project will also put forth recommendations for better incorporating truck movement into Metro's creating livable streets design guide.

### 2035 Regional Transportation Plan

Metro periodically reviews and updates the Regional Transportation Plan (RTP) to keep it current with transportation challenges facing the region, and to incorporate new information, technologies and strategies. The updated plan provides a blueprint for building a sustainable transportation future that allows the region to compete in the global economy and preserve the unique qualities and natural beauty that define our region. An overarching aim of the RTP is to move the region closer to the vision of the region's long-range strategy for managing growth, the 2040 Growth Concept. Fundamentally, the RTP defines a framework for making choices about the future of the region – choices about where to allocate limited transportation resources and choices about the future residents wish to see for our region and, by extension, the state of Oregon. The Regional Freight Plan for the Portland metro region is an element of the RTP. While the plan targets needs and issues specific to the freight transportation system, key policies and actions are incorporated into the comprehensive RTP.

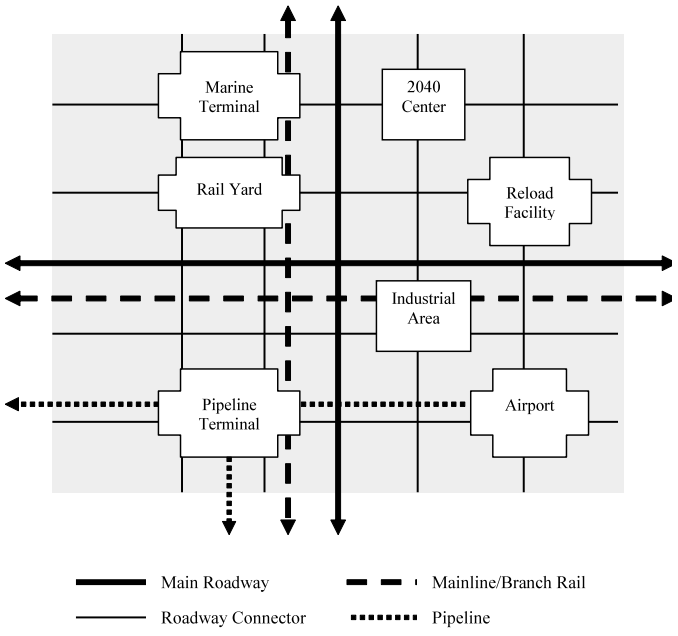
## 2.3 RTP freight transportation system

The transport and distribution of freight occurs via the regional freight system, a combination of interconnected publicly and privately owned networks and terminal facilities. The concept in Figure 1 shows the components of the regional freight system and their relationships.

Rivers, mainline rail, pipeline, air routes and arterial streets and throughways connect the region to international and domestic markets and suppliers beyond local boundaries. Inside the 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.

The Regional Freight System Map, shown in Figure 2, applies the regional freight concept on the ground to identify the transportation networks and facilities that serve the region and state's freight mobility needs

Figure 1. Regional freight concept



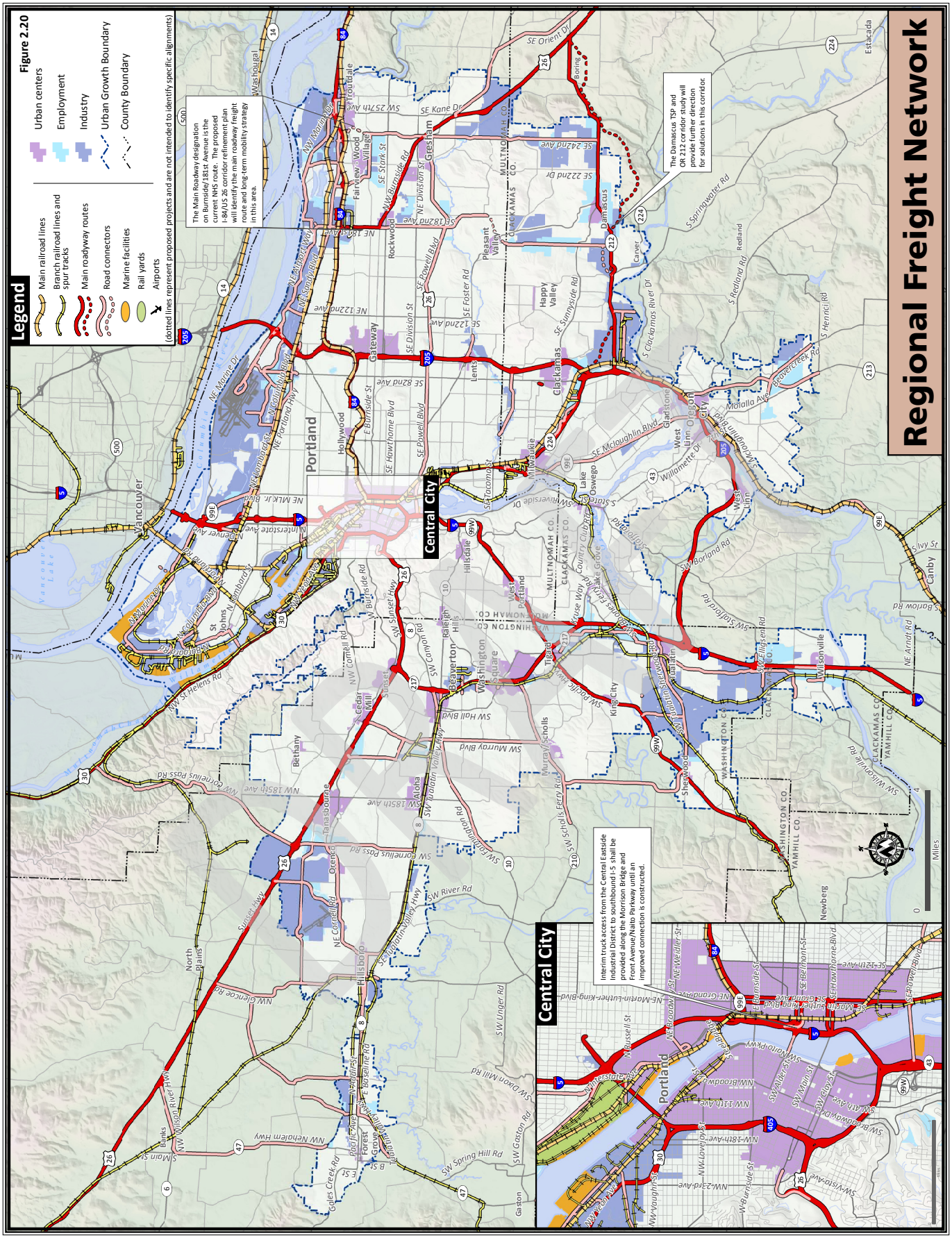

Regional Freight Network
Legend
Main railroad lines
Branch railroad lines and spur tracks
Main roadway routes
Road connectors
Marine facilities
Rail yards
Airports
(dotted lines represent proposed projects and are not intended to identify specific alignments)
Urban centers
Employment
Industry
Urban Growth Boundary
County Boundary
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
Central City
Portland
Vancouver
Gresham
Damascus
Clackamas
Gateway
Hollywood
Lents
Milwaukie
Lake Oswego
West Linn
Oregon City
Beaverton
Washington Square
Tigard
King City
Sherwood
Wilsonville
Canby
Hillsboro
Forest Grove
Tanasbourne
Aloha
Bethany
Cedar Mill
Sunset
Hillsdale
Raleigh Hills
Tualatin
Newberg
Estacada
Miles

Figure 2.20

# 3 KEY ISSUES ON THE REGIONAL FREIGHT TRANSPORTATION SYSTEM

## 3.2 Top general freight-related issues

In terms of broadly important regional freight issues, the task force identified six problem areas to target: The task force targeted the following top issues from a broad perspective:

- congestion and hotspots – chronic road and rail network bottlenecks that impede regional freight/goods movement
- reliability – unpredictable travel time due to crashes, construction, special events and weather
- capacity constraints due to physical and operational issues as well as lack of capacity in critical corridors
- network barriers – safety concerns and out of direction travel resulting from weight-limited bridges, low bridge clearances, steep grades, at-grade rail crossings and poorly designed turns or intersections
- land use – system capacity and land for industrial uses that is being lost to other activities
- impacts – managing adverse impacts including diesel emissions, greenhouse gas emissions, water quality, noise and land use conflicts

In line with sound regional planning practice in the area, the task force believes that a systems approach must be taken in order to produce important outcomes such as reduced delay, better travel time reliability, safer travel across all modes and trip types, and broader shipping choices and better customer service to help area businesses remain competitive. Such an approach must also consider the economic context in which projects are built, using measures such as return on investment to link transportation investment decisions to the local, regional and national economy.

## 3.1 Specific issue identification

Between April 2006 and February 2007, Metro staff interviewed nearly two dozen individuals and facilitated discussions at more than 35 meetings with regional stakeholders and analysts.[7] The result was more than 225 discrete comments reflecting desires and concerns regarding the state of the region's freight transportation system. With input from the Regional Freight and Goods Movement Task Force, the collection of comments was refined into a list of key issues that the plan should begin to address.

[7] Ibid.

Table 3.1, below, provides a categorized list of the key issues and needs. Appendix A summarizes the comments from those interviewed.

Table 3.1. Priority issues for freight

| Issue category | Key issues |
|---|---|
| Mobility and accessibility | Road congestion on regional truck routes<br>Travel time reliability on regional truck routes<br>Accessibility between intermodal terminals, industrial areas, centers and interstate system<br>Class 1/short line rail – throughput and velocity, capacity constraints in rail yards, sidings<br>Improved rail access and service for regional shippers<br>Barriers: weight/vertical clearance issues on bridges; gaps in connectivity (new roads/bridges)<br>Safe barge navigation in I-5/BNSF bridges area<br>At-grade rail crossings – grade separation<br>River channel deepening |
| System management | Preservation and efficient use of existing capacity<br>Intelligent Transportation System tools (signal timing, cameras)<br>Access management<br>Increase in truck crash rate<br>Faster response to roadway incidents (crashes)<br>Truck parking: hours of service limitations<br>Efficient loading/unloading operations in commercial centers<br>Advances in traveler information (road conditions, directional signage)<br>Workforce access to industrial and employment areas<br>Maintenance dredging and lock repair<br>Rail system management (directional running, grade crossing info)<br>Modal redundancy |
| Land use | General population growth and impacts to transportation system<br>Competition between industrial and other uses for interchange capacity<br>Adequate supply of industrial land served by transportation system (i.e., marine accessible)<br>Incompatible land uses along rail lines and major truck corridors<br>Accommodation of truck delivery in pedestrian-friendly areas and corridors (street design trade-offs) |
| Environment | Air quality impacts from diesel engine emissions<br>Residential noise impacts from truck, rail and air cargo operations<br>Water quality |

| Issue category | Key issues |
|---|---|
| Investment strategies | Link transportation investment decisions to regional, state and national economy.<br>Expand types and amounts of funding for infrastructure and programs (i.e., gas tax indexing, user pays cost responsibility).<br>Use public-private partnerships to fund improvements.<br>Create a role for the public sector in funding private operations.<br>Use a building block approach to fix corridors (i.e., ITS first, then graduate to other solutions).<br>Incorporate lifecycle cost (maintenance) into project. |
| Coordination | Create better coordination between freight system stakeholders in the region.<br>Educate decision makers and public about importance of region's freight transportation system.<br>Consider rail service needs for regional shippers.<br>Consider freight/goods movement needs in project development. |
| Research and data | Freight system performance over time<br>Ongoing truck count program<br>Economic impact assessments of investments |

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# 4 FREIGHT GENERATION IN THE REGION

## 4.1 Manufacturing, warehousing and distribution

The Portland metro region is home to a number of traded sector firms engaged in a broad array of activities. These firms bring wealth from outside the local economy into the region, helping communities to prosper. All of these enterprises have unique goods movement needs, some local, others national or international.

Unlike many areas of the country which have witnessed a substantial decline in manufacturing/industrial employment, the region has experienced growth in the manufacturing sector of the economy during the last two decades. This has created a need to efficiently deliver the materials needed for production (domestically and internationally) and to cost effectively ship finished products. Manufacturers in the region assemble products from components delivered from around the globe and ship components for assembly internationally. The mobility needed to support commerce in the region is as diverse as the commerce itself.

Manufacturers and shippers from throughout Oregon and Southwest Washington depend on the Portland metro region's warehousing, distribution, logistics, customs and multimodal goods movement infrastructure to move raw materials, semi-finished and finished products. These activities create substantial quantities of regional jobs. Warehousing, distribution services and related activities, are major employers within the Portland metro region, with at least 46,000 local jobs attributed to this sector.

These activities are spread throughout the region, with concentrations in the Rivergate, Columbia Corridor, Sunset Corridor, Swan Island, Clackamas-Milwaukee, Springwater-Damascus, inner Eastside, North Wilsonville-Tualatin-Sherwood, Beaverton-Tigard, Beavercreek and Northwest Portland industrial areas.

## 4.2 Port activities

The ports of Portland and Vancouver host more than 1,000 ocean-going ships each year. These vessels transport 18 to 20 million short tons of cargo annually to and from public and private facilities located in the Portland-Vancouver Harbor. Another to 8 to 10 million tons of inland barge cargo also moves through these facilities. In total, $12 billion in foreign trade moved through Portland Harbor in 2007. Much of this cargo is transported beyond the Portland metropolitan area, through key truck and rail corridors.

In addition, the Port of Portland operates the largest international airport in Oregon. It is the hub for the vast majority of air freight activity in the Portland metro region, western Oregon and Southwest Washington. Approximately 288,000 tons of domestic and international air freight shipped through Portland International during 2005.

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# 5 REGIONAL GOODS MOVEMENT

## 5.1 Highway

Trucks will remain the predominant mode of freight transport for the foreseeable future, due to their flexibility, speed, adaptability and availability. West Coast truck traffic is expected to increase 200 percent by 2035[8], placing increasing pressure on the interstate highway system and local freight corridors. And though more than 90 percent of total regional truck trips begin and/or end within our region origin, as much as 52 percent of the total truck traffic entering the region via the interstate system is through traffic.[9] This reflects the importance of our stewardship role for maintaining the through-put efficiency of the interstate freeway system for national freight movement, but also provides a basis for requesting national assistance.

Maintaining access to, and adequate capacity on, designated freight corridors, the National Network and the National Highway System within the region will remain critical to efficient goods movement. Performance of NN and NHS roads within the region varies, but there are locations with regularly recurring chokepoints. It is not unusual for these chokepoint locations to experience frequent failures, particularly during peak weekday travel times, greatly reducing overall system efficiency and reliability.

Below are some key examples of recurring highway system chokepoint locations within the region identified by the RFGM Task Force as having broad impacts to goods movement.

- I-5/CRC (Columbia River Crossing) and Delta Park: North Marine Drive to Columbia Boulevard operates near or over capacity during all peaks.
- I-5/I-84 Interchange: Operates at or over capacity during the a.m., p.m. and mid-day peaks.
- I-5/I-405/US 26 Loop: Is congested through the central city area.
- I-5 Corridor, south of I-217 interchange: the South Metro I-5 Corridor and Boone Bridge is reaching capacity and carries a larger percentage of trucks than the CRC.
- I-205/OR 224 Interchange: Operates near capacity during the mid-day and p.m. peak hour.
- I-205: I-84 to Northeast Marine Drive: Several interchanges connecting to and sections of I-84 and I-205 within these limits operate near or over capacity during the p.m. peak hour.
- I-205: OR 212 to I-5: I-205, particularly south of the Oregon City I-205 bridge has long had capacity issues; enhanced merge lanes to I-205 are also needed.
- OR 217: Inadequate interchange spacing leads to merge/weave congestion chokepoints as well as accidents in the area of the Southwest Beaverton-Hillsdale Highway, Allen Boulevard and Denney Road interchanges.

[8] *Portland/Vancouver International and Domestic Trade Capacity Analysis, Port of Portland, 2006*

[9] Figures obtained from 4,159 roadside intercept surveys reported as *Task 10, Portland Freight Data Collection Phase II, Final Summary Report* (March 2007) prepared for the Portland Freight Data Collection Team.

- I-205/Airport Way: Eastbound to northbound on-ramp is a bottleneck to providing access to and from Portland International Airport
- Non-continuous or awkward parallel arterials and connections: Improving arterial connections to current and emerging industrial areas (e.g., Sunrise Corridor phased connectors, I-5/Hwy 99W connector area) are needed.
- Last-mile chokepoints: Various locations experience congested last-mile local industry connectors (e.g., Columbia/Cascade River District Projects, including the I-84/257th Avenue Troutdale interchange and SW 124th from Tualatin-Sherwood Road to the I-5/North Stafford interchange)

Several of these highway segments and interchanges have also been identified as projects of statewide significance due, in part, to their negative impact on the statewide or national goods movement systems.

## 5.2 Rail

Class 1 rail lines[10] operating in the Portland metropolitan area (BNSF Railway and Union Pacific Railroad) have been capacity-constrained due to several long-standing and well documented historical factors. 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.

Issues in the Portland Triangle area include inadequate siding lengths (Class 1 railroads are now fielding up to 8,000 foot long unit trains), rail bridges with inadequate capacity and lowered sufficiency ratings, at-grade rail crossings, sidings and mainline track sections that are over capacity. Other Class 1 capacity constraints within the region include switch control at the Steel Bridge and inadequate rail and intermodal yard capacity for current and future needs. 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.

Short line rail operators have taken over many of the local and regional rail functions formerly performed by the Class 1 railroads. Rail car weights are a critical issue for short line railroads. The Class 1 railroads are now considering rail car weights above 286,000 pounds, which will exceed the carrying capacity of many short line tracks in the region. Assisting regional short line railroads with track upgrades could reduce the risk of derailments, a potential public safety issue and certainly a productivity issue for the railroads. It also keeps trucks off the road. The short lines are also having to make-up more trains in their yards, which have limited capacity, before delivering them to the Class 1 rail yards. Assisting short line railroads requires

[10] 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.

government to show a clear public benefit, since these facilities are privately owned and operated.

Government and the railroads have historically cooperated to implement rail crossing safety improvements. The Class 1 and short line railroads have multiple at-grade crossings of their lines in the region, limiting train speeds and increasing the risk of conflicts between trains, vehicles, pedestrians and bicycles. Improving, eliminating, or grade separating at-grade crossings improves safety as the number and size of trains increase. Crossing improvements increase rail and road system productivity by helping longer trains clear crossings more quickly. Crossing improvements are the first step in applying for quiet zone status with the Federal Railroad Administration.

## 5.3 Aviation

Combined air cargo providers generally operate on a hub-and-spoke system, where freight is picked up at airports throughout the country in the early evening, flown back to a central destination to be sorted and then reloaded and flown to its final destination in the early hours of the morning for next day delivery. In order for this system to work, schedules must be maintained. This generally places air freight carriers' trucks on the road during evening peak hour traffic.

While traffic flows on the roadways immediately adjacent to Portland International have improved within the last decade, trucks carrying air freight to the airport during the evening peak hour face increasing congestion on several area highways leading to the airport. I-205, I-84, I-5, I-405 and U.S. 26 all serve locations feeding generating air freight but have failing evening peak hour level of service.

Several traded sector manufacturers within the region are heavy users of air freight. Frequent roadway congestion forces many of these users to move shipping deadlines up, causing firms to lose valuable production time and increasing their production costs. Many shippers in the region were disappointed when direct air freight connections to Asia were lost. They now have to truck their shipments to Sea-Tac or San Francisco International airports to make their desired connections.

In May 2009, Portland International Airport began to implement a project to extend its north runway, as well as a complete overhaul of its south runway. With these improvements runway and taxiway capacity at the airport should be adequate to meet the needs of air freight carriers through the next decade, based on recent statements by the Port of Portland.

## 5.4 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. 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 ability of the ports of Portland and Vancouver to serve as major ports will be hampered by the size of ships that can traverse the Columbia River channel, since ocean carriers try to reduce per slot vessel (docking) cost by using larger ships.

The ports generate significant volumes of truck and rail traffic in the West Vancouver and Rivergate areas. Congestion during peak commute hours adversely impacts these truck movements. Intermittent congestion also impacts the Class 1 and shortline railroads serving the area.

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[11] 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 the maintenance of navigable locks on the Columbia and Snake rivers.

## 5.5 Pipelines

The Olympic Pipe Line transports 65 percent of the petroleum products that Oregon uses. The pipeline delivers the equivalent of 750 tanker trucks of fuel between the Puget Sound and the Portland tank farm located in the Northwest Portland industrial area every day. The product in the petroleum pipeline generally moves at approximately 4 to 5 miles per hour. The pipeline is privately owned and is regulated by the federal government. [12]

Regional distribution occurs from the tank farm through a Chevron owned pipeline to Portland International Airport and through the Kinder-Morgan pipelines to users and distributors throughout the region. Maintaining good quality access to the tank farm facility is critical, particularly in light of a recent at-grade rail crossing closure on an access road to the tank farm.

[11] Standard container measurements, known as twenty-foot equivalent units.
[12] www.phmsa.dot.gov/index.html

The Williams Northwest Pipeline transports natural gas products to northwestern Oregon and Southwest Washington. Northwest Natural Gas operates a private natural gas network that connects to the Williams Northwest Pipeline and radiates through and beyond the Portland metro region. This pipeline network delivers gas directly to end users within and beyond the Portland metropolitan area.

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# 6 GOODS MOVEMENT AND LAND USE

While the success of the region's economy is directly tied to its ability to efficiently move freight, it is true that freight movement and operations can potentially produce adverse impacts on local communities in the form of:

- increased emissions, noise and vibration, lighting and safety concerns
- impacts to land uses, community access and bicycle and pedestrian movements
- competition for highway and parking capacity
- a perceived (though less often real) reduction in land values
- impediments to visual quality and redevelopment efforts

These concerns are likely to increase over time as freight volumes increase. Many of the typical complaints voiced regarding truck and rail operations could be minimized or avoided with thoughtful and appropriate land use planning, which, like a good fence, makes better neighbors. It's important to note that these types of impacts are not the exclusive domain of freight operations – highways, transit and other transportation systems and services, even hospitals and schools – can engender comparable concerns over impacts to nearby residents.

On the other side, freight carriers and shippers can themselves be impacted when communities seek to restrict access by trucks on certain streets, limit night-time operations[13], reduce the number of truck loading zones, increase water recreation activities and public access within working waterfront areas, or when communities seek to use a freight railroad's track for passenger rail service. As shippers' supply chain logistics continue to evolve, the definition of "state of the art" warehousing and distribution centers changes as well. Larger, increasingly truck-biased facilities are becoming the new standard. In addition, higher fuel costs could lead to decentralization of regional distribution centers nationally, with the Portland metro region well positioned to take advantage of this opportunity.[14]

Certain key regional intermodal rail to truck transfer facilities are quickly reaching their capacity and are constrained by the physical dimensions of their facilities. A regional discussion regarding retaining or restoring rail access into industrial areas should occur among the warehousing, manufacturing and distribution sectors, local governments and the short line rail operators.

There has been a demand, at times, for conversion of industrial property to mixed-use residential. This is often incompatible with surrounding industrial operations and freight movement. New residential development along truck and rail corridors and adjacent to industrial sanctuary areas should be discouraged, with land uses that provide a buffer for

[13] The cost of congestion within a spreading peak period has pushed some shippers and businesses toward night-time operations, which often elicits its own push back from neighbors objecting to nocturnal disturbances.

[14] *CSCMP Explores, Vol. 5, Spring 2008



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freight related uses being preferred in these areas. From the viewpoint of freight carriers and shippers, allowing new, incompatible land uses into industrial areas impedes business operations and access, resulting in higher operating costs, reduced safety and efficiency.

There is often fierce competition for land, a finite resource. Siting, protecting and redeveloping industrial areas for industrial uses is in keeping with the goal of creating and preserving industrial sanctuaries in the 2040 Growth Concept, but managing and balancing competing land uses will continue to be difficult as the region grows. Maintaining reliable multi-modal transport options to our industrial areas is critical, particularly truck and rail connections. Providing rail service is becoming particularly difficult as rail operating practices continue to change rapidly.

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# 7 TECHNOLOGY AND PLANNING FOR SUSTAINABLE FREIGHT TRANSPORT

## 7.1 Going green

There are at least two variables that every commercial carrier must come to grips with: fuel cost and fuel use. The former frequently dictates the lengths to which a carrier will go to conserve fuel, while the later directly impacts the production of greenhouse gases and PM 2.5[15] emissions. The goods movement industry is responding to the prospect of sustained higher fuel costs and tightening emissions standards. Tools being used to improve powertrain operating efficiency and reduce stationary idling of truck diesel engines include:

- clean diesel technologies, more efficient powertrains and improved aerodynamics
- low sulfur and bio-diesel fuels
- on board auxiliary power units
- parking area power and HVAC hook-ups for trucks
- ongoing and innovative operational changes that reduce the carbon footprint of freight

Every operator of commercial vehicles, be they aircraft, marine, rail or truck, has grown increasingly sophisticated at load, route, operator and vehicle optimization in an effort to minimize equipment downtime and maximize profit. Recent increases in the cost of fuel have only intensified efforts to increase operational efficiencies. Still, there is little evidence of a shift to alternative modes due to fuel costs.

The public sector needs to complement these efforts by optimizing its own facilities and strategies to gain maximum through-put capacity and efficiency where it matters most. This effort needs to include multi-jurisdictional coordination and ongoing participation from the private sector goods movement community. The challenge of increasing the capacity of the goods movement system while remaining environmentally sustainable will require close coordination and cooperation between the private and public sectors.

## 7.2 Transportation system management

Several tools are available for transportation system management on the corridor level. These tools include variable message signs, traveler information systems, incident management and response, traffic signal progression, ramp metering and demand (traffic volume) responsive signal timing. Truck signal priority might also be considered in certain situations.

The public sector would benefit by managing its roadway infrastructure with the understanding that roadway capacity is valuable and costly to expand. For example, managing roadway

[15] Particulate matter smaller than 2.5 microns have been shown to affect human health.

performance through congestion pricing can include electronically charging road users a fee for using a road that might vary depending on changing real-time demand for roadway capacity throughout the day, with higher prices charged at periods of peak travel demand. Market-based road user fees, if properly implemented, can free up scarce road capacity for both passenger and freight needs, and provide revenue for alternative transportation and/or improvements to existing facilities.

Weigh-in-motion scales have been in use for several years, allowing trucks to bypass conventional truck scales, saving time, fuel and wear. Weigh-in-motion systems could be improved through the use of a single, common transponder system for commercial vehicles operating throughout several western states.

Some industrial areas within the Portland metro region have freed up roadway capacity by forming transportation management associations. These associations can facilitate and promote enhanced pedestrian, transit, carpooling and bicycle alternatives to the daily commute. These associations also work with employees to tailor transit services to their work shifts and with employers to facilitate staggered shifts, compressed work weeks and work-from-home programs. These efforts can reduce single occupant vehicle travel within industrial areas during critical peak travel times.

## 7.3 Freight data collection and analysis

Portland State University's Intelligent Transportation Systems Laboratory has begun a project to produce truck travel time estimates using the transponder information from ODOT's Green Light weigh-in-motion system. The system can supplement Tripcheck's traveler information system as well as help calculate key freight measurements by linking the other data collected by the weigh stations to the travel time estimates. The ITS lab at PSU houses and maintains the Portland Oregon Regional Transportation Archive Listing. PORTAL collects data from all of the in-bed loop detection sensors in the Portland area as well as free floating dynamic sensors that can be placed in TriMet buses or other vehicles. The archive also collects weather and incident reports, all of which can be accessed in a variety of methods to help monitor and evaluate traffic improvements and patterns.

## 7.4 Planning, coordination and education

The RFGM Task Force requested that freight coordination continue at the regional level. Metro staff would like to honor the task force's efforts and contributions but recommends sunsetting this particular advisory group. However, in recognition of the importance to maintain and improve Metro's relationship with the commerce, freight and goods movement community, staff recommends that an *ad hoc* bench, with an expanded membership, be established (see Section 10 of this report.) In addition, a wide variety of ongoing coordination, planning and data collection efforts would allow Metro to be more responsive to requests from the goods movement community.

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The RFGM Task Force also recommended that efforts to educate the public on the importance of goods movement, and the critical role it plays in the economy, continue on an ongoing basis.

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# 8 REGIONAL FREIGHT PLAN FINDINGS

The following findings were developed or compiled by Metro staff but are based on RFGM Task Force input as well as data collected as part of this project.

## 8.1 Trade and the Portland economy

- Trade volumes in the Portland/Vancouver region will double by 2035.
- Continued trade growth will create economic opportunities for the region and state that are dependent on adequate transportation infrastructure.
- The goods movement needs of the Portland-Vancouver region, and the markets it serves, require access to a broad range of modal options and service providers.
- The ability to transport goods into, out of, through and within the region in an efficient, timely and reliable manner is critically important to the economic health of the region and the state as well as West Coast trade.
- Maintaining an efficient, accessible, multimodal goods movement system is essential to attracting and retaining traded sector companies. These firms require access to the global marketplace comparable or superior to any firm they might compete against.

## 8.2 Industrial land supply

- 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 recreational or environmental resources.
- Industrial sanctuaries should continue to be considered a unique and protected land use. Preserving the region's existing industrial sanctuaries is essential to maintaining 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.
- 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.

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## 8.3 Freight rail

- Rail service characteristics are changing. Class 1 railroads, 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.
- Class 1 railroads are currently struggling to meet existing freight demand. They are facing shortages in rolling stock and siding, yard and track capacity. They are attempting to address these deficiencies in a timely manner but are struggling to do so.
- 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.
- The current Class 1 railroad business model focuses on delivering service to railheads with intermodal yards or directly to port facilities. The Class 1 railroad intermodal yards in the region are operating near capacity now, and they will need to be expanded. These intermodal yards are predominantly dependent on trucks to move freight to and from their facilities. This may require use of scarce lands within certain Industrial Sanctuaries.
- Short line railroads have generally taken over the role of distributing rail cars throughout the region on their rail networks to end users requiring direct local rail service. Lack of space in Class 1 rail yards means short line railroads need additional marshalling yards on their own properties to make up trains. Identifying locations for these yards is challenging, as it often requires the acquisition of scarce lands within certain industrial sanctuaries.
- Short line railroads and certain private operators are also operating intermodal facilities, frequently offering additional logistics services to shippers. Maintaining and improving both truck and rail access to these satellite intermodal locations is critical.

## 8.4 Trucking

- Trucks will continue to be the dominant mode of transport in the freight transportation system, with West Coast truck volumes expected to increase over 250 percent by 2035. 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.

**Did you know?**

- Trucks are the primary movers of freight and goods
- Trucks carried 67 percent of the total tonnage in 2000 and are expected to move 75 percent of the tonnage by 2035

Source: 2035 RTP p. 2-21

- 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 are also supportive of active Transportation System Management, to include incident management.
- Transportation service providers identified the Columbia River Crossing, I-5 through Delta Park, the I-84/I-5 interchange area, I-205 from OR 224 to I-5 and the Sunrise Corridor projects as well as improved access to the North Wilsonville-Tualatin-Sherwood and Clackamas industrial areas as their highest regional road improvement priorities.

## 8.5 Air cargo

Air cargo continues to require efficient access for perishable and high-value goods and production-critical components. However, 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. This has led, in turn, to higher production costs and reduced productivity.

## 8.6 General concerns and observations

- The rail, truck, marine, pipeline and air cargo carriers all invest in their own equipment and infrastructure and are privately owned for-profit businesses. This complicates public sector investment in safety, access, reliability or capacity improvements for these modes.
- Every privately owned carrier, of whatever mode, relies on publicly owned infrastructure for at least a portion of their activities.
- Firms relying on the goods movement system monitor the efficiency, reliability and speed of the existing transportation system and use these measures to evaluate system performance. The vast majority of this information is considered proprietary and is used by shippers to gain an advantage over competitors. Much of this data is also derived from proprietary systems that generate unique data outputs focused on parameters specific to that firm. This can make even anonymous data sharing very difficult.
- The goods movement industry provides over 46,000 family wage jobs within the region.
- Maintaining the Portland metro region's historic preeminence as a goods movement and industrial hub should remain a regional priority.
- Long-term under investment in transportation infrastructure within the region, for both maintenance and capacity improvements, has led to congestion, weight limits and frequent system breakdown.
- Transportation revenues to fund maintenance and capacity enhancements are at an historical low on the federal, state and local levels.

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- An ongoing regional freight data collection effort needs to be undertaken and sustained over time. One of the better efforts to date is PORTAL, operated by PSU, but several other efforts under development also show promise.
- A component of regional freight data collection efforts needs to include interviewing shippers directly on ongoing basis, to capture current supply chain dynamics.
- The importance of freight transportation to the regional economy needs to be reinforced through an ongoing public education effort.

## 8.7 The transportation funding challenge

### Funding background

Change is needed: Federal and state fuel tax revenues have been in decline for several years. Funding for transportation projects has historically come from several federal, state, regional and local funding sources, as reflected in the following lists. There are several programs funded under the current federal transportation act, the Safe, Accountable, Flexible, Transportation Equity Act: A Legacy for Users (SAFETEA-LU), that can be directed towards freight. The next federal transportation act is expected to specifically address freight movement. Funding for transportation was taken up by the Oregon Legislature during its recently concluded session.

### The consequences of long-stagnant state transportation funding

Public sector funding for transportation infrastructure, particularly targeting freight movement, has diminished over time. Even with recent federal recovery efforts and state legislation, competition for available funds will increase, and most (road) funds are likely to be funneled into critical safety projects. The region's funding dilemma is real: until the July 2009 HB 2001 hikes, the state of Oregon hadn't had a gas tax increase since 1993[16] and the federal Highway Trust Fund is teetering on insolvency. For most of the first decade of this century, the cost of construction materials has risen significantly on the global market, greatly increasing the cost to construct infrastructure improvements. Simply put, costs to construct improvements having been trending upward rapidly, while available revenues to pay for them have been declining. Deferred maintenance and delayed projects have cost individuals and businesses in terms of lost time and opportunities, increased vehicle wear and tear and threatened or lost jobs. This lack of investment in the US transportation infrastructure is weakening our ability to compete globally against China, India and the European Union, all of which are investing heavily in transportation. The successful implementation of any programs or projects in these times requires coordination at all levels of government with the business community to address the immediate and long term freight transportation funding needs.

### HB 2001 provides new state transportation resources

On July 30, 2009, Oregon Governor Ted Kulongoski signed House Bill 2001 (HB 2001) into law. The bill provides for a gas tax increase of 6 cents, from 24 cents per gallon to 30 cents per

[16] However, Oregon's Weight-Mile Tax levied on trucks over 26,000 pounds (GCW) has increased since that date.

gallon, as well as increasing vehicle license plates from $54 to $86 every two years. Vehicle title fees will rise from $23 to $78. All told, the changes will make approximately $300 million per year available for transportation projects, of which $136 million will be directed into the state highway program. Counties will receive $82 million; cities will receive $55 million. The remaining $24 million will fund non-road alternative transportation projects. Among the projects funded through this bill that will benefit freight and goods movement in the Portland area are Hwy 26 widening from 185th Ave to Cornell Rd. ($20 million), the Hwy. 26/Shute Rd. interchange ($45 million), and Hwy. 26/Glencoe Rd. interchange ($32 million).

### Uncertainty at the federal level

Nationally, funding for transportation projects has become scarce. The need to replace aging transportation infrastructure and expand facilities in areas of the country experiencing growth has exploded. This need comes at a time when infrastructure project costs have increased significantly during the last several years. Federal reauthorization of the multi-year omnibus transportation bill is now expected to be delayed 18 months past the expiration of the current bill, SAFETEA-LU, in September 2009. The private sector portion of the goods movement community has been making great strides in adopting sustainable technologies and wringing efficiencies out of their respective portions of the goods movement system. The public sector must also effectively weigh policies, programs and investments to achieve the maximum benefit for the goods movement system, particularly during a time of uncertain funding for transportation.

### Funding sources

The following funding sources are currently available to the region.

**Federal funding sources or programs (FHWA programs, unless otherwise noted):**

- Modernization (freight chokepoints, capacity enhancements, dimensional issues on NN/NHS freight routes)
- Preservation (road and bridge maintenance)
- Surface Transportation Program
- National Corridor Infrastructure Improvement Program
- Congestion Management and Air Quality Improvement Program
- Transportation Infrastructure Finance and Innovation Act of 1998 – allowed the creation of state infrastructure banks through a federal credit, generally fund state infrastructure banks (Funds are expected to be repaid.)
- Truck Parking Facilities
- Freight Intermodal Distribution Pilot Grant Program
- Transportation, Community and System Preservation Program
- Elimination of Hazards and Installation of Protective Devices at Rail-Highway Crossing

- High Risk Rural Roads (e.g., Cornelius Pass)
- Intelligent Transportation Systems Research
- FTA dollars for TDM measures on truck corridors and in industrial areas
- MARAD: provides funding for harbor and channel maintenance
- FAA: various programs for providing airside, landside and runway protection zone funding

**State funding sources:**

The following list of funding sources is generally administered through ODOT:

- Oregon Gas Tax/Vehicle Registration Fees: With passage of HB 2001, an additional $300 million annually we be raised for transportation purposes, statewide.
- Oregon Weight Mile Tax: Charged to trucks weighing over 26,000 pounds, the tax is the primary source of tax revenue raised by trucks in the state. Weight Mile Tax receipts are primarily directed at roadway maintenance and system preservation efforts throughout Oregon, with a smaller amount allocated to administering the program.
- Oregon Energy Income Tax Credit: The Oregon Department of Energy offers a tax credit for businesses that invest in reducing energy consumption. Under this program transportation projects that reduce the number of single-occupancy vehicle trips are eligible for the credit. The credit covers up to 35 percent of eligible project costs.
- Connect Oregon I & II: Funded through lottery proceeds, this effort has focused on projects that enhance intermodal connections and improve freight mobility for several modes, to include aviation, marine and freight rail. It was allocated a total of $200 million for both phases.
- OTIA: The various OTIA funding programs relied on bond proceeds to raise funding for critical statewide infrastructure needs. While this program was a success, these bonds now need to be paid off.

The Connect Oregon and OTIA programs have shown that government and the private sector can collaborate successfully. These programs have delivered tangible benefits to freight movement within the Portland metro region and the state. The Connect Oregon program should be continued. The program has proven particularly useful in funding much needed projects for off-highway modes. Dedicating the loan revenues from the Connect Oregon program into a revolving fund could help the program be more self sustaining.

**Regional funding sources:**

- Congestion pricing/use-based toll: Set up a regional congestion pricing program, starting with CRC (both bridges). Enforce through WMT transponders or cell phones. Dedicate revenues generated by trucks to truck oriented projects.
- Vehicle registration fee: Apply a uniform vehicle registration fee to all vehicles.

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- Regional funding initiative: Regional transportation improvement districts have experienced success in the Northwest. These packages use increments of vehicle registration fees, fuel taxes and/or property taxes to fund a specific list of infrastructure improvements. A regional transportation improvement fee is under development for consideration.
- Value capture: Certain transportation projects generate greater tax revenues for a community during their construction and throughout their active lifespan. Projecting this value and using it to help bond the project is another way to help fund certain capital projects, such as shortline railroad intermodal facilities.
- Freight innovation initiative: A fund for innovative, freight-oriented technological and operational efforts using commercial vehicle congestion pricing tolls. Revenues could fund freight-oriented TSM, ITS, fuel consumption reduction or alternative fuel efforts and technology proof of concepts, trials and demonstration projects. A small percentage of these funds could also support a regional freight database and associated freight movement research.

Local transportation funding efforts in other regions and states have illustrated that the public is willing to pay for infrastructure under certain conditions. The public needs to see a demonstrable need for the project and how the proposed project will meet that need; it has to feel confident in the cost estimate and projected schedule and also in the constructing agency's ability to deliver a project within that cost and schedule.

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# 9 DEVELOPING A FREIGHT STRATEGY TOOL KIT

## 9.1 Linking freight plan goals and issues to targeted solutions

The RFGM Task Force identified specific issues associated with the RTP goals for freight movement. These issues, summarized in the table below, require an ongoing, creative and collaborative approach to problems that are sometimes systemic, sometimes localized and usually complex. The task force recognized that freight problems occur on a multimodal system and that even when problems appear to be localized bottlenecks or network barriers, there are often multiple underlying causes that extend far beyond the apparent problem. The interdependent nature of our transportation system, economy and environment all demand that a rigorous analysis of potential solutions be performed, in order to avoid downstream impacts or unintended consequences.

The tables are structured around the Regional Freight Plan goals developed by the task force and found in Section 2 of this document. Two critical goals are for the related, yet distinct categories of congestion reduction and improvement of travel-time reliability. These and other freight goals have been addressed in the following categories:

**System planning for efficient freight mobility and access.** This category of issues and solutions speaks to Metro's mission as the Metropolitan Planning Organization for the Portland metro area. It seeks to provide better freight and goods movement data, to analyze that date with freight considerations in mind and to implement a multimodal plan that facilitates freight movements required for a vibrant regional and state economy.

**System management to increase network efficiency.** This category comprises the "first step" to improved freight and goods movement operations on the existing system and includes preservation, maintenance and operations-focused projects and associated planning and coordinating activities.

**Public understanding of freight issues.** To gain public support for projects and funding of freight initiatives, and to help the public and elected officials make wiser land use decisions, a program of public education is required.

**Sustainable freight transportation system.** This category of issues and solutions deals with traditional nuisance and hot spot issues associated with "smokestack and tailpipe" problems, but it also recognizes the many current contributions and new opportunities for the evolving green freight community to be part of the larger environmental and economic solution set required in these times, including greenhouse gas curtailments.

**Freight-sensitive land use planning.** This category targets land use planning and design issues that can affect the ability of freight, goods movement and industrial uses to live harmoniously with their neighbors. Freight-sensitive land use planning includes everything from long-range aspirations for freight and industrial lands to short-term and smaller scale design and access issues.

**Strategic transportation investments.** This category of solutions focuses on planning and building capital projects and developing the funding sources, partnerships and coordination to implement them. It includes the list of regional freight project priorities attached as Appendix B to this report, identifying a wide range of projects from preservation and maintenance to major facility construction.

To maximize the return on public investment, these freight-oriented preservation, management and investment priorities should focus on:

- more carefully evaluating what, where and when the freight problems occur (noting, for example, that they do not always coincide with the commute peaks)
- addressing core throughway system bottlenecks with substantial freight impacts, to improve truck mobility in and through the region. Examples include the Columbia River Crossing influence area, the I-5/I-405 with connection toUS 26, 99W through Tigard, and the I-5 corridor south to Wilsonville
- improving and protecting the throughway interchanges that provide access to major industrial areas, particularly: I-5/Marine Drive and I-5/Columbia Blvd serving the Columbia Corridor and Rivergate industrial areas, I-205/Hwy 212 serving the Clackamas and Milwaukie industrial areas, and I-205/Airport Way serving Portland International Airport and east Columbia Corridor industrial areas
- improving arterial connections to current and emerging industrial areas. Examples include Sunrise Corridor phased improvements recommended by the Sunrise Project Policy Committee and last mile local industry connectors, e.g., Columbia/Cascade River District projects, including the I-84/257th Avenue Troutdale interchange and SW 124th from Tualatin-Sherwood Road to the I-5/North Stafford interchange
- ensuring safe transport of hazardous loads with a regional routing strategy
- looking beyond the roadway network to address critical marine and freight rail transportation needs such as completing the Columbia River channel deepening and upgrading main line and rail yard infrastructure.

Several issues raised by the stakeholders are difficult to resolve, primarily because the improvements suggested involve infrastructure that is under private ownership. In these instances, identified public benefits must be rigorously quantified to demonstrate net benefits associated with public investment. In addition, qualitative benefits must be logically articulated and assessed.

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| Freight plan goal | Key issues identified by stakeholders | Potential solutions/strategies |
|---|---|---|
| **System planning for efficient freight mobility and access**<br><br>We must use a systems approach to plan and manage our multimodal freight transportation infrastructure, recognizing and coordinating both regional and local decisions to maintain seamless flow and access for freight movement that benefits all of us. | Inability to track freight system performance over time<br><br>Inability to measure economic impact of investments<br><br>Inability to account for land use needs generated by non-truck (rail, air, pipeline) commodity flows<br><br>Accessibility between intermodal terminals, industrial areas, commercial centers and the interstate system<br><br>Improved rail access and service for regional shippers<br><br>Consideration of freight and goods movement needs in project development<br><br>Protection of modal redundancy<br><br>Through-truck travel in neighborhoods<br><br>Need to maintain freight route and mode choice | **Data, research, modeling and analysis**<br>• Improve Metro's truck module within the regional travel forecast model<br>• Explore methods of linking non-highway commodity flows and land use needs<br>• Investigate predictive risk analysis, economic models and/or manual estimates of monetary benefits based on predicted travel time savings, incident clearance, enforcement, etc.<br>• Submit proposals for relevant regional, state and national freight-related research or pilot project opportunities (e.g., Transportation Research Board projects)<br>• Continue and expand work with Portland State University faculty and research staff to improve tools for freight analysis (e.g., truck counts)<br>**Planning and coordination**<br>• Maintain Regional Freight Technical Advisory Committee meetings (monthly) and hold twice-yearly Task Force meetings (or as needed to provide timely input)<br>• Periodic development, refinement and ongoing advocacy for RTP freight projects list<br>• Coordinate with and through Portland Freight Committee, ODOT, Oregon Freight Advisory Committee (OFAC) and Southwest Washington Regional Transportation Council/Clark County/WSDOT on statewide and regional freight, port and rail planning to ensure regional issues are addressed<br>• Monitor freight innovations across the country and globally to mine for Portland metro application<br>• Ensure that freight needs are included in all Metro planning efforts, such as corridor refinement plans, transit and land use planning |

| Freight plan goal | Key issues identified by stakeholders | Potential solutions/strategies |
|---|---|---|
| **System management to increase network efficiency**<br><br>RFGM Task Force: We must use a systems approach to plan and manage our multimodal freight transportation infrastructure, recognizing and coordinating both regional and local decisions to maintain seamless flow and access for freight movement that benefits all of us. | Travel time reliability on regional truck routes<br><br>Efficient use of existing capacity<br><br>Continuing to reduce state and regional truck crash rate<br><br>Need for faster response to roadway incidents<br><br>Improved traveler information – road conditions, directional signage<br><br>Maintenance dredging and lock repair | **Data collection, analysis and planning**<br>• Regional Transportation System Management Plan<br>• Monitor/comment on ODOT statewide freight planning studies (Statewide Freight Plan, related studies for ports and rail at the state level)<br>• Continued support for use and expansion of tools such as the PORTAL program of real-time traffic delay, etc.<br>• Periodic surveys/interviews with shippers about the services provided by the region's carriers in the multimodal system<br>**Projects (operations, build options)**<br>• Access management<br>• Improved incident management<br>• VMS/GPS active (in cab) truck route management<br>• Truck-only lanes, ramp meter bypass lanes, next generation ITS infrastructure for commercial vehicles<br>• Road pricing, congestion pricing, managed lanes studies, pilots or deployment if appropriate<br>• Rail track/yard improvements<br>• At-grade rail/highway projects to eliminate rail/highway conflicts and increase rail functional capacity<br>• Facilitate multiple shippers' combined shipments to meet railroad's operating plans<br>• Increase enforcement of traffic/carrier regulations<br>• Expand rest areas/better utilization of rest areas for extended truck rest areas, including smart truck parking<br>• To improve workforce access to jobs, support Regional Transportation Options program, Transportation Management Associations, expanded transit service/vanpools, bicycle and pedestrian facility improvements in industrial/employment areas |

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| Freight plan goal | Key issues identified by stakeholders | Potential solutions/strategies |
|---|---|---|
| **Better public understanding of freight issues**<br><br>RFGM Task Force: We must enlighten our region's citizens and decision-makers about the importance of freight movement on our daily lives and economic well-being. | Better coordination between freight system stakeholders in region<br><br>Education of decision makers and public about importance of region's freight transportation system, including the economic relationship between freight and community sustainability | **Education and coordination**<br>• Improve information exchange between public and private stakeholders via existing state, regional and local freight advisory groups<br>• Improve analysis and communication of freight impacts on regional economy<br>• Quarterly regional freight transportation system stakeholder roundtable<br>• Annual state of regional freight report<br>• Help local freight initiatives through providing strategic and technical assistance |
| **Sustainable freight transportation system**<br><br>RFGM Task Force: We must ensure that our multimodal freight transportation system supports the health of the economy and the environment. | Regional and local air quality impacts from diesel emissions, which, if not addressed, will grow as freight volumes increase<br><br>Marine freight movement impact on water quality and habitat (e.g., invasive species introduced through ballast water) | **Air quality**<br>Promotion of existing programs such as diesel retrofit technologies, idle reduction regulations, transportation system management tools<br>**Water quality**<br>Support of regulations that address environmental quality in riparian areas<br>**Other environmental**<br>• Aggressively implement clean, green and smart best practices, as appropriate<br>• Legislation to regulate and enforce ballast water release<br>• Reduction of light sources and/or filtering or redirecting lighting<br>• Proactive public outreach strategies<br>• Performance monitoring and review following public and regulatory processes such as environmental justice mitigation, where appropriate |

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| Freight plan goal | Key issues identified by stakeholders | Potential solutions/strategies |
|---|---|---|
| **Freight-sensitive land use planning**<br><br>RFGM Task Force: We must 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. | Inadequate supply of industrial land well served by transportation infrastructure<br><br>Incompatible land uses along rail lines and major truck corridors<br><br>Incompatible land uses often adjacent to one another resulting in complaints about, and adverse impacts to, freight movement<br><br>Inadequate areas for trucks to conduct off and on-street loading and unloading<br><br>Competition between industrial and other uses for system capacity<br><br>Truck deliveries to local commercial and neighborhood districts that are difficult due to narrow lanes/turning radii<br><br>Growing noise impacts from truck, rail and air cargo operations in residential areas<br><br>Limited truck parking to meet needs of drivers (hours of service limitations)<br><br>Workforce access to industrial areas | **Planning and coordination**<br>• Coordinate with land use planning efforts to ensure that current and future freight/industrial needs are addressed<br>• Expand regional Brownfields programs to allow return of industrial land to industrial uses<br>• Take advantage of Regional Freight Task Force experts to inform Metro planning activities, e.g., in creating better linkages between commodity flow data and employment projections in determining long-term land use and freight routes<br>• Consider revising "regionally significant industrial land" designation to protect high value industrial areas<br>• Use interchange management plans to protect capacity at key industrial areas<br>• Support affordable housing with access to employment/industrial centers<br>• Support enforcement of required full disclosure to property buyers adjacent to freight/industrial uses<br>• Explore strategies where businesses co-locate in order to share resources (e.g. the local "resourceful use pilot") to conserve resources and use transportation system efficiently<br>**Design and projects**<br>• Prioritize infrastructure investment to support existing industrial areas<br>• Develop neighborhood agreements between facilities and residential neighborhoods that balance freight and community needs<br>• Create "quiet zones" for rail corridors.<br>• Updating livable streets design guide to better incorporate truck movement and operations.<br>• New strategies to buffer residential and commercial land uses near industrial areas and along major truck, rail, airport and pipeline corridors |

| Freight plan goal | Key issues identified by stakeholders | Potential solutions/strategies |
|---|---|---|
| **Strategic transportation investments**<br><br>RFGM Task Force: We must create first-rate multimodal freight networks that reduce delay, increase reliability, improve safety and provide choices.<br><br>RFGM Task Force: We must adequately fund and sustain investment in our multimodal freight transportation system to ensure that its businesses stay economically competitive. | Network barrier deficiencies such as weight and vertical clearance issues on bridges, at-grade rail crossings<br><br>Existing capacity constraints in rail yards and sidings<br><br>Road congestion on regional truck routes<br><br>Main line rail congestion<br><br>Expand types and amounts of funding for freight transportation infrastructure and programs<br><br>Role of public sector in funding private operations<br><br>Need for public-private partnerships to fund improvements<br><br>Transportation investment decisions linked to economy<br><br>Concerns about safe barge navigation in I-5/BNSF bridge area | **Project development and implementation (not all-inclusive)**<br>• Implement RTP freight projects with focus on identified Task Force priorities, (see Appendix B).<br>• Fill in gaps in truck route alternatives to interstate (e.g., parallel arterials for emergency detours)<br>**Funding policy and partnering**<br>• Expanded use of public-private partnerships to fund transportation system expansion<br>• Expanded ability to invest public dollars in private facilities when improvements in those facilities result in public benefits<br>• When funds aren't available for major system improvements, make incremental improvements to those facilities through Intelligent Transportation System and traffic demand strategies, access management and less-costly strategies<br>• Common ground and linkages in the needs of different funding sources and the opportunities presented by them<br>• Expanded types of programs and amounts of funding for freight transportation infrastructure (e.g., MTIP, STIP, gas tax indexing, user fee strategies)<br>• Appropriate coordination with planning, political and advocacy groups, including Oregon delegation, OFAC, West Coast Corridor Coalition, etc., to ensure adequate funding for freight priorities<br>• Regional Freight TAC/RFGM Task Force participation in any regional road pricing pilots or planning studies<br>• Support regional ConnectOregon freight and goods movement projects |

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# 10 THE FREIGHT ACTION PLAN – FROM GOALS TO IMPLEMENTATION

Section 9 of this Regional Freight Plan includes a "tool kit" of freight strategies that respond to a broad range of needs and issues clustered around the six goals articulated by the RFGM Task Force. Section 10 constitutes the regional freight action plan. Its elements have primarily been pulled from the tool kit and elaborated.

The action items described below are the result of review with the Regional Freight and Goods Movement Task Force and the Regional Freight Technical Advisory Committee. Many of the actions described are foundational activities that constitute the glue holding the regional freight action plan together – planning, coordinating, research and policy making that take place on both an ongoing and cyclic basis. Some of the action items below are quite well developed; others will require elaboration during fall 2009, for inclusion in the spring 2010 RTP adoption process. The list of efforts will need to find staff, time and funding resources, whether that includes Metro, members of the freight, goods movement and economic development community, or other agencies or organizations.

In 2008, the RFGM Task Force developed a long list of prioritized freight projects submitted for consideration as part of the July/August 2009 RTP project solicitation process. These are included in an appendix to this plan and are also included by reference as part of Action F1.

In addition, a handful of important, achievable near-term items are included and recommended for implementation within this RTP cycle of 2009-2013, to support the approved regional freight and goods movement goals. Although circumstances and regional priorities may shift, the task force believes that a four year period is short enough to be relevant to the freight community, yet long enough for activities to be programmed, refined and deployed, as described in this section.

Between September and December 2009, this section will be winnowed into a smaller selection of important, achievable near-term actions. It will be refined to identify who does what and detailed to include a timeframe for implementation, and necessary staffing and funding amounts and sources for selected efforts.

The nearest-term actions that eventually are adopted by the task force and Metro Council and which also fall within Metro's purview will be incorporated, as appropriate, into Metro's unified planning work program for FY 2010-2011.

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## Goal A. Multimodal system planning for efficient freight mobility and access

This goal, as well as its related actions, speaks to Metro's mission as the metropolitan planning organization for the Portland metro area. Actions described below will give us better freight and goods movement data and will guide planning efforts to ensure that freight considerations in mind and to implement a multimodal plan that facilitates freight movements required for a vibrant regional and state economy.

### A1: Maintain private sector cooperation with Metro planning by forming a sustainable freight, jobs and economic development bench

The current Regional Freight and Goods Movement Task Force has been a great asset in preparing the Regional Freight Plan. Its mission now accomplished, the task force will sunset.

However, Task Force members find that continued private sector input in some form to Metro would be valuable and recommend that Metro hold periodic meetings to maintain engagement with private sector representatives. They also believe that, going forward, the group could be broadened across a more diverse regional cross section that would include multimodal carriers, shippers, producers and business, members of the economic development community and facility operators. Metro freight staff suggests that subsets of members drawn from the "bench" could be formed based on changing circumstances and regional issues, on an *ad hoc* or a more formal basis as needed, to focus on specific projects, corridors or topics that involve freight within the region. The bench may be thought of more broadly as a think tank, a speakers' bureau, a listening post and a sounding board. In short, this wider group of stakeholders constitutes a deep bench of regional freight and business acumen that will serve Metro well to keep handy. The bench would necessarily overlap with other regional groups such as the Portland Freight Committee, and Metro staff would work to coordinate freight initiatives of common interest.

Areas where members of the proposed bench could provide value to Metro include:

#### Implementation of the Regional Freight Plan

- Review, assist, comment, contribute and/or lead various elements of the action plan
- Contribute to future freight plan refinements and updates

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**Regional planning efforts**

- System planning, modeling and analysis
- Freight access/industrial land aspects of land use planning
- Input into selecting and carrying out regional corridor refinement plans
- Metropolitan Transportation Improvement Program (MTIP) funding and project selection processes
- Provide input into ConnectOregon criteria and selection
- Development of analytical tools, data bases, performance measures and policies
- Prioritization of investments and projects with a freight and economic development perspective
- Assisting localities with transportation system plan (TSP) freight components

**Freight and goods movement, jobs and economic development**

- Develop policy and business support for transportation funding initiatives, including possible fees or pricing strategies
- Define economic development context and goals for freight and goods movement policies and investments
- Support for broad regional prosperity and environmental justice with an economic development strategy

**Sustainability**

- Greening freight and industry while promoting sustainable jobs and economic growth
- Greenhouse gas and other environmental impact reduction strategy development

**Public education and stakeholder engagement**

- Participate in a Speakers' Bureau on freight, goods movement and economic development for use by local and regional groups

### A2: Continue baseline freight and goods movement policy and technical coordination

In addition to maintaining Metro's monthly meetings with the Regional Freight Advisory Committee, Metro's freight program staff will participate on effective local, state and national freight-relevant organizations, such as the Portland Freight Committee, the Columbia Corridor Association, the Columbia River Crossing freight working group, ODOT's statewide freight planning committees, the Oregon Freight Advisory Committee, the West Coast Corridor Coalition and the Bi-State Coordinating Committee.

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### A3: Continue baseline freight and goods movement data collection and reporting activities

Keeping current in an environment that is volatile, in an era which is increasingly unpredictable, is as challenging as it is essential. This recommended action ensures needed support for ongoing data collection and necessary or desired expansions to existing efforts, such as PORTAL, ensuring updates to the commodity flow matrix, continuing to seek more detailed freight and goods movement flow data at the regional level, etc. Freight and business stakeholder interviews should be held periodically, to provide updates to the "cost of congestion" data and to provide early detection of problems and opportunities affecting the flow of goods and our regional economy. Collecting data sufficient to support other tasks, including Action C3, will mean the region will be able to assess a wide variety of outcomes, including jobs creation, value/tons moved, economic impacts, cost of delays, emissions, energy use, neighborhood impacts and others associated with freight movement. In addition, new goals and programs for greenhouse gas reduction, and possibly a regional congestion pricing pilot program, may add to or change regional data needs.

### A4: Ensure that freight needs are included in local and regional planning efforts

Metro freight staff and the Bench members will be responsible to deliver the freight and goods movement and economic sustainability perspective during development and refinement of corridor plans, transit and land use planning, etc. This effort could include development of a comprehensive freight "check-off" list for use in planning or project development.

### A5: Develop and conduct freight and goods movement research program

In general, freight is a less well understood component of the regional transportation system; many regions are struggling to improve and integrate such tools as basic freight data, performance measures and analytic and modeling tools. The Regional Freight Plan distinguishes between the specialized needs for moving industrial/agricultural commodities through and beyond the region and the day-to-day needs of urban goods movement within and between 2040 centers. Yet this distinction requires the use of analytical tools which can shed light on those two categories of goods movement within our region. It also requires close coordination between Metro and ODOT to ensure that the statewide model addresses regional needs.

In order to develop and/or refine freight-relevant analytical tools that can help Metro and its partners better predict, manage and invest for freight and goods movement, the task force recommends that Metro develop and nominate a program of applied research. To accomplish that, Metro will coordinate a research agenda between in-house research/modeling units and OTREC, PSU or other appropriate research institutions and Metro's freight partners. Possible elements of a research program could include:

- convening a Regional Freight Analysis Improvement Symposium to share best freight modeling practices and ideas for improving Metro's model at a reasonable cost, with the least intensive data requirements

- continuing to develop the regional truck model
- developing explicit linkages between improvements to freight components of Metro's regional model and the Oregon statewide model, focusing on taking intercity flows to enhance the regional distribution component
- more fully incorporating freight trip time reliability performance measures into Metro's transportation and land use planning and project prioritization criteria, no later than for the 2013 RTP cycle
- pursuing Transportation Research Board research programs, such as C15: Integrating Freight Considerations into Collaborative Decision Making for Additions to Highway Capacity
- investigating predictive risk analysis, economic models and/or manual estimates of monetary benefits based on predicted travel time savings, incident clearance, enforcement, etc.
- finding and evaluating solutions for reliability and economic impacts for next RTP
- seeking funding for desired elements of a research program through existing and new programs, as appropriate

### A6: Coordinate research, modeling and planning with Oregon Department of Transportation (ODOT)

Coordination with ODOT is sufficiently important to be called out specifically. All efforts in recommendation A4 should include ODOT as a partner. Metro staff will work with ODOT's freight mobility manager to consult and coordinate with respect to the statewide freight plan as well as regionally recommended changes to the National Highway System/National Network freight designations.

## Goal B. System management to increase network efficiency

This category comprises the first step to improved freight and goods movement operations on the existing system and includes preservation, maintenance and operations-focused projects and associated planning and coordinating activities. It focuses on using the system we have more effectively.

### B1: Better define, preserve and enhance freight function of existing system

In order to fill gaps and preserve functionality of existing freight system, including needed parallel truck routes, the task force recommends that Metro further examine and clarify functions of essential truck route alternatives to the interstate system. In addition to normal access functions, freight route alternatives are needed for emergencies, construction or congestion, and system flexibility and redundancy for future mobility patterns. The role, use and need for parallel arterials must be better understood as part of a wider and more effective system management effort.

### B2: Assess need to develop and fund better incident management and traveler information

Real-time travel information (focused on truckers) to avoid incidents and find detours is increasingly important, particularly to improving reliability performance. Incident clearing resources and regionally coordinated efforts to manage incidents must be sufficiently funded. This action item would direct attention on deficiencies to be addressed, if they exist.

### B3: Continue support for use and expansion of ITS system management tools

Begin to address need for 24/7 congestion mapping for the multimodal freight system, among other needs. Support PORTAL's program of real-time traffic delay; provide VMS/GPS active (in cab) truck route management, electronic routing and signage.

### B4: Support workforce access to the region's industrial jobs through Metro RTO/TDM programs

The task force recognizes the need for Metro's transportation demand management programs and supports non-auto mobility choices for workers to get to their jobs. If options are limited in certain industrial areas, deficiencies will be highlighted for the region to address. Efforts to improve alternative transportation options for workers will include partnering with TriMet and other service providers to ensure good access to high employment areas.

### Goal C. Public understanding of freight and goods movement issues

To gain public support for projects and funding of freight initiatives, and to help the public and elected officials make wiser land use decisions, a program of public education is required.

### C1: Establish stakeholder outreach program

Make use of an ongoing relationship with the freight community to provide topical and informative briefings to Metro's various audiences. This could be led by members of the expanded Bench and include a speakers' bureau service to groups within the region.

### C2: Provide support for topical fact-based fact sheets, white papers, guest columns and editorials

Apart from any advocacy, Metro's freight staff would coordinate with technical resources within and outside Metro to help improve the analysis and communication of freight impacts on the regional economy and environment. Coherent, logically argued and factually based analysis of freight and goods movement problems, or investments under consideration within the region, are key to gaining public understanding. Creating stories that can carry technical messages to a lay audience is also necessary. The task force recommends using Metro's analytic capability in support of appropriate, balanced responses to news and editorials, in order to clarify and highlight freight, goods movement and economic development issues. A key topic to articulate better is the link between freight and goods movement investments and environmental justice

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(reducing hot spot congestion and pollutants) and economic equity (good, family wage jobs in one of the few sectors that do not always require higher education).

### C3: Create "state of freight" report for the region

Metro staff will coordinate with its stakeholders to develop an outcomes-based report that summarizes the most salient freight, goods movement and economic development issues in terms of regionally vetted benchmarks and performance measures. This could be a piece that is updated on a regular basis, which could be used to improve public and policy-maker awareness of regional freight issues. The report would highlight traditional and emerging industries' mobility and access needs during a challenging and volatile economic period.

### C4: Coordinate with and include the economic development community

As part of expanding the current Task Force into a broader sustainable freight, jobs and economic development bench, Metro will reach out to the economic development community, including the Portland Business Alliance, Project Greenlight, the Columbia Corridor Association, the East Side Economic Alliance, West Side Economic Alliance and others. Metro staff will work with these partners to support development of an economic development strategy for the region that is coordinated with infrastructure investment.

### C5: Host Operation Lifesaver training session

This action involves sponsoring a "train the trainer" session to disseminate Operation Lifesaver's latest information and techniques to teach the public, especially young people, about how to be safe around trains (both freight and passenger).

## Goal D. Sustainable freight transportation system

This category of issues and solutions deals with traditional nuisance and hot spot issues associated with "smokestack and tailpipe" problems, but it also recognizes the many current contributions and new opportunities for the evolving green freight community to be part of the larger environmental and economic solution set required in these times, including greenhouse gas curtailments.

### D1: Provide useful "green freight" links from Metro's freight program webpage

This would be a simple web resource that could direct our regional stakeholders to useful local, state and national programs and resources.

### D2: Establish a regional "green freight, goods and jobs" roundtable series

To help identify what emission and greenhouse gas reductions can be expected from regional freight and goods movement activities, and to improve the effectiveness and reduce business impacts of such reductions, Metro will hold one or more "green freight, goods and jobs" symposia or roundtables. These will be designed to share best practices and discuss funding for effective freight-related environmental programs. Include PDC clusters in our thinking, for example, the electric vehicle cluster. Examine small business strategies for sharing space,

industrial processes, using waste streams, etc. This venue would also provide a conduit for technology transfer, the sharing of research or practical experience and similar activities.

### D3: Pursue greenhouse gas and other pollutant reduction policies and strategies for freight

Coming out of item D2, and drawing from other initiatives within and beyond the Metro region, staff will explore and define potential environmental benefits in the following areas:

- procedures for identifying greenhouse gas impacts of freight and evaluating the net greenhouse gas impact of freight projects
- programs, policies and projects for cost-effective net reduction of greenhouse gas and other pollutants, such as industrial symbiosis (businesses sharing resources and possibly using neighbors' waste products in their processes); and
- leveraging and possibly expanding diesel retrofit programs, promote idle reduction regulations, etc.

## Goal E. Freight-sensitive land use planning

Quality of life begins with a job. With that fact in mind, this category targets land use planning and design issues that can affect the ability of freight, goods movement and industrial uses to live harmoniously with their neighbors. Freight-sensitive land use planning includes everything from long-range aspirations for freight and industrial lands to short-term and smaller scale design and access issues.

### E1: Develop strategies to protect existing supply of industrial land

Staff will identify lessons learned from previous efforts in the region and look at the most effective ways to protect high-value industrial land and prioritize and protect the value of freight investments to serve such areas. This action will also focus on the economic impacts of failing to preserve and serve industrial lands. It would be tied in with action C4, above.

### E2: Examine need for additional industrial land

The region must ensure a continued adequate supply of appropriate industrial land. In addition to internal coordination between Metro planning and land use staff, and coordination with local jurisdictions and industry sectors, an understanding of how the City of Portland succeeded in this area could aid the larger regional effort to meet future industrial land needs.

### E3: Provide freight perspective to revision of Metro's livable street design guide

The devil is truly in the details of neighborhood provisioning (delivering to retailers and restaurants), designing for utility and street access for oversize construction equipment and providing needed arterial redundancy for freight and goods movement, all of which can impact local streets and communities. However, all these things are also critical for the very vitality we value in our region. As Metro updates its 2002 edition of Creating livable streets: Street design

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guidelines for 2040, Metro's freight program staff will coordinate with regional stakeholders to ensure that previously recommended freight considerations are kept in mind and incorporated into any revisions. This action will also require coordination with local jurisdictions (especially with the City of Portland's staff and its Freight Master Plan elements such as the Working Harbor study) to integrate finer grain land use issues into the regional framework.

This update will begin in fall 2009. Metro freight staff will provide direction on appropriate freight and goods movement representation on the technical advisory committee that will oversee the revision of the guidelines and will develop "lessons learned" based on recent regional case studies.

### E4: Explore and develop regional industrial sustainability and co-location strategies

This action item (which also supports Goal D, above) directs Metro staff to assist its freight/goods movement and agency partners in exploring co-location of business to share resources (heat, energy, transportation, infrastructure) and use the transportation system efficiently. Metro could consider partnering with the Zero Waste Alliance and the Pollution Prevention Resource Center to further their existing efforts in this area. Further exploration of "freight villages" could be included. One of the semi-annual bench meetings could be devoted to national and international best practices in this important emerging area.

## Goal F. Strategic transportation investments

This category of solutions focuses on planning and building capital projects and developing the funding sources, partnerships and coordination to implement them. It includes the list of regional freight project priorities attached as Appendix B to this report, identifying a wide range of projects from preservation and maintenance to major facility construction.

### F1: Work toward implementation of the RTP freight priority projects

Bench members will continue to advocate for the prioritized list of regional freight projects within the approved RTP project list. This will include supporting funding needs and initiatives to build desired projects. In general, consistent with the message presented throughout this action plan, major investments for freight-oriented preservation, management and "build" projects should focus on:

- more carefully evaluating what, where and when the freight problems occur (noting, e.g., that they do not always coincide with the commute peaks)
- addressing core throughway system bottlenecks with substantial freight impacts, to improve truck mobility in and through the region. Examples include the Columbia River Crossing influence area, the I-5/I-405 loop with connection to US 26, 99W through Tigard, and the I-5 corridor south to Wilsonville
- improving and protecting the throughway interchanges that provide access to major industrial areas, particularly: I-5/Marine Drive and I-5/Columbia Blvd serving the Columbia Corridor and Rivergate industrial areas, I-205/Hwy 212 serving the

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Clackamas and Milwaukie industrial areas, and I-205/Airport Way serving Portland International Airport and east Columbia Corridor industrial areas

- improving arterial connections to current and emerging industrial areas. Examples include Sunrise Corridor phased improvements recommended by the Sunrise Project Policy Committee and last mile local industry connectors, e.g., Columbia/Cascade River District projects, including the I-84/257th Avenue Troutdale interchange and SW 124th from Tualatin-Sherwood Road to the I-5/North Stafford interchange
- ensuring safe transport of hazardous loads with a regional routing strategy
- looking beyond the roadway network to address critical marine and freight rail transportation needs such as completing the Columbia River channel deepening and upgrading main line and rail yard infrastructure

### F2: Strengthen the tie between project prioritization and the framework for freight performance

Metro recognizes that, while autos and trucks must share the same network, auto trips can more easily be diverted off the highway system via a number of satisfactory existing or planned alternatives, including high capacity transit, a supporting bus network, and regional and corridor bicycle and pedestrian systems in various stages of completeness. Thus, the dependence of trucks and truck-related commerce on the highway system should be recognized as a factor in roadway project prioritization. This action item relies in part on improving the understanding and rigor of freight-related performance measures within Metro's modeling protocols: are we measuring what is relevant to know about freight? In addition, this action depends on technical staff and the freight/jobs/economic development community's ability to articulate fact-based net benefits of strategic goods movement and business-friendly investments and to compete effectively for regional dollars and attention within the decision-making structure of their respective local jurisdictions.

### F3: When appropriate, focus regional funds on large capital projects

Based on solid performance measures and other indicators of need and effectiveness fully vetted through regional planning processes, it makes sense in some cases for the region to focus its funding on one large project. In such cases, freight staff and the Bench would work to identify funding sources for identified projects.

### F4: Make strategic incremental improvements when large capital projects are unfunded

When funds are not available for major system improvements, make incremental improvements to those facilities through less costly strategies using tools such as intelligent transportation systems, transportation system management and transportation demand management. Also, phase larger improvements, or ensure that projects move along through completing preliminary engineering, right-of-way acquisition or other steps toward construction. Projects need to be in the pipeline should funding become available.

### F5: Ensure that unfunded freight projects are on an aspirational or illustrative RTP project list

The region should be prepared to ensure that unfunded projects could at least be considered if unusual, one-time, or new funding sources became available (e.g., American Recovery and Reinvestment Act of 2009)

### F6: Develop policy and evaluation tools to guide public investment in private freight infrastructure (notably rail projects)

More clearly define private and public sector roles, including incorporation of the identified state role in freight infrastructure planning and investment that is emerging from the statewide freight planning effort. This planning and analytical effort would answer the question "what are we trying to do with our investments?" And it would yield practical and usable performance measures and investment guidelines for public development of freight assets or services, when they are wholly or partially private. It would also help to correctly phase developments, based on public benefits, and identify equitable funding strategies. Rail/roadway grade separation projects and a shortline investment strategy could be key focus areas for such policy development.

Public investment could be appropriate, for example, when it:

- leverages private investment
- allows progression of a needed project that would otherwise not occur for a relatively modest investment
- involves a facility's yard or terminal but has regional impacts
- pays for intermodal links
- creates new passenger capacity by solving freight bottlenecks
- preserves or creates jobs, generates wealth and taxes
- allows for more competition, modes or choices to shippers, businesses or consumers
- increases overall benefits more than it improves any single mode or facility

Note that private investment in public infrastructure—apart from development fees—should also be part of this policy discussion.

### F7: Develop regional freight rail strategy

Many hopes are pinned on the potential for regional freight rail to accommodate a greater share of the future demand for goods movement capacity. However, there is a lack of depth in understanding from an operational or investment perspective how that potential could be realized. For example, the I-5 Trade and Capacity studies indicated that there was adequate capacity for the existing level of passenger train frequency along the north/south corridor. However, that capacity would be at the expense of freight train operations for both UP and

BNSF region-wide, create hot spot congestion, minimize the possibility of growing freight rail commerce and degrade freight rail service throughout the Pacific Northwest, resulting in more trucks on the region's highways. The Portland metro region is committed to a variety of passenger rail modes and must reckon with the interactions with the freight rail system.

In addition, regional demand and support for pedestrian and bicycle trails frequently puts pressure on existing freight rail capacity and operations. Issues of freight rail capacity, liability, safety, cost and efficiency must be balanced with other regional goals, based on common factual understanding of the underlying issues.

This recommendation contemplates a consultant-assisted technical regional rail study that would provide a foundation for developing the policy framework described in F6, above, and could incorporate that work as part of the study. Development of the strategy could include evaluation of public ownership and control of current or potential future passenger rail routes within the region or state, as part of a regional freight management strategy.

In addition to Metro's local jurisdictional partners, both Class 1 railroads, the regional short line operator, Tri-Met, ODOT Region 1, ODOT Rail Division, the Ports and major shippers/customers would be critical stakeholders.

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# 11 CONCLUSION

The Portland metro region has a vibrant and flourishing economy that is more diversified than ever before. Industry has historically located in the region to take advantage of regional and global connections via pipeline, rail, marine, aviation and highway infrastructure. Today, the region is both an international gateway for trade and a hub for distribution and warehousing activities.

Policies and programs designed to take advantage of the opportunities hidden in the current economic downturn should begin to be refined and implemented to ensure that the Portland metro region is flexibly and securely positioned for the future of freight and goods movement. However, in addition to regional policy and program development and implementation, concrete freight-related projects ranging from modest system management fixes to multi-year construction projects must be built when they are needed, to ensure that the goals of the Regional Freight Plan are met.

The private sector portion of the goods movement community has been making great strides in adopting sustainable technologies and wringing efficiencies out of its portion of the goods movement system. The public sector must also find ways to determine the effectiveness of a variety of freight-related policies (e.g., river channel policies), programs and investments to achieve the maximum benefit for the goods movement network, particularly during a time of uncertain funding for transportation.

Maintaining the region's historic preeminence as a goods movement and industrial hub must remain a regional priority; our economic future depends on it. Investment in smart, strategic and green freight system improvements now can help the region secure not only its economic future by increasing its share of family wage jobs but also support development of a green economy that is the Portland area's trademark.

The region's goods movement system must improve and adapt if the region is to maintain its economic competiveness in the global economy and its status as an international freight gateway. Immediate action is required to meet the economic opportunities of the 21st century. This Regional Freight Plan highlights the key issues for the regional freight transportation system and suggests policies and investments to address them.

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# APPENDIX A: STAKEHOLDER INTERVIEWS – NEEDS AND ISSUES

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# APPENDIX B: REGIONAL TRANSPORTATION PLAN FREIGHT PRIORITIES PROJECT LIST

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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**

Metro Council President – David Bragdon

Metro Councilors
Rod Park, District 1
Carlotta Collette, District 2
Carl Hosticka, District 3
Kathryn Harrington, District 4
Rex Burkholder, District 5
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**Regional Freight and Goods Movement Task Force**

## Summary of 9/27/06 Issues and Needs Discussion

| |
|---|
| ***Industrial-Employment Lands Accessibility*** |
| Improve accessibility to major roads |
| Access to industrial and Port lands from interstate corridors - need to protect the arterial truck routes |
| Maintenance of good truck corridors between major industrial and commercial centers and between those centers and the primary freight systems (interstates and major regional highways, ocean ports; rail centers for container transload) |
| Local businesses/constituents need enhanced accessibility to and from the Portland/I-5 multimodal freight infrastructure hub. Limited routes also congested by commuter demand, make freight movement time delays extensive and unpredictable. No or very limited choices of routes |
| Protect truck corridors connecting industry to interstate system - I-5 & I-205 to Port and Airport |
| Improve access for trucks to major corridors |
| I-84/257th interchange - serve freight and industrial districts |
| 99W Bypass |
| Need better route west to south than Hwy 26 through downtown Portland |
| Improve access between Port & rail mainline |
| Enable protection of truck corridors connecting industrial districts |
| ***Congestion and Capacity*** |
| Today's transportation system does not have the capacity to move freight efficiently or safely. Additional capacity is needed. Without additional capacity, existing shippers will leave (with associated jobs) and growing the industrial job base will be curtailed. |
| Need infrastructure for growth |
| Interstate congestion, especially at chokepoints and bottlenecks such as the Interstate Bridge |
| Relief of congestion on I-5 form Tualatin to Wilsonville, I-205 and Hwy 217 |
| Congestion due to long haul trucking - does it help our region, is there a way to highway congestion through multimodal shipping? |
| Issue with congestion as it equates to time |
| Real time delivery of freight to and from facilities - import and international export |
| Freeway congestion in peak hours |
| ***Trucks and Street Design*** |
| Access for 28' semi-trailers in urban areas |
| For local delivery, ensure quality street and pedestrian districts with effective delivery - parking and loading |
| Main street design |
| ***Community Impacts*** |
| Where do you put it? How do you balance impacts on communities and environment with economic benefits |
| ***Transportation Financing*** |
| Increase types and amounts of monies for transportation infrastructure improvements |
| Steer public/private funding of transportation projects |
| How to pay for new capacity - wt mile tax has been an issue for 20 years - need different means to finance improvements |
| Plan needs to be financially constrained - identify elements that can be implemented over time |
| Who pays for transportation investments needed to move freight - public-private issues |
| How do you pay for it? |
| Tax breaks for instructure growth - feds |
| Policy changes react to market changes in real time = private land use investments mismatched with public infrastructure investments |
| Balance rail vs. urban housing growth |
| Promote industrial land use adjacent to the waterways that would encourage distribution centers locating next to waterways - this could help take some traffic off the roadways |
| Ensure land for heavy industrial use along rail corridors - land use conflict with goals for commuter rail land use |
| Diversification of private facilities nationally |

| |
|---|
| ***Marine*** |
| Safer navigation through I-5/BNSF bridge area |
| Maintenance (and rehab) of federal waterway system - maintenance dredging as needed; replacing lock gates before they fail |
| ***Operations and Maintenance*** |
| Faster responses to incidents and crashes is also needed |
| System needs to be predictable - congestion is predictable and repeats, incidents cause excess delays, must be cleared quickly to maintain schedules |
| Increase trucking parking |
| Principal freight route arterials need to have signals synchronized to minimize stops, thereby decreasing air and noise pollution |
| Truck loading zones use by construction crews |
| Balance passenger and freight movements |
| Truck parking |
| Better access between the Port and I-5, particularly for trucks, they require sequence signals with length between intersections |
| Commercial garbage franchising |
| ***Rail*** |
| Encourage rail carriers to improve expedited rail service |
| Rail capacity including preservation of short line railroads |
| Shorten time constraints on intermodal and rail shipments |
| Improve short and long haul rail delivery - can this potentially effectively reduce (road) congestion? |
| We need longer tracks in rail yards. Class I railroads have indicated that they prefer to move trains of 100 to 110 cars - however, many of the tracks in the area are only long enough to hold 50 - 60 railcars |
| Need to move unit trains in and out of the congested metro area promptly and efficiently |
| Rail capacity issues - yards, short lines, double-track main lines, sidings - who pays and how? |
| ***Business Environment*** |
| Distributors - direct to customers with e-commerce, seeing 10-15% annual growth |
| Growing delivery of goods to urban centers and corridors |
| Need the transportation stakeholders to cooperate with each other |
| Growth of e-commerce and home delivery changing shipping patterns and increasing truck volumes |
| We have plenty of freight coming into the region but need more freight to ship out of the region - drives up costs to get loads delivered |
| Educated employees |

**Date:** Wednesday, June 17, 2009
**To:** Metro Region Jurisdictions and Interested Parties
**From:** Regional Freight and Goods Movement Task Force
**Subject:** Regional Freight Goals, Issues, Priorities and Project List

**Purpose of this memo:** The Regional Freight and Goods Movement Task Force, a private and public stakeholder committee chaired by Councilor Rod Park, created a set of goals for regional freight movement, and identified key issues and priorities to be addressed by the region. This memorandum and the attached project list are intended to help local jurisdictions understand regional freight priorities as they prepare Regional Transportation Plan (RTP) project lists.

## Freight Task Force goals—reduce delay, increase reliability, improve safety and provide choices to help area businesses remain competitive

The Portland-Vancouver area is a globally competitive international gateway and domestic hub for commerce. The multimodal freight transportation system is a foundation for economic activities and we must strategically maintain, operate, and expand it in a timely manner to ensure a vital and healthy economy. A systems approach to plan and manage our multimodal freight transportation infrastructure must recognize and coordinate both regional and local transportation and land use decisions to maintain seamless freight and goods flow and access that benefit us all.

## Key issues for the regional freight transportation system include:

***Congestion and hotspots*** – chronic road and rail network bottlenecks impede regional freight/goods movement
***Reliability*** – unpredictable travel time due to crashes, construction, special events, and weather
***Capacity constraints*** – due to physical and operational issues as well as lack of capacity in critical corridors
***Network barriers*** – safety concerns and out of direction travel resulting from weight-limited bridges, low bridge clearances, steep grades, at grade rail crossings and poorly designed turns or intersections
***Land use*** – system capacity and land for industrial uses is being lost to other activities
***Impacts*** – managing adverse impacts including diesel emissions, water quality, noise and land use conflicts

## Freight-oriented preservation, management and investment priorities should focus on:

- Core throughway system bottlenecks to improve truck mobility in and through the region – hotspots of note include the Columbia River Crossing influence area, the I-5/I-405 loop and the I-5 corridor south of I-205.
- Improving and protecting the throughway interchanges that provide access to major industrial areas, particularly: I-5/Marine Drive and I-5/Columbia Blvd serving the Columbia Corridor and Rivergate industrial areas; I-205/Hwy 212 serving the Clackamas and Milwaukie industrial areas; and I-205/Airport Way serving Portland International Airport and east Columbia Corridor industrial areas.
- Improving arterial connections to current and emerging industrial areas (e.g., Sunrise Corridor phased improvements recommended by the Sunrise Project Policy Committee and *last mile* local industry connectors, e.g., Columbia/Cascade River District Projects)
- Looking beyond the roadway network to address critical marine and freight rail transportation needs such as completing the Columbia River channel deepening and upgrading main line and rail yard infrastructure.

## The Task Force prioritized regional freight project list (attached)

The attached table represents the Task Force's freight priority list as of 2008 (Table 4.3 from the document, *Investing in Freight System Infrastructure*, April 2008). The list, which was developed in 2007-08, begins with those projects that ranked highest at the time the list was finalized. Please note, therefore, that 1) a number of the projects are now under construction or have been funded through recent initiatives; 2) several corridor studies have been completed, which may change project priorities; and 3) the list doesn't reflect the ongoing corridor mobility work coming from the RTP update effort. Note that the growing recognition of funding limitations may increase the priority of lower cost solutions. Finally, some important local freight and goods movement projects may not be reflected in this list.

The following Table represents the 2008 Task Force's freight priority list (Table 4.3 from a report, *Investing in Freight System Infrastructure*, April 2008). Note that the list was developed in 2007-2008, and has not been updated. The list begins with those projects that ranked highest at the time the list was finalized. The left-most column has been added to identify whether the project is in the currently adopted Federal RTP Status (indicated as yes/no).

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| **High Regional Priority** | | | | |
| Yes | 10000 | Linwood/Harmony Rd./ Lake Rd. Overcrossing/ Intersection | Add NB right turn lane, add EB right turn lane, add WB left turn lane and grade separate UPRR. | $20,000,000 |
| Yes | 10357 | Channel Deepening | Deepening the Columbia River channel to 43 feet between mouth of Columbia River and Portland/Vancouver Harbor. | $150,573,000 |
| Yes | 10865 | New I-205 NB on-ramp at I-205/Airport Way interchange based on I-205/Airport Way Study | New I-205 NB on-ramp at I-205/Airport Way interchange based on I-205/Airport Way Study. | $27,200,000 |
| Yes | 10866 | Improve I-5/Columbia River bridge (Oregon share) | Improve I-5/Columbia River bridge (Oregon share). | $50,000,000 |
| Yes | 10867 | I-5: Conduct preliminary engineering and environmental work to modernize freeway and ramps to improve access to the Lloyd District and Rose Quarter | Conduct preliminary engineering and environmental work to modernize freeway and ramps to improve access to the Lloyd District and Rose Quarter. | $30,000,000 |
| Yes | 10874 | I-5: Construct new roadway between Columbia Blvd and Denver Ave near Argyle Street; replace Denver Viaduct; Relocate/reconstruct and signalize Denver/Schmeer Rd intersection | Construct new roadway between Columbia Blvd and Denver Ave near Argyle Street; replace Denver Viaduct; Relocate/reconstruct and signalize Denver/Schmeer Rd intersection. | $46,000,000 |
| Yes | 10877 | Modernize freeway and ramps to improve access to the Lloyd District and Rose Quarter (Greeley ramp improvements in financially constrained system). I-84/I-5 interchange would include two phases (phase 1 is project #390, phase 2 is #427, and phase 3 is #4 | Modernize freeway and ramps to improve access to the Lloyd District and Rose Quarter (Greeley ramp improvements in financially constrained system). I-84/I-5 interchange would include two phases (phase 1 is project #390, phase 2 is #427, and phase 3 is #4. | $521,000,000 |
| No | 10883 | I-5: Acquire right-of-way | Acquire right-of-way. | $20,000,000 |
| Yes | 10884 | I-5/I-84 Interchange: Acquire R-O-W | Acquire right-of-way. | $30,000,000 |
| No | 10893 | Improve I-5/Columbia River bridge (Oregon share) | Improve I-5/Columbia River bridge (Oregon share). | $550,000,000 |
| Yes | 11091 | Columbia Blvd./I-205 Interchange: SB On-Ramp Improvement | Expand the on-ramp to three lanes, including for truck/HOV | $750,000 |
| Yes | 11121 | I-5 Delta Park Phase 1 | Widen I-5 to 3 lanes, realign ramps | $73,079,000 |
| No | 20010 | Install High Speed crossovers at North Portland Jct. | Replace existing 10mph crossovers at North Portland Jct. with high speed turnouts. If necessary, construct connection between Peninsula Terminal Co and BNSF A&B yards at Terminal 6 and eliminate interchange | $15,000,000 |

**3351**

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| | | | connection at North Portland. | |
| No | 20012 | Expand Controlled siding at East St. Johns | Reconstruct/extend East Pass at East St. Johns to serve as third main between Willamette Draw and Columbia Slough (8300'). Install eastward crossover at Willamette Draw from main one to main two. | $10,000,000 |
| No | 20013 | North Portland Junction | Upgrade railroad with revised crossovers, centralized traffic control tie-in and increased turning radius. | $9,160,000 |
| **Medium-High Regional Priority** | | | | |
| Yes | 10001 | Johnson Creek Blvd. Interchange Improvements | Add loop ramp and NB on-ramp; realign SB off-ramp. | $9,800,000 |
| Yes | 10002 | Johnson Creek Blvd. Improvements | Widen from three to five lanes and widen bridge over Johnson Creek. | $40,790,000 |
| Yes | 10020 | Clackamas County ITS Plan | Deploy traffic responsive signal timing, ramp metering, traffic management equipment for better routing of traffic during incidents along the three key ODOT corridors - I-205, I-5, and 99E. Install signal controller upgrades and update county ITS plan. | $6,500,000 |
| No | 10105 | 224 Grade Separation | Preferred approach would be burial of 224, with at least one overcrossing (Harrison). | $100,000,000 |
| No | 10111 | North Industrial Access Improvements (OR 99-E) | Add turn pockets and/or turn lanes. Reconfigure access points. Improve internal circulation to optimize access points. | $10,000,000 |
| No | 10115 | Sunrise project ROW Preservation | Acquire right-of-way. | $100,000,000 |
| No | 10119 | Hwy. 213 - Phase 2 | Add through lane in both directions. | $25,000,000 |
| No | 10139 | I-205 Climbing Lanes | I-205 Abernethy Bridge Widening. | $20,000,000 |
| Yes | 10154 | Wilsonville Rd./I-5 Interchange Improvements - Setback Abutments & Widen Wilsonville Rd. | Provide additional left-turn lanes, setback abutments, improves signal synchronization, fixes sight distance problems, and provides for enhanced bike/pad safety. | $11,000,000 |
| Yes | 10213 | Airport Way, NE (I-205 to NE 158th Ave.): ITS | Install needed ITS infrastructure (communication network, new traffic controllers, CCTV cameras, and vehicle /pedestrian detectors). These ITS devices allow us to provide more efficient and safe operation of our traffic signal system. | $278,251 |
| Yes | 10219 | Argyle on the Hill, N Columbia to N Denver Ave. | New N Argyle street connection, west of I-5. | $11,773,032 |
| No | 10237 | Southern Triangle Circulation Improvements, SE | Improve local street network and regional access routes in the area between the Powell/12th, Willamette River, | $2,887,500 |

**3352**

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| | | | railroad mainline and Hawthorne Bridge. Improve freeway access route from CEID to I-5 SB via the Ross Island Bridge. | |
| No | 10239 | 11th/12th/Railroad Crossing, SE (West of Division): Intersection Improvements | Reconstruct intersection to upgrade traffic signalization and establish bike and ped. routes. | $400,000 |
| Yes | 10336 | Alderwood/Columbia Blvd/Cully, NE: Intersection Improvements | Reconstruct intersection to provide left turn pockets, enhancing turning radii, and improving circulation for trucks serving expanding air cargo facilities south of Portland. | $1,460,000 |
| No | 10346 | Marine Dr, N/NE (Portland Rd. to 185th): ITS | CCTV at N Portland Rd. Changeable message signs at Portland Rd, Vancouver, and 185th. | $170,000 |
| Yes | 10366 | Alderwood Rd. and Cornfoot Intersection Improvements | Add signals and/or improve turn lanes at Alderwood Rd/82nd Ave, Alderwood Rd/Cornfoot Rd, AirTrans Way/Cornfoot Rd. | $2,206,000 |
| Yes | 10369 | Leadbetter St. Extension/Overcrossing | Complete Leadbetter St. loop to Marine Dr. (Pacific Gateway/T-6 intersection) and construct road bridge over rail line. | $11,203,600 |
| Yes | 10375 | Cathedral Park Quiet Zone | Address rail switching noise related to the Toyota operations at T-4 by improving multiple public rail crossings in the St. Johns Cathedral Park area. | $5,198,900 |
| Yes | 10378 | T-6 Internal Overcrossing | Construct an elevated roadway between Marine Dr. and Terminal 6. | $3,649,084 |
| Yes | 10379 | Marine Dr. Improvement Phase 2 | Construct rail overcrossing on Marine Dr. | $13,644,200 |
| Yes | 10393 | Replace RR Over-crossing on 223rd Ave. | Reconstruct railroad bridge on 223rd Ave, at I-84 to accommodate wider travel lanes, sidewalks and bike lanes. | $7,000,000 |
| Yes | 10394 | Replace RR Over-crossing on 223rd Ave. | Reconstruct railroad bridge on 223rd Ave, 2000' north of I-84 to accommodate wider travel lanes, sidewalks and bike lanes. | $7,000,000 |
| Yes | 10410 | Broadway Bridge Rehabilitation | Rehabilitate mechanical system, approach structure, corrosion control, and phase 1 seismic. | $22,700,000 |
| Yes | 10414 | Sellwood Bridge Rehabilitation/Replacement | Implement results of alternatives analysis. | $25,100,000 |
| Yes | 10493 | 181st Ave. Sandy to I-84 | Add southbound aux lane & widen RR overcrossing. | $827,659 |
| Yes | 10556 | Tualatin-Sherwood/Boones Ferry Intersection | Grade separate Tualatin-Sherwood/Boones Ferry intersection | $25,000,000 |
| No | 10588 | Grahams Ferry Rd Improvements | Widen Grahams Ferry Rd to 3 lanes, add bike/pedestrian connections to regional trail system, and fix undersized | $28,000,000 |

**3353**

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| | | | railroad overcrossing. | |
| No | 10598 | I-5/99W Connector Related Arterial Improvements | Improve arterial roads to enhance the function of the I-5/99W Connector. | $50,000,000 |
| No | 10599 | Hwy. 217/72nd Ave. Interchange Improvements | Complete interchange reconstruction with additional ramps and overcrossings. | $19,537,000 |
| Yes | 10600 | Hwy. 26/Shute Interchange Improvements | Add westbound to southbound loop ramp, additional northbound through lane and relocate Jacobsen intersection. | $29,272,000 |
| Yes | 10674 | Oregon-Tonquin Intersection & Street Improvements | Intersection improvements (consider roundabout) on Oregon at Tonquin Road; sidewalks and bike access through the intersection. | $1,945,000 |
| No | 10675 | Adams Ave Signal & Interconnect on T-S Rd. | Install traffic signal at Adams Ave. and interconnect the signals along T-S road between Cipole and Borchers. | $1,875,000 |
| No | 10734 | I205 SB - I5 SB | Merge lane to I-5 south. | |
| Yes | 10751 | Hwy. 217 Overcrossing | Realign Hunziker Road to meet Hampton Street at 72nd Ave. and removes existing 72nd/Hunziker Road intersection. | $9,635,000 |
| Yes | 10767 | 72nd Ave. Intersection Improvements | Southbound right turn lane, northbound right turn overlap at Hwy 99W and 72nd; Southbound or Eastbound right turn lane at 72nd/Hampton/Hunziker. | $2,000,000 |
| Yes | 10770 | Hwy. 99W Intersection Improvements | Provide increased capacity at priority intersections, including bus queue bypass lanes in some locations, improved sidewalks, priority pedestrian crossings, and an access management plan, while retaining existing 4/5-lane facility from I-5 to Durham Road. | $19,669,000 |
| Yes | 10869 | Sunrise Project: Construct new highway facility from I-205 to 122nd and interim connection to 122nd Ave as defined by supplemental EIS | Construct improvements as defined by supplemental EIS. | $116,000,000 |
| Yes | 10870 | I-5/99W Connector Phase 1: Conduct study, complete environmental design work and NEPA for I-5 to OR-99W Connector and acquire ROW | Phase 1: Conduct study, complete environmental design work and NEPA for I-5 to OR-99W Connector and acquire ROW. | $100,500,000 |
| Yes | 10872 | Add lane: SB I-205 to SB I-5 interchange ramp and extend acceleration lane and add auxiliary lane on SB I-5 to Stafford Road. | Add lane to SB I-205 to SB I-5 interchange ramp and extend acceleration lane and add auxiliary lane on SB I-5 to Stafford Road. | $9,700,000 |
| Yes | 10875 | OR 217: Braid OR 217 ramps between Beaverton-Hillsdale Hwy. and Allen Blvd. in both directions. | Braid OR 217 ramps between Beaverton-Hillsdale Highway and Allen Boulevard in both directions. | $79,600,000 |
| Yes | 10876 | I-84: Extend Halsey exit lane to I-205 NB exit | I-84 Lane Extension: Halsey to I-205 NB ramp. | $6,446,790 |
| No | 10878 | I-5/99W Connector Phase 2: Minimum Operable Segment - construct minimal connection to I-5 and two lane arterial to Tonquin Road/124th extension | Phase 2: Minimum Operable Segment - construct minimal connection to I-5 and two lane arterial to Tonquin Road/124th extension. | $263,000,000 |

~~3354~~

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| No | 10879 | I-5/99W Connector Phase 3: Additions to Minimum Operable Segment - Extend two lanes to OR 99W and construct interchange | Phase 3: Additions to Minimum Operable Segment - Extend two lanes to OR 99W and construct interchange. | $148,000,000 |
| No | 10880 | I-5/99W Connector Phase 4: Additions to minimum operable segment - Improve I-5 interchange connections and add braids on I-5 | Phase 4: Additions to minimum operable segment - Improve I-5 interchange connections and add braids on I-5. | $113,000,000 |
| No | 10881 | I-5/99W Connector Phase 5: Additions to minimum operable segment - Construct mid-point interchanges | Phase 5: Additions to minimum operable segment - Construct mid-point interchanges. | $56,500,000 |
| No | 10882 | I-5/99W Connector Phase 6: Additions to minimum operable segment - Widen from two lanes to four lanes in corridor | Phase 6: Additions to minimum operable segment - Widen from two lanes to four lanes in corridor. | $56,500,000 |
| No | 10885 | Sunrise Project Phase 2 Construction | Construct new highway facility and interchanges SE 122nd Ave with transition to 172nd. | $247,900,000 |
| Yes | 10890 | Sunrise Project: Acquire right-of-way: I-205 to SE 172nd Ave | Acquire right-of-way: I-205 to SE 172nd Ave. | $129,000,000 |
| No | 10891 | Sunrise Project Phase 2: Conduct preliminary engineering to construct new highway facility and interchanges. | Conduct preliminary engineering to construct new highway facility and interchanges. | $25,000,000 |
| No | 10892 | Sunrise Project: Acquire right-of-way for Phase 2: SE 122nd to 172nd | Acquire right-of-way for Phase 2: SE 122nd to Rock Creek Jct. | $74,000,000 |
| Yes | 10894 | Sunrise Hwy. PE: I-205 to SE 172nd Ave | Preliminary engineering and EIS from I-205 to 172nd. | $25,000,000 |
| No | 11058 | Construct Hogan Corridor Improvements | Construct new freeway to highway connection. | $ 11,200,000 |
| No | 11059 | I-205 Corridor Refinement Planning: OR/WA state line to I-5 | I-205 refinement planning. | $ 5,000,000 |
| No | 11060 | I-205/Airport Way Refinement Planning | I-205/Airport Way refinement planning. | $ 1,400,000 |
| No | 11062 | I-5 South Corridor Refinement Plan - Wilsonville to North Tigard | I-5 South Corridor refinement plan - Wilsonville to North Tigard. | $ 3,000,000 |
| No | 11063 | North Tigard to I-405 Refinement Plan | North Tigard to I-405 refinement plan. | $ 4,000,000 |
| No | 11064 | I-205 Widening: Stafford Road to Willamette River (two phases, not including Abernethy Bridge | Widen I-205 by one lane in each direction from Willamette River to Stafford Road. | $ 74,900,000 |
| No | 11065 | I-205: Abernethy Bridge Widening (Willamette River crossing) | Widen Abernethy Bridge by one lane in each direction. | $106,400,000 |
| No | 11066 | I-205: Truck climbing lane | Construct southbound truck climbing lane. | $ 56,800,000 |
| No | 11068 | I-5 Auxiliary Lanes: Stafford Interchange to Wilsonville Road | Add auxiliary lane to I-5 southbound between Wilsonville Rd. and Elligsen Rd. Extend Boeckman Rd. overcrossing bridge on both ends. | $ 8,000,000 |

**3355**

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| No | 11069 | I-5/Wilsonville Road Interchange: Phase 2 | Reconstruct southbound off-ramp and add southbound auxiliary lane from Wilsonville Rd. to Hubbard cut-off. | $ 13,300,000 |
| No | 11070 | I-205/OR 213 Interchange: Stage 5 -I-205 Improvements, OR 99E to Gladstone interchange | Auxiliary lanes/braided ramp enhancements and freeway modifications needed to support I-205/OR 213 interchange improvements. | $200,800,000 |
| Yes | 11071 | I-5/Wilsonville Road Interchange: Phase 1 | Reconstruct NB and SB on ramps, and NB off ramp. Add NB auxiliary lane from Hubbard cut-off to Wilsonville Rd. | $ 18,500,000 |
| Yes | 11092 | Ramsey Rail Yard | Construct up to six yard tracks and one lead track | $ 13,900,000 |
| Yes | 11122 | OR 217: Sunset Hwy to TV Hwy | Widen Or 217 and structures | $37,676,000 |
| Yes | 11124 | US 26W Cornell to 185th | Widen US 26 to 6 lanes from Cornell to 185th. | $21,312,000 |
| No | 20001 | Kenton Rail Line Upgrade | Upgrade existing track to second main track with new double track from N. Portland Jct. to Troutdale and increase track speeds between North Portland Junction and Troutdale on UP's Kenton Line. Part of triangle project with ODOT. | $25,400,000 |
| No | 20002 | Valley Sub Double Track | Double track mainline to Clackamas (99E/Hwy 224 corridor) | $36,000,000 |
| No | 20003 | Harbor Siding Extension, approximately 2,255 feet. | Extend Harbor siding on Astoria District to 7,200’ to accommodate staging of unit grain trains to and from Ethanol plant. | $2,000,000 |
| No | 20004 | Install Power Switch on Astoria Line Wye switch | Replace current electric lock on BNSF main one with power operated turnout at Astoria line Wye near Willamette River draw. | $2,000,000 |
| No | 20005 | Install Power Switches at Lake Yard | Install one power switch at east entrance to PTRR Lake Yard (MP 1.7). Install up to six power switches on crossovers and entrance switch at west end of PTRR Lake Yard (MP 3.1). | $5,000,000 |
| No | 20006 | East Portland connection to Graham Line | Build connection from Brooklyn Sub to Portland Sub (Graham Line) to facilitate direct movement. | $15,000,000 |
| No | 20007 | Increased Track Speeds Between UP Willsburg Junction and UP Albina Yard | Remove the 6 mph restriction along this segment to greatly increase capacity and improve both passenger and freight trail velocity and help to move trains in and out of the Albina Yard more quickly. | $8,800,000 |
| No | 20008 | Barnes to Terminal 4 Rail | Provide a new track from Barnes Yard to Terminal 4. | $3,000,000 |
| No | 20022 | Graham Line Siding | Install two controlled sidings, 10,000' siding near Wood Village and a 10,000' siding near Parkrose, between East | $7,000,000 |

**3356**

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| | | | Portland Jct and Troutdale along UPRR's Graham Mainline. | |
| No | 30000 | PDX North Runway Extension | Lengthen north runway to accommodate larger planes during closure of south runway for rehabilitation | $3,500,000 |
| **Medium-Low Regional Priority** | | | | |
| Yes | 10021 | 102nd Ave./Industrial Way Improvements | Extend Industrial Way from Mather Road to Lawnfield Road. | $8,570,000 |
| Yes | 10022 | SE 82nd Dr. Improvements | Widen to five lanes to accommodate truck movement. | $12,350,000 |
| No | 10023 | SE 82nd Dr. Improvements | Widen to five lanes. | $17,627,801 |
| Yes | 10025 | Beavercreek Rd. Improvements Phase 2 | Widen to 5 lanes with sidewalks and bike lanes. | $5,800,000 |
| Yes | 10026 | Beavercreek Rd. Improvements Phase 3 | Widen to 4 lanes with sidewalks and bike lanes. | $12,920,000 |
| Yes | 10042 | 97th realignment | Realign the existing Lawnfield Rd. Road from 98th to 97th, reduce the grade from 18% to 8%. | $20,650,000 |
| Yes | 10052 | Mather Rd. | Extend Mather Rd. across railroad to SE 82nd Dr. | $17,250,000 |
| Yes | 10066 | 92nd/Johnson Creek Blvd. intersection | Add turn lanes on 92nd (northbound left at JCB, and northbound right at Idleman). | $1,000,000 |
| Yes | 10073 | Hwy.-212 intersections | Existing Highway 212 remains two lanes with turn pockets from 162nd Ave. to Anderson Road south of limited access parkway. Design elements to be included are sidewalks, bike lanes, and a landscaped buffer. | $5,970,000 |
| Yes | 10078 | Hwy. 224 | Widen Highway 224 to four lanes with turn pockets at intersections to Carver bridge. The Damascus/Boring Concept Plan identifies Highway 224 as a community bus transit classification. | $12,150,000 |
| No | 10106 | 224 Thruway/Local Access Preservation | Convert some intersections to R in/R out; add turn pockets. | $15,000,000 |
| No | 10107 | Harrison/UPRR grade separation | Grade separate UP mainline from principal E-W arterial. | $25,000,000 |
| Yes | 10132 | Boeckman Rd./I-5 Overcrossing Improvements | Widen Boeckman Road bridge over I-5 to 3 lanes. Add bike/pedestrian connections to regional trail system. | $13,600,000 |
| Yes | 10134 | SW 65th, Elligsen Rd. and Stafford Rd. Intersection Improvements | Currently there are two intersections with a dangerous grade difference and within 100 ft of one another. Combining them into one or the construction of a round-about will help with safety and navigability concerns. | $1,000,000 |
| No | 10140 | Hwy. 213 - Phase 1 | Add one SB and NB through lane, bike lanes, and sidewalks. | $5,000,000 |
| Yes | 10141 | I-205/Hwy. 213 Interchange Phase 1 | Grade separate SB Hwy. 213 at Washington Street and | $22,000,000 |

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| | | | add a northbound lane to Hwy. 213 from just south of Washington Street to the I-205 on-ramp. Reconstruct I-205 SB off-ramp to Hwy. 213 to provide more storage and enhance freeway operations and safety. | |
| No | 10143 | Hwy. 213 Intersection Improvements | Intersection improvements. | $10,000,000 |
| Yes | 10174 | Going, N (Interstate - Greeley): ITS | Install needed ITS infrastructure (communication network, new traffic controllers, CCTV cameras, and vehicle /pedestrian detectors). These ITS devices allow us to provide more efficient and safe operation of our traffic signal system. | $950,024 |
| Yes | 10175 | Yeon/St. Helens, NW (US 30): ITS | Install needed ITS infrastructure (communication network, new traffic controllers, CCTV cameras, and vehicle /pedestrian detectors). These ITS devices allow us to provide more efficient and safe operation of our traffic signal system. | $885,499 |
| Yes | 10208 | MLK O-Xing/Turn Lanes (Columbia-Lombard) | Intersection and signalization improvements with right turn lane. | $2,228,909 |
| Yes | 10210 | 47th, NE (Columbia - Cornfoot): Roadway & Intersection Improvements | Widen and reconfigure intersections to better facilitate truck turning movements to the cargo area located within the airport area. Project includes sidewalk and bikeway improvements. | $5,541,678 |
| Yes | 10212 | Airport Way/122nd, NE: Intersection Improvement | Add northbound left turn lane, modify traffic signal, and reconstruct island. | $1,100,000 |
| Yes | 10214 | Lombard, N (Rivergate - to T-6): Multi-modal Improvements | Widen N Lombard to include two travel lanes, a non-continuous center turn land, medians, bike lanes, sidewalks and planting strips. | $34,517,517 |
| Yes | 10217 | Lombard at Columbia Slough, N: Overcrossing | Add sidewalk and bike lanes to strengthened bridge. | $9,767,000 |
| Yes | 10218 | Burgard-Lombard, N: Street Improvements | From UPRR Bridge to N Columbia Blvd. Widen street to include 2 12-foot travel lanes, continuous left turn lane, bike lanes and sidewalk. | $24,884,000 |
| Yes | 10229 | Columbia Blvd./Portland Rd., N: Intersection Improvements | Redesign intersection. | $1,214,000 |
| No | 10241 | Clay/MLK Jr, SE: Intersection Improvements | Geometric, signalization and channelization improvements to allow transit and general traffic access to westbound Clay street from southbound MLK. | $924,000 |
| No | 10242 | N. Interstate Ave. Ramp | Replacement of the existing N. Interstate to Larrabee flyover ramp with a new structure. | $14,677,225 |
| No | 10244 | Kittridge, NW (Bridge at Yeon): Seismic Retrofit | Seismic retrofit. | $1,000,000 |

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| No | 10269 | Lombard/St. Louis/Ivanhoe: Multi-modal Improvements | Restripe, construct curb extensions, realign, and signalize as needed to improve pedestrian-bicyclist amenities while not impeding truck movements. | $1,400,000 |
| No | 10302 | MLK Jr, N (Columbia Blvd. - CEID): ITS | CCTV at various locations & traffic monitoring stations at Clay and Burnside. | $705,000 |
| No | 10331 | Columbia Blvd, N (Bridge at Taft): Seismic Retrofit | Seismic retrofit of bridge. | $415,800 |
| No | 10342 | Columbia Blvd, N/NE(I-205 - Burgard): ITS | Communications infrastructure including closed circuit TV cameras, variable message signs for remote monitoring and control of traffic flow for six signals. | $420,000 |
| Yes | 10343 | West Hayden Crossing, N | New four-lane bridge between Marine Drive to Hayden Island. | $99,258,000 |
| Yes | 10361 | Widen Airport Way West of 82nd | Widen Airport Way from terminal to 82nd Ave. | $8,588,400 |
| Yes | 10362 | 82nd Ave./Airport Way Grade Separation | Construct grade-separated overcrossing. | $92,000,000 |
| Yes | 10363 | SW Quad Access | Provide street access from 33rd Ave. into SW Quad. | $5,917,500 |
| Yes | 10367 | CS/PIC Access Improvements | Intersection improvements (installation of stop signs, signalization and/or channelization) at Sandy Blvd/105th Ave, Airport Way/Holman St, Alderwood Rd/Holman St, Alderwood Rd/Cascades Pkwy. | $1,217,000 |
| Yes | 10371 | Airport Way Braided Ramps | Construct braided ramps between the I-205 interchange and Mt. Hood Interchange. | $59,000,000 |
| Yes | 10373 | Rivergate ITS | Intelligent Transportation System in Rivergate. | $480,000 |
| Yes | 10376 | Columbia Blvd. Widening | Widen Columbia Blvd. to five lanes between 60th Ave and 82nd Ave. | $14,859,000 |
| Yes | 10392 | Columbia/Cascade River District Projects | Implement findings of traffic management plan. | $9,200,000 |
| Yes | 10395 | Replace RR over crossing. | Reconstruct railroad bridge to accommodate wider travel lanes, sidewalks, and bike lanes. | $7,000,000 |
| Yes | 10396 | Reconstruct Cornelius Pass Rd. | Reconstruct Cornelius Pass Road including passing lane, safety, and shoulder and drainage improvements. | $37,000,000 |
| Yes | 10401 | Reconstruct Marine Dr. | Reconstruct Marine Drive between Intelachen and the frontage roads in Troutdale. | $14,000,000 |
| Yes | 10402 | Construct new road north of I-84, Exit 16 | Construct new connector between Sandy Blvd. and Marine Dr, linking industrial sites with I-84 | $14,500,000 |
| Yes | 10406 | Reconstruct Stark St. to arterial standards | Reconstruct road to arterial standards with 1 travel lane in each direction, center turn lane/median, sidewalks | $1,810,000 |

**3359**

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| | | | and bicycle lanes. | |
| Yes | 10411 | Burnside Bridge Rehabilitation | Rehabilitate mechanical system, approach structure, corrosion control, phase 1and 2 seismic. | $41,600,000 |
| Yes | 10412 | Morrison Bridge Rehabilitation | Rehabilitate mechanical system, approach structure, corrosion control, phase 1 seismic. | $42,000,000 |
| Yes | 10413 | Hawthorne Bridge Rehabilitation | Rehabilitate mechanical system, approach structure, corrosion control, phase 1 seismic. | $13,300,000 |
| No | 10415 | Phase 2 Seismic | Phase 2 seismic on Broadway, Morrison and Hawthorne Bridges. | $82,000,000 |
| No | 10416 | Hogan Corridor Improvements | Interim capacity improvements and access controls. | $19,140,461 |
| No | 10417 | Hogan Corridor Improvements | Complete study and construct new principal arterial connection. | $7,507,673 |
| Yes | 10430 | Orient Dr. Imps. | Upgrades to arterial 4 lane standards. | $9,000,000 |
| No | 10435 | I-84 to US 26 Study | Study to id access management, freight, alignment. | $1,360,590 |
| Yes | 10443 | Sandy Blvd. Widening | Widens street to 5 lanes w. sidewalks, bikelanes. | $26,040,578 |
| Yes | 10444 | 181st Ave. Widening | Widens street to three lanes southbound. | $1,797,270 |
| Yes | 10445 | 181st Ave. Intersection Improvement (181st/Glisan) | Improve Intersection. | $1,041,867 |
| Yes | 10446 | 181st Ave. Intersection Improvement (181st/Burnside) | Improve Intersection. | $831,210 |
| Yes | 10454 | 181st Ave. Improvements | Complete boulevard design improvements. | $11,440,061 |
| Yes | 10474 | Rugg Rd. Ext. | Construction of new roadway that adds e/w capacity in vicinity Rugg Rd and connects Springwater Industrial area to Highway 26. | $30,672,208 |
| Yes | 10475 | Rugg Rd. Ext. | Construction of new roadway that adds e/w capacity in vicinity Rugg Rd and connects Springwater Industrial area to Highway 26. | $39,329,973 |
| Yes | 10478 | 252nd Ave. | Construction of new street for implementation of Springwater Plan. | $26,162,462 |
| Yes | 10479 | 252nd Ave. | Construction of new street for implementation of Springwater Plan. | $9,808,690 |
| Yes | 10480 | Springwater Road Section 7 | Construction of new street for implementation of Springwater Plan. | $8,008,421 |
| Yes | 10490 | 201st RR Bridge at I-84 | Construct new RR bridge to accommodate alternative modes. | $2,359,125 |
| Yes | 10495 | 181st Ave. at Halsey | add 2nd LT lane to N & S legs, add RT lane to EB WB SB. | $1,025,038 |

3360

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| Yes | 10496 | 181st at I-84 | Freight mobility improvements subject to refinement study. | $250,000 |
| Yes | 10497 | 181st at Sandy, at Stark | At Sandy: Northbound right turn, 2nd westbound left turn. Overlap eastbound right turn. At Stark, add 2nd left turn lane on east and west legs. | $1,884,390 |
| Yes | 10498 | 181st (182nd) at Division/Powell Intersections | At Division: add second westbound left turn lane (TIF P1). At Powell, add northbound and southbound double left turn lanes (TIF P2 and TSP8).At Powell add SB and NB lanes. | $1,682,670 |
| Yes | 10501 | Barnes Rd.: Powell Valley to City Limits: only Orient to So. City Limits | Widen road and add improvements. | $7,135,229 |
| Yes | 10503 | Burnside at Powell | At Powell: eliminate EB and WB left turn lanes. | $683,517 |
| Yes | 10511 | Hogan Rd. at Stark St. | Add right turn lanes on all approaches and second northbound and southbound left turns. | $1,908,431 |
| Yes | 10512 | Hogan: Powell to Burnside boulevard improvements plus three intersection improvements | Improve to boulevard standards, and intersection improvements at Burnside, Division and Powell. | $8,739,328 |
| No | 10522 | Burnside, Hogan to Powell | Safety improvements and reconstruction. | $8,807,400 |
| No | 10552 | Cornell/Cornelius Pass Interchange | Grade separate Cornell at Cornelius Pass | $21,200,000 |
| Yes | 10560 | Farmington Rd. Improvements | Widen roadway from 2/3 lanes to 5 lanes with bike lanes and sidewalks. | $17,676,000 |
| Yes | 10568 | Tualatin-Sherwood Rd. Improvements | Widen from three to five lanes with bike lanes and sidewalks. | $49,150,000 |
| Yes | 10574 | Farmington to 198th Improvements | Widen from two to three lanes with bike lanes and sidewalks. | $17,326,000 |
| Yes | 10587 | Cornelius Pass Rd. Improvements | Widen to five lanes with bike lanes and sidewalks | $59,872,000 |
| Yes | 10590 | Tonquin Rd. Improvements | Realign and widen to three lanes with bike lanes and sidewalks. | $28,406,000 |
| Yes | 10596 | Scholls Ferry Rd. Improvements | Widen to seven lanes with bike lanes and sidewalks. | $19,749,000 |
| Yes | 10597 | Evergreen Rd. Improvements | Widen to 5 lanes with bike lanes and sidewalks. | $11,242,000 |
| Yes | 10603 | Tualatin-Sherwood Rd. ATMS | Install integrated surveillance and management equipment. | $1,594,000 |
| Yes | 10605 | Cornell Rd. ATMS | Install integrated surveillance and management equipment. | $2,043,000 |
| Yes | 10617 | Farmington Rd.: Murray Blvd. to Hocken Ave. Safety, turn lanes, bicycle, and pedestrian improvements | Construct turn lanes and intersection improvements; signalize where warranted; add bike lanes and sidewalks in gaps. | $8,700,000 |

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| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| Yes | 10699 | Oregon Street | Construct road to 3 lane collector standards. | $6,712,000 |
| No | 10708 | T-S Road | Construct road to 5 lane collector standard. | $1,900,000 |
| No | 10710 | Cipole | Signalize intersection & realign railroad crossing. | $5,600,000 |
| Yes | 10714 | 105th Ave/Avery Street | Realign curves, signalize intersection of Avery/105th, sidewalks on 105th from Avery to 108th. | $5,000,000 |
| Yes | 10720 | Boones Ferry | Widen to 5 lanes from Tualatin-Sherwood to Ibach. | $16,500,000 |
| No | 10723 | ORE 99W | Widen to 6 lanes from Cipole to the Tualatin River. | $14,400,000 |
| Yes | 10755 | 72nd Ave. Improvements | Widen to 5 lanes with bikeways and sidewalks. Includes bridge replacement. | $50,964,000 |
| No | 10758 | Dartmouth Street Extension | 3 lane extension; new Highway 217 overcrossing. | $58,690,500 |
| Yes | 10776 | HWY 8/HWY 47 Intersection | Turn Lanes, modify traffic signal. | $3,300,000 |
| No | 10787 | 10th Ave/Cornelius-Schefflin Rd | Improve to urban standard w/in City (sidewalks & bike lanes); widen rural road with shoulder bike lane, reconstruct Council Creek Bridge. | $9,000,000 |
| No | 10790 | 10th Ave | Signalize intersection. | $300,000 |
| Yes | 10795 | Holladay St Extension | Construct new collector. | $2,500,000 |
| Yes | 10796 | Holladay St Extension | Construct new collector. | $1,300,000 |
| Yes | 10797 | Holladay St Extension | Construct new collector. | $1,300,000 |
| Yes | 10803 | TV Hwy | Interconnect OR 8 signal system in Cornelius. | $450,000 |
| Yes | 10814 | Evergreen Rd | Widen to 5 lanes with bike lanes and sidewalks. | $4,000,000 |
| Yes | 10816 | TV Hwy. Signal Coordination | Interconnect traffic signals. | $2,350,000 |
| Yes | 10824 | Cornell Rd | Improve to 5 lanes with bike lanes and sidewalks. | $9,248,000 |
| Yes | 10831 | Century Blvd | Extend 2/3 lanes with US 26 Overpass, connect existing segments. | $12,920,000 |
| Yes | 10836 | Evergreen Rd | Widen to 5 lanes with bike lanes and sidewalks. | $5,440,000 |
| Yes | 10846 | TV Hwy. | Expand to 7 lanes with bike/sidewalks. | $42,000,000 |
| Yes | 10852 | 95th Ave/Boones Ferry Rd/Commerce Circle Intersection Improvements | Provide dual left-turn and right-turn lanes, improve signal synchronization, access management measures, | $2,500,000 |

**3362**

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| | | | fix sight-distance problems, and add extra lanes. | |
| Yes | 10853 | Kinsman Rd Extension from Ridder Rd to Day St | Extend 3 lanes with sidewalks and bike lanes. | $6,500,000 |
| Yes | 10863 | Convert Marine Dr. one-way southbound to two-way under I-84 and widen to five lanes. | Convert Marine Drive one-way southbound to two-way under I-84 and widen to five lanes. | $20,400,000 |
| Yes | 10864 | New interchange on US 26 to serve industrial area. | New interchange on US 26 to serve industrial area. | $29,500,000 |
| No | 10868 | Grade separate southbound OR 213 at Washington Street and add a northbound lane to OR 213 from just south of Washington Street to the I-205 on-ramp. | Convert existing OR 213 at Washington Street intersection to right-in/right-out only. Realign Clackamas River Drive under OR 213 to intersect with Washington St. New signalized intersection on Clackamas River Drive with OR 213 connector. New stop sign controlled intersection on Washington St at realigned Clackamas River Dr. Extend the bridge over the railroad by 100' to the south over realigned Clackamas River Dr. | *$16,000,000* |
| Yes | 10871 | Marine Dr. extension (Backage road), from I-84 EB off-ramp to 257th Dr. | Marine Drive extension (Backage road), from I-84 EB off-ramp to 257th Drive. | $8,200,000 |
| Yes | 10873 | US 26W: Widen highway to 6 lanes | Widen highway to 6 lanes. | $36,119,034 |
| No | 11057 | I-84/US 26 Connector R-O-W Preservation | Obtain right-of-way. | $ 20,700,000 |
| No | 11061 | I-84 to US 26 Corridor Refinement | I-84 to US 26 Corridor refinement. | $ 1,300,000 |
| No | 11067 | I-205/OR 213 Interchange: Stage 1: Southbound flyover ramp to OR 213 | Construct southbound I-205 flyover ramp to OR 213. | $ 49,102,000 |
| No | 11072 | I-205/OR 213 Interchange: Stage 3 - NB Washington grade separation segment | Build new northbound OR 213 ramp to I-205 starting at Redlands and merging into I-205 northbound. Grade separate new ramp over Washington. Rebuild Washington St. to five lanes with two traffic signals. | $ 26,000,000 |
| No | 11073 | I-205/OR 213 Interchange: Stage 6 - Redland Road Interchange | Construct interchange on OR 213 at Redland Rd. Widen OR 213 Bridge over Redland Rd. Lengthen Redland. | $ 72,000,000 |
| Yes | 11125 | US 26E Springwater at grade intersection | Construct at grade intersection connecting Springwater area to US 26 | $6,700,000 |
| No | 20009 | Barnes Yard to Bonneville Yard Trackage | Construct additional unit train trackage (approximately 16,000 linear feet) between Bonneville and Barnes rail yards. | $11.000.000 |
| No | 20015 | South Rivergate Rail Yard Expansion Phase I | Construct a second lead and two storage tracks in South Rivergate Yard. | $8,800,000 |
| No | 20016 | St. Johns Lead Expansion | Add two additional tracks within existing ROW | $3,000,000 |

**3363**

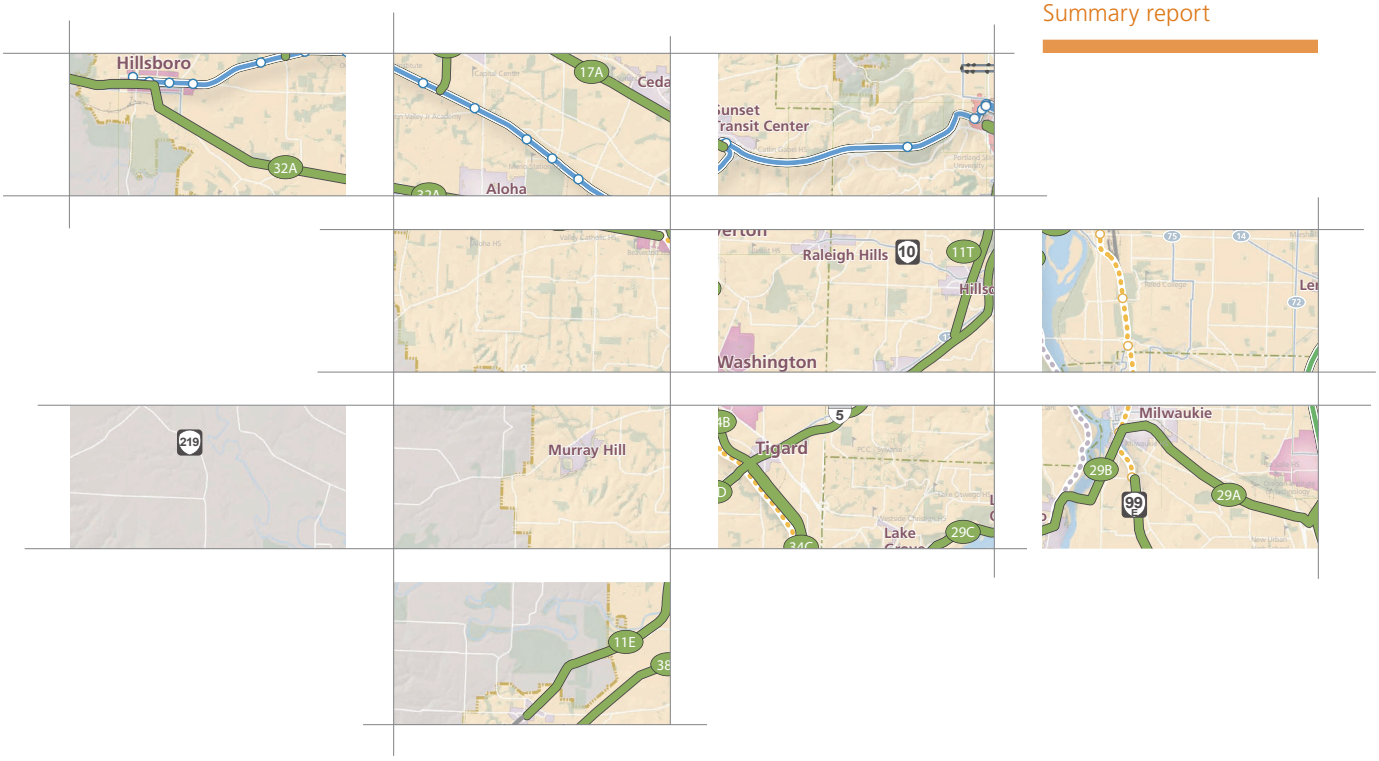
| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| No | 20017 | Terminal 6 A+B Yard | Connect A and B Yard at Terminal 6 | $2,900,000 |
| No | 20018 | West Hayden Island Rail Access | Rail access to support West Hayden Island development. | $3,000,000 |
| No | 20019 | West Hayden Island Rail Yard | Seven-track rail yard connected to facility trackage. | $9,500,000 |
| No | 20021 | Cornelius Pass Tunnel | Rehabilitate & improve capacity through this 4103 foot long tunnel by improving clearance | TBD |
| No | 20023 | Second Slough Lead | Provides a new rail/highway bridge over the Columbia Slough | TBD |
| No | 20024 | T6 Internal Overcrossing | Construct second gate to provide secondary access to T6. Construct an elevated roadway between Marine Drive and T6 | $6,000,000 |
| No | 30001 | PDX South Runway Rehabilitation | Repair pavement and joints on existing runway | $15,000,000 |
| No | 30002 | PDX North Runway Rehabilitation | Periodic rehabilitation of north runway | $11,200,000 |
| **Low Regional Priority** | | | | |
| Yes | 10074 | New Connection | Rock Creek junction interchange to 172nd Ave through Rock Creek industrial area. | $19,800,000 |
| Yes | 10130 | Kinsman Rd. Extension from Barber St. to Boeckman Rd. | Extend 3 lanes with sidewalks and bike lanes. | $5,750,000 |
| No | 10156 | Boeckman Rd. at Boeckman Creek | Widen Boeckman Road to 3 lanes with bike lanes, sidewalks and connections to regional trail system, remove culvert and install bridge. | $5,800,000 |
| Yes | 10209 | 92nd Dr. (Columbia Slough to Alderwood) | Improve NE 92nd Drive from Columbia Slough to Alderwood Rd. | $2,406,547 |
| No | 10236 | Water Ave., SE (Caruthers - Division Pl): Street Extension Phase II | Provide new roadway connection with sidewalks, bike lanes, landscaping, access to Willamette Greenway, & reconstruction of existing roadway. | $288,750 |
| No | 10246 | 7th/8th Ave., SE: New Street Connection | Construct new street connection from SE 7th to 8th Ave. at Division Street. | $577,500 |
| Yes | 10477 | Springwater Road Section 4 | Construction of new street for implementation of Springwater Plan. | $13,148,679 |
| Yes | 10481 | Springwater Road Section 8 | Construction of new street for implementation of Springwater Plan. | $5,519,551 |
| Yes | 10482 | Springwater Road Section 9 | Construction of new street for implementation of Springwater Plan. | $8,008,421 |
| Yes | 10483 | Springwater Road Section 10 | Construction of new street for implementation of Springwater Plan. | $12,202,421 |

**3364**

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| Yes | 10484 | Springwater Road Section 11 | Construction of new street for implementation of Springwater Plan. | $21,031,280 |
| No | 10492 | 162nd RR bridge@I-84 | Reconstruct RR bridge to accommodate alternative modes. | $2,621,250 |
| Yes | 10499 | 192nd Ave. Wilkes to Halsey | Improve to collector street standards. | $3,833,031 |
| No | 10515 | Riverside Dr. ext. to Sandy Blvd | Extend collector from 190th to Sandy to improve industrial access. | $10,975,110 |
| Yes | 10516 | San Rafael, 181st to 201st | Complete collector and remove frontage road. | $9,990,952 |
| Yes | 10518 | Wilkes St., 181st to 192nd | Improve Wilkes to collector standards and provide slip ramp connection from Eastbound I-84 on ramp. | $6,781,698 |
| No | 10520 | 184th Ave., Wilkes to San Rafael | Construct new collector street. | $7,353,375 |
| No | 10524 | Cleveland Ave., Glisan to Stark | Construct new collector street. | $15,277,585 |
| No | 10525 | Clyde, Glisan to Stark | Construct new collector street. | $16,277,585 |
| No | 10557 | Murray/TV Hwy. Intersection | Grade-separate the intersections of TV Hwy. and Farmington with Murray Blvd. | $25,000,000 |
| No | 10711 | Teton | Signalize intersection. | $307,000 |
| No | 10713 | Leveton | Extension. | $9,070,000 |
| Yes | 10715 | Herman | Reconstruct and widen to 3 lanes from Teton to Tualatin. | $2,500,000 |
| Yes | 10716 | Myslony | Reconstruct/widen from 112th to 124th to fill system. | $9,400,000 |
| No | 10717 | Cipole | Reconstruct/widen to 3 lanes from 99W to Tualatin-Sherwood Road. | $13,000,000 |
| Yes | 10718 | Herman | Reconstruction from Cipole to 124th. | $4,100,000 |
| No | 10719 | Leveton Ind. Area | Widen Leveton Drive to 5 lanes, signalize the 108th/Leveton intersection, and signalize 108th/Tualatin intersection. | $10,400,000 |
| Yes | 10730 | E-W connection | Construct new street. | $18,200,000 |
| Yes | 10735 | Herman | Widen to 5 lanes from 108th to Teton. | $1,250,000 |
| Yes | 10736 | 124th Ave | Construct new street from Tualatin-Sherwood to Tonquin Rd - 5 lanes. | $82,500,000 |
| Yes | 10774 | 23rd/24th | Construct collector level roadway between Hawthorne Ave. and Quince Street. | $15,000,000 |
| No | 10780 | Hwy 47 Intersection Improvements | Add traffic signal. | $1,000,000 |

**3365**

| Fed RTP Status | Metro ID | Project/Program Name | Description | Estimated Cost ($2007) |
|---|---|---|---|---|
| No | 10793 | 19th Ave | Signalize intersection. | $300,000 |
| Yes | 10815 | Cornell Rd Signal Coordination | Interconnect Traffic Signals (Extends County ATMS). | $1,000,000 |
| Yes | 10821 | Huffman | Build 3 lanes with bike lanes and sidewalks. | $9,282,000 |
| Yes | 10822 | 253rd | Build 3 lanes with bike lanes and sidewalks. | $6,162,000 |
| No | 20020 | Banks Connection | Provides a head-on connection at Wilkesboro (east of Banks) between the Tillamook Branch and the United Railways Line over Cornelius Pass | $4,000,000 |
| **Other** | | | | |
| Yes | 10377 | PSU ITS Expansion, incl. freight data repository | Expand PSU's existing web based ITS "count sensor" program beyond the freeway to some key arterials throughout the region. Create a repository of freight data (primarily truck data) from the region's Freight Data Collection project. | $0 |




REGIONAL HIGH CAPACITY TRANSIT SYSTEM PLAN

# 2035

## Summary report

**September 15, 2009**

Metro | *Joint Policy Advisory Committee on Transportation*

**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/goingplaces

*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.*

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## METRO COUNCILOR MESSAGE

The Metro Council is collaborating with our region's cities and counties to create vibrant, compact, connected communities in a distinctive fashion. In planning for future high capacity transit routes, we're building on a legacy of citizen involvement, elected leadership, and coordinated land use and transportation policy. Over 30 years ago, elected leaders and citizens rallied against the construction of freeways through developed neighborhoods and, instead, directed resources to a light rail project from Portland to Gresham along I-84. In 1995, the region adopted the 2040 Growth Concept to serve as a vision to guide growth and development over the coming decades. The existing and planned high capacity transit system functions to support the 2040 Growth Concept and the Regional Transportation Plan to protect the region's farm and forestland and to make great places.

The Portland metro region continues to lead the way in providing the region with a state-of-the-art transit system. The region has constructed over 50 miles of light rail and 14.7 miles of commuter rail. These high capacity lines connect the far reaches of the urban area from Hillsboro to Gresham and from north Portland to Clackamas – and many neighborhoods in between. In the wake of our success at building the first chapter of an exceptional high capacity transit system, the following document details the next phase of planning for high capacity transit to serve great places in the region over upcoming decades.

The Metro Council strives to create a region with sustained economic competitiveness and prosperity, transportation choices, minimized contributions to global warming, healthy ecosystems and equitably distributed benefits and burdens of growth. Therefore, the Metro Council adopted goals focusing on environment, communities and the economy to reflect that vision. Intensive public outreach and evaluation and analysis of high capacity transit options according to those goals and vision led to the Metro Council adopting Resolution No. 09-4052, which provides the region with high capacity transit projects and policy direction for the next decade.

We are thrilled to present you with following Regional High Capacity Transit System Plan summary report. The document encapsulates the planning process and results which led to the adoption of Resolution No. 09-4052 and the brilliant ideas captured from the public, scholars and experts, and elected officials on high capacity transit options in the region.

— Carlotta Collette, Metro Councilor

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# INTRODUCTION

The Portland metropolitan area is an incredible place to live. Our region has vibrant communities, neighborhoods with distinctive personalities and a world class transit system. Residents value access to nature, trails, parks and wild places. The area is rich with lively community events and festivals, an active arts scene and a rich array of cultural activities. The communities that make up the Portland metro region have worked together tirelessly over the past decades to create one of the most livable regions of the county and consistently strive to be the greatest place to live, work and play.

> "Our region is a place that rewards those who commit themselves to keeping it a great place to live. It is a place where people act to meet the future, rather than wait to cope with its eccentricities. History teaches the often cruel lesson that a community that does not possess a clear vision of the kind of future it wants is not likely to be satisfied with the one it gets. Making the effort to identify what we want, and then acting purposefully and collectively to achieve it, is critical."—*Your Future Vision Commission, final report, Metro, 1993.*

As the Portland metro region aspires to be the greatest place, it must address 21st century challenges of energy independence, carbon neutrality, population growth, sustainable economic development and human health. Continued development of a world class, high capacity transit system is one part of an integrated strategy to accommodate the region's rapidly increasing population while reducing the negative impacts of that population on land, air and water quality. More than any single factor, regional land use policy has positioned the Portland metro area to take advantage of transit-supportive development policy and implementation. Dramatic future population growth and a renewed energy toward infill development will provide new opportunities to build upon this legacy. Furthermore, raw geometry and rising construction costs demand a focus on moving people efficiently and rapidly within existing corridors and rights of way. Economic growth in the region will depend on continued investment in a transit system that can move people efficiently. Achievement of other land use, financial and equity goals also rely heavily on a well formed high capacity transit system.

This High Capacity Transit System Plan report summarizes the results of outreach and data analysis intended to provide guidance for the region's long-term investments in high capacity transit. The prioritized high capacity transit corridors and discussion of improvements to the existing system are based on planned land uses, community values, environmental benefits, economic potential and deliverability. In addition, the report covers the main components addressed during the High Capacity Transit System Plan process, including public outreach, high capacity transit corridor evaluation, system considerations and best practices for high capacity transit in the United States and around the world. Further information about the technical evaluation of corridors and public outreach results are available in the technical documents Regional High Capacity Transit System Plan detailed evaluation (Nelson\Nygaard, July 2009) and Regional High Capacity Transit System Plan public involvement outreach summary (Metro, May 2009).

The Regional High Capacity Transit System Plan is a component of the Regional Transportation Plan. The RTP is the region's blueprint to guide projects, programs and policies related to all transportation modes, including bikes, pedestrians, autos, freight and transit. The Regional HCT System Plan is designed to focus on the frequent, fast and high capacity element of the public transit system; other transit system functions, including local bus, paratransit, streetcar and frequent bus are included in the RTP. High capacity transit is characterized by exclusive right of way and routes with fewer stops. The Regional HCT System Plan is not intended as a review of the regional transit structure or its management, or a complete service analysis of the existing HCT system. Rather, the plan aligns HCT project advancement in a way that supports and enhances the goals of the RTP and regional 2040 Growth Concept.

**Transportation in the Portland metropolitan area**

- ✓ Over 90 percent of the region's residents live within one-half mile of public transit. 9.2 million rides on bus and MAX were taken during July 2008, a 13.3 percent increase over July 2007, and there are 100 million rides on bus and MAX annually.[1]
- ✓ Twenty-two percent of Portland metro residents use alternative transportation,[2] and 11 percent of the region's workforce walks, bicycles or rides mass transit to work.[3]
- ✓ Portland-Vancouver area residents make an average of about 50 trips per year on transit. Only four of 40 regions in the United States had higher rates in 2004: San Francisco, Boston, Washington D.C. and Philadelphia.[4]
- ✓ Residents of the region drove about 19.5 miles per day in 2003. On average, city of Portland residents drive four miles less than the other 33 most populous U.S. metro areas. These extra miles saved translates into more money in the pockets of Portland residents and an extra $2.6 billion in spending money to invest in our local economy.[5]
- ✓ Transportation activities are the second largest source of greenhouse gases in Oregon, accounting for approximately 34 percent of the state's carbon dioxide emissions. Congestion on our region's freeways increased 20 percent between 2000 and 2005.[6]
- ✓ Trips on transit in the Portland metro region replace more than 205,000 car trips daily, eliminating more than four tons of smog producing pollutants and more than 540 tons of greenhouse gas emissions daily.
- ✓ The regional high capacity transit system has helped to leverage more than $6 billion of development in centers, corridors and station areas, and has been shown to create jobs through construction and long-term development.[7]

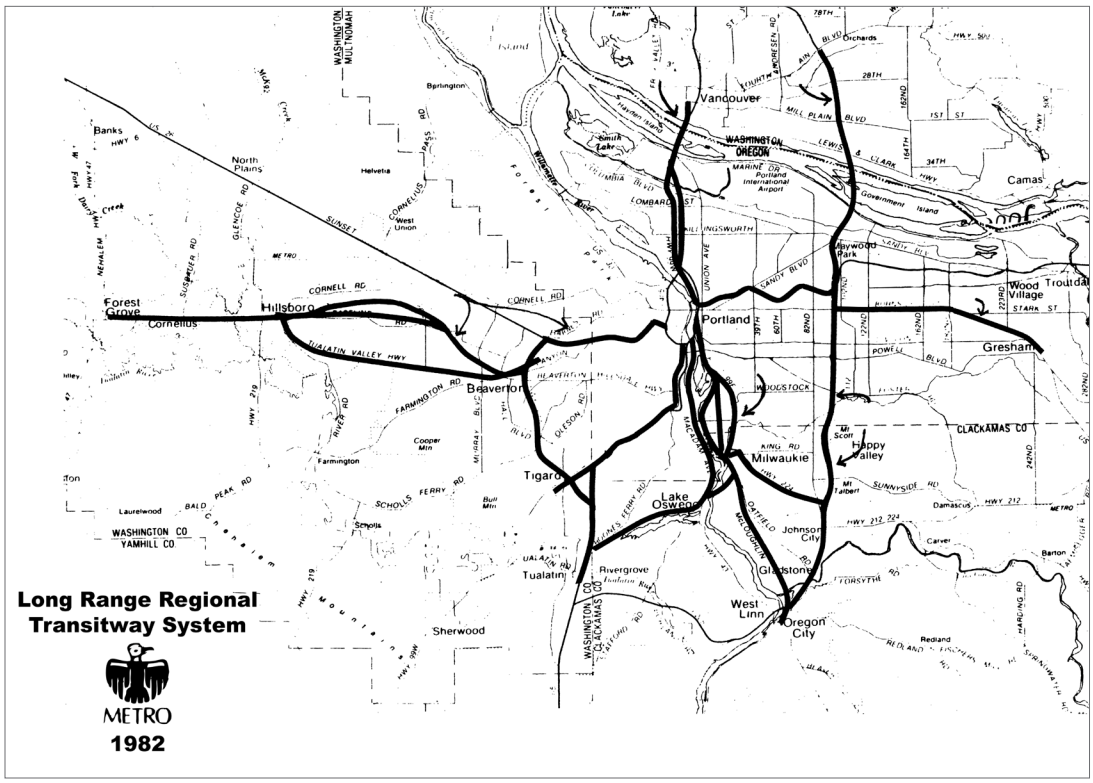
*1 Our place in the world, Metro, 2009.*
*2 American Community Survey, U.S. Census Bureau, 2006.*
*3 Greater Portland prosperity: a regional outlook, Greenlight, 2008.*
*4 Metropolitan briefing book, Institute of Portland Metropolitan Studies, PSU, 2007.*
*5 Portland's green dividend, Joe Cortright, CEOS for Cities, July 2007.*
*6 Our place in the world, Metro, 2009.*
*7 Resolution No. 09-4025, Metro, February 2009.*

## THE CHOICE FOR HIGH CAPACITY TRANSIT IN THE REGION

The last comprehensive examination of regional high capacity transit system needs was the 1982 Light Rail System Plan. Impressively, the 1982 plan has resulted in 64 miles of light rail transit, commuter rail and streetcar being built and an additional 26 miles planned for construction by 2016.

In 1974, elected leaders rejected the so-called Mt. Hood Freeway project after public outcry over its expected cost and the destruction of neighborhoods required for its construction. Following this sea change in transportation policy, the region set aside plans for 54 new highway projects in favor of modest roadway projects and a network of transitways. These plans were codified in the 1975 Interim Transportation Plan and resulting refinements through the 1982 Light Rail System Plan. The 2040 Growth Concept, adopted in 1995 after an extensive public engagement process, calls for high capacity transit service to regional centers.

**Figure 1.1: 1982 Light Rail System Plan map**




## REGIONAL TRANSPORTATION PLAN SCENARIO EVALUATION

As part of the RTP, in the fall of 2008, Metro and partner jurisdictions developed four transportation investment scenarios designed to measure improvements in mobility and access.[1] The scenarios were developed to provide a range of extreme investment decisions that would help illustrate trade-offs between investments. The four RTP scenarios were:

- investing in connectivity
- investing in high capacity transit and its supporting transit network
- investing in throughways
- investing in transportation demand management.

The high capacity transit scenario demonstrated the least increase in transportation-source greenhouse gases, created the least amount of housing growth outside the urban growth boundary and the highest effectiveness in concentrating housing growth in centers and corridors, and produced the greatest increase in transit use, walking and biking. While the high capacity transit scenario performed well, none of the scenarios by iteself would address the region's diverse needs.

When polled on the impact of the high capacity transit scenario in comparison to the other three scenarios, Joint Policy Advisory Committee on Transportation and Metro Policy Advisory Committee members stated that the HCT scenario will better address transportation issues and needs, have a positive ability to support job creation and goods movement, have a positive ability to support local, community aspirations, and have a positive ability to reduce the amount people drive.[2]

1 Transportation investment scenarios, Metro, November 2008.
2 Results of joint MPAC/JPACT meeting, Metro, November 2008.

## THE HIGH CAPACITY TRANSIT SYSTEM TODAY

TriMet is the primary transit operator in the region; its district service area encompasses 575 square miles, serving 1.3 million people in the urban portions of Clackamas, Multnomah and Washington counties.[3] More than half the service area's population lives within one-half mile of TriMet service that operates every 15 minutes or better; 90 percent lives within one-half mile of TriMet service. In addition to those light rail lines listed in Figure 1.2, TriMet will open the green line in downtown Portland and to Clackamas Town Center in fall 2009 and the commuter rail line, WES, opened in February 2009. Wilsonville Smart provides service in the southwest corner of the region. 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).

**Figure 1.2: 2008 MAX light rail summary[4]**

| Line | Project/ construction Segment | Open | Length (miles) | Annual ridership opening year | Annual Ridership FY2008 | Stations | Park and ride spaces |
|---|---|---|---|---|---|---|---|
| **Blue** Hillsboro to Gresham | Eastside- Portland to Gresham | Sept. 1986 | 15 | 6,600,000 | 35,100,000 | 30 | 2,898 |
| **Blue** Hillsboro to Gresham | Westside- Hillsboro to Portland | Sept. 1998 | 18 | 5,900,000 | | 20 | 3,613 |
| **Red** Beaverton to Airpot | Airport- Gateway to Portland Airport | Sept. 2001 | 5.5 | 571,484 | | 4 | 193 |
| **Yellow** City Center to Expo | Interstate- Rose Quarter to Expo | May 2004 | 5.8 | 3,900,000 | | 10 | 600 |
| **Green** City Center to Clackamas Town Center | Downtown- PSU to Union Station<br>Eastside- Gateway to Clackamas Town Center | Sept. 2009 | 14.5 (8.3 new) | TBD | n/a | 20 (15 new) | 2,300 |

3 A profile of the regional transit system in the Portland metropolitan region background paper, Metro, February 2007.

4 Transit Investment Plan, TriMet, 2007.

Portland Streetcar was constructed by the City of Portland. The streetcar is designed to provide local circulation in the central city; it operates in mixed traffic with frequent stops. Ridership has increased by an average of 17.4 percent per year since 2001.[5]

## REGIONAL VALUES

Light rail became an important transportation choice for the region when faced with the destruction of established neighborhoods that a new freeway would cause, but it and other modes of high capacity transit continue to support regional values on many other levels. A 2006 survey of regional residents asked what they thought would be the three issues facing the region in 10 years; four of the top five issues mentioned benefit from high capacity transit: traffic congestion and transportation, the economy and jobs, population and growth, and environmental quality.[6]

## PLACEMAKING AND REGIONMAKING

Six 2040 fundamentals were adopted as part of the 2040 Growth Concept by the region in 1997:

1. healthy economy
2. vibrant communities
3. environment health
4. transportation choices
5. equity
6. fiscal stewardship.[7]

This section addresses ways the regional HCT system supports these 2040 fundamentals.

### Green economic boom

Dating back to 1979 when Metro was created by the voters, the region has been a national leader of the green and sustainable development movement. The Portland metro region often receives accolades for its transportation and land use planning and was recently ranked the top eco-friendly big city in the United States by SustainLane, a web-based guide to sustainable living. It is very possible that as the world transitions away from fossil fuels for most of its energy needs, the region could attract major employers in the fields of sustainability, green nanotechnology and renewable energies. The region should be prepared for rapid economic growth similar to the technology boom that occurred in the Seattle area and Silicon Valley.



### Global migration

Climate change and volatile energy costs are likely to impact global migration patterns. Given the Portland region's moderate climate and supply of clear water, many have asked whether the region could accommodate another million residents beyond those already forecasted. If just 10 percent of California's 36 million people moved to the comparably wetter Pacific Northwest, and 30 percent of that wave moved to Portland, the region could gain 1 million residents within a short few years. Such a migration could create additional demand for transit and other forms of transportation.

5 Portland Streetcar Inc., 2009

6 Regional attitudes toward population growth and land use issues, Davis, Hibbits & Midghall, Inc., Metro, February 2006.

7 A profile of the regional transit system in the Portland metropolitan region background paper, Metro, February 2007.

## Healthy economy

High capacity transit plays an important role in making the region affordable, attracting a well-educated work force, keeping freight and goods moving and supporting access to new jobs.

Transit supports a healthy economy by providing essential connections between where people live and work. Transit can help reduce the number of cars on the road, which reduces traffic congestion and improves the movement of freight.

The Department of Labor's Consumer Expenditure Survey shows that Portland has the second lowest rate of spending on transportation cost of the 28 largest U.S. metro areas.[8] Since residents spend less on driving, there is more money available to put back into the local economy, an extra $2.6 billion by some calculations.[9]

The emphasis on vibrant communities, reduction of congestion and transportation choices has attracted a passionate, well-educated workforce. During the 1990s, the number of college-educated 25 to 34 years olds increased 50 percent in the Portland metropolitan area, a rate five times faster than the nation as a whole.[10] Between 1995 and 2000, the city added 268 people in that demographic group for every 1,000 of the same group living there in 1995, according to the Census Bureau. Only four other metropolitan areas had a higher ratio.[11] As noted by the Wall Street Journal, transportation choices are part of the hard-to-quantify blend of attractions to the area.[12]

Transit capital investment also creates jobs and increases revenues for local businesses. A report by Cambridge Systematic, Inc. found that for every $10 million dollars invested in transit, 314 jobs are created in the year following investment, and businesses realize a gain in sales three times the

8 Portland's green dividend, Joe Cortright, CEOS for Cities, July 2007.
9 *Ibid*.
10 'Youth magnet' cities hit midlife crisis, Conor Dougherty, The Wall Street Journal, May 16, 2009.
11 American Community Survey, U.S. Census Bureau, 2006.
12 'Youth magnet' cities hit midlife crisis, Conor Dougherty, The Wall Street Journal, May 16, 2009.

### Volatile energy costs and peak oil

No one can be sure, but most experts agree that we are approaching the "peak" in worldwide oil and natural gas production where demand exceeds supply, leading to rapid price increases. Fluctuating energy prices are creating pressure to reduce our consumption of fossil fuels and make rapid changes and investments in our transportation system. The sudden energy cost increases could dramatically shift how people travel.

Crude oil prices averaged about $15 per barrel from 1986 to 1999 and about $25 per barrel from 2000 to 2003. Prices climbed to almost $37 per barrel in 2004 and to $51 per barrel in 2005; from 2000 to 2005, crude oil prices rose an average of 14 percent annually.[1] The average price for 2008 was nearly $100 per barrel.[2]

Eighty-five percent of all petroleum is used for transportation, and 95 percent of energy used for transportation in Oregon is oil. Peak oil has direct, major implications for the movement of freight and people to, from and within our region. According to the City of Portland Peak Oil Task Force, automobile use will decline in favor of alternative transportation as oil prices increase in response to lack of supply. The region may have seen a preview of this with recent gas price spikes: between July 2007 and July 2008, the number of daily transit riders increased by more than 13 percent, likely in response to gasoline prices that topped $4 per gallon.[3]

1 *Descending the oil peak: navigating the transition from oil and natural gas, City of Portland Peak Oil Task Force, March 2007.*
2 *Short-term energy and summer fuels outlook, Energy Information Administration, U.S. Department of Energy, April 2009.*
3 *Choices: Transporation investment scenarios, Metro, November 2008.*

investment ($30 million).[13] Additionally, transit has been shown to produce a high net return on investment (4- or 5-to-1).[14] The Portland metro high capacity transit system has been shown to create jobs through construction and long-term development, including more than 50 new businesses that opened along the most recent line, Interstate MAX, since construction.

## Vibrant communities

High capacity transit is an important tool for building vibrant, walkable and affordable communities. Transit-oriented developments are large- or small-scale developments organized to take advantage of high quality transit service. A survey of four transit-oriented developments in the Portland metro region, Orenco/Northwest 231st Avenue Station, Elmonica/Southwest 170th Avenue Station, Beaverton Central and The Merrick/Convention Center MAX, demonstrated the power of this development approach to increase transit ridership; 23 to 33 percent of residents take transit to work or school, and 15 percent of riders are 65 years old or older.[15] In the San Francisco Bay Area Rapid Transit discovered that transit-oriented development was one of the most cost-effective ways to reduce greenhouse gas emissions.[16]

A key component of the successful pairing of vibrant communities with high capacity transit is pedestrian connections. Nearly all transit riders are pedestrians at one end of their trip.

## Environmental health

Transit supports environmental health. Alternative transportation allows for more compact development that preserves the natural environment and agricultural land, reduces air pollution and is more energy efficient. Transportation activities are the second largest source of greenhouse gases in Oregon, accounting for approximately 34 percent of the state's carbon dioxide emissions. The Governor's

### Climate change

Accordining to the University of Washington's Climate Impacts Group (2009), the Pacific Northwest will have average annual temperature increases of 2.2° F by the 2020s, 3.5° F by the 2040s and 5.9° F by the 2080s in comparison with the average annual temperatures from 1970 to 1999. In Oregon, the average snowpack has declined by 30 percent, and the spring runoff is happening sooner. Probable impacts of climate change in the Pacific Northwest include warmer temperatures, wetter winters and drier summers.[1]

Much of the change in the climate is attributed to greenhouse gas emissions, and as much as 35 percent of greenhouse gas emissions in Oregon are related to transportation. Many cities and regions around the world, including the Portland metro region, are actively working to minimize these emissions. As one of five states participating in the Western Climate Initiative, Oregon aims to reduce greenhouse gas emissions 15 percent below 2005 levels by 2020. Transit could play a key role in reducing regional greenhouse emissions, but the system has to have the capacity to meet these goals. (See the section on high capacity transit's role in reducing carbon emmissions, page 76).



*1 A framework for addressing rapid climate change, final report to the governor, The Governor's Climate Change Integration Group, State of Oregon, January 2008.*

13 Public Transportation and the nation's economy: a quantitative analysis of public transportation's economic impact, Cambridge Systematics, Inc., October 1999.

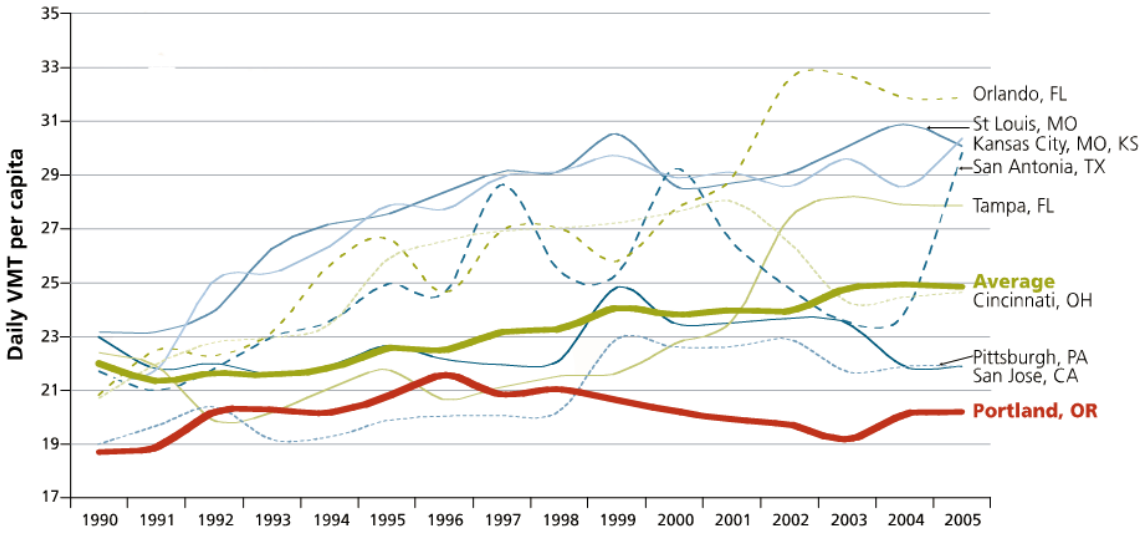
14 Dollars and sense: the economic case for public transportation in America, Donald H. Camph, July 1997.

15 Travel and transit use at Portland area TODs, Jennifer Dill, May 2006.

16 BART action to reduce greenhouse gas emissions: a cost-effectiveness analysis, Nelson\Nygaard Consulting Associates, December 2008.

Climate Change Integration Group stated that reducing vehicle miles traveled, the number of miles that residential vehicles are driven, is the "single most effective way to reduce greenhouse gas emissions."[17] As noted in Figure 1.3, the Portland area has fewer vehicle miles traveled compared to other metropolitan areas with similar populations.

**Figure 1.3: Vehicle miles traveled comparison[18]**




## Transportation choices

A high capacity transit system that is fast, reliable and convenient provides individuals with transportation choices. The complete high capacity transit system facilitates access by bicycling, walking and transit to provide an integrated system of travel options. High quality transit in exclusive right of way helps ease congestion. Traffic congestion growth rates have actually been shown to decline in several U.S. cities after the establishment of light rail service.[19] Additionally, per capita congestion delay is significantly lower in cities with high quality rail transit systems than in otherwise comparable cities with little or no rail service.[20]

High capacity transit allows travelers a choice to avoid traffic congestion. TriMet calculates that the westside MAX Blue Line alone carries the equivalent of an additional 1.2 lanes of car traffic each direction on the Sunset Highway. In fact, MAX carries 26 percent of afternoon rush-hour commuters traveling on the Sunset Highway and Banfield Freeway corridors.[21]

## Equity

High capacity transit offers access for individuals of all income levels and special needs residents of the region, including seniors and people with disabilities. Public transportation also serves the economically disadvantaged throughout the region by connecting low-income individuals to employment areas and related social services. The average cost of a public transit trip is substantially less than the average auto trip cost.

17 A framework for addressing rapid climate change, final report to the governor, The Governor's Climate Change Integration Group, State of Oregon, January 2008.

18 The average shown is for the 25 U.S. urban areas with the exception of Portland that have 2005 populations of one million to three million residents. Source: Highway Statistics, Table IM-72, Urban areas – selected characteristics, 1990-2005, U.S. Federal Highway Administration.

19 Comprehensive evaluation of rail transit benefits, Todd Litman, Victoria Transport Policy Institute, June 2006.

20 *Ibid.*

21 Facts about TriMet, TriMet, October 2008..

## Fiscal stewardship

When paired with supportive land use, pedestrian connections and growth potential, high capacity transit capital investments can serve more people for fewer operating funds. Despite its high capital cost, high capacity transit can be more efficient and, therefore, fiscally responsible. In a recent exercise, projecting ridership to 2035 as part of the analyses supporting the development of the RTP, 26 miles of light rail transit was compared to 148 miles of new, expanded frequent bus. Although the two were allocated the same operating costs, the light rail transit was projected to have average weekday boardings of 37,000 and the frequent bus had average weekday boardings of 29,000.[22] Rail transit often attracts more choice riders than buses, in part due to its reliability, speed, comfort and integration with land use. When similar sized U.S. cities were compared, those with bus and rail systems and those with bus only systems fared differently over the period from 1996 to 2003. Over this period, bus and rail cities saw transit ridership grow 16 percent compared with 1.7 percent in bus only cities.[23] As of 2003, bus and rail cities experienced 74 percent less in operating and maintenance costs per passenger mile than bus only cities.[24]

Historically, high capacity transit projects have been built using a combination of capital funds from federal, state and local governments and some private sources. The federal support for capital development means that the region has historically paid only a minor share of capital projects out of local funds. This federal support would have otherwise gone to other transit projects in other parts of the country so these projects have offered a good value for local tax payers.

**Figure 1.4: Historical regional light rail project funding shares[25]**

| | FTA *New Starts | TriMet | State of Oregon | FHWA Flex Funds | Local |
|---|---|---|---|---|---|
| Banfield light rail and Highway | | 33% | 21% | 45% | 1% |
| Eastside light rail | 65% | 17% | 14% | 2% | 1% |
| Airport light rail | | 22% | | 14% | 64% |
| Interstate light rail | 74% | 11% | | 7% | 9% |
| Clackamas light rail/Portland Mall | 60% | 5% | 4% | 11% | 19% |
| WES commuter rail | 37% | 19% | 22% | 8% | 14% |
| **AVERAGE TOTAL** | **53%** | **17%** | **9%** | **12%** | **10%** |

22 Comprehensive evaluation of rail transit benefits, Todd Litman, Victoria Transport Policy Institute, June 2006.
23 *Ibid.*
24 *Ibid.*
25 TriMet, 2009.

## PUBLIC INVOLVEMENT

The last broad-based, region-wide consideration of high capacity transit's role in regional planning dates back to 1982, with some adjustments in later RTP processes, notably the 2000 RTP update, though extensive planning, analysis, and public involvement have surrounded each project. The development of the Regional High Capacity Transit System Plan offered a valuable opportunity to gauge the public's vision for high capacity transit growth and development. Public input was requested during each phase of the process: the identification of corridors to evaluate, the development of evaluation framework and the evaluation and prioritization of corridors.

During the summer of 2008, feedback from residents, businesses, community organizations and elected officials identified 192 potential connections in about 55 corridors around the regions. The more than 50 stakeholders that participated included business and community leaders, transportation and transit providers, safety and security experts, developers, economic development professionals, social service and nonprofit organizations, environmental groups and elected officials. In addition, over 100 attendees contributed at the four workshops, farmers' markets and community events, and 200 people completed the online questionnaire.

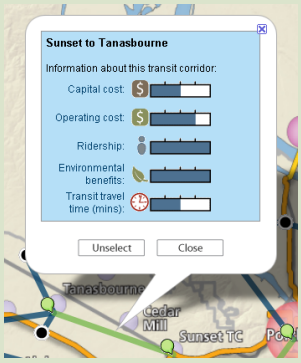
During the winter of 2009, the values collected during public involvement efforts were incorporated into the screening criteria. Staff presented the criteria to 31 existing community groups and to Metro advisory committees. In response, 115 community members, planning staff and elected officials completed a questionnaire about the evaluation framework.

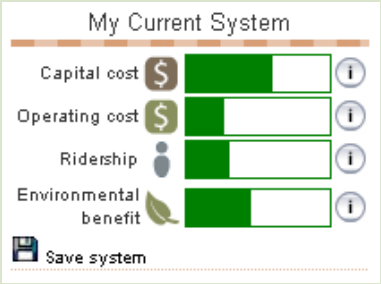
In spring 2009, Metro shared evaluation results with the public to begin discussing trade-offs, choices and priorities using an interactive web site build-a-system tool and online survey and public outreach events. The online survey was completed by 657 people, and the web site was viewed by 4,256 people.

### Build-a-system tool

To understand community values related to prioritization of high capacity transit corridors, an online build-a-system tool allowed community members to explore trade-offs between corridors and build their own high capacity transit system.

With the build-a-system tool, community members learned about centers that could be served by high capacity transit and to compare corridors based on ridership, travel time, operations cost, capital cost and environmental benefits.




Participants were able to add corridors to their system until they reached a budget cap that approximated the funding that might be available for new high capacity transit in the next 25 to 30 years. Participants could see the total benefits and cost of their system and compare the benefits and costs between systems that they had created. Finally, participants could submit their favorite system to Metro and complete the online questionnaire. The tool and questionnaire were featured in several news articles.

The preparation of the HCT plan included a robust public involvement program that sought to:

- provide an open and transparent decision-making process conducted through equitable and constructive public discussion and input
- provide early and ongoing opportunities for stakeholders to raise issues and concerns
- proactively inform and engage a wide range of stakeholders in the decision-making process
- build widespread community understanding of findings and decisions
- encourage the participation of all stakeholders regardless of race, ethnicity, age, disability, income or primary language.

For detailed reports on these outreach efforts, see the Regional High Capacity Transit System Plan Public Involvement Outreach Summary (Metro, May 2009).

## Themes resulting from outreach efforts

In addition to the specific input on the identification of corridors, the evaluation framework, and the evaluation and prioritization, staff collected overarching themes and policy level public comment. Some of the themes staff heard over the year-long process were access, service and speed, safety and security and connecting HCT to land use.

In general, the public expressed interest in:

- serving employment areas and major institutions, shopping areas and activity centers in addition to regional centers
- integrating stations into surrounding communities and linking stations to communities with bike facilities, pedestrian facilities and local transit service
- connecting land use to public transportation to create compact commercial, residential and mixed-use development to support transit ridership
- connecting suburbs to suburbs and faster service through downtown Portland
- improving access for transit-dependent groups such as low income or elderly populations
- increasing safety and security on transit vehicles, at stations and at crossings

### Public outreach

The Regional High Capacity Transit System Plan gained valuable information about regional values through its robust public outreach process. The outreach included:



*summer 2008*

- ✓ interviews with 50 stakeholder groups
- ✓ four workshops with 100 attendees
- ✓ presentations at farmers' markets and events
- ✓ online questionnaire with 200 participants

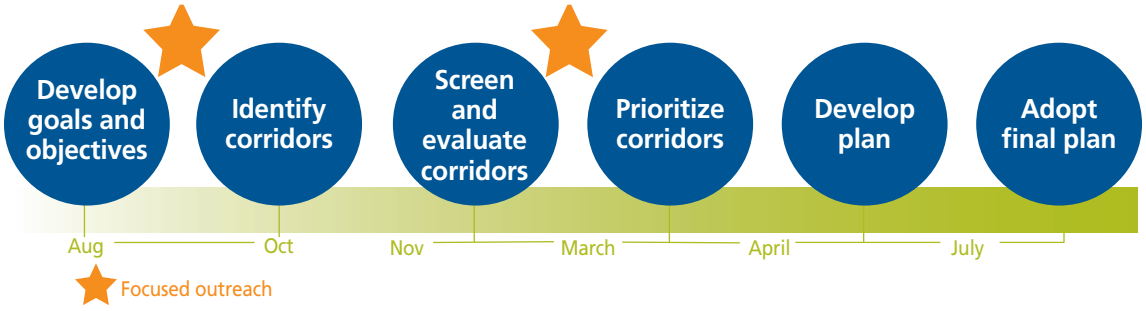
*winter 2008 and spring 2009*

- ✓ presentations to 31 groups
- ✓ a questionnaire with 115 participants of community members, planning staff and elected officials
- ✓ the build-a-system tool with 657 survey participants and 4,256 website visits.

- increasing budget and funding sources for high capacity transit
- filling in gaps and serving areas that are not served with high capacity transit today
- reducing congestion on roadways by reducing auto dependence and providing reliable transit with travel times that are competitive with driving
- supporting development or redevelopment in the region
- providing better transit service and existing system improvements in the city of Portland and other urbanized areas to reduce pressure to develop new areas.

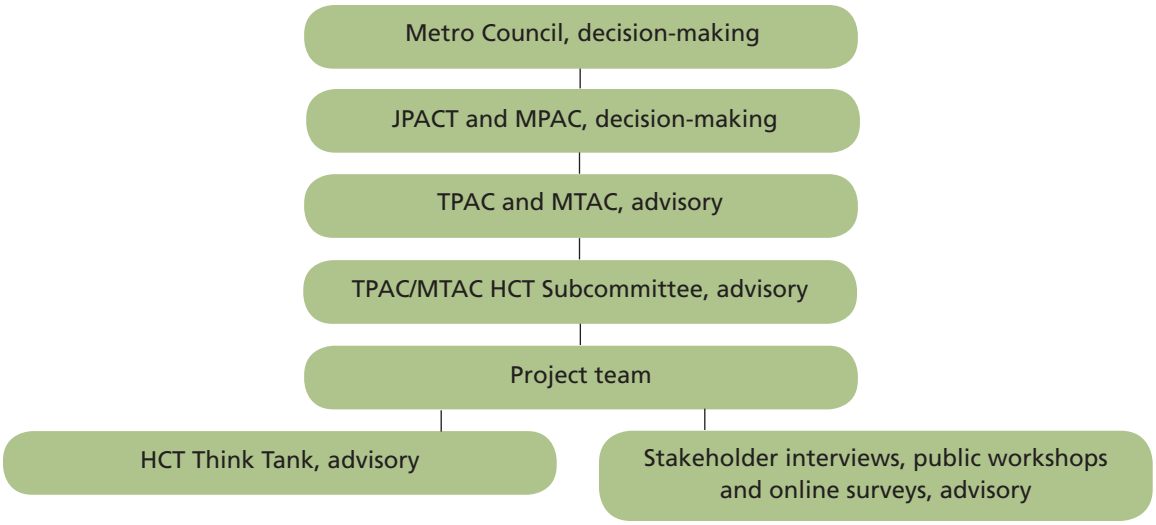
For individual reports on these outreach results, see the High Capacity Transit System Plan public involvement outreach summary (Metro, May 2009).

**Figure 1.5: Project schedule of key decision points and focused outreach**




## DECISION-MAKING

**Figure 1.6: Decision-making process**



The decision-making process for the High Capacity Transit System Plan was framed within existing Metro advisory committees. The High Capacity Transit Subcommittee was comprised of 18 representatives from the Metro Technical Advisory Committee and the Transportation Policy Alternatives Committee or the designees of the members. The subcommittee was charged with reviewing public input and technical analysis to provide guidance and consensus-based recommendations that reflected the interests and priorities of local jurisdictions through the High Capacity Transit System Plan process. The subcommittee provided ongoing guidance to the project and formal consensus-based recommendations to MTAC and TPAC at key decision points such as the identification of alternatives, development of an evaluation framework and prioritization of alternatives. MTAC and TPAC then made formal recommendations to the Metro Policy Advisory Committee, the Joint Policy Advisory Committee on Transportation and the Metro Council.

### HCT Think Tank

The Portland area has historically been a center of activity for discussion of progressive approaches to land use, transportation and the integration of these in achieving quality communities with vibrant economies. As a result, the region has produced some of today's leading thinkers and practitioners on these subjects. The High Capacity Transit Think Tank was intended to bring together a cross section of these experts and activists at major milestones to ensure the Regional High Capacity Transit System Plan considered and benefited from this body of knowledge and experience. The group was not intended to embody a full representation of the community, but rather a cross section of specialized knowledge and interests.

The HCT Think Tank raised several crucial themes and questions to consider as part of the vision for high capacity transit within the region.

- ✓ Consider Portland's history in moving forward and be true to the region's values.
- ✓ Use high capacity transit as a tool for placemaking and regionmaking.
- ✓ Reinforce the concept of 20-minute neighborhoods within the region on a local level.
- ✓ Use high capacity transit to link residents to the global society.
- ✓ Balance the tension between the present in individual terms and the future in community and collective terms.
- ✓ Consider all existing rights of way as "land banking" for the transit system.
- ✓ Promote federal policy changes to level the playing field for federal transportation funding in favor of transit.
- ✓ Look beyond the norm and shift cultural expectations in order to serve and balance the needs of diverse constituencies.
- ✓ Create a complete, integrated system that includes pedestrians, bicycles and bus.
- ✓ Reinforce redundancies and diversity in the transit network for disasters.

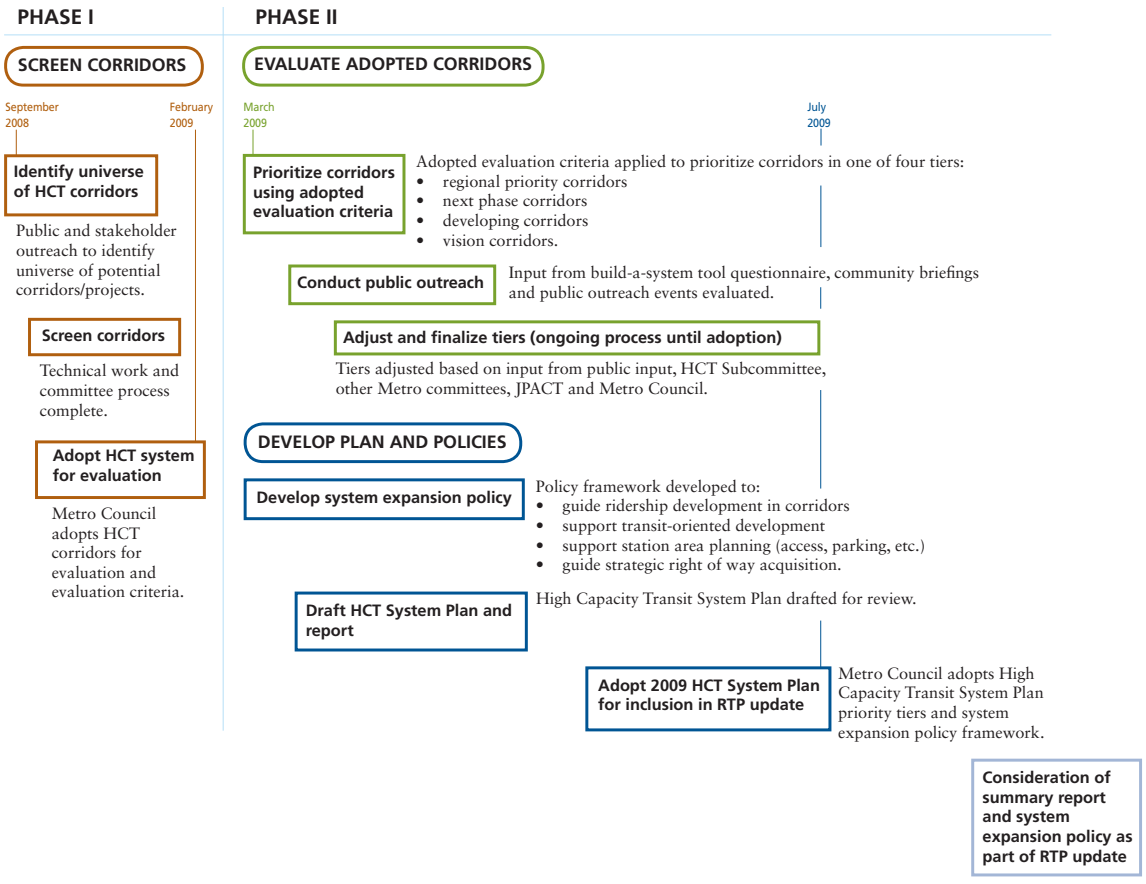
# HIGH CAPACITY TRANSIT CORRIDOR PRIORITIZATION AND ADVANCEMENT

Metro is working with local partners to define how regional and local aspirations come together to create vibrant, healthy and sustainable communities. This effort is called, "Making the Greatest Place", and the HCT plan is one component of this effort. The challenges of climate change, rising energy costs, economic globalization, aging infrastructure and population growth require regional land use and transportation decisions to be supported by local decisions and actions. Much of the region remains auto dependent due to the relatively low level of transit supportive land use outside major urban centers. The Regional High Capacity Transit System Plan used an extensive evaluation process to identify regional priorities for high capacity transit investment over the long-term (30 years) and in the near-term (next 4 years).

## SUPPORT OF METRO VISION AND RTP GOALS, PERFORMANCE MEASURES

HCT system capital investments must be recognized as an element of a much broader corridor strategy that includes supportive land use and transit-oriented development, comprehensive parking programs, well developed access systems for pedestrians and cyclists, park and rides and feeder bus networks.

**Figure 2.1: Regional HCT System Plan process diagram**

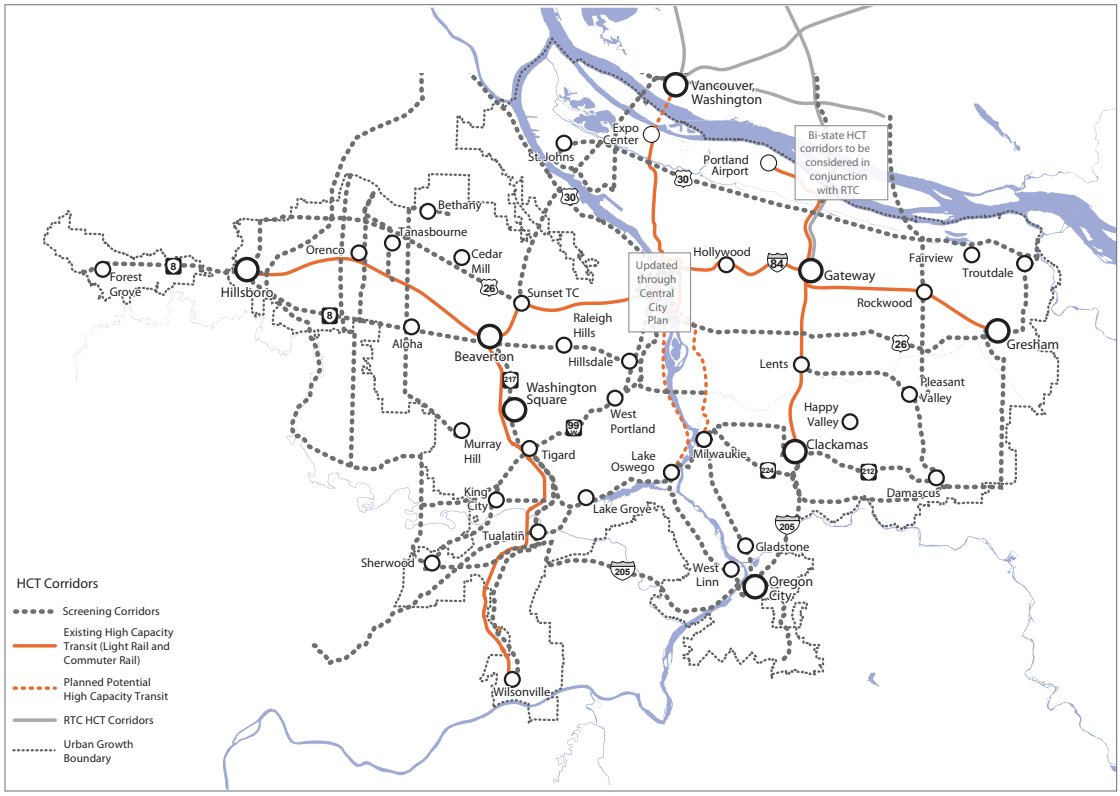


## EVALUATION METHODOLOGY

### Phase one: Identification of corridors and development of screening criteria

Public workshops, stakeholder interviews and review of numerous past regional transit planning efforts were considered in developing a "long list" of potential regional HCT corridors to be studied. At the completion of this work, the universe of potential corridors totaled 55, as shown in Figure 2.2.

**Figure 2.2: Universe of corridors for screening evaluation**




The intent of the screening was to eliminate corridors that could not reasonably support an HCT investment in the next 30 years; however, some corridors where projected 2035 land uses are not supportive of HCT were retained for other reasons, such as demonstrated local aspirations to meet transit-supportive land use requirements. An early phase evaluation was applied to reduce the list of potential corridors, so more intensive evaluation of the best candidate corridors could be completed.

Eight criteria were used to screen the corridors:

- ridership
- corridor availability and cost
- environmental constraints
- equity
- connectivity and system benefit
- congestion
- 2040 Growth Concept land use
- origins and destinations transit demand.

A set of 18 high capacity transit corridors was identified and adopted for evaluation and prioritization by the Metro Council on Feb. 12, 2009 (Figure 2.3). Additionally, two central city service improvement projects, a tunnel through downtown Portland and an eastside connector, were evaluated separately from the other corridors. Potential corridor extension to neighboring cities were also evaluated separately, as discussed later in this report.

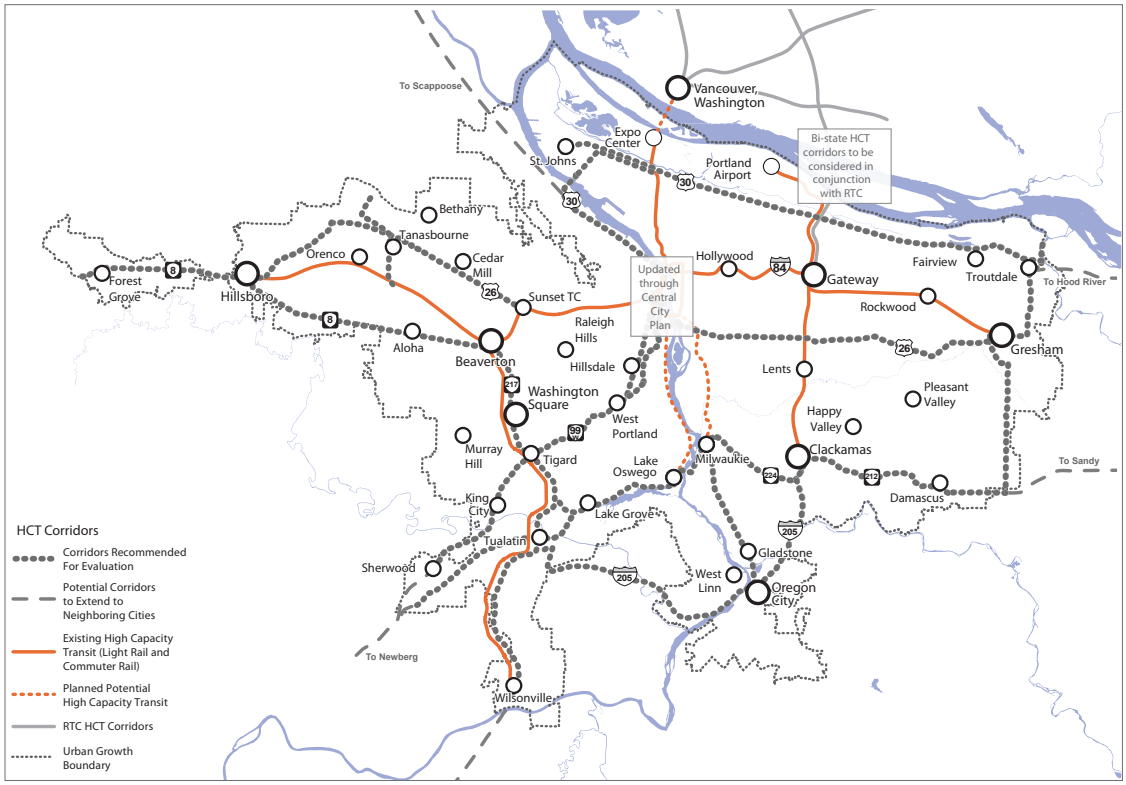



**Figure 2.3: Corridors advanced for detailed evaluation and prioritization**

For details on the screening process, see the Regional High Capacity Transit System Plan final screening results memo (Nelson\Nygaard, February 2009).

## Phase two: Detailed evaluation of adopted corridors

In the fall of 2008 and early 2009, Metro worked with local jurisdictions and regional partners, including TriMet, to develop and refine a set of evaluation criteria to be used to evaluate and prioritize the screened HCT corridors. The evaluation criteria were organized using a multiple account evaluation approach.

This approach is consistent with the Regional Transportation Plan outcomes-based evaluation approach, in which three areas of benefit are stressed: community, environment and economy. Additionally, a deliverability account was added to determine a corridor's near-term readiness.

Within each category, several measures were used to assess near-term and long-term benefits and impacts of implemented HCT investments. Figure 2.4 presents how the process was aligned with the RTP evaluation approach.

### Multiple account evaluation

The multiple account evaluation approach was adapted and refined from a standardized methodology employed in the United Kingdom for evaluation of major transportation projects. This approach, called the new approach to appraisal, is a multi-criteria decision analysis based tool that builds on already well established cost-benefit analysis and environmental impact assessment techniques.

The multiple account evaluation approach was chosen for the HCT System Plan because of its ability to provide decision-makers with data in a number of key areas, allowing them to assess the cost and benefits of proposed HCT investments. The process also aligned closely with the Regional Transportation Plan framework, which ensured consensus among regional partners.

**Figure 2.4: 2035 RTP evaluation approach and deliverability**




The evaluation approach aligns specific HCT plan recommendations with the hierarchy of regional planning objectives.

- 2040 Growth Concept (vision)
- 2035 Regional Transportation Plan (implementing the 2040 Growth Concept)
- Regional High Capacity Transit Plan (supporting RTP Goals)

Figure 2.5 summarizes the specific criteria under each account: community, environment, economy and deliverability. For more detailed descriptions of these criteria, see the Regional High Capacity Transit System Plan detailed evaluation report (Nelson\Nygaard, July 2009).

**Figure 2.5: High Capacity Transity System Plan evaluation criteria**

| | |
|---|---|
| | Community |
| C1 | Supportiveness of existing land uses |
| C2 | Local aspirations |
| C3 | Placemaking and urban form |
| C4 | Ridership generators |
| C5 | Support of regional 2040 Growth Concept |
| C6 | Integration with regional transit system |
| C7 | Integration with other land uses* |
| C8 | Congestion avoidance benefit** |
| C9 | Equity benefit |
| C10 | Health (promotion of physical activity)** |
| C11 | Safety and security*** |
| C12 | Housing and transportation benefit |
| C13 | Transportation efficiency or travel time benefit to individual user** |
| C14 | Transportation efficiency or travel time benefit to all corridor users** |
| | Environment |
| EN1 | Reduction in emmissions and disturbance** |
| EN2 | Risk of natural resources disturbance |
| EN3 | Risk of 4(f) resource disturbance*** |
| | **Economy** |
| EC1 | Transportation efficiency (operating cost per rider)** |
| EC2 | Transportation efficiency annual capital and operating cost per rider)** |
| EC3 | Employment served |
| EC4 | Vacant and rebuilding/redevelopment land |
| | Deliverability |
| D1 | Total project capital cost (exclusive and nonexclusive right of way options) |
| D2 | Capital cost per mile (exclusive and nonexclusive right of way options) |
| D3 | Operating and maintenance cost** |
| D4 | Total corridor ridership** |
| D5 | Funding potential** |

** Addressed through the mobility corridors work in coordination with Oregon Department of Transportation*
*** Criteria which are evaluated, at least in part, using regional travel demand outputs*
****Discussed later in this report*

It should be noted that two criteria, safety & security and risk of 4(f) resource disturbance, were not evaluated at the corridor level because the results would not show a difference between the corridors at this level of analysis. Issues related to these two criteria would be addressed through alignment alternatives studies and design solutions. Another criterion, integration with other road uses, was deferred to the regional mobility corridor process being undertaken by Metro in support of the RTP update. A discussion of issues relating to these criteria is provided in the best practices for building great communities with transit at the center section of this report (page 49).

Using the adopted evaluation criteria, a detailed evaluation was conducted on the 18 corridors. For each corridor, the criteria were either quantitatively or qualitatively applied or given an assessment using a scale between significant benefit to significant constraint or adverse impact.

Where quantitative data was available as part of a criterion evaluation, natural data breaks were employed in the scoring process. Where possible, criteria were rated against a baseline or reference case (in this case, the RTP 2035 reference case) and criteria scoring for all corridors were shown as either having a beneficial or adverse impact, as shown in Figure 2.6.

**Figure 2.6: Criteria scoring method**

| Assessment | Natural data break | Rating |
|---|---|---|
| Significant benefit | 4th | 3 |
| Moderate benefit | 3rd | 2 |
| Slight benefit | 2nd | 1 |
| Neutral | 1st | 0 |
| Slight constraint/adverse impact | 2nd | -1 |
| Moderate constraint/adverse impact | 3rd | -2 |
| Significant constraint/adverse impact | 4th | -3 |

*Note: For most criteria with quantitative evaluation outputs, four natural data breaks were applied indicating the level of benefit or constraint – from neutral to significant benefit. In all cases, the first break was considered to fall close to neutral and was indicated as such. For several of the criteria, it was determined that the corridors needed to be scored using the full range of impacts – from significantly adverse to significant benefit – in which case seven natural breaks were used.*

The technical evaluation was documented and presented to the HCT Subcommittee for review and consideration. After considering several options for balancing evaluation criteria, the subcommittee determined that an equal weighting of all adopted criteria was the best determinant of project prioritization and was most reflective of public input, RTP goals and the 2040 Growth Concept vision.

### Local aspirations workshops



Making a vision a reality is not a simple task. Metro initiated a local aspirations process to help each community establish its own voice as the region prepares for regional growth management and transportation systems decisions in 2009 and 2010.

These decisions include the identification of transportation investment priorities and how to best accommodate the next 20 to 50 years of population and employment growth. Over the long term, the aspirations of local communities to accommodate that growth will inform the deployment of Metro's technical and financial assistance to support communities in implementation of the 2040 Growth Concept, the region's blueprint for managing growth.

To inform these decisions and use regional investments wisely, Metro held four workshops to understand the aspirations of each unique community and engage in an ongoing dialogue with local partners to document community aspirations as related to high capacity transit.

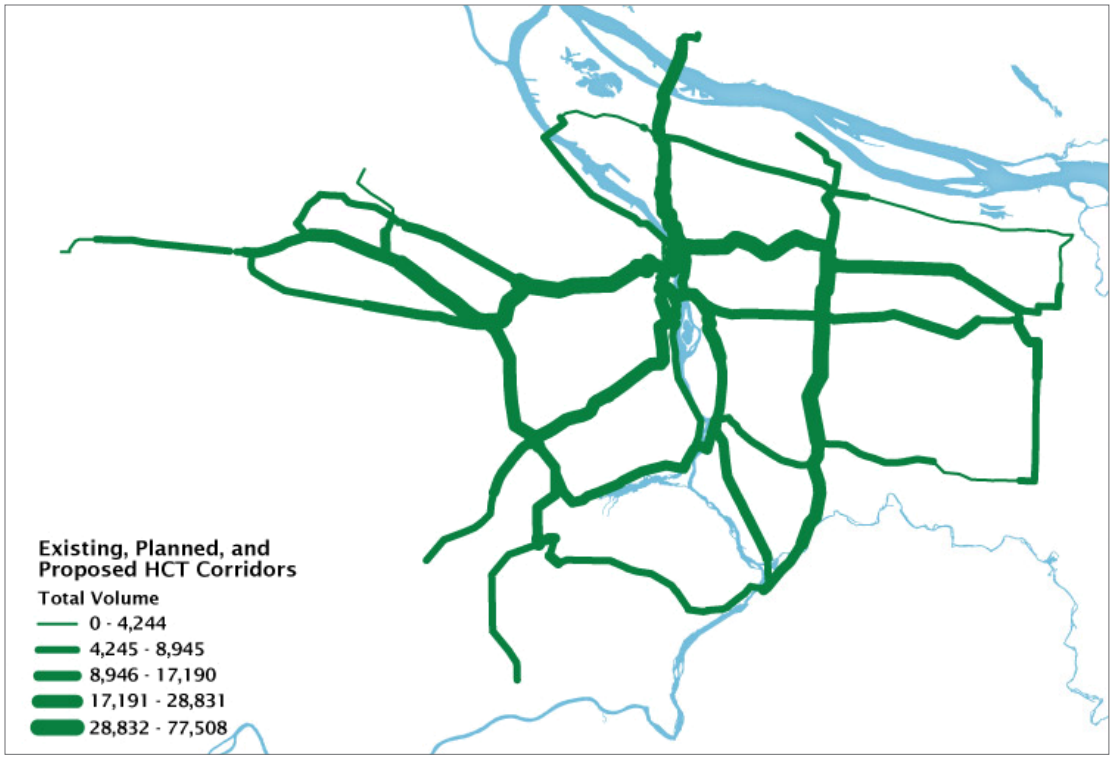
## EVALUATION RESULTS AND ADVANCEMENT PROCESS

The Regional High Capacity Transit System Plan identifies near- and long-term regional HCT priorities. The system expansion policy component of the HCT plan provides a framework to advance future regional HCT corridors by setting targets and defining regional and local actions that will guide the selection and advancement of those projects.

All corridors were evaluated assuming light rail transit as the primary investment mode. This decision was made to simplify evaluation requirements and to ensure that all corridors were evaluated evenly. A more detailed analysis of each corridor is included in the Regional High Capacity Transit System Plan detailed evaluation report (Nelson\Nygaard, July 2009), including a discussion of other viable HCT modes. Ultimately, mode decisions will be made as corridors enter into the Federal Transit Administration Alternatives Analysis process. Corridor communities that wish to consider lower cost transit modes can use system expansion policy targets to assess whether a different mode could improve the priority ranking of their project (see system expansion policy framework section, page 25).

The full detail of the screening and corridor evaluation are included in technical reports available on Metro's web site at www.oregonmetro.gov. Highlights from these reports are summarized below.

**Figure 2.7: Future transit ridership volumes for evaluated corridors**




## High capacity transit priority tiers

All corridors that were evaluated in detail are priority regional transportation corridors in which future high capacity transit could serve an important function. Certain corridors are much more viable in the near term. To distinguish near-term regional priorities from corridors that will need time to develop, a simple set of priority tiers was established. The set of near-term projects was constrained to two or three based on the region's history of project implementation. In the past 25 years, Metro and TriMet have taken on a major investment analysis about every three years. If regional policy makers were to choose to dedicate more resources toward HCT corridor evaluation and development, it could influence the number of HCT projects the region takes on over time and the speed of HCT system expansion. Metro and TriMet are constrained when it comes to working with the federal government to obtain funding for capital development. For example, obtaining funding through the Federal Transit Administration's New Starts grant process takes seven or eight years on average from initiation of a federal alternatives analysis to completion of a full funding grant agreement.

The Regional HCT System Plan recommends near-term regional priority corridors receive top priority for advancement to a federal alternatives analysis, federal funding and implementation. However, no corridor is guaranteed advancement, and every corridor has the opportunity for rapid advancement by meeting system expansion policy targets to be defined in the 2010 Regional Transportation Plan update.

Figure 2.8 summarizes the priority tiers and (with figures 2.9 to 12) shows which projects were ranked in each tier. Priority tiers will be updated each time the Regional Transportation Plan is updated or by amendment to the RTP.

**Figure 2.8: Summary of HCT priority tiers**

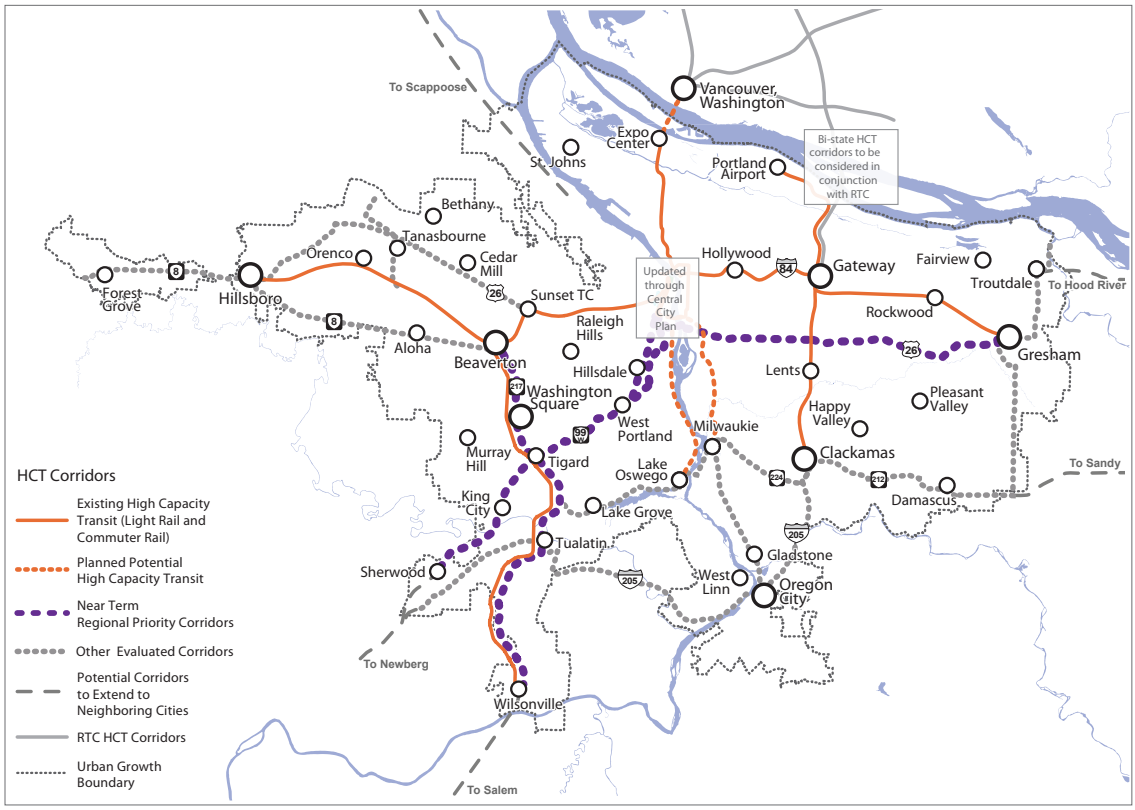
| Tier | Tier description | Corridors** (not listed in order of performance) |
|---|---|---|
| Near-term regional priority corridors | Corridors that are most viable for implementation in next four years. | 10 – Portland city center to Gresham (in general Powell Boulevard corridor)<br>11 – Portland city center to Sherwood (in general Barbur Boulevard / Highway 99W corridor)<br>34 – Beaverton to Wilsonville (in general WES commuter rail corridor)* |
| Next phase regional priority corridors | Corridors where future HCT investment may be viable if recommended planning and policy actions are implemented. | 8 – Clackamas Town Center to Oregon City Transit Center via I-205<br>9 – Milwaukie to Oregon City Transit Center via McLoughlin Boulevard<br>17 – Sunset Transit Center to Hillsboro<br>17D – Red Line extension to Tanasbourne<br>28 – Washington Square Transit Center to Clackamas Town Center via I-205<br>29 – Washington Square Transit Center to Clackamas Town Center (via abandoned railroad)<br>32 – Hillsboro to Hillsdale<br>55 – Gateway to Salmon Creek** |
| Developing regional priority corridors | Corridors where projected 2035 land use and commensurate ridership potential are not supportive of HCT implementation, but which have long-term potential due to political aspirations to create HCT supportive built form. | 12 – Hillsboro to Forest Grove<br>13 – Gresham to Troutdale extension |
| Regional vision corridors | Corridors where projected 2035 land use and commensurate ridership potential are not supportive of HCT implementation. | 13D – Troutdale to Damascus<br>16 – Clackamas Transit Center to Damascus<br>38S – Tualatin to Sherwood |

***Corridors presented in each tier are sorted by numeric order only; corridor numbers refer to identifications used in the scoring and evaluation processes.*

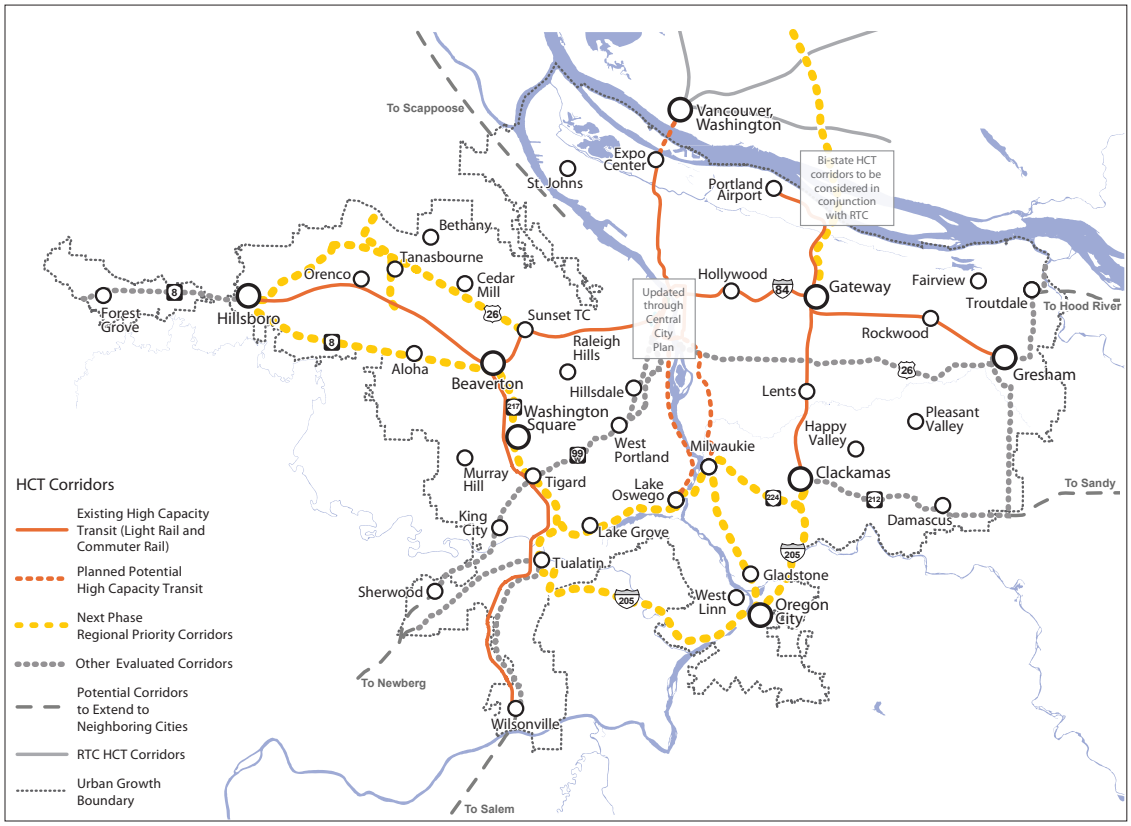
**Corridor 34: WES frequency improvements to 15-minute all day service are currently included in the state RTP financially constrained list of projects. The project as included in the RTP represents this level of improvement phased in over time, not construction as light rail as evaluated in the Regional HCT Plan technical evaluation.*

***Corridor 55 (Gateway to Salmon Creek) was selected as part of the Southwest Washington Regional Transportation Council HCT System Plan and was not ranked based on evaluation criteria used in this plan.*

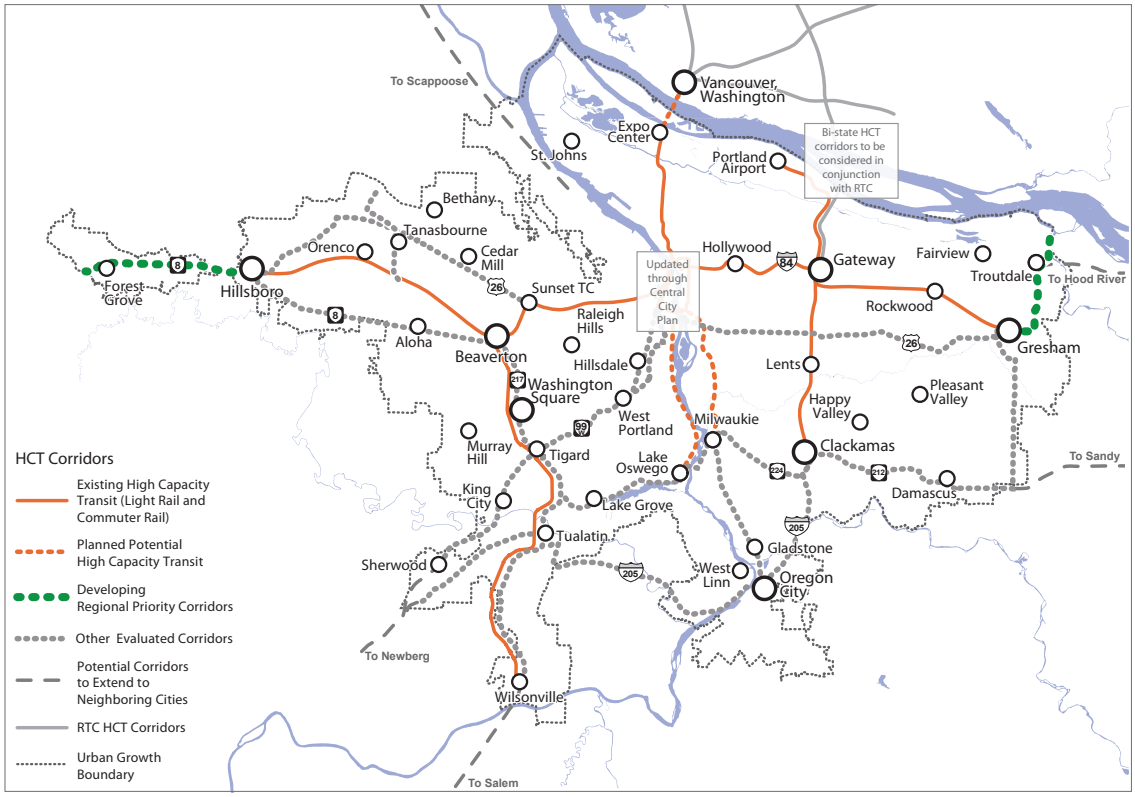
## Figure 2.9: Near-term regional priority corridors



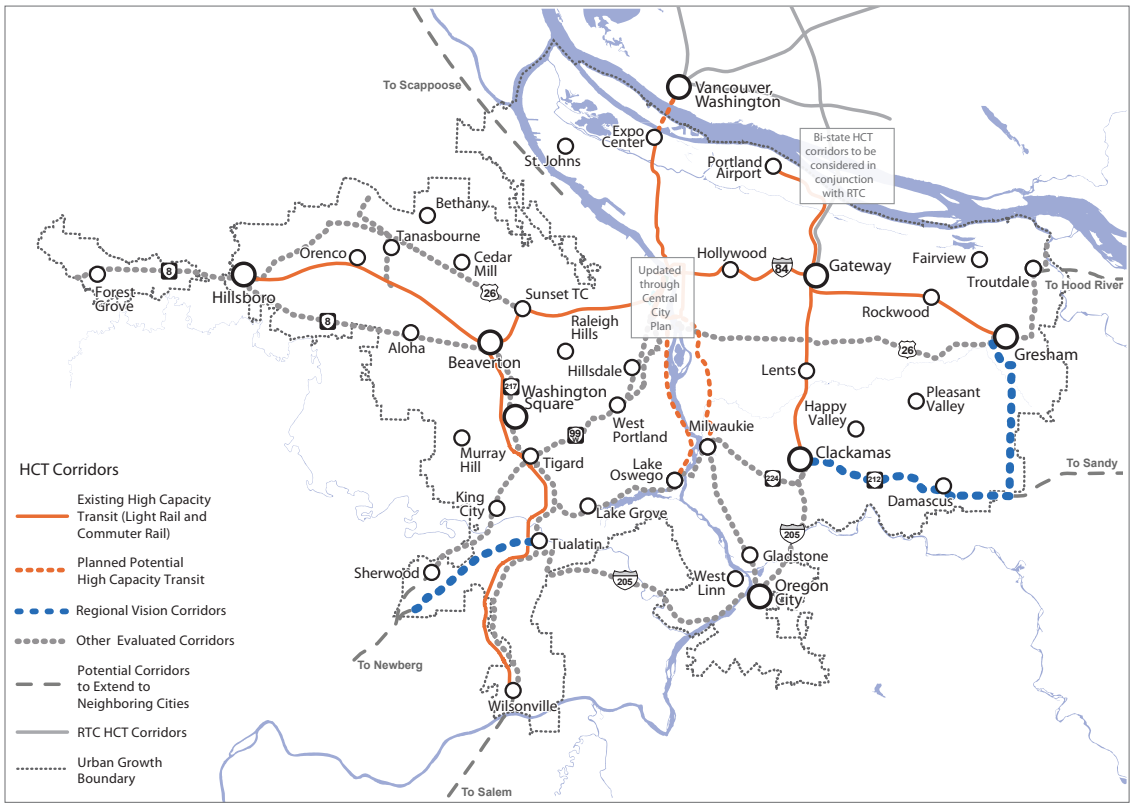

## Figure 2.10: Next phase regional priority corridors



## Figure 2.11: Developing regional priority corridors




## Figure 2.12: Regional vision corridors



"The Portland region is more fortunate than most. It has already defined a future vision by adopting the 2040 Growth Concept of compact, mixed-use development designed for walking and bicycling. Now it needs to support this ambitious vision with a transportation system that will make it work: a regional framework of light rail transit connected by frequent and reliable bus and streetcar service to smaller centers and neighborhoods, supported by safe and convenient facilities for pedestrians and bicyclists of all ages.

"The criteria for implementing this system needs to be not increased mobility or even reduced congestion, but the social and economic vitality of all of the region's communities. Therefore, the public's investment in transportation must further other regional goals. Light rail stations and transit centers must be located and designed to attract the stores, businesses, and housing that revitalizes and sustains neighborhoods. Public transit must connect residential areas and employment centers."—*Myron Orfield, "Portland Metropolitics," Coalition for a Livable Future, July 1998.*

## SYSTEM EXPANSION POLICY FRAMEWORK

The system expansion policy framework is designed to provide a transparent process agreed to by Metro and local jurisdictions to advance high capacity transit projects through the tiers. The framework is based on a set of targets designed to measure corridor readiness to support a high capacity transit project.

The system expansion policy framework:

1. identifies which near-term regional priority corridors perform best in the analysis and therefore appear to be the best candidates to move into the federal project development process toward implementation
2. delineates a process by which potential HCT corridors can move closer to implementation, advancing from one tier to the next through a set of coordinated Metro and local jurisdiction actions.

Based on the tiered category, regional actions would be aligned with concurrent work in each corridor while local actions would focus on meeting HCT system expansion targets. In near-term corridors, formal corridor working groups would be established. Other corridors would coordinate work through existing processes.

Figure 2.13 illustrates the process for project advancement under the system expansion policy.

### System expansion policy framework concepts

This section elaborates on terms used in Figure 2.13 to describe local actions, regional actions and targets proposed for HCT project advancement. The process for advancing projects and specific targets for project advancement will be refined as part of the Regional Transportation Plan update.

**Figure 2.13: Local actions matrix**

| Tiers | Potential local actions | Potential regional support | Potential system expansion targets | Potential strategies |
|---|---|---|---|---|
| Near-term regional priority corridors | Develop corridor problem statement.<br>Define corridor extent.<br>Assess corridor against system expansion targets.<br>Create ridership development, land use and TOD plans for centers and stations.<br>Assess mode and function of HCT.<br>Create multimodal station access and parking plans.<br>Assess financial feasibility. | Create land use and TOD plans for centers and stations.<br>Analyze station siting alternatives.<br>Coordinate with MTIP priorities.<br>Perform multi-modal transportation analysis.<br>Create multimodal station access and parking plans.<br>Start potential alternatives analysis. | Transit supportive land use/station context<br>Community support<br>Partnership/political leadership<br>Regional transit network connectivity<br>Housing needs supportiveness<br>Financial capacity – capital and operating finance plans<br>Integrated transportation system development | Corridor working group<br>Existing land use and transportation working groups |
| Next phase regional priority corridors | Develop corridor problem statement.<br>Define corridor extent.<br>Assess corridor against system expansion targets.<br>Create ridership development, land use and TOD plans for centers and stations.<br>Assess mode and function of HCT. | Create land use and TOD plans for centers and stations.<br>Analyze station siting alternatives.<br>Coordinate with MTIP priorities. | Transit supportive land use/station context<br>Community support<br>Partnership/political leadership<br>Regional transit network connectivity<br>Housing needs supportiveness<br>Financial capacity – capital and operating finance plans | Existing land use and transportation working groups |
| Developing regional priority corridors | Develop corridor problem statement.<br>Define corridor extent.<br>Assess corridor against expansion targets.<br>Create ridership development, land use and TOD plans for centers and stations. | Create land use and TOD plans for centers and stations.<br>Analyze station siting alternatives. | Transit supportive land use/station context<br>Community support<br>Partnership/political leadership<br>Regional transit network connectivity | Existing land use and transportation working groups |
| Regional vision corridors | Develop corridor problem statement.<br>Define corridor extent.<br>Assess corridor against system expansion targets.<br>Create ridership development, land use and TOD plans for centers and stations. | Create land use and TOD plans for centers and stations. | Transit supportive land use/station context<br>Community support | Existing land use and transportation working groups |

## Local action descriptions

Local actions would be structured to help local jurisdictions move their project toward targets set for project advancement. Some or all of the following actions could be taken to advance a project, depending on the tier placement.

**Develop corridor problem statement:** The corridor problem statement defines the purpose of and establishes goals for the proposed HCT investment (i.e., congestion mitigation, economic development, etc.). It assesses the role of the project in addressing other regional transportation priorities and identifies opportunities for integration with other transportation system improvements in the corridor.

**Define corridor extent:** As in a federal alternatives analysis, the definition of corridor extent could encompass multiple alignment corridors or options.

**Assess corridor against system expansion targets:** Progress toward all system expansion targets for the current priority tier is identified.

**Create ridership development, land use and transit-oriented development plans for centers and stations:** Assessment of potential future ridership based on current land use projections, identified station areas and local zoning. This might involve demand modeling, but could effectively use Transit Orientation Index (TOI) scores within one-half mile of identified station areas. A ridership development plan could include assessment of TOI score, residential density, employment density, potential cost-effectiveness and transit supportive land uses (zoning and station typology aspirations).

**Assess mode and function of HCT:** The HCT modes that are most relevant for meeting the primary function of a corridor's problem statement are defined. Selection of a lower cost mode could improve the corridor's ability to meet targets.

**Create multimodal station access and parking plan:** The station access plan would ensure that station designs optimize opportunities for intermodal connections and transit-oriented development by planning for an urban block pattern. The parking management plan would help local jurisdictions develop transit-supportive parking policies that include development of potential parking districts. It could also establish maximum parking requirements, pay-for-parking, park and ride development and management plans, and other parking code changes such as unbundling parking for new development.

**Assess financial feasibility:** Financial feasibility of the region to advance an HCT project is examined. The analysis would consider and propose incentives to finance existing and future infrastructure improvements, using tools such as system development charge credits, tax abatement, improvement districts and tax increment financing.

## Regional support descriptions

Regional support will be necessary to advance any corridor. Regional actions may already be in place, such as work coordinated through the transportation system plans; however, specific regional actions to support HCT project advancement would vary based on the tier.

**Create land use and transit-oriented development plans for station areas:** Land use and transit-oriented development plans for corridors would be reviewed for local areas to ensure that station areas within a defined corridor extent can meet defined targets for ridership and transit supportive land use.

**Analyze station siting alternatives:** Locations of stations are critical to the success of the HCT system. Metro has advanced tools to work in tandem with locals to assess the trade-offs between potential station areas.

**Coordinate with Metropolitan Transportation Improvement Program priorities:** HCT investments should align with regional priorities for transportation and land use investments. MTIP prioritization would support development or preparation of a corridor as an HCT project.

**Perform multi-modal transportation analysis:** Metro will assist with the preparation and production of transportation modeling for near-term regional priority corridors. Metro will assist corridors in other tiers as well; however, methods may vary.

**Create station access and parking plans:** Parking availability is one of the strongest determinants of transit ridership and has the potential to add significant value to leverage regional HCT investment. Metro has tools for the region to review parking plans for all land use types; regional support action will coordinate with and aid local action.

**Start potential alternatives analysis:** The region can begin the process to help projects advance into federal alternatives analysis process.

## Proposed system expansion target descriptions

A small set of system expansion targets will be identified to measure project readiness and contribution to regional goals. These targets will provide clear direction to local jurisdictions that desire to advance projects. System expansion targets would vary based on the tier.

**Transit supportive land use/station context:** Under this target, each station along a proposed alignment should be evaluated for ridership potential based on the jurisdiction's demonstrated willingness to promote transit supportive development. Specific targets could be set for residential, commercial and employment density in station areas. Additionally, each station should undergo an evaluation to determine: (1) the capacity for station area development, (2) ability to create good station access for all modes and (3) any issues with station capacity or functionality.

**Community support:** This measure would be qualitative, based on expressed support for HCT service in the corridor.

**Partnership/political leadership:** This measure would be qualitative based on demonstrated political leadership, development of strategic partnerships and demonstrated advancement of local aspirations.

**Regional transit network connectivity:** This measure would assess the role the project plays in filling key regional transit system gaps, connectivity with the existing and planned systems and ability for existing system facilities to support the investment. It would also measure a project's impact on the regional HCT system's ability to increase system capacity to deal with malfunction, incident or construction/maintenance, and the ability for existing station and track infrastructure to support the investment.

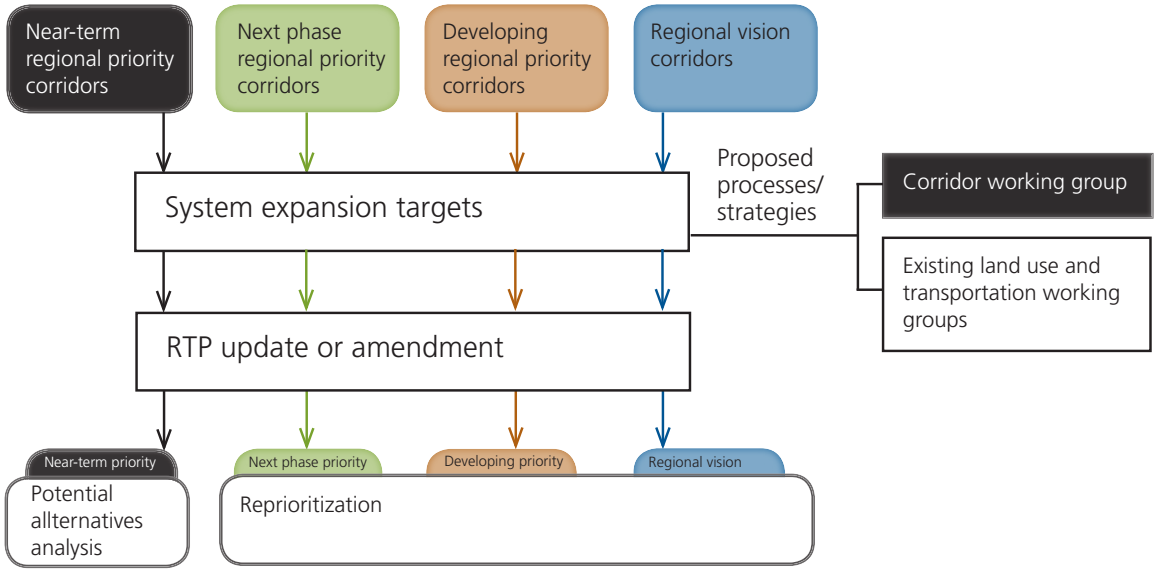
**Housing needs supportiveness:** This measure would assess the contribution of the project to improve overall housing and transportation affordability for populations of concern.

**Financial capacity (capital and operating finance plans):** This measure would assess the capacity to fund capital and operations with no significant negative consequences on existing infrastructure or transit system operations. This evaluation could include:

> **Capital finance plan:** A qualitative rating based on whether a project is partially or fully funded, the availability of local capital funds and competition for funding that is needed for core system capacity enhancements or maintenance.
>
> **Operating finance plan:** A preliminary analysis of the financial capacity to operate using measures such as estimated farebox recovery, cost-effectiveness (total annualized operating and capital cost per passenger), and the stability, reliability and availability of proposed operating subsidy.

**Integrated transportation system development:** This measure would quantitatively assess the role each project would play in addressing a broad range of regional transportation priorities, particularly those priorities for the mobility corridor in which the corridor is located.

**Figure 2.14: System expansion policy process**



# HIGH CAPACITY TRANSIT SYSTEM DEVELOPMENT

This plan reviews and prioritizes future regional high capacity transit corridors for the Portland metro region. A critical consideration when prioritizing a HCT investment is how well the corridor integrates into the entire transit system, including the conventional bus and streetcar system. The region's transit system should be designed to be responsive to a wide range of travel needs and diverse customer markets while also furthering key transportation and land use policy objectives. As corridors advance and are studied more carefully, there are a number of system considerations that should be evaluated. This section frames the context in which the regional system has developed to date and identifies key system design considerations for future system expansion and enhancement.

> "One of the basic principles of urban planning is that the distribution and intensity of land use should be coordinated and balanced with a transportation system that will accommodate the movement of people and goods within the community of region. The transportation system can be utilized as a principal tool in developing proper land use patterns, thus allowing land-use planning and transportation planning to reinforce on another. An effective regional policy to integrate land use development planning and transportation planning will intensify rapid transit's catalyst effect upon the distribution of future land use developments."—*National League of Cities & US Conference of Mayors, 1973*[1]
>
> 1 *Banfield Transitway Project, technical report, light rail transit land use considerations, TriMet, 1977*

## DEFINING HIGH CAPACITY TRANSIT

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.

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[1]
- 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.

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.

## SYSTEM DESIGN CONSIDERATIONS

While individual proposed high capacity transit corridors will need to have independent value to merit future investment, it is also critical to consider the role each new line or extension plays in developing the region's transit and broader transportation system. This section discusses some considerations in system design that will be important as new lines are studied in more detail.

1 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.

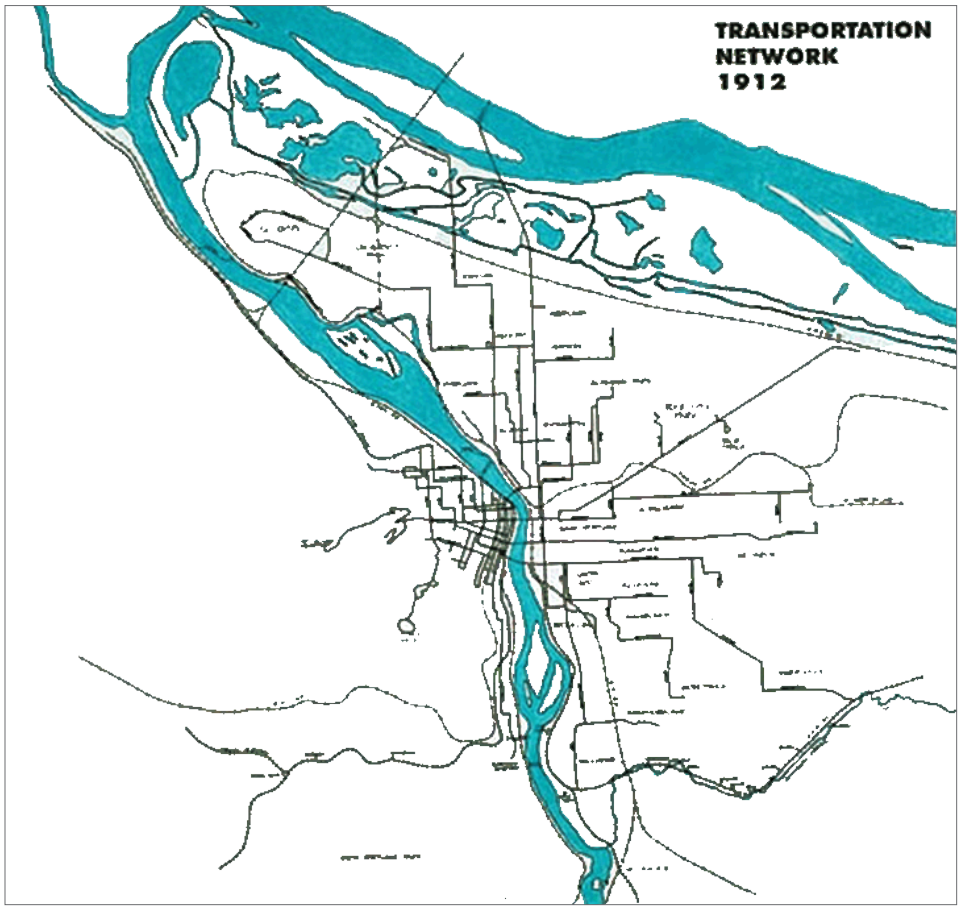
## Grid versus radial system

The historic urban form of the Portland area was influenced by developers who organized new neighborhoods around streetcar and interurban rail transport. By the early 1900s, Portland and surrounding developed areas were organized around a dense series of radial rail corridors operated by Portland Railway Light and Power Company and the City and Suburban Railway Company. By 1904, there were over 100 miles of operating rail service; this amount increased as new lines were added into the 1920s.

The radial streetcar and interurban network brought workers to downtown Portland, creating a strong business district, and returned workers to neighborhood centers such as Irvington, Richmond, St. Johns, Council Crest and Lake Oswego. Today, many of TriMet's frequent service bus lines follow the historic streetcar network, and Portland's most vital neighborhood centers and main streets are on former streetcar corridors. As the region has grown, downtown Portland has continued to serve as the regional employment and entertainment center. As in the past, the region's modern rail system plays an important role in maintaining a strong, region-serving central city district.

Given the historic development of the region, a radial high capacity transit structure continues to serve current and projected travel patterns in the Portland region well. Strong linkages remain between key regional markets and the Portland central city. Development of the near-term regional priority corridors identified in this report (Portland to Sherwood and Portland to Gresham via

**Figure 3.1: 1912 Portland streetcar system**



### European Street Trams

The distinction between urban streetcars – smaller trains operating in mixed-traffic with limited priority – and light rail transit, which is typically developed using exclusive rights of way, has been blurred in many European cities which have taken an integrated approach, combining the best attributes of each.

These European street tram systems, which have been constructed in places like Lyon, Dublin, Hanover, and Nantes over the past few decades, use larger vehicles with sleek styling of a modern streetcar but with capacities comparable to a light rail train. They operate in dedicated rights of way with traffic priority on urban streets, comparable to Portland's downtown light rail operations, but also stress urban integration and the placemaking value of rail investments. As the Portland metro region continues to lead the nation in building great communities, rail mode integration will be a critical consideration.



*Nantes, France*



*Dublin, Ireland*

Southeast Powell Boulevard) along with planned MAX service to Milwaukie and Vancouver, Wash. and a rapid streetcar extension to Lake Oswego will create a robust radial high capacity transit network. An extension of the Interstate Highway 205 MAX line or Milwaukie MAX line to Oregon City would further enhance this radial system. New cross-region or circumferential routes, which create grid connections between key regional markets, may become priorities for the region once the radial system is fully realized and regional markets can generate enough riders to justify the HCT investment.

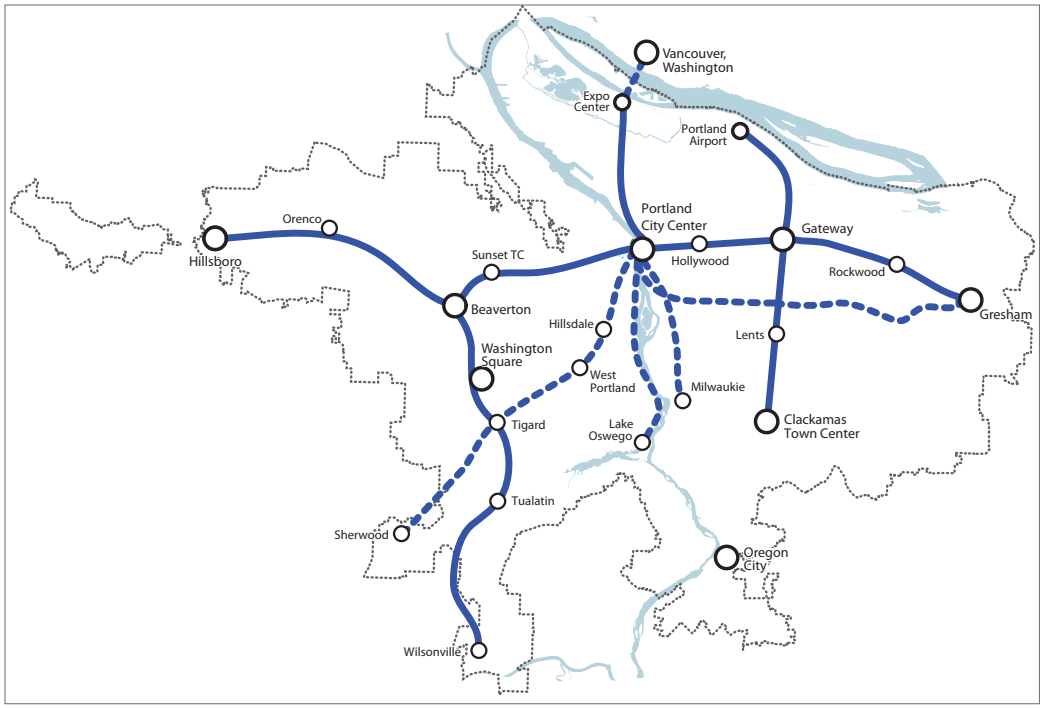
Much like a grid street network, which uses perpendicular streets crossing at regular intervals, a HCT grid network provides service in a series of linear corridors crossing frequently across a city or region. Grid systems provide additional person carrying capacity and travel choices but are only feasible if there are enough riders to support parallel lines. Consistent, high frequencies are required for a grid system to work well, so transfer time between lines is minimized. Once the radial HCT system illustrated in Figure 3.2 is complete, new cross-region investments in HCT may be more viable. Some of the most heavily used TriMet bus lines in the region are cross town routes that connect neighborhoods and centers outside of downtown. Future benefits of a grid HCT system include:

- strengthened regional and town centers
- increased travel options to, from and within regional and town centers
- reduced travel times for cross-region trips.

This plan determines that near-term regional priority investments in the HCT system are best aimed at extending the radial network and increasing the person carrying capacity of services to the central city. The additions of the planned Milwaukie and Vancouver extensions of the Yellow Line and Lake Oswego rapid streetcar will dramatically improve the radial network south and north of downtown Portland. This study suggests the next regional priorities are two new radial lines to Southeast Portland/Gresham and Southwest Portland/

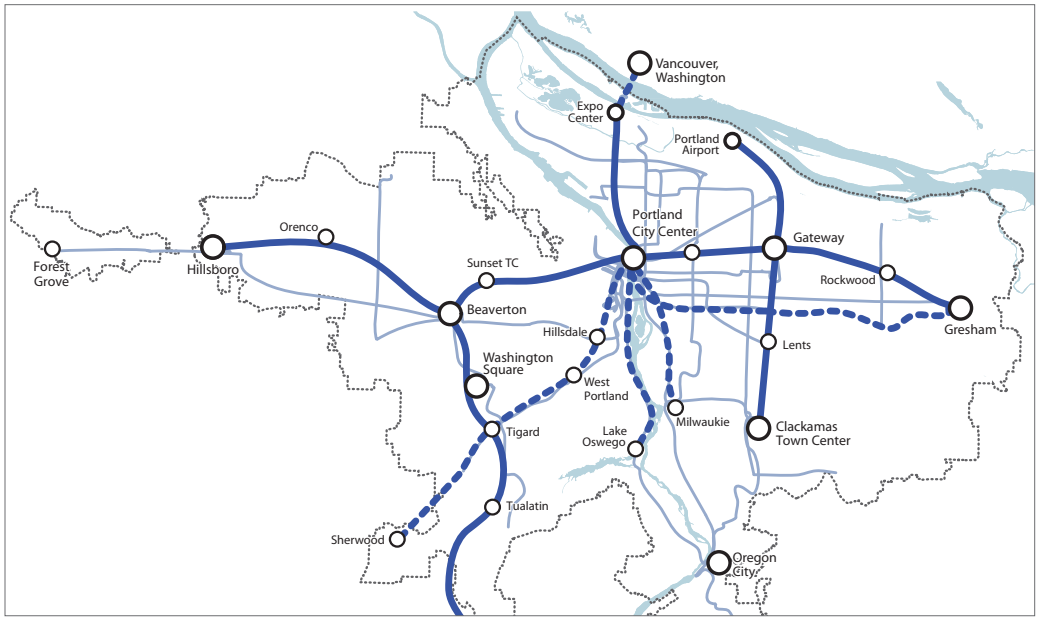
Tigard (possibly continuing to Sherwood). Furthermore, system analysis shows that the highest value investments in terms of riders gained per dollar of capital and operating investment would be the inner portions of these two regional priority corridors. Indeed, two short radial lines may provide a much greater transportation benefit than a single long corridor. This is an important consideration as the region evaluates future high capacity transit investments. Well within the timeframe of this 30-year plan, cross-region investments in HCT are likely to advance as regional priorities. In particular, an east-west alignment south of Portland connecting the I-205 corridor with Milwaukie, Lake Oswego, Tigard and Washington Square appears to be a strong candidate for a cross-region HCT line. With the Westside Express Service (WES), the Green Line, the Milwaukie extension of the Yellow Line, the Lake Oswego streetcar and a future Barbur Boulevard HCT investment in place, this new line crossing the southern metro region would increase transit connectivity to downtown via connections to multiple high capacity lines as well as provide an important connection between growing 2040 Growth Concept-identified regional and town centers.

**Figure 3.2: Existing and near-term regional priority HCT corridors**



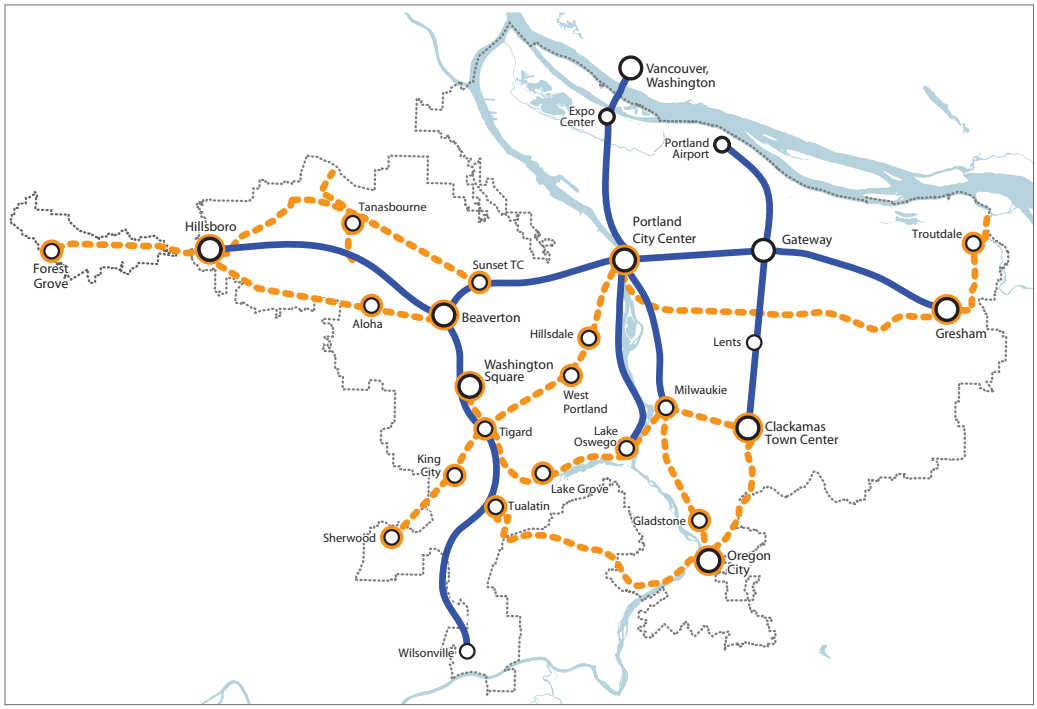

*This map shows the existing high capacity transit network (solid lines) along with the planned and near-term HCT corridors (dashed lines). The existing and planned HCT network is largely radial in nature with service oriented to the central city.*

**Figure 3.3: Existing, planned and near-term regional priority HCT corridors and frequent bus network**




*This map shows the existing, planned and near-term HCT corridors (solid and dashed dark blue lines) with the potential frequent service network (in light blue). The frequent service network provides extensive cross-regional connections to the radial HCT system, forming the basis of a grid transit network with service oriented to the central city.*

**Figure 3.4: Existing, planned and regional priority HCT corridors**




*This map shows the existing and planned HCT corridors (solid blue) along with all of the near-term, next phase and developing regional priority HCT corridors. This HCT network more closely resembles a grid network with several new cross-region connections.*

## Network density (versus system coverage)

The region's light rail system was developed to fit the unique characteristics of the region, including downtown Portland's 200-foot blocks, which limit MAX light rail trains to two cars (many light rail systems can operate three- or four-car trains). As the region grows and demand for high capacity transit increases, particularly to downtown Portland, the system will need to increase its capacity to carry passengers. There are a few viable options to increase HCT person carrying capacity over time:

- increase service frequency (number of trains per hour) on existing lines
- add new lines to the system that serve parallel radial markets, preferably with at least 1-mile spacing between lines
- construct a tunnel under downtown that would allow some trains to operate with more than two cars and to travel faster through downtown Portland. However, the analysis for the HCT showed that, though a tunnel would increase travel speeds, the losses in direct walk access outweigh the benefits in the planning horizon.

The person carrying capacity of the region's transit system is anticipated to increase over time as new lines open and/or service frequency is increased to deal with increased demand. For example, the Green Line will add passenger capacity in the Banfield corridor where it will operate with Blue Line and Red Line service.

## Branching

Branching uses the strategy of allowing high capacity transit lines with different terminus locations to use the same route for the bulk of their run. In the current MAX system, the Green, Red and Blue lines branch at the Gateway Transit Center (after sharing tracks and stops through the Banfield corridor). As the Portland metro region expands its rail system, the strategy of branching lines should be considered in more cases. This is particularly effective where a strong inner line segment exists, but there are multiple options for a line terminus. Branching can eliminate the need to make difficult decisions between relatively equal outer termini markets and can help deliver higher frequency service on inner line segments.

As the system evolves and new corridors are studied in detail, there will be other opportunities for branching light rail or other high capacity services. It is important to recognize that lines radiating from the central city have the opportunity to serve a triangular area, expanding as the corridor moves away from the central city. Corridor 11, which is described as a general corridor from Portland to Tigard and on to Sherwood in the vicinity of the Southwest Barbur Boulevard, is one of the corridors given top regional priority in this study and provides a good example of a corridor where branching opportunities should be evaluated. In this case, the three strongest terminus markets are Tigard, Washington Square and Tualatin. It would be difficult to serve all directly with a single line. A Tigard line that branched at Hillsdale Highway to serve Washington Square or Tualatin could provide service to both destinations on equal headways and deliver service at half the headway to Hillsdale and Oregon Health Science University.

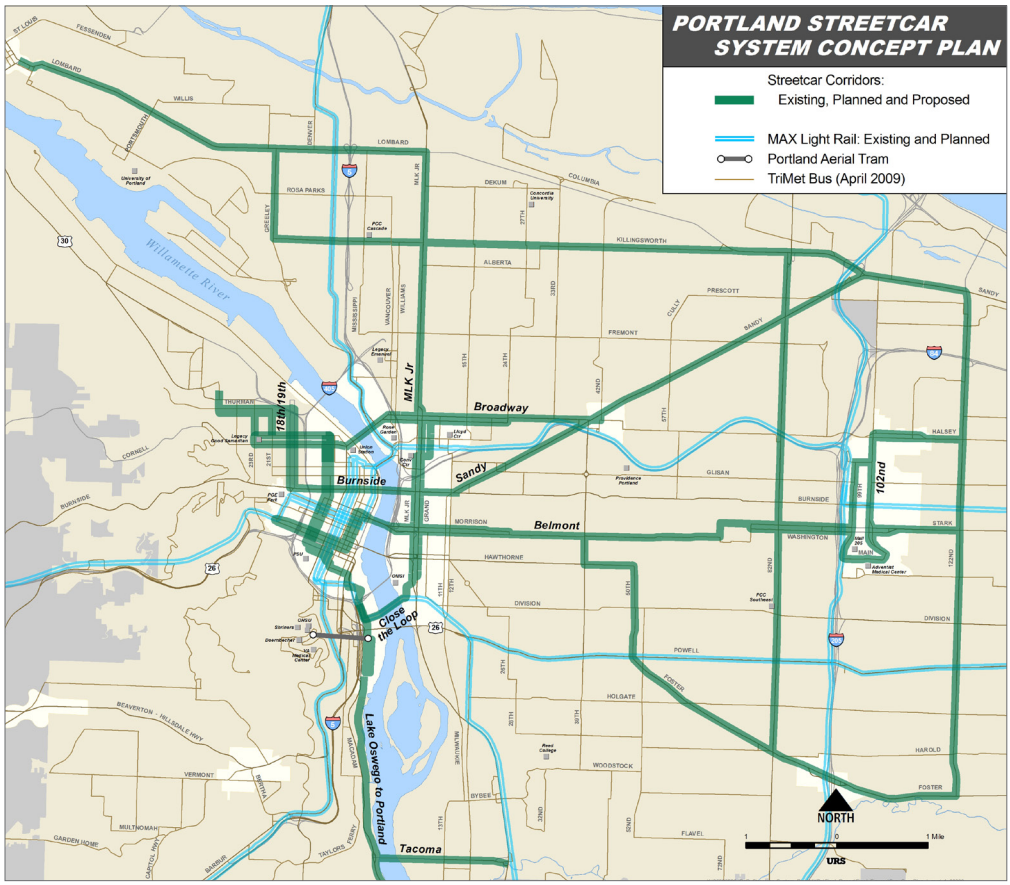
## Portland Streetcar System Concept Plan and rail interoperability

The City of Portland Bureau of Transportation and Bureau of Planning are conducting a Streetcar System Plan in coordination with the TriMet and Metro. The Streetcar System Plan is a long-range study that will identify transit corridors in Portland with the highest potential for more detailed analysis in future years. Key goals of the plan are to:

- reinforce walkable and economically diverse neighborhoods and vibrant main streets
- encourage sustainable and equitable development and infrastructure
- support reduction of vehicle trips
- support greater accessibility, housing options, employment and economic development.

Figure 3.5 illustrates draft corridors identified in the system plan. These may change as the plan is finalized.

**Figure 3.5: Draft Streetcar System Plan map**




*Draft Streetcar System Concept Plan map from the public review draft of the Portland Streetcar System Concept Plan, July 2009. This draft map is subject to revisions.*

Certain corridors identified as potential long-range streetcar lines were excluded from consideration in the Regional High Capacity Transit System Plan. However, an important future consideration is the interoperability of MAX light rail and Portland streetcar systems. Currently, each system uses slightly different design standards that do not allow MAX trains to operate on streetcar tracks. Because streetcar trains are lighter, a shallower track bed can be used that can save significant cost and cut down on construction time. Careful consideration should be given to future investments to determine whether there may be value in developing segments of streetcar track to support light rail technology. This may have particular value where streetcar tracks could provide alternative routings for MAX, providing system redundancy and protecting the regional transportation system in the case of a major facility failure. For example, streetcar tracks could provide an eastside connection between the Rose Quarter and the Broadway Bridge or the new light rail bridge (to be constructed as part of the Milwaukie line), which would allow MAX trains access to downtown Portland if it were necessary to close the Steel Bridge.

Corridor 43 as initially studied includes a connection between St. Johns and the MAX Yellow Line on North Interstate Avenue but focuses on the Highway 30 corridor as the primary connection between downtown and St. Johns. A more cost-effective way serve St. Johns with light rail may be to branch the Yellow Line at North Lombard Street. Lombard Street is being considered as a streetcar corridor in this area; however, constructing the line to be compatible with both technologies could create the opportunity to serve this area as a MAX extension. Delivering streetcar to St. Johns will require construction of new north-south trackage from the central city, whereas branching the MAX Yellow Line could significantly reduce the total track miles to be constructed. Additionally, the Southeast Foster Boulevard corridor may be a viable alternate to share streetcar and light rail.[2]

## Vehicles

Along with predictable departures and efficient travel times, ensuring adequate vehicle capacity greatly impacts passenger comfort and system reliability. Block lengths in downtown Portland constrain the length of MAX light rail trains, but TriMet is adding capacity by purchasing vehicles that are slightly longer than previous vehicles and have more passenger space by eliminating redundant operator space. This additional capacity comes with a loss of service flexibility so it is still uncertain whether this strategy will continue into the future..

Typical HCT vehicles have low floors and wide doorways that streamline boarding and alighting. These characteristics are important to universal access and should be combined with providing vehicle seating available at various heights, using nonslip fabrics and surface materials, and providing highly visible and tactile yellow warning strips and handles. Choosing vehicle amenities that serve older adults, passengers who use mobility devices and people with strollers and large packages creates a system that is more comfortable and attractive for everyone. Current TriMet procurement practice and guidelines prioritize these features.

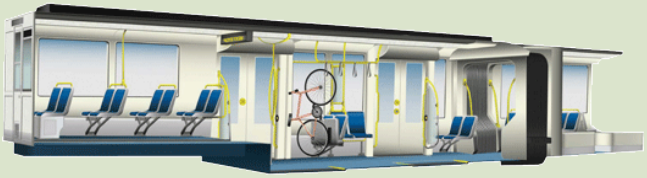
In addition to selecting vehicles with adequate capacity and passenger comforts, agencies brand their systems by choosing highly recognizable vehicle designs. Developing an innovative HCT system offers a special opportunity to choose vehicles that will become a vibrant symbol of the new service, the agency and the region. Sleek, modern designs, unique colors and even "green" fuel propulsion systems can create an iconic vehicle, and may draw upon elements of existing fleet vehicle designs. For example TriMet light rail vehicles, including the new "Type IV" have

2 In the June 2009 Streetcar System Plan materials, the Lombard Street and Foster Boulevard lines are categorized as eventual streetcar corridors. The Southeast Belmont Street line leading to Foster Boulevard is categorized as a planned and/or priority corridor.

### New TriMet MAX vehicles in Portland

In preparation for the new Green Line service rollout in September 2009, TriMet has ordered 22 new Siemens Avanto S70 light rail vehicles. These 70 percent low-floor trains have more passenger capacity than the existing fleet, with eight more seats per train and more room for standees with only 7 feet of additional length. This is due to the parlor cab configuration, a seat layout and interior design that leaves more open space. These vehicles also have an updated exterior, with rounded corners and smooth sloping fronts, but retain MAX's emblematic blue and gold circles in the paint design.



regenerative braking, which recaptures some of the energy from braking and puts it back into the overhead wires for use by other trains on the alignment.

## Service quality

Successful transit services consider the total transit system; this means delivering safe, comfortable, reliable service to passengers in a manner that pleases existing customers and attracts new customers. Key components of service quality stressed in the functional design of HCT are addressed below.

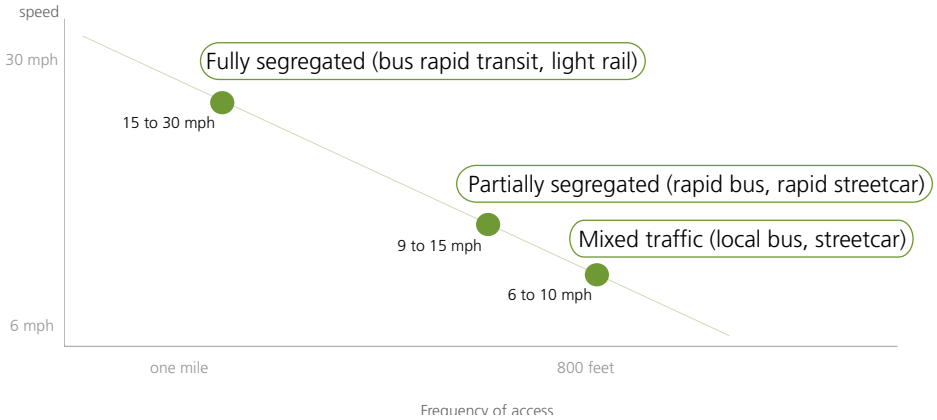
**Service frequency and hours of service.** Frequent service, or service with headways of 15 minutes or less, are generally considered the point at which a person no longer needs to use a schedule. Passengers can rely on a bus or train arriving within a short time frame. Frequent service also makes transfers easier, since the wait time between trip segments is minimal. Transit customers consider wait time at stops doubly punitive compared with in-vehicle delay. Transit agencies often choose their headways based on the demand for transit service in an area. Where there is weak demand, headways are typically longer. Long headways do not offer the same amount of convenience as short headways. As a result, riders must carefully plan their trips, so not to miss any crucial transfers.

Services with an 18-hour span of service provide customers with the security that transit is available to them almost any time they need it. In combination, 15-minute or better frequency and long service spans create a predictable, reliable, livable system, where people can feel comfortable relying on transit for their daily transportation needs. TriMet has expanded frequent service seven days a week from three bus lines in 1999 to 16 bus lines by 2008, and all MAX lines offer frequent service every 15 minutes or more often.

**Speed and reliability.** Urban transit users often have many travel options, including driving, bicycling, walking or taking transit. Each mode offers advantages to people, depending on their circumstances. Most transit users do not expect transit to get them to their destination faster than driving, but they find other benefits that make transit a desirable option.

In order for transit service to be effective, transit speed and access must be balanced. In the case of high capacity transit, access is typically concentrated in select areas in exchange for faster travel speeds, shorter travel times and better on-time performance. Access to only a few station areas emphasizes the need for a good access to these sites by bike, foot, conventional transit service or automobile. Figure 3.6 depicts the direct tradeoff between access and operating speed. Lines with fewer stops have less delay.

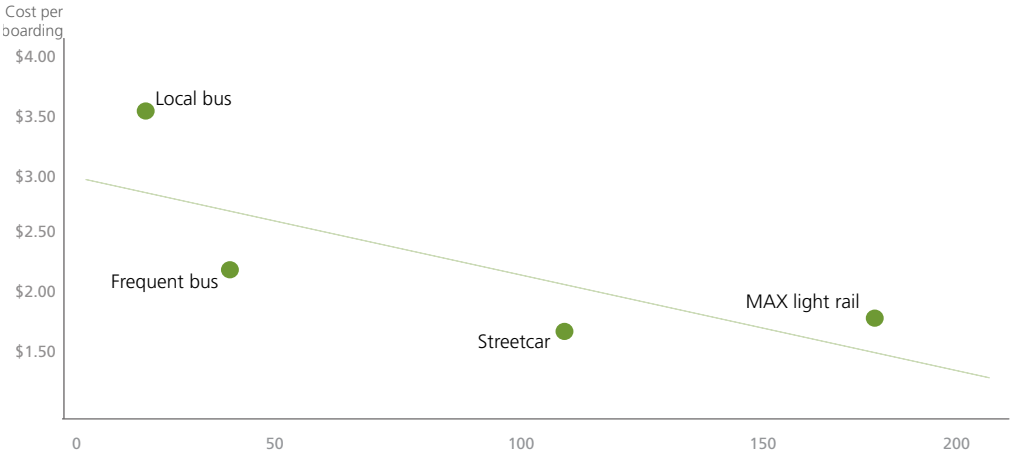
**Figure 3.6: Average speeds relative to stop spacing**




## Capacity

Two key factors determine person carrying capacity in a corridor (assuming the right of way design is established): vehicle type and frequency. Sizing transit service to meet demand is an ongoing challenge. One of the advantages of HCT is, if demand for transit service is high, that it can move a large number of people efficiently at a low operating cost. The Figure 3.7 shows that Portland's regional light rail system, which provides the most passenger capacity per hour of service, is also the most cost-effective way to transport transit passengers in high demand corridors.

**Figure 3.7: Cost per passenger trip for transit modes in the Portland metro region**



## Customer experience

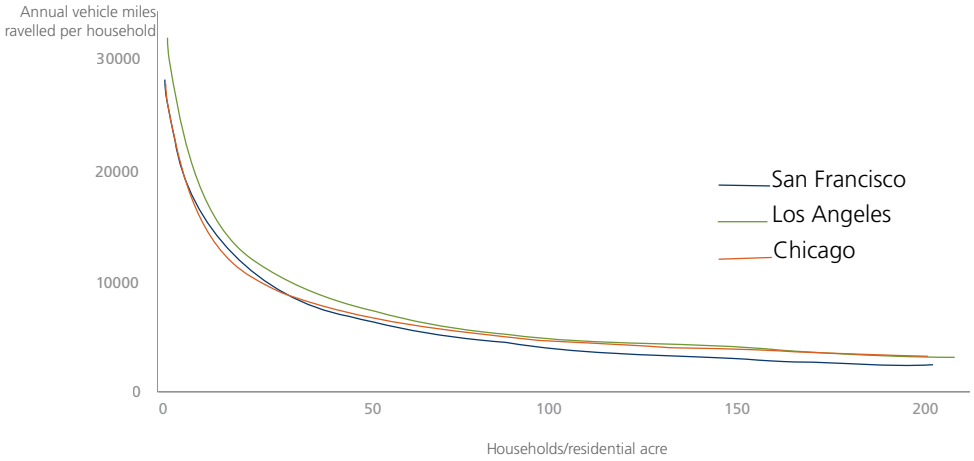
Since their wheels run on tracks rather than pavement and turning movements are more gradual and less frequent, rail vehicles typically deliver a smoother ride than buses, thus making it easier to read or work on board. Seating configurations on rail vehicles are also typically more spacious, although advanced bus rapid transit vehicle configurations are often similar to a small rail car. Modern bus rapid transit vehicles provide comparable level of amenities to rail but are often challenged to provide an equal ride quality. From a purely aesthetic standpoint, transit customers and developers often prefer rail modes and bus rapid transit over local bus, because these modes signify a more permanent and important component of the transportation network. Other factors that can improve customer experience include: large windows, tall ceilings and a clean environment on vehicles, and real-time information, clean environments and covered waiting areas at station areas. Issues related to the customer's experience with transit are further discussed in the system design and usability section later in this report (page 64).

## Land use and urban form

Mixed land uses concentrated within walking distance of HCT stations are critical to fostering walkable communities where transit is the most convenient mode available for longer trips. A detailed regression analysis conducted in the Portland metro region shows that population and employment density can predict 80 percent of transit demand in an area. In other words, where concentrations of residents, jobs and activities are high, so too is the demand for transit.

Denser mixed-use communities also reduce demand for driving, which in turn can satisfy multiple policy goals such as reductions in greenhouse gas emissions, improved roadway operations and reduced capital construction. Figure 3.8 shows residential density's impact on annual vehicle miles travelled (VMT) per household in San Francisco, Los Angeles and Chicago. To achieve the dramatic drop in per capita VMT that occurs as urban neighborhoods transition from 10 to 50 households per acre, high quality transit service and quality pedestrian access must be in place. The most dramatic shift happens between 10 and 30 households per acre. In the Portland metro area, downtown and the Pearl District have an average 24 households per acre and Nob Hill has 28 households per acre. The Lloyd and Hillsdale districts and the Westmoreland and Clinton neighborhoods have an average of between eight and 11 households per acre.

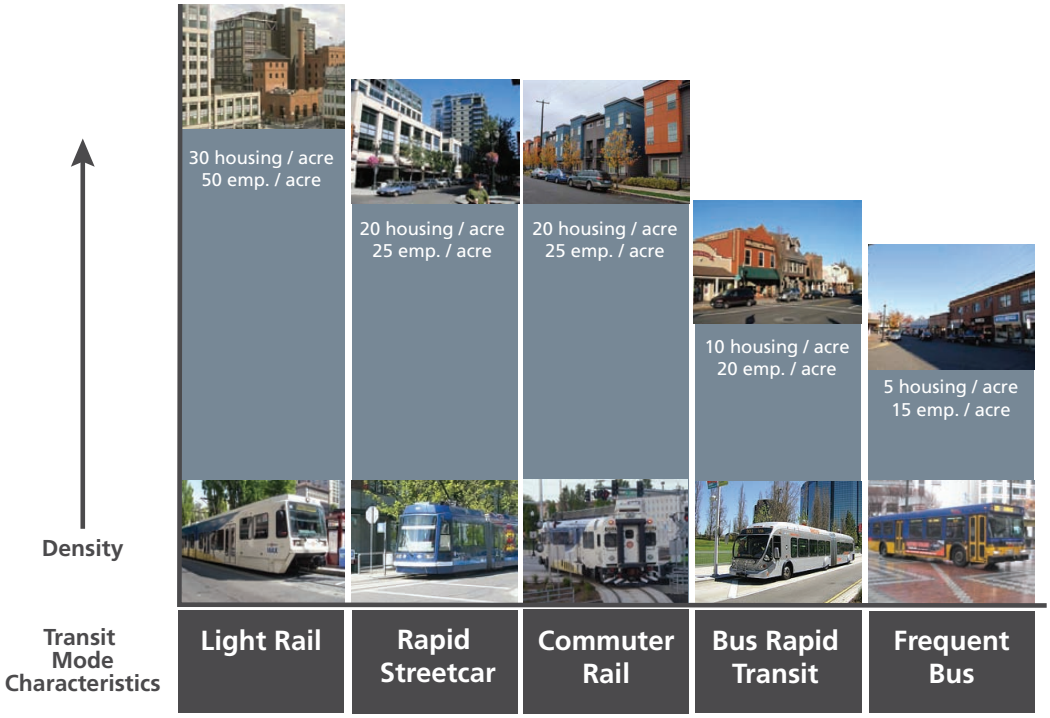
**Figure 3.8: Impact of residential density on driving[3]**




3 Location efficiency: neighborhood and socioeconomic characteristics determine auto ownership and use – studies in Chicago, Los Angeles and San Francisco, Holtzclaw, J. et al., Transportation Planning and Technology, vol. 25, 2002.

Figure 3.9 provides a guide for the average land use densities (within one-half mile of stations) that support various transit mode investments.

**Figure 3.9: Station area density targets for high capacity transit modes**




The transit systems that support the great cities of the world (London, New York, Tokyo, etc.) are emblematic and were essential to the evolution of each city's urban fabric and pedestrian-friendly streets. It is important to note that HCT systems tend to organize development differently than locally serving modes.

- Linear development. Local bus and streetcar typically have a linear impact on density and overall mix of land uses in a corridor since these modes have close stop spacing and provide consistent pedestrian access along the entire line.
- Nodal development. Light rail and bus rapid transit typically provide regional service with wider stop spacing and more developed stations. These modes typically have an impact on density and land use types within a one-third to one-half mile radius of the station.
- Mixed. Rapid bus (on-street bus rapid transit) or modes that mix right of way treatments and/or stop spacing may spur both types of development in different segments of the line.

**Figure 3.10: Mode capacity**

| Local bus, streetcar | Frequent bus | Bus rapid transit, light rail |
|---|---|---|
| *Less capacity* | | *More capacity* |
| *Streetscape doubles as station* | | *High investment in station access* |
| *Supports linear development* | | *Supports nodal development* |

## HCT SYSTEM STATUS

Population growth must be considered first when planning for transportation and economic opportunity. The world's population is growing, and here at home our population is also expanding rapidly. The population of the Portland-Vancouver area grew 26.6 percent between 1990 and 2000, from 1.5 million to 1.9 million.[4] Seventy-five percent of this population lives in the three counties of the Portland metro region, Multnomah County (34 percent), Washington County (23 percent) and Clackamas County (nearly 18 percent). The area's population grows at a rate of 500 people per week, and Metro projects that by 2030 the Portland-Vancouver area will house one million additional residents, raising the population to between 2.9 and 3.2 million – about double what it was in 1990. New forecasts show that by 2030, the population of the Portland metro region and adjacent cities will increase from 1.9 million people to between 2.9 and 3.2 million.[5] By 2060, the Portland region could have between 3.6 and 4.4 million residents and as many as 2.4 million jobs.[6]

Regional transit ridership grew at twice the rate of population growth between 1990 and 2000.[7] TriMet states that though Portland's population has grown 27 percent in the last 10 years, transit ridership has grown 46 percent.[8] The region's 2040 Growth Concept seeks to prepare for the increase in growth in the Portland metro region by encouraging growth and transportation access in seven regional centers and downtown Portland as the central city. Transportation options, including pedestrian and bike access as well as transit, play a large role in facilitating growth within our current capacity. While this growth brings opportunity, it also creates new challenges. Assuming these growth forecasts are correct, the region needs to prepare itself to be able to accommodate new demand with the existing and planned high capacity transit services.

Using regional travel demand model data, an analysis was conducted to assess the ability of the existing and future HCT system to meet demand. In 2005, the existing system consisted of three lines: the Red, Blue and Yellow lines. It has been estimated that in 2005 the existing system, had adequate capacity to accommodate demand (using between 26 to 76 percent of available capacity). For the future model year of 2035, several recently completed corridors and planned transit corridors were modeled to determine how well the system can handle future demand. As shown in Figure 3.11, most of the existing and future capacity will be utilized, but demand can be accommodated with more frequent trains.

4 Statistics for regional population are drawn from the Census Bureau's designation of the "Portland-Vancouver Primary Metropolitan Statistical Area" and include Multnomah, Washington and Clackamas counties as well as Clark, Columbia and Yamhill counties. This Portland-Vancouver area differs from the Metro's service area of the Portland metro region which includes Multnomah County and parts of Washington and Clackamas counties and is the focus for Metro's transportation and land use planning.

5 20 and 50 year Regional population and employment range forecasts – draft, Metro, March 2009.

6 *Ibid.*

7 Transportation Investment Scenarios, Metro, November 2008.

8 Dirty Words, TriMet, April 2009.

**Figure 3.11: Transit demand**

| Route or corridor | Modeled headway (minutes) | Percent utilized (evening peak 2-hour period) | Necessary headway to meet demand (minutes) |
|---|---|---|---|
| **Existing corridors (2005)** | | | |
| Blue Line (Gresham to Hillsboro) and Red Line (Portland Airport to Beaverton) – combined | 5 | 62% | 16.2 |
| Yellow Line (Portland central city to Expo Center) | 10 | 26% | 38 |
| **Existing and planned corridors (2035)** | | | |
| Blue Line (Gresham to Hillsboro) and Red Line (Portland Airport to Beaverton) – combined | 4.3 | 126% | 4.1 |
| Yellow Line (Portland Central City to Expo Center) | 7.5 | 123% | 6.1 |
| WES commuter rail (Beaverton to Wilsonville) | 30 | 142% | 21.1 |
| Green Line (Portland Central City to Clackamas Town Center) | 7.5 | 134% | 5 |
| **Near-term priority high capacity transit corridors (2035)** | | | |
| Corridor 10 (downtown Portland to Gresham) | 10 | 83% | 12.1 |
| Corridor 11 (downtown Portland to Sherwood) | 10 | 110% | 9.1 |
| Corridor 34 (upgrades to WES commuter rail corridor) | 10 | 89% | 11.2 |

Capacity on the entire MAX system is constrained by the need to operate two car trains, meaning future capacity increases require adding headways or building new lines. The current HCT system can accommodate headways of about 2 minutes per direction (30 trains per hour, per direction) over prolonged periods. With the Portland Mall in operation, the Yellow and Green lines operate on Southwest 5th and 6th avenues, which increases system capacity to expand train service through downtown. Although passenger capacity will be over utilized assuming modeled headways, existing light rail infrastructure is sufficient to accommodate projected 30-year increases in passenger demand. In short, this analysis shows that the current and planned HCT major track infrastructure does have the capacity to accommodate demand at least until the year 2035, assuming operating funds become available to improve headways.[9]

The public, jurisdictional staff and elected officials requested that the Regional HCT System Plan evaluate options for improving operating speed of MAX through downtown Portland. The plan conducted an analysis of two options for improving travel speeds through downtown:

9 A number of minor track upgrades will be needed to accommodate more trains on the existing system, particularly at key merge points such as Gateway Transit Center, Rose Quarter Transit Center and the Steel Bridge.

1. An east-west tunnel from Lloyd Center/Northeast 11th Avenue station to Goose Hollow/ Southwest Jefferson station with a single station located in the vicinity of Pioneer Courthouse Square. The tunnel would save approximately 12 minutes of travel time for passengers traveling from the Lloyd Center to Goose Hollow or beyond and allow for longer train sets not constrained by downtown block widths.
2. An eastside bypass from the future OMSI station to Interstate Rose Quarter station. This bypass would save approximately 10 minutes for approximately 4 percent of passengers traveling north-south past the central city.

The analysis concluded that construction of a downtown bypass or tunnel does improve travel speed but at the expense of superior access to employment and households in downtown provided by an at-grade, convenient alignment. This analysis also concluded that the operational need to meet projected demand can be met with the existing surface alignments on Southwest Morrison and Yamhill streets and on the Portland Mall. Downtown employment constitutes a high enough percentage of regional employment that diminished accessibility due to a single station is not outweighed by optimizing transit travel speed through the downtown. Direct service is measured by walk access of a half mile. The total estimated capital cost to construct the downtown tunnel as described is $2.2 billion in 2009 dollars. More stations could be built, but the travel time savings would be correspondingly less, diminishing returns for what would be one of the most expensive projects ever built in the region.

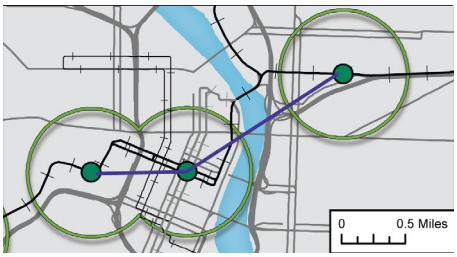
**Figure 3.12: Analysis of tunnel or connector through downtown Portland**

| Tunnel versus downtown | Current alignment | Tunnel |
|---|---|---|
| Households served in 2005 | 19,300 | 14,400 |
| Households served in 2035 | 40,600 | 28,100 |
| Employment served in 2005 | 121,000 | 98,700 |
| Employment served in 2035 | 173,900 | 140,800 |

**Current downtown light rail stations**

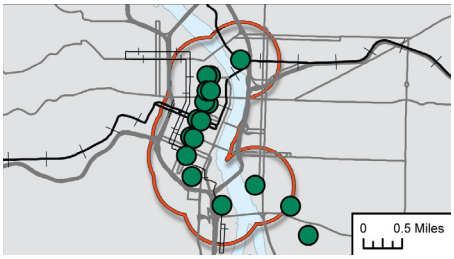



**Proposed tunnel light rail stations**

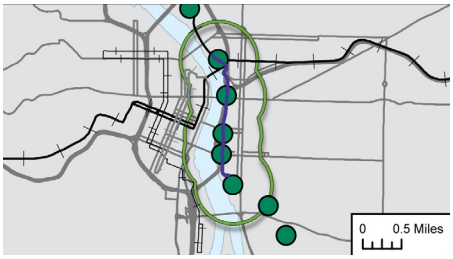



| Connector versus Portland Mall | Current alignment | Connector |
|---|---|---|
| Households served in 2005 | 15,900 | 3,800 |
| Households served in 2035 | 42,700 | 13,000 |
| Employment served in 2005 | 129,600 | 49,900 |
| Employment served in 2035 | 192,900 | 75,300 |

**Current Portland Mall light rail stations**




**Proposed connector light rail stations**



Other surface running options for enhancing MAX travel speed through downtown will be considered by the City of Portland in the Central City Plan; these may prove to be the most cost-effective improvements and to best match regional land use and growth management goals. Simply eliminating one or two tightly spaced stations, providing bypass tracks for express trains on Southwest Morrison and Yamhill streets, or adding a separate express alignment on another couplet in downtown could all improve travel speed through the central city at a minimal cost when compared with tunneling.

### Other system constraints

There are several merge locations in the system that impact operating speed and overall system capacity:

- Steel Bridge. The Green, Red, Yellow and Blue lines will utilize the Steel Bridge. There are capacity constraints at the junctions on the east and west ends leading to the bridge.
- Rose Quarter Transit Center. The Rose Quarter Transit Center is also constrained due to the high number of light rail, bus, pedestrian, bicycle, and auto movements sharing limited space.
- Non-preempted at-grade light rail/auto crossings in the system. Wherever a non-preempted at-grade crossing with a roadway occurs, light rail must either preempt or yield to traffic creating some operational constraints.
- At-grade light rail/light rail crossings at Steel Bridge, Gateway, and the Portland Mall.

## PASSENGER RAIL BEYOND THE PORTLAND METRO REGION

### Preliminary demand estimates to Neighboring Cities

A high level assessment of potential demand for commuter rail outside of the Portland urban growth boundary was conducted for this 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 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. Five potential corridors were evaluated:

- Salem/Keizer to Beaverton. This line would be an extension of the WES commuter rail, terminating at the Beaverton Transit Center and serving to downtown Salem..
- Hood River to Gresham. This line would generally travel along I-84 and connect Hood River to the MAX Red Line at the Parkrose/Sumner Transit Center.
- Newberg to Beaverton. This line would generally travel along Highway 99 from Newberg to the existing WES commuter rail corridor, terminating at the Beaverton Transit Center.
- Scappoose to Portland. This line would generally follow Highway 30 and connect to downtown Portland at Union Station.
- Sandy to Clackamas Town Center. This line would generally follow Highway 212 and connect to the Green Line at Clackamas Town Center.

Estimates of ridership potential were developed using two different approaches:

- Journey-to-work flows and adjusted mode split. This method uses worker flows from the 2000 U.S. Census and applies an adjusted mode share based on different factors that influence ridership in the corridors.

- Ridership per capita based on peer commuter rail systems. This method utilizes actual ridership data from several peer commuter rail systems in the country and estimates ridership on a per capita basis.

These two methods were then compared and blended to develop a single high-level estimate of ridership, as shown in Figure 3.13. Ridership numbers assigned to each corridor should be considered an order-of-magnitude estimate for purpose of comparing corridors and prioritizing future study.

**Figure 3.13: Estimated ridership potential methods and average annual ridership**

| Commuter rail corridor | Estimated corridor population* | Peer review | | Journey-to-work analysis | |
|---|---|---|---|---|---|
| | | Estimated weekday ridership | Estimated annual ridership | Estimated weekday ridership | Estimated annual ridership |
| Hood River | 22,100 | 130 | 34,000 | 50 | 12,000 |
| Salem/Keizer | 519,800 | 3,200 | 807,000 | 2,500 | 637,000 |
| Scappoose | 11,000 | 70 | 17,000 | 40 | 9,000 |
| Newberg | 111,500 | 700 | 173,000 | 1,000 | 257,000 |
| Sandy** | 33,200 | 400 | 103,000 | n/a | n/a |

** Very rough estimate of population within a 5-mile buffer of the commuter rail corridor.*
*** Ridership on the Sandy line was not estimated using the journey-to-work because this corridor is entirely within Clackamas County.*

## Key findings from this analysis

**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 HB 2408, which directs ODOT to study the possible extension of commuter rail service from Wilsonville to Salem.

# GOOD PRACTICES FOR BUILDING GREAT COMMUNITIES WITH TRANSIT AT THE CENTER

## PLANNING CONTEXT AND SYSTEM CONCEPTS

During the development of the High Capacity Transit Plan, a number of questions and concepts were raised in communication with the public and with partner jurisdictions. This section attempts to address the range of issues raised and provide guidance for future policy discussions, guidance, and implementation of practices related to the High Capacity Transit.

The Portland metro region uses a collaborative regional approach to planning and economic development. Most importantly, the approach recognizes the tight interrelation of land use, economic development and transportation decisions in creating great communities and building a region ready to address the greatest challenges of the 21st century. High capacity transit is an important tool to this end. The Regional HCT System Plan provides a framework by which HCT investments support urban growth, housing, regional affordability, environmental protection and livability goals. Like any element of community development, the plan is not static. Rather it sets a dynamic course where holistic system development is a priority and future investments are measured against targets that advance a broad set of regional goals.

This section is intended to provide background for further future policy discussions using examples and research from great transit-oriented communities and neighborhoods in the Portland metro region, around the country and in other parts of the world. This section describes in more detail the mutually supportive relationship between land use, transit service quality, transit accessibility and integration of the complete multimodal transportation system. Two additional considerations are discussed separately, safety and security, and carbon/greenhouse gases reduction strategies. Station safety and security is discussed under the system design and usability section (page 66), while carbon/greenhouse gases reduction strategies are presented in the final section, high capacity's role in reducing carbon emissions (page 76), since these strategies are a culmination of all of these factors.

In this section:

- Integrating transit and land use
- Access and system integration
- System design and usability
- Multimodal corridors
- High capacity transit's role in reducing carbon emissions

The practices discussed in this section are not prescriptive for the Portland metro region and do not have consensus among jurisdictional partners. Rather, the ideas brought forth in this section reflect the interests, concerns, and thoughts heard and discussed in meetings and stakeholder interviews with members of the public, committees of jurisdictional staff and elected officials, and the Think Tank that warrant further investigation.

## INTEGRATING TRANSIT AND LAND USE

Metro's Regional High Capacity Transit System Plan presents a significant opportunity to implement the regional 2040 Growth Concept by further integrating land use and transportation in the region. By extending the transit network, the HCT plan will increase regional accessibility, thereby enhancing the viability of transit-oriented development in new and existing station areas. Designed properly, the future corridors will open up new opportunities for residents to choose lifestyles where they can live, work and play without the daily use of a private automobile.

Capturing the full value of future regional transit investments will require coordinated land use planning along corridors and within station areas. Given the maturation of Portland's light rail

transit system and others like it throughout the country, there is a growing body of tested best practices that can help inform land use policy in the region. The section below describes some of these key practices under the headings of guiding transit-oriented development principles including the "three D's" of transit-oriented development: density, diversity and design.

## Start with development-oriented transit

The realization of integrated land use and transit planning is commonly referred to as transit-oriented development. The connotation is, however, that land use follows and reacts to transit. A truly synergistic relationship begins with development-oriented transit (transit projects that are intentionally designed with existing and future development in mind). HCT alignments and stations should provide direct access to compact mixed-use districts while also opening up new development and redevelopment opportunities.

The long-term potential value of development oriented transit is illustrated by the Rosslyn-Ballston Corridor in the Washington, D.C. area. Despite the added upfront costs, Arlington County, Va. was successful in its bid to move the proposed Metrorail Orange Line alignment from the median of Interstate Highway 66 to a subway beneath the struggling Wilson Boulevard commercial corridor. This prescient move helped the corridor's five station areas attract over 45 million square feet of commercial space and 20,000 residential units while diverting growth from nearby stable single family neighborhoods. To mimic this success, transit-oriented development potential should be considered and incorporated into alignment and station location decisions.

In order to be successful, the region must establish a corridor vision and stick with it. Far from operating in a vacuum, each station is part of a corridor and the greater transit system. As such, its land use planning should be tied to broader corridor analysis and visioning. This can be difficult because transit lines cross neighborhood and political boundaries, so corridor-wide land use planning takes additional effort and coordination not found in every region or every project. The successful efforts of other regions to coordinate corridor planning efforts should inform the corridor working groups envisioned by the HCT system expansion policy.

Much of Arlington County's success with implementing transit-oriented development has been attributed to its corridor approach to planning. Well before the term transit-oriented development was coined, the county's elected officials, planners and citizenry understood the transit and land use connection and were willing to advocate for it. With a development friendly Rosslyn-Ballston corridor to work with, the county was able to develop and adopt a general land use plan for the new stations. Successfully branded as the bull's-eye approach to development, the public and private sectors rallied behind this vision. Supported by more targeted station sector plans, the county's General Land Use Plan guided all development decisions for the corridor over the last 40 years.

It is this steady strategic planning and implementation over multiple development cycles that has helped each station area thrive in its own right and as part of the corridor. Rather than effectively

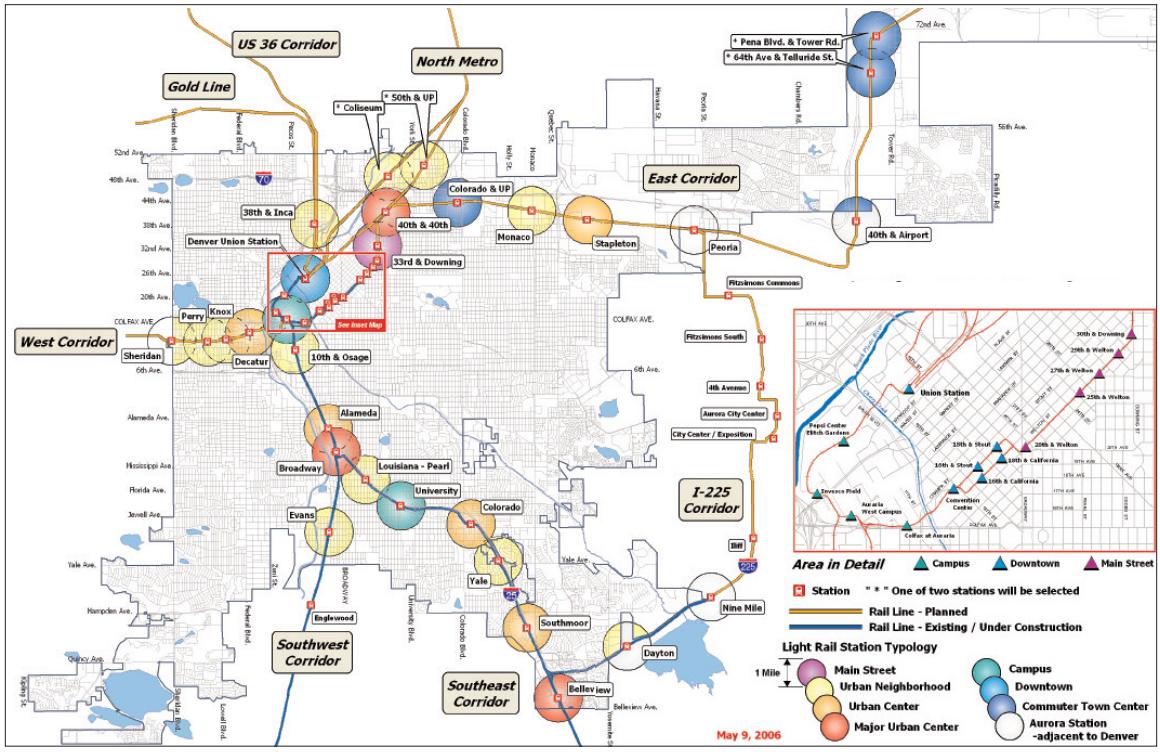
### The relationship of density, diversity and design

As density increases, more potential riders are given access to transit, if transit is available. Assuming nicely designed streets and stops that invite passengers, increased density will drive ridership higher. As the level of transit patronage increases in a corridor, transit providers will look to offer more frequent service and to improve the speed and reliability of service for passengers. High quality, permanent transit service makes an area attractive to more residents, signaling to developers that the market is good for more dense, diverse and designed housing and amenities. This relationship builds over time as long as transit is able to respond to growing demand.

cannibalizing one another by pursuing similar aspirations, the stations fulfill distinct roles or market niches and are often referred to as a "string of pearls." For instance, some stations areas are primarily employment centers, while others are small scale urban villages with an eclectic mix of shops and restaurants.

Other jurisdictions have used corridor and system planning to establish a hierarchy of station areas. The City and County of Denver developed a transit-oriented development typology system for existing and future transit stations as part of its Transit-Oriented Development Strategic Plan. In anticipation and advance of actual zoning changes, the typologies helped "clarify expectations for new development, alleviate concerns about inappropriately scaled development at transit stations and guide incremental decisions on infrastructure and project approvals."[1] Station area classifications outside of the central business district range from high density major urban centers to smaller scale urban neighborhoods and include unique types such as campus (e.g. University of Denver) and main street (e.g. historic streetcar corridors) typologies. This place-based approach enhances predictability for the development community while easing the fears of single family neighborhoods. From a corridor perspective, it helps create vibrant lines by stringing together a series of differentiated, but compatible, station areas.

**Figure 4.1: City and County of Denver's station area typology map**




## Promote and test new density concepts

Household and employment density is the primary determinant of transit ridership. Here in the Portland region, a 1995 study by Nelson\Nygaard Consulting Associates found that 93 percent of the variation of transit demand is explained by employment and housing density, after controlling for 40 land use and sociodemographic variables.[2] The degree to which density impacts ridership

1 Transit-Oriented Development Strategic Plan, City and County of Denver, 2006.

2 Land use and transit demand: the transit orientation index, Nelson\Nygaard Consulting Associates, 1995.

is also significant. A study of 129 San Francisco Bay Area rail stations found that the commute mode split was 24.3 percent in neighborhoods with densities of 10 housing units per gross acre.[3] This figure jumps to 43.4 percent and 66.6 percent, respectively, in station areas with densities of 20 and 40 housing units per gross acre. In terms of employment density, significant commuter modal shifts to transit occur as employment destinations reach 50 to 75 employees per gross acre.[4] Consistent with this body of research, a recent national review of transit-oriented development design guidelines found that most agencies recommend a minimum of 20 to 30 housing units per gross acre to create highly transit-supportive housing areas.[5] Minimum employment thresholds are sought by requiring minimum floor area ratios of 5:1 for commercial or mixed-use development.[6]

One strategy to best encourage transit oriented densities in HCT station areas over the short- and mid-terms, would for local jurisdictions to test the market feasibility of land use requirements through an audit of their development codes. Thresholds for minimum densities should be transit oriented, but they should also be achievable within the planning horizon of the station area. An audit could determine whether minimum densities can be achieved. An audit should also ensure that maximum densities can be achieved in light of parking requirements, height restrictions, floor area ratio maximums and other bulk restrictions. The audit should assess public financial resources available for transit-oriented development and related infrastructure such as urban renewal, tax abatements and adjusted system development charges or other



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



*Mixed-use development at North Main Village in Milwaukie.*



*The Center Commons transit-oriented development project in Northeast Portland includes a mix of renter and owner-occupied housing types.*



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

3 Influence of density, diversity, and design on proportion of commutes by transit for Bay Area station area residents, Bay Area Rapid Transit, 2000.

4 Relationships between land use and travel behavior in the Puget Sound region, L.D. Frank and G. Pivo, WSDOT, 1994.

5 Transportation and land use innovations, Reid Ewing, 1997.

6 Station area planning: how to make great transit oriented places, Reconnecting America and the Center for Transit-Oriented Development, 2008.

programs.[7] This process would reconcile land use regulations with market realities while demonstrating the potential need for local financial tools in facilitating higher density mixed-use development.

"Transportation is one of the key factors in shaping our cities. As our communities increasingly undertake deliberate measures to guide their development and renewal, we must be sure that transportation planning and construction are integral parts of general development planning and programming. One of our main recommendations is that Federal aid for urban transportation should be made available only when urban communities have prepared or are actively preparing up-to-date general plans for the entire urban area which relate transportation plans to land-use and development plans."
*— March 1962 joint report on urban mass transportation submitted to President Kennedy at his request by the Secretary of Commerce and the Housing and Home Finance Administrator.*[1]

1 *Urban transportation planning in the U.S.: an historical overview, U.S. Department of Transportation, August 1983.*

## Diversify uses and housing types

The second of the "three Ds" of transit-oriented development is diversity, or a mix of land uses. By providing retail, services and employment opportunities, a diverse transit-oriented development enhances the viability of a transit lifestyle. This is consistent with the City of Portland's concept of the 20-minute neighborhood, a place where people can reach most of their routine destinations within a 20-minute walk from home. Mixing uses also enhances the efficiency of a transit system by inducing more counter-flow trips to stations outside the central business district. More mature transit systems in the United States are often characterized by this more balanced multidirectional ridership. Again demonstrating the long-term benefits of concerted transit-oriented development efforts, Arlington County Metrorail stations exhibit a nearly equal number of boardings and alightings during the morning and evening peak periods, optimizing the system by serving as origins (residential) and destinations (employment, entertainment) and filling outbound and inbound trains throughout the course of a day.

Encouraging and in some cases requiring mixed-use development should be done strategically for the entire corridor. In strong markets with high visibility and a large critical mass of residents and/or employees, ground floor commercial can be very successful. In less intense and more peripheral station areas, the viability of retail and services may be more challenging. With the exception of specialty neighborhood destination retail, commercial uses usually require vehicle access, visibility and traffic to survive. Whereas a busy light rail station might have 2,000 boardings and alightings per day, even a modest retail node typically will have at least 15,000 cars passing per day. For these reasons, requiring mixed-use in inappropriate locations may result in empty storefronts or preclude new development altogether.

Rather than stretching retail beyond its limits, jurisdictions are increasingly targeting specific areas for active ground floor uses. The City of Vancouver, B.C. has adopted a downtown retail uses map that designates specific streets and corners that are best suited for commercial uses. Generally speaking, these areas are historic streetcar corridors where retail has grown and prospered organically over time. So as not to over saturate supply and dilute demand, the map also prohibits ground floor commercial uses on many of its downtown residential streets.

To optimize diversity in HCT corridors, stations and mixed-use zoning should be targeted in areas that are already attracting diversity rather than forcing the market elsewhere. Regionally and nationally, stations that conjure images of places (e.g., Hollywood District in Portland, Mockingbird Station in Dallas, Texas, Gaslamp Quarter in San Diego, Calif., and Dupont Circle in Washington,

7 For more information and programs, see Community investment toolkit, vol. 1: Financial incentives, Metro, 2007.

D.C.) rather than simply transportation nodes have been successful in this regard. To this end, HCT alignments and stations should be oriented towards existing "branded" areas with strong urban amenity packages. Urban amenities such as shops, restaurants and theaters in these districts have the ability to attract future mixed-use development and promote destination ridership.

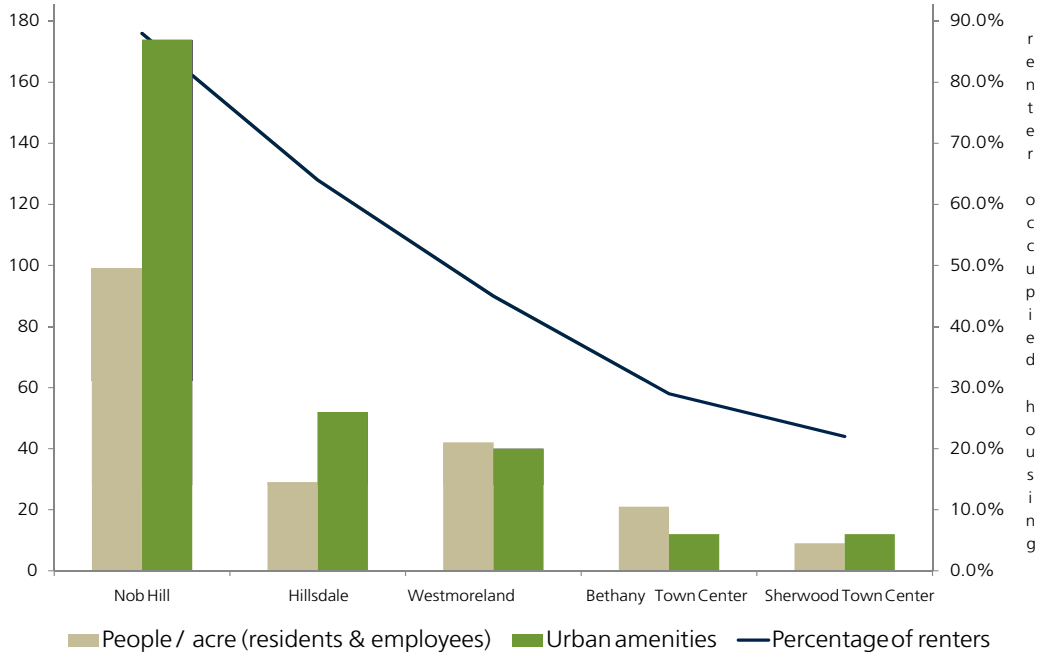
A second best practice is to adopt a more holistic view of transit-oriented development diversity. Recent analysis of a selected number of the region's successful neighborhood centers such as Nob Hill and Sellwood-Westmoreland compared to regional town centers found that, in addition to residential and employment density, urban amenities were related with a strong supply of rental housing, a good proxy for an active youthful population.[8] Local jurisdictions should design land use regulations in station areas to help capture diversity in terms of housing types, thereby attracting a better mix of generations and income groups.

## Design urban form both vertically and horizontally

The third of the "three Ds" of transit-oriented development is design, the urban form and character of a station area. Pedestrian friendly design is what separates transit-oriented development from transit-adjacent development. A dense mix of uses may be near a transit station, but if the uses are not functionally linked to the station via pleasant and comfortable pedestrian connections, they are not likely to fulfill their full ridership potential.

The density and configuration of street blocks dictates urban form and connectivity, both of which impact travel behavior. Research suggests that the single most important urban design determinant of transit ridership is the underlying block pattern of an area. In the Bay Area, residents in neighborhoods with an average block size of 6 acres (approximately 900 feet by 300 feet) had a transit mode split of approximately 11 percent. Neighborhoods with blocks averaging 3 acres (approximately 600 feet by 200 feet) exhibited an impressive 48 percent mode split.[9]

**Figure 4.2: Density, housing urban amenities**




8 State of the centers: investing in our communities, Metro, 2009.

9 Influence of density, diversity, and design on proportion of commutes by transit for Bay Area station area residents, Bay Area Rapid Transit, 2000.

Whereas smaller blocks warrant more urban style development and provides greater connectivity, large blocks will likely attract fewer transportation routing options. The large blocks along the MAX Blue Line east of I-205 demonstrate this difficulty. Platted originally within unincorporated Multnomah County, individual lots reaching 300 feet in depth pull development away from the street. To avoid this problem, land division regulations should set the table for transit-oriented development by establishing maximum block lengths (e.g., 400 feet) and/or block perimeters (e.g., 1,200 feet). Big blocks make walking seem to take longer, stifling pedestrian activity. To implement this provision, local jurisdictions should have local funding mechanisms and incentives in place to help finance land assembly and existing and future infrastructure improvements.

Transit-oriented design is also controlled by design guidelines and/or design review processes. Seeking to enhance the pedestrian experience walking to and from transit, guidelines may control building size, materials, fenestration (openings and windows) and building articulation. Standards should avoid requiring costly materials and features and focus on the key elements of strong urban form to limit added costs, increase affordability and promote architectural diversity. Minimum building heights and maximum setbacks, for instance, can be employed together to foster a sense of safety and enclosure for pedestrians, thereby creating an "outdoor room" effect. It also simply ensures the walk from sidewalk to building is not prohibitively long. Massachusetts's *Model Transit-Oriented Development Overlay District* suggests a minimum allowable building height of 28 feet and a maximum building setback of 5 feet. Exceptions to these standards may be granted if, respectively, a building is at least two stories or if an outdoor seating area, plaza or courtyard is incorporated into a development. To add visual interest and to provide more visibility, design standards may include requirements for transparency (e.g., see-through windows, openings onto the sidewalk) and/or active ground floor uses. For key pedestrian streets, Sacramento Regional Transit recommends 75 percent of ground floor building facades be transparent. As mentioned earlier, active ground floor retail or commercial uses can be required along market viable streets and/or strategic corners. This continuous pedestrian friendly street edge is preserved by the regulation of access and vehicle parking. Design standards should limit or prohibit curb cuts along pedestrian streets and tuck surface parking to the side or, ideally, behind buildings. More so than with other modes, every transit rider is also a pedestrian. If it isn't pleasant and safe to walk (or roll a wheelchair) to and from a station, then transit cannot perform to its potential. Similar standards are implemented in some jurisdictions in this region. Those that do will compete better for future HCT investments.

## ACCESS AND SYSTEM INTEGRATION

A successful transit system must allow people to travel where they want and when they want with assurance that they won't be met with unreasonable delays or breaks in service. This necessitates an approach to system design which places priority on multimodal access.

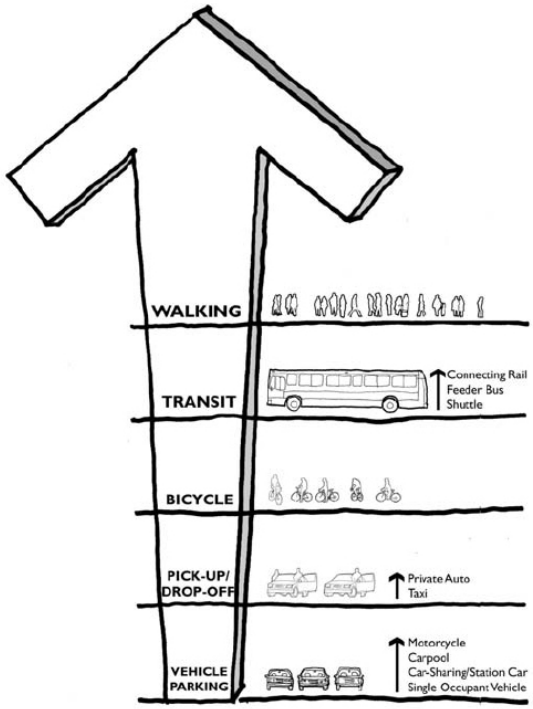
No matter how frequent, comfortable and well planned an HCT line is, passenger experience and ridership will suffer if it is difficult, time-consuming or uncomfortable to get to and from stations. Ultimately, jurisdictions' decisions to support different modes of access also determine the success of common goals such as easing traffic congestion, reducing emissions and supporting sustainable development.

Jurisdictions could consider developing a formal hierarchy of access to guide decision-making along HCT corridors and to evaluate disparate HCT station designs, infrastructure investments and area planning in light of these community goals . Figure 4.3, taken from the 2003 Bay Area Rapid Transit Access Guidelines, illustrates that low cost and high capacity modes, such as walking and transit, can produce the most cost-effective benefits and have less of an impact on the environment

and neighborhoods. This hierarchy helps decision makers combine incentives for priority modes with disincentives for low priority modes in mutually reinforcing land use, infrastructure and urban design decisions. In the Portland region, bicycles might likely take higher priority than transit in the hierarchy of access.

Urban form around many current MAX stations is transit, bike and pedestrian supportive, but some current stations and many future station locations will be challenged to provide excellent access for bicyclists and pedestrians. How passengers get to their origin station also determines their access choices at the destination end. Investments in multi-modal infrastructure and services are needed in regional and town centers and smaller station areas alike. Coordinated planning between jurisdictions in a corridor, design guidelines tailored to station typologies and targeted policies for parking management and infrastructure investment are all best practice strategies for creating environments that support multiple modes of HCT system access.

**Figure 4.3: Muti-modal hierarchy**




Source: BART Station Access Guidelines, April 2003.

## Corridor thresholds and station area plans

In the San Francisco Bay Area, the Metropolitan Transportation Commission adopted a transit-oriented development policy in 2005 to promote "the development of vibrant, mixed-use neighborhoods around new stations."[10] The policy guides coordinated transit-oriented development planning at different scales in order to make sure regional goals and site specific development work together. Elements of the Bay Area plan should be considered in creating land use plans in HCT corridors and station areas.

**Residential density thresholds around proposed HCT corridors.** Setting these thresholds on a corridor level allows jurisdictions to meet density requirements even if intensification is not feasible at every station along the line.

**Station area plans.** Created in collaboration with the community, these plans specify future land use goals, parking strategies and transportation network designs around local stations. In addition to supporting corridor level density targets, these plans are detailed enough to guide walkable street designs, such as limiting blank walls and curb cuts, and promoting active storefronts, retail and employment.

**Access circulation diagrams.** These diagrams direct all new development to support preferred travel patterns for each access mode in the station area.

The commission has also implemented a grant program to fund plans in key locations and has determined that these small planning grants (most $100,000 or less) are among the most cost-

10 Transit-Oreiente Development (TOD) Policy for Regional Transit Expansion Projects, Resolution 3434, Metropolitan Transportation Commission, 2005.

effective ways to improve station access, draw new passengers to the system and reduce regional greenhouse gas emissions.

As with the corridor level density thresholds, the Bay Area recognizes that not all areas are appropriate locations for intense transit-oriented development growth. During planning, stakeholders employ station classification based on existing land uses, street networks, parking supply, proximity to highways and the quality of existing and proposed transit service and non-motorized infrastructure. Classification identifies the access modes most appropriate for each station in order to prioritize supportive infrastructure investments and consider the cost per new rider of making a given improvement. Based on a station's classification, plans focus on bolstering the non-motorized network, strengthening transit connectivity or improving park and ride access in the immediate term. Best practices for supporting each access mode are described below.

## Walking and biking networks

Non-motorized modes are primary in the access hierarchy because they consume little land, have the least impact on the environment, reduce demand on motorized systems and are available to all people without the need to own or drive a car. With good pedestrian and bicycle networks in place, the catchment area for walking access to transit is considered to be within a one-half mile radius for pedestrians (a 10-minute walk) and a 3- to 5-mile radius for bicycling. Bike and walk networks within these HCT catchment areas should be among top local priorities. Accordingly, the draft

### Creating a walk- and bike-friendly environment

- ✓ Mixed-use development offers conveniences like cafés, day care, dry-cleaning, and shopping.
- ✓ Human-scale urban design features add comfort and interest, such as transparent frontages, small setbacks, street trees, furniture, and awnings.
- ✓ Traffic calming slows vehicles and prioritizes people on bicycle and on foot.
- ✓ A complete network of walkways with continuous sidewalks, well-marked signalized crossings and green buffers or parking separates the walkway and traffic.
- ✓ A complete network of off- and on-street bikeways with prominent intersection treatments offers convenience and safety to bicyclists.
- ✓ Universal design recognizes the needs of people of all ages with a wide range of physical and cognitive abilities.
- ✓ Good wayfinding includes consistent signage, maps and online trip planners combining biking, walking and transit.





recommended policy language for the Regional Transportation Plan update specifically describes an integrated mobility strategy "to guide the development of a region-wide network of on- and off-street bikeways and walkways integrated with transit… [which] cannot achieve their full potential if they are treated as stand-alone." Portland's dramatic success increasing bicycle travel to the central city could be replicated around key HCT stations through the region. Critical non-motorized elements for station access are addressed below.

**Comprehensive walking and biking networks.** HCT corridor and station construction present special opportunities to build new walking and cycling amenities, such as parallel paths along the right of way, and station area plans can compel specific radial (feeder) improvements within the expected one-half mile and 3- to 5-mile catchment areas. Walk and bike pathways to stations should be continued onto the property and into station buildings.

**Prominent bike and pedestrian station entrances.** Entrances should be separated from vehicle traffic, leading directly to ticketing and boarding platforms or to bike parking.

**Concentrated passenger amenities.** Amenities at terminals and transfer points, including weather protection, seating and nearby or integrated services and dining options.

## Bicycles at the station

In addition to complete, comfortable and clear bicycle networks through the 3- to 5-mile catchment area, cyclists must be assured that they will have a secure place to keep their bicycles at the HCT station. A survey of Portland cyclists found that a major deterrent to combining cycling with transit was a limited capacity for bikes on board and not wanting to leave expensive bicycles parked unattended.[11]

Refinements for the RTP from the bike policy and transit-bike parking working groups include consistent guidelines for bike parking, concentrated at stations identified as regional bike-transit facilities. Such identified transit centers would have dense residential development or major destinations located in the area but outside of walking distance, especially with bikeway connections to the station. Station areas with high expected walking or feeder transit access would not receive as much bike

### Bicycle accommodations



*This bike lane in Portland leads cyclists safely behind a streetcar stop, out of the way of both vehicles and waiting pedestrians.*




*A bike box in Portland allows cyclists to be more visible at intersections.*



*Covered bicycle parking creates a safe, dry and convenient place for bicyclists to park.*

11 Bicycle parking guidelines – draft, TriMet, 2009.

*Figures 4.4 to 4.7 show how walking and bike access would increase throughout the region as the high capacity transit network expands. The analysis was conducted using a network analysis tool that measures walking and biking distances based on existing road networks. These figures are calculated on households and employement within the urban growth boundary only; Clark County is not calculated, but estimated.*

**Figure 4.4: 10-minute walking and biking travel shed, existing HCT corridors**

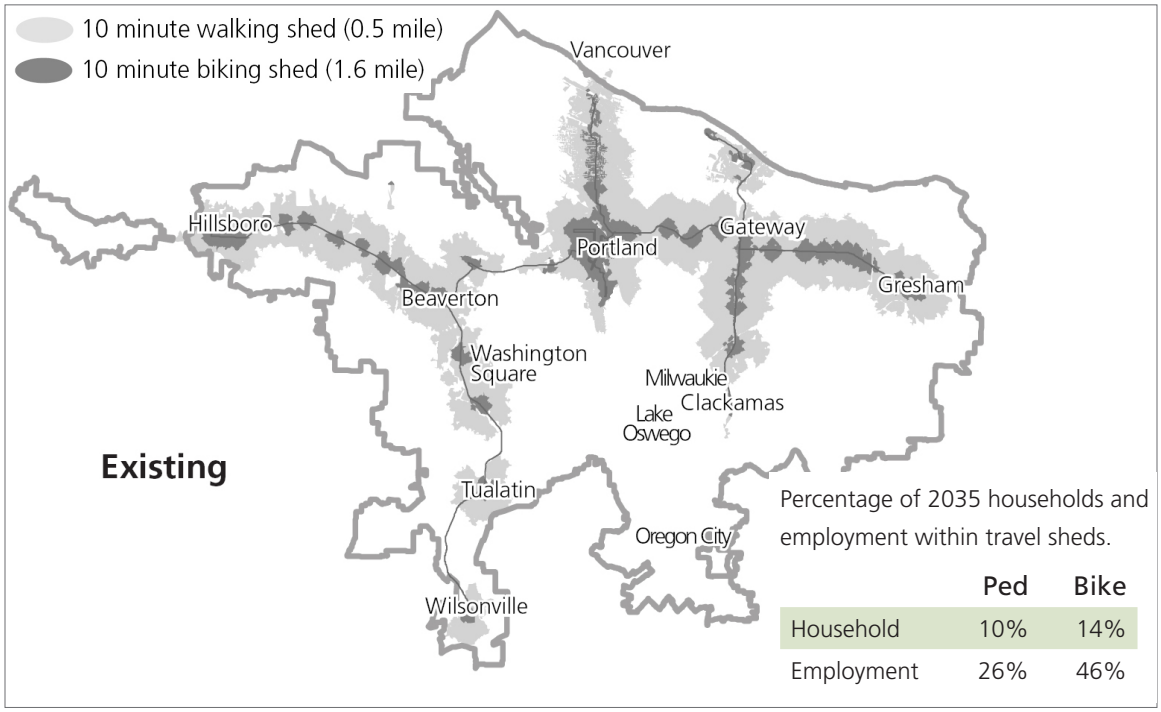



**Figure 4.5: 10-minute walking and biking travel shed, existing and planned HCT corridors**

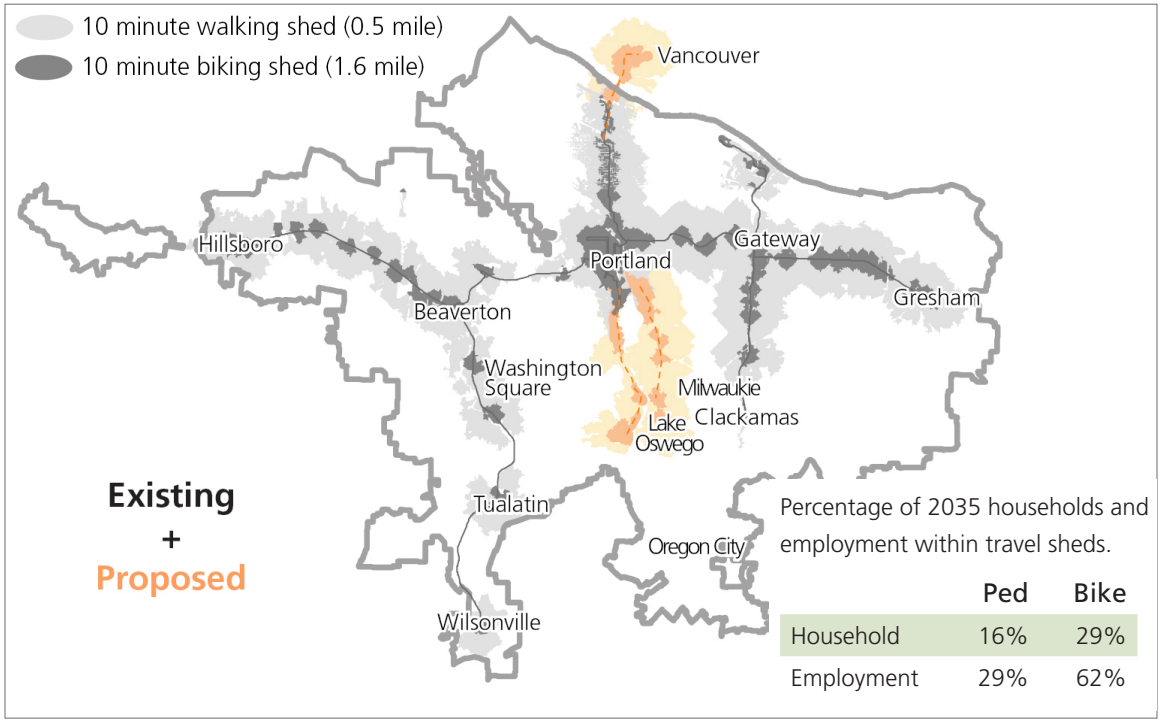


**Figure 4.6: 10-minute walking and biking travel shed, existing, planned and near-term priority HCT corridors**

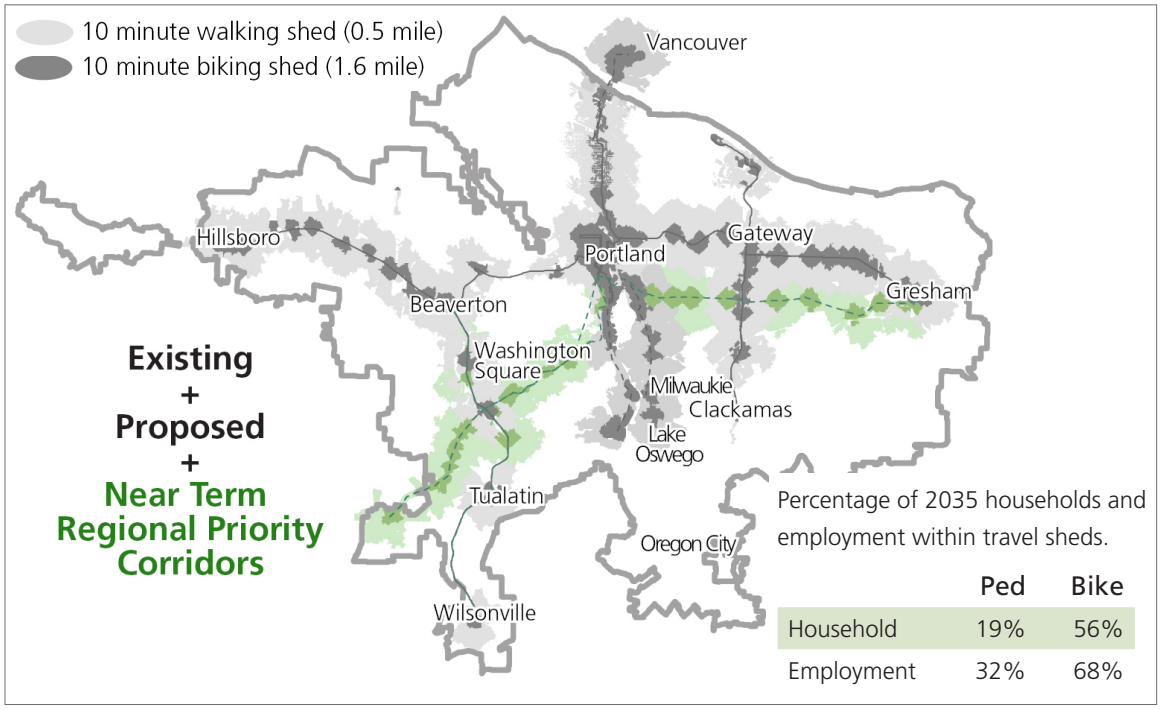
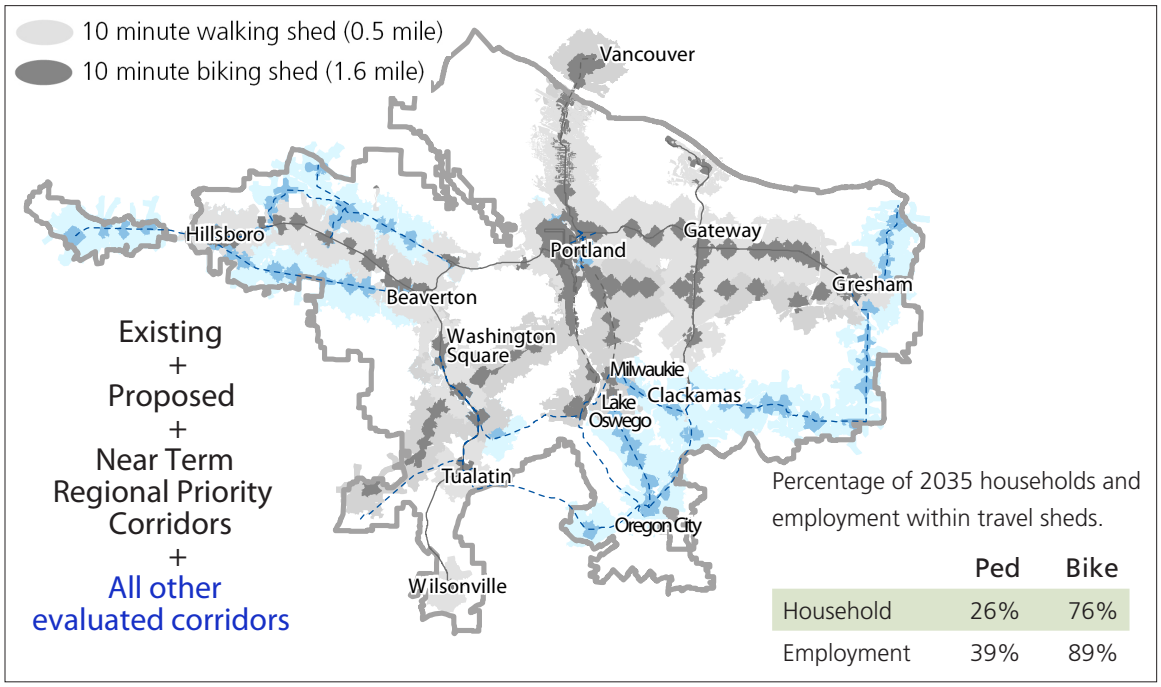



**Figure 4.7: 10-minute walking and biking travel shed, existing, planned and evaluated HCT corridors**



parking. The guidelines suggest evaluating daily boarding data, existing bicycle facilities and household densities to determine the amount and placement of parking. For stations identified as regional bike-transit facilities, the guidelines recommend bike parking capacity for 10 to 30 percent of peak hour bike-walk boardings, with a mix of sheltered racks, bike lockers and enclosed racks within attended or card access areas.[12]

The RTP transit-bike parking working group recommendations for Portland draw on examples of extensive, high quality, high priority bicycle parking at train stations throughout Europe, especially in the Netherlands, Denmark and Germany. In cities such as Copenhagen, Amsterdam and Münster, main train stations overflow with parked bicycles. In order to accommodate and prioritize cycling access, bike racks have been installed near station entrances en route to ticketing areas and on desire lines from major bikeways. Stations offer a range of parking types, from open outdoor U-racks to sheltered parking with direct access to the platforms, staffed bike stations with clothes lockers, restrooms, repairs and rentals and even piped-in music. Bike parking in full view of station attendants, or at the least with optional cages and rentable bike lockers, are preferred for added security. Because capacity issues will always constrain the number of bicycles that can be transported on board HCT vehicles, opportunities should exist for cyclists to rent overnight, long-term storage for personal bikes at destination stations to complete the trip to their final destination.

**Motorized access**




*Peninsula Traffic Congestion Relief Alliance*




*Parking at Portland's Beaverton Transit Center*




*Paid BART Park and Ride*

## Connecting transit service

Among motorized access modes, connections to transit are of highest priority. Feeder service significantly extends HCT catchment areas without creating additional traffic from private vehicles. Today, TriMet connects bus routes to MAX light rail and WES commuter rail, providing convenient transfers between modes and maintaining predictable wait times. Real-time information such as Transit Tracker displays improves passenger experience by providing information about vehicle arrivals. Riders perceive time spent waiting much more negatively than time spent riding, particularly when no information about vehicle arrival is available. Vehicle location and departure estimates can be displayed inside stations and at

12 *Ibid.*.

### HCT around the world

Bogota, Columbia's world-renowned TransMilenio bus rapid transit system was designed with the goal to stimulate urban renewal through improvements to public spaces and restricted reliance on private vehicles. Instead of building a planned citywide multilevel highway system, Mayor Enrique Peñalosa refocused policy on creating a ubiquitous HCT bus network coupled with innovative urban design features that support access to the network without the need to drive.



Stations are located every 500 meters (one-third mile) on average. In addition to funding bike facilities, sidewalks, pedestrian avenues and signalized intersections through station catchment areas, public plazas and open spaces were built or improved, making areas inviting for pedestrian and bicycle trips and creating community amenities.

Since TransMilenio opened, transit mode share has increased from 64 to 70 percent. Notably, in light of the deliberate bike and pedestrian improvements, non-motorized mode share also increased, from 8 to 15 percent. In Bogota's bus rapid transit corridors, bikes are critical for TransMilenio ridership and cost-efficient service. Officials estimate that for every 20 people who bike to a station, one fewer feeder bus is needed. Bike parking facilities are integrated within terminals at key locations, where cyclists receive a bike parking sticker free of charge.



bus stops as well as online and on mobile devices. As new HCT stations are constructed, bus stops should be located to minimize the walking distance, avoid street crossings and offer sufficient curb space for peak demand with a preference for on-street stops. Developing supporting bus networks can be particularly important in suburban jurisdictions where pedestrian and bicycle access is more challenging, but these additional bus networks also add significant operating cost to support a new HCT line.

## Feeder service for transit

A common barrier to shifting people away from long regional trips by private vehicle is the "last mile" connections to trunk line transit service like light rail or commuter rail. Shuttle services are often the most viable option in suburban environments where pedestrian and bicycle options are limited and locations are distant and/or on a disconnected street network.

## Private vehicles

In station areas where automobile access will remain the dominant mode for the near term, agencies can choose parking management tools that enable passengers to use private cars but still demonstrate a priority for non-motorized and transit access.

- Allow passenger drop-offs as a low-cost means of extending the HCT catchment area without requiring parking; however, these zones still consume valuable curb space and generate vehicle congestion that can dissuade bicycle, pedestrian and transit access.
- Carefully size and locate park and rides based on the feasibility of other access modes (i.e., not locating park and rides in areas with good feeder transit access).
- Set parking maximums instead of parking minimums or allow shared parking arrangements among varied uses.
- Reserve spaces for high occupancy vehicles in priority locations near entrances and weather protection.
- Charge for parking on a monthly, daily or hourly basis, with surcharges at popular stations or variable prices throughout the day based on changing demand.

The Portland metro region's parking management policy establishes parking maximums at developments based on proximity to frequent transit service. TriMet park and ride lots are sited outside of the Portland central city to extend transit access to locations not otherwise well served by transit routes and where transit-oriented development is unlikely. Twenty percent of these park and rides are shared arrangements with churches, movie theaters and retail, many of which are not at light rail stations. Priority spaces may also be reserved for carpools and motorcycles, modes that consume less space per passenger for vehicle storage.

In the San Francisco Bay Area, Bay Area Rapid Transit has begun offering different types of paid parking, setting rates and the number of reserved spots based on demand patterns at different stations. Between 25 to 45 percent of stalls are reserved for monthly permit holders, with these spaces opening to anyone for use after 10 a.m. Other spaces can be reserved online on a daily basis before driving to the station. In addition, stations where parking regularly reaches capacity have begun to charge a $1 fee for parking in any spot, not just reserved spaces. While BART found that there was no drop in ridership as parking charges were implemented, and many lots continue to be filled to capacity before the morning peak period ends, lower-income passengers tend to respond more strongly to changes in parking prices than higher income passengers.[13] TriMet has begun to implement similar programs in the Portland metro region. At Sunset and Gateway Transit Centers, TriMet has reserved some spots for short-term, metered parking to address demand and increase availability of spaces at these over-subscribed park and ride lots.

At many stations, BART is also pursuing mixed-use housing redevelopment projects on old surface parking lots and constructing new structured garages with smaller footprints for the same or even greater capacity. This is a primary BART regional strategy to reduce vehicle miles traveled per capita by creating walkable, transit-oriented communities and to reduce the combined cost of housing and transportation for area residents. Similarily, TriMet entered into an agreement with the Portland Development Commission(PDC) to replace several  acres of surface park and ride at the Gateway Transit Center with spaces in a parking garage. PDC partnered with a local developer on a multi-phase transit oriented development of the former park-and-ride site.  Phase 1 is a medical clinic.

## Parking management in station area communities

Above and beyond these direct treatments at stations, jurisdictions can also adopt regionwide policies that reduce incentives to drive. Parking policy can be a key determinant of a jurisdiction's readiness to support high capacity transit. Some of the most important policies are explored below.

13 Parking pricing and fees – traveler response to transportation system changes, TCRP report 95, Transportation Research Board, February 2005.

**Widespread parking pricing.** To ensure high ridership and reduce the many negatives of excessive driving, most public parking should be priced, and most employee parking should be either cashed out or priced. Cash out policies require employers who provide subsidized parking for their employees to offer a cash allowance in lieu of a parking space. Revealing the true cost of parking to those who drive typically decreases driving by 20 to 25 percent and increases transit ridership accordingly. Municipalities can put policies in place to require employer parking cash out, like Bellevue, Wash., and ensure adequate parking availability at all times by pricing public parking, like Redwood City, Calif.

**Residential parking unbundling.** Households looking for transit-oriented lifestyles are more likely to self-select into transit-oriented developments when they do not have to buy more parking than they need. Municipalities should require that developers unbundle the cost of parking from the cost of housing, particularly in rental units and multifamily condos For example, the City of Portland allows the unbundling of parking.

**Residential parking ratios.** Families living near high capacity transit demand less parking than those in auto dependent neighborhoods. Municipalities should eliminate minimum parking requirements in station areas and substitute parking maximums, ideally no more than 1.5 spaces per unit and often less. For example, San Francisco, Calif. sets residential parking maximums in transit-oriented neighborhoods at 0.25 to 0.75 spaces per unit.

**Commercial parking ratios.** Minimum parking ratios should be eliminated and replaced by maximums to ensure that development is truly transit-oriented and not just transit-adjacent. San Mateo, Calif., allows up to 2.0 spaces per 1,000 square feet of transit-oriented development. Commercial parking in San Francisco is limited to 7 percent of gross floor area and typically must be wrapped in active uses or built underground.

**Transit pass programs.** Many municipalities require that all new developments in station areas fund universal transit pass programs for project residents and employees in perpetuity. Some, like Boulder, Colo., extend such programs to cover existing residents and employees. Municipalities should implement such programs in all station areas.

### HCT around the world

In Montpelier, France, high capacity rail lines are built directly through major town centers, including the main public square, and directly adjacent to key destinations like the convention center and the iconic Comédie Opera House. Lines run on surface streets in between sidewalk cafes and through the public market, as a blended part of the streetscape. The transit system is a part of all residents' daily experience whether or not they are passengers, because everyone walks around trains and across lines throughout the city. These European street trams created placemaking value similar to Portland's Streetcar, but operate more reliably and efficiently due to dedicated lane operations.



*Montpelier, France*

## SYSTEM DESIGN AND USABILITY

### Integrating transit into our communities and daily lives

When designing new service, transit planners generally focus on passenger markets, route alignments and operational criteria. These are essential considerations when siting new HCT routes; however, how transit is built into

neighborhoods and the everyday lives of residents also plays a critical role in attracting passengers and can establish transit as a valued, integral part of the community. Stations, vehicles and HCT rights of way are important elements of urban form that all community members experience at some level, and they should be designed as welcoming public spaces.

Above all, riders and neighbors must feel that the system is safe, comfortable, easy to use and compatible with their neighborhoods and their daily activities. TriMet's station design guidelines encompass many system design best practices, including civic architecture that incorporates neighborhood characteristics, clear building layouts and signage systems that naturally direct smooth passenger flow, and comfortable waiting environments that offer weather protection, security and seating.

## HCT rights of way as integrated streetscapes

Dedicated HCT rights of way are critical to ensure on-time reliability and desirable travel times. In addition to this functional role, HCT corridors can make transit a visible and tactile element of the built environment. When HCT vehicles are given signal priority and dedicated lanes, they do not have to compete with or get stuck in general traffic and are clearly identified as a fundamental part of the transportation network. Instead of widening streets to accommodate transit, European cities regularly take over existing general traffic lanes and convert them to dedicated lanes for streetcars, buses and bicycles, or to accommodate wider sidewalks and greenspace amenities for the community at large. At the same time, these streets and the HCT corridors should be designed to integrate into and accentuate the existing neighborhood fabric, especially when built at grade instead of underground and out of sight. Highly prominent transit lines that deliver people directly to centers of activity help animate the streetscape by attracting pedestrians.

## Stations as placemakers

Specific station area plans are necessary to guide nearby land uses and ensure that street and building designs support HCT access and use. TriMet's station design guidelines also direct walkway and bicycle amenities on the station property itself as well as call for seating, lighting and 24-hour uses that create a publicly desirable place with natural activity and surveillance. ADA-accessible entrances and ramps, platforms built to match vehicle heights for easing loading and obvious paths that avoid level changes and blind corners are all fundamental to easy station navigation for all passengers.

Beyond ensuring basic access and circulation needs, station property and buildings should also be designed as a good neighbor, reflecting

### HCT around the world

Dublin created an integrated land use and transportation plan that was directed not by transportation considerations, but by a broader vision for the city. Land use policies and public private partnerships focused on the character, quality and on-the-ground implementation of higher density development. Routes were designed to provide access directly into major plazas, dining and retail spaces, and to interface easily with buses and regional rail. New station construction helped revitalize abandoned, high-crime areas outside of the city, and downtown redevelopment and intensification of businesses and residences fronting the light rail lines changed the face of Dublin.




*Dublin, Ireland*

community characteristics and supplying a valued public space. Building designs can incorporate materials and patterns drawn from neighborhood architecture and culture, and define public spaces both inside and outside the building. Green spaces, gathering places and public art give stations and the transit system character and humanize spaces that might otherwise remain large and impersonal. Designing new stations also presents the opportunity to create highly recognizable, valued and unique community landmarks. Grandiose, whimsical or interactive architectural elements can be incorporated into otherwise standard building designs to create a visual and cultural identity for the station and its neighborhood.

## Public information: consistent, easy to find and far reaching

Since people will access HCT stations by foot, bike and car, it is critical that public information successfully direct passengers to, through, and out of stations, reorient them to the neighborhood when they exit and get them back to the station for the return trip. Public information materials must be easily and completely understandable by all transit users, especially those that are unfamiliar with the system or new to the Portland metro region. Similar to designing physical spaces for seniors and persons with disabilities, creating a system that is easily understandable to all users ensures that riding transit will be a pleasant, convenient and seamless experience for all passengers.

TriMet has developed guidelines for station and stop information that at a minimum include schedules and maps for routes serving that location. Some of the major stops in the system also include digital displays with real-time information, and Transit Tracker allows users to obtain real-time information for all stops in the system via phone or TriMet's web site. An additional navigation tool could include a map that shows the station and surrounding streets and key landmarks and destinations. Prominent signs outside of the station can also be used to direct passengers to surrounding streets. Correspondingly, wayfinding elements can be placed throughout the neighborhood to direct people to the station. Passenger experience includes every part of making a trip, not just the time spent on board.

TriMet is continually evaluating and improving their public information systems by observing passengers as they make a complete trip in order to discover where confusing or uncomfortable roadblocks occur. The goal of this effort is to identify ways of improving the passenger's experience from start to finish. This total user experience includes planning a route and deciphering timetables, boarding the vehicle and paying the fare, finding a seat and riding comfortably, and requesting stops and making transfers. As part of this experience, fare structures should be simple to understand and remember, and payment media and rates should be integrated across modes and systems. Portland uses proof of payment systems and off-vehicle fare collection on MAX, and is investigating advance payment technology such as smart cards that will make fare payment at the station effortless to passengers. Prepaid and no-contact cards would make boarding faster and reduce customer confusion about how much, when and where to pay. These passes have the capacity to serve as a monthly pass as well as for pay as you go trips or offer discounted fares tailored to individual travel needs that serve a wide variety of rider groups.

## Station safety and security

Transit stations are the front door of the transit system. Station design not only establishes user value but enhances usability. Well designed, secure transit stations send a clear signal to transit passengers that they are using a first class public service. Station amenities can be enhanced or even replaced by a well integrated urban streetscape, as is often the case with streetcars and urban bus malls. Standardized station design and facilities across lines and modes are also important for user comprehension.

High capacity transit modes, which often use exclusive rights of way, must still operate in busy street environments where the alignment and stations share the right of way with pedestrians, bicycles and motor vehicles. Station design, and design of trackage between stations, must minimize conflicts with people and vehicles and emphasize safety where modes intersect. In addition, security at stations and on transit vehicles is an integral element of the customer experience and can often be enhanced by design. This section highlights some best practices for creating safe and secure transit stations.[14]

## Inside the station

**Create inviting, safe platforms and secure station areas.** Stations that follow accessible design practices convey inviting, safe and secure station areas. This can be accomplished through design, lighting, clear zones and cleanliness. Station elements should consider:

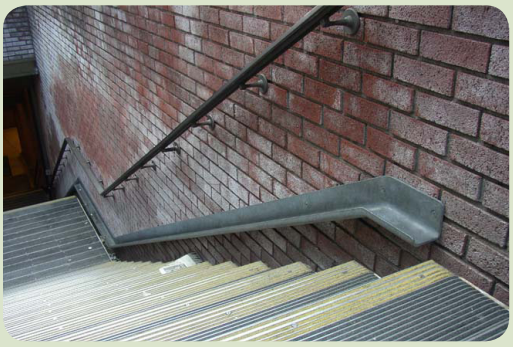
- **Station location.** Stations in low crime areas near activity centers tend to be more safe and secure. Paid fare zones increase the sense of security. Isolated stations should be closed down during off hours; if this is not possible, maintain a security presence and bright lighting throughout the night.
- **Lighting and clear wayfinding.** Lighting throughout the station and clear wayfinding signage can make stations more inviting.
- **Station design.** Stations that have dead-ends are less inviting and can encourage criminal activity.
- **Station cleanliness.** Clean stations ensure that amenities like ticket machines, pay phones and vending machines remain in working order. Cleanliness signifies that the station is monitored and well cared for, helping to reinforce safety.
- **Accessible stations.** In accordance with the Americans with Disabilities Act

14 Guidance provided in part from light rail design practices documented for the City of Bellevue, the Columbia River Crossing plan and recommendations for the Portland-Milwaukie Light Rail Project.

### CPTED in practice



*Tactile strips at stations*



*Bicycle access*



*Signals for light rail*




*Pedestrian warning gates*

Accessibility guidelines, platform edges must have a tactile warning strip. The warning strip can be enhanced with additional measures similar to the feature on the ACE light rail platforms in Las Vegas, which have a warning strip preceding the platform edge strip and a square to alert passengers, especially those with physical impairments, where train doors will open. Due to variation between vehicles in the TriMet MAX fleet, consistent door location markers are not possible.

**Check station designs against crime prevention through environmental design principles.** CPTED principles outline ways of using the built environment to deter criminal activity. For example, a transit station facing out onto the street, viewable by any passerby, feels much more secure than a station surrounded by a high wall and closed off from the public. Early decisions about alignment (i.e., highway rights of way versus arterial corridor) can influence the level of investment needed to design and construct secure stations. The CPTED principles include making spaces feel visible to others, delineating boundaries between public and private space, and managing access through measures like a clearly marked primary entrance. The CPTED principles also prescribe keeping all elements of the station clean and maintained, which also deters crime. If the station cannot be access-restricted, follow CPTED to clearly delineate platform areas and communicate that only paying customers are allowed in that area.

**Provide station art and amenities.** Successful HCT stations will become an important extension of the community and civic life when the transit line opens. Artistic touches can help humanize the station environment and foster a sense of ownership among residents and business owners, encouraging community policing of suspicious activity. Any amenities like bike parking should be clearly visible outside the station to deter theft, and enclosed if possible. Benches can be designed as single seats to prevent people from sleeping on them.

**Coordinate with enforcement and response agencies.** While station design has the potential to deter a good portion of criminal activity, stations also need the presence of security personnel. The transit agency can work with local law enforcement and emergency workers throughout station design to ensure the station is routinely monitored. Some strategies include:

- Work with local police to add new transit stations to their rounds. If businesses near the station already employ private security services, there may be an opportunity to partner on monitoring a station.
- The number of transit police or daily visits could be increased as ridership increases and more people are using a station.
- During station design, determine how emergency vehicles will reach stations and tracks, and train first responders and police on how to access secured station areas.

**Use technology to monitor the station.** Closed circuit cameras not only allow agents to monitor stations, their very presence helps deter crime by increasing the feeling of visibility to the outside. Closed circuit television cameras in and around stations, as well as in parking areas can be used to monitor activity. Call boxes at stations can also be provided so that passengers can directly contact security or emergency personnel if needed. By planning for technology early in the design process, the equipment can be better integrated with the station to be unobtrusive yet still effective.

## Getting to the station

**Maximize predictability and minimize confusion.** Safety around the station can be enhanced by increasing the predictability for drivers, bicyclist and pedestrians. This can be achieved by limiting movement choices.

- Separate station entrances for cars and pedestrians can minimize conflicts.

- Barriers at transitway may be used so that bicyclists must dismount before crossing tracks. This improves predictability for the train operator.
- Clear signage and markings provide unambiguous direction to all users.

**Create safe and direct connections for non-motorized access.** Bicycling and walking to stations can be encouraged by providing clear, direct, well-lit pathways to transit. Ramps or "runnels" (rails for bicycles on stairways) can improve access to platforms and secure bike storage. Pathways that require tunnels or overpasses, or routes that pass through areas without natural surveillance, are discouraged. It is important to provide direct access from adjacent bus stations to and from the train platform.

**Provide pedestrian-scaled lighting.** An important distinction should be drawn between roadway lighting, which is meant to illuminate roads for drivers, and pedestrian-scaled lighting. Good lighting at the pedestrian level improves people's feeling of security. In Seattle, the Department of Neighborhoods and Seattle City Light are installing pedestrian-scaled lighting at a height of 12 to 15 feet in business districts. These lights are placed on the sidewalk rather than in the road and will improve security and business exposure.[15] The Puget Sound Regional Council recommends lighting at 10 to 12 feet and providing 0.75 to 1.5 foot candles of illumination. When possible, high pressure sodium (HPS) lighting should be avoided because of its poor color rendering. TriMet's system design guidelines specify lighting conditions for various environments throughout their system. They also specify that new lighting should use F32T8 florescent lamps whenever possible rather than T12, HPS or pulse-start metal-halide lamps due to better efficiency and color rendering.

**Ensure secure parking areas.** CPTED principles can be used when designing parking areas. As noted above, lighting provides a better sense of security when placed at the pedestrian scale. A small but fully occupied lot feels safer than a large, mostly vacant lot. In cases where structured parking is provided, garage attendants can circulate through the garage to provide additional security. Closed circuit cameras can also be used in parking areas.

### Surrounding and between stations

**Provide pedestrian and bicycle warnings.** Crossing gates on sidewalks can be used where there are at-grade crossings of HCT corridors. Signs showing people which way to look when crossing transitways improve safety, especially if there are three tracks. Warning signs and lights also help alert pedestrians and bicyclists. If transit runs at grade through a pedestrian zone, tactile warning strips along the entire corridor help to alert pedestrians that the street is shared with a transit line.

**Provide visibility for all users.** Visibility from the standpoint of the transit operators, drivers, bicyclists, pedestrians and wheelchair users should all be considered. Operators need to have a clear view of the station, track and crossing areas. Pedestrians, drivers and bicyclists should have a clear view of the tracks, roadways and sidewalks. Visibility can be achieved by providing lighting above transitways and especially at crossings.

**Ensure safe interactions between vehicles and trains.** Transit and cars often share rights of way, even if only where tracks cross roadways at grade. The Transportation Research Board recommends completely separate signals for both transit and cars, with consistent application of such signals throughout the system to maximize safety. [16]

In general, exclusive transitway running in the center of the street along a median is the safest type of operation because it minimizes conflicts between turning vehicles at intersections and driveways.

15 Create a thriving business district, Office of Economic Development, City of Seattle, www.cityofseattle.net, accessed June 30, 2009.

16 Integration of light rail transit into city streets, TCRP report 17, Transit Research Board, 2000.

Center running transit also provides transit operators with more time to see pedestrians stepping into transit right of way and reduces exposure at the curb. For this reason, much of the MAX system constructed on arterial streets is center running (e.g., North Interstate Avenue, East Burnside Street). The new Portland Transit Mall employs a unique mix, with curb-loading stations and center-running transit between stations. If enough right of way is available, provide protected left and right turn lanes to the roadway to safely channel cars in traffic around light rail trains, reducing conflicts.

## MULTIMODAL CORRIDORS

The Oregon Department of Transportation requires that any proposed HCT corridor affecting a state highway comply with a variety of ODOT regulations and standards, whether the alignment is within, adjacent to or parallel to existing right of way. This section identifies federal and state policies that would currently apply when an HCT corridor within a state highway right of way is selected for further evaluation.

### General transportation and land use planning requirements

Oregon's Transportation Planning Rule[17] is a Land Conservation and Development Commission administrative rule that imposes several general requirements relevant to HCT corridors, including those affecting state facilities.

- Metro and TriMet would need to coordinate with state agencies, owners of transportation facilities and providers of transportation services (including railroads and the ODOT Rail division for rail right of way).
- The Transportation Planning Rule establishes a hierarchy of transportation plans, requiring that the RTP be consistent with state plans and local transportation safety plans be consistent with the RTP.
- The Transportation Planning Rule (Section 660-012-0060) requires that a local government take measures to mitigate significant effects of land use plan amendments on a transportation facility.

### Process for further corridor evaluation: refinement plans and project development

The Transportation Planning Rule defines a refinement plan as an amendment to a transportation system plan, such as the Regional Transportation Plan, that "resolves, at a systems level, determinations on function, mode or general location which were deferred during transportation system planning." Corridor refinements are necessary where a transportation need exists, but mode, function and general location of a transportation improvement are not determined.

A refinement plan is the approach ODOT recommends for conducting further analysis of potential corridors identified in the HCT planning process and adopted in the RTP. Regardless of the type of right of way required, this process would facilitate resolution of concerns over the effect of HCT corridors on vehicular mobility and freight on state highways.

During the development of projects in an adopted transportation system plan, the projects are not "subject to further justification with regard to their need, mode, function, or general location," provided that the plan makes decisions about those project characteristics as could be done in a refinement plan. Project development would implement HCT corridors adopted in the RTP by

17 Transportation Planning Rule, OAR 660, State of Oregon.

"determining the precise location, alignment, and preliminary design (of those corridors) based on site-specific engineering and environmental studies."[18]

## Mobility

The regional transportation system balances the function of providing mobility, or movement, for people, goods and services with providing the ability for people to access local destinations. The RTP defines an integrated concept of multimodal regional mobility corridors, including both limited access throughways and high capacity transit that facilitate travel through and across the region. These throughways are subject to level of service mobility standards based on the vehicle to capacity ratio defined in the Oregon Highway Plan. Action 1F.3 of the Oregon Highway Plan permits jurisdictions to adopt alternate capacity standards with approval of the Oregon Transportation Commission; Metro adopted such standards in the 2035 Regional Transportation Plan.

ODOT has articulated several options that apply where future detailed analysis of HCT corridors indicates that current or forecasted V/C ratios on an affected state highway do not meet OHP standards.[19]

**Option 1:** Select a HCT corridor where the state highway meets mobility standards for the region.

**Option 2:** Mitigate for the negative impact using design or operational strategies and request ODOT approval pursuant to Action 1F.5 of the Oregon Highway Plan. The Oregon Highway Plan lists a number of possible design or management actions that might improve performance under Actions 1F.3 and 1F.5. This approach is applicable to corridor refinement plans as well as an RTP update.

**Option 3:** Another approach applies to minor RTP amendments subject to Section 660.012.060 of the Transportation Planning Rule,[20] as opposed to major updates or corridor refinement plans. If developing an HCT corridor is found to have a significant effect on a transportation facility (e.g., a degradation in the facility's performance) a request could be made for ODOT approval pursuant to Action 1F.6 of the Oregon Highway Plan, where the performance standard is to avoid further degradation of the facility.

**Option 4:** Request Oregon Transportation Commission approval of an alternate mobility standard for the particular highway, pursuant to Action 1F.3 of the OHP. This approach is applicable to RTP updates and possibly to corridor refinement plans, if the area "is of a size necessary to support compact development, reduce the use of automobiles and increase the use of other modes of transportation, promote efficient use of transportation infrastructure, and improve air quality."

## Reducing vehicle carrying capacity on freight routes

On freight routes designated in the Oregon Highway Plan, through-highway mobility is given greater importance than accessibility. In the Portland metro region, these routes include all or portions of interstate highways 5, 84, 205 and 405, state routes 8 (TV Highway), 99W, 99E, 224, Powell Boulevard and U.S. Route 26, and U.S. Route 30.

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18 Section 660-012-0010 and 660-012-0050 of the Transportation Planning Rule, OAR 660, State of Oregon.

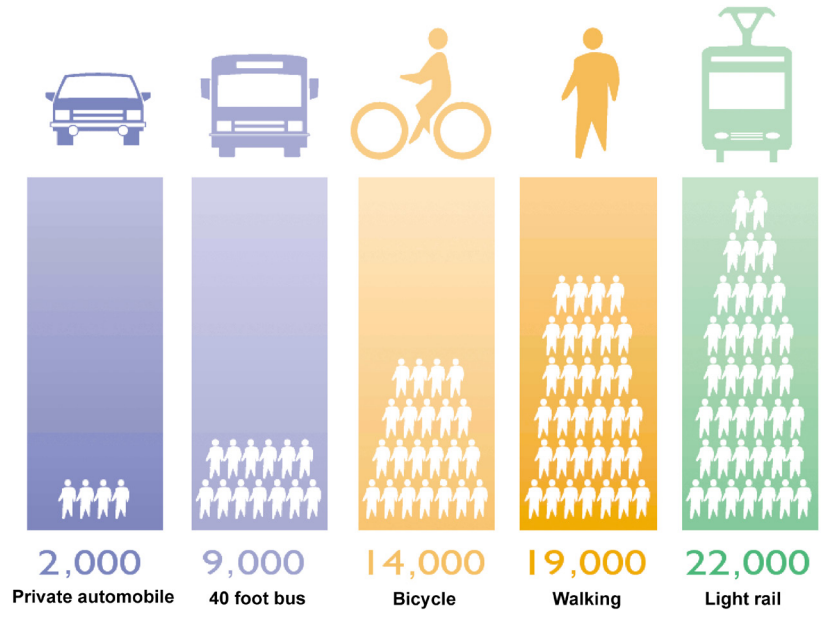
19 Oregon Highway Plan, Actions 1F.3, 1F.5, and 1F.6, p. 80-82, and Policy Element, Tables 6 & 7, State of Oregon, 1999 (amendments through July 2006).

20 "Where an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation would significantly affect an existing or planned transportation facility, the local government shall put in place measures… to assure that allowed land uses are consistent with the identified function, capacity, and performance standards… of the facility."

### Alternate mobility measures

The region is developing alternative means of measuring mobility, emphasizing person-carrying capacity rather than vehicle capacity. These alternate measures better account for the use of alternate transportation modes and a wider range of transportation options available in existing or planned mixed-use areas.

**Figure 4.8: Person capacity per lane eqiuvalent[1]**




*Number of people crossing a 3.5-meter wide space in an urban environment during a one-hour period.*

1 *Ticket to the future: 3 stops to sustainable mobility, UITP, International Association of Public Transport, Brussels, 2003.*

Oregon law precludes the Oregon Transportation Commission from permanently reducing "the vehicle-carrying capacity of an identified freight route when altering, relocating, changing or realigning a state highway unless safety or access considerations require the reduction," unless a local government, including districts such as Metro and TriMet, requests an exemption. According to the law, the commission "shall grant the exemption if it finds that the exemption is in the best interest of the state and that freight movement is not unreasonably impeded by the exemption."[21]

## Acquisition of highway right of way land by public agencies

In 1991, the Intermodal Surface Transportation Efficiency Act (federal transportation authorization legislation) directed state departments of transportation to make surplus right of way constructed with at least partial federal funding available for transit projects, if doing so would not adversely impact automotive safety.[22]

An ODOT policy (formalized in 2008) stipulates that there is a reversionary clause for any right of way purchased for a highway project and transferred to a local jurisdiction. The right of way reverts

21 Creation of state highways; reduction in vehicle-carrying capacity, ORS 366.215, State of Oregon.

22 "Where sufficient land or air space exists within the publicly acquired rights of way of any highway, constructed in whole or in part with Federal-aid highway funds, to accommodate needed … public mass transit facilities, the Secretary shall authorize a State to make such … rights of way available with or without charge to a publicly or privately owned authority or company… if such accommodation will not adversely affect automotive safety."

back to ODOT if the land is not used for public road purposes "to protect the constitutionally dedicated Highway Fund contribution to the original purpose of the property."[23]

## Policy considerations

Metro has already adopted mobility standards in the 2035 RTP that allow higher vehicle to capacity ratios but is also working to develop alternate measures of mobility. State regulations attempt to address the concern that increased intensity of land use around HCT stations will generate increased trips on state highway facilities and require mitigation measures to maintain highway performance standards. While these regulations are understandable, they can also act as an obstacle to furthering walkable transit-oriented communities needed to reduce regional vehicle miles traveled over the long term. Alternative mobility measures could provide a more comprehensive assessment of these impacts.

## Right of way options for developing high capacity transit

Any new HCT line is faced with unique geographic, political and land use challenges and opportunities. Since many of the best opportunities for easily threading HCT lines through the metropolitan area have already been capitalized, future corridors are likely to face even greater challenges. In any one corridor, it is likely that multiple strategies for integrating HCT will be needed. This section outlines key strategies and tradeoffs.

**Existing right of way (undeveloped).** In urban areas, right of way is often available only along existing transportation corridors, including the roadway medians, highway shoulders and railroad alignments. For example, TriMet's practice is to use public and available railroad rights of way where possible, obtaining easements or purchasing land outright. A downside of existing, undeveloped right of way along transportation corridors is that it may be more challenging to create a high quality pedestrian environment or foster mixed-use, transit-oriented development.

- **Westside Express Service:** WES commuter rail provides an alternate route between Beaverton and Wilsonville during peak hours using 14.7 miles of freight railroad tracks shared with Portland & Western Railroad. The right of way was previously utilized for passenger service by the Oregon Electric Railway and Red Electric line.

**Existing right of way**



*Northeast Holladay Street, before light rail*



*Northeast Holladay Street, after light rail*




*MUNI 3rd Street Light Rail, Sunnyside Station*

23 Relinquishment of project right of way to local public ager
Transportation, State of Oregon, May 15, 2008.

- **Westside light rail (MAX Blue Line):** In order to support concentrated development and land use patterns, the Portland region chose a railroad alignment adjacent to greenfields rather than build the light rail along already developed Highway 26 or Tualatin-Valley Highway.

**Existing right of way (reallocate lane usage).** Altering the use of lanes to provide exclusive transit right of way can improve travel time and reliability but may require eliminating local access or parking, particularly in mixed-use areas, which can raise community opposition.

- **Banfield light rail corridor:** Prior to MAX Blue Line construction, Northeast Holladay Street was a major westbound arterial carrying high volumes of traffic into downtown Portland. When MAX was constructed the street was converted to a double-track exclusive transitway and two westbound traffic lanes. When the auto lanes reopened after construction, they were

### Right of way scenarios



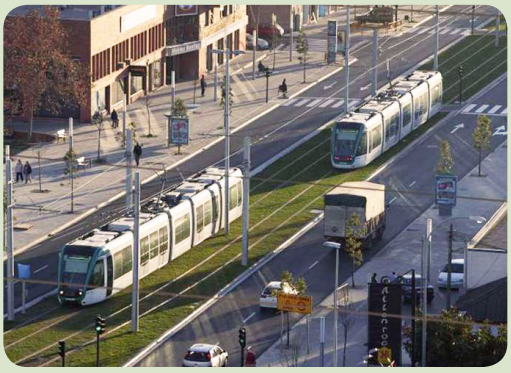
*Railroad right of way: Westside Express Service (WES) commuter rail is an example of an active rail corridor that was modified to carry commuter rail (light rail is also possible). There may also be unutilized space in the right of way to construct additional tracks.*



*Grade separated: MAX trains run on exclusive right of way in the street median, then enter grade-separated right-of-way leading to the bridge..*



*Side running: Blue and Red Line MAX trains run in exclusive right of way on two sets of tracks on one side of the street, adjacent to a traffic lane and on-street parking. Unutilized right of way may be available or existing traffic lanes could be converted to transit use.*



*Median: The photo above shows median running light rail in Barcelona, Spain. In Portland, the MAX Yellow Line runs in the median of North Interstate Avenue, which was reconfigured to accommodate the MAX. In other cases, there is unused right of way in street or freeway medians.*

so underutilized that the direction was shifted to a safer, eastbound movement and a lane was converted to parking.

- **Interstate MAX:** The Interstate Avenue MAX Yellow Line was constructed at grade within the existing street right of way. It replaced a five-lane arterial with a fully separated double-track median and one traffic lane in each direction with turn lanes. As a result of transferring public right of way to HCT from roadway, the project avoided any home or business displacements. North of the Kenton Street station, it was more cost-effective to build the Expo Center section of the line grade separated but within the right of way, instead of replacing or widening the existing Denver Viaduct and the Columbia Slough Bridge.[24]
- **Third Street light rail, San Francisco:** The Third Street MUNI Metro line, completed in 2006 between the Bayview District and the downtown Caltrain station, operates in a semi-exclusive right of way. Third Street is one of the city's longest north-south routes and runs along its eastern waterfront. Three traffic lanes in each direction were reduced to two lanes, which some residents perceived as a benefit because of the traffic calming impact. The line runs in a median transitway with the exception of a nine-block section in the Bayview commercial core, where it operates in one of the two traffic lanes, with parking preserved. The remaining right of way was used to expand sidewalk width.[25]

**Preserved right of way.** Preserving right of way for transit use is a cost-effective means of providing right of way for future transit service in developing and undeveloped areas and is identified in the RTP as an investment need and as a fiscal stewardship goal. It is also a desirable approach where HCT service along a corridor is expected to be feasible in the future. In these cases, local land use plans should provide for transit right of way.

**I-205/Portland Mall Light Rail Project:** The I-205 MAX line largely follows an existing transitway created when I-205 was originally constructed. This right of way allowed for faster construction, fewer traffic disruptions and few community impacts.[26]

**Purchase right of way (land in other use or undeveloped).** Purchasing new or additional right of way is a complementary strategy to the other right of way options. In some cases, a small strip of additional land may be needed to create sufficient width in a right of way; in other cases, whole new tracts of land in developed or undeveloped areas may be needed.

## Costs

There are trade-offs between construction in a street or freeway median and adjacent to the roadway. In the median, the right of way is publicly owned, but there are potentially greater construction costs due to access issues, grade conflicts with other transportation system users and station siting issues. Construction adjacent to a roadway has potential for more displacement of residences or businesses and the need to acquire additional property outside of the public right of way. There is no one answer to whether one approach is more cost-effective the other.

24 Debate of at-grade versus grade separation construction: Interstate MAX Project, Portland, OregonTransportation Research Circular E-C058: 9th National Light Rail Transit Conference, 2003.

25 Community and systems planning for Muni's Third Street Light Rail Project, Transportation Research Circular E-C058: 9th National Light Rail Transit Conference, 2003.

26 About the I-205 Project, TriMet, trimet.org, accessed June 30, 2009.

**Figure 4.9: Rough order of magnitude cost estimates for right-of-way configuration**

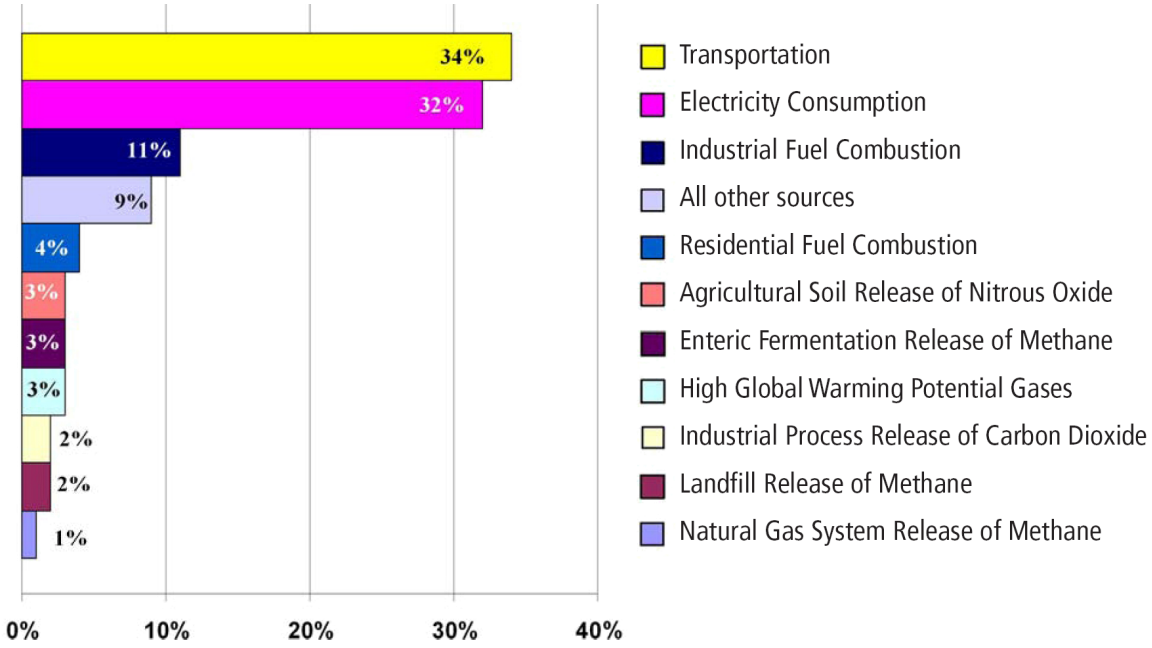
| Right of way type | Right of way configuration | Estimated cost per mile (2009 dollars) | Percent difference from existing in-street median (low/high) |
|---|---|---|---|
| Existing | In-street median | $118 - $123M | – |
| Existing | In freeway | $130M | 10%/6% |
| New | Adjacent to roadway | $113 - $146M | -4% / 19% |
| New | Adjacent to roadway, with retained fill | $120 - $153M | 2%/24% |

Figure 4.9 lists low and high estimates of average costs per mile for different HCT right of way configurations. These estimates were developed to evaluate potential HCT corridors and were primarily based upon actual construction costs for MAX Green Line and estimated costs for the South Corridor (Portland-Milwaukie) light rail project. The cost estimates assume light rail and are intended to provide a relative cost comparison. The right-most column shows the percentage difference between each right of way configuration and use of existing right of way in the street median. Use of the freeway median is generally 6 to 10 percent more expensive than a street median. Construction in new right of way adjacent to the existing roadway ranges from 4 percent less expensive to 19 percent more expensive. If adjacent right of way requires fill and a retaining wall, this increase is as as little as 2 percent and as much as 24 percent.

## HIGH CAPACITY TRANSIT'S ROLE IN REDUCING CARBON EMISSIONS

Cities and regions across the United States have come to accept that greenhouse gas emissions are a chief cause of global warming. Oregon, a state known for environmental activism, has adopted goals of halting and cutting emissions levels across sectors. Reducing greenhouse gas emissions is especially important for the transportation field, which represents the largest source of emissions in the state (see Figure 4.10).

**Figure 4.10: Major sources of Oregon greenhouse gas emissions (2004)[27]**




Metro has a key role to play in reducing the region's greenhouse gas emissions because of responsibilities, regional perspective and a commitment to partnerships and collaborative solutions. This includes efforts by the Regional Transporation Plan. Metro is committed to identifying how the region can meet Oregon's greenhouse gas reduction goals, which call for arresting the growth of greenhouse gas emissions by 2010, reducing emissions to at least 10 percent below 1990 levels by 2020, and reducing emissions to at least 75 percent below 1990 levels by 2050.

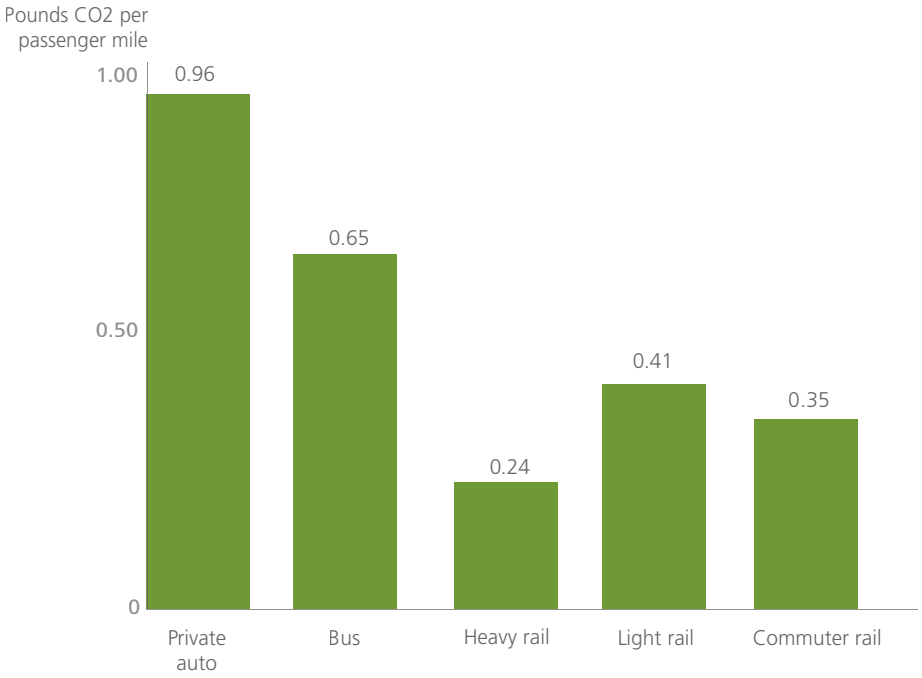
Metro is focusing on:

- developing regional greenhouse gas emissions tools to help Metro and the region assess and prioritize program options;
- coordinating with partners to create a regional climate prosperity strategy premised on the belief that successful reduction of greenhouse gas emissions and protection of the environment translates into competitive advantage and can serve as the foundation for economic growth and wealth creation in a transformed global economy.

Transportation emissions are primarily produced by personal motor vehicles. According to the Environmental Protection Agency, in 2008 passenger cars and light duty vehicles (which include vans and SUVs) accounted for 64 percent of all transportation emissions. Thus, increasing mass transit use and reducing vehicle miles traveled is a key element of a larger regional strategy for reducing the emissions produced by the transportation sector. Public transit emits far fewer emissions than auto travel, as shown in Figure 4.11.

27 A framework for addressing rapid climate change, final report to the governor, The Governor's Climate Change Integration Group, State of Oregon, January 2008.

**Figure 4.11: National average greenhouse by gas emissions (2004)**




The Federal Transit Administration's statistics are based on average vehicle occupancy of 1.14 for average single-occupancy vehicle work trips and 9.2 passengers per bus. Thus an increase in transit ridership affects emissions reduced: a full bus carrying 40 passengers emits 83 percent fewer greenhouse gas emissions on a per passenger basis than one carrying the average bus load. Most rail systems are powered entirely by electricity, therefore agencies purchasing electricity through clean sources – hydroelectric, wind, nuclear, solar – have a smaller carbon footprint than those using fossil fuel-produced electricity.[28] The Portland region does utilize a higher percentage of hydroelectric and wind powered sources for electricity generation than other regions in the country.

This section highlights how high capacity transit plays a key role in reducing regional greenhouse gas emissions; a particular focus is given to evaluation done locally and in other regions to quantify the most effective means for reducing greenhouse gas emissions. Findings from the review suggest the region should:

- focus on strategies that make more productive use of existing facilities and resources
- tie any transit expansions to land use changes; together they can have a large impact on $CO_2$
- consider cost effectiveness; some of the most popular means to reduce $CO_2$ emissions are the least cost-effective, but some of the most effective measures actually earn money for the economy and the implementer.

28 Calculated using carbon dioxide emissions per megawatt hour for the power supplied to the electrical grid in the particular subregion in which the transit agency operates. The data is from the U.S. Environmental Protection Agency's Emissions & Generation Resource Integrated Database (eGRID) 2006 v2.1. Subregion emission factors are used rather than state level emission factors, as regional power grids do not correspond with state lines. In addition, using the eGRID subregion data rather than the state level data is recommended by the California Climate Action Registry's general reporting protocol, chapter 14.

## Make better use of what we have



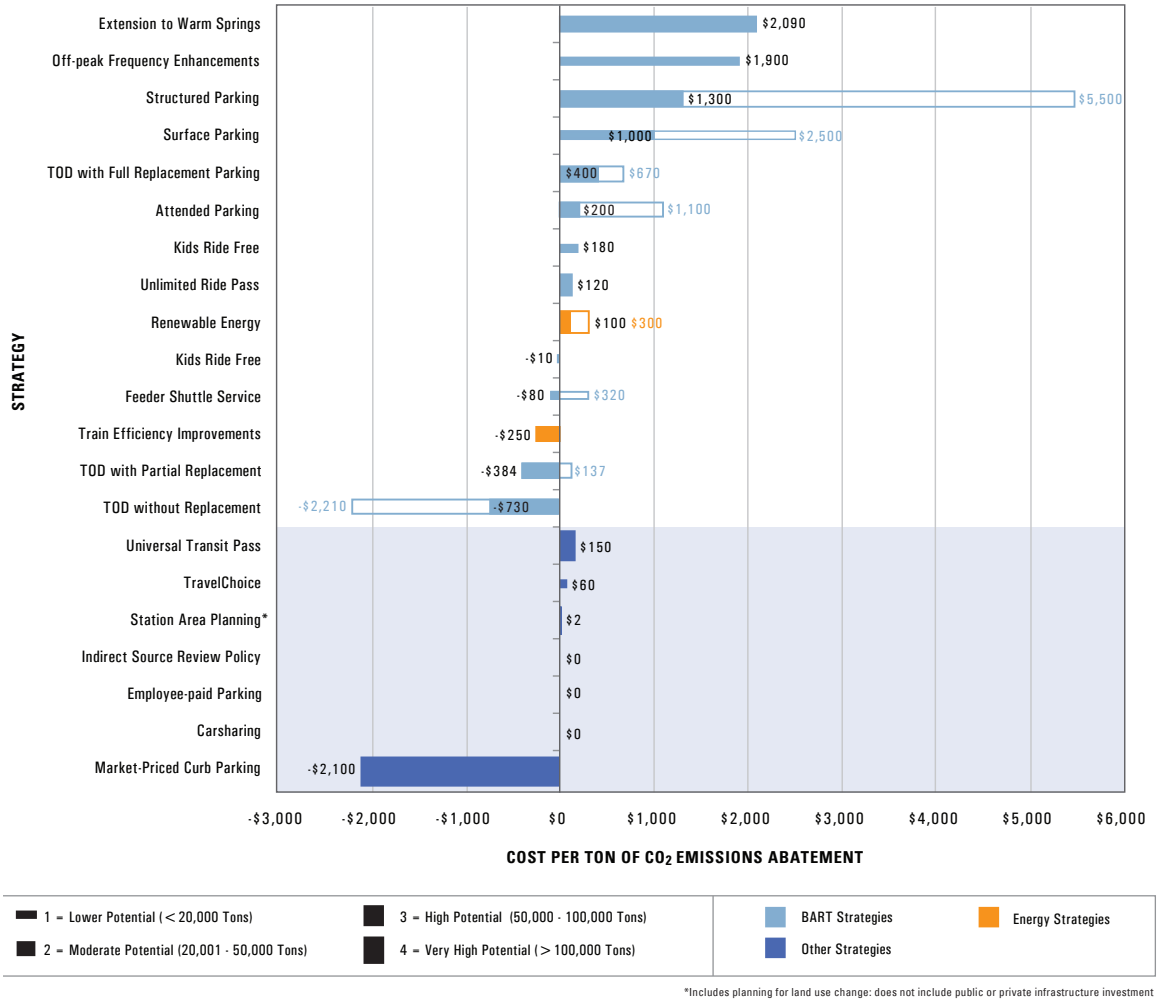
*Multimodal intersection: Exclusive bus lane and bike connector crossing MAX tracks at Northeast Wheeler and Holladay streets.*

The metropolitan planning organization for the San Francisco Bay Area, the Metropolitan Transportation Commission, has been heavily involved in reducing greenhouse gas emissions by promoting transit-oriented development. In 2005, MTC adopted an incentive program to encourage housing construction along the region's major new transit corridors as a way of fostering growth while minimizing energy consumption. To be awarded a station area planning grant, a municipality must accept corridor level thresholds for minimum levels of development around transit stations, develop a local station area plan to address future land use changes and incorporation of transit-oriented development elements, and create and maintain a corridor working group made of local and county planning staff, transit agencies and other stakeholders. Two cities have been awarded station area planning grants with an average of 2,595 housing units created in each. When taking into consideration the amount of vehicle miles traveled reduced by building transit accessible housing, the program reduces greenhouse gas emissions by 5,300 tons per city. At the same time, the program costs little; the credits produced in emissions reductions over the life cycle of the housing created bring the cost of the project to $2 per ton.[29]

BART recently commissioned a thorough analysis of several programs and their total cost and tons of greenhouse gas emissions reduced. Figure 4.12 illustrates the cost per ton of $CO_2$ reduced through various transit, land use and parking management programs. Some programs, particularly those that involve charging for parking, make money while reducing emissions; others show a high cost per ton of carbon dioxide reduced. Many of the strategies benefit not just the transit agency and the environment, but cause positive externalities in other areas of public life. For example, building transit-oriented development can improve public health by providing interesting and safe places to walk and bike.

29 BART actions to reduce greenhouse gas emissions: a cost-effectiveness analysis, Nelson\Nygaard Consulting Associates, Bay Area Rapid Transit, 2008.

**Figure 4.12: Cost per metric ton of $CO_2$ emissions by abatement strategy**




*Includes planning for land use change: does not include public or private infrastructure investment

Simple strategies such as fare incentive that fill seats at off peak times, station area planning and station access improvements can reduce greenhouse gas emissions at relatively low costs (compared with programs in other sectors) and help meet other regional land use and transportation goals.

## Strategies to reduce $CO_2$ emissions

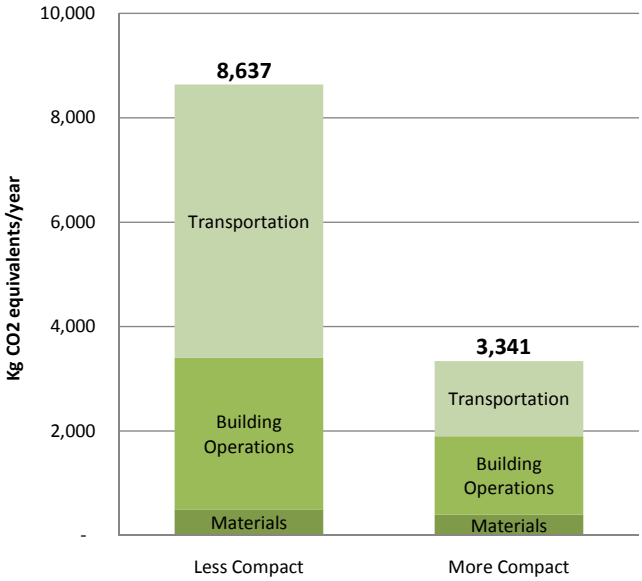
**Fares.** One main factor that people consider when making transportation decisions is cost. During times when the system has excess capacity, such as on weekends or off-peak hours, fare incentives can effectively shift drivers to transit, since roadways are less congested. Fare programs must be given careful thought, though, as they may result in reduced revenue for the agency. For example, when New York City Transit introduced unlimited ride weekly and monthly passes, ridership increased but revenue fell nearly 4 percent because the average fare per trip went down. New York Cit Transit did not cut service or raise fares during the 2009 recession and this change made the financial picture worse.

**Better access to transit/walkable communities.** The most effective way to decrease vehicle miles traveled is building communities that are more transit-oriented. As shown in Figure 4.13, people living in compact developments emit far fewer kilograms of $CO_2$.

BART's analysis concluded that transit-oriented development has the most potential to produce revenue and reduce emissions. When taking a typical BART station and implementing transit-oriented development in place of parking lots, BART could reduce emissions by 650 to 2,300 tons per project and achieve revenue gains of $600 to $1,400 per ton.[30]

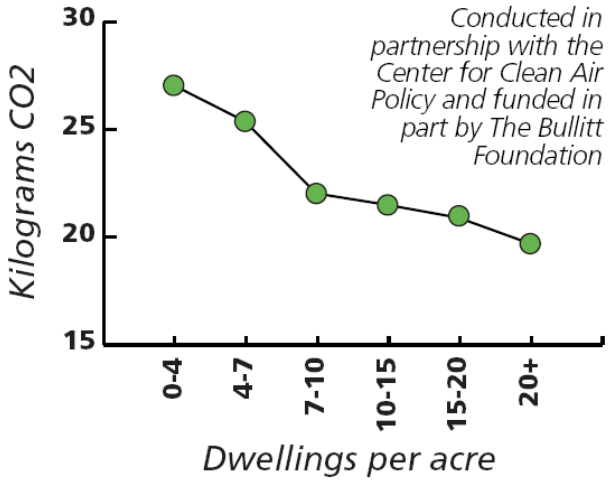
Increasing incentives for developers to build in existing MAX station areas or on frequent bus lines and developing regional and local land use policies that promote transit-oriented development will be the most cost-effective means to reduce regional greenhouse gases.

**Figure 4.13: Greenhouse gas emissions and compact development**




*Journal of Urban Planning and Development, March 2006*

**Figure 4.14: Greenhouse gas emissions and dwellings per acre**




*Achieving sustainability through healthy community design, King County, 2005*

**Enhancements to existing service.** Transit service strategies that shift travelers from auto travel to transit are the primary focus of efforts to reduce greenhouse gas emissions. Adding service to existing high demand, high ridership lines is an effective strategy. Speeding up existing service is often a more cost-effective strategy, since it allows transit operators to get more service for the same amount of operating cost and increases transit's competitiveness with driving. There is also an important role for local agencies that operate the streets and signal systems, since they can provide priority needed for transit to bypass traffic and speed operations using traffic signal priority, which holds a green signal to allow a train or bus to pass. TriMet is doing its part by focusing on creating a total transit system to attract every choice rider possible. To do this, the agency is focusing on service reliability, adequate capacity and complete information for customers. Measures like real-time arrival information and cell phone service updates improve customer service and play a role in attracting and retaining passengers.

30 BART actions to reduce greenhouse gas emissions: a cost-effectiveness analysis, Nelson\Nygaard Consulting Associates, Bay Area Rapid Transit, 2008.

**Marketing.** This is a measure that costs little in relation to many other strategies but can reap large rewards in increased ridership and ultimately greenhouse gas reduction. Measuring the effects of marketing campaigns can be difficult, but in general making sure the populace is aware and knowledgeable about available transit service is a critical step in attracting riders. Marketing has the biggest effect in instances where transit is most competitive with driving in terms of price, convenience and travel time. The BART study concluded that targeted marketing of existing transit services might be one of the most cost-effective means for reducing transportation related greenhouse gas emissions.

**Transit expansion must be tied to land use changes.** Most detailed analyses conducted to identify cost-effective strategies to reduce transportation related greenhouse gas emissions point to the need to increase our efforts to build dense, walkable, transportation-efficient communities and neighborhoods and to transfer the real cost of parking construction and operations to users.

Developing new HCT lines or extending existing lines is a capital intensive endeavor, but one that can drastically reduce greenhouse gas emissions if carefully executed to serve or leverage transit supportive development. A study completed for the American Public Transit Association suggests that transit service has a primary benefit from the act of substituting a mile of travel by car to a mile of travel on transit. It also offers a secondary benefit: Since transit fosters more compact and walkable communities, even those living near transit who don't use it will still reduce vehicle miles traveled as a result of being able to accomplish errands through shorter walking and cycling trips. This secondary benefit may be as much as 1.9 times as large as transit's direct impact.[31]

## Strategies to reduce emissions at the agency level

Transit providers can change internal practices to further reduce greenhouse gas emissions, such as by making green practices part of procurement, fostering an environmental workplace, constructing green buildings and facilities and implementing new technologies that can reduce emissions and energy consumption.

TriMet is currently conducting a detailed assessment of its carbon footprint according to American Public Transportation Association's recommended practice for quantifying greenhouse gas emissions. The analysis is not complete yet, but data in the 2007 National Transit Database shows that TriMet's total operational footprint was 76,000 metric tons of $CO_2$.[32] The more detailed APTA footprint analysis will tell TriMet its debits – the amount of greenhouse gases emitted by source – as well as its credits, or how much greenhouse gases are not emitted because of TriMet's ability to shift mode choice and foster compact development. The footprint analysis will allow TriMet to identify its biggest sources of emissions and create targets for reductions.

One main source of greenhouse gas emissions for transit agencies comes from traction power. TriMet trains currently have wayside regenerative braking capability, which allows power released from braking to be briefly stored in the overhead wire and used by another train. This measure has reduced traction power needs by 20 percent; however, only 50 to 75 percent of potential power released from braking is being retained. TriMet is researching on-board regenerative braking, which allows the braking train to store the energy. This technology has the potential to capture 75 to 100 percent of the energy released from braking.[33] Other initiatives TriMet has undertaken include: using biodiesel blends containing vegetable oil and fats, installing railroad ties made of recycled plastic taken from car gas tanks and developing the South Mall light rail terminus alternative energy

31 The broader connection between public transportation, energy conservation and greenhouse gas reduction, ICF International, American Public Transit Association, February 2008.

32 Eric Hesse, TriMet Strategic Planning Analyst, e-mail message May 15, 2009.

33 Eric Hesse. TriMet Strategic Planning Analyst, phone interview. May 15, 2009.

project. This pilot project, which recently received funding from the federal stimulus package, is also planned to include solar and wind power generators at the South Mall light rail terminus.

The Metropolitan Transportation Association, the state authority running transit systems in New York City, has identified several innovative measures to cut greenhouse gas emissions, including:

- building administrative and maintenance facilities to LEED standards or higher
- using aluminum, which has a lower resistance than steel, for the third rail, resulting in less energy use from braking
- for new track construction, creating humped tracks at platforms so trains can take advantage of gravity and use less power for braking and accelerating
- retrofitting train cars with aluminum where possible to lower the train weight and thus reduce energy needs.[34]

Metro will need to work with its local, regional and national partners to ensure that critical climate change goals are met. While renewable energy sources, cleaner fuels and green technology will help to reduce greenhouse gas emissions, significant changes are needed in how communities are designed and constructed to meet reduction goals. The region's 2040 Growth Concept vision should continue to serve as a blueprint for more detailed strategies; research shows that dense, mixed-use communities that allow people to travel by foot, bike and transit are critical to climate protection.

Achieving emissions reductions requires involvement and leadership at the national, state and regional level. Many greenhouse gas emissions reduction strategies can all be undertaken by transit providers; however, some of the most important policies for reducing greenhouse gas emissions require wider, more systemic change than a transit agency can achieve on its own.

34 Energy/carbon, Metropolitan Transportation Authority, State of New York, www.lirr.org, accessed June 30, 2009.

# CONCLUSION

> Planning is bringing the future into the present so that you can do something about it now.
> *—Alan Lakein, author*

As the first decade of the 21st century concludes, the world is struggling to confront the reality of global climate change, to realign the global economy toward a more sustainable future and to create energy systems that rely less on fossil fuels to run our grids and transportation systems. In this context, the Portland metro region is committed to being a great place to live and do business. To do so, it must address these issues while continuing to provide equitable and affordable housing, great parks and public spaces, and quality jobs for its residents. The region is challenged to leverage limited financial capacity to create a greater wealth of human, environmental and economic resources. This challenge is reflected in the six fundamentals adopted by Metro as part of the 2040 Growth Concept:

- healthy economy
- vibrant communities
- environment health
- transportation choices
- equity
- fiscal stewardship

The region has performed well so far. This region has on of the highest proportions of green buildings in the country, extensive renewable energy production and development, and is a national leader in growth management and natural resource protection. The Portland metro region has also established itself as a leader in sustainable transportation. Not only does it lead the nation in development of cycling infrastructure, but its public transit system is renowned for quality and innovation. In order to continue to thrive in the face of new challenges, the region must continue its proactive and innovative focus. A review of state of the industry practices summarized in this report points to a few guiding principles to accomplish regional goals:

- The best strategies make use of what we already have (infill transit-oriented development, transit efficiency improvements, etc).
- Transit expansions must be tied to land use; together they are among the most powerful tools we have to meet economic and environmental goals.
- The region's 2040 Growth Concept vision is as relevant today as when it was conceived, but we need to do more, moving quickly to manage the growth of our population while improving the health of environment.

The Regional High Capacity Transit System Plan is intended to set a framework for the continued development of a world class high capacity transit system in the Portland metro region. More importantly, it establishes a clear and measurable relationship between our investments in high capacity transit and the efficient land use patterns, sustainable development practices and placemaking principles to which we aspire.

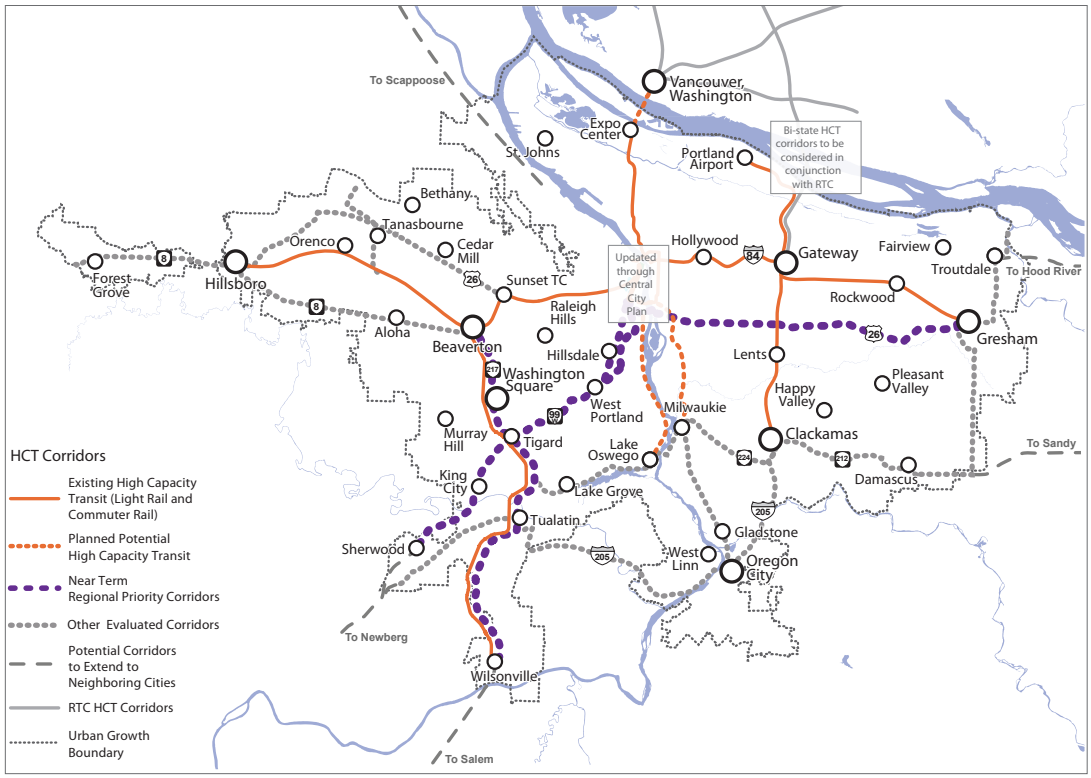
The Regional HCT System Plan makes several important contributions to the Regional Transportation Plan and the region's collaborative long range planning efforts.

**Recommends top regional priorities for near-term investments in high capacity transit.** Through an extensive screening and evaluation process, the plan uses a bottom line (economy, environment, community and deliverability) evaluation approach to identify the three top priorities for regional investment in high capacity transit (not necessarily listed in order of priority):

- a new HCT corridor in the vicinity of Powell Boulevard from the Portland central city to Gresham,
- a new HCT corridor running in the vicinity of Barbur Boulevard between the Portland central city, Tigard and Sherwood (with possible branch to Washington Square) and
- additional capital improvements to the WES commuter rail line that would will allow for 15-minute peak headways and the addition of midday service.

Figure 5.1 shows these near-term priority corridors alongside the region's existing and planned corridors.

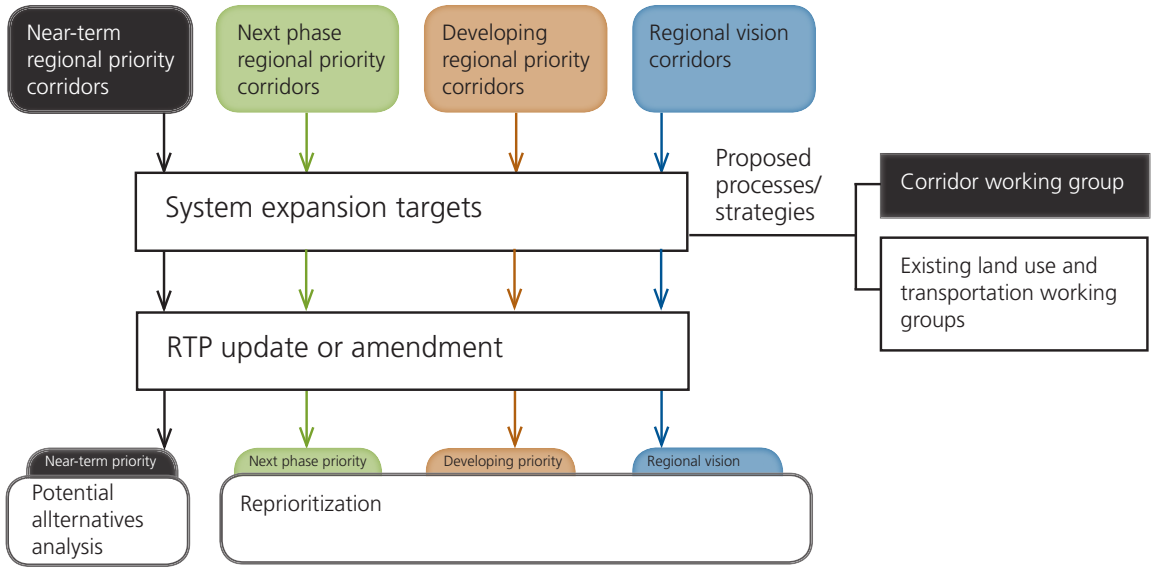
**Figure 5.1: Near-term regional priority corridors**




**Creation of a clear and measurable framework for future system expansion prioritization.** The system expansion policy provides a transparent process by which jurisdictions in regional priority corridors can work locally to advance their projects' regional priority status. When adopted as part of the 2010 Regional Transportation Plan update, the policy will set quantitative and qualitative targets that corridor communities, or working groups consisting of multiple jurisdictions, can work toward to advance a specific HCT project. Subsequent RTP updates, scheduled every four years, will serve as an opportunity to reprioritize regional funding for HCT based on interim actions taken by local jurisdictions. The system expansion plan emphasizes fiscal responsibility by ensuring that limited resources for new high capacity transit lines are spent where local jurisdictions have committed to supportive land uses, high quality access systems and management of parking resources, and proven there is broad based political support for the investment.

Figure 5.2 provides a conceptual illustration of how projects would advance between tiers and into the federal funding process.

**Figure 5.2: System expansion policy process**




**Proposal of a new definition of high capacity transit for the Regional Transportation Plan.** The plan calls for a functional definition of high capacity transit that is not mode specific, but rather addresses the critical operating and design features that attract a broad range of riders and leverage quality development and placemaking. Specifically, the regional high capacity transit system is designed to carry high volumes of passengers quickly and efficiently between regional centers. 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.

This functional definition ties to system expansion policy targets, which ensures that investment outcomes are optimized, and is in line with the RTP performance based approach to prioritizing and measuring transportation investments.

**Identification of best practices for high capacity transit system development and operations as well as supportive access, land use and parking strategies.** This report describes the mutually supportive relationship between land use, transit service quality, transit accessibility and integration of the complete multimodal transportation system. These features largely define the level of community benefit from high capacity transit investments and require simultaneous attention in investment to optimize the achievement of regional goals.

The relationship between the factors can be described as follows:

> As density increases, more potential riders are given access to transit, if transit is available. Assuming streets and stops are designed to invite passengers, increased density will drive ridership higher. As the level of transit patronage increases in a corridor, transit providers will look to offer more frequent service and to improve the speed and reliability of service for passengers. High quality, permanent high capacity transit service makes an area attractive to

more residents, signaling to developers that the market is good for more dense housing and amenities. This relationship builds over time as long as transit is able to respond to growing demand.

The Portland metro region uses a collaborative regional approach to planning and economic development. Most importantly, the approach recognizes the tight interrelation of land use, economic development and transportation decisions in creating great communities and building a region ready to address the challenges of the 21st century. High capacity transit is an important tool to this end. The Regional HCT System Plan provides a framework by which HCT investments support urban growth, housing, regional affordability, environmental protection and livability goals. Like any element of community development, the plan is not static. Rather, it sets a dynamic course where wholistic system development is a priority, and future investments are measured against targets that advance a broad set of regional goals. As our predecessors have proven, we can accomplish what is beyond common expectation and that which is greater than the goals of any one organization.

> If you have accomplished all that you have planned for yourself, you have not planned enough. *—Edward Everett Hale, author*

# RESOLUTION NO. 09-4052

BEFORE THE METRO COUNCIL

| | | |
|---|---|---|
| FOR THE PURPOSE OF ACCEPTING THE REGIONAL HIGH CAPACITY TRANSIT SYSTEM TIERS AND CORRIDORS, SYSTEM EXPANSION POLICY FRAMEWORK AND POLICY AMENDMENTS FOR ADDITION TO THE 2035 REGIONAL TRANSPORTATION PLAN, STATE COMPONENT | ) ) ) ) ) ) ) | RESOLUTION NO. 09-4052<br><br>Introduced by Councilor Carlotta Collette |

WHEREAS, in 1975, elected leaders set the stage for the Metro Area's balanced transportation system by rejecting the so-called Mt. Hood Freeway project between the Marquam Bridge and Lents neighborhood after public outcry over its expected cost and the destruction of developed neighborhoods that would be harmed by its construction; and

WHEREAS, the Metro Area chose a different development option and adopted the 1975 Interim Transportation Plan, setting aside plans for large new highway projects in favor of a multitude of street and roadway projects and a network of transitways along major travel corridors to meet future travel demand; and

WHEREAS, a systemwide network examination of regional high capacity transit corridors was completed in 1982 and adopted by Metro that resulted in nearly 90 miles of light rail transit, commuter rail and streetcar being built and/or planned for construction by 2016; and

WHEREAS, the Metro Area's 2040 Growth Concept and 2035 Regional Transportation Plan seek to prepare for the expected increase in growth in the Metro Area by providing multiple transportation options, including having pedestrian, bike and transit play a large role in facilitating growth within the Metro Area's current capacity; and

WHEREAS, expansion of the high capacity transit system will continue to reduce vehicle miles traveled, greenhouse gas emissions and the Metro Area's transportation carbon footprint; and

WHEREAS, high capacity transit is one of many important elements the Metro Area can use to build great communities; and

WHEREAS, a broad list of 55 potential high capacity transit corridors developed with the community and local jurisdictions was screened to the 18 most promising corridors based on criteria including ridership, cost, environmental constraints, social equity, transit connectivity, traffic congestion and region 2040 Growth Concept land uses; and

WHEREAS, the resulting 18 potential high capacity transit corridors were further analyzed based on a set of evaluation criteria that was approved by the Joint Policy Advisory Committee on Transportation (JPACT), Metro Policy Advisory Committee (MPAC) and the Metro Council; and

WHEREAS, the evaluation criteria were derived from the six outcomes of the Metro Council for a successful region, and are based on the three Regional Transportation Plan (RTP) categories of community, environment and economy, and also include a high capacity transit-specific category of deliverability; and

WHEREAS, the resulting 18 potential high capacity transit system corridors are prioritized and placed into the tiers of near term regional priority corridors, next phase regional priority corridors, developing regional priority corridors and regional vision corridors; and

WHEREAS, the regional high capacity transit system plan corridors which have been placed into tiers will be incorporated into the RTP and long-range land use and transportation planning efforts; and the 18 high capacity transit corridors will be regularly reviewed through the RTP; and

WHEREAS, the system expansion policy provides a framework for advancement of regional high capacity transit corridors, and identifies a distinct set of planning and policy actions and targets that will support successful high capacity transit implementation, including proposed amendments to the RTP; and,

WHEREAS, at its meeting on June 12, 2009, the Joint Policy Advisory Committee on Transportation recommended approval of the following; now therefore

BE IT RESOLVED THAT:

1. The Metro Council accepts the regional high capacity transit system plan tiers and corridors (Exhibit A), system expansion policy framework (Exhibit B), and recommended policy amendments (Exhibit C) for addition to the 2035 Regional Transportation Plan, State Component.

2. Acceptance of the regional high capacity transit system tiers and corridors, system expansion policy framework and policy amendments is not a final land use decision. The Metro Council will make a final land use decision on these matters when it adopts the 2035 Regional Transportation Plan, State Component, by ordinance.

ADOPTED by the Metro Council this 9TH day of JULY 2009.

David Bragdon, Council President

Approved as to Form:

Daniel B. Cooper, Metro Attorney

Officially Approved
Approvato Ufficialmente
Consiglio Metropolitano
METRO COUNCIL
Metro Council

Resolution No. 09-4052 Page 2 of 2

**Regional High Capacity Transit System Plan Tiers and Corridors**

*Corridors are not ranked within the tiers. Corridors are shown in numeric order by the corridor identification number. Also refer to the attached map.*

| Tier | Corridor Description (Mode As Evaluated) [1] | HCT Corridor Number | RTP Mobility Corridor Reference | Actions | | |
|---|---|---|---|---|---|---|
| | | | | Actions for Next 4-Years | | |
| Near Term Regional Priority | Portland to Gresham in the vicinity of Powell Corridor (LRT) | 10 | 5 - Central City – Gateway; 6 – Gateway to Gresham/Fairview/Wood Village/Troutdale | See the System Expansion Policy Framework's potential local actions and potential regional support, figure 2. | The location of High Capacity Transit and local land use actions and investments will influence future capacity for residential and employment in the region. | Location of High Capacity Transit may influence the location of future Urban Reserves and Urban Growth Boundary expansions. |
| | Portland to Sherwood in the vicinity of Barbur/Hwy 99W Corridor (LRT) | 11 | 2 – Central City – Tigard; 4 – Portland Central City; 20 – Tigard - Sherwood | | | |
| | Beaverton to Wilsonville (LRT) in the vicinity of WES[2] | 34[2] | 2 – Central City – Tigard; 3 - Tualatin – Wilsonville; 19 – Beaverton – Tigard; 22 – Beaverton – North Plains | | | |
| Next Phase Regional Priority Corridors | CTC to Oregon City in the vicinity of I-205 Corridor (LRT)[3] | 8[3] | 8 – Clackamas – Oregon City | See the System Expansion Policy Framework's potential local actions and potential regional support, figure 2. | The location of High Capacity Transit and local land use actions and investments will influence future capacity for residential and employment in the region. | Location of High Capacity Transit may influence the location of future Urban Reserves and Urban Growth Boundary expansions. |
| | Park Ave to Oregon City in the vicinity of McLoughlin Corridor(LRT extension)[3] | 9[3] | 8 – Clackamas – Oregon City; 11 – Milwaukie to Clackamas | | | |
| | Sunset Transit Center to Hillsboro in the vicinity of Hwy 26 Corridor/ Evergreen (LRT) | 17[4] | 22 – Beaverton – North Plains; 24 – Beaverton to Forest Grove | | | |
| | Tanasborne (LRT extension)[4] | 17D[4] | 22 – Beaverton – North Plains | | | |
| | Clackamas Town Center to Washington Square in the vicinity of I-205/217 Corridors(LRT) | 28 | 2 – Central City – Tigard; 7 – Oregon City – Tualatin; 8 – Clackamas – Oregon City | | | |
| | Clackamas Town Center to Washington Square in the vicinity of RR ROW (LRT) | 29 | 2 – Central City – Tigard; 11 – Milwaukie to Clackamas | | | |
| | Beaverton to Hillsboro in the vicinity of TV Highway (LRT) | 32 | 24 – Beaverton – Forest Grove | | | |
| | Gateway to Salmon Creek in the vicinity of I-205 Corridor[5] | 55[5] | 9 – Gateway – Clark County | | | |
| Developing Regional Priority Corridors | Hillsboro to Forest Grove (LRT extension) | 12 | 24 – Beaverton – Forest Grove | See the System Expansion Policy Framework's potential local actions and potential regional support, figure 2. | The location of High Capacity Transit and local land use actions and investments will influence future capacity for residential and employment in the region. | Location of High Capacity Transit may influence the location of future Urban Reserves and Urban Growth Boundary expansions. |
| | Gresham to Troutdale Extension (LRT Extension) | 13 | 6 – Gateway – Gresham/Fairview/Wood Village/Troutdale | | | |
| Regional Vision Corridors | Troutdale to Damascus (LRT) | 13D | 15 - Gresham/Fairview/Wood Village/Troutdale – Damascus | See the System Expansion Policy Framework's potential local actions and potential regional support, figure 2. | The location of High Capacity Transit and local land use actions and investments will influence future capacity for residential and employment in the region. | Location of High Capacity Transit may influence the location of future Urban Reserves and Urban Growth Boundary expansions. |
| | Clackamas Town Center to Damascus (LRT) | 16 | 12 – Clackamas – Happy Valley; 13 – Happy Valley - Damascus | | | |
| | Sherwood to Tualatin (LRT) | 38S | 20 – Tigard – Sherwood/Newberg | | | |

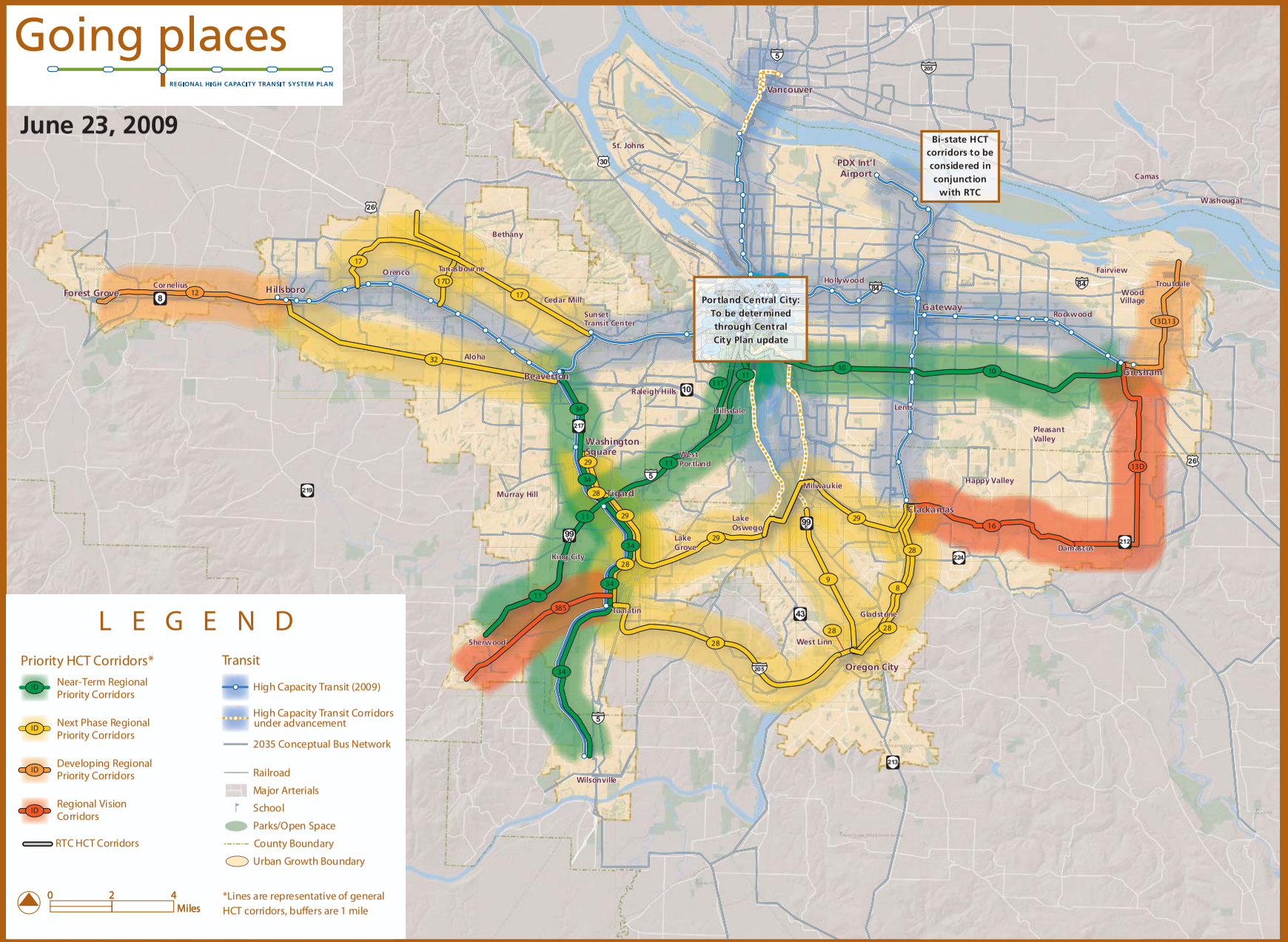
[1] The location of the alignment is to be decided through a corridor refinement plan and/or alternatives analysis.

[2] The WES Corridor (34) service upgrades are currently included in the federal RTP financially constrained list of projects to all day, 15 minute service. Service improvements that mimic light rail service will be examined in phases. Some portions of this corridor are included in corridors 28, 29 and potentially 11.

[3] Corridor 9 to be studied in conjunction with corridor 8.

[4] Corridor 17D to be studied in conjunction with corridor 17.

[5] Corridor 55 was selected as part of Southwest Washington Regional Transportation Council (RTC) HCT System Plan and was not ranked based on the evaluation criteria.


Going places
REGIONAL HIGH CAPACITY TRANSIT SYSTEM PLAN
June 23, 2009
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
Forest Grove
Cornelius
Hillsboro
Orenco
Tanasbourne
Cedar Mill
Sunset Transit Center
Aloha
Beaverton
Hollywood
Gateway
Rockwood
Fairview
Wood Village
Troutdale
Gresham
Raleigh Hills
Hillsdale
Lents
Pleasant Valley
Happy Valley
Washington Square
West Portland
Tigard
Murray Hill
Milwaukie
Clackamas
Damascus
Lake Oswego
Lake Grove
King City
Tualatin
Sherwood
West Linn
Gladstone
Oregon City
Wilsonville
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

**Regional high capacity transit system expansion policy framework**
**6-24-09**

**BACKGROUND**
*Making the Greatest Place* helps define how regional and local aspirations come together to create vibrant, healthy and sustainable communities. The challenges of climate change, rising energy costs, economic globalization, aging infrastructure and population growth require regional land use and transportation decisions to be supported by local decisions and actions. While regional land use policy has positioned the Portland metro region as a model for transit-supportive development, much of the region remains auto dependent due to the relatively low level of transit supportive land use regionwide. With limited resources, it is essential that future regional investments in high capacity transit (HCT) be used to leverage achievement of land use and economic development goals.

**PROCESS FOR HIGH CAPACITY TRANSIT PROJECT ADVANCEMENT - PRIORITY TIERS AND SYSTEM EXPANSION POLICY FRAMEWORK**
The regional high capacity transit system tiers and corridors identify near- and long-term regional HCT priorities. The system expansion policy component of the plan provides a framework to advance future regional HCT corridors by setting targets and defining regional and local actions that will guide the selection and advancement of those projects.

**High capacity transit priority tiers**
As described in Figure 1, 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 relate to an HCT corridor's readiness and regional capacity to study and implement HCT projects. Corridors within each tier would be updated with each RTP or by RTP amendment. 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.

**System expansion policy framework**
The system expansion policy framework is designed to provide a transparent process agreed to by Metro and local jurisdictions to advance high capacity transit projects through the tiers. The framework is based on a set of targets designed to measure corridor readiness to support a high capacity transit project.

The system expansion policy framework:

1. Identifies which near-term regional priority corridor(s) should move into the federal project development process toward implementation; and
2. Delineates a process by which potential HCT corridors can move closer to implementation, advancing from one tier to the next through a set of coordinated Metro and local jurisdiction actions.

Based on the tiered category, regional actions would be aligned with work in each corridor while local actions would focus on meeting HCT system expansion targets. In near-term corridors, formal **corridor working groups** would be established. Other corridors would coordinate work through existing processes.

**Figure 1: System expansion policy framework**

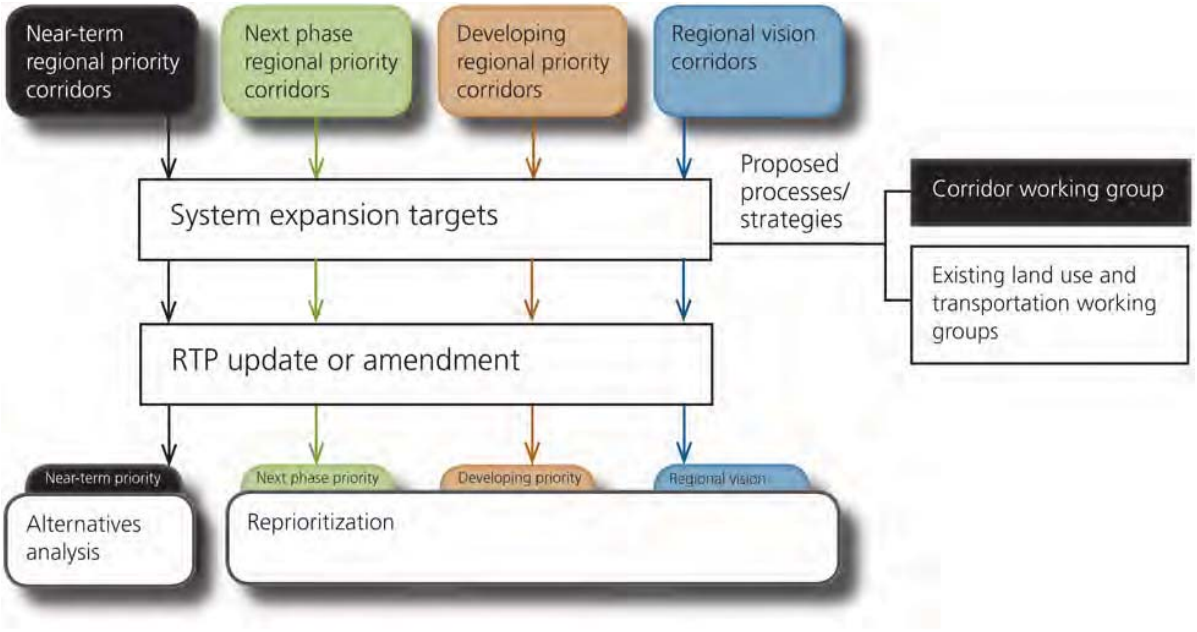


**Figure 2: HCT system expansion policy framework concept**

| Tiers | Summary | Potential methods to reach targets | | Potential system expansion targets | Potential strategies |
|---|---|---|---|---|---|
| | | Potential local actions (applied to each corridor) | Potential regional support (assistance with corridor assessment against system expansion targets) | | |
| **Near-term regional priority corridors**[1] | Corridors most viable for implementation in next four years. | • Develop corridor problem statement<br>• Define corridor extent<br>• Assess corridor against system expansion targets<br>• Create ridership development plan/ land use/TOD plans for centers and stations<br>• Assess mode and function of HCT<br>• Create multimodal station access and parking plans<br>• Assess financial feasibility | • Create land use/TOD plans for centers and stations<br>• Analyze station siting alternatives<br>• Coordinate with MTIP priorities<br>• Perform multi-modal transportation analysis<br>• Create multimodal station access and parking plans<br>• Start potential Alternatives Analysis | • Transit supportive land use/station context<br>• Community support<br>• Partnership/political leadership<br>• Regional transit network connectivity<br>• Housing needs supportiveness<br>• Financial capacity – capital and operating finance plans<br>• Integrated transportation system development | • Corridor working group<br>• Existing land use and transportation working groups |
| **Next phase regional priority corridors**[1] | Corridors where future HCT investment may be viable if recommended planning and policy actions are implemented. | • Develop corridor problem statement<br>• Define corridor extent<br>• Assess corridor against system expansion targets<br>• Create ridership development plan/ land use/TOD plans for centers and stations<br>• Assess mode and function of HCT | • Create land use/TOD plans for centers and stations<br>• Analyze station siting alternatives<br>• Coordinate with MTIP priorities | • Transit supportive land use/station context<br>• Community support<br>• Partnership/political leadership<br>• Regional transit network connectivity<br>• Housing needs supportiveness<br>• Financial capacity – capital and operating finance plans | • Existing land use and transportation working groups |

[1] The location of the alignment is to be decided through a corridor refinement plan and/or alternatives analysis.

| Tiers | Summary | Potential methods to reach targets | | Potential system expansion targets | Potential strategies |
|---|---|---|---|---|---|
| | | Potential local actions (applied to each corridor) | Potential regional support (assistance with corridor assessment against system expansion targets) | | |
| **Developing regional priority corridors**[1] | 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. | • Develop corridor problem statement<br>• Define corridor extent<br>• Assess corridor against expansion targets<br>• Create ridership development plan/ land use/TOD plans for centers and stations | • Create land use/TOD plans for centers and stations<br>• Analyze station siting alternatives | • Transit supportive land use/station context<br>• Community support<br>• Partnership/political leadership<br>• Regional transit network connectivity | • Existing land use and transportation working groups |
| **Regional vision corridors**[1] | Corridors where projected 2035 land use and commensurate ridership potential are not supportive of HCT implementation. | • Develop corridor problem statement<br>• Define corridor extent<br>• Assess corridor against system expansion targets<br>• Create ridership development plan/ land use/TOD plans for centers and stations | • Create land use/TOD plans for centers and stations | • Transit supportive land use/station context<br>• Community support | • Existing land use and transportation working groups |

[1] The location of the alignment is to be decided through a corridor refinement plan and/or alternatives analysis.

**Attachment 1 - System expansion policy terms and definitions**

This section provides a description of terms and definitions used in this document to describe the proposed process for HCT project advancement.

**Local action descriptions**

Local actions would be structured to reach tiered targets. Some or all of the following actions could be taken to advance a project, depending on the tier placement.

**Develop corridor problem statement:** The corridor problem statement defines the purpose of and establishes goals for the proposed HCT investment (i.e., congestion mitigation, economic development, etc.). It assesses the role of the project in addressing other regional transportation priorities and identifies opportunities for integration with other transportation system improvements in the corridor.

**Define corridor extent:** As in an FTA Alternatives Analysis, the definition of corridor extent could include a project extent that encompasses multiple alignment corridors or options.

**Assess corridor against system expansion targets:** The identification of progress toward all system expansion targets for the current priority tier.

**Create ridership development plan/land use/TOD plans for centers and stations**: Assessment of potential future ridership based on current land use projections, identified station areas and local zoning. This might involve demand modeling, but could effectively use Transit Orientation Index (TOI) scores within ½ mile of identified station areas. A ridership development plan could include assessment of: TOI score, residential density, employment density, potential cost effectiveness and transit supportive land uses (zoning and station typology aspirations).

**Assess mode and function of HCT**: Definition of the HCT modes that are most relevant for meeting the primary function of a corridor's problem statement. Selection of a lower cost mode could improve the corridor's ability to meet targets.

**Create multimodal station access and parking plan**: The station access plan would ensure that station designs optimize opportunities for intermodal connections and TOD by planning for an urban block pattern. The parking management plan would help local jurisdictions develop transit supportive parking policies that include development of potential parking districts. It could also establish maximum parking requirements, pay-for-parking, park-and-ride development and management plans, and other parking code changes such as unbundling parking for new development.

**Assess financial feasibility:** Assessment of the financial feasibility of the region to advance an HCT project. The analysis would consider and propose incentives to finance existing and future infrastructure improvements, using tools such as system development charge credits, tax abatement, improvement districts and tax increment financing (TIF).

**Regional support descriptions**

Regional support will be necessary to advance any corridor. Regional actions may already be in place, such as work coordinated through the transportation system plans; however, specific regional actions to support HCT project advancement would vary based on the tier.

**Create land use and transit-oriented development plans for station areas:** Land use and TOD plans for corridors would be reviewed for local areas to ensure that station areas within a defined corridor extent can meet defined targets for ridership and transit supportive land use.

**Analyze station siting alternatives:** Locations of stations is critical to the success of the HCT system. Metro has advanced tools to work in tandem with locals to assess the trade-offs between potential station areas.

**Coordinate with MTIP priorities**: HCT investments should align with regional priorities for transportation and land use investments. MTIP prioritization would support development or preparation of a corridor as an HCT project.

**Perform multi-modal transportation analysis:** Metro will assist with the preparation and production of transportation modeling for near-term regional priority corridors. Metro will assist corridors in other tiers as well; however, methods will vary.

**Create station access and parking plans**: Parking availability is one of the strongest determinants of transit ridership and has the potential to add significant value to leverage regional HCT investment. Metro has tools for the region to review parking plans for all land use types.

**Start potential alternatives analysis:** The region can begin the process to help projects advance into federal alternatives analysis process.

**Proposed system expansion target descriptions**

A small set of system expansion targets will be identified to measure project readiness and contribution to regional goals. These targets will provide clear direction to local jurisdictions that desire to advance projects. System expansion targets would vary based on the tier.

**Transit supportive land use/station context:** Under this target, each station along a proposed alignment should be evaluated for ridership potential based on the jurisdictions' demonstrated willingness to promote transit supportive development. Specific targets could be set for residential, commercial and employment density in station areas. Additionally each station should undergo an evaluation to determine: (1) the capacity for station area development, (2) ability to create good station access for all modes and (3) any issues with station capacity or functionality.

**Community support**: This measure would be qualitative, based on expressed support for HCT service in the corridor.

**Partnership/political leadership**: This measure would be qualitative based on demonstrated political leadership, development of strategic partnerships and demonstrated advancement of local aspirations.

**Regional transit network connectivity**: This measure would assess the role the project plays in filling key regional transit system gaps, connectivity with the existing and planned systems and ability for existing system facilities to support the investment. It would also measure a project's impact on the regional HCT system's ability to increase system capacity to deal with malfunction, incident or construction/maintenance, and the ability for existing station and track infrastructure to support the investment.

**Housing needs supportiveness:** This measure would assess the contribution of the project to improve overall housing and transportation affordability for populations of concern.

**Financial capacity – capital and operating finance plans**: This measure would assess the capacity to fund capital and operations with no significant negative consequences on existing infrastructure or transit system operations. This evaluation could include:

- **Capital finance plan**: A qualitative rating based on whether a project is partially or fully funded, the availability of local capital funds and competition for funding that is needed for core system capacity enhancements or maintenance.

- **Operating finance plan**: A preliminary analysis of the financial capacity to operate using measures such as estimated farebox recovery, cost effectiveness (total annualized operating and capital cost per passenger), and the stability, reliability and availability of proposed operating subsidy.

**Integrated transportation system development**: This measure would quantitatively assess the role each project would play in addressing a broad range of regional transportation priorities, particularly those priorities for the Mobility Corridor in which the corridor is located.

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This document describes elements of the federal 2008 Regional Transportation Plan recommended for update based on the work concluded through the High Capacity Transit System Plan.

**1. <u>Define the function of high capacity transit within an integrated transportation system</u>**

**Current Regional Transportation Plan policy:** As defined in the Regional Transportation Plan, page G-7, "High capacity transit is characterized by carrying a larger volume of passengers using larger vehicles and/or more frequent service than a standard fixed route bus system. It operates on a fixed guideway or within an exclusive right-of-way, to the extent possible. Service frequencies vary by type of service. Passenger infrastructure is provided at transit stations and station communities, including real-time schedule information, ticket machines, special lighting, benches, shelters, bicycle parking, and commercial services. Using transit signal priority at at-grade crossings and/or intersections preserves speed and schedule reliability. Park and-ride lots provide important and necessary access to the high capacity transit network."

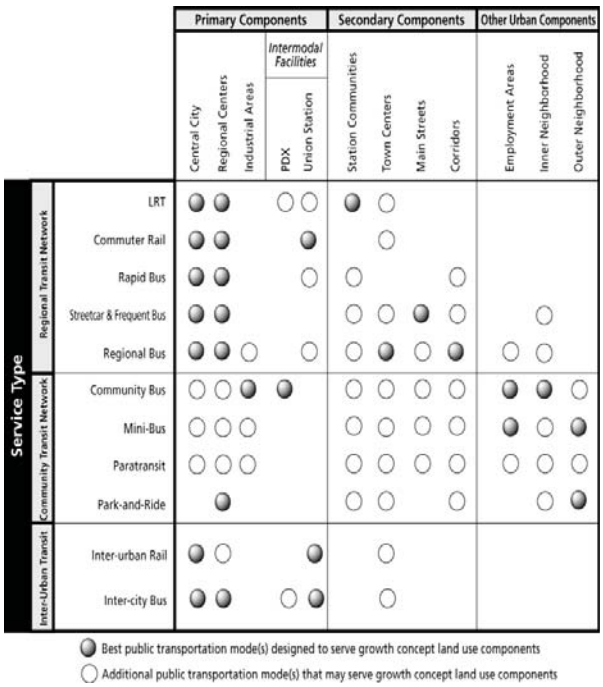
**What we've heard**: In public involvement efforts and committees, staff has heard conflicting understanding and opinions about the purpose and function of high capacity transit. High capacity transit could serve corridors with access and many stops or it could serve centers with speed and few stops. Some participants wanted more suburban-to-suburban service and faster service through downtown Portland.

**Recommendation:** Update the RTP to define the function of high capacity transit as carrying a larger volume of passengers using larger vehicles and/or more frequent service than a standard fixed route bus, with a majority of an HCT line separated from traffic. The update should include language to reflect that the level of investment in High Capacity Transit should be warranted based on performance targets. HCT targets would be based on the ability of a capital investment to move people more efficiently than can be achieved by a fixed-route bus in traffic.

**RTP update method:** Regional High Capacity Transit System Plan system expansion policy targets would set clear guidelines about what HCT investment is fiscally appropriate based on projected demand. This would help guide the level of investment necessary for individual corridors.

**2. <u>Define the role of HCT in providing service to town centers and employment areas</u>**

***RTP Figure 3.14***




**Current Regional Transportation Plan policy:** Under the current Regional Transportation Plan, Figure 3.14, high capacity transit (LRT, commuter rail, and rapid bus) is designed to provide core transit service to primary components, which include the central city, regional centers, and Union Station, and to the secondary component, station communities. High capacity transit (LRT, commuter rail, and rapid bus) is designed to provide additional public transportation modes that may serve growth concept land use components include the Portland Airport (PDX) and town centers.

**What we've heard:** In public involvement efforts and committees, staff has heard a desire for town centers, employment areas and major activity centers (e.g., the Oregon Zoo) to be served by high capacity transit.

**Recommendation:** Update the RTP with defined targets for mode-neutral transit service frequencies to serve each of the 2040 Growth Concept land uses. Performance targets would guide the mode type and clarify what major investment is appropriate. Activity centers are not clarified in the 2040 Growth Concept, and no specific service targets are recommended.

**RTP update method:** Regional High Capacity Transit System Plan system expansion policy targets would set clear guidelines about what HCT investment is fiscally appropriate based on projected demand. This would help guide the level of investment necessary for individual corridors.

**3. <u>Define HCT modes and resolve if rapid streetcar should be added as potential high capacity transit mode and clarify the role of commuter rail</u>**

**Current Regional Transportation Plan policy:** Under the current Regional Transportation Plan, page 3-38, high capacity transit facilities and services include light rail transit, commuter rail, bus rapid transit, intermodal passenger facilities and park-and-ride lots.

The Regional Transportation Plan, page G-15, defines streetcar as: "Fixed-route 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 and streetcar routes may include transit preferential treatments, such as transit signal priority systems, and enhanced passenger infrastructure, such as covered bus shelters, curb extensions and special lighting."

The Regional Transportation Plan, page G-3, defines commuter rail as: "Short-haul rail passenger service operated within and between metropolitan areas and neighboring communities. This transit service

operates in a separate right-or-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 demands exists and where 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."

The Regional Transportation Plan, page G-8, defines inter-rail as "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."

**What we've heard:** In public involvement efforts and committees, staff has heard that there are discrepancies existing in the current RTP. Rapid streetcar is being proposed in the Portland to Lake Oswego corridor, but rapid streetcar is not defined in the RTP. The High Capacity Transit System Plan has identified potential commuter rail lines to neighboring communities, but these lines would fall in between the RTP definitions of commuter rail definition and inter-city rail.

**Recommendation:** Update the RTP to replace the mode description type with mode function and performance targets. Targets for all modes performing as high capacity transit will be added, including the modes of commuter rail and rapid streetcar.

**RTP update method:** Regional High Capacity Transit System Plan system expansion policy targets would set clear guidelines about what HCT investment is fiscally appropriate based on projected demand. This would help guide the level of investment necessary for individual corridors.

**4. <u>Define the coordination of land use, station area and transportation investments with HCT investments</u>**

**Current Regional Transportation Plan policy:** There is currently no Regional Transportation Plan policy directing concurrent land use, transportation and transit planning in high capacity transit corridors.

**What we've heard:** In public involvement efforts and committees, staff has heard an emphasis on the importance of combining placemaking efforts and land use planning with future high capacity transit investments. Public participants were interested in creating links between stations and neighborhoods by integrating stations into surrounding communities, considering pedestrian and bike facilities around stations, and providing good local transit service to get people to HCT stations.

**Recommendation:** Update the RTP to incorporate the system expansion policy for advancement of high capacity transit corridors to include land use coordination and action by local communities to advance HCT projects.

**RTP update method:** Regional High Capacity Transit System Plan system expansion policy targets will include land use targets in association with measuring the value of potential future HCT investments.

**STAFF REPORT**

IN CONSIDERATION OF RESOLUTION NO. 09-4052 FOR THE PURPOSE OF ACCEPTING THE REGIONAL HIGH CAPACITY TRANSIT SYSTEM TIERS AND CORRIDORS, SYSTEM EXPANSION POLICY FRAMEWORK AND POLICY AMENDMENTS FOR ADDITION TO THE 2035 REGIONAL TRANSPORTATION PLAN STATE COMPONENT

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Date: June 25, 2009 Prepared by: Tony Mendoza 503-797-1726

**BACKGROUND**

The Regional High Capacity Transit (HCT) System Plan identifies corridors where new HCT could be developed over the next 30 years and prioritizes corridors based on evaluation criteria adopted by the region, and sets a framework to advance projects in the future. This staff report summarizes the study process, provides key results and describes proposed policy changes.

**Role of high capacity transit**

Metro's *Making the Greatest Place* process will position the region as a national leader in addressing the 21st century challenges of energy independence, carbon neutrality, population growth, sustainable economic development and human health. Continued development of a world class, HCT system is part of an integrated strategy to accommodate the region's rapidly increasing population, while reducing the negative impacts of growth on land, air and water quality and the ability to get around. Regional land use policy has positioned the Portland metro area to effectively employ transit supportive development policy and implementation. It is essential that HCT future investments leverage achievement of land use and economic development goals.

**Regional HCT System Plan outcomes**

The Regional HCT System Plan is not intended as a review of the regional transit structure or its management, or as a complete service analysis of the existing HCT system. Rather, the plan applies technical evaluation of possible investments to set near- and long-term priorities and aligns HCT project advancement in a way that supports and enhances the goals of the Regional Transportation Plan (RTP) and the region's 2040 Growth Concept. HCT system capital investments must 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. The Regional HCT System Plan creates a new policy framework where these elements lead or parallel investment in HCT.

**Regional HCT System Plan process**

Significant work has been done by Metro's technical team as well as the HCT MTAC/TPAC Subcommittee and other Metro policy committees. Steps completed in the process to date include:

- early plan public outreach and stakeholder interviews to identify major issues and objectives, and to develop an initial universe of corridors to be evaluated

- formation of and meetings with a "Think Tank" group, a group of regional leaders in a number of related fields formed to provide high-level concept development to guide the Regional HCT System Plan
- development of a long list of 55 potential regional high capacity transit corridors
- development and application of a set of eight screening criteria to narrow the 55 corridors to 18 promising corridors.
- development and adoption of 25 detailed evaluation criteria used to prioritize the 18 corridors
- stakeholder and public review of evaluation criteria
- evaluation and prioritization of the 18 adopted regional HCT system corridors
- development of a system expansion policy which sets a framework to advance HCT corridors into development.

**RESOLUTION MATERIALS**

*Exhibit A* delineates HCT system plan tiers and corridors. These tiers and corridors are the result of months of technical work and iterations of review by the MTAC/TPAC HCT Subcommittee, TPAC, MTAC, MPAC, and JPACT.

*Exhibit B* explains the system expansion policy framework, as described in more detail below.

*Exhibit C* illustrates recommended policy amendments for addition to the 2035 RTP, State Component based on lessons learned through the HCT planning process.

**EXHIBIT A: Regional high capacity transit system plan tiers and corridors**

An intense evaluation process revealed that ridership, though not weighted, is an important indicator of how a corridor scores since many of the evaluation criteria relate to ridership. In short, the more use a corridor has, the more benefits the corridor will produce. In addition to the technical analysis, public outreach efforts and a survey of Metro's standing committees revealed that ridership (or ridership potential) was seen as the most important single factor in determining where new HCT investments should be made.

**HCT modes**

To ensure that all corridors were evaluated evenly, all HCT corridors were examined as light rail. This was also done to limit the potential for subjective judgments about appropriate modes for a corridor, which could favor one corridor over another.

Mode selection will be a critical component of the system expansion policy for future selection of priority corridors, and targets will be set to help guide what the appropriate investment should be for each corridor.

**EXHIBIT B: Regional high capacity transit system expansion policy**

**System expansion policy framework**

The system expansion policy framework is designed to provide a transparent process to advance high capacity transit projects through the tiers. The framework is based on a set of targets designed to measure corridor readiness to support a high capacity transit project, as described in *Exhibit B.*

**System expansion targets**

The targets or thresholds set through the system expansion policy will provide clarity for actions local jurisdictions can take to move a corridor to a higher tier or prepare a corridor for advancement. Regional actions will also be required to ensure projects move forward in partnership. Targets will be based on measurable factors that support ridership such as household and employment densities and sidewalk connectivity. Additionally, targets will be set for community support and political leadership. These targets will be finalized in conjunction with the completion of the 2035 RTP, State Component.

**EXHIBIT C: Recommendations for regional transportation plan updates**

Over the course of the HCT System Plan process, several policy questions arose. These policy questions are addressed in *Exhibit C.* This document seeks to address policy questions of the function of HCT and definitions of HCT modes and to define the framework of the system expansion policy.

**ANALYSIS/INFORMATION**

**Known opposition**

Representatives from Forest Grove (including the mayor) and Cornelius have concurred with the validity of the technical analysis but are on record as opposing the tiered ranking of Corridor 12 (Hillsboro to Forest Grove) in the developing regional priority category.

**Legal antecedents**

Resolution No. 09-4025 *For the Purpose of Adopting the Regional High Capacity Transit System Plan Screened Corridors and Evaluation Criteria.*

Ordinance No. 82-135 *For the Purpose of Adopting the Regional Transportation Plan*

Resolution No. 83-383 *For the Purpose of Endorsing the Regional Light Rail Transit (LRT) System Plan Scope of Work and Authorizing Funds for Related Engineering Services*

Resolution 07-383 1B *For the Purpose Of Approving the Federal Component of the 2035 Regional Transportation Plan (RTP) Update, Pending Air Quality Conformity Analysis*

**Anticipated effects**

Adoption of this resolution would enable the prioritized HCT corridors to be included in the RTP, State Component, set a policy framework for the advancement of high capacity transit projects through the system expansion policy, and set a policy framework for HCT within the RTP, State Component.

**Budget impacts**

There would be no direct impact on the Metro budget as a result of taking action on this resolution.

**RECOMMENDED ACTION**

Approve Resolution No. 09-4052 For the Purpose of Accepting the Regional High Capacity Transit System Tiers and Corridors, System Expansion Policy Framework and Policy Amendments for Addition to the 2035 Regional Transportation Plan State Component

**Resolution exhibits**

Exhibit A: High capacity transit system plan tiers and corridors
Exhibit B: System expansion policy framework
Exhibit C: Recommended policy amendments for addition to the 2035 Regional Transportation Plan, State Component

**Staff report attachments**

Council has previously received the following document in the draft form:

- High Capacity Transit System detailed evaluation report on May 12, 2009

Council will receive the following documents when they have been finalized after council's final adoption of Resolution:

- High Capacity Transit System detailed evaluation report
- Regional High Capacity Transit System Plan summary report
- Public outreach summary report

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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.

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*Printed on recycled content paper. 09205 September 2009*
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CHAPTER 3.08

# DRAFT REGIONAL TRANSPORTATION FUNCTIONAL PLAN

*NOTE: This draft document codifies current regional transportation functional plan language. The draft document will serve as a starting point for identifying additional functional plan provisions to direct how city and county plans will implement new RTP policies and implementation actions.*


SECTIONS TITLE

3.08.010 Purpose of Regional Transportation Functional Plan

**TITLE 1**: **DEVELOPMENT OF TRANSPORTATION SYSTEM PLANS**
3.08.110 Transportation Needs
3.08.120 Congestion Management

**TITLE 2**: **AMENDMENT OF TRANSPORTATION SYSTEM PLANS**
3.08.210 Amendments of City and County Transportation System Plans

**TITLE 3**: **REGIONAL STREET DESIGN**
3.08.310 Design Standards for Street Connectivity

**TITLE 4**: **TRANSPORTATION PROJECT DEVELOPMENT**
3.08.410 Addressing Projects in Transportation System Plans
3.08.420 Transportation Project Analysis

**TITLE 5**: **REGIONAL PARKING MANAGEMENT**
3.08.510 Intent
3.08.520 Performance Standards

**TITLE 6**: **COMPLIANCE PROCEDURES**
3.08.610 Metro Review of Amendments to Transportation System Plans
3.08.620 Extension of Compliance Deadline
3.08.630 Exception from Compliance

**TITLE 7**: **DEFINITIONS**
3.08.710 Definitions


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## CHAPTER 3.08

## REGIONAL TRANSPORTATION FUNCTIONAL PLAN

SECTIONS TITLE

3.08.010 Purpose of Regional Transportation Functional Plan

The Regional Transportation Functional Plan (RTFP) implements those policies of the Regional Transportation Plan (RTP) that cities and counties of the region will carry out in their comprehensive plans, transportation system plans (TSPs) and other land use regulations. The RTFP is intended to be consistent with federal law that applies to Metro in its role as a designated metropolitan planning organization, the Oregon Transportation Plan, and Statewide Planning Goal 12 (Transportation) and its Transportation Planning Rule (TPR). City and county TSPs must be consistent with the RTP, including its population and employment forecast; its determination of regional transportation needs; its system maps for street design, motor vehicles, public transportation, bicycles, pedestrians and freight; motor vehicle performance measures; and regional non-SOV modal targets. If a TSP is consistent with this RTFP, Metro shall deem it consistent with the RTP.

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### TITLE 1: DEVELOPMENT OF TRANSPORTATION SYSTEM PLANS

3.08.110 Transportation Needs

A. Each city and county shall determine its transportation needs, including needs for regional travel within the city or county, and consider modes, corridors and strategies to meet the needs.

B. If a city or county provides for transportation needs in an urban reserve, it shall ensure planned improvements in the reserve are contingent upon addition of the reserve to the UGB and link to transportation facilities within the UGB.

3.08.120 Congestion Management

A. Each city and county shall incorporate the appropriate motor vehicle level-of-service Deficiency Thresholds and Operating Standards in Table 3.16 of the RTP for regional facilities into its TSP for management of congestion on those facilities. A city or county may adopt alternative standards that do not exceed the minimums on Table 3.16 upon a demonstration that the alternative standards:

1. Will not result in motor vehicle capacity improvements that shift unacceptable levels of congestion into neighboring jurisdictions along shared regional facilities;

2. Will not result in motor vehicle capacity improvements to the principal arterial system as defined in Figure 3.16 that are not recommended in, or are inconsistent with, the RTP; or

3. Will not increase SOV travel to a measurable degree that affects local consistency with the modal targets in Table 3.17.

B. Each city and county shall conduct its congestion analysis using the following steps:

1. Analysis: a transportation need is identified if congestion exceeds the deficiency threshold in Table 3.16 of the RTP.

2. Accessibility: if a transportation need is identified, the city or county shall evaluate the effect of the congestion on regional accessibility using the best available quantitative and qualitative methods. If the city or county determines that the congestion will have a negative effect on regional accessibility, then the city or county shall follow the procedures set forth in subsection C of this section.

3. Consistency: If amendments to comprehensive plans or land use regulations would significantly affect the function or capacity of a road, the city or county shall take one of the actions set forth in Title 4, section 3.08.420A, to maintain consistency between planned land uses and existing or planned transportation facilities.

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C. If congestion occurs on the principal arterial system as defined in Figure 3.6 or on the regional freight system as defined in Figure 7.13, the city or county responsible for developing a TSP for the area of congestion shall identify any unmet transportation need associated with the congestion in its TSP and propose one of the following actions:

1. Identify a proposed project at the time of Metro review of its TSP, but incorporate the project into the RTP during the next RTP update; or

2. Propose an amendment to the RTP for more immediate unmet needs and projects.

D. Each city and county shall consider the following strategies for managing congestion:

1. Transportation demand management that refine or implement a regional strategy in the RTP;

2. Transportation system management, including intelligent transportation systems that refine or implement a regional strategy in the RTP;

3. Sub-area or local transit, bicycle and pedestrian system improvements;

4. Amendments to comprehensive plans and land use regulations to help achieve the city's or county's overall modal target;

5. Improvements to parallel arterials, collectors or local streets, consistent with the connectivity standards in Title 3, in order to provide alternative routes;

6. Traffic-calming techniques;

7. Change to the motor vehicle functional classification;

8. Capacity improvement only upon a demonstration that other strategies in this subsection cannot solve the congestion problem in a cost-effective manner.

E. Upon its conclusion that the strategies in subsection B would not be adequate or cost-effective to manage congestion, a city or county shall, in coordination with Metro, consider the following strategies:

1. Amend the 2040 Growth Concept design type for an area;

2. Take an exception to the relevant RTFP requirement under Title 6;

3. Amend the relevant policy in the RTP; and

4. Designate the area an Area of Special Concern under Table 3.16.

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3.08.130 Non-SOV Modal Targets

A. Each city and county shall establish, and include in its TSP, non-SOV modal targets for trips into, out of and within all 2040 Growth Concept land design types within its jurisdiction. The targets shall be no lower than the Regional Non-SOV Modal Targets in Table 3.17 of the RTP.

B. Each city and county, in coordination with TriMet and other regional agencies, identify actions in its TSP that will result in progress toward achievement of its non-SOV modal targets. Selection of actions shall be based initially upon consideration of:

1. Maximum parking ratios developed pursuant to Title 5;

2. Regional street design considerations in Title 3;

3. Transportation demand management strategies adopted pursuant to subsection 3.08.120D; and

4. The role of transit in the area.

## TITLE 2: AMENDMENT OF TRANSPORTATION SYSTEM PLANS

3.08.210 Amendments of City and County Transportation System Plans

A. When a city or county proposes to amend its TSP, it shall consider the strategies for managing congestion set forth in subsection 3.08.120D.

## TITLE 3: REGIONAL STREET DESIGN

3.08.310 Design Standards for Street Connectivity

A. To protect the integrity of the region's transportation system, particularly to preserve the capacity of the region's arterials for through trips, each city and county shall amend its TSP, if necessary, to comply with the mapping requirements and street design standards set forth in subsections B through E of this section.

B. To improve local access, each city and county shall incorporate into its TSP a conceptual new streets map of all contiguous areas of vacant and re-developable lots and parcels of five or more acres that are zoned to allow residential or mixed-use development. The map should identify street connections to adjacent areas in a manner that promotes a logical, direct and connected system of streets and should demonstrate opportunities to extend and connect new streets to existing streets, provide direct public right-of-way routes and limit closed-end designs.

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C. If proposed residential or mixed-use development involves construction of a new street, the city or county shall require the applicant to provide a site plan that:

1. Is consistent with the conceptual new streets map required by subsection B of this section;

2. Provides full street connections with spacing of no more than 530 feet between connections, except if prevented by barriers such as topography, rail lines, freeways or pre-existing development, or in leases, easements or covenants that existed prior to May 1, 1995;

3. If streets must cross water features identified pursuant to Title 3 of the Urban Growth Management Functional Plan ("UGMFP"), provides a crossing every 800 to 1,200 feet unless habitat quality or the length of the crossing prevents a full street connection;

4. If full street connection is prevented, provides bicycle and pedestrian accessways on public easements or rights-of-way spaced such that accessways are not more than 330 feet apart, unless not possible for the reasons set forth in paragraph 3 of this subsection;

5. Provides for bike and pedestrian accessways that cross water features identified pursuant to Title 3 of the UGMFP at an average of 530 feet between accessways unless habitat quality or the length of the crossing prevents a connection;

6. If full street connection over water features identified pursuant to Title 3 of the UGMFP cannot be constructed in Centers as defined in Title 6 of the UGMFP or Main Streets shown on the 2040 Growth Concept Map, or if spacing of full street connections exceeds 1,200 feet, provides bike and pedestrian crossings at an average of 530 feet between accessways unless habitat quality or the length of the crossing prevents a connection;

7. Limits cul-de-sac designs or other closed-end street designs to circumstances in which barriers prevent full street extensions and limits the length of such streets to 200 feet and the number of dwellings along the street to no more than 25; and

8. Provides street cross-sections showing dimensions of right-of-way improvements and posted or expected speed limits.

B. City and county street design regulations shall allow:

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1. Local streets of no more than 46 feet of total right-of-way, including:

   a. Pavement widths of no more than 28 feet from curb-face to curb-face;

   b. Sidewalk widths of at least five feet; and

   c. Landscaped pedestrian buffer strips that include street trees.

2. Traffic calming devices, such as woonerfs and chicanes, to discourage traffic infiltration and excessive speeds on local streets.

3. Short and direct right-of-way routes to connect residences with commercial services, parks, schools and other neighborhood facilities.

4. Opportunities to extend streets in an incremental fashion.

## TITLE 4: TRANSPORTATION PROJECT DEVELOPMENT

3.08.410 Addressing Projects in Transportation System Plans

A. Each city or county developing or amending a TSP shall specify the general location of planned regional transportation facilities and improvements identified on the appropriate RTP map, subject to the project development requirements in this title. Except as otherwise provided in the TSP, the general location is as follows:

1. For new facilities, a corridor within 200 feet of the location depicted on the appropriate RTP map;

2. For interchanges, the general location of the crossing roadways, without specifying the general location of connecting ramps;

3. For existing facilities planned for improvements, a corridor within 50 feet of the existing right-of-way; and

4. For realignments of existing facilities, a corridor within 200 feet of the segment to be realigned as measured from the existing right-of-way depicted on the appropriate RTP map.

B. The city or county shall adopt findings that explain how the chosen location complies with the city's or county's comprehensive plan, the RTP and applicable statewide planning goals. The general location of a planned regional transportation facility or improvement in a city or county TSP is consistent with the RTP if it is within the general location depicted in the appropriate RTP map.

C. A city or county may refine or revise the general location of a planned facility as it prepares or revises its TSP. Such revisions may be appropriate to reduce the impacts or the facility or to comply with comprehensive plan or statewide planning goal requirements. If, in developing or amending its TSP, a city or county determines that the general location of a planned facility or improvement is inconsistent with its comprehensive plan or a statewide planning goal requirement, it shall:

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1. Propose a revision to the general location of the planned facility or improvement to achieve consistency and, if the revised location lies outside the general location depicted in the appropriate RTP map, seek an amendment to the RTP; or

2. Propose a revision to its comprehensive plan to authorize the planned facility or improvement at the revised location.

3.08.420 Transportation Project Analysis

A. If a city or county proposes a transportation project that is not included in the RTP, it shall consider the following in its Congestion Management System report as part of its project analysis:

1. Transportation system demand (such as access management, signal inter-ties and lane channelization) to address or preserve existing street capacity;

2. Street design guidelines adopted pursuant to Title 3 of the RTFP, standards set forth on Figure 3.17 of the RTP, the implementing guidelines in *Creating Livable Streets: Street Design Guidelines for 2040* (2nd Editions, 2002), or other similar resources consistent with regional street design policies.

3. The environmental design guidelines contained in *Green Streets: Innovative Solutions for Stormwater and Street Crossings* (2002) and *Trees for Green Streets: An Illustrated Guide* (2002) or other similar resources consistent with federal regulations for stream protection.

B. If the city or county decides not to build the project, it shall inform Metro so that Metro can amend the RTP to delete the project and address transportation need that gave rise to the project in an alternative way.

C. This section does not apply to city or county transportation projects that are financed locally and would be undertaken on local facilities.

## TITLE 5: REGIONAL PARKING MANAGEMENT

3.08.510 Intent

A. The State's Transportation Planning Rule calls for reductions in vehicle miles traveled per capita and restrictions on construction of new parking spaces as a means of responding to transportation and land use impacts of growth. The Metro 2040 Growth Concept calls for more compact development as a means to encourage more efficient use of land, promote non-auto trips and protect air quality. In addition, the federally-mandated air quality plan adopted by the state relies on full achievement of the transportation objectives of the 2040 Growth Concept. Notably, the air quality plan relies upon reducing vehicle trips per capita and related parking spaces through minimum and maximum parking ratios. This title addresses these state and federal requirements and preserves the quality of life of the region.

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B. A compact urban form requires that each use of land is carefully considered and that more efficient forms are favored over less efficient ones. Parking, especially that provided in new developments, can result in less efficient land use and lower floor to area ratios. In areas where transit is provided or other non-auto modes (walking, biking) are convenient, less parking can be provided and still allow accessibility and mobility for all modes, including autos. Substitution of non-auto modes for auto trips can reduce congestion and increase air quality.

3.08.520 Performance Standards

A. Cities and counties shall amend their comprehensive plans and implementing regulations, if necessary, to meet or exceed the following minimum parking standards:

1. Cities and counties shall require no more parking than the minimum as shown on Table 3.08-2, Regional Parking Ratios.

2. Cities and counties shall establish parking maximums at ratios no greater than those listed in Table 3.08-2 and as illustrated in the Parking Maximum Map. The

designation of A and B zones on the Parking Maximum Map should be reviewed after the completion of the Regional Transportation Plan and every three years thereafter. If 20-minute peak hour transit service has become available to an area within a one quarter mile walking distance for bus transit or one-half mile walking distance for light rail transit, that area shall be added to Zone A. If 20-minute peak hour transit service is no longer available to an area within a one-quarter mile walking distance for bus transit or one-half mile walking distance for light rail transit, that area shall be removed from Zone A. Cities and counties should designate Zone A parking ratios in areas with good pedestrian access to commercial or employment areas (within 1/3 mile walk) from adjacent residential areas.

3. Cities and counties shall establish an administrative or public hearing process for considering ratios for individual or joint developments to allow a variance for parking when a development application is received which may result in approval of construction of parking spaces either in excess of the maximum parking ratios; or less than the minimum parking ratios. Cities and counties may grant a variance from any maximum parking ratios.

B. Free surface parking shall be subject to the regional parking maximums provided for Zones A and B. Parking spaces in parking structures, fleet parking, parking for vehicles that are for sale, lease, or rent, employee car pool parking spaces, dedicated valet parking spaces, spaces that are user paid, market rate parking or other high-efficiency parking management alternatives may be exempted from maximum parking standards by cities and counties. Reductions associated with redevelopment may be done in phases. Where mixed land uses are proposed, cities and counties shall provide for blended parking rates. Cities and counties should count adjacent on-street parking spaces, nearby public parking and shared parking toward required parking minimum standards.

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C. Cities and counties may use categories or measurement standards other than those in the Regional Parking Ratios Table but must demonstrate that the effect will be substantially the same as the application of the Regional Parking Ratios.

D. Cities and counties shall provide data to Metro on an annual basis that demonstrates compliance with the minimum and maximum parking standards, including the application of any variances to the regional standards in this title. Collection of other building data should be coordinated with Metro.

E. Cities and counties shall provide for the designation of residential parking districts in local comprehensive plans or implementing ordinances.

F. Cities and counties shall amend their comprehensive plans and implementing regulations to require that parking lots more than three acres in size provide street-like features along major driveways, including curbs, sidewalks, and street trees or planting strips. Major driveways in new residential and mixed use areas shall meet the connectivity standards

for full street connections as described in Section 6.4.5 of the 2000 Regional Transportation Plan.

## TITLE 6: COMPLIANCE PROCEDURES

3.08.610 Metro Review of Amendments to Transportation System Plans

A. Cities and counties shall amend their TSPs to comply with the RTFP, or an amendment to it, within two years after its acknowledgement or after such later date specified in the ordinance that amends the RTFP. The COO shall notify cities and counties of the compliance date.

B. Cities and counties that amend their TSPs after acknowledgment of the RTFP or an amendment to it, but before two years following its acknowledgment, shall make the amendments in compliance with the RTFP or the amendment. The COO shall notify cities and counties of the date of acknowledgment.

C. One year following acknowledgment of the RTFP or an amendment to it, cities and counties whose TSPs do not yet comply with the RTFP or the amendment shall make land use decisions consistent with the RTFP or amendment. The COO, at least 120 days before the specified date, shall notify cities and counties of the date upon which RTFP requirements become applicable to land use decisions. The notice shall specify which requirements become applicable to land use decisions in each city and county.

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D. An amendment to a city or county TSP shall be deemed to comply with the RTFP if no appeal to the Land Use Board of Appeals is made within the 21-day period set forth in ORS 197.830(9), or if an appeal is made and the amendment is affirmed, upon the final decision on appeal. Once the amendment is deemed to comply with the RTFP, the RTFP shall no longer apply directly to city or county land use decisions.

E. An amendment to a city or county TSP shall be deemed to comply with the RTFP as provided in subsection D only if the city or county provided notice to the COO as required by subsection F.

F. At least 45 days prior to the first public hearing on a proposed amendment to a TSP, the city or county shall submit the proposed amendment to the COO. The COO may request, and if so the city or county shall submit, an analysis of compliance of the amendment with the RTFP. Within four weeks after receipt of the notice, the COO shall submit to the city or county a written analysis of compliance of the proposed amendment with the RTFP, including recommendations, if any, that would bring the amendment into compliance with the RTFP. The COO shall send a copy of its analysis to those persons who have requested a copy.

G. If the COO concludes that the proposed amendment does not comply with RTFP, the COO shall advise the city or county that it may:

1. Revise the proposed amendment as recommended in the COO's analysis;

2. Seek an extension of time, pursuant to section 3.08.620, to bring the proposed amendment into compliance;

3. Seek an exception to the requirement, pursuant to section 3.08.630; or

4. Seek review of the noncompliance by JPACT and the Metro Council, pursuant to subsections H and I of this section.

H. The city or county may postpone further consideration of the proposed amendment and seek review of the COO's analysis under subsection F of this section by JPACT within 21 days from the date it received the COO's analysis. JPACT shall schedule the matter for presentations by the city or county and the COO at the earliest available time. At the conclusion of the presentations, JPACT, by a majority of a quorum, shall decide whether it agrees or disagrees with the COO's analysis and shall provide a brief written explanation as soon as practicable.

I. The city or county may seek review of JPACT's decision by the Metro Council within 10 days from the date of JPACT's written explanation. The Council shall schedule the matter for presentations by the city or county and the COO at the earliest available time. At the conclusion of the presentations, the Council, by a majority of a quorum, shall decide whether it agrees or disagrees with JPACT's decision and shall provide a brief written explanation as soon as practicable.

J. A city or county that adopts an amendment to its TSP shall send a copy of the ordinance making the amendment to the COO within 14 days after its adoption.

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3.08.620 Extension of Compliance Deadline

A. A city or county may seek an extension of time for compliance with the RTFP by filing an application on a form provided for that purpose by the COO. Upon receipt of an application, the Council President shall set the matter for a public hearing before the Metro Council and shall notify the city or county, JPACT, the Department of Land Conservation and Development (DLCD) and those persons who request notification of applications for extensions.

B. The Metro Council shall hold a public hearing to consider the application. Any person may testify at the hearing. The Council may grant an extension if it finds that: (1) the city or county is making progress toward compliance with the RTFP; or (2) there is good cause for failure to meet the compliance deadline.

C. The Metro Council may establish terms and conditions for an extension in order to ensure that compliance is achieved in a timely and orderly fashion and that land use decisions made by the city or county during the extension do not undermine the ability of the city or county to achieve the purposes of the RTFP requirement. A term or condition must

relate to the requirement of the RTFP for which the Council grants the extension. The Council shall not grant more than two extensions of time, nor grant an extension of time for more than one year.

D. The Metro Council shall issue an order with its conclusion and analysis and send a copy to the city or county, JPACT, the DLCD and any person who participated in the proceeding. The city or county or a person who participated in the proceeding may seek review of the Council's order as a land use decision described in ORS 197.015(10)(a)(A).

3.08.630 Exception from Compliance

A. A city or county may seek an exception from compliance with a requirement of the RTFP by filing an application on a form provided for that purpose by the COO. Upon receipt of an application, the Council President shall set the matter for a public hearing before the Metro Council and shall notify JPACT, the DLCD and those persons who request notification of requests for exceptions.

B. Following the public hearing on the application, the Metro Council may grant an exception if it finds:

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1. It is not possible to achieve the requirement due to topographic or other physical constraints or an existing development pattern;

2. This exception and likely similar exceptions will not render the objective of the requirement unachievable region-wide;

3. The exception will not reduce the ability of another city or county to comply with the requirement; and

4. The city or county has adopted other measures more appropriate for the city or county to achieve the intended result of the requirement.

C. The Council may establish terms and conditions for the exception in order to ensure that it does not undermine the ability of the region to achieve the policies of the RTP. A term or condition must relate to the requirement of the RTFP to which the Council grants the exception.

D. The Council shall issue an order with its conclusion and analysis and send a copy to the city or county, JPACT, the DLCD and those persons who have requested a copy of the order. The city or county or a person who participated in the proceeding may seek review of the Council's order as a land use decision described in ORS 197.015(10)(a)(A).

## TITLE 7: DEFINITIONS

3.08.710 Definitions

For the purpose of this functional plan, the following definitions shall apply:

A. "Accessibility" means the amount of time required to reach a given location or service by any mode of travel.

B. "Accessway" means right-of-way or easement designed for public access by bicycles and pedestrians, and may include emergency vehicle passage.

C. "Alternative modes" means alternative methods of travel to the automobile, including public transportation (light rail, bus and other forms of public transportation), bicycles and walking.

D. "Bikeway" means separated bike paths, striped bike lanes, or wide outside lanes that accommodate bicycles and motor vehicles.

E. "Boulevard design" means a design concept that emphasizes pedestrian travel, bicycling and the use of public transportation, and accommodates motor vehicle travel.

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F. "Capacity expansion" means constructed or operational improvements to the regional motor vehicle system that increase the capacity of the system.

G. "Chicane" means is a permanent barrier used to prevent cars from driving across a pedestrian or bicycle accessway.

H. "Connectivity" means the degree to which the local and regional street systems in a given area are interconnected.

I. "COO" means Metro's Chief Operating Officer or the COO's designee.

J. "DLCD" means the Oregon state agency under the direction of the Land Conservation and Development Commission.

K. "Design type" means the conceptual areas depicted on the Metro 2040 Growth Concept Map and described in the RFP including Central City, Regional Center, Town Center, Station Community, Corridor, Main Street, Inner Neighborhood, Outer Neighborhood, Regionally Significant Industrial Area, Industrial Area and Employment Area.

L. "Full street connection" means right-of-way designed for public access by motor vehicles, pedestrians and bicycles.

M. "Growth Concept Map" means the conceptual map depicting the 2040 Growth Concept design types described in the RFP.

N. "Improved pedestrian crossing" means a marked pedestrian crossing and may include signage, signalization, curb extensions and a pedestrian refuge such as a landscaped median.

O. "JPACT" means the Joint Policy Advisory Committee, composed of elected officials and agency representatives involved, that makes recommendations to the Metro Council on transportation planning and projects.

P. "Landscape strip" means the portion of public right-of-way located between the sidewalk and curb.

Q. "Land use decision" shall have the meaning of that term set forth in ORS 197.015(10).

R. "Land use regulation" means any local government zoning ordinance, land division ordinance adopted under ORS 92.044 or 92.046 or similar general ordinance establishing standards for implementing a comprehensive plan, as defined in ORS 197.015.

S. "Level-of-service (LOS)" means the ratio of the volume of motor vehicle demand to the capacity of the motor vehicle system during a specific increment of time.

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T. "Local trips" means trips that are five miles or shorter in length.

U. "Median" means the center portion of public right-of-way, located between opposing directions of motor vehicle travel lanes. A median is usually raised and may be landscaped, and usually incorporates left turn lanes for motor vehicles at intersections and major access points.

V. "Metro" means the regional government of the metropolitan area, the elected Metro Council as the policy-setting body of the government.

W. "Metro boundary" means the jurisdictional boundary of Metro, the elected regional government of the metropolitan area.

X. "Mixed-use development" includes areas of a mix of at least two of the following land uses and includes multiple tenants or ownerships: residential, retail and office. This definition excludes large, single-use land uses such as colleges, hospitals, and business campuses. Minor incidental land uses that are accessory to the primary land use should not result in a development being designated as "mixed-use development." The size and definition of minor incidental, accessory land uses allowed within large, single-use developments should be determined by cities and counties through their comprehensive plans and implementing ordinances.

Y. "Mobility" means the speed at which a given mode of travel operates in a specific location.

Z. "Mode-split target" means the individual percentage of public transportation, pedestrian, bicycle and shared-ride trips expressed as a share of total person-trips.

AA. "Motor vehicle" means automobiles, vans, public and private buses, trucks and semi-trucks, motorcycles and mopeds.

BB. "Motor vehicle level-of-service" means a measurement of congestion as a share of designed motor vehicle capacity of a road.

CC. "Multi-modal" means transportation facilities or programs designed to serve many or all methods of travel, including all forms of motor vehicles, public transportation, bicycles and walking.

DD. "Narrow street design" means streets with less than 46 feet of total right-of-way and no more than 28 feet of pavement width between curbs.

EE. "Non-SOV modal target" means a target for the percentage of total trips made in a defined area by means other than a private passenger vehicles carrying one occupant.

FF. Performance measure" means a measurement derived from technical analysis aimed at determining whether a planning policy is achieving the expected outcome or intent associated with the policy.

GG. "Person-trips" means the total number of discrete trips by individuals using any mode of travel.

HH. "Regional vehicle trips" are trips that are greater than five miles in length.

II. "Residential Parking District" is a designation intended to protect residential areas from spillover parking generated by adjacent commercial, employment or mixed use areas, or other uses that generate a high demand for parking.

JJ. "RFP" means Metro's Regional Framework Plan adopted pursuant to ORS chapter 268.

KK. "Routine repair and maintenance" means activities directed at preserving an existing allowed use or facility, without expanding the development footprint or site use.

LL. "RTFP" means this Regional Transportation Functional Plan.

MM. "Shared-ride" means private passenger vehicles carrying more than one occupant.

NN. "Significant increase in Single Occupancy Vehicle (SOV) capacity for multi-modal arterials." An increase in SOV capacity created by the construction of additional general purpose lanes totaling 1/2 lane miles or more in length. General purpose lanes are defined as through travel lanes or multiple turn lanes. This also includes the construction of a new general purpose highway facility on a new location. Lane tapers are not

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included as part of the general purpose lane. Significant increases in SOV capacity should be assessed for individual facilities rather than for the planning area.

OO. "Significant increase in Single Occupancy Vehicle (SOV) capacity for regional through-route freeways." Any increase in SOV capacity created by the construction of additional general purpose lanes other than that resulting from a safety project or a project solely intended to eliminate a bottleneck. An increase in SOV capacity associated with the elimination of a bottleneck is considered significant only if such an increase provides a highway section SOV capacity greater than ten percent over that provided immediately upstream of the bottleneck. An increase in SOV capacity associated with a safety project is considered significant only if the safety deficiency is totally related to traffic congestion. Construction of a new general purpose highway facility on a new location also constitutes a significant increase in SOV capacity. Significant increase in SOV capacity should be assessed for individual facilities rather than for the planning area.

PP. "SOV" means a private passenger vehicle carrying one occupant (single-occupancy vehicle).

QQ. "Substantial compliance" means city and county comprehensive plans and implementing ordinances, on the whole, conform with the purposes of the performance standards in the functional plan and any failure to meet individual performance standard requirements is technical or minor in nature.

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RR. “Throughway” means limited-access facilities that serve longer-distance motor vehicle and freight trips and provide interstate, intrastate and cross-regional travel.

SS. “TPR” means the administrative rule entitles Transportation Planning Rule adopted by the Land Conservation and Development to implement statewide planning Goal 12, Transportation.

TT. "Traffic calming" means street design or operational features intended to maintain a given motor vehicle travel speed.

UU. “TriMet” means the regional service district that provide public mass transit to the region.

VV. “TSP” means a transportation system plan adopted by a city or county.

WW. "UGB" means an urban growth boundary adopted pursuant to ORS 268.390(3).

XX. “Woonerf” means a street or group of streets on which pedestrians and bicyclists have legal priority over motor vehicles.

# The case for an integrated mobility strategy

## WALKING AND BIKING OFFER AN IMMEDIATE OPPORTUNITY TO TACKLE KEY CHALLENGES.

Congestion, climate change, burdensome fuel costs, lack of funding to even maintain roads, concern about making sure our transportation investments build, rather than destroy, communities—these challenges make it plain to each of us in our daily lives that the times are changing.

The good news is that we can take one relatively small step that will attack every one of these problems. It won't work overnight and it won't solve everything, but it will set us on a path towards a transportation network that is truly earth and community friendly. It is a policy that brings smiles to commuters, kids and communities (as well as taxpayers!)

Our region already has a good start, with Portland the most "bike friendly" city in America. But with smart investments in a network of routes and trails for biking and walking, in ten years we can more than double the number of people who choose to walk or bike. People like us in cities around the world with climates and hills as challenging as ours have done it. Their air and water are cleaner, their communities are stronger, and they are more active and healthy as a result.

**It is time. It will work.**

"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. For Senator Moynihan and his colleagues 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*

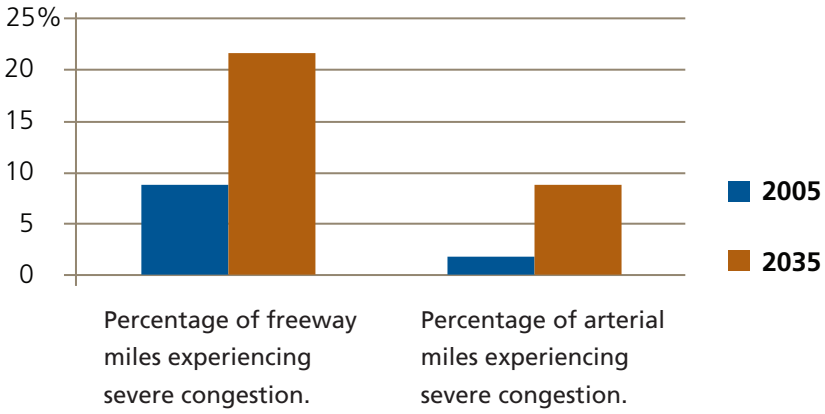
# Why encourage bike and pedestrian travel now?

## INVESTMENT PRODUCES ENVIRONMENTAL, LIVABILITY AND FINANCIAL RETURNS

### Non-motorized travel reduces congestion

Thirty years from now, one million more people are expected to call the Portland region home. During this time, car traffic is expected to grow by nearly half, while truck traffic will more than double. The percentage of roadways experiencing severe congestion is expected to quintuple from 2% today to 10% by 2035. Increasing congestion has real economic costs. Dedicated facilities for pedestrians and cyclists frees roadways for other users.

Projected congestion growth in Portland region
Source: www.gasbuddy.com




Bicycling and walking reduce congestion by replacing cars on short trips, increasing use of public transportation and by stimulating compact, mixed use development.

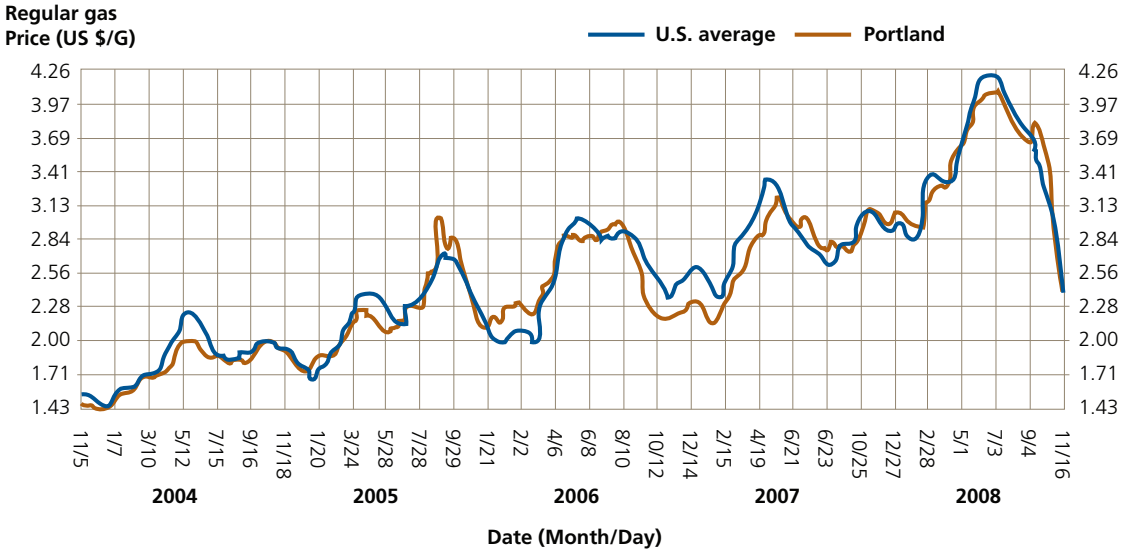
### Non-motorized travel is inexpensive

Transportation is second to housing as a proportion of household budgets and fuel costs have risen from 3% of household expenditures in 2002 to 8.5% as of June 2008, putting an increasing strain on resident's budgets. Bicycle and pedestrian infrastructure saves public dollars as well. A lane of roadway will accommodate five to ten times more pedestrian and bicycle traffic than driving and the cost of bicycling and pedestrian infrastructure is just a small fraction of that of building highways. Trails and paths can also be efficient connections to transit, reducing the need for expensive and land-gobbling park-and-ride stations.

Those households that rely on walking and cycling as their primary means of travel save an average of $694 per month.
– www.gasbuddy.com

## 60 Month average U.S. and Oregon gas prices

Source: www.gasbuddy.com



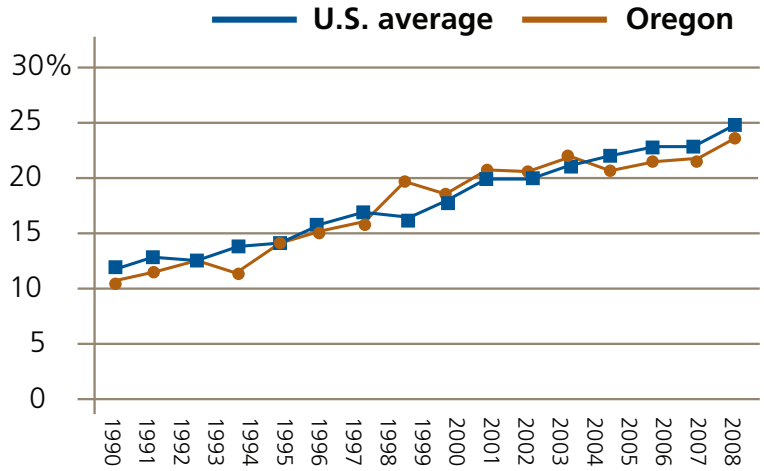

Those households living near a greenway are more likely to meet CDC health guidelines – CDC, Rails To Trails Conservancy

## Non-motorized travel improves health and reduces health care costs

Americans' lack of physical activity is leading to an increase in a variety of health conditions including hypertension, cancer, heart disease, diabetes, and obesity, which will soon eclipse tobacco as the number one preventable cause of death in the United States. Studies have shown that people living in communities with walking and cycling facilities walk and cycle more. Bicycling and walking offer a way to integrate physical activity into busy schedules, and have been demonstrated to improve these conditions as well as to contribute to emotional well-being.

## Percentage of adults who obese, Oregon and U.S. 1990-2008

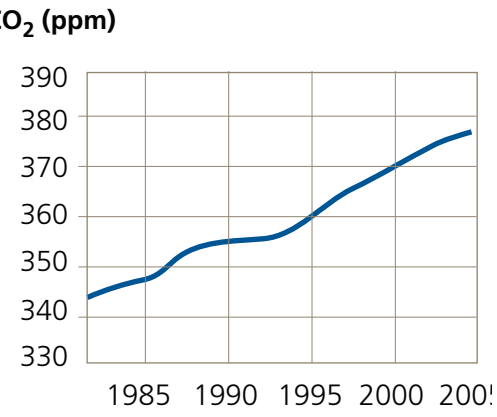
Source: Oregon Department of Human Services



## Non-motorized travel reduces greenhouse gas emissions

Greenhouse gas emissions are causing climate change, which leads to environmental and economic disruption and threatens our health and well being. The transportation sector is responsible for 38% of greenhouse gas emissions. Any strategy to address climate change requires reducing energy consumption in this sector. Bicycle and pedestrian transportation must be a key element in our region's strategy to increase the share of total trips made by bicycle and by foot. The Rails To Trails Conservancy estimates that bicycling and pedestrian travel can offset between 3 percent and 8 percent of greenhouse gas emissions of US cars and trucks.

Globally averaged CO2 1985 - 2005
Source: World Meteorological Organization

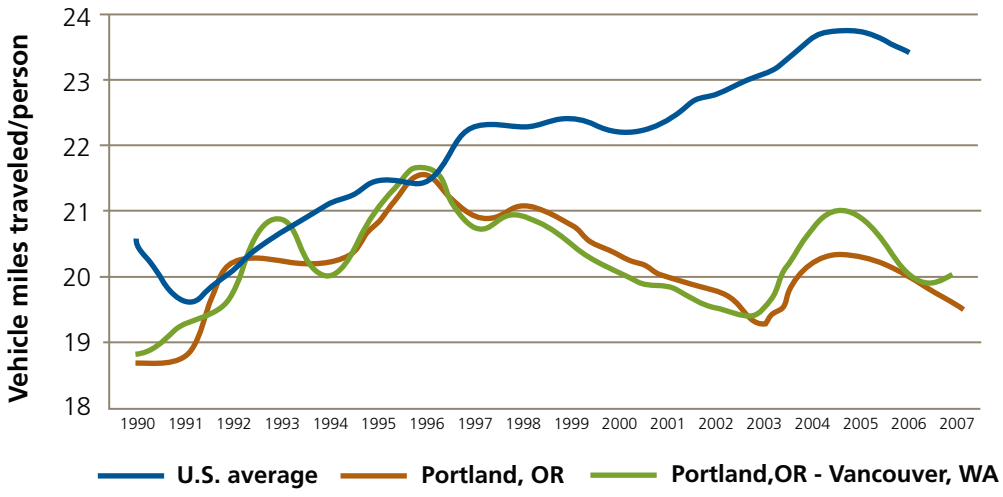



Every 1% increase in miles traveled by bicycle or on foot instead of by car reduces our region's greenhouse gas emissions by 0.4%

## Non-motorized travel fosters dynamic, mixed-use communities

Non-motorized travel encourages a diverse mix of housing, shopping, restaurants, workplaces and recreation in convenient proximity. Residents that walk or ride tend to patronize small businesses, buying in smaller quantities but making more frequent purchases than motorists. This pattern of commerce supports small, community-based businesses and leads to a dynamic community environment. Motorists in such communities also benefit from shorter distances between services, which leads to fewer vehicle miles traveled per person.

Vehicle miles traveled per person 1990 - 2007
Source: FHWA, ODOT, WDOT




Motor vehicle miles traveled per person are increasing nationally. The Portland region has shown it is possible to counter this trend through compact growth and by providing transportation options.

# The special case for greenways

## GREENWAYS PROVIDE PREMIER ROUTES AND DISTINGUISH THE REGION

Some greenways connect population centers with a non-motorized, natural corridor that provides an unrivaled commute experience. Other Greenways connect the best natural gems our region has to offer and draw both residents and visitors for long recreational excursions. In either case, Greenways play a special role in the region's mobility strategy.

- Greenways are like parks. They are places for families and friends to be together and places to find solitude and connect with nature. But unlike parks, they facilitate travel through the urban area, from neighborhood to neighborhood, or from park to school, or from home to work.
- Greenways are like roads. They give us a way to get where we need to go. But unlike roads, they are built for nonmotorized travel and so they are safer, less stressful and truly enjoyable. They are places where you can experience the wind in your hair or the sun on your shoulders as you travel.
- Greenways are like public squares. They are places for community to gather and can be good locations for shops, restaurants, museums, benches, fountains or works of art. But unlike public squares they extend in either direction as gateways to additional urban and natural experiences.
- Greenways are like a local gym, except that the scenery is better and you can exercise while you get to work rather than before or after.

Greenways are a significant element of Connecting Green, a broad-based movement in the Portland region to create a system of parks, trails and natural areas that is second to none.

Greenways may pass through a park, natural area or stream corridor. The land may be newly developed, but usually it is redeveloped, having been formerly occupied by a railroad, highway, or other transportation route. Many greenways in urban centers or developed areas are linear parks. Greenways are the premier travel corridor for walking and riding because they are safe and fast, and because they offer a natural experience that is removed from the noise and frenzy of the urban environment.



# Why the Portland region?

## PORTLAND IS UNIQUELY QUALIFIED TO UNDERTAKE THIS STRATEGY

### Residents are choosing non-motorized transportation with increased frequency

An active, outdoor-oriented culture, sustainability consciousness, and strong civic and elected leadership position the Portland Region to lead the nation in implementing a nonmotorized transportation strategy. In the city, bicycling to work increased 146% between 2000 and 2006 despite accounting for only 0.7% of the Portland Office of Transportation's capital budget. Travel by bike and foot now makes up as much as 9% of total commute trips in the city, and just under 5% in the metropolitan region as a whole. In 2008, Portland became the first major city to be designated by the League of American Bicyclists as a platinum level bicycle friendly community. The City of Beaverton has been awarded Bronze status. The region's strong transit system is a key asset that positions the Portland region to lead a bicycle and pedestrian strategy.

Finally, Metro, local governments and nonprofit groups have proposed an exemplary network of greenways that span the region and provide opportunities for connection with the region's rich natural heritage. These routes are in varying stages of development, with many in the advanced stages of planning and ready to proceed.

# Solution requires a more integrated approach to mobility

## A FOUR PRONGED STRATEGY IS NEEDED



Our nation's overwhelming emphasis on one mode of travel has created stark inefficiencies and negative side effects. A regionwide network of on-street and off-street bikeways and walkways integrated with transit and supported by educational programs would make travel by foot and bike safe, fast and enjoyable. Such a system would take walking and cycling well beyond the exclusive domain of avid cyclists and the courageous to become a practical and preferred option for average residents. This is well within reach if we achieve four things:

### 1 Organize leadership

The strategy requires public and private leadership with interagency staff support.

**Form a Caucus of Elected Leaders.** Caucus members will make a commitment to champion the strategy. Members of the caucus agree to support the strategy's themes and direction. There will also be opportunities to help support specific proposals at the local, regional, state and federal levels.

**Establish a Leadership Council**. The council will be made up of civic and business leaders that make a commitment to support the caucus of elected leaders and serve as third party validators when the caucus is presenting proposals, making presentations, or involved in campaigns for elements of the strategy.

**Create an Interagency Staff Team**. Staff from interested cities, counties, state agencies and Metro will form an interagency team to support the work of the Caucus of Elected Leaders and the Leadership Council.

**Model Cross-Discipline Integration at Metro**. Cycling and walking, and particularly off-street trails, have in the past been treated as minor transportation facilities, with a divide between park and transportation planning. This schism reduces the functionality of the region's transportation system, limits options and increases costs. The aesthetic, recreation, health and ecological objectives associated with cycling and walking, which have been the traditional responsibility of parks bureaus and associated policy-making bodies, need to be acknowledged and fully integrated with transportation and mobility objectives, which are the purview of transportation departments. Metro should model the organizational changes that are necessary to integrate bicycle and pedestrian facilities planning with planning for other modes and encourage this integration within other jurisdictions in the region.

## 2 Demonstrate potential

There is excellent work going on across the region building trails, transit and bicycle/pedestrian facilities. Plans are in place, they are coordinated through the Regional Transportation Plan (RTP) and, as a region, our accomplishments are nationally significant. However, institutional traditions marginalize the planning, funding and development of trails and other bicycling and pedestrian infrastructure, resulting in weak coordination or even competition among these facilities.

The strategy's leadership must establish recognition among elected officials and influential organizations and committees that walking and cycling are serious transportation options. Such recognition stems from a realistic understanding of the return on investment such a system could have for our communities, our economy, and the environment. Nothing substitutes for results. Strategy leadership will showcase existing results as well as champion demonstration projects that take bike and pedestrian travel to new levels. Three pilot projects are envisioned:

**Urban.** Complete a well-designed and well-connected nonmotorized transportation project within a single urban "commute shed." Partner with area businesses to provide education and encourage use. For example, develop a trail that connects a regional center with the central city and provide associated on-street feeder routes and transit connections to substantially increase bicycle and pedestrian commuting within a targeted area.

**Suburban.** Partner with TriMet and area businesses to create an integrated bicycle/transit strategy for a geographically-defined area in the suburbs. For example, develop on and off-street bicycle and walking paths that feed a transit node. Provide safe, dry bicycle parking at the transit node. Make an agreement with area businesses to encourage their employees to use the facilities. A partnership with transit is critical in the suburbs, because distances between population and employment centers can be too long for bicycle travel (greater than 30 minutes by bike), but can be well served by transit.

**Greenway.** Identify a demonstration project that would link together key natural attractions to create a unique urban/natural experience. This would be a greenway of exceptional quality that can serve as a day or multi-day excursion for residents and visitors.

### Actions required are as follows:

**Select Demonstration Areas**. A committee will be formed to select three demonstration areas: an urban, a suburban and a recreational greenway. The areas will be based on the extensive data and research that has been compiled through the Blue Ribbon Committee for Trails process, and will draw from existing transportation plans. The committee will meet three times to complete the selection by early 2009.

**Secure Federal and State Funds**. The Caucus of Elected Officials and Leadership Council will advocate for funding for the demonstration areas in upcoming legislative sessions at the state and federal levels.

**Build Demonstration Projects.** The goal is to begin moving demonstration areas forward in 2009.

## 3 Reduce costs

Federal and state standards set up for road construction complicate the construction of off-street bicycling and walking trails and add an estimated 30% to their cost. The barriers generally relate to procedures in place to support highway construction that don't adapt well for trails, such as cumbersome acquisition requirements that give the impression that a condemnation is about to take place; time consuming change order reviews because standards for roads aren't appropriate for trails; redundancy of effort to fulfill local, state and federal requirements; and excessively time consuming paperwork for intergovernmental agreements, accounting and project closeout.

A key element of the strategy is to bring these costs into line. Federal funding is administered through ODOT. Eliminating these barriers will involve working with ODOT staff, the Oregon Transportation Commission, state legislature and federal congressional staff.

**Convene an "Oregon Solutions" style Cost Reduction Project.** Strategy leadership would convene agencies involved in trail construction to identify opportunities to streamline, fastrack and reduce costs and implement solutions.

## 4 Develop system

Strategy leadership will work towards a regional mobility strategy that fully integrates walking and cycling into the region's transportation plans. The Regional Transportation Plan (RTP) is now being updated and so the timing for such an integration is excellent.

**Refine Guiding Principles.** A work group will refine the guiding principles that will guide the development of the region's bicycle and pedestrian system. A preliminary list, developed during the work of the Blue Ribbon Committee for Trails, is provided in a later section of this document.

**Develop Mobility Strategy and Integrate with Regional Transportation Plan.** Inclusion in the Regional Transportation Plan qualifies projects for federal funding.

**Create Safe Crossings.** Work with the Oregon Department of Transportation to create a "safe crossings" initiative that addresses bicycle and pedestrian crossings. Areas where trails cross arterials or highways are particularly challenging. Crossings are in the right-of-way and so are eligible for gas tax investments and are key to protecting the safety of those who travel by bike and by foot.

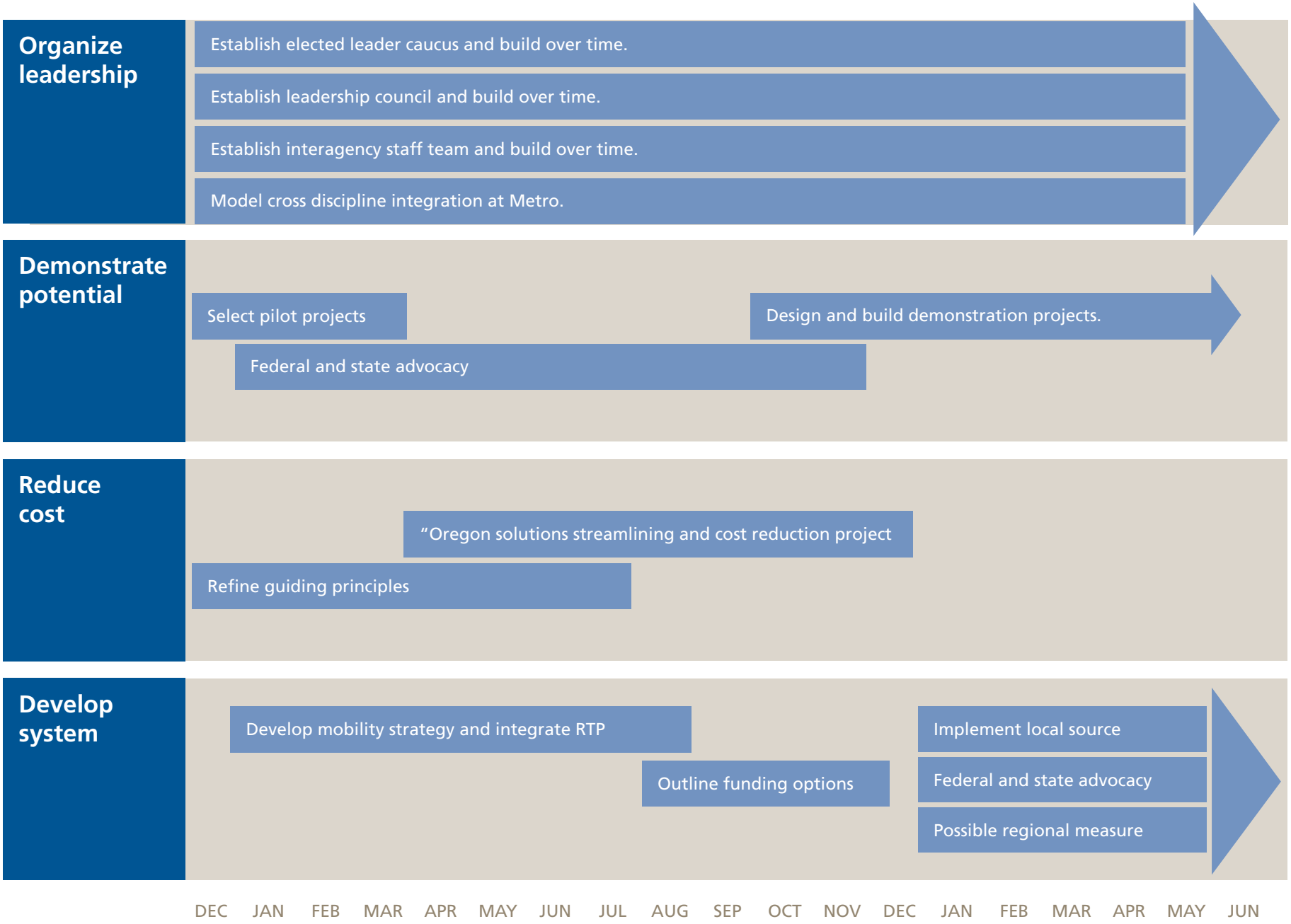
**Design Funding Package.** A staff team will outline a broad strategy for funding the mobility strategy identifying a target amount to be raised at the local, regional, state and federal levels and suggesting sources and a time frame for these amounts.

**Implement Local Source.** It is likely that the funding package will require a local match from system users. This source will need to be identified and implemented.

**Secure State and Federal Funds.** Strategy leadership will advocate at the state and federal level.

**Implement a Regional Measure.** A regional ballot measure or other source may need to be implemented.

# Portland region bicycle and pedestrian strategy



# Costs are small relative to other options

## THE FINANCIAL INVESTMENT REQUIRED IS WITHIN THE REGION'S CAPACITY

### Near term | Capacity $118,000/year

Project management and technical staff support would include:

**Project management.** Provide support to the Caucus of Elected Leaders and Leadership Committee and serve as lead staff to the Interagency Staff Team. Direct overall strategy effort and provide staff leadership to key initiatives outlined in this document.

**Demonstration areas.** Scope and Develop demonstration project proposals, support selection process.

Funding. Develop materials, coordinate with partners and orchestrate advocacy for federal and state funding.

**Fast tracking and Cost Reduction.** Provide technical and project management support to Oregon Solutions to complete an interagency cost reduction project.

**System Development.** Coordinate development of the mobility strategy, facilitate integration of bicycle, pedestrian and trail plans with plans for other transportation modes.

The above is in addition to staff currently available at Metro and other governments in the region who will participate in the interagency staff team. The roles outlined above will be needed for two years at a total cost of $236,000.

### Mid term | Demonstration areas $50 to 75 million

The urban, suburban and greenway demonstration areas have not been identified. However, a reasonable estimate for urban, suburban and greenway demonstration areas, including design, permitting, bidding, and construction is $50-75 million.

### Long term | System $300 million to $1 billion

A fully functioning bicycle and pedestrian system, built over the coming decades, is likely to cost between $300 million and $1 billion depending on the ultimate scope desired. To achieve this, the pace of investment must be increased over the current rate. For example, an average of only $2.8 million per year in regional transportation funds are spent on urban multi modal trails. In the context of the region's overall investment in public transportation facilities of approximately $630 million per year, a $300 million investment over a span of ten or more years should not be out of range.

# Appendices

## NOTES ON FUNDING

### A near term opportunity with the Federal reauthorization

The 2035 Regional Transportation Plan (RTP) identifies a $7B gap for capital and $6B gap for operations and maintenance of the transportation system across the region. Federal transportation funding has been the primary source of trail, bike and transit planning and construction. This funding is likely to remain key to urban mobility projects and competition for these funds is keen.

Congress reauthorizes the federal transportation bill every six years. As the next scheduled reauthorization approaches in 2009, revenues are down and needs are up. Success in obtaining an increased level of trails funding will depend on building alliances and lobbying effectively. Specifically:

- Participate in shaping Metro's federal transportation agenda in coordination with JPACT and the Regional Transportation Plan.
- Build support from a variety of constituencies across the region for urban mobility projects
- Build alliances with trail supporters in other Oregon communities
- Build on Rails to Trails Conservancy (RTC) national "2010 Campaign for Active Transportation"
- Identify federal earmarks and advocate for them with Oregon's Congressional delegation
- Participate in the Bike Summit in Washington D.C., March 2009 and 2010

Timeframe: Now through 2010. (Note: while the transportation bill is scheduled to be reauthorized in 2009, the last reauthorization bill was late, and knowledgeable observers believe it is likely that this bill will not be completed until 2010.)

Outcomes: Trails and other bicycle and pedestrian facilities are seen as integral elements of a transportation system that responds to a range of current and future challenges. The City of Portland and the Portland region are successful in lobbying for $100M from the transportation reauthorization in coordination with RTC. Traditional sources of federal trails funding (MTIP, TE) are expanded.

### State funding opportunities are worth pursuing in 2009

State funding has not been strong for either urban transportation trails or recreation trails. State gas tax revenues cannot be used outside the road right-of-way, and lottery funds, which can be used for trails, are likely to be scarce in 2009 due to the ailing economy as well as ballot measures that may have dramatic effects on the state budget. However, several factors suggest it may be timely to pursue state funding in 2009. These factors include a multi-stakeholder effort to pass a significant transportation funding package, heightened concern over gas prices and climate change, and potential reauthorization of Measure 66. There are several arenas to pursue.

### Transportation-related

- The Governor's Vision Committee is considering a proposal to allocate up to $20M annually across the state for trails and bicycle facilities.
- The Legislature doesn't necessarily follow the Governor's budget and is important to get in front of Legislative committees.
- A proposed third round of funding for multimodal transportation investments, the so-called ConnectOregon program, provides a logical legislative vehicle and funding structure for trail investments.

### Recreation-related

Measure 66 is up for reauthorization in 2014 and may be under discussion sooner, possibly in 2009. A strategic approach is needed to secure a portion of these funds for scenic greenways.

Outcomes: Active transportation and scenic greenways are recognized as legitimate elements of a complete transportation system and receive state funding accordingly. Pilot projects have been funded by the state and are successful in demonstrating the need for bicycle and pedestrian facilities coordinated with transit. Consistent funding sources, at appropriate levels, are dedicated to these projects.

### New funding

- The level of public support needs to be tested for new funding opportunities:
- Voter-approved Funding. Review the field of upcoming ballot measures and evaluate the potential for a mobility focused measure.
- Potential for Bicycle Community Contribution. Pursue a contribution or registration fee for bicycles to engage cyclists and to address concern, however mistaken, that cyclists don't carry their weight. This may be an important equity effort, rather than a key funding source.
- Potential for Regional and Local Funding. There may be traditional funding sources that could contribute to the funding mix. All have many competing priorities and the associated institutional hurdles. However, the case should be made for non-motorized mobility with sources such as urban renewal, transportation and parks systems development charges, and local gas taxes.

## Principles for development

Demonstration areas will test and refine a set of principles that can then guide the development of a region-wide system. Based on the work of the Blue Ribbon Committee for Trails and the German Marshall Fund study tour to Amsterdam and Copenhagen, the following principles are suggested as a point of departure:

- Focus on the users experience over their entire trip. Working with the "total trip" experience requires not just transportation engineering but landscape and recreational planning expertise.
- Connectivity is key. Coordinate on-street, off-street, and transit facilities within key transportation corridors. Determine a range of mobility options to serve the corridors.

- Factor health, the environment, personal and public costs, convenience, the travel experience and community health into investment decisions.
- Consider the pattern of development and respond with effective mobility strategies; urban solutions are likely to be different than suburban solutions.
- Emphasize bicycle trails and routes to connect population and employment centers that are accessed with a 30 minute ride.
- Set Priorities. Focus on completing or a few commute sheds at a time. Build regional equity into the sequence, so each part of the region gets a turn. This is similar to the way light rail was developed—first the east, then the west, then north, then airport, then south…
- Provide separated bicycle and pedestrian facilities in high-volume corridors.
- Set high standards for both the quality of the travel experience and a unified way finding system.
- Consider principles used in Europe that the system should be coherent, direct and easy, safe and secure, self-explanatory, comfortable and attractive.
- For greenways, the quality of the experience, the destinations, and the opportunities along the route to enjoy nature are all important. The process also has a focus on development of tree canopy and understory for wildlife habitat with special sensitivity to stream bank conditions. The balance between providing access to nature while preserving fragile habitat and ecosystems requires judgment that must be further developed. The Portland region will be positioned as a national model on achieving the right balance.

# Blue Ribbon Committee for Trails

CONVENTED BY THE METRO COUNCIL

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The Blue Ribbon Committee was supported by a team led by Metro and including staff from the City of Portland, Oregon State Parks, the City of Forest Grove, and Alta Planning and Design. The composition of the staff workgroups was diverse, with expertise in transportation, trail, bicycle and parks planning, data analysis, cartography and GIS, funding, legislative process, and design. Staff worked collaboratively to serve the needs of the committee as a whole and to foster shared understanding rather than to advocate any specific position.

Thank you to the following people for their work on the Blue Ribbon Committee for Trails:

Elizabeth Adams
Janet Bebb
Mia Birk
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Anthony Butzek
Mary Anne Cassin
Jim Desmond
Steve Durrant
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Derek Robbins
Robert Spurlock
Patricia Sullivan
Mike Tresidder
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