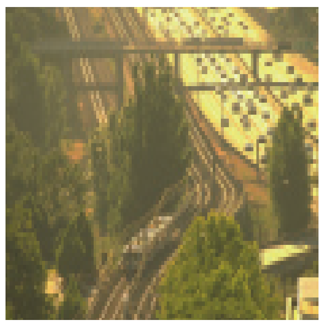
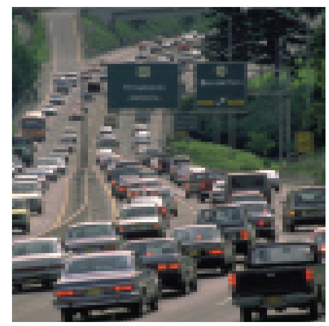
August 10, 2000

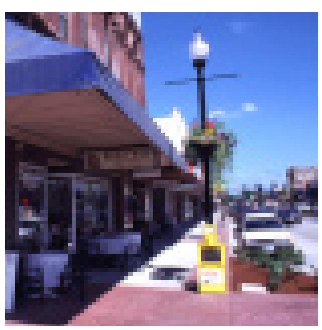
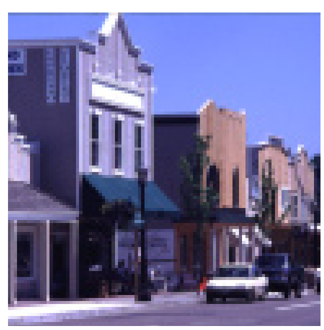
2000 Regional Transportation Plan

Adopted by Ordinance No. 00-869A and Resolution No. 00-2968B





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Creating livable communities

Metro

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"It's better to plan for growth than ignore it."

Planning is Metro's top job. Metro provides a regional forum where cities, counties and citizens can resolve issues related to growth – things such as protecting streams and open spaces, transportation and land-use choices and increasing the region's recycling efforts. Open spaces, salmon runs and forests don't stop at city limits or county lines. Planning ahead for a healthy environment and stable economy supports livable communities now and protects the nature of our region for the future.

Metro serves 1.3 million people who live in Clackamas, Multnomah and Washington counties and the 24 cities in the Portland metropolitan area. Metro provides transportation and land-use planning services and oversees regional garbage disposal and recycling and waste reduction programs.

Metro manages regional parks and greenspaces and the Oregon Zoo. It also oversees operation of the Oregon Convention Center, Civic Stadium, the Portland Center for the Performing Arts and the Portland Metropolitan Exposition (Expo) Center, all managed by the Metropolitan Exposition-Recreation Commission.

For more information about Metro or to schedule a speaker for a community group, call (503) 797-1510 (public affairs) or (503) 797-1540 (council).

Metro's web site: www.metro-region.org

Metro is governed by an executive officer, elected regionwide, and a seven-member council elected by districts. An auditor, also elected regionwide, reviews Metro's operations.

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METRO

2000 Regional Transportation Plan

Metro has spent the past several years working with our state and local government partners as well as citizens, community groups, and businesses to update the Regional Transportation Plan (RTP). The 2000 RTP implements the 2040 Growth Concept, the region's long-range plan for addressing expected growth while preserving our region's livability. The 2000 RTP is the latest in a series of updates to Metro's transportation plan to comply with state and federal planning requirements in a manner that also achieves the region's own land use and transportation goals and objectives.

On August 10, 2000, the Metro Council unanimously adopted the 2000 Regional Transportation Plan by Ordinance No. 00-869A and Resolution No. 00-2968B. Metro has submitted the 2000 RTP to the Oregon Land Conservation and Development Commission for acknowledgement of compliance with state planning goals. This interim document is also posted on Metro's web-site at www.metro-region.org. A final published document will be prepared upon acknowledgement, tentatively in Summer 2001.

The 2000 RTP recognizes the diversity of transportation needs throughout the Portland metropolitan region and mixes land-use and transportation policies in an integrated fashion. This plan lays out the 20-year priorities for road, transit, freight, bicycle and pedestrian improvements, consistent with federal requirements of TEA-21 and state requirements.

Send e-mail to trans@metro.dst.or.us, or call Metro's transportation hotline at (503) 797-1900 for further information or to request a copy when final publishing is complete.

METRO

2000 Regional Transportation Plan
August 10, 2000

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Preface

The 2040 Growth Concept was adopted in 1995, and serves as the blueprint for future growth in the region. The Growth Concept text and map identify the desired outcome for the compact urban form to be achieved in 2040. The 2040 Growth Concept has been acknowledged to comply with statewide land use goals by the Land Conservation and Development Commission (LCDC). It is the foundation of Metro's 1997 Regional Framework Plan. This 2000 Regional Transportation Plan (RTP) marks the end of a nearly five-year planning process to begin a refined implementation of the 2040 Growth Concept. As such, the 2000 RTP is the culmination of a nearly 25-year evolution from a mostly road-oriented plan to a more multi-modal one, ultimately mixing land-use and transportation objectives in a truly integrated fashion. The transportation improvements recommended in this plan are prioritized and layered within the 2000 RTP to address differing federal, state and regional planning requirements and are summarized in the Introduction.

The 2000 RTP is the result of extensive input from the residents of this region and from our state, regional and local government partners. The plan recognizes the diversity of transportation needs throughout the Portland metropolitan region, and attempts to balance often competing transportation needs. This RTP sets the policies, systems and actions to adequately serve walking, bicycling, driving, use of transit and national and international freight movement in this region consistent with federal requirements of TEA-21 and state requirements for the region's transportation system plan.

While advocating a transportation system that adequately serves all modes of travel, the plan recognizes that the automobile will likely continue to be the primary mode of personal travel over the life of the plan. However, the RTP also recognizes the need for transportation alternatives for traveling to everyday destinations, and to provide mobility for those unable to travel by automobile. Even the occasional use of transit, walking, bicycling or sharing a ride can help the region maintain its clean air, conserve energy and efficiently accommodate more people within a compact urban form.

Finally, the Regional Transportation Plan recognizes that the transportation system plays a critical role in the continued economic health of the region. Many sectors of the regional economy heavily depend on the safe and efficient movement of goods and services by truck, rail, air and water. Improvements defined in this plan attempt to balance all of these diverse, and often competing~~,~~ needs. The Regional Transportation Plan identifies priority investments that aim to:

- limit the amount of congestion motorists experience
- maintain access for national and international rail, air, truck and ship freight to reach its destination with limited travel delay
- balance the need to maintain motor vehicle and freight mobility with the potential impacts of these improvements on our communities and other modes of travel
- expand public transit service and improve pedestrian access to transit
- build new sidewalks and bicycle facilities
- develop system and demand management strategies to improve how the system operates

Read on to learn more about Metro's commitment to link transportation, land-use and environmental planning for the region in order to protect the community livability we all value. A brief, illustrated overview of the plan is also available from Metro, and can also be viewed online at Metro's website: www.metro-region.org.

The 2000 Regional Transportation Plan

The 2000 Regional Transportation Plan is a 20-year blueprint for the Portland metropolitan region's transportation system. The plan deals with how best to move people and goods in and through the region. There are many transportation needs in this region, including:

- limit the amount of congestion people experience, and provide alternatives to avoid congestion
- build new sidewalks and bicycle facilities
- expand transit service and improve pedestrian access to transit
- maintain access for national and international rail, truck, air and marine freight to reach its destination with limited delay
- regional street designs that safely accommodate all forms of travel

One of the region's goals is to provide a balanced range of transportation choices for the movement of people and goods in this region. The plan sets transportation policies for all forms of travel: motor vehicle, transit, pedestrian, bicycle and freight. The plan includes specific objectives, strategies and projects to guide local and regional implementation of each policy.

Why does the RTP matter?

As this region grows, additional demands are placed on the existing transportation system. The RTP matters because it defines regional policies that all city, county, Tri-Met, Oregon Department of Transportation and Port of Portland transportation plans must follow. Through the financially constrained and priority systems described in Chapter, 5, the plan identifies transportation projects and programs throughout the region for the next 20 years to implement the region's 2040 Growth Concept and addresses the impacts of future growth on our transportation system.

The plan must also meet federal and state requirements. A transportation project is eligible for federal transportation funds distributed through Metro if it is included in the financially constrained system and is consistent with federal air quality standards. The projects and programs in the priority system address state transportation planning requirements. The role of these systems in meeting state and federal requirements, and funding specific projects and programs is described in more detail in the "how to use this plan" section that follows.

Choices made today about how to serve future growth in this region will have lasting impacts on our quality of life. The 2000 Regional Transportation Plan is just one part of Metro's overall strategy to protect the community livability we all value.

Metro's Role in Transportation Planning

Metro is the regional government responsible for regional land use and transportation planning under state law and the federally designated metropolitan planning organization (MPO) for the Portland metropolitan area. Metro is governed by an executive officer elected region-wide and a seven-member council elected by districts. Metro's jurisdictional boundary encompasses the urban portions of Multnomah, Washington and Clackamas counties. Today, Metro serves 1.3 million people who live in these three counties and the 24 cities in the Portland metropolitan area. Metro coordinates with the Southwest Washington Regional Transportation Council, the federally designated MPO for the Clark County portion of the metropolitan region.

How to Use this Plan

The Regional Transportation Plan, first adopted by the Metro Council in 1983, is updated every three to five years to reflect changing conditions in the Portland metropolitan region. The Metro Council adopted an interim Regional Transportation Plan in 1995 to address new federal planning requirements. This document is the result of the interim 1995 plan being further updated to implement policies identified in the adopted Regional Framework Plan (1997), including the 2040 Growth Concept, to address state planning requirements set forth in the Transportation Planning Rule, and to address future transportation needs through the year 2020.

The 2000 Regional Transportation Plan marks the end of a five-year process that has included extensive input from the residents of this region and from our state, regional and local government partners. The plan is organized into six chapters, and includes an introduction, glossary of terms and an appendices.

- The **Introduction** describes the different systems set forth in the plan, and how they relate to federal, state and regional planning requirements, and the selection of transportation improvements in the four-year Metropolitan Transportation Improvement Program (MTIP).

- **Chapter 1** presents the overall policy framework for the specific transportation policies, objectives and actions contained in the Regional Transportation Plan. This chapter sets a direction for future planning and decision-making by the Metro Council and the implementing agencies, counties and cities.

- **Chapter 2** describes the expected land uses and travel demand for the year 2020 based on implementation of the 2040 Growth Concept and predicted population and employment growth.

- **Chapter 3** analyzes the impact of future growth on the "preferred system" that includes all future projects and programs necessary to meet the goals and objectives established in Chapter 1. Appendix 1.1 lists all of these improvements grouped by location as defined in the 2040 Growth Concept. The chapter also describes federal congestion management requirements and provides an analysis of how this plan meets these requirements.

- **Chapter 4** discusses transportation revenue sources and estimated costs for implementation of the preferred system.

- **Chapter 5** analyzes the impact of future growth on the "financially constrained" and priority systems. The financially constrained system includes the most critical projects and programs needed over the 20-year planning period. The priority system contains additional projects and programs needed to keep pace with future growth, while maintaining an adequate level of performance. This chapter also groups these proposed projects and programs by geographic subarea. The proposed projects are further grouped into three phases of implementation – from 2000 to 2005, 2006 to 2010 and 2011 to 2020. This chapter also proposes potential funding strategies to implement the priority system.

- **Chapter 6** describes the processes through which this plan will be implemented; defines statewide goal and local comprehensive plan compliance procedures; establishes a process to update, refine and amend the RTP; and details outstanding issues that remain unresolved at the time this plan is adopted.

- The **Glossary** of terms located at the end of the document includes definitions of many transportation-related planning and engineering terms used throughout the document.

- The **Appendices** are located in a separate document. It contains the technical documents used to develop this plan and legal findings of compliance with federal, state and regional planning requirements.

The 2000 Regional Transportation Plan was developed to include separate layers of planned projects and programs that respond to differing federal, state and regional planning mandates. These layers are:

- the **financially constrained system**, which responds to federal planning requirements, and is based on a financial forecast of limited funding over the 20-year plan period

- the **priority system**, which responds to state planning requirements, and assumes that significant new revenue must be identified in order to provide an adequate transportation system over the 20-year plan period

- the **preferred system**., which responds to regional planning policies adopted as part of the 2040 Growth Concept and Regional Framework Plan, including specific system performance measures.

Each of these distinct layers of transportation projects and programs are described in more detail below.

Federal Context and the Financially Constrained System

The federal "metropolitan transportation plan" is contained in applicable provisions of Chapter 1, 2, 3, 4 and 6 of this RTP. The policies and financial analysis in Chapters 3 and 4 for the preferred system of policies and facility improvements are for federal, not state, transportation planning requirements.

As a federally designated MPO, Metro must coordinate transportation planning for the Portland metropolitan region, including distribution of federal transportation funds to this region through the Regional Transportation Plan and the Metropolitan Transportation Improvement Program. Adopted in the 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) was amended in 1998 as the Transportation Equity Act for the 21st Century (TEA-21). These Congressional acts expanded public participation in the transportation planning process and required increased cooperation among the jurisdictions that own and operate the region's transportation system. These partners include the region's 24 cities, three counties, Oregon Department of Transportation, Oregon Department of Environmental

Quality, Port of Portland, Tri-Met, Washington Regional Transportation Council, Washington Department of Transportation, Southwest Washington Air Pollution Control Authority and other Clark County governments.

The centerpiece of the federal planning program is the development of a financially constrained transportation system. This system of projects and programs is limited to current funding sources, and those new sources that can be reasonably expected to be available during the 20-year plan period. In Oregon, state transportation funding has not kept pace with inflation or the need for new infrastructure during the past 15 years. This trend could translate into a serious decline in performance of the region's transportation system during the next 20 years, as limited funds are increasingly required to maintain and operate the system, leaving inadequate funds to keep pace with growth. The financially constrained system described in Chapter 5 describes such a scenario. While this system includes the region's most critical projects and programs, the overall system is inadequate to meet adopted performance measures, and would limit the region's ability to fully implement the 2040 Growth Concept.

As the federally recognized system, the financially constrained system is also the source of transportation projects that may be funded through the Metropolitan Transportation Improvement Program. The MTIP allocates federal funds in the region, and is updated every two years, and includes a rolling, four-year program of transportation improvements. The 2000 Regional Transportation Plan not only provides an updated set of financially constrained projects and programs for future MTIP allocations, but also establishes more formal procedures and objectives for implementing the long-range regional transportation policies through incremental funding decisions. These new MTIP provisions are set forth in Chapter 6 of the 2000 Regional Transportation Plan.

Other federal transportation planning requirements also apply to Metro. The federal Clean Air Act Amendments of 1990 establish air quality standards for key air pollutants, including carbon monoxide, ozone and particulate matter. Areas that do not meet the standards are designated in varying degrees of non-attainment from "marginal" to "extreme." If a metropolitan area is designated non-attainment, the state in which the metropolitan area is located must submit an implementation plan that shows how the metropolitan area will meet the federal standards and maintain compliance over a 10-year period. Areas that do not meet the State Implementation Plan requirements could face sanctions, including potential loss of federal highway funds and limits on industrial expansion.

In 1991, the Portland-Vancouver Interstate Air Quality Maintenance Area (AQMA) received a marginal non-attainment designation for ozone and moderate non-attainment designation for carbon monoxide. However, by the end of 1991, the area began to meet federal ozone and carbon monoxide standards on a consistent basis. As a result, this region began to work on 10-year maintenance plans and attainment designation requests for both pollutants. These plans were finalized in 1996 and submitted to the U.S. Environmental Protection Agency (EPA) as revisions to the Oregon State Implementation Plan. EPA approved the maintenance plans and also designated the Portland-Vancouver Interstate AQMA to attainment status in 1997. As required in the federal planning regulations, the financially constrained system in the 2000 Regional Transportation Plan has been demonstrated to conform with the Clean Air Act.

Another federal requirement that impacts regional transportation planning is the Endangered Species Act (ESA), a federal regulation that mandates protection and recovery for species in immediate and near-immediate danger of extinction. The 1998 and 1999 listing of Pacific Northwest steelhead, chinook and chum as threatened species under the ESA have placed an additional emphasis on protecting fish and wildlife habitat. The National Marine Fisheries Service (NMFS) is the federal agency charged with the listing and recovery of anadromous fish. An anadromous fish reproduces in fresh water but spends part of the growth cycle in the ocean. Once a species is listed, no person or municipality may "take" individual fish or so disrupt habitat as to "take" an individual fish without a permit. A "take" is any action that harms, threatens, endangers or harasses a species or modifies or degrades that species' habitat. There are often conflicts between good transportation design, planned urbanization and the need to protect streams and wildlife corridors from urban impacts. Metro and its local, regional, state, and federal partners are defining actions to protect these endangered species. Chapter 6 of the 2000 Regional Transportation Plan identifies outstanding issues that must be addressed prior to the next update to the plan, including the upcoming Green Streets project.

Additional federal transportation requirements include the 1990 Americans with Disabilities Act, which requires that transportation plans address equal access and opportunity for disabled people. The updated plan includes new policy provisions that focus on the transportation needs of the elderly, disables and other special needs populations. Chapter 6 of the plan also identifies additional work that must be completed to fully address special needs populations.

State Context and the Priority System

In 1991, the Land Conservation and Development Commission adopted the Oregon Transportation Planning Rule (TPR). The TPR implements State Land Use Planning Goal 12, Transportation, which was adopted by the Oregon Legislature in 1974. The TPR requires most cities and counties and the state's four MPOs to adopt transportation system plans that consider all modes of transportation, energy conservation and avoid principal reliance on any one mode to meet transportation needs. By state law, local plans in MPO areas must be consistent with the regional transportation system plan (TSP). In the Portland region, the 2000 Regional Transportation Plan serves as the regional TSP. Likewise, the regional TSP must be consistent with the Oregon Transportation Plan, adopted in 1992 by the Oregon Transportation Commission.

The state TPR requires that transportation system plans provide an adequate system of improvements that meet adopted performance measures. The priority system described in Chapter 5 of this plan serves as the statement of adequacy for the purpose of compliance with the state TPR. The priority system includes a broad set of needed transportation projects and programs that generally keep pace with growth in the region, while implementing key elements of the 2040 Growth Concept.

However, projects in the priority system cannot be funded through the MTIP process unless they are also included in the smaller financially constrained system. Instead, these projects and programs are intended to guide local transportation plans and land use actions, and serve as the source of future projects in the financially constrained system, either through amendments to the Regional Transportation Plan, or through the regular updates that occur every three to five years.

Metro's acknowledged 2040 Growth Concept as implemented in functional plan provisions have required changes in city and county comprehensive plans for land use solutions to transportation needs. The Metro regional transportation system plan is contained in applicable provisions of Chapters 1, 2, 5 and 6 of this RTP. The policies and financial analysis in Chapter 5 for the 2020 Priority System of transportation policies and improvements represent the transportation funding program for the regional TSP.

Regional Context and the Preferred System

In 1979, the voters in this region created Metro, the only directly elected regional government in the ~~U.S~~ nation. In 1991, Metro adopted Regional Urban Growth Goals and Objectives (RUGGOs) in response to state planning requirements. Revised in 1995 and acknowledged by the Land Conservation Development Commission in 1996, the RUGGOs establish a process for coordinating planning in the metropolitan region in an effort to preserve regional livability. 1995 RUGGOs, including the 2040 Growth Concept, were incorporated into the 1997 Regional Framework Plan to provide the policy framework for guiding Metro's regional planning program, including development of functional plans and management of the region's urban growth boundary.

In 1992, the voters of the Portland metropolitan area approved a home-rule charter for Metro. The charter identifies specific responsibilities of Metro and gives the agency broad powers to regulate land-use planning throughout the three-county region and to address what the charter identifies as "issues of regional concern." Among these responsibilities, the charter directs Metro to provide transportation and land-use planning services, oversee regional garbage disposal, and recycling and waste reduction programs, develop and operate a regional parks system and operate regional spectator facilities such as the Oregon Zoo, the Oregon Convention Center and the Portland Metropolitan Exposition (Expo) Center.

The charter also directed Metro to develop the 1997 Regional Framework Plan that integrates land-use, transportation and other regional planning mandates. The 2040 Growth Concept and implementing functional plan were incorporated into the charter-required regional framework plan.

The Regional Framework Plan is a comprehensive set of policies that integrate land-use, transportation, water, parks and open spaces and other important regional issues consistent with the 2040 Growth Concept. The Framework Plan is the regional policy basis for Metro's planning to accommodate future population and employment growth and achieve the 2040 Growth Concept. The RTP is consistent with Chapter 2 of the Framework Plan, which identifies transportation policies for the region. Chapter 1 of the 2000 Regional Transportation Plan addresses these regional transportation policies.

Since adoption of RUGGOs in 1991 and a home-rule charter in 1992, Metro has been involved in a long-range planning process that has included extensive involvement of residents of this region and our state, regional and local government partners. Metro started this planning effort because the region is growing rapidly. Today there are about 100,000 more people living in the three-county region than there were five years ago. By 2020, 470,000 more people are expected to live here.

The purpose of this effort has been to adopt and implement plans for protecting livable communities based on the values expressed by people in this region – such as clean air and water, access to nature, safe and stable neighborhoods, the ability to get around the region and a strong regional economy. Metro's Future Visions, 2040 Growth Concept in 1995 RUGGOs, the 1996 Urban Growth Management Functional Plan, the 1997 Regional Framework Plan, the 1998 water quality and flood area regulations, and the 1998 urban growth boundary amendments have been adopted. This 2000 RTP implements the goals and policies in 1995 RUGGOs and the 1997 Regional Framework Plan, including the 2040 Growth Concept.

The 2040 planning process also included an evaluation of how different land-use and transportation strategies could help preserve livability in this region. The possible consequences of such strategies were analyzed, including their impact on operation of the region's transportation system. The regional strategy that evolved from this process is called the 2040 Growth Concept, which integrates land-use and transportation planning and curbs rural and resource land consumption by using land more efficiently inside the urban growth boundary. From a transportation standpoint, the 2040 Growth Concept provided the best overall performance at the lowest cost of all the alternatives concepts that were evaluated.

Adopted in 1995 as part of the RUGGOs, the 2040 Growth Concept directs most new development to mixed-use centers with higher densities of development and along existing major transportation corridors. It relies on a balanced transportation system that adequately serves walking, bicycling, driving, transit and national and international freight movement. Building neighborhoods and communities to focus new jobs, housing and services in these centers and corridors provides many benefits and has important implications for the region's transportation system.

The 2040 Growth Concept can be summarized by the following components:

- centers and corridors with an emphasis on higher development densities, mixed land uses, ease of traveling by transit, bicycling and walking, parking limit and streets designed for people, not just cars

- neighborhoods that will remain largely residential in nature, and change very little from today

- industrial areas and marine, rail and air cargo terminals that serve as the hub for regional commerce

- environmentally sensitive areas that need special protections

The preferred system of transportation projects and programs described in Chapter 3 of the 2000 Regional Transportation Plan represents the full set of improvements needed to fully implement the 2040 Growth Concept during the 20-year planning period, and keep pace with forecasted growth in the region. This system contains many "placeholder" projects, where a specific transportation need is identified, but more work is needed to develop refined projects or programs that serve the identified need. The preferred system meets all of the performance measures included in Chapter 1 of the plan, and should be used to guide long-range land use and right-of-way planning.

The preferred system also incorporates all of the projects and programs included in the financially constrained and priority systems, described above. To be eligible for federal funds, a project or program in the preferred system must be amended into the financially constrained system.

Using urban land wisely allows for more cost-effective and efficient provision of road, sewer, water and stormwater systems. Our technical analysis showed that without the 2040 Growth Concept, the region's urban growth boundary would have needed to be expanded by about 50 percent to accommodate predicted housing and employment growth to 2040. This would have resulted in the need for more costly extensions of existing transportation and utility systems.

The 2040 Growth Concept also supports the region's goal of providing jobs and shopping closer to where people live. A diverse and well-designed community provides access to a variety of jobs, shopping and other services from home and reduces the number of auto trips and the need to drive longer distances.

More people will walk, take a bus or ride a bike if our transportation system provides safe and convenient opportunities to do so. Focusing new jobs and housing close to restaurants, stores and services makes walking, bicycling and riding public transportation convenient. These travel options allow people who cannot drive, or who choose not to drive, to get where they need to go. Finally, more households may choose not to own a car, or decline a second car, if there are a number of travel options. Money could be saved that would otherwise be spent on car payments, fuel, insurance and maintenance.

The 2040 Growth Concept encourages effective use of our land. The concept uses transportation investments to encourage economic activity in preferred areas where the region decides future development should occur.

The region's transportation system plays a critical role in the continued economic health and livability of this region. When planning for how and where development should occur in this region, consideration must be given to existing and future transportation needs. Experience has shown that economic vitality occurs in those areas with the best access. Therefore, it is important that the Regional Transportation Plan strategically invest transportation funds to improve access to and through the areas that need it (e.g., central city, regional centers, industrial areas and facilities where goods move from one transportation mode to another). This means targeting investments in a manner that serves areas where the region has decided future development should occur as part of implementation of the 2040 Growth Concept.

METRO

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CHAPTER 1

Regional Transportation Policy

1.0 Introduction

This chapter presents the overall policy framework for specific transportation policies, objectives and actions identified throughout this plan. It also sets a direction for future planning and decision-making by the Metro Council and the implementing agencies, counties and cities. A 21-member Regional Transportation Plan citizen advisory committee guided development of this chapter. The committee was appointed by the Metro Council in May 1995 to develop regional transportation policies and propose transportation solutions as part of the update to the 1992 Regional Transportation Plan. The group met monthly until January 1998. The culmination of the group's work can be found in policies in this chapter and in the guiding principles developed for use in updating the other chapters of this plan. This chapter is organized as follows:

Regional Transportation Vision: This section establishes the basic mission of the plan as a means for implementing the 2040 Growth Concept.

Connecting Land-use and Transportation: This section identifies the individual transportation needs for each 2040 Growth Concept land use component and the relative importance of each component to the region.

Regional Transportation Policies: This section provides specific policies and supporting objectives regarding the design, function and performance of the regional transportation system. As a whole, these policies form the basis for improvements recommended in Chapters 3 and 5 of this plan. The objectives establish how a particular policy will be implemented. Motor vehicle performance measures will be used to make a determination of whether the proposed transportation system is adequate to serve planned land uses during the 20-year plan period. Benchmarks will be developed to track implementation of these policies.

1.1 Regional Transportation Vision

Adoption of the 2040 Growth Concept established a new direction for planning in the Portland metropolitan region by linking urban form to transportation. This new direction reflects a regional commitment to developing a plan that is based on efficient use of land and a safe, cost-effective and efficient transportation system that supports the land uses in the 2040 Growth Concept and serves all forms of travel.

The unifying theme of the 2040 Growth Concept is to preserve the region's livability while planning for expected growth in this region – a principle that calls for a regional transportation system designed to meet the specific needs of each 2040 Growth Concept land use component. This Regional Transportation Plan seeks to protect the region's livability by defining a transportation system that:

- anticipates the region's current and future travel needs

- accommodates an appropriate mix of all forms of travel

- supports key elements of the 2040 Growth Concept through strategic investments in the region's transportation system

1.2 Connecting Land Use and Transportation

While the 2040 Growth Concept is primarily a land use planning strategy, the success of the concept, in large part, hinges on implementation of regional transportation policies identified in this plan. The following are descriptions of each of the 2040 Growth Concept land-use components and the transportation system envisioned to serve them. The 2040 Growth Concept land-use components, called 2040 Design Types, are grouped into a hierarchy based on investment priority. Table 1.1 lists each 2040 Design Type, based on this hierarchy. Figure 1.0 shows the adopted Region 2040 Growth Concept Map.

Table 1.1
Hierarchy of 2040 Design Types

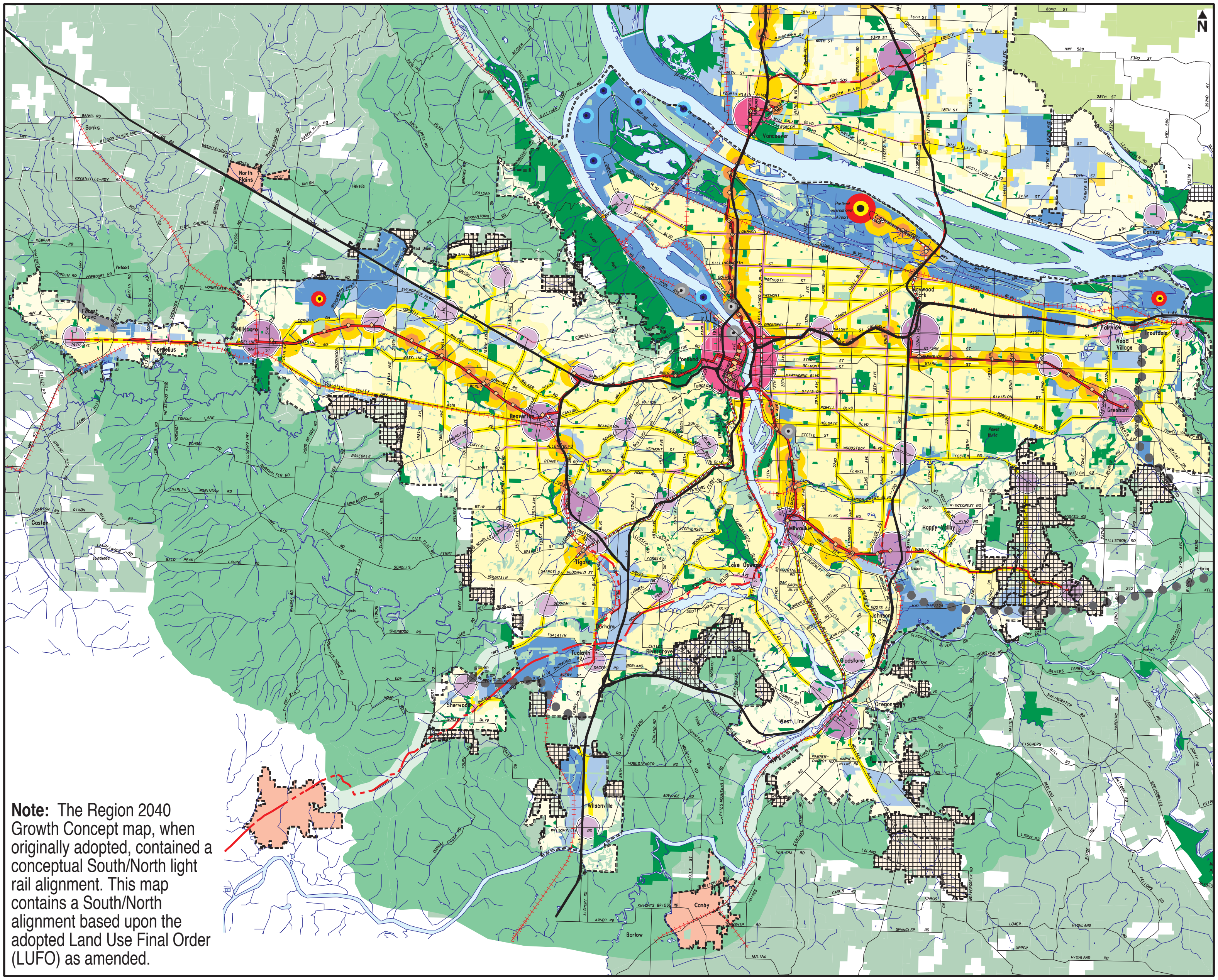
Primary land-use components	Secondary land-use components
Central city	Station communities
Regional centers	Town centers
Industrial areas	Main streets
Intermodal facilities	Corridors
Other urban land-use components	**Land-use components outside of the urban area**
Employment areas	Urban reserves
Inner neighborhoods	Rural reserves
Outer neighborhoods	Neighboring cities
	Green corridors

Source: Metro

1.2.1 Primary Components

The central city, regional centers, industrial areas and intermodal facilities are centerpieces of the 2040 Growth Concept, and form the geographic framework for more locally oriented components of the plan. Implementation of the overall growth concept is largely dependent on the success of these primary components. For this reason, these components are the primary focus of 2040 Growth Concept implementation policies and most infrastructure investments.

Central city and regional centers
Portland's central city already forms the hub of the regional economy. Regional centers in suburban locales such as Gresham, Beaverton and Hillsboro are envisioned in the 2040 Growth Concept as complementary centers of regional economic activity. These areas have the region's highest development densities, the most diverse mix of land uses and the greatest concentration of commerce, offices and cultural amenities. They are the most accessible areas in the region by both auto and public transportation, and have very pedestrian-oriented streets.



Note: The Region 2040 Growth Concept map, when originally adopted, contained a conceptual South/North light rail alignment. This map contains a South/North alignment based upon the adopted Land Use Final Order (LUFO) as amended.

Figure 1.1-1

Region 2040 Growth Concept

- Central City
- Regional Centers
- Town Centers
- Inner Neighborhoods
- Outer Neighborhoods
- Employment Areas
- Industrial Areas
- Corridors
- Main Streets
- Proposed Regional Throughways
- Potential Regional Throughways
- Green Corridors
- Planned & Existing Light Rail Lines
- Proposed Light Rail Alignments
- Potential HCT Facilities
- Light Rail Stations
- Potential Light Rail Stations
- International Airports
- Regional Airports
- Terminals
- Intermodal Rail Yards
- Rail Distribution Network
- Exclusive Farm Use
- Exception Land in Urban Reserves
- Resource Land in Urban Reserves
- Urban Reserves
- Rural Reserves
- Open Space
- Urban Growth Boundary
- Urban Reserve Boundaries
- Neighboring Cities
- Public Parks

SOURCES:

STREET NETWORK
Graphic source:
RLIS tax lot map, 1997
Map accuracy and data collection scale:
Cities of Beaverton, Milwaukie, Oregon City and Tigard: control point positional accuracy is plus or minus five feet or better, 1" = 100'
Multnomah County East of 42nd Ave: based on existing control points. Line work entered using coordinate geometry.
Remainder of region: control point positional accuracy is plus or minus ten feet, 1" = 100', 1" = 200' or 1" = 400'
Data source:
U.S. Bureau of the Census TIGER Line File 1990, county address records, Thomas Bros. Maps Inc, Portland Bureau of Emergency Communications, Washington County Consolidated Communications Agency.

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In the 2040 Growth Concept, the central city is highly accessible by a high-quality public transportation system, multi-modal street network and a regional freeway system of through-routes. Light rail lines radiate from the central city, connecting to each regional center. The street system within the central city is designed to encourage public transportation, bicycle and pedestrian travel, but also accommodate auto and freight movement. Of special importance are the bridges that connect the east and west sides of the central city, and serve as critical links in the regional transportation system.

Regional centers also feature a high-quality radial transit system serving their individual trade areas and connecting to other centers, as well as light rail connections to the central city. In addition, a fully improved network of multi-modal streets tie regional centers to surrounding neighborhoods and nearby town centers, while regional through-routes will be designed to connect regional centers with one another and to points outside the region. The street design within regional centers encourages public transportation, bicycle and pedestrian travel while also accommodating automobile and freight movement.

Industrial areas and intermodal facilities

Industrial areas serve as "sanctuaries" for long-term industrial activity. A network of major street connections to both the regional freeway system and intermodal facilities primarily serves these areas. Many industrial areas are also served by freight rail, and have good access to intermodal facilities. Freight intermodal facilities, including air and marine terminals, freight rail yards and common carrier truck terminals are areas of regional concern. Access to these areas is centered on rail, the regional freeway system, public transportation, bikeways and key roadway connections.

While industrial activities often benefit from roadway improvements largely aimed at auto travel, there are roadway needs unique to freight movement that are critical to the continued vitality of industrial areas and intermodal facilities.

1.2.2 Secondary components

While more locally oriented than the primary components of the 2040 Growth Concept, town centers, station communities, main streets and corridors are significant areas of urban activity. Because of their density and pedestrian-oriented design, they play a key role in promoting public transportation, bicycling and walking as viable travel alternatives to the automobile, as well as conveniently close services from surrounding neighborhoods. As such, these secondary components are an important part of the region's strategy for achieving state goals to limit reliance on any one mode of travel and increase walking, bicycling, carpooling, vanpooling and use of transit.

Station communities

Station communities are located along light rail corridors and feature a high-quality pedestrian and bicycle environment. These communities are designed around the transportation system to best benefit from the public infrastructure. While they include some local services and employment, they are mostly residential developments that are oriented toward the central city, regional centers and other areas that can be accessed by rail for most services and employment.

Town centers and main streets
Town centers function as local activity areas that provide close access to a full range of local retail and service offerings within a few miles of most residents. While town centers will not compete with regional centers in scale or economic diversity, they will offer some specialty attractions of regional interest. Although the character of these centers varies greatly, each will function as strong business and civic communities with excellent multi-modal arterial street access and high-quality public transportation with strong connections to regional centers and other major destinations. Main streets feature mixed-use storefront style development that serves the same urban function as town centers, but are located in a linear pattern along a limited number of bus corridors. Main streets feature street designs that emphasize pedestrian, public transportation and bicycle travel.

Corridors
Corridors will not be as intensively planned as station communities, but similarly emphasize a high-quality bicycle and pedestrian environment and convenient access to public transportation. Transportation improvements in corridors will focus on nodes of activity – often at major street intersections – where transit and pedestrian improvements are especially important. Corridors can include auto-oriented land uses between nodes of activity, but such uses are carefully planned to preserve the pedestrian orientation and scale of the overall corridor design.

1.2.3 Other urban components
Some components of the 2040 Growth Concept are primarily of local significance, including employment areas and neighborhoods. Urban activities in these areas often impact the regional transportation system, but are best addressed through the local planning process.

Employment areas
Employment areas allow mixed commercial and industrial uses, including some residential development. A network of arterial street connections to both the regional freeway system and intermodal facilities primarily serves these areas. Some employment areas also are served by freight rail. Employment areas often are located near industrial areas, and may benefit from freight improvements primarily directed toward industrial areas and intermodal facilities.

Neighborhoods
In recent decades, neighborhoods have become more congested largely due to a lack of street connections. A lack of street connections discourages walking and bicycling for local trips in these areas, and forces local auto trips onto the regional multi-modal arterial network. The 2040 Growth Concept envisions master street plans in all areas to increase the number of local street connections to the regional roadway network. However, new connections must be designed to discourage through-travel on local neighborhood streets.

1.2.4 Components outside the urban area
The remaining components of the 2040 Growth Concept are located outside the urban growth boundary.

Urban reserves
Since January 2000 changes in state regulations, Metro now has the option to adopt urban reserves, which would be located outside the urban growth boundary. If urban reserves are designated, they are intended to accommodate future growth and would eventually require multi-modal access to the rest of the region. General street and public transportation planning is completed prior to urbanization as part of the RTP process, and is based on specific 2040 Growth Concept land use policies for these areas. Once urban

reserves are brought within the urban growth boundary, more detailed transportation system planning at the regional and local level occurs in conjunction with detailed land-use planning. Urban reserves designated by the Metro Council in March, 1997 were remanded to Metro by the Oregon Court of Appeals in January, 2000. Some of these areas are being studied for possible addition to the urban growth boundary for housing consistent with state law. No urban reserve areas have been designated by Metro at this time.

Rural reserves
These largely undeveloped reserves are also located outside the urban growth boundary and have very limited transportation facilities. Roadways in these areas are intended to serve rural industry and needs, and urban travel on these routes is accommodated with designs that are sensitive to their basic rural function. Rural reserves will be protected from urbanization for the foreseeable future through state statutes and administrative rules, county land-use ordinances, intergovernmental agreements and by limiting rural access to urban through-routes when possible. Urban-to-urban travel is generally discouraged on most rural routes, with exceptions identified in this plan.

Neighboring cities and green corridors
Neighboring cities are separated from the main urban area by rural reserves, but are connected to regional centers within the metropolitan area by limited-access green corridor transportation routes. Green corridor routes will include bicycle and public transportation service to neighboring cities. Neighboring cities will be encouraged through intergovernmental agreements to balance jobs and households in order to limit travel demand on these connectors. The region also has an interest in maintaining reasonable levels of through-travel on major routes that pass through neighbor cities and function as freight corridors. Growth in neighboring cities will ultimately impact through-travel and could create a need for bypass routes. Such impacts also will be addressed through coordination with county and state agencies, as well as individual neighboring cities.

1.3 Regional Transportation Policies

The following section contains the regional policies for transportation. The policies are grouped into seven subject areas: public process, connecting land use, equal access and safety, protecting the environment, designing the transportation system, managing the transportation system and implementing the transportation system. In most cases, objectives follow each policy statement. The objectives identify how a particular policy will be implemented. Benchmarks will be developed to track implementation of these policies.

The policies aim to implement the 2040 Growth Concept and:

- protect the economic health and livability of the region
- improve the safety of the transportation system
- provide a transportation system that is efficient and cost-effective, investing our limited resources wisely
- provide access to more and better choices for travel in this region and serve special access needs for all people, including youth, elderly and disabled

- provide adequate levels of mobility for people and goods within the region
- protect air and water quality and promote energy conservation
- provide transportation facilities that support a balance of jobs and housing
- limit dependence on any single mode of travel and increase the use of transit, bicycling, walking and carpooling and vanpooling
- provide for the movement of people and goods through an interconnected system of highway, air, marine and rail systems, including passenger and freight intermodal facilities and air and water terminals
- integrate land use, automobile, bicycle, pedestrian, freight and public transportation needs in regional and local street designs
- use transportation demand management and system management strategies
- limit the impact of urban travel on rural land through use of green corridors.

Figure 1.1 provides a complete listing of all policies identified in this chapter.

Figure 1.1
Regional Transportation Policies

Policy 1.0. Public Involvement
Provide complete information, timely public notice, full public access to key decisions and support broad-based, early and continuing involvement of the public in all aspects of the transportation planning process that is consistent with Metro's adopted local public involvement policy for transportation planning. This includes involving those traditionally under-served by the existing system, those traditionally under-represented in the transportation process, the general public, and local, regional and state jurisdictions that own and operate the region's transportation system.

Policy 2.0. Intergovernmental Coordination
Coordinate among the local, regional and state jurisdictions that own and operate the region's transportation system to better provide for state and regional transportation needs.

Policy 3.0. Urban Form
Facilitate implementation of the 2040 Growth Concept with specific strategies that address mobility and accessibility needs and use transportation investments to leverage the 2040 Growth Concept.

Policy 4.0. Consistency Between Land-use and Transportation Planning
Ensure the identified function, design, capacity and level of service of transportation facilities are consistent with applicable regional land use and transportation policies as well as the adjacent land-use patterns.

Policy 5.0. Barrier-Free Transportation
Provide access to more and better transportation choices for travel throughout the region and serve special access needs for all people, including youth, elderly and disabled.

Policy 5.1 Interim Special Needs Transportation Policy
Serve the transit and transportation needs of elderly and disabled in the region.

Policy 5.2 Interim Job Access and Reverse Commute Policy
Serve the transit and transportation needs of the economically disadvantaged in the region by connecting low-income populations with employment areas and related social services.

Policy 6.0. Transportation Safety and Education
Improve the safety of the transportation system. Encourage bicyclists, motorists and pedestrians to share the road safely.

Policy 7.0. The Natural Environment
Protect the region's natural environment.

Policy 8.0. Water Quality
Protect the region's water quality.

Policy 9.0. Clean Air
Protect and enhance air quality so that as growth occurs, human health and visibility of the Cascades and the Coast Range from within the region is maintained.

Policy 10.0. Energy Efficiency
Design transportation systems that promote efficient use of energy.

Policy 11.0. Regional Street Design
Design regional streets with a modal orientation that reflects the function and character of surrounding land uses, consistent with regional street design concepts.

Policy 12.0. Local Street Design
Design local street systems to complement planned land uses and to reduce dependence on major streets for local circulation, consistent with Section 6.4.5 in Chapter 6 of this plan.

Policy 13.0. Regional Motor Vehicle System
Provide a regional motor vehicle system of arterials and collectors that connect the central city, regional centers, industrial areas and intermodal facilities, and other regional destinations, and provide mobility within and through the region.

Policy 14.0. Regional Public Transportation System
Provide an appropriate level, quality and range of public transportation options to serve this region and support implementation of the 2040 Growth Concept, consistent with Figures 1.15 and 1.16.

Policy 14.1. Public Transportation System Awareness and Education
Expand the amount of information available about public transportation to allow more people to use the system.

Policy 14.2. Public Transportation Safety and Environmental Impacts
Continue efforts to make public transportation an environmentally-friendly and safe form of motorized transportation.

Policy 14.3. Regional Public Transportation Performance
Provide transit service that is fast, reliable and has competitive travel times compared to the automobile.

Policy 15.0. Regional Freight System
Provide efficient, cost-effective and safe movement of freight in and through the region.

Policy 15.1. Regional Freight System Investments
Protect and enhance public and private investments in the freight network.

Policy 16.0. Regional Bicycle System Connectivity
Provide a continuous regional network of safe and convenient bikeways connected to other transportation modes and local bikeway systems, consistent with regional street design guidelines.

Policy 16.1. Regional Bicycle System Mode Share and Accessibility
Increase the bicycle mode share throughout the region and improve bicycle access to the region's public transportation system.

Policy 17.0. Regional Pedestrian System
Design the pedestrian environment to be safe, direct, convenient, attractive and accessible for all users.

Policy 17.1. Pedestrian Mode Share
Increase walking for short trips and improve pedestrian access to the region's public transportation system through pedestrian improvements and changes in land-use patterns, designs and densities.

Policy 17.2. Regional Pedestrian Access and Connectivity
Provide direct pedestrian access, appropriate to existing and planned land uses, street design classification and public transportation, as a part of all transportation projects.

Policy 18.0. Transportation System Management
Use transportation system management techniques to optimize performance of the region's transportation systems. Mobility will be emphasized on corridor segments between 2040 Growth Concept primary land-use components. Access and livability will be emphasized within such designations. Selection of appropriate transportation system techniques will be according to the functional classification of corridor segments.

Policy 19.0. Regional Transportation Demand Management
Enhance mobility and support the use of alternative transportation modes by improving regional accessibility to public transportation, carpooling, telecommuting, bicycling and walking options.

Policy 19.1. Regional Parking Management
Manage and optimize the efficient use of public and commercial parking in the central city, regional centers, town centers, main streets and employment centers to support the 2040 Growth Concept and related RTP policies and objectives.

Policy 19.2 Peak Period Pricing
Manage and optimize the use of highways in the region to reduce congestion, improve mobility and maintain accessibility within limited financial resources.

Policy 20.0. Transportation Funding
Ensure that the allocation of fiscal resources is driven by both land use and transportation benefits.

Policy 20.1. 2040 Growth Concept Implementation
Implement a regional transportation system that supports the 2040 Growth Concept through the selection of complementary transportation projects and programs.

Policy 20.2. Transportation System Maintenance and Preservation
Emphasize the maintenance, preservation and effective use of transportation infrastructure in the selection of the RTP projects and programs.

Policy 20.3. Transportation Safety
Anticipate and address system deficiencies that threaten the safety of the traveling public in the implementation of the RTP.

1.3.1 Public Process

Policy 1.0. Public Involvement
Provide complete information, timely public notice, full public access to key decisions and support broad-based, early and continuing involvement of the public in all aspects of the transportation planning process that is consistent with Metro's adopted local public involvement policy for transportation planning. This includes involving those traditionally under-served by the existing system, those traditionally under-represented in the transportation process, the general public, and local, regional and state jurisdictions that own and operate the region's transportation system.

a. Objective: Develop a detailed public involvement work plan consistent with the regional public involvement policy for each transportation plan, program or project.
b. Objective: Provide opportunities for the public to supply input. Revise work scopes, plans and programs to reflect public comment, as appropriate. Create a record of public comment received and agency response regarding draft transportation plans and programs at the regional level.

Metro's public involvement policy for regional transportation planning and funding activities is intended to support and encourage broad-based public participation in the development and review of Metro's transportation plans, programs and projects. The policy was developed in response to citizen interest, changes in state and federal transportation planning requirements, and in an effort to reach traditionally under-served portions of the population. The Metro Council adopted the public involvement policy in July 1995. Workshops, public meetings, hearings, open houses, mailings, flyers, surveys and paid advertising all are used to seek input from citizens. Metro coordinates input from the public and our local, regional, state and federal planning partners through several committees (see Policy 2.0 discussion).

Policy 2.0. Intergovernmental Coordination
Coordinate among the local, regional and state jurisdictions that own and operate the region's transportation system to better provide for state and regional transportation needs.

Metro's transportation planning activities also are guided by a decision-making framework that integrates federal, state, regional and local government staff and interested groups into the transportation and land-use decision-making processes of the region. Metro's job is to make sure that local planning is coordinated throughout the region, consistent with federal, state and regional requirements. Metro's planning partners include the cities, counties and affected special districts of the region, Oregon Department of Transportation (ODOT), Oregon Department of Environmental Quality, Port of Portland and Tri-Met. Metro also coordinates with Southwest Washington Regional Transportation Council (RTC), C-Tran, the Washington Department of Transportation, the Southwest Washington Air Pollution Control Authority and other Clark County governments on bi-state issues. Those affected special districts that have identified their interest are included in the RTP interested parties mailing list. In addition, plan materials are sent to the Oregon Special Districts Association for their coordination of comments by special districts.

By providing regional coordination amongst the planning partners and setting regional standards, cities and counties can better coordinate their planning efforts with neighboring jurisdictions – and this benefits the entire region. Metro facilitates this coordination through three decision-making bodies – the Metro Council, the Joint Policy Advisory Committee on Transportation (JPACT) and Transportation Policy Alternatives Committee (TPAC). Figure 1.2 displays the regional decision-making process.

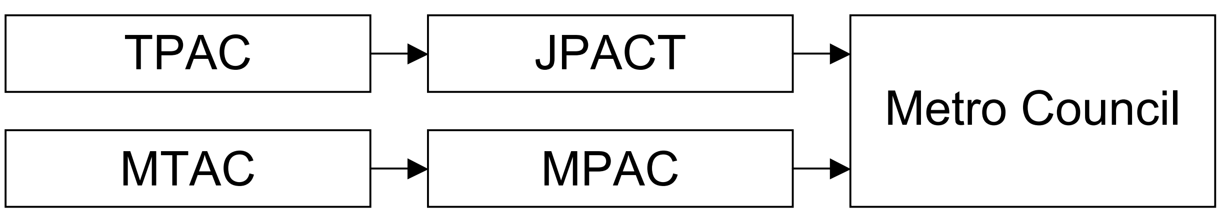
Metro Council. The seven members of the Metro Council are elected from districts throughout the region. The Council approves Metro policies, including transportation plans recommended by JPACT. The Metro Council, in making policy decisions and approving transportation plans, relies on JPACT and the Metro Policy Advisory Committee (MPAC) for input. JPACT and MPAC, in turn, rely on technical expertise and input from TPAC and the Metro Technical Advisory Committee (MTAC).

JPACT. The Joint Policy Advisory Committee on Transportation provides a forum for elected officials and representatives of agencies involved in transportation planning to evaluate transportation policies and make recommendations on projects to implement those policies. This 17-member committee makes funding recommendations to the Metro Council. The committee includes elected officials from local governments within the region, three Metro councilors, representatives from ODOT, Tri-Met, the Port of Portland, plus representatives from governments and agencies of Clark County, Wash., and the state of Washington. The JPACT finance subcommittee also meets to develop and recommend financing strategies to implement the region's transportation policies.

TPAC. The Transportation Policy Alternatives Committee provides technical input into the planning process and makes recommendations to JPACT. TPAC membership includes senior technical staff from cities and counties in the region, ODOT, Tri-Met, the Port of Portland, the Washington Department of Transportation, Federal Highway Administration, Oregon Department of Environmental Quality and the Southwest Washington Regional Transportation Council. There are also six citizen representatives with strong public involvement skills and diverse backgrounds appointed to TPAC by the Metro Council.

RTP Citizen Advisory Committee. In addition, the 21-member RTP Citizen Advisory Committee was appointed by the Metro Council in May 1995 to provide citizen perspectives on transportation issues during the RTP update. Members of the committee were selected as delegates for specific constituencies, to represent various citizen, demographic, business and special interest perspectives. The committee provided direct input to all of Metro's working committees and to the Metro Council.

Figure 1.2
Regional Decision-Making Process



Source: Metro

1.3.2 Connecting Land Use

Policy 3.0. Urban Form
Facilitate implementation of the 2040 Growth Concept with specific strategies that address mobility and accessibility needs and use transportation investments to leverage the 2040 Growth Concept.

a. Objective: Serve new development with interconnected public streets that provide safe and convenient pedestrian, bicycle and motor vehicle access.
b. Objective: Provide street, bicycle and pedestrian connections to transit routes within and between new and existing residential, commercial and employment areas and other activity centers.
c. Objective: Encourage development that supports increased mobility and accessibility, particularly by transit, walking and bicycling.
d. Objective: Support mixed-use development to reduce travel demand. Locate housing, jobs, schools, parks and other destinations within walking distance of each other whenever possible.
e. Objective: Leverage the region's multi-modal transportation investment by supporting the development of innovative tools including transit-oriented development, the location efficient mortgage and others.

Policy 4.0. Consistency Between Land-use and Transportation Planning
Ensure the identified function, design, capacity and level of service of transportation facilities are consistent with applicable regional land use and transportation policies as well as the adjacent land use patterns.

a. Objective: Provide adequate transportation facilities to support a land use plan that implements the 2040 Growth Concept.
b. Objective: Provide transportation facilities that enhance jobs and housing as well as the community identity of neighboring cities.

1.3.3 Equal Access and Safety

Policy 5.0. Barrier-Free Transportation
Provide access to more and better transportation choices for travel throughout the region and serve special access needs for all people, including youth, elderly and disabled.

a. Objective: Continue to work with local, regional and state jurisdictions to provide transportation facilities that comply with the Americans with Disabilities Act of 1990.
b. Objective: Continue to work with local, regional and state jurisdictions to identify and assess structural barriers to mobility for transportation disadvantaged populations in current and planned regional transportation system and address through a comprehensive program.
c. Objective: Continue to work with local, regional and state jurisdictions to make public transportation stops and walkway approaches accessible.
d. Objective: Develop outreach programs that encourage and support ridership among youth, elderly and disabled populations.

Policy 5.1 Interim Special Needs Transportation Policy
Serve the transit and transportation needs of elderly and disabled in the region.

a. Objective: Develop and implement an elderly and disabled transportation plan that defines the transit and other transportation needs of the region's elderly and disabled populations and incorporate more specific policies that address these needs in the RTP.
b. Objective: Develop strategies, establish on-going funding and design transportation projects that serve the elderly and disabled with particular emphasis on the transit dependent portion of this community, which is estimated to be about eight percent of the general population.
c. Objective: Consider for future inclusion in the RTP recommended strategies and transportation projects from Tri-Met and the Washington, Clackamas and Multnomah County Area Agencies on Aging and Disability's elderly and disabled transit plan.

Policy 5.2 Interim Job Access and Reverse Commute Policy
Serve the transit and transportation needs of the economically disadvantaged in the region by connecting low-income populations with employment areas and related social services.

a. Objective: Improve transportation options for the targeted population by improving transportation options through development of programs and services.
b. Objective: Provide employers, case managers and community services staff with training and resources directly related to the unique transportation needs of the targeted population.
c. Objective: Develop education and information materials specifically designed for the targeted population.

Policy 6.0. Transportation Safety and Education
Improve the safety of the transportation system. Encourage bicyclists, motorists and pedestrians to share the road safely.

a. Objective: Promote safety in the design and operation of the transportation system.
b. Objective: Minimize conflicts between modes, particularly between motor vehicles, freight, transit, pedestrians and bicycles.
c. Objective: Develop and implement regional safety and education programs. Coordinate regional efforts to promote safe use of roadways by motorists, bicyclists and pedestrians through a public awareness program.
d. Objective: Provide region-wide coverage of local traffic education programs, and actively distribute safety information to local jurisdictions, law enforcement agencies, schools and community organizations that informs and educates motorists, bicyclists and pedestrians.

1.3.4 Protecting the Environment

Policy 7.0. The Natural Environment
Protect the region's natural environment.

a. Objective: Place a priority on protecting the natural environment in all aspects of the transportation planning process.
b. Objective: Reduce the environmental impacts associated with transportation planning, project construction and maintenance activities.
c. Objective: Reduce negative impacts on parks, public open space, natural areas, wetlands and rural reserves arising from noise, visual impacts and physical segmentation.
d. Objective: New transportation and related utility projects shall seek to avoid fragmentation and degradation of components of the Regional System (regionally significant parks, natural areas, open spaces, trails and greenways). If avoidance is infeasible, impacts shall be minimized and mitigated.

Policy 8.0. Water Quality
Protect the region's water quality.

a. Objective: Meet applicable state and federal water quality standards in the planning process.
b. Objective: Support local jurisdiction efforts to reduce impervious surface coverage in the development review and street design process.
c. Objective: Comply with the Governor's fish initiative and federal requirements related to endangered species listings.

Ecosystems do not conform to political boundaries. Streams and watersheds cross both city and county boundaries, and transportation projects often impact watersheds. In recent years, it has become increasingly important to acknowledge the effect of developing the public right-of-way on the health of our environment, particularly urban waterways. Streets and driveways combine to form the largest source of impervious surfaces in our urban landscape. A particular challenge is how to address conflicts between planned transportation improvements and identified stream corridors, and how transportation improvements can be constructed in concert with stream corridor protection plans.

Impervious surfaces are hard surfaces that do not allow water to soak into the ground, and increase the amount of stormwater running off into the stormwater drainage system. The majority of total impervious surfaces are from roads, sidewalks, parking lots and driveways. Stormwater runoff from these impervious surfaces reduces the amount of recharge of water to ground water and increases the capacity requirements of the storm water drainage system.

Higher impervious surface coverage has been linked to dramatic changes in the shape of streams, water quality, water temperature and the health of the flora and fauna that live in the natural waterways. Examples of impervious surface reduction techniques that could be used by local jurisdictions in the development review and street design process include:

- consider use of open channels and swales on smaller streets and roads, as long as runoff velocities are low enough to prevent erosion
- grade sidewalks so that stormwater runs off into adjacent unpaved areas such as planting strips or landscaped private property

- encourage the use of shared parking to reduce the size and number of parking lots
- consider reducing commercial, industrial and multi-family use parking requirements to reduce impervious surface coverage
- encourage shared driveways between adjacent development projects
- follow guidelines for erosion control techniques during construction of regional streets and adjacent development projects.

Policy 9.0. Clean Air
Protect and enhance air quality so that as growth occurs, human health and visibility of the Cascades and the Coast Range from within the region is maintained.

a. Objective: Encourage use of all modes of travel (e.g., transit, telecommuting, zero-emissions vehicles, carpooling, vanpooling, bicycles and walking) that contribute to clean air.
b. Objective: Include strategies for planning and managing air quality in the regional airshed in the State Implementation Plan for the Portland-Vancouver air quality maintenance areas as required by the federal Clean Air Act Amendments.
c. Objective: Develop new regional strategies to comply with federal Clean Air Act Amendments requirements and provide capacity for future growth.
d. Objective: Work with the state to pursue close collaboration of the Oregon and Clark County Air Quality Management Areas.
e. Objective: Provide regional support for implementation of the voluntary parking provisions of the Portland region's Ozone Maintenance Plan.
f. Objective: Ensure timely implementation and adequate funding for Transportation Control Measures as identified in the State Implementation Plan.

Policy 10.0. Energy Efficiency
Design transportation systems that promote efficient use of energy.

a. Objective: Reduce the region's transportation-related energy consumption through increased use of transit, telecommuting, zero-emissions vehicles, carpooling, vanpooling, bicycles and walking and through increasing efficiency of the transportation network to diminish delay and corresponding fuel consumption.

1.3.5 Designing the Transportation System

The design and function of individual transportation facilities and entire systems have a significant impact on adjacent land uses and the character of the communities they serve. As a result, transportation systems planning must consider larger regional and community goals and values, such as protection of the environment, the regional economy and the quality of life that area residents presently enjoy.

The Regional Transportation Plan measures economic and quality-of-life impacts of the proposed system by evaluating key indicators, such as access to jobs and retail services, mode share, vehicle miles traveled, travel times, travel speeds, level of congestion and air quality impacts. Other key indicators include economic benefits to the community, access to transportation by the traditionally underserved, including low-income and minority households and the disabled, energy costs and protection of natural resources.

The Regional Transportation Plan defines a transportation system that balances all of the policies in this plan. Sometimes these policies are in conflict – so each transportation project or program must be evaluated in terms of financial constraints, associated social, economic and environmental impacts, and how it best achieves an overall balance between those conflicting goals.

The following policy guides planning and implementation of the region's transportation system.

Policy 11.0. Regional Street Design
Design regional streets with a modal orientation that reflects the function and character of surrounding land uses, consistent with regional street design concepts.

a. Objective: Support local implementation of regional street design concepts in local transportation system plans.

Regional street design policies address federal, state and regional transportation planning mandates with street design concepts intended to support local implementation of the 2040 Growth Concept. The design concepts reflect the fact that streets perform many, often conflicting functions, and the need to reconcile conflicts among travel modes to make the transportation system safer for all modes of travel. Implementation of the design concepts is intended to promote community livability by balancing all modes of travel and address the function and character of surrounding land uses when designing streets of regional significance.

Regional street design concepts

Regional street design concepts are intended to serve multiple modes of travel in a manner that supports the specific needs of the 2040 land-use components. The street design concepts fall into five broad classifications:

- **Throughways** – emphasize motor vehicle travel and connect major activity centers, industrial areas and intermodal facilities

- **Boulevards** – serve major centers of urban activity and emphasize public transportation, bicycle and pedestrian travel while balancing the many travel demands of intensely developed areas

- **Streets** – serve transit corridors, main streets and neighborhoods with designs that integrate many modes of travel and provide easy pedestrian, bicycle and public transportation travel

- **Roads** – are traffic-oriented with designs that integrate all modes but primarily serve motor vehicles

- **Local streets** – complement the regional system by serving neighborhoods and carrying local traffic.

These design concepts apply to the regional system as they relate to specific 2040 Growth Concept land-use components. Figure 1.3 provides a chart of regional street design classifications for roadways that serve a given 2040 land use. The most appropriate street design classification for roadways that serve a given land use is indicated with a solid circle(s). Separate regional street design guidelines were developed to guide local implementation of the design concepts. A detailed discussion of these guidelines can be found in *Creating Livable Streets: Street Design for 2040*. The regional street design map, Figure 1.4, applies the regional street design concepts to streets of regional significance. Following Figure 1.4 is a detailed description of the purpose and design emphasis of each design concept.

Figure 1.3
Regional Street Design Classifications and the 2040 Growth Concept

Regional Street Design Classifications		Primary Components			Secondary Components				Other Urban Components			
		Central City	Regional Centers	Industrial Areas	Station Communities	Town Centers	Main Streets**	Corridors	Employment Areas	Inner Neighborhood	Outer Neighborhood	Exurban Areas
Throughways	Freeway	*Throughways are not included in this chart because Freeway and Highway designs do not reflect adjacent land use.*										
Throughways	Highway											
Boulevards	Regional Boulevard	●	●	○	●	●	●	○	○	○	○	
Boulevards	Community Boulevard	●	●	○	●	●	●	○	○	○	○	
Streets	Regional Street	○	○	○	○	○	●	●	○	●	●	
Streets	Community Street	○	○	○	○	○	●	●	○	●	●	
Roads	Urban Road			●					●			
Roads	Rural Road											●

● Most appropriate street design classification

○ Appropriate street design classification in transition areas

** Main Streets feature Boulevard designs along key segments and at major intersections

Source: Metro

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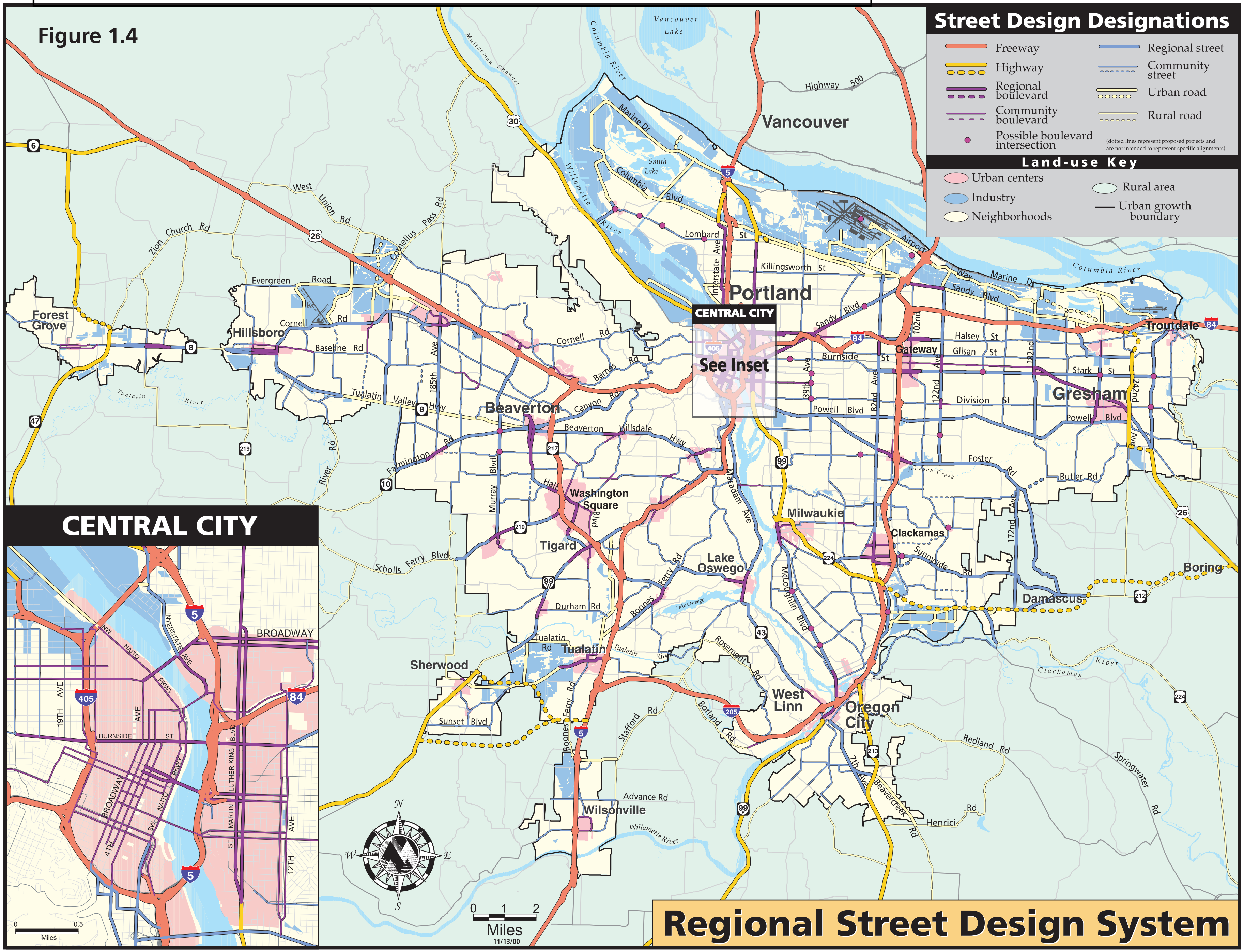

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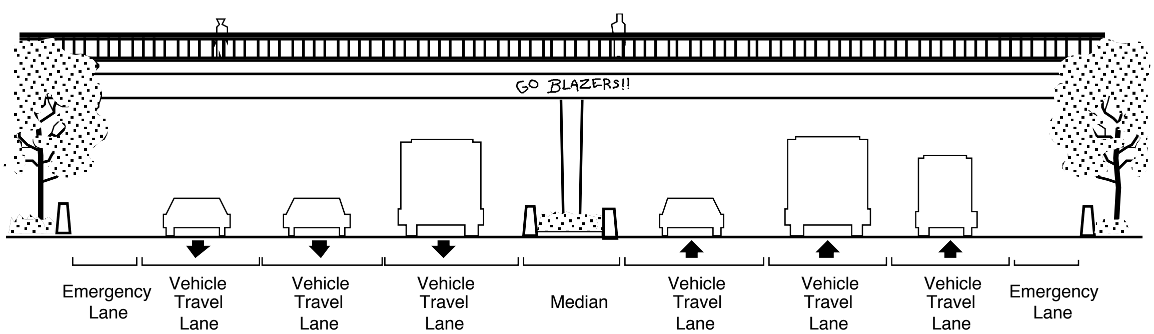
Throughways
The purpose of throughways is to connect major activity centers within the region, including the central city, regional centers, industrial areas and intermodal facilities to one another and to points outside the region. Throughways are divided into limited access freeway designs where all intersections have separated grades, and highways that include a mix of separate and at-grade intersections.

Both freeways and highways are designed to provide high-speed travel for longer motor vehicle trips throughout the region, are primary freight routes and serve all 2040 Growth Concept land-use components. In addition to facility designs that promote mobility, throughways may also benefit from access management and advanced traffic management system techniques. These facilities may carry transit through-service, with supporting amenities limited to transit stations. These facilities may also incorporate transit-priority design treatment where appropriate, and may incorporate light rail or other high-capacity transit.

Freeways
Freeways usually consist of four to six vehicle travel lanes, with additional lanes in some situations. They are completely divided, with no left-turn lanes. Freeway designs have few street connections, and always occur at separated grades with access controlled by ramps. There is no driveway access to freeways or buildings oriented toward these facilities – only emergency parking is allowed. Freeway designs do not include pedestrian amenities, with the exception of improved crossings on overpasses and access ramps. Bikeways designed in conjunction with freeway improvements usually are separated facilities. Figure 1.5 illustrates a typical cross-section of a freeway.

Figure 1.5
Freeway Design Elements

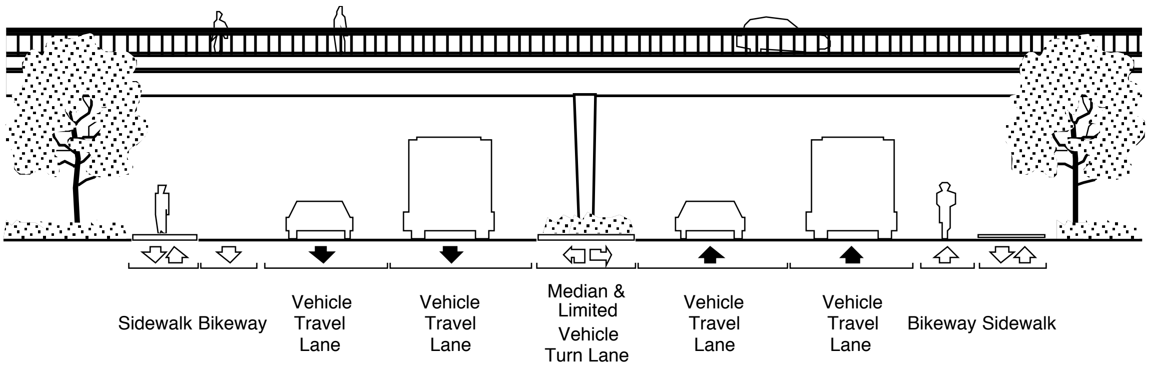


Source: Metro

Highways
Highways usually consist of four to six vehicle travel lanes, with additional lanes in some situations. Highway designs have few street connections, and they may occur at same-grade or on separate grades. Highways are usually divided with a median, but also have left-turn lanes where at-grade intersections exist. There are few driveways on highways, and buildings are not usually oriented toward these facilities. On-street parking is usually prohibited in highway designs, but may exist in some locations.

Highway designs include striped bikeways and sidewalks with optional buffering. Improved pedestrian crossings are located on overpasses, underpasses and at same-grade intersections. Figure 1.6 illustrates a typical cross-section of a highway.

Figure 1.6
Highway Design Elements



Source: Metro

Boulevards

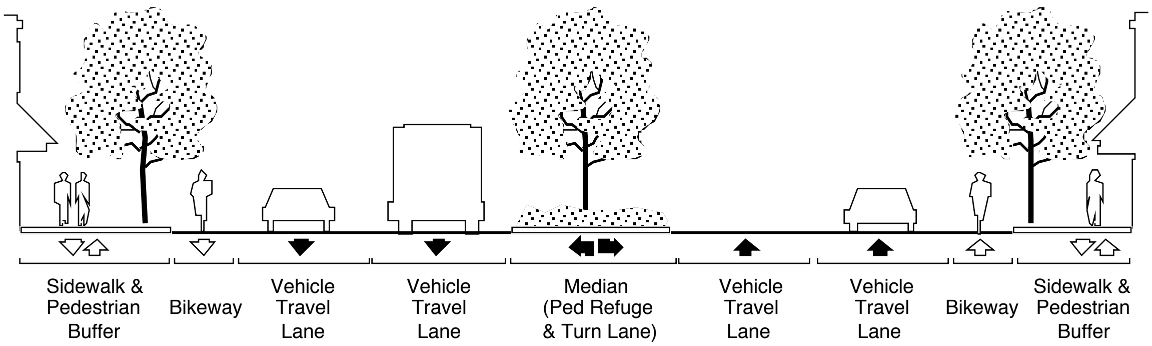
Boulevards are designed with special amenities that promote pedestrian, bicycle and public transportation travel in the districts they serve. Boulevards serve the multi-modal needs of the region's most intensely developed activity centers, including the central city, regional centers, station communities, town centers and some main streets. As such, these facilities may benefit from access management, traffic calming and ATMS techniques that reinforce pedestrian, bicycle and public transportation travel. Boulevards are divided into regional and community-scale designs.

Regional boulevards

Regional boulevards mix a significant amount of motor vehicle traffic with public transportation, bicycle and pedestrian travel where dense development is oriented toward the street. These designs feature low to moderate vehicle speeds and usually include four vehicle lanes. Additional lanes or one-way couplets may be included in some situations. Regional boulevards have many street connections and some driveways, although combined driveways are preferable. These facilities may include on-street parking when possible. The center median serves as a pedestrian refuge and allows for left-turn movements at intersections.

Regional boulevards are designed to be transit-oriented, with high-quality service and substantial transit amenities at stops and station areas. Pedestrian improvements are substantial on boulevards, including broad sidewalks, pedestrian buffering, special street lighting and crossings at all intersections with special crossing amenities at major intersections. These facilities have bike lanes or wide outside lanes where bike lanes are not physically possible, or are shared roadways where motor vehicle speeds are low. They also serve as primary freight routes and may include loading facilities within the street design. Loading facilities should occur on side streets, where feasible. Figure 1.7 illustrates a typical cross-section of a regional boulevard.

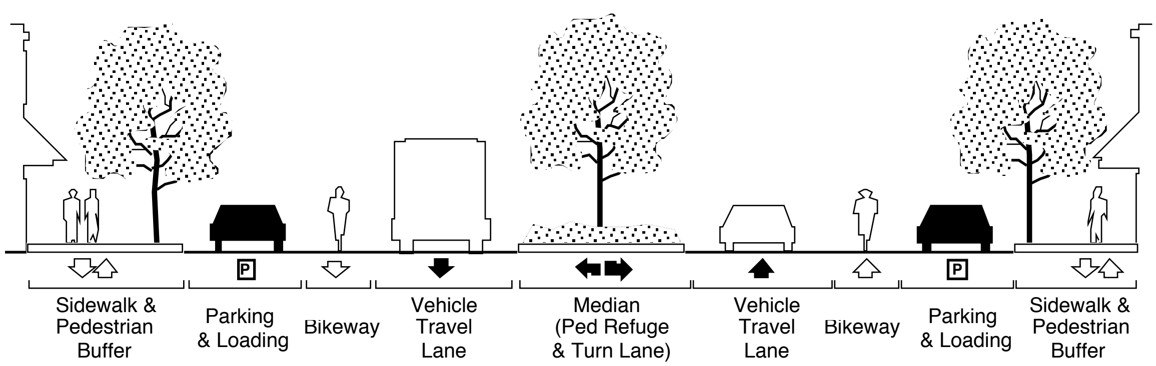
Figure 1.7
Regional Boulevard Design Elements



Source: Metro

Community boulevards
Community boulevards mix motor vehicle traffic with public transportation, bicycle and pedestrian travel where dense development is oriented toward the street. These facilities are designed for low motor vehicle speeds and usually include four vehicle lanes and on-street parking. Fewer vehicle lanes may be appropriate in some situations, particularly when necessary to provide on-street parking. Community boulevards have many street connections and some driveways, although combined driveways are preferable. Where appropriate, center medians offer a pedestrian refuge and allow for left turn movements at intersections. Figure 1.8 illustrates a typical cross-section of a community boulevard.

Figure 1.8
Community Boulevard Design Elements



Source: Metro

Community boulevards are designed to be transit-oriented, with high-quality service supported by substantial transit amenities at stops and station areas. Pedestrian improvements are also substantial, including broad sidewalks, pedestrian buffering, special street lighting and crossings at all intersections with special crossing amenities at major intersections. Community boulevards have striped or shared bikeways and some on-street parking. These facilities also serve as secondary freight routes, and may include loading facilities within the street design. Loading facilities should occur on side streets, where feasible.

Boulevard intersections
Boulevard design classifications are usually focused on centers and some main streets where a pedestrian and transit-oriented street design can best complement higher density, mixed-use development patterns. However, there are many locations where corridors and some main streets intersect along major streets. At these intersections, motor vehicle traffic must be managed to limit negative impacts on other modes and adjacent land uses. While boulevard intersections accommodate a significant amount of motor vehicle traffic, they are designed with special amenities that promote pedestrian, bicycle and public transportation travel. Pedestrian improvements are substantial, including broad sidewalks, special lighting, crossings on all streets and special crossing features where unusually heavy motor vehicle traffic is present.

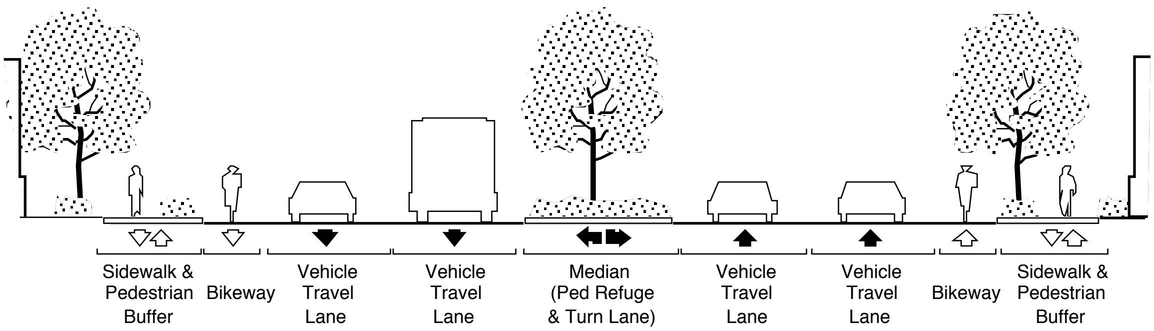
Streets

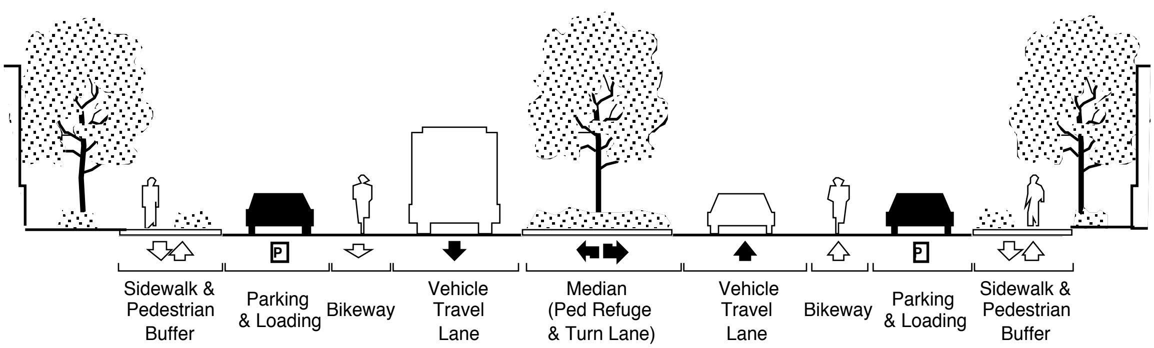
Streets are designed with amenities that promote pedestrian, bicycle and public transportation travel in the districts they serve, particularly where development densities warrant special transit and pedestrian design consideration. Streets serve the multi-modal needs of the region's corridors, neighborhoods and some main streets. As such, these facilities may benefit from access management, traffic calming and ATMS techniques that enhance pedestrian, bicycle and public transportation travel, while providing appropriate vehicle mobility. Streets are divided into regional and community scale designs.

Regional streets
Regional streets are designed to carry significant vehicle traffic while also providing for public transportation, bicycle and pedestrian travel. These facilities serve a development pattern that ranges from low-density residential neighborhoods to more densely developed corridors and main streets, where buildings are often oriented toward the street at major intersections and transit stops. Regional street designs accommodate moderate motor vehicle speeds and usually include four vehicle lanes. Additional motor vehicle lanes may be appropriate in some situations. These facilities have some to many street connections, depending on the district they are serving. Regional streets have few driveways that are combined whenever possible. On-street parking may be included, and a center median serves as a pedestrian refuge and allows for left turn movements at intersections.

These facilities are designed to be transit-oriented, with high-quality service and substantial transit amenities at stops and station areas. Although less substantial than in boulevard designs, pedestrian improvements are important along regional streets, including sidewalks that are buffered from motor vehicle travel, crossings at all intersections and special crossing amenities at major intersections. Regional streets have bike lanes or wide outside lanes where bike lanes are not physically possible, or are shared roadways where motor vehicle speeds are low. They also serve as primary freight routes and may include loading facilities within the street design, where appropriate. Figure 1.9 illustrates a typical cross-section of a regional and community street.

Figure 1.9
Regional and Community Street Design Elements





Source: Metro

Community streets
Community streets are designed to carry vehicle traffic while providing for public transportation, bicycle and pedestrian travel. These facilities serve lower-density residential neighborhoods as well as more densely developed corridors and main streets, where buildings are often oriented toward the street at main intersections and transit stops. Community street designs allow for moderate motor vehicle speeds and usually include four motor vehicle lanes and on-street parking. However, fewer travel lanes may be appropriate when necessary to provide for on-street parking. These facilities have some to many street connections, depending on the 2040 Growth Concept land-use components they serve. Community streets have few driveways that are shared when possible. A center median serves as a pedestrian refuge and allows for left-turn movements at intersections.

Community streets are transit-oriented in design, with transit amenities at stops and station areas. Although less substantial than in boulevard designs, pedestrian improvements are important on community streets, including sidewalks that are buffered from motor vehicle travel, crossings at all intersections and special crossing features at major intersections. Community streets have striped or shared bikeways. These facilities also serve as secondary freight routes and may include loading facilities within the street design, where appropriate. Loading facilities should occur on side streets, where feasible.

Roads

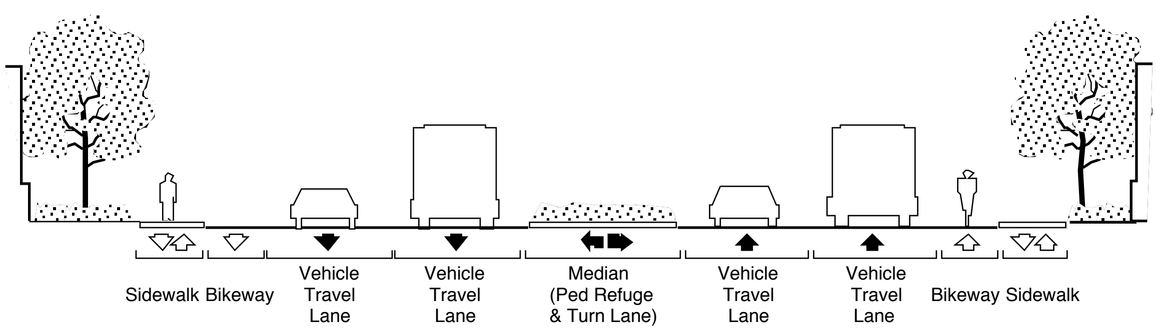
Roads are traffic-oriented designs that provide motor vehicle mobility in the 2040 Growth Concept land-use components they serve and accommodate a minimal amount of pedestrian and public transportation travel. These facilities may benefit from access management and ATMS techniques. Roads serve the travel needs of the region's lower density industrial and employment areas as well as rural areas located outside the urban growth boundary. Roads are, therefore, divided into urban and rural designs.

Urban roads

These facilities are designed to carry significant motor vehicle traffic while providing for some public transportation, bicycle and pedestrian travel. Urban roads serve industrial areas, intermodal facilities and employment centers where buildings are less oriented toward the street. These facilities also serve new urban areas (UGB additions) where plans for urban land use and infrastructure are not complete. Urban roads are designed to accommodate moderate vehicle speeds and usually include four motor vehicle lanes, although additional lanes may be appropriate in some situations. These designs have some street connections, but few driveways. Urban roads rarely include on-street parking, and a center median primarily serves to optimize motor vehicle travel and to allow for left-turn movements at intersections.

Urban roads serve as primary freight routes and often include special design treatments to improve freight mobility. These facilities are designed for transit through-service, with limited amenities at transit stops. Sidewalks are included in urban road designs, although buffering is optional. Pedestrian crossings are included at intersections. Urban roads have striped bikeways. Figure 1.10 illustrates a typical cross-section of an urban road.

Figure 1.10
Urban Road Design Elements

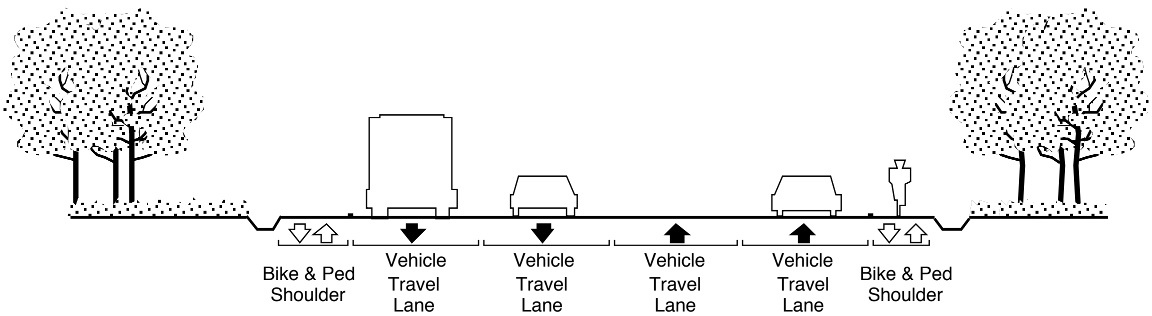


Source: Metro

Rural roads

Rural roads are designed to carry rural traffic while accommodating limited public transportation, bicycle and pedestrian travel. In some cases rural roads serve to connect urban traffic to throughways. Rural roads serve urban reserves, rural reserves and green corridors, where development is widely scattered and usually located away from the road. These facilities are designed to allow moderate motor vehicle speeds and usually consist of two to four motor vehicle lanes, with occasional auxiliary lanes appropriate in some situations. Rural roads have some street connections and few driveways. On-street parking occurs on an unimproved shoulder, and is usually discouraged. These facilities may include center turn lanes, where appropriate. Figure 1.11 illustrates a typical cross-section of a rural road.

Figure 1.11
Rural Road Design Elements



Source: Metro

Rural roads serve as primary freight routes and often provide important farm-to-market connections. Special design treatments to improve freight mobility are therefore important in these designs. Rural roads rarely serve public transportation, but may include limited amenities at rural transit stops where transit service does exist. Bicycles and pedestrians share a common striped shoulder on these facilities, and improved pedestrian crossings occur only in unique situations (such as rural schools or commercial districts).

Policy 12.0. Local Street Design
Design local street systems to complement planned land uses and to reduce dependence on major streets for local circulation, consistent with Section 6.4.5 in Chapter 6 of this plan.

Local streets include all facilities not identified on the regional motor vehicle system map in Figure 1.11 of this plan. Local streets serve the immediate travel needs of the region at the neighborhood level. These facilities are multi-modal and are designed to serve most short automobile, bicycle and pedestrian trips. They generally do not carry freight in residential areas, but are important to freight movement in industrial and commercial areas. Local streets may serve as transit routes in some situations. Local street designs include many connections with other streets, and bicycle and pedestrian accessways where topography or existing development patterns prevent full street extensions.

Policy 13.0. Regional Motor Vehicle System
Provide a regional motor vehicle system of arterials and collectors that connect the central city, regional centers, industrial areas and intermodal facilities, and other regional destinations, and provide mobility within and through the region.

a. Objective: Provide for statewide, national and international connections to and from the region, consistent with the Oregon Transportation Plan.
b. Objective: Provide a system of principal arterials for long-distance, high-speed, interstate, inter-region and intra-region travel.
c. Objective: Provide an adequate system of arterials that supports local and regional travel.
d. Objective: Provide an adequate system of local streets that supports localized travel, thereby reducing dependence on the regional system for local travel.
e. Objective: Maintain an acceptable level of service on the regional motor vehicle system during peak and off-peak periods of demand, as defined in Table 1.2.
f. Objective: Minimize the effect of improved regional access outside the urban area.
g. Objective: Minimize the impact of urban travel on rural land uses. Limit access to and minimize urban development pressure on rural land uses and resource lands by maintaining appropriate levels of access to support rural activities, while discouraging urban traffic.
h. Objective: Implement a congestion management system to identify and evaluate low cost strategies to mitigate and limit congestion in the region.

These policies and objectives direct the region's planning and investment in the regional motor vehicle system. The regional motor vehicle system is designed to provide access to the central city, regional centers, industrial areas and intermodal facilities with an emphasis on mobility between these destinations. The regional motor vehicle system is shown in Figure 1.12 of this plan.

This plan recognizes the need to accommodate a variety of trip types on the regional motor vehicle system that include personal errands, commuting to work or school, commerce, freight movement and public transportation. In general, this plan recognizes there would be a higher degree of mobility during the mid-day compared to the peak-hour. Although focused on motor vehicle travel, the system described in this section is multi-modal, with design criteria intended to serve motor vehicle mobility needs while reinforcing the urban form of the 2040 Growth Concept. While the motor vehicle system usually serves bicycle and pedestrian travel, the system is designed to limit impacts of motor vehicles on pedestrian and transit-oriented districts.

Finally, the Regional Transportation Plan must demonstrate that it defines an adequate transportation system to serve planned land uses. The motor vehicle performance measures identified in Table 1.2 serve as the basis for making this determination.

In areas of special concern, substitute performance measures identified in Chapter 6 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 for addressing a level-of-service need, but where alternative routes for regional through-traffic are provided. Figure 1.13 in this chapter defines 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 are included in Section 6.7.7 of this plan. Adopted performance measures for these areas are detailed in Appendix 3.6.

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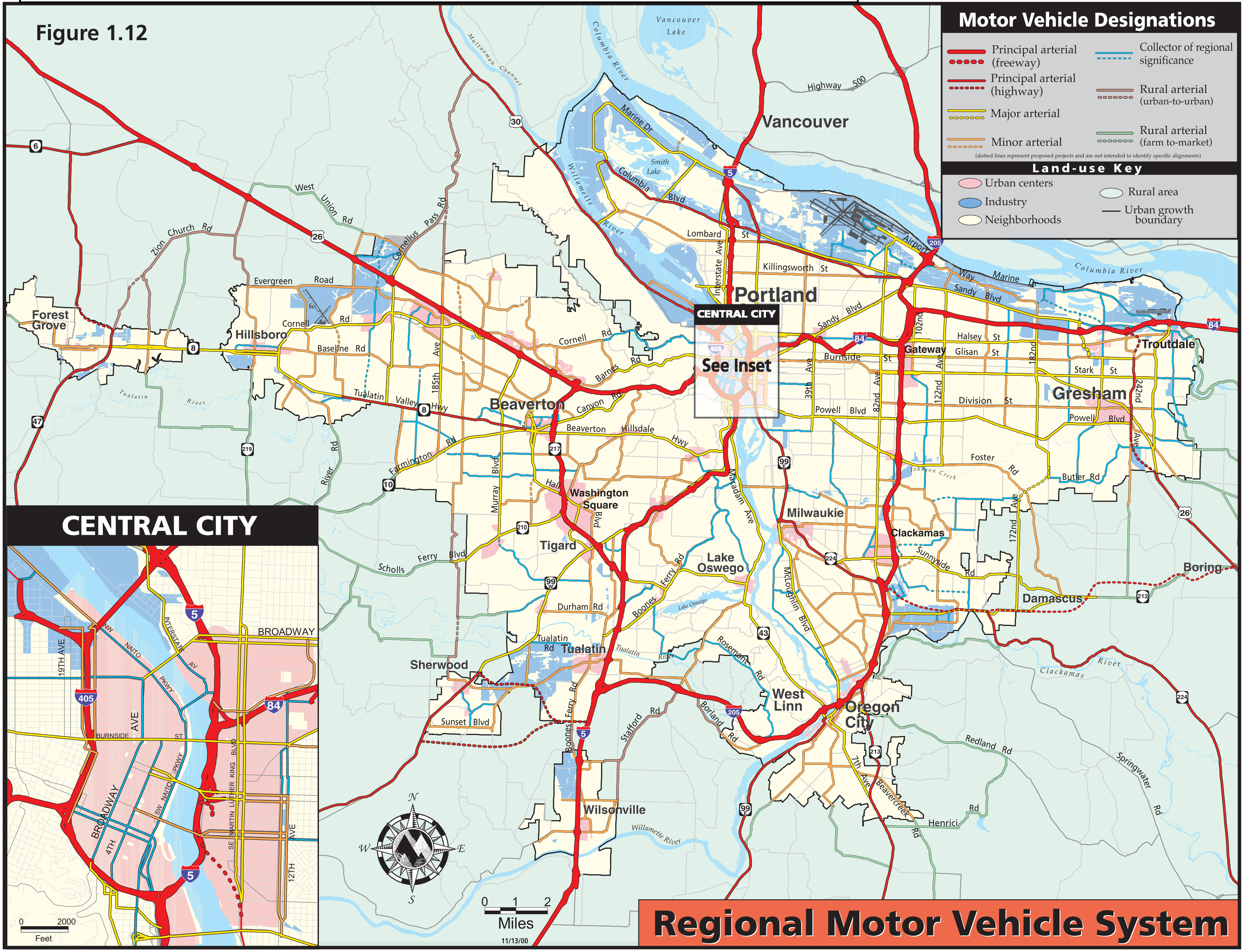

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Table 1.2

Regional Motor Vehicle Performance Measures

Deficiency Thresholds and Operating Standards[1]

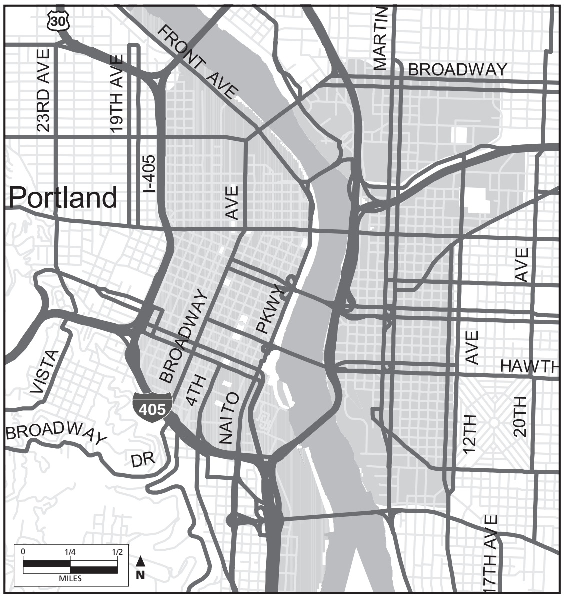
Location	Mid-Day One-Hour Peak			A.M./P.M. Two-Hour Peak					
	Preferred Operating Standard	Acceptable Operating Standard	Exceeds Deficiency Threshold	Preferred Operating Standard		Acceptable Operating Standard		Exceeds Deficiency Threshold	
				1st Hour	2nd Hour	1st Hour	2nd Hour	1st Hour	2nd Hour
Central City **Regional Centers** **Town Centers** **Main Streets** **Station Communities**	C	E	F	E	E	F	E	F	F
Corridors **Industrial Areas** **Intermodal Facilities** **Employment Areas** **Inner Neighborhoods** **Outer Neighborhoods**	C	D	E	E	D	E	E	F	E
Banfield Freeway[1] *(from I-5 to I-205)*	C	E	F	E	E	F	E	F	F
I-5 North* *(from Marquam Bridge to Interstate Bridge)*	C	E	F	E	E	F	E	F	F
Highway 99E[1] *(from the Central City to Highway 224 interchange)*	C	E	F	E	E	F	E	F	F
Sunset Highway[1] *(from I-405 to Sylvan interchange)*	C	E	F	E	E	F	E	F	F
Stadium Freeway[1] *(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 1.13.a-e 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 are included in Section 6.7.7 of this plan. Adopted performance measures for these areas are detailed in Appendix 3.3.								

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. A copy of the level of service tables from the Highway Capacity Manual is shown in Appendix 1.6.

[1] Thresholds shown are for interim purposes only; refinement plans for these corridors are required in Chapter 6 of this plan, and will include a recommended motor vehicle performance policy for each corridor.

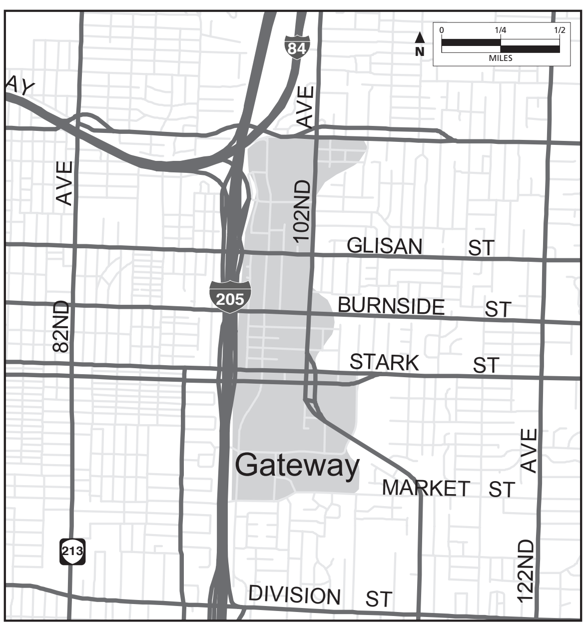
Source: Metro

Figure 1.13.a
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 3.3 for detail on alternative performance measures identified for this area of special concern.

Figure 1.13.b
Gateway Regional Center
Area of Special Concern

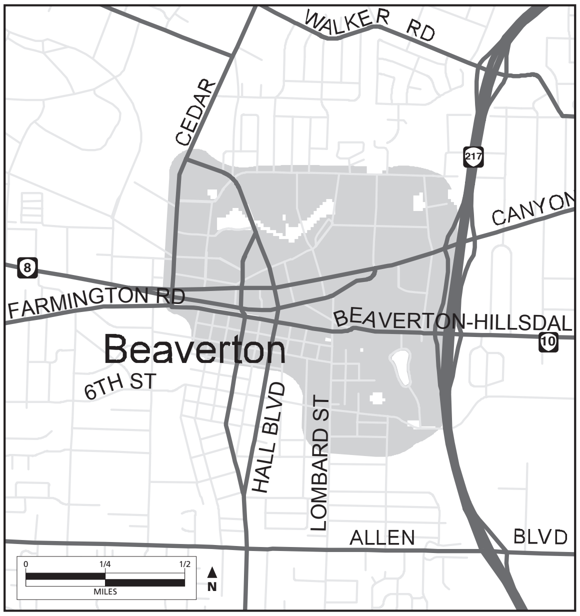


Gateway regional center is defined as a major crossroads of transportation that is impacted by through traffic that is not destined for the regional center such and which presents barriers to local circulation where congested through-streets isolate some parts of the regional center. Refer to Chapter 6 for detail on refinement planning identified for this area of special concern.

Figure 1.13.c

Beaverton Regional Center

Area of Special Concern

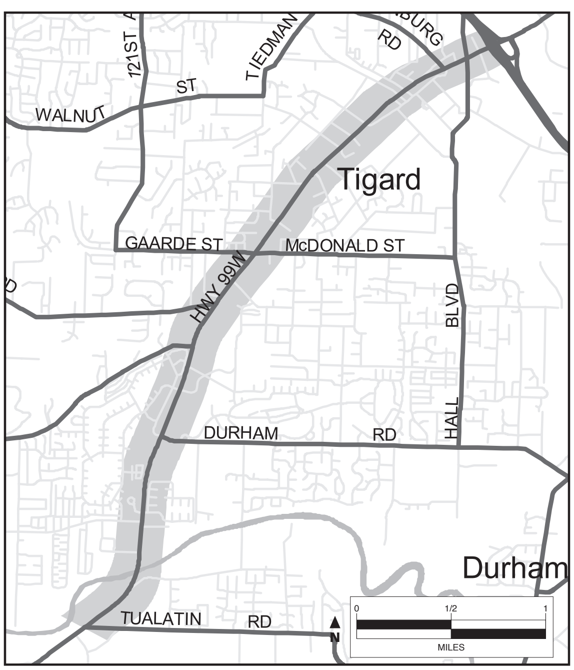


Beaverton has historically been defined as a crossroads of transportation, with both the advantages and limitations that heavy through traffic brings. While the level of access has helped make the Beaverton regional center a focus of commerce in Washington County, it also presents barriers to local circulation where congested through-streets isolate some parts of the area. Refer to Appendix 3.3 for detail on alternative performance measures identified for this area of special concern.

Figure 1.13.d

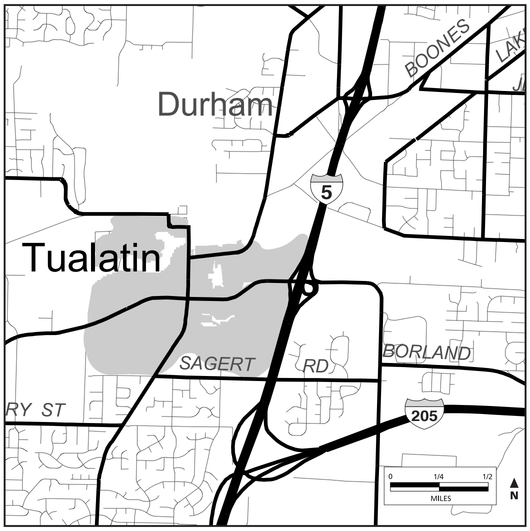
Highway 99W

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. The Regional Transportation Plan establishes the proposed I-5 to 99W connector as the principal route connecting the Metro region to the 99W corridor outside of the region as an alternative to 99W. Refer to Chapter 6 for detail on refinement planning identified for this area of special concern.

Figure 1.13.e
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 1.2, including Hall Boulevard and Boones Ferry Road. Refer to Chapter 6 for detail on refinement planning identified for this area of special concern.

Regional Motor Vehicle Functional Classification System
The regional motor vehicle system includes principal arterials, major and minor arterials, rural arterials and collectors of regional significance. These routes are designated on the motor vehicle system map, Figure 1.12. Local comprehensive plans also include additional minor arterials, collectors and local streets. Figure 1.14 provides a chart of the regional motor vehicle functional classifications and their relationship to the regional street design classifications. The most appropriate street design classification for roadways that serve a given functional classification is indicated with a solid circle(s). Following Figure 1.14 is a detailed description of the regional motor vehicle functional classification categories.

Figure 1.14
Relationship Between Regional Street Design and Motor Vehicle Classifications

Regional Motor Vehicle Functional Classifications	Regional Street Design Classifications: Throughways		Boulevards		Streets		Roads		Local Streets
	Freeway	Highway	Regional Boulevard	Community Boulevard	Regional Street	Community Street	Urban Road	Rural Road	Local Street Design
Principal Arterial	●	●					●	●	
Major Arterial			●		●		●	●	
Minor Arterial				●		●	●	●	
Collector				●		●	●	●	●
Local Street									●

● Most appropriate street design classification

Source: Metro

The following are the regional functional classification categories:

Principal arterials: These facilities form the backbone of the motor vehicle network. Motor vehicle trips entering and leaving the urban area follow these routes, as well as those destined for the central city, regional centers, industrial areas or intermodal facilities. These routes also form the primary connection between neighbor cities and the urban area. Principal arterials serve as major freight routes, with an emphasis on mobility. These routes fall within regional freeway, highway and road designs, as defined in the regional street design concepts.

Principal arterial system design criteria:
- Principal arterials should provide an integrated system that is continuous throughout the urbanized area and should also provide for statewide continuity of the rural arterial system.
- The principal arterial system should serve the central city, regional centers, industrial areas and intermodal facilities, and should connect key freight routes within the region to points outside the region.

- A principal arterial should provide direct service: from each entry point to each exit point or from each entry point to the central city. If more than one route is available, the most direct route will be designated as the principal arterial when it supports the planned urban form.

Major arterials: These facilities serve as primary links to the principal arterial system. Major arterials, in combination with principal arterials, are intended to provide general mobility for travel within the region. Motor vehicle trips between the central city, regional centers, industrial areas and intermodal facilities should occur on these routes. Major arterials serve as freight routes, with an emphasis on mobility. These routes fall within regional boulevard, regional street, urban road and rural road designs, as defined in the regional street design concepts.

Major arterial system design criteria:

- Major arterials should provide motor vehicle connections between the central city, regional centers, industrial areas and intermodal facilities and connect to the principal arterial system. If more than one route is available, the more direct route will be designated when it supports the planned urban form.
- Major arterials should serve as primary connections to principal arterials, and should also connect to other arterials, collectors and local streets, where appropriate.
- Freight movement should not be restricted on the principal arterial network.
- The principal and major arterial systems in total should comprise 5-10 percent of the motor vehicle system and carry 40-65 percent of the total vehicle miles traveled.

Minor arterials: The minor arterial system complements and supports the principal and major arterial systems, but is primarily oriented toward motor vehicle travel at the community level connecting town centers, corridors, main streets and neighborhoods. As such, minor arterials usually serve shorter trips than principal and major arterials, and therefore must balance mobility and accessibility demands. Minor arterials may serve as freight routes, providing both access and mobility. These routes fall within community boulevard, community street, urban road and rural road designs, as defined in the regional street design concepts.

Minor arterial system design criteria:

- Minor arterials generally connect town centers, corridors, main streets and neighborhoods to the nearby regional centers or other major destinations.
- Minor arterials should connect to major arterials, collectors, local streets and some principal arterials, where appropriate.
- The principal, major and minor arterial system should comprise 15-25 percent of the motor vehicle system and carry 65-80 percent of the total vehicle miles traveled.

Rural arterials: The rural arterial system serves urban reserve areas, rural reserve areas and green corridors. There are two functional categories of rural arterial – urban-to-urban and farm-to-market. Urban-to-urban rural arterials provide key connections to the regional motor vehicle system and 2040 land-use components inside the urban growth boundary. While principal arterials provide primary connections from the Metro region to neighboring cities, urban-to-urban rural arterials also function as secondary connections to neighboring cities. Farm-to-market rural arterials provide farm-to-market access between urban and rural areas.

Collectors: While some collectors are of regional significance, most of the collector system operates at the community level to provide local connections to the minor and major arterial systems. As such, collectors carry fewer motor vehicles than arterials, with reduced travel speeds. However, an adequate collector system is needed to serve these local motor vehicle travel needs. Collectors may serve as freight access routes, providing local connections to the arterial network. Collectors fall within the plan's local street design principles.

Collectors of regional significance connect the regional arterial system and the local collector system by collecting and distributing neighborhood traffic to arterials. Collectors of regional significance have three purposes. First, these facilities ensure adequate access to the primary and secondary land-use components of the 2040 Growth Concept. Second, collectors of regional significance allow dispersion of arterial level traffic over a number of lesser facilities where an adequate local street network exists. Third, collectors of regional significance help define appropriate collector level movement between jurisdictions.

Collector system design criteria:
- Collectors should connect neighborhoods to nearby centers, corridors, station areas, main streets and other nearby destinations.
- Collectors should connect to minor and major arterials and other collectors, as well as local streets.
- The collector system should comprise 5-10 percent of the motor vehicle system and carry 5-10 percent of the total vehicle miles traveled.

Local streets: The local street system is used throughout the region to provide for local circulation and access. However, arterials in the region's newest neighborhoods are often the most congested due to a lack of local street connections. The lack of local street connections forces local auto trips onto the principal and major arterial network, resulting in significant congestion on many suburban arterials. These routes fall within the plan's local street design principles.

Local Street System Design Criteria:
- Local streets should connect neighborhoods, provide local circulation and give access to adjacent centers, corridors, station areas and main streets.
- The local street system should be designed to serve local, low-speed motor vehicle travel with closely interconnected local streets intersecting at no more than 530-foot intervals. Closed local street systems are appropriate only where topography, environmental or infill limitations exist. Local streets should connect to major and minor arterials and collectors at a density of 10 to 16 street intersections per mile.
- Local streets should comprise 65-80 percent of the motor vehicle system and carry 10-30 percent of the total vehicle miles traveled.

Policy 14.0. Regional Public Transportation System
Provide an appropriate level, quality and range of public transportation options to serve this region and support implementation of the 2040 Growth Concept, consistent with Figures 1.15 and 1.16.

a. Objective: Serve this region with appropriate public transportation service as defined in Figures 1.15 and 1.16.
b. Objective: Continue to work with local jurisdictions and Tri-Met to implement Tri-Met's Transit Choices for Livability community transit plan.
c. Objective: Provide transit service that is accessible to the mobility impaired and provide para-transit to the portions of the region without adequate fixed-route service to comply with the Americans with Disabilities Act of 1990.
d. Objective: Develop a long-term strategy for potential use of freight railroad lines for passenger use and work with jurisdictions inside and outside of the Metro area to explore other commuter rail opportunities.

Policy 14.1. Public Transportation Awareness and Education
Expand the amount of information available about public transportation to allow more people to use the system.

a. Objective: Increase awareness of public transportation and how to use it through expanded education and public information media and easy to understand schedule information and format.
b. Objective: Improve mechanisms for receiving and responding to feedback from public transportation users.
c. Objective: Explore new technologies to improve the availability of schedule, route, transfer and other service information.

Policy 14.2. Public Transportation Safety and Environmental Impacts
Continue efforts to make public transportation an environmentally-friendly and safe form of motorized transportation.

a. Objective: Continue to reduce the amount of air pollutants and noise generated by public transportation vehicles.
b. Objective: Support efforts by the region's transit providers to improve the existing level of passenger safety and security on public transportation and reduce the number of avoidable accidents involving transit vehicles.

Policy 14.3. Regional Public Transportation Performance
Provide transit service that is fast, reliable and has competitive travel times compared to the automobile.

a. Objective: Transit travel time (in-vehicle) for trips on light rail transit and rapid bus routes during the peak hours of service should be no slower than 150 percent of the auto travel time during the off-peak hours. Exceeding this threshold would result in considering preferential treatment to the road system for transit and express operation.
b. Objective: Total transit travel time (in-vehicle + non-weighted wait time) for trips on regional bus routes should be no slower than 200 percent of the total auto travel time.

These policies and objectives direct the region's planning and investment in the regional public transportation system. Public transportation has been an increasingly important component of our region's transportation system during the past 25 years. In the next 20 years, public transportation will play a critical role in linking people to activity centers throughout the region and getting them around their local communities. On an average weekday in 1998, approximately 186,000 riders used the bus and rail systems in this region. By 2020 that number is expected to increase to 500,000 riders as a result of expected growth and transit improvements identified in this plan.

Figure 1.15

Relationship Between 2040 Growth Concept and Public Transportation System

Service Type		Primary Components			Primary Components: Intermodal Facilities		Secondary Components				Other Urban Components		
		Central City	Regional Centers	Industrial Areas	PDX	Union Station	Station Communities	Town Centers	Main Streets	Corridors	Employment Areas	Inner Neighborhood	Outer Neighborhood
Regional Transit Network	LRT	●	●		○	○	●	○					
Regional Transit Network	Commuter Rail	●	●			●		○					
Regional Transit Network	Rapid Bus	●	●			○	○			○			
Regional Transit Network	Streetcar & Frequent Bus	●	●				○	○	●	○		○	
Regional Transit Network	Regional Bus	●	●	○		○	○	●	○	●	○	○	
Community Transit Network	Community Bus	○	○	●	●		○	○	○	○	●	●	○
Community Transit Network	Mini-Bus	○	○	○			○	○	○	○	●	○	●
Community Transit Network	Paratransit	○	○	○			○	○	○	○	○	○	○
Community Transit Network	Park-and-Ride		●				○	○		○		○	●
Inter-Urban Transit	Inter-urban Rail	●	○			●		○					
Inter-Urban Transit	Inter-city Bus	●	●		○	●		○					

● Best public transportation mode(s) designed to serve growth concept land use components

○ Additional public transportation mode(s) that may serve growth concept land use components

Figure 1.15 provides a hierarchy of public transportation service for 2040 Growth Concept land-use components. "Core service" is defined as the most efficient level of public transportation service planned for a given land use and is indicated with a solid circle(s). A description of each type of core service follows the public transportation policies.

Source: Metro

Regional public transportation system components

Metro's role is to establish a 20-year plan for regional transit improvements, such as major bus or rail service, through the Regional Transportation Plan. Tri-Met is the primary public transportation provider for the metropolitan region and is committed to providing the appropriate level of transit service to achieve regional 2040 Growth Concept objectives. Tri-Met implements transit improvements identified in the Regional Transportation Plan through annual updates and expansions to their service plan. In addition, Tri-Met plans for improvements to community-level transit service, such as local bus lines or lift services. Annual growth trends, ridership and traffic congestion are all considerations in where expanded transit service is most needed each year.

However, this plan recognizes that providers other than Tri-Met are needed to serve special transportation needs. Other public transit operators in region include SMART, which serves the Wilsonville area, and C-Tran, which serves Clark County and includes bus service to points in Portland. Metro works with these operators, as well, to ensure that planned transit service is adequate to meet our 20-year needs. While this is not required in this plan, Metro is committed to helping coordinate agreements to address special needs as they arise. Such special needs may be served by private service providers, public/private partnerships, or public actions, as appropriate.

Public transportation should serve the entire urban area, and the hierarchy of service types described in this section defines what level and type of service is appropriate for specific areas of the region. The public transportation system is divided in three categories based on frequency of service and the areas of the region each network serves – the regional transit network, or RTN; the community transit network, or CTN; and interurban public transportation. The regional public transportation system map, Figure 1.16, depicts the regional transit network and interurban public transportation components.

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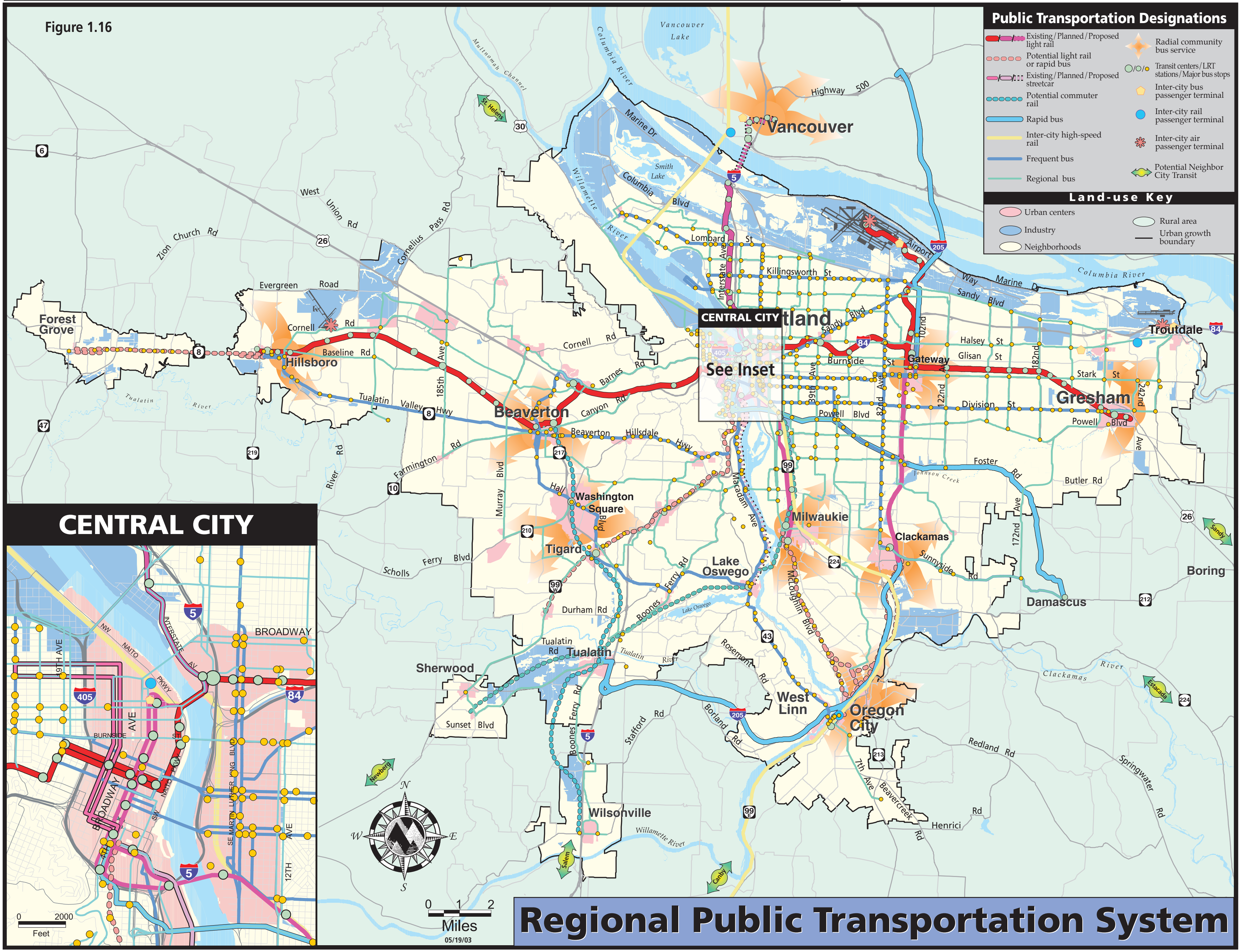

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The following section describes:

- the types of transit service each network provides;
- the principal 2040 Growth Concept land-use components (primary and secondary) served by each service type; and
- facility design guidelines to provide an appropriate operating environment and level of pedestrian and bicycle accessibility.

Regional transit network

The regional transit network is a fast and frequent transit system designed to serve the primary land-use components identified in the 2040 Growth Concept, including central city, regional centers, industrial areas and intermodal facilities such as the Portland International Airport. This system serves as the framework for consistency among plans of local jurisdictions and Tri-Met and consists of six major transit modes that operate at frequencies of 15 minutes or less all day. The six primary transit modes included in this plan are light rail transit, commuter rail, rapid bus, streetcar, frequent bus and regional bus service. The regional transit network is designed to provide convenient transit access and improve connections between transit modes. Any transit trip between two points located in a primary or secondary 2040 Growth Concept land-use component could be completed on the regional transit network. This includes the central city, regional centers, town centers, main streets, stations areas or corridors. The following is a description of the functional and operational characteristics of the regional transit network's major transit modes.

Light rail transit. Light rail transit (LRT) is a frequent and high-capacity service that operates on a fixed guideway within an exclusive right-of-way to the extent possible, connecting the central city with regional centers. LRT also serves existing regional public attractions such as Civic Stadium, the Oregon Convention Center and the Rose Garden, and station communities. LRT service runs at least every 10 minutes during the weekday and weekend midday base periods with limited stops and operates at higher speed outside of downtown Portland. A high level of passenger amenities are provided at transit stations and station communities including schedule information, ticket machines, special lighting, benches, shelters, bicycle parking and commercial services. The speed and schedule reliability of LRT can be maintained by the provision of signal preemption at-grade crossings and/or intersections.

Commuter rail. Commuter rail is the use of existing freight railroad tracks either exclusively or shared with freight use, for passenger service. The service is typically focused on peak commute periods but can be offered other times of the day 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 basic amenities for passengers, bus and LRT transfer opportunities and parking if supported by adjacent land uses.

Rapid bus. Regional rapid bus service emulates LRT service in speed, frequency and comfort, serving major transit routes with limited stops. This service runs at least every 15 minutes during the weekday and weekend mid-day base periods. Passenger amenities are concentrated at transit centers. Regional rapid bus passenger amenities include schedule information, ticket machines, special lighting, benches, covered bus shelters and bicycle parking.

Street cars. Street cars provide fixed-route transit service for more locally oriented trips in higher density mixed-use centers. This service runs at least every 15 minutes and includes transit preferential treatments such as signal preemption and enhanced passenger amenities along the corridor such as covered bus shelters, curb extensions and special lighting.

Frequent bus. Frequent bus service provides slightly slower, but more frequent, local bus service than rapid bus along selected transit corridors. This service runs at least every 10 minutes and includes transit preferential treatments such as reserved bus lanes and signal preemption and enhanced passenger amenities along the corridor and at major bus stops such as covered bus shelters, curb extensions, special lighting and median stations.

Regional bus. Regional bus service is provided on most major urban streets. This type of bus service operates with maximum frequencies of 15 minutes with conventional stop spacing along the route. Transit preferential treatments and passenger amenities such as covered bus shelters, special lighting, signal preemption and curb extensions are appropriate at high ridership locations.

Major transit stops. Major transit stops are intended to provide a high degree of transit passenger comfort and access. Major 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. Major transit stops may also be located where bus lines intersect or serve intermodal facilities, major hospitals, colleges and universities. Major transit stops shall provide 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.

Pedestrian district. A pedestrian district is a comprehensive plan designation or implementing 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 2040 Design types of Central City, Regional and Town Centers, Corridors and Main Streets, as designated in local plans. Pedestrian districts emphasize a safe and convenient pedestrian environment, and facilities to support and integrate efficient use of several modes within one area (e.g., pedestrian, auto, transit, and bike).

Community transit network (CTN)

Underlying the primary transit network of fast and frequent service is a community network of transit service that provides more locally-oriented public transportation. Tri-Met and local jurisdictions will develop specific elements of the community transit network. The community transit network is comprised of community bus, mini-bus, para-transit and park-and-ride service. This service is focused more on accessibility, frequency of service along the route and coverage to a wide range of land use options rather than on speed between two points. Community transit is designed as an alternative to the single-occupant vehicle by providing frequent reliable service. Community bus service generally is designed to serve travel with one trip end occurring within a secondary land use component, including town centers, main streets, station communities and corridors.

Community bus. Community bus lines provide coverage and access to primary and secondary land-use components. Community bus service runs as often as every 30 minutes on weekdays. Weekend service is provided as demand warrants.

Mini-bus. Mini-bus service provides coverage in lower density areas by providing transit connections to primary and secondary land-use components. Mini-bus services, which may range from fixed route to purely demand responsive including dial-a-ride, employer shuttles and bus pools, provide at least a 60-minute response time on weekdays. Weekend service is provided as demand warrants.

Para-transit. Para-transit service is defined as non-fixed route service that serves special transit markets, including "ADA" service throughout the greater metro region.

Park-and-ride. Park-and-ride facilities provide convenient auto access to regional trunk route service for areas not directly served by transit. Bicycle and pedestrian access as well as parking and storage accommodations for bicyclists are considered in the siting process of new park-and-ride facilities. In addition, the need for a complementary relationship between park-and-ride facilities and regional and local land use goals exists and requires periodic evaluation over time for continued appropriateness.

Interurban public transportation

The federal ISTEA has identified interurban travel and passenger "intermodal" facilities (e.g., bus and train stations) as a new element of regional transportation planning. The following interurban components are important to the regional transportation system:

Passenger rail. Inter-city high-speed rail (up to 79 miles per hour) 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 public transportation services within the metropolitan region with connections to passenger intermodal facilities. High-speed rail needs to be complemented by urban transit systems within the region.

Inter-city bus. Inter-city bus connects points within the region to nearby destinations, including neighboring cities, recreational activities and tourist destinations. Several private inter-city bus services are currently provided in the region.

Passenger intermodal facilities. Passenger intermodal facilities serve as the hub for various passenger modes and the transfer point between modes. These facilities are closely interconnected with urban public transportation service and highly accessible by all modes. They include Portland International Airport, Union Station and inter-city bus stations.

Transit service for special needs populations

Public transportation service often provides the only available transportation service to many people in the region, including students, the elderly, the economically disadvantaged, the mobility impaired and others with special needs. It is important that the region's transportation service providers consider the special needs of those people who rely on their services as their primary transportation option for access to jobs, job training and services. Section 6.8.12 describes a collaborative effort that is underway for special transportation planning in the tri-county area. As sponsors of this plan, the Areas Agencies on Aging and Disabilities of Washington, Multnomah and Clackamas counties, Tri-Met and the Special Transportation Fund Advisory Committee are coordinating a broad-based effort to create an elderly and disabled transportation services plan. The plan will develop special needs transportation options for both the urban and rural portions of the tri-county area and will be included in the Regional Transportation Plan. In anticipation of completing this program, interim policies and objectives have been included in the RTP. These policies will be updated during the next RTP update, reflecting the recommendations from the special needs transit plan.

Policy 15.0. Regional Freight System
Provide efficient, cost-effective and safe movement of freight in and through the region.

a. Objective: Provide high-quality access between freight transportation corridors and the region's freight intermodal facilities and industrial sanctuaries.
b. Objective: Maintain a reasonable and reliable travel time for moving freight through the region in freight transportation corridors that enhances the region's economic competitive advantage.
   - Freight operation (such as weigh-in-motion, automated truck counts, enhanced signal timing on freight connectors).
   - Where appropriate, consider improvements that are dedicated to freight travel only.
c. Objective: Consider the movement of freight when conducting multi-modal transportation studies.
d. Objective: Work with the private sector, local jurisdictions, ODOT and other public agencies to:
   - develop the regional Intermodal Management System (IMS) and Congestion Management System (CMS)
   - monitor the efficiency of freight movements on the regional transportation network
   - identify existing and future freight mobility problems and opportunities
   - reduce inefficiencies or conflicts on the freight network
   - maximize use of ship, rail, air and truck for a multi-modal freight system
   - address safety concerns related to freight.
e. Objective: Coordinate public policies to reduce or eliminate conflicts between current and future land uses, transportation uses and freight mobility needs, including those relating to:
   - land use changes/encroachments on industrial lands; and
   - transportation and/or land use actions or policies that reduce accessibility to terminal facilities or reduce the efficiency of the freight system.
f. Objective: Ensure that jurisdictions develop local strategies that provide adequate freight loading and parking strategies in the central city, regional centers, town centers and main streets.
g. Objective: Develop improved measures of freight movement as defined in the 2040 Growth Concept.
h. Objective: Correct existing safety deficiencies on the freight network relating to:
   - roadway geometry and traffic controls;
   - bridges and overpasses;
   - at-grade railroad crossings;
   - truck infiltration in neighborhoods; and
   - congestion on interchanges and hill climbs.

Policy 15.1. Regional Freight System Investments
Protect and enhance public and private investments in the freight network.

a. Objective: Improve opportunities for partnerships between the private freight transportation industry and public agencies to improve and maintain the region's integrated multi-modal freight network:
- work with the private transportation industry, Oregon Economic Development Department, Portland Development Commission, Port of Portland and others to identify and realize investment opportunities that enhance freight mobility and support the state and regional economy
b. Objective: Analyze market demand and linkages in estimating and expanding the life of public investments in the freight network.
c. Objective: Encourage efforts to provide flexible public funding for freight mobility investments.

These policies and objectives direct the region's planning and investment in the regional freight system. Freight mobility is the movement of goods and services. National and international freight movement contributes significantly to our regional economy, and will likely play an even larger role in the future. The region's relative number of jobs in transportation and wholesale trade exceeds the national average. The regional economy has historically, and continues to be, closely tied to the transportation and distribution sectors. This trend is projected to continue. A study of goods movement in the region, the

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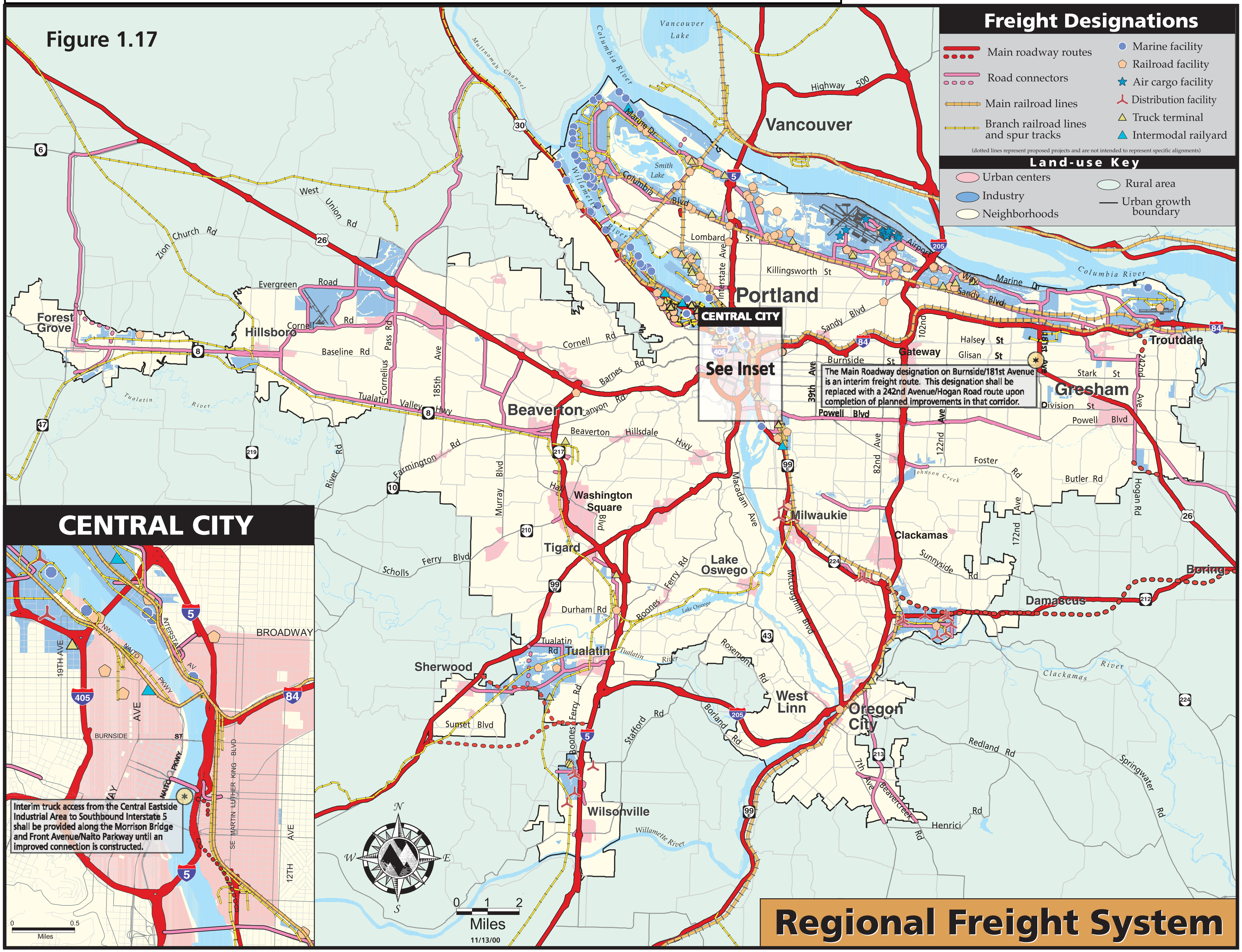

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2040 Commodity Flow analysis, predicts freight volume to more than double by 2040 – a rate higher than projected population growth.

The significant growth in freight projected by the 2040 Commodity Flow Analysis indicates the need to make available adequate land for expansion of intermodal facilities, manufacturing, wholesale and distribution activities, and to continue maintaining and enhancing the freight transportation network. The 2040 Growth Concept identifies industrial sanctuaries for distribution and manufacturing activities. Figure 1.17 identifies the transportation infrastructure and intermodal facilities that serve these land uses and commodities that flow through the region to national and international markets.

Regional freight system functional classification system

The following definitions reflect the regional freight system functional classification categories shown in Figure 1.17.

Main roadway route. Main roadway routes connect major activity centers in the region to other areas in Oregon or other states throughout the U.S., Mexico and Canada.

Road connectors. A road that connects freight facilities or freight generation areas to the main roadway route.

Main railroad line. Class I rail lines (e.g., Union Pacific and Burlington Northern/Sante Fe).

Branch railroad lines. Non-Class I rail lines, including shortline or branch lines.

Marine facility. A facility where freight is transferred between water-based and land-based modes.

Reload facility. A facility that serves as the primary gateway for freight entering and leaving the region by truck.

Air cargo facility. A facility that has direct access to an airport runway and transfers commodities between airplanes and land-based modes.

Distribution facility. A facility where freight is reloaded from one land-based mode to another for further distribution.

Truck terminal. A facility that serves as a primary gateway for commodities entering/leaving the region by truck. A truck terminal operates only truck to truck transfers of commodities.

Intermodal facility. An intermodal facility is a transportation element that accommodates and interconnects different modes of transportation and serves the statewide, interstate and international movement of people and goods.

Intermodal railyard. An intermodal railyard is a railyard that facilitates the transfer of containers or trailers between truck and rail.

Policy 16.0. Regional Bicycle System Connectivity
Provide a continuous regional network of safe and convenient bikeways connected to other transportation modes and local bikeway systems, consistent with regional street design guidelines.

a. Objective: Integrate the efforts of the state, counties and cities in the region to develop a convenient, safe, accessible and appealing regional system of bikeways.
b. Objective: Design the regional bikeway system to function as part of the overall transportation system and include appropriate bicycle facilities in all transportation projects.
c. Objective: Integrate multi-use paths with on-street bikeways, consistent with established design standards.
d. Objective: Work with local jurisdictions, ODOT and other public agencies to identify high-frequency bicycle-related crash locations and improvements to address safety concerns in these locations.

Policy 16.1. Regional Bicycle System Mode Share and Accessibility
Increase the bicycle mode share throughout the region and improve bicycle access to the region's public transportation system.

a. Objective: Promote increased bicycle use for all travel purposes.
b. Objective: Coordinate with Tri-Met to improve bicycle access and parking facilities at existing and future light rail stations, transit centers and park-and-ride locations.
c. Objective: Work with local jurisdictions, ODOT and other public agencies to provide appropriate short and long-term bicycle parking and other end-of-trip facilities at regional activity centers through the use of established design standards.
d. Objective: Develop travel-demand forecasting for bicycle use and integrate with regional transportation planning efforts.

These policies and objectives direct the region's planning and investment in the regional bicycle system. The bicycle is an important component in the region's strategy to provide a multi-modal transportation system. The 2040 Growth Concept focuses growth in the central city and regional centers, station communities, town centers and main streets. One way to meet the region's travel needs is to provide more opportunities to use bicycles for shorter trips.

The regional bikeway system identifies a network of bikeways throughout the region that provide for bicyclist mobility between and accessibility to and within the central city, regional centers and town centers. A complementary system of on-street and off-street regional bikeway corridors, regional multi-use trails and local bikeways is proposed to provide a continuous network. In addition to major bikeway corridors that create a network of regional through-routes, the system provides accessibility to and within regional and town centers.

Regional bicycle functional classification system

The following are the regional bicycle system functional classification categories as identified in Figure 1.18. These classifications, including regional access bikeways, regional corridor bikeways and community connector bikeways, are on-street bikeways that would be designed using a flexible "toolbox" of bikeway designs, including bike lanes, shoulder bikeways, bicycle boulevards and shared roadway/wide outside lanes. The appropriateness of each design is based on adjacent motor vehicle speeds and volumes. The most appropriate bikeway design is defined in the regional street design concepts and in *Creating Livable Streets: Street Design Guidelines for 2040*. Regional streets provide the

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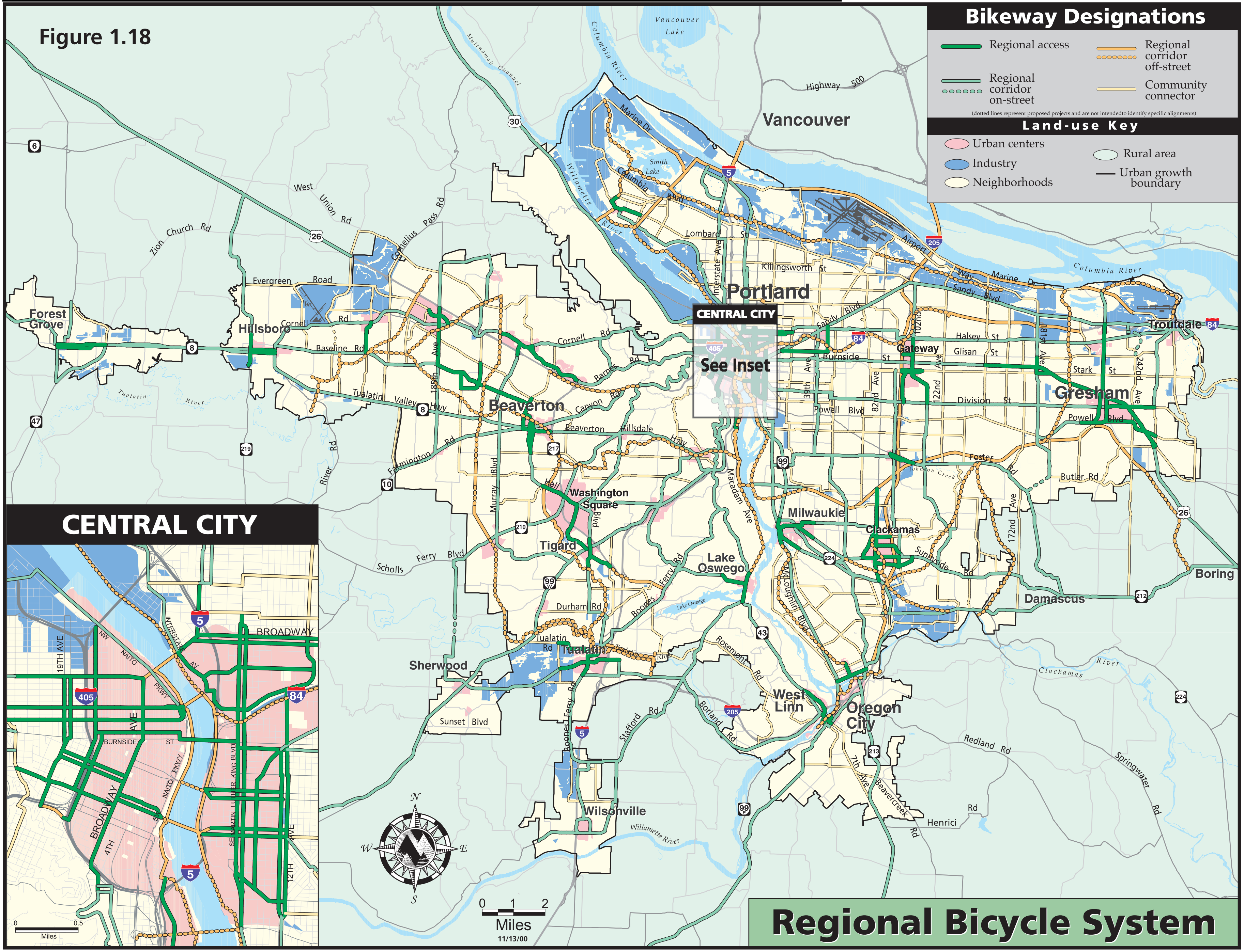
Figure 1.18



Regional Bicycle System

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primary network for bicycle travel in the region, and require features that support bicycle traffic. Bicycle lanes are the preferred bikeway design for throughway (highway), boulevard, street and road design classification concepts.

Regional access bikeway: The function of regional access bikeways is to focus on accessibility to and within the central city, regional centers and some of the larger town centers. Bicyclist travel time to and from activity centers is an important consideration on regional access bikeways. Regional access bikeways generally have higher bicyclist volumes because they serve areas with higher population and employment density.

Regional corridor bikeway: Regional corridor bikeways function as longer routes that provide point-to-point connectivity between the central city, regional centers and larger town centers. Regional corridor bikeways are generally of longer distance than regional access bikeways and community connector bikeways. Regional corridor bikeways generally have higher automobile speeds and volumes than community connector bikeways.

Community connector bikeway: These bikeways connect smaller town centers, main streets, station areas, industrial areas and other regional attractions to the regional bikeway system.

Multi-use paths with bicycle transportation function: Multi-use paths with a bicycle transportation function are connections that are likely to be used by people bicycling to work or school, to access transit or to travel to a store, library or other local destination. Multi-use paths that support both utilitarian and recreational bicycle functions are included as part of the bicycle transportation system. Bicycle/pedestrian sidewalks on bridges are also included in this functional classification. In terms of design, multi-use paths are physically separated from motor vehicle traffic by open space or a barrier, and are either within the highway right-of-way or within an independent right-of-way. In addition to bicyclists, pedestrians, joggers, skaters and other non-motorized travelers use multi-use paths.

Policy 17.0. Regional Pedestrian System
Design the pedestrian environment to be safe, direct, convenient, attractive and accessible for all users.

a. Objective: Work with local, regional and state jurisdictions to complete pedestrian facilities (i.e., sidewalks, street crossings, curb ramps) needed to provide safe, direct and convenient pedestrian access to and within the central city, regional centers, town centers, main streets, corridors and to the region's public transportation system.
b. Objective: Work with local, regional and state jurisdictions to provide landscaping, pedestrian-scale street lighting, benches and shelters affecting the pedestrian and transit user near and within the central city, regional centers, town centers, main streets, corridors and along the regional transit network.

Policy 17.1. Regional Pedestrian Mode Share
Increase walking for short trips and improve pedestrian access to the region's public transportation system through pedestrian improvements and changes in land use patterns, designs and densities.

a. Objective: Increase the walk mode share for short trips, including walking to public transportation, near and within the central city, regional centers, town centers, main streets, corridors and LRT station communities.
b. Objective: Work with local, regional and state jurisdictions to improve walkway networks serving transit centers, stations and stops.

Policy 17.2. Regional Pedestrian Access and Connectivity
Provide direct pedestrian access, appropriate to existing and planned land uses, street design classification and public transportation, as a part of all transportation projects.

a. Objective: Among regional pedestrian projects, give funding priority to those projects which are most likely to increase pedestrian travel, improve the quality of the pedestrian system and help complete pedestrian networks near and within the central city, regional centers, town centers, main streets, corridors and LRT station communities.
b. Objective: Integrate pedestrian access needs into planning, programming, design and construction of all transportation projects.

These policies and objectives direct the region's planning and investment in the regional pedestrian system as defined in Figure 1.19. By providing dedicated space for those on foot or using mobility devices, pedestrian facilities are recognized as an important incentive that promotes walking as a mode of travel. Throughout this plan, the term "walking" should be interpreted to include traveling on foot as well as those pedestrians using mobility aids, such as wheelchairs. 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 focus of the regional pedestrian system is identifying areas of high, or potentially high, pedestrian activity in order to target infrastructure improvements that can be made with regional funds.

A well-connected high-quality pedestrian environment facilitates walking trips by providing safe and convenient access to pedestrian destinations within a short distance. 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

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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 pedestrian system functional classification

An integrated pedestrian system supports and links every other element of the regional transportation system and complements the region's land-use goals. The following definitions reflect the regional pedestrian system functional classification categories shown in Figure 1.19.

Pedestrian district: 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. Pedestrian districts should be designed to reflect an urban development and design pattern where walking is a safe, convenient and interesting 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.

Transit/mixed-use corridor: Transit/mixed-use corridors (referred to only as corridors in the 2040 Growth Concept) are also 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.

Multi-use path with pedestrian transportation function: These paths are paved off-street regional facilities that accommodate pedestrian and bicycle travel and meet the requirements of the Americans with Disabilities Act. Multi-use paths with a pedestrian transportation function are connections that are likely to be used by people walking to work or school, to access transit or to travel to a store or library. These paths are generally located near or in residential areas or near mixed-use centers. Paths that support purely recreational uses are not considered part of this transportation network, although they are important components of the regional parks and greenspaces map. Pedestrian/bicycle-only bridges also are included in this designation.

1.3.6 Managing the Transportation System

Programs that allow the region to better use the existing transportation system benefit all uses of it. System management strategies are divided into two categories – transportation system management (TSM) and transportation demand management (TDM). Each category emphasizes different strategies.

TSM strategies manage the flow of traffic on existing freeways and arterial streets through ramp metering, signal timing, access management, transit priority treatments and other operational-oriented strategies without adding major new infrastructure that is often much more costly. In contrast, TDM strategies manage the flow of traffic on and extend the life cycle of existing facilities by reducing and reshaping the demand for use of these facilities. Most TDM strategies are designed to influence travel choices by providing alternatives to driving alone. Other TDM strategies are designed to eliminate the need for certain trips and still others enable people to time their trips outside of peak travel periods.

Implementation of TSM and TDM strategies helps limit the amount of congestion, improve the safety and efficiency of transportation facilities during all times of day and delay the need for major road expansion projects. The following policies and objectives guide regional investments in system management strategies.

Policy 18.0. Transportation System Management
Use transportation system management techniques to optimize performance of the region's transportation systems. Mobility will be emphasized on corridor segments between 2040 Growth Concept primary land-use components. Access and livability will be emphasized within such designations. Selection of appropriate transportation system techniques will be according to the functional classification of corridor segments.

a. Objective: Provide for through travel on major routes that connect central city, regional centers, industrial areas and intermodal facilities.
b. Objective: Implement an integrated, regional advanced traffic management system program that addresses:

- Freeway management (such as ramp meters and automated incident detection or rapid response)
- Arterial signal coordination (such as comprehensive adjustment of signal timing to minimize stop-and-go travel, consistent with adjacent land use, street design type and function, and which coordinates with freeway and interchange operations)
- Transit operation (such as expanded reliance on Tri-Met's computer-aided fleet location and dispatch system and its integration with freeway and arterial management systems, with special emphasis on relaying incident detection data to allow rerouting of buses)
- Multi-modal traveler information services (such as broadcast radio and television; highway advisory radio; variable message signs; on-line road reports and transit service reports; real-time transit arrival and departure monitors; and on-board navigation aids)

c. Objective: Work with local, regional and state jurisdictions to develop access management plans for urban areas that are consistent with regional street design concepts. For rural areas, access management should be consistent with rural reserve and green corridor land-use objectives.
d. Objective: Integrate traffic calming elements into new street design as appropriate consistent with regional street design guidelines, and as a method to optimize regional street system operation without creating excessive local travel on the regional system.
e. Objective: Continue to restripe and/or fund minor reconstruction of existing transportation facilities consistent with regional street design concepts to address roadway safety and operations.

Transportation System Management

These policies and objectives direct the region's planning and investment in transportation system management strategies. Transportation system management techniques are divided into four categories:

Facility design. Facility design techniques address roadway safety and operations with minor roadway reconstruction. Projects might include re-striping travel lane widths, realigning roadways to enhance sight distances and geometry at intersection approaches, channeling of turning movements (e.g., stripping or roadway widening to provide left-turn pockets, right-turn lanes, bus pullouts, etc.), improved signage of cross streets and activity centers and signalization control and phasing adjustment.

Access management. Access management techniques reduce opportunities for conflict between through-movements and vehicles turning off and onto the roadway. They also reduce conflict between motor vehicles, pedestrians and bicycles. Examples include closing and/or consolidating commercial driveways, minimizing connection of local streets to regionally significant arterial streets consistent with regional street design policies and selectively prohibiting left turn and U-turn movements at and between intersections.

Traffic calming. Traditionally, traffic calming techniques have been applied to existing neighborhood streets and collectors to protect them from intrusion of through-traffic seeking to avoid congested major facilities during peak periods and high-speed traffic at all hours. These "retrofit" techniques include speed bumps, traffic-rounds and traffic barriers, and have not been typically used on larger regional facilities. They are, however, critical design elements that address secondary local effects of the regional system and operational policies promoted in this plan.

Other traffic calming techniques are reflected in the design of streets serving pedestrian-oriented land uses. These include narrowed travel lanes, wider sidewalks, curb extensions, planted median strips and other features designed to unobtrusively reduce motor vehicle speeds and buffer pedestrians from the myriad effects of adjacent motor vehicle movements.

Advanced traffic management system (ATMS). ATMS refers to proven traffic management techniques that use computer processing and communications technologies to optimize performance of multi-modal roadway and public transportation systems. A mature ATMS system will integrate freeway, arterial and public transportation management systems. A blueprint of the region's planned ATMS system is described in the ODOT/FHWA-sponsored Portland-area ATMS plan published in 1993. The ATMS Plan recognizes the relationship between high-speed, limited access through-routes and the parallel system of regional and local minor arterials and collectors, and how they interact with one another. ATMS provides techniques and management systems to facilitate region-wide auto, truck and transit vehicle mobility (i.e., ATMS prioritizes longer trips on freeway and arterial through-routes). ATMS systems also manage "short-trip" facilities that emphasize access to commercial/residential uses. Most important, the ATMS plan emphasizes the importance of fully integrating through-route and local-system traffic management for optimum performance of the region's roadways.

Policy 19.0. Regional Transportation Demand Management
Enhance mobility and support the use of alternative transportation modes by improving regional accessibility to public transportation, carpooling, telecommuting, bicycling and walking options.

a. Objective: Promote programs that reduce the number of people driving alone and dependence on the automobile.
b. Objective: Promote transit-supportive design and infrastructure in 2040 Growth Concept land-use components, including the central city, regional centers, town centers, station communities, main streets and along designated transit corridors.
c. Objective: Establish an non-single occupancy vehicle modal target for each 2040 Design Type, consistent with Table 1.3.
d. Objective: Promote, establish and support transportation management associations (TMAs) in the central city, regional centers, industrial areas and intermodal facilities, town centers and employment centers.
e. Objectives: Promote private and public sector programs and services that encourage employees to use non-SOV modes or change commuting patterns, such as telecommuting, flexible work hours and/or compressed work weeks.
f. Objective: Investigate the use of HOV lanes to improve system reliability and reduce roadway congestion.
g. Objective: Promote end-of-trip facilities that support alternative transportation modes, such as showers and lockers at employment centers.
h. Objective: Investigate the use of market-based strategies that reflect the full costs of transportation to encourage more efficient use of resources.

Policy 19.1. Regional Parking Management
Manage and optimize the efficient use of public and commercial parking in the central city, regional centers, town centers, main streets and employment centers to support the 2040 Growth Concept and related RTP policies and objectives.

a. Objective: Establish minimum and maximum parking ratios to help the region manage the number of off-street parking spaces in the region.
b. Objective: Support local adoption of parking management plans within the central city, regional centers, town centers, main streets and employment centers.
c. Objective: Promote the use and development of shared parking spaces for commercial and retail land uses.
d. Objective: Implement appropriate parking ratios and investigate implementation of other measures throughout the region that reduce the demand for parking or lead to more efficient parking design options.
e. Objective: Encourage the designation of preferential parking stalls for carpool, vanpool, motorcycle, bicycle and motorized bicycle parking at major retail centers, institutions and employment centers.
f. Objective: Conduct further study of market-based strategies such as parking pricing and employer-based parking-cash outs and restructuring parking rates.

Policy 19.2 Peak Period Pricing
Manage and optimize the use of highways in the region to reduce congestion, improve mobility and maintain accessibility within limited financial resources.

a. Objective: Apply peak period pricing appropriately to manage congestion. In addition, peak period pricing may generate revenues to help with needed transportation improvements.
b. Objective: Consider peak period pricing as a feasible option when major, new highway capacity is being added to the regional motor vehicle system using the criteria used in *Working Paper 9* of the Traffic Relief Options study. Do not price existing roadways at this time. Circumstances where peak period pricing may be appropriate are:
   - when one or more lanes are being added to a currently congested highway, peak period pricing for a stretch of several miles should be considered
   - where a major new highway facility is being constructed where none exists now to provide congestion relief in the corridor, peak period pricing of all lanes should be considered
   - where a major facility (bridge or highway) is undergoing reconstruction and significant capacity is being added, pricing of one or all lanes should be considered.
c. Objective: Identify at least one specific project for which peak period pricing is appropriate to serve as a pilot within two years.
d. Objective: Pursue Value Pricing Pilot Program funds from FHWA for development of detailed implementation plans and/or administration of pilot projects.

Transportation demand management

These policies and objectives direct the region's planning and investment in the regional transportation demand management program (TDM) and support investment in the regional bicycle, pedestrian and public transportation systems. The regional TDM program is operated by Tri-Met with oversight by Metro through the TDM subcommittee, a TPAC subcommittee. The regional TDM program combines regional and local efforts and works cooperatively with employers, community-based groups and other organizations in the region to provide alternatives to driving alone. The transportation demand management policies and objectives respond to the federal Clean Air Act requirements of 1990, the state Transportation Planning Rule and the state Employee Commute Options Rule.

Regional transportation demand management program. The regional TDM program includes strategies that promote shared ride and the use of transit, walking, biking, work schedule changes and telecommuting, especially during the most congested times of the day. Providing options to driving alone allow people to eliminate trips or switch to another mode of travel that maximizes the efficiency of our transportation system and can result in improved air quality. This benefits all residents of this region by allowing the region to be more strategic in the timing and extent of expansion of the regional motor vehicle system.

Alternative mode share targets established in Table 1.3 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 measures in Areas of Special Concern. Improvement in non-single-occupancy vehicle mode share 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-single-occupancy vehicle mode shares than less developed areas closer to the urban growth boundary. See Section 6.4.6 in Chapter 6 of this plan for more detail.

Table 1.3

2040 Regional Non-SOV Modal Targets[1]

2040 Design Type	Non-SOV Modal Target
Central city	60-70%
Regional centers **Town centers** **Main streets** **Station communities** **Corridors**	45-55%
Industrial areas **Intermodal facilities** **Employment areas** **Inner neighborhoods** **Outer neighborhoods**	40-45%

[1] The targets apply to trips *to and within* each 2040 Design Type. The targets reflect conditions appropriate for the year 2040 and are needed to comply with Oregon Transportation Planning Rule objectives to reduce reliance on single-occupancy vehicles.

Source: Metro

Parking management. Policies and objectives related to parking management are intended to assist local jurisdictions with implementation of the state Department of Environmental Quality's voluntary parking ratio program contained in the region's ozone maintenance plan. As non-auto modes of travel are used more for work and non-work trips, the demand for parking decreases. The reduction in demand for parking will allow the region to use our land supply more efficiently, reduce impervious surfaces and provide opportunities to redevelop existing parking into other more important uses.

Peak period pricing. Policies and objectives related to peak period pricing are intended to guide the evaluation of peak period pricing as an option to consider when major, new highway capacity is added to the regional motor vehicle system. Peak period pricing involves the application of market pricing (through variable tolls) to use of congested roadways at times of peak usage. Peak period pricing has been successful in other parts of the US and internationally at managing peak use on limited roadway infrastructure by providing an incentive for drivers to select other modes, routes, destinations or times of day. Those drivers who choose to pay the toll can benefit from significant time savings. Peak period pricing is the only demand management tool that is location and time of day specific, making it uniquely effective in reducing congestion and improving mobility while limiting vehicle miles traveled and the need for new roads. In addition, peak period pricing may generate revenues to help with needed transportation improvements.

The Traffic Relief Options study, completed in 1999 by Metro and ODOT, examined the potential of various types of roadway pricing to meet regional transportation, environmental and land use goals. The study, undertaken with guidance from a citizen task force, found that pricing of existing lanes would generate the most revenue. It could also result in the most significant reduction in vehicle miles of travel and air pollution. However, due to the negative public reaction and possible deleterious effects on adjacent areas and accessibility, the citizen's task force did not recommend pricing of existing roadways.

1.3.7 Implementing the transportation system

While the primary mission of this plan is to implement the 2040 Growth Concept, the plan must also address other important transportation needs that may not directly assist in implementing the growth concept. This plan must also protect the region's existing transportation investments by placing a high priority on projects or programs that maintain or preserve our existing infrastructure. The purpose of this section is to establish key issues as the most important criteria when selecting transportation projects and programs. The following policies and objectives identify these issues.

Policy 20.0. Transportation Funding
Ensure that the allocation of fiscal resources is driven by both land use and transportation benefits.

a. Objective: Maintain and preserve the existing transportation infrastructure.
b. Objective: Improve the efficiency of the existing transportation system.
c. Objective: Consider a full range of costs and benefits in the allocation of transportation funds.
d. Objective: Use funding flexibility to the degree necessary to implement the adopted Regional Transportation Plan.
e. Objective: Establish a set of criteria for project selection based on the full range of policies in this plan and fund projects in accordance with those selection criteria.
f. Objective: Develop a transportation system necessary to implement planned land uses, consistent with the regional performance measures.

Policy 20.1. 2040 Growth Concept Implementation
Implement a regional transportation system that supports the 2040 Growth Concept through the selection of complementary transportation projects and programs.

a. Objective: Place the highest priority on projects and programs that best serve the transportation needs of the central city, regional centers, intermodal facilities and industrial areas.
b. Objective: Place a high priority on projects and programs that best serve the transportation needs of station communities, town centers, main streets and corridors.
c. Objective: Place less priority on transportation projects and programs that serve the remaining components of the 2040 Growth Concept.
d. Objective: Emphasize projects and programs that provide or help promote a wider range of transportation choices.

Policy 20.2. Transportation System Maintenance and Preservation
Emphasize the maintenance, preservation and effective use of transportation infrastructure in the selection of the RTP projects and programs.

a. Objective: Place the highest priority on projects and programs that preserve or maintain the region's transportation infrastructure and retrofit or remove culverts identified in the region's fish passage program.
b. Objective: Place a high priority on projects and programs that preserve or maintain the region's transportation infrastructure.
c. Objective: Place less priority on projects and programs that modernize or expand the region's transportation infrastructure.

Policy 20.3. Transportation Safety
Anticipate and address system deficiencies that threaten the safety of the traveling public in the implementation of the RTP.

a. Objective: Place the highest priority on projects and programs that address safety-related deficiencies in the region's transportation infrastructure.
b. Objective: Place less priority on projects and programs that address other deficiencies in the region's transportation infrastructure.

These policies and objectives direct the region's planning and investment in the regional transportation system. The 2040 Growth Concept has established a broad regional vision that will guide all future comprehensive planning at the local and regional levels, including development of the Regional Transportation Plan. The 2040 Growth Concept contains a series of land-use building blocks that establish basic design types for the region. Of these, the central city, regional center and industrial area/intermodal facility components are most critical in terms of regional significance and their role in supporting implementation of the other growth concept design types. Substantial public and private investment will be needed in these areas over the long-term to realize the 2040 Growth Concept vision. These areas provide the best opportunity for public policy to shape development, and are, therefore, the best candidates for more immediate transportation system improvements.

During the past several years, the region has experienced unprecedented growth – a trend that is predicted to continue in the 2020 population and employment forecast. Subsequently, a significant amount of urbanization is likely to occur while local jurisdictions are in the process of adopting local ordinances that implement the 2040 Growth Concept. Therefore, the phasing of RTP projects and programs will reflect this period of transition, with project identification and selection increasingly tied to implementation of the 2040 Growth Concept.

The RTP includes three implementation scenarios based on varying financial assumptions. The **financially constrained system (Chapter 5)** responds to federal planning requirements, and is based on a financial forecast of limited funding over the 20-year plan period. The "priority" system (Chapter 5) includes a mix of regional projects and programs that represents the minimum set of actions needed to adequately keep pace with expected growth during the next 20 years. The priority system identifies more improvements than the region can afford, given expected revenue for the plan period, and thus establishes a target for additional funding. The "preferred" system (Chapter 3) includes an optimal package of regional transportation projects and programs that best addresses the region's needs during the 20-year plan period.

CHAPTER 2

Land Use, Growth and Travel Demand

2.0 Introduction

Chapter 1 presented the overall policy framework for the specific transportation policies, objectives and actions contained in the Regional Transportation Plan. This chapter provides an overview of the expected land-use and travel patterns for the year 2020 based on implementation of the 2040 Growth Concept and predicted growth in population and employment. This chapter will also describe how expected growth in the region will affect our transportation system, assuming no new transportation projects are built. This transportation system is called the "2020 No-Build System."

This chapter is organized as follows:

2020 Population and Employment Forecast: This section provides an overview of expected growth in population and employment between 1994 and 2020 for the Portland metropolitan region. A discussion of expected growth in freight movement in the region is also provided.

2020 Land-Use Assumptions: This section describes the land-use assumptions used to define the 2020 population and employment forecast, including a brief summary of the 2040 Growth Concept and assumptions for urban reserves designated by the Metro Council in 1997.

2020 Population and Employment Forecast by RTP Subarea: This section provides an overview of expected growth in population and employment between 1994 and 2020 for each RTP Subarea. For RTP analysis purposes, the Portland metropolitan region is divided into seven different subareas, called RTP subareas. These subareas are: Portland Central City and Neighborhoods, West Columbia Corridor, East Multnomah County, urban Clackamas County, Damascus/Pleasant Valley, North Washington County and South Washington County.

Regional Jobs and Housing Balance: This section identifies potential regional and RTP subarea disparities which may exist between the location of new jobs and new housing in the Portland metropolitan region and the expected impact of these potential disparities on operation of the regional transportation system.

Effects of Growth on the 2020 No-Build System: This section summarizes the impact of expected growth on the regional transportation system if no new transportation projects or programs are constructed.

2.1 2020 Population and Employment Forecast

By the year 2020, the Portland metropolitan region, including Clark County, Wash., is predicted to be home to approximately 2.3 million people, an increase of 51 percent from 1994. Approximately two-thirds of future population growth is projected to come from people moving to this region.

Employment in the region is expected to grow by 70 percent, bringing the number of jobs in the region to 1.6 million. Retail employment in the region grows by 81 percent between 1994 and 2020, as compared to other employment sectors, which grow by 68 percent. Employment is expected to continue to grow at a faster rate than population. Table 2.1 shows forecasted household, population and employment growth.

Table 2.1
2020 Population and Employment Forecast

	1994	2020	Percent Change
Total Region (four-county) [1]			
• Population	*1,552,673*	*2,348,945*	*+51%*
• Households	*599,698*	*986,207*	*+64%*
• Employment	*947,647*	*1,610,956*	*+70%*
Intra Metro UGB [2]			
• Population	*1,142,463*	*1,666,636*	*+46%*
• Households	*453,283*	*716,150*	*+58%*
• Employment	*791,410*	*1,327,939*	*+68%*

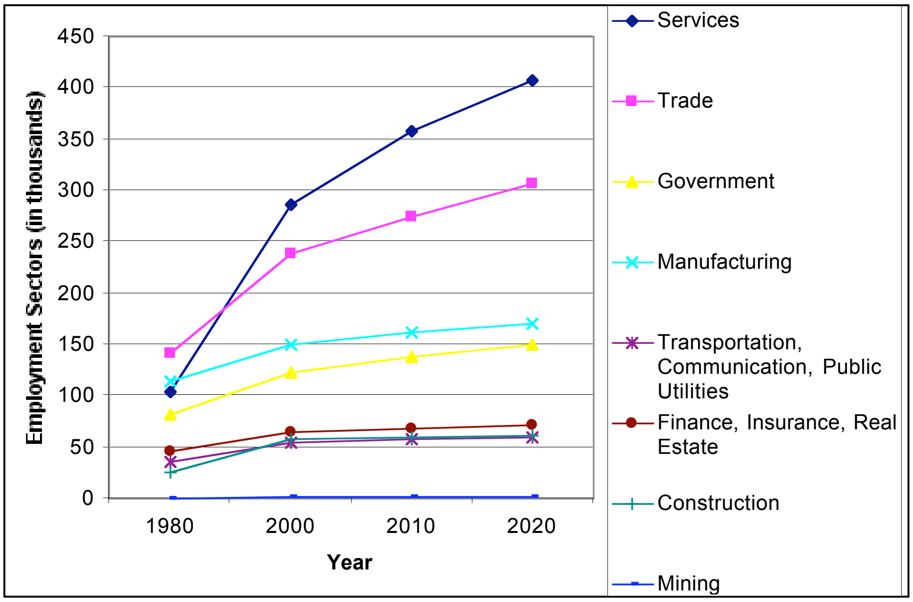
1 Includes Clark, Clackamas, Multnomah and Washington counties.
2 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

The Portland metropolitan region's position as a major regional and national distribution hub has an impact on the regional economy and on the volume of freight movement in the region. A recent report summarizes expected employment growth in the Portland metropolitan region, highlighting changes in the movement of goods and services and their possible impact on the region's transportation system and the regional economy. This report, *Commodity Flow Analysis for the Portland Metropolitan Area*[1], predicts a shift in the composition of the manufacturing sector from a focus on wood products and other heavy materials to the electrical machinery, plastics and chemicals industries between 1980 and 2020. This shift away from an economy largely driven by the demand for agricultural products, wood products and the manufacturing of heavy equipment to an economy dominated by the service, trade and light manufacturing sectors is expected to impact the nature and extent of freight movement in the region. Figure 2.1 graphs expected employment growth by employment sector for the Portland metropolitan region between 1980 and 2020.

[1] ICF Kaiser, Columbus Group, Reebie Associates, the WEFA Group and Port of Portland, Commodity Flow Analysis for the Portland Metropolitan Area, p. 9.

Figure 2.1
Growth by Employment Sector for the Portland Metropolitan Area



Source: WEFA Group, Eddystone, Pennsylvania

As population, employment and trade grow, more freight is predicted to move through the region. Freight volume is expected to more than double (in terms of tonnage) by the year 2030 – a rate higher than projected population growth.[2] This combined with population growth is expected to put increased demands on the regional transportation system.

Freight movement is largely dependent upon trucks. Today and in the future, about 60 percent of all cargo moving in and out of the Portland metropolitan region is predicted to move on a truck at some point of its journey here in the region. In addition, more than 70 percent of all truck traffic is expected to be intra-regional in nature, meaning that both the origin and destination are in the Portland metropolitan area. Finally, all transportation dependent employment sectors combined account for nearly 50 percent of the region's total employment by 2020.[3] Transportation dependent sectors include the manufacturing, trade, transportation, communications, public utilities, construction and mining sectors.

[2] Ibid, p. 71.
[3] Ibid, p. 10.

2.2 2020 Land-Use Assumptions

2.2.1 2040 Growth Concept

The land-use assumptions used in the 2020 population and employment forecast are based on the 2040 Growth Concept. Adopted in 1995 as part of the RUGGOs, the 2040 Growth Concept was acknowledged by LCDC in 1996 to comply with statewide land use goals. The 2040 Growth Concept resulted from a three-year planning process that evaluated how different land-use strategies could accommodate expected growth in this region. The possible consequences of such strategies were analyzed, including their impact on operation of the regional transportation system. Results from the transportation modeling and land-use analysis suggest that the important differences between strategies relate to where growth is directed and how land inside the urban growth boundary is used. The Region 2040 process found that building neighborhoods and communities to focus new jobs, housing and services closer together creates land-use patterns that support walking, biking and transit use for local trips. As a result, this land-use pattern provides many benefits and has important implications for the regional transportation system.

Using what was learned from the technical analysis and from discussions with the residents of this region, the adopted 2040 Growth Concept seeks to achieve the desired urban form in 2040 with the following approach:

- a modest expansion of the urban growth boundary
- using land more wisely through infill and redevelopment, emphasizing higher density and mixed-use development in key centers and corridors
- focusing jobs and shopping closer to where people live
- expanding transportation choices
- protecting prime farmland, rural reserves, open spaces and other environmentally sensitive lands

When the 2040 Growth Concept was developed, there was an emphasis on limiting expansion of the urban growth boundary and protecting prime farmland. As a result, the 2040 Growth Concept directs new growth to centers and along existing major transportation corridors. In addition, areas outside of and adjacent to the urban growth boundary, primarily exception lands, are also assumed to accommodate new growth during the next 20 years. The areas tend to be focused in areas outside of the urban growth boundary that are predominately zoned for rural residential development and which have rolling topography. Therefore, while this strategy meets the larger goal of preserving prime farmland, it does not allow incremental extension of transportation facilities throughout the region. To preserve farmland, the urban growth boundary will be expanded into areas where new urban transportation facilities are needed.

In 1998, the Metro Council expanded the urban growth boundary to include 3,527 acres of the more than 18,000 acres assumed in the 2020 forecast to accommodate growth for the next 20 years. These lands are estimated to accommodate 15,000 dwelling units and nearly 6,300 jobs. These areas are still undergoing more detailed planning so that development of these areas will be timed to coincide with provision of public facilities such as sewer, stormwater, water and road systems. The Metro Council is likely to add more land from these areas adjacent to the urban growth boundary in the future once natural resource protection techniques are better defined to address the federal Endangered Species Act listing of salmon and steelhead in the Pacific Northwest.

The 2020 population and employment forecast assumed varying levels of new jobs and homes in each of the areas outside of and adjacent to the 1997 urban growth boundary. In general, the jobs and housing assumed for each area intentionally attempted to help balance the current mix of jobs and housing in that part of the region, given the suitability of each urban reserve area for certain types of development (e.g., housing, industrial or employment uses). Many of these concentrated areas, such as the Pleasant Valley/Damascus area, are large enough to require new transportation networks, not merely extensions of existing facilities, such that development in areas that will be more difficult to serve with transportation and other urban services. As a result, the Damascus/Pleasant Valley area and other potential 2040 communities will be the subject of master planning by Metro and local partners.

2.3 2020 Population and Employment Forecast by RTP Subarea

For RTP analysis purposes, the Portland metropolitan region is divided into seven different subareas, called RTP subareas. These subareas are: Portland Central City and Neighborhoods, West Columbia Corridor, East Multnomah County, Urban Clackamas County, Damascus/Pleasant Valley, North Washington County and South Washington County. Figure 2.2 shows a map identifying the combined RTP subareas and a graph of expected change in population and employment between 1994 and 2020. Figure 2.2 provides a table summary of predicted population and employment growth for each individual subarea. A text summary of predicted population and employment growth for each subarea follows Table 2.2.

These subareas were used for governmental coordination purposes to illustrate facilities which serve related city, county and district areas as part of the functional plan role of this RTP. The location and boundaries of these subareas are for analysis purposes only, and roughly correspond to county boundaries.

Figure 2.2
2020 Population and Employment Forecast
(by RTP Subarea)

Table 2.2
2020 Population and Employment Forecast by RTP Subarea

Combined RTP Subarea	**Population**			**Employment**		
	1994	**2020**	**Increase**	**1994**	**2020**	**Increase**
Multnomah County Subareas						
• *Portland Central City and Neighborhoods*	*376,495*	*428,309*	*51,814 (+ 14%)*	*334,882*	*449,548*	*114,666 (+ 34%)*
• *West Columbia Corridor*	*9,465*	*18,899*	*9,434 (+ 100%)*	*51,010*	*98,497*	*47,487 (+ 93%)*
• *East Multnomah County*	*188,734*	*258,694*	*69,960 (+ 37%)*	*68,195*	*107,610*	*39,415 (+ 58%)*
Sub-total	**574,694**	**705,902**	**131,208 (+ 23%)**	**454,087**	**655,655**	**201,568 (+ 44%)**
Clackamas County Subareas						
• *Urban Clackamas County*	*133,322*	*207,615*	*74,293 (+ 56%)*	*77,691*	*143,500*	*65,809 (+ 85%)*
• *Damascus/Pleasant Valley*	*13,425*	*125,397*	*111,972 (+ 834%)*	*3,908*	*33,084*	*29,176 (+ 746%)*
Sub-total	**146,747**	**333,012**	**186,265 (+ 127%)**	**81,599**	**176,584**	**94,985 (+ 116%)**
Washington County Subareas[1]						
• *North Washington County*	*229,807*	*368,064*	*138,257 (+ 60%)*	*134,090*	*293,477*	*159,387 (+ 119%)*
• *South Washington County*	*195,111*	*264,722*	*69,611 (+ 36%)*	*122,156*	*202,873*	*80,717 (+ 66%)*
Sub-total	**424,918**	**632,836**	**207,918 (+ 49%)**	**256,246**	**496,350**	**240,104 (+ 94%)**
Clark County, Wash.	**282,437**	**480,387**	**197,950 (+ 70%)**	**123,759**	**228,523**	**104,764 (+85%)**
Areas outside of the urban growth boundary[4]	**123,868**	**196,806**	**72,938 (+ 59%)**	**31,956**	**53,844**	**21,888 (+ 68%)**
Total Region (4-county)	**1,552,664**	**2,348,943**	**796,279 (+ 51%)**	**947,647**	**1,610,956**	**663,309 (+ 70%)**

1 This subarea includes areas of Clackamas County west of the Willamette River.

Source: Metro

2.3.1 West Columbia Corridor

This subarea is planned to be the focus of employment growth and is expected to serve as the region's most important center of industrial and freight terminal activity. Population and employment in the subarea are predicted to nearly double, increasing from 9,500 to 18,900 people and from 51,000 to 98,500

[4] These figures include growth in small cities and rural residential land uses that fall within the 1,260 transportation analysis zones used for RTP modeling. In addition, some of the growth that is expected outside of the urban growth boundary is part of the expected expansion of the current urban growth boundary.

jobs, between 1994 and 2020. Employment growth is expected to be family-wage jobs based on the transportation-related industry that locates near marine and air intermodal terminals in this subarea.

2.3.2 Portland Central City and Neighborhoods

The number of people living in the subarea is predicted to increase from 376,495 in 1994 to 428,309 people in 2020. This reflects a 14 percent increase in population. The number of jobs in the subarea is expected to increase by 34 percent. In 1994, more than 334,000 people worked in the subarea. By 2020, more than 449,000 people are expected to work there. Most of the population and employment growth will be accommodated through infill and redevelopment.

2.3.3 East Multnomah County

The number of people living in the subarea is expected to increase by more than 37 percent between 1994 and 2020. In 1994, more than 188,000 people lived in this part of the region. By 2020, the number of people living in the subarea is expected to be more than 258,000. The number of jobs in the subarea is expected to increase by nearly 58 percent, changing from more than 68,000 jobs in 1994 to 107,610 jobs in 2020.

2.3.4 Urban Clackamas County (excluding Damascus)

The number of people living in this subarea is expected to increase by more than 55 percent between 1994 and 2020. In 1994, more than 133,300 people lived in this part of the region. By 2020, the number of people living in the subarea is expected to be more than 207,600. Though the rate of employment growth exceeds 80 percent during the plan period, the number of jobs in the subarea continues to outpace the number of homes. In 1994, more than 77,000 people worked in this part of the region. By 2020, the number of jobs in the subarea is expected to be more than 143,000. However, the significant growth in the number of jobs helps to balance the mix of jobs and housing in this part of the region. The urban reserves in the Stafford Basin are expected to develop more housing than jobs between 1994 and 2020 because of topographic constraints that limit employment in this area, especially industrial uses.

2.3.5 Damascus/Pleasant Valley Urban Reserves

The number of people living in this subarea is expected to increase dramatically between 1994 and 2020. In 1994, more than 13,000 people lived in this part of the region in a largely rural land use pattern. By 2020, the number of people living in the subarea is expected to be more than 125,000. The number of jobs in the Damascus subarea is also expected to increase dramatically, growing from slightly more than 3,900 jobs in 1994 to more than 33,000 jobs in 2020. Despite such a significant increase in both jobs and population, this area of the region continues to fall behind the rest of the region in having a balanced mix of jobs and housing. This has important implications for the transportation system serving this area.

2.3.6 South Washington County

The number of people living in this subarea is expected to increase by slightly more than 35 percent between 1994 and 2020. In 1994, more than 195,000 people lived in this part of the region. By 2020, the number of people living in the subarea is expected to be more than 264,700. The number of jobs in the subarea is expected to increase by 66 percent, growing from slightly more than 122,000 jobs in 1994 to more than 202,000 in 2020. The urban reserve areas adjacent to Sherwood, Tualatin and Wilsonville are expected to develop more housing than jobs between 1994 and 2020 to help further balance the mix of jobs and housing in this part of the region.

2.3.7 North Washington County

The number of people living in this subarea is expected to increase by slightly more than 60 percent between 1994 and 2020. In 1994, more than 229,000 people lived in this part of the region. By 2020, the number of people living in the subarea is expected to be slightly more than 368,000. The number of jobs in the subarea is expected to increase by 118 percent, growing from slightly more than 134,000 jobs in 1994 to more than 293,000 in 2020. The urban reserve areas located north of US 26 and south of Tualatin Valley Highway are expected to develop more housing than jobs between 1994 and 2020 to help balance the mix of jobs and housing in this part of the region.

2.4 Regional Jobs/Housing Balance

The TPR requires that the regional TSP reduce reliance on the automobile as measured by vehicle miles traveled per capita. Providing opportunities for people to make fewer and shorter trips can reduce vehicle miles traveled per capita. As one part of the 2040 Growth Concept policy to balance jobs and housing, this subregional analysis serves as the basis for findings in Chapters 3 and Chapter 5, which establish the impact of expected growth in population, households and employment on regional transportation corridors that serve key 2040 design types. These corridors have the greatest traffic volumes and the longest trips among the highest concentrations of jobs and housing in the region. This subregional analysis serves as the basis for understanding trip patterns based on the location of jobs and housing throughout the region and is one tool for identifying opportunities to reduce the number and length of trips in these high volume corridors based on those trip patterns.

The household and employment forecasts outlined in Table 2.1 demonstrate that the number of households and jobs are growing at a similar rate regionally, 64 percent and 70 percent respectively. However, the analysis indicates disparities between the location of new jobs and new housing in the Portland metropolitan region. Table 2.3 shows the potential disparities between the location of new jobs and new housing in the Portland metropolitan region. Figure 2.3 summarizes the household and employment growth in the region by combined RTP subarea and percent change in jobs per household from 1994.

The rate of housing growth is predicted to be highest in the Clackamas County subarea, which includes urban Clackamas County and the Damascus/Pleasant Valley urban reserve areas. Clark County, Wash. and the Washington County subareas, however, are expected to represent 20 percent and 25 percent of the regional growth in households respectively, as compared to 12 percent in the Clackamas County subarea. Figure 2.4 summarizes predicted growth in households by RTP subarea, indicating the proportion of the region’s total growth in households within each RTP subarea.

The rate of employment growth is expected to be highest in the Clackamas and Washington counties subareas, increasing by 116 percent and 93 percent respectively. However, the greatest increase in the number of new jobs is expected to occur in the Multnomah and Washington counties subareas, with each subarea representing 45 percent of the overall increase in jobs in the four-county region. Figure 2.5 summarizes predicted growth in employment by RTP subarea, indicating the proportion of the region’s total growth in employment within each RTP subarea.

Table 2.3
2020 Household and Employment Forecast by RTP Subarea

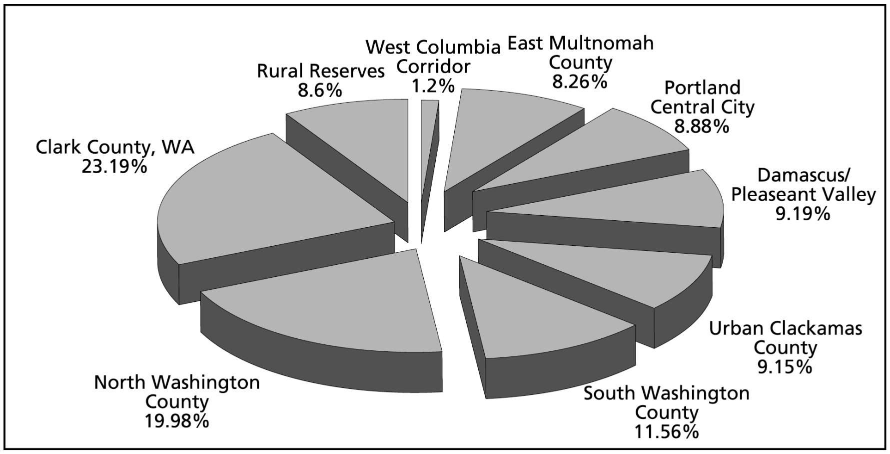
Combined RTP Subarea	Households			Employment		
	1994	**2020**	**Increase**	**1994**	**2020**	**Increase**
Multnomah County Subareas						
• *Portland Central City and Neighborhoods*	*164,061*	*197,918*	*33,857 (+ 21%)*	*334,882*	*449,548*	*114,666 (+ 34%)*
• *West Columbia Corridor*	*4,298*	*8,936*	*4,638 (+ 108%)*	*51,010*	*98,497*	*47,487 (+ 93%)*
• *East Multnomah County*	*70,726*	*106,065*	*35,339 (+ 50%)*	*68,195*	*107,610*	*39,415 (+ 58%)*
Sub-total	**239,533**	**310,414**	**70,881 (+ 31%)**	**454,087**	**655,655**	**201,568 (+ 44%)**
Clackamas County Subareas						
• *Urban Clackamas County*	*45,602*	*66,571*	*20,969 (+ 46%)*	*77,691*	*143,500*	*65,809 (+ 85%)*
• *Damascus/Pleasant Valley*	*3,372*	*32,034*	*28,662 (+ 850%)*	*3,908*	*33,084*	*29,176 (+ 746%)*
Sub-total	**54,855**	**125,719**	**70,864 (+ 129%)**	**81,599**	**176,584**	**94,985 (+ 116%)**
Washington County Subareas[1]						
• *North Washington County*	*77,061*	*140,778*	*63,717 (+ 83%)*	*134,090*	*293,477*	*159,387 (+ 119%)*
• *South Washington County*	*67,405*	*100,410*	*33,005 (+ 49%)*	*122,156*	*202,873*	*80,717 (+ 66%)*
Sub-total	**160,585**	**282,464**	**121,879 (+ 76%)**	**256,246**	**496,350**	**240,104 (+ 94%)**
Clark County, Wash.	**102,664**	**192,290**	**89,626 (+ 88%)**	**123,759**	**228,523**	**104,764 (+85%)**
Areas outside of the urban growth boundary	**42,061**	**75,319**	**33,258 (+ 79%)**	**31,956**	**53,844**	**21,888 (+ 68%)**
Total Region (4-county)	**599,698**	**986,206**	**386,508 (+ 64%)**	**947,647**	**1,610,956**	**663,309 (+ 70%)**

1 This subarea includes areas of Clackamas County west of the Willamette River.

Source: Metro

Figure 2.3
2020 Jobs and Housing Growth
By RTP Subarea
(with percent change in total employment)

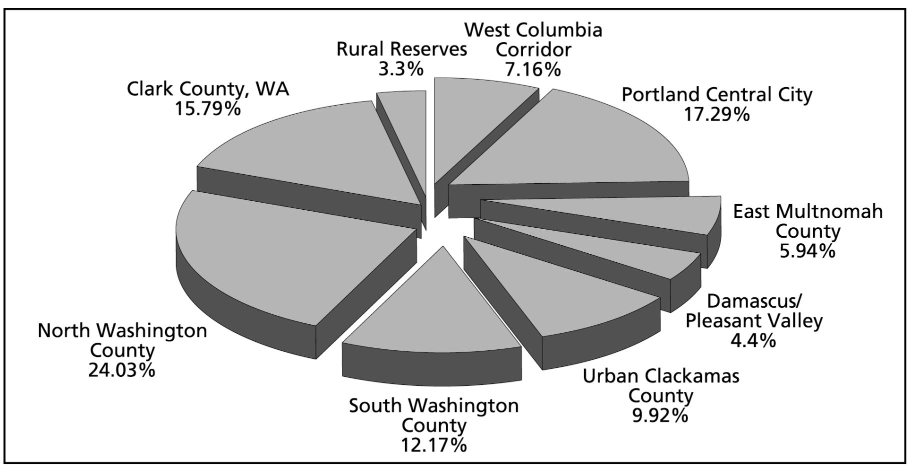
Figure 2.4
RTP Subarea Household Growth



Note: Number represents the percentage of total regional growth in households.

Source: Metro

Figure 2.5
RTP Subarea Employment Growth



Note: Number represents the percentage of total regional growth in employment.

Source: Metro

Despite the high rate of household and employment growth in the Clackamas County subarea, this part of the region is predicted to have more housing than jobs in 2020 to the extent that individuals will need to travel to jobs in other parts of the region, particularly Multnomah and Washington counties. This has important implications on how the region's transportation system operates. Likewise, Clark County, Wash. falls behind the rest of the region in terms of having a balanced mix of jobs and housing. Table 2.4 summarizes the number of jobs per household for each RTP subarea, Clark County, Wash., and for the four-county region as a whole.

Table 2.4
Jobs/Housing Ratio

Combined RTP Subarea	Number of jobs per household 1994	2020	Percent Change
Multnomah County Subareas	1.90	2.11	+11.4%
Washington County[1] Subareas	1.60	1.76	+10.1%
Total Region (4-county region)	1.58	1.63	+3.3%
Clackamas County Subareas	1.49	1.40	-5.58%
Clark County, Wash.	1.21	1.19	-1.4%

1 This subarea includes areas of Clackamas County west of the Willamette River.

Source: Metro

A perfect balance of jobs and housing will be difficult to achieve. Market demand and personal choice and willingness to travel longer distances to their place of work influence where people choose to work and live. The Clackamas County subarea is expected to have more housing than jobs overall in 2020. However, a decision to provide additional housing in Washington County beyond what is assumed in the 2040 Growth Concept and designated urban reserve areas would likely impact prime farmland surrounding the urban growth boundary in that part of the region.

2.5 Effects of Growth on the 2020 No-Build System

If no new transportation projects or programs are constructed, the estimated population and employment growth will impact the existing regional transportation system. This No-Build System shows where additional regional transportation system needs are created by that growth. The regional TSP, then, adequately addresses those needs in the Priority System in Chapter 5.

2.5.1 Overall System Performance[5]

Population and employment is expected to increase by 46 percent and 68 percent respectively between 1994 and 2020 within the urban growth boundary. Growth in population and employment is predicted to result in a corresponding increase in travel demand during the same time period for both people and freight movement. Between 1994 and 2020, the number of person trips beginning and ending within the urban growth boundary are expected to increase by 56 percent, to 7.6 million trips per day. Since employment in the region is expected to increase faster than population, the number of trips devoted to work is also expected to increase faster than trips for non-work purposes such as shopping and recreation. In addition, despite a nearly 50 percent increase in the average vehicle miles traveled overall and a nearly 4 percent increase in vehicle miles traveled on a per capita basis between 1994 and 2020, vehicle miles traveled per employee are expected to decline by almost 10 percent.

[5] Based on Appendix 1.2.

Table 2.5 summarizes changes in trips made in the region between 1994 and 2020. Following Table 2.5, Table 2.6 summarizes changes in vehicle miles traveled between 1994 and 2020.

Table 2.5
2020 No-Build System Average Weekday Trips[1]

	1994	2020	Percent Change
Average weekday person trips	*4,864,738*	*7,597,888*	*+ 56%*
Average home-based work trip length	*6.45 miles*	*6.36 miles*	*- 1%*

Note: These numbers exclude trucks and through traffic.
1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Table 2.6
2020 No-Build System Vehicle Miles of Travel[1]

	1994	2020	Percent Change
Average weekday vehicle miles traveled	*16,112,462*	*24,384,986*	*+49%*
Average weekday vehicle miles traveled per person	*14.10*	*14.63*	*+3.7%*
Average weekday vehicle miles traveled per employee	*20.36*	*18.36*	*- 9.8%*

Note: These numbers exclude trucks and through traffic.
1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

2.5.2 Motor Vehicle System Performance

As a result of the significant increase in trips made in the region and without implementation of new transportation projects or strategies, average motor vehicle speeds are expected to decrease from 25 mph in 1994 to 19 mph in 2020 during the evening two-hour peak period. This reduction in travel speeds reflects an increase in the proportion of the region's freeway and arterial street network experiencing congestion during the evening two-hour peak period.

In 1994, 15 percent of the region's freeway network experienced congestion during the evening two-hour peak period. By 2020, almost 37 percent of the region's freeway network is expected to experience congestion during the evening two-hour peak period. Assuming no new transportation projects are constructed, the proportion of the region's arterial streets experiencing congestion is predicted to increase by more than three times 1994 levels, increasing from 6 percent in 1994 to almost 25 percent in 2020. Delay on the region's freeway and arterial street networks also is also expected to increase between 1994 and 2020, with the greatest amount of delay predicted to occur on the arterial street network. Table 2.7 summarizes changes in the amount and extent of congestion within the Metro urban growth boundary between 1994 and 2020.

Table 2.7
2020 No-Build System Motor Vehicle System Performance[1]

	1994	2020	Percent Change
Average motor vehicle speed	*25 mph*	*19 mph*	*- 24%*
Average motor vehicle travel time	*11 minutes*	*14 minutes*	*+ 27%*
Percent of freeway miles experiencing congestion (v/c >0.9)	*14.9%*	*36.7%*	*+146%*
Percent of arterial street miles experiencing congestion (v/c >0.9)	*6.0%*	*24.6%*	*+ 310%*
Total motor vehicle hours of delay	*7,764*	*64,786*	*+ 734%*

1 Based on evening two-hour peak period. Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

2.5.3 Alternative Mode Performance

Drive alone trips as a percentage of all person trips remain almost the same between 1994 and 2020, without implementation of new transportation projects or strategies. In 1994, drive alone trips represented nearly 62 percent of all person trips within the Metro urban growth boundary. In 2020, drive alone trips are expected to remain virtually unchanged of all trips within the urban growth boundary. By comparison, bicycle and pedestrian travel are expected to increase between 1994 and 2020. In 1994, bicycling or walking (not including walk trips to transit) represented slightly more than 6 percent of all person trips inside the urban growth boundary. By 2020, bicycle and pedestrian travel is expected to represent slightly less than 8 percent of all person trips made inside the urban growth boundary. Transit revenue hours are expected to increase by 27 percent between 1994 and 2020, increasing from 4,400 average weekday revenue hours in 1994 to more than 5,600 average weekday hours in 2020. Transit's share of all trips is expected to increase by 15 percent per year during the plan period, reflecting an overall increase of 15 percent of all trips between 1994 and 2020. The proportion of households and jobs within 1/4-mile of transit service is expected to decline by 7 and 4 percent respectively between 1994 and 2020. Table 2.8 summarizes alternative mode performance.

Table 2.8
2020 No-Build System Alternative Mode Performance[1]

	1994	2020	Percent Change
Walk trips (as a percent of total person trips)	*5.18%*	*6.79%*	*+ 31%*
Bike trips (as a percent of total person trips)	*.97%*	*1.2%*	*+ 24%*
Transit trips (as a percent of total person trips)	*3.55%*	*4.08%*	*+ 15%*
Average weekday transit revenue hours[2]	*4,400*	*5,608*	*+ 27%*
Percent of households within 1/4-mile of transit	*78%*	*72%*	*- 7.7%*
Percent of jobs within 1/4-mile of transit	*86%*	*82%*	*- 4.7%*

1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).
2 *Average weekday transit revenue hours were calculated using existing daily peak and off-peak expansion factors.*

Source: Metro

2.5.4 Freight System Performance

Trucks are a critical part of moving goods within the Portland metropolitan region. Today, of the total goods moving into, out of and within the region, 62 percent complete all or part of the trip by truck. The region is expected to handle more than 72,000 truck trips daily by 2020. As a result, average truck travel times are expected to increase by 30 percent between 1994 and 2020. Truck hours of delay are also expected to increase by more than nine times over 1994 levels by 2020 if no new transportation projects are constructed, increasing from 130 hours in 1994 to more than 1,000 hours in 2020. Table 2.9 summarizes key performance measures for the regional freight system.

Table 2.9

2020 No-Build System Freight System Performance[1]

	1994	2020	Percent Change
Average weekday total truck trips	*54,598*	*72,118*	*+ 32%*
Average weekday truck average travel time	*37 minutes*	*48 minutes*	*+ 30%*
Average weekday truck average trip length	*22.64*	*23.96*	*+ 6%*
Peak period truck vehicle hours of delay	*132*	*1,222*	*+ 840%*

Note: This summary of freight system performance reflects Metro's regional truck travel forecasting model.

1 Within the four-county region, includes Clark, Clackamas, Multnomah and Washington counties.

Source: Metro

2.5.5 Regional Travel Times

In all parts of the region, evening two-hour peak period auto travel times are expected to increase from 1994 travel times assuming no implementation of new transportation projects or strategies. The largest increases in auto travel times are expected to occur along I-5, I-205 and Highway 217. Transit travel times are also expected to increase throughout much of the region, reflecting no expansions in service and no transit preferential improvements. Table 2.10 summarizes auto and transit travel times along major corridors that link key 2040 land-use components.

Table 2.10
2020 No-Build System
Major Corridor Auto and Transit Travel Time Comparison

Major Travel Corridor	Auto Travel Times (in minutes) 1994	Auto Travel Times (in minutes) 2020 (%change)	Transit Travel Times (in minutes) 1994	Transit Travel Times (in minutes) 2020 (%change)
Central city to Beaverton on Highway 217	20.63	23.28 (+13%)	34.35*	22.61 (- 34%)
Central city to Vancouver on I-5	23.46	42.52 (+81%)	28.65*	50.28* (+75%)
Central city to Milwaukie on 99E	19.57	29.52 (+ 51%)	26.54*	38.11* (+44%)
Washington Square to Oregon City on Highway 217, I-5 and I-205	28.45	55.84 (+ 96%)	70.72*	102.36* (+45%)
Gateway to Gresham on Division St.	17.77	23.12 (+ 30%)	18.29	17.96 (- 2%)
Gateway to Oregon City on I-205	21.75	35.85 (+65%)	80.91*	102.39* (+27%)
Milwaukie to Clackamas on Highway 224	10.48	14.36 (+ 13%)	11.56*	14.67* (+27%)
Beaverton to Hillsboro on TV Highway	19.62	22.38 (+ 14%)	35.41*	26.03* (-26%)
T-6 to I-205 on NE Portland Highway	23.10	28.87 (+ 25%)	n/a	n/a
Portland international Airport to Gateway on Airport Way and I-205	9.98	15.74 (+ 58%)	n/a	12.01

* Transit travel times are on light rail unless noted by an asterisk. Travel times are based on Round 3 model results.

Source: Metro

2.5.6 Title 3 Areas and Endangered Species Act

The Stream and Floodplain Protection Plan, adopted by Metro in June 1998, is an example of a functional plan that contains specific requirements to protect vegetated corridors along rivers, streams and wetlands. The plan also addresses ways to control soil erosion and reduce flooding within the 100-year floodplain. Together these provisions help to enhance the region's water resources and manage land use in floodplains.

There are a number of water quality issues embedded in stormwater management. Roads, parking lots, sidewalks and multi-use paths collect chemical residues, which are washed off the hard surface and into the stormwater drainage system. Transportation-related activities to control the quantity and quality of stormwater runoff include reducing impacts caused by hard (impervious) surfaces, building parking lot swales to filter runoff and building detention ponds for stormwater storage.

On March 16, 1999, the National Marine Fisheries Service (NMFS) listed eight species of salmon and steelhead in Washington and Oregon as threatened and one as endangered under the Endangered Species Act (ESA). With the ESA listing, there is new attention to projects that mitigate the affect of road projects on fish habitat and water quality. MTIP funds allocated to projects on Foster Road, Sunnyside Road and Highway 213 have been designed to make fish passage in the creeks that are crossed easier. Also, replacement of the Northeast 47th Avenue culvert over the Columbia Slough is designed to improve water quality and canoe passage. In August 1999, Metro received funding for a "green streets" pilot program, which would, among other tasks, screen proposed transportation projects for potential impacts on fish and to develop fish-friendly design solutions

Even with a No-Build System, work is proceeding to ensure that regional transportation projects do not block fish passage. More than 150 culverts requiring repair to be "fish-friendly" have been identified. Federal and state transportation programs must allocate funds to replace or repair these fish access problems. Other work in progress includes prioritization of the existing culverts that block fish passage to identify a "dirty dozen" that should be replaced first. However, there will be limited opportunities to replace existing culverts without making improvements to the regional street system.

CHAPTER 3

Growth and the Preferred System

3.0 Introduction

Chapter 2 of this plan describes predicted growth in population and employment between 1994 and 2020 and overall regional travel patterns for the year 2020. The projects and programs identified in this chapter represent all the transportation projects and programs needed to address the impacts of future growth on our regional transportation system based on policies identified in Chapter 1. This system is called the "2020 Preferred System."

This chapter is organized as follows:

Proposed Preferred System Improvements for 2020: This section provides an overview of the process and principles used to identify the 2020 Preferred System and generally describes the types of projects and programs included in that system.

Regional Congestion Management System Findings for the 2020 Preferred System: This section describes federal congestion management requirements and provides an analysis of how the Regional Transportation Plan meets these requirements.

2020 Preferred System Analysis: This section evaluates the performance of the 2020 Preferred System on a regional and sub-region basis and highlights areas for further study and analysis as part of refinement plans, local transportation system plans, corridor studies or project development.

Environmental Impacts of the 2020 Preferred System: This section describes environmental impacts of the preferred system.

3.1 Proposed Preferred System Improvements for 2020

3.1.1 Process to Identify System Needs and Projects

While the primary mission of the 2020 Regional Transportation Plan is to implement the 2040 Growth Concept, the plan must also address other state and federal transportation planning requirements that may not directly assist in implementing the growth concept.

Chapter 1 of this plan identifies specific transportation needs for each 2040 Growth Concept land-use component and policies for achieving a balanced regional transportation system, including mode share targets and regional performance measures. Federal requirements also set forth a system for managing congestion (*see Section 3.2 of this chapter*), which requires a careful evaluation of transportation alternatives before adding roadway capacity. This chapter establishes regional congestion management findings for all projects in the 2020 Preferred System. Specific principles for identifying 2020 Preferred System needs and projects to meet those needs are summarized in Table 3.1.

Table 3.1
2020 Preferred System
Principles for Identifying Needs and Projects

Vision for consistency with the 2040 Growth Concept • Implements all primary land-use components transportation needs • Preserves “Regional highways” function • Addresses most secondary land-use components transportation needs • Addresses many transportation needs for other 2040 Growth Concept land-use components **Structure for consistency with the 2040 Growth Concept** • Central city and regional centers served by light rail have direct access to the regional highway system and contain a mix of arterial street, pedestrian and bicycle systems improvements • Industrial areas are connected to the regional highway system and intermodal facilities • Town centers, corridors and main streets served by regional transit contain a mix of arterial street, pedestrian and bicycle systems improvements • Neighborhoods and employment areas served by community transit, arterial capacity improvements and some improvements to the pedestrian and bicycle systems **2020 Preferred System Performance** • Makes progress toward meeting all Chapter 1 modal targets *(from Chapter 1)* • Meets all Regional Transportation Plan performance measures *(from Chapter 1)* • Meets all Oregon Transportation Planning Rule requirements *(from Chapter 6)* • Meets all federal Congestion Management System requirements *(from Chapter 6)* • Meets all regional operations, maintenance and preservation needs • Meets all 20-year benchmarks for 2040 Growth Concept implementation *(from Chapter 6)*

Source: Metro

3.1.2 Sources of Preferred System Projects

The list of preferred system projects was generated during the last two years based on extensive input from the residents of this region and state, regional, and local government partners. The list of transportation projects and programs were identified at workshops and events identified in Table 3.2.

Table 3.2

Sources of 2020 Preferred System Projects

July 1996	• Resolution on Chapter 1 sets direction for project identification as part of RTP System Component
July 1997	• JPACT/Metro Council workshop on level-of-service and street connectivity sets more direction for projects
September 1997	• Technical workshops held with local jurisdiction staff to expand project identification to address 2040 implementation and role of alternative analysis findings
October 1997	• Citizen Advisory Committee workshop held
November 1997	• Public workshops held throughout the region
January 1998	• Citizen Advisory Committee Idea Kit released that incorporates project ideas identified during September-November 1997 workshops
Spring 1998	• TPAC refines CAC Idea Kit and initiates RTP Round 1 modeling which establishes federal CMS finding
August 1998	• TPAC reviews RTP Round 1 findings and initiates RTP Round 2 modeling • JPACT and the Metro Council are briefed on status of RTP update
October 1998	• RTP open houses held throughout the region • RTP Round 2 projects described in “Proposed Transportation Solutions for 2020” document
March 1999	• TPAC reviews RTP Round 2 modeling results and proposes final RTP Round 3 project refinements • JPACT and the Metro Council are briefed on status of RTP update
October 1999	• TPAC reviews RTP Round 3 model results and proposes final recommendations on RTP project list • Public comment meetings on draft RTP
November 1999	• JPACT and the Metro Council are briefed on comments received on draft RTP • JPACT forwards committee recommendation to the Metro Council
December 1999	• Metro Council approves draft RTP by Resolution No. 99-2878B
January 2000	• Metro Council amends draft RTP by Resolution No. 00-2888
May 2000	• Final 45-day public comment period begins
June 2000	• TPAC reviews final comments on draft RTP and forwards committee recommendation to JPACT
July 2000	• JPACT and the Metro Council are briefed on comments received on draft RTP
August 2000	• JPACT forwards committee recommendation to the Metro Council • Metro Council approves draft RTP by Ordinance No. 00-0869A

Source: Metro

3.1.3 Scale and Scope of 2020 Preferred System Projects

More than 800 projects and programs are proposed in the 2020 Preferred System, which focus transportation investments to meet regional performance measures and leverage the 2040 Growth Concept. The 2020 Preferred System efficiently meets all Chapter 1 mode share targets, most regional performance measures, Oregon transportation planning rule requirements and regional system operations, maintenance and preservation needs. The 2020 preferred system would require all currently identified revenue sources, but would require new unspecified revenue sources at the local, regional, state or federal level to fully implement. The 2020 preferred system represents all the improvements necessary to build a complete transportation system during the next 20 years based on predicted population and employment growth.

3.1.4 Overview of Key 2020 Preferred System Projects

The improvements and programs described on the following pages represent the region's commitment to establishing a balanced transportation system that meets all of the region's travel needs during the next 20 years. Table 3.3 provides a general overview of the preferred system. Figure 3.1 depicts the number and modal emphasis of the road-related projects proposed in the preferred system. (Note: Throughout the document, cost estimates referring to "road-related" improvements include the full modal mix reflected in Figure 3.1. For example, any single road-related project may benefit multiple modes, including motor vehicles, bicyclists and pedestrians). Proposed transit capital projects are not included in Figure 3.1.

Table 3.3

General Overview of the 2020 Preferred System[1]

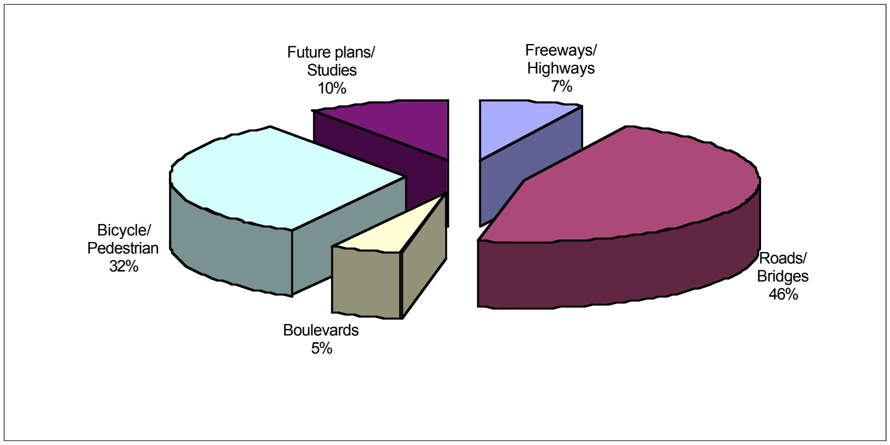
	1994	2020	Percent Change
Freeway lane miles	*572*	*712*	*+ 24%*
Arterial lane miles	*3,233*	*3,817*	*+ 18%*
Freight network miles**	*618*	*653*	*+ 5%*
Light rail miles	*15*	*67*	*+ 346%*
Rapid/frequent bus route miles	*none*	*214*	*n/a*
Local bus route miles	*958*	*1,144*	*+19%*
Bicycle network miles added	*not available*	*551*	*n/a*
Pedestrian network miles added	*not available*	*553*	*n/a*

Note: This table includes arterial and freeway lane/route miles.

1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Figure 3.1
2020 Preferred System Road-Related Projects



Note: All "Road" and "Boulevard" projects include a bicycle and pedestrian component.

Source: Metro

Examples of the types of projects included in Figure 3.1 include:

- *Willamette River Bridge preservation.* Preservation and maintenance of the Willamette River bridges, including sidewalk/multi-use path repair, deck replacement, painting and lift span repair, and improved bicycle and pedestrian bridge access.

- *Expanded regional trails network.* Better bike and pedestrian connections to the regional trails network and construction of many new multi-use paths throughout the region. Figure 3.2 shows the existing and planned regional trails system as adopted in the Greenspaces Master Plan and the Regional Framework Plan. The map also includes a specific category that identifies trail projects included in this plan.

- *Freight access and connections*. Rail and road expansions to maintain access and connections for national and international rail, air and marine freight to reach its destination with limited delay.

- *Highway expansion.* Major highway expansions to maintain regional mobility and enhance access to intermodal industrial areas and facilities where goods move from one transportation mode to another.

- *Arterial street expansion*. Arterial street expansions to maintain access to the regional highway system and to maintain circulation and access between the central city, regional centers and town centers.

- *New street connections*. New street connections across and parallel to regional highways to slow increases in traffic congestion and provide direct alternate routes and, within regional and town centers, to improve access by all modes of travel.

- *Retrofit of major streets for walking, biking and transit.* Wider sidewalks, safer street crossings, landscaped buffers, improved bus stops and shelters, and bikeways along major streets that serve the central city, regional and town centers, corridors, main streets, employment areas and neighborhoods. Figure 3.3 shows existing bike lanes, multi-use paths and bicycle boulevards in addition to proposed bikeways on the regional bicycle system. Figure 3.4 will identify existing sidewalks and pedestrian system improvements included in this plan.

- *Transportation system management*. System management strategies, such as ramp metering, signal timing and access management, to better manage the flow of traffic on existing freeways and arterial streets to achieve maximum efficiency of the current road system without adding major new infrastructure. Improve transit service reliability through the use of transit preferential treatments and service adjustments such as bus-only lanes, signal preemption, modified stop spacing and more direct routes. Real time information for the motorist and transit user about transportation operating conditions (i.e., traffic congestion and bus arrival times).

- *Transportation demand management*. Demand management strategies, such as transportation management associations in the central city, regional centers, some town centers and employment areas, attempt to increase transit ridership, vehicle occupancy, walking and biking, telecommuting and reduce the length of some trips, move some trips to off-peak travel periods or eliminate some trips altogether. Figure 3.5 shows existing and proposed transportation management associations in the Metro region.

- *Future studies*. These studies include: (a) town center plans to define long-term transportation needs for all modes of travel in these areas; (b) corridor refinement plans to develop phased strategies for implementing planned improvements in a particular corridor; and (c) regional highway corridor studies to identify phased road and transit improvements to maintain regional mobility and address travel demand in the corridor.

Other projects that are included in the preferred system, but are not identified in Figure 3.1 include:

- *State and local road maintenance.* Maintenance and preservation of the existing road system to remove the backlog of pavement in poor condition and keep 90 percent of regionally significant roads in fair or better condition.

- *Expanded transit service.* A three-fold increase in transit service hours, including light rail transit to the central city and regional centers, commuter rail between Wilsonville and Beaverton and streetcar service in downtown Portland. Faster and more direct transit connections to regional and town centers, corridors and main streets, minimizing the need to go to downtown Portland to transfer. New community and local routes to better serve neighborhoods and employment areas.

- *Transit capital improvements to enhance expanded transit service.* Provide new park-and-ride facilities, low-floor air-conditioned buses, transit station upgrades that include ticket machines and bicycle parking and better passenger amenities at bus stops, including maps, phones, electronic displays showing actual bus locations and arrival times, covered shelters, curb extensions, special lighting and benches.

Figure 3.2
Regional Trails System

This map will be completed for final published 2000 RTP in Spring 2001.

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Figure 3.3
Existing and Proposed Bikeways

This map will be completed for final published 2000 RTP in Spring 2001 to reflect the following changes:

- Combine Existing Bikeways and Funded Bicycle Lanes & Paths as one category – Existing and Funded Bikeways.
- Combine Strategic System Planned Bikeways and Preferred System Planned Bikeways as one category – Preferred System Planned Bikeways.
- Delete line segments from bikeways on state highways that are outside the urban growth boundary, including: I-84 and the Columbia River Scenic Highway east of the UGB; US 26 east and west of the UGB; Highway 8 west of the UGB; Highway 219 north of UGB; Highway 99W southwest of the UGB; Highways 99E and 213 south of the UGB; and Highway 212 east of the UGB.
- Add bikeway improvements funded under MSTIP3 (in which bikeway design is not determined until project development) to the Existing and Funded Bikeways category on the map.

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Figure 3.4

Existing and Proposed Pedestrian System

This map will be completed for final published 2000 RTP in Spring 2001.

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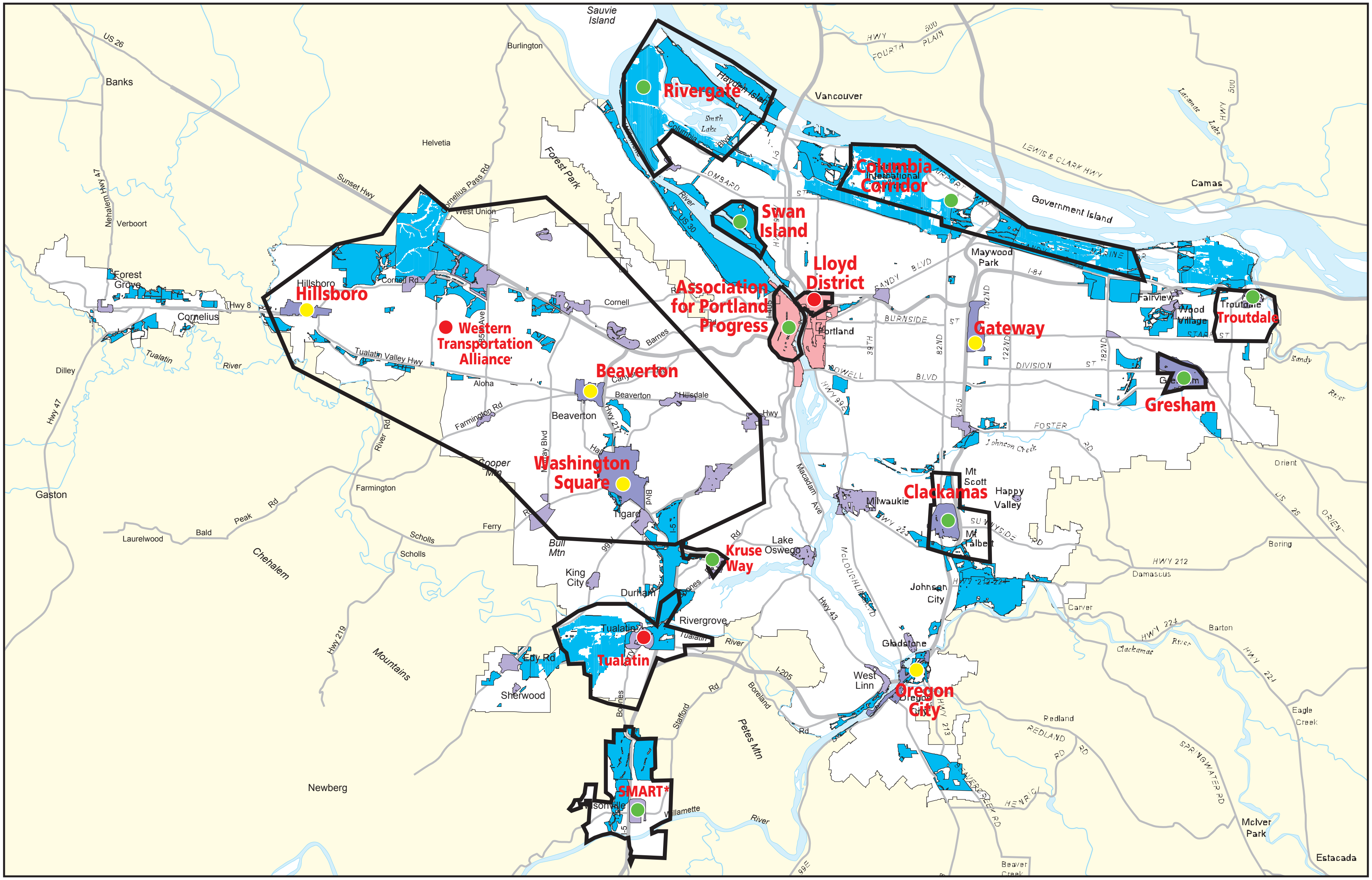

Legend	
Existing and funded TMA Areas	
Existing TMA[1]	
Funding Allocated in 2000-2003 MTIP	
Proposed In RTP	
Major Arterials	
Urban Growth Boundary	

2040 Design Type and corresponding 2040 Regional Non-SOV Mode Split Target[2]

- Central City (60-70%)
- Industrial and Employment Areas (40-45%)
- Regional Centers (45-55%)
- Town Centers (45-55%)

[1]SMART is funded for a TDM program.

[2]See Table 1.3 in Chapter 1 for more detail.

January 2000

N

0 2 4 MILES

Figure 3.4

Existing and Proposed Transportation Management Associations (and 2040 Regional Non-SOV Mode Split Targets)

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3.2 Regional Congestion Management Findings for the 2020 Preferred System

The Congestion Management System (CMS) is a transportation-related management process required for metropolitan transportation planning under 23 CFR Part 500 for all federally designated Transportation Management Areas (TMAs). As the federally designated metropolitan planning organization, Metro is responsible for reviewing transportation projects for consistency with federal CMS requirements.

The purpose of a congestion management system is to provide information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of people and goods. A key provision of CMS requirements is that consideration be given to a variety of demand reduction and traffic management strategies prior to expanding capacity for single-occupant vehicles to address congestion. Significant, new single-occupant vehicle capacity can only be added to the transportation system when it is demonstrated that alternatives cannot cost-effectively address a congestion problem. The congestion management system includes methods to monitor and evaluate transportation system performance, identify alternative actions, assess and implement cost-effective actions and evaluate the effectiveness of implemented actions. The congestion management system can help the transportation system in the following ways:

- develop and implement more efficient projects
- extend the life span of projects, thereby reducing costs
- enhance a project's multi-modal characteristics
- improve the relationship between transportation and land-use planning
- assist in project prioritization.

To address the CMS requirements from a regional "systems level" planning analysis, a number of strategies were developed as part of the RTP Preferred System to minimize the need for additional single-occupant vehicle capacity. In the first round of the 2020 Preferred System project selection process, improvements to arterial streets and freeways were initially limited to a total of five lanes and six lanes, respectively. The underlying philosophy of this approach was that five-lane arterial streets and six-lane freeways are reasonable capacities within an urban transportation system from an impact and cost perspective. If further capacity improvements were needed beyond this amount, a project would go through a series of congestion management system actions. For example, some seven-lane arterial street projects were identified in earlier local transportation plans. The purpose of applying congestion management system actions to the RTP project selection process was to revisit the seven-lane projects from previous plans and to look at regional street connectivity and alternative mode strategies before concluding that a particular seven-lane arterial project was an appropriate strategy in a given corridor.

The following congestion management actions are included and accounted for in the 2020 Preferred System:

- **Regional transportation demand strategies.** Parking pricing and reduced transit fares were assumed in the 2020 Preferred System. These transportation demand management assumptions varied by 2040 Design Type.

- **Regional transportation system management strategies, including intelligent transportation systems (ITS).** The 2020 Preferred System includes transportation system management strategies such as ramp metering, signal timing, access management and transit preferential treatment.

- **High-Occupancy Vehicle (HOV) strategies.** Any capacity improvements beyond six lanes on the freeway will consider express, HOV or peak period pricing as the project proceeds through preliminary engineering studies.

- **Regional transit, bicycle and pedestrian system improvements to improve mode split.** The Metro model is able to analyze the effect of improvements to the regional transit system; however the impact of proposed bicycle or pedestrian system improvements is difficult to quantify. As a result, local jurisdictions were asked to identify bicycle and pedestrian projects throughout the region. The model then relied on a 2020 intersection density as a surrogate measure to reflect the impact of proposed bicycle and pedestrian improvements on mode split. The intersection density represents the expected number of street intersections per mile for each 2040 Design Type. Intersection density affects choice and trip length for all modes of travel, and helps determine how direct and convenient a trip will be.

- **Unintended land use and transportation effects resulting from proposed single-occupancy vehicle (SOV) projects.** Applying this CMS factor helped identify unintended impacts of adding capacity improvements on areas outside the urban growth boundary. Specific findings about accessibility are described elsewhere in this chapter.

- **Latent demand effects from proposed SOV projects on other modes, routes or times of day.** Latent demand is traffic that would use a congested route if it could, but shifts to another destination, time of day, mode or route due to the congestion. Consideration of latent demand is important when adding capacity to the regional transportation system to ensure that if a roadway is expanded, it does not simply fill up with latent demand that should more appropriately be accommodated by other routes, time of day or mode. The RTP Preferred System used a 1997 latent demand analysis to guide roadway capacity expansion consistent with the function a particular roadway is intended to perform.

- At the conclusion of each of four rounds of modeling, local jurisdictions were asked to identify projects needed to meet motor vehicle performance measures as defined in Title 6 of the Urban Growth Management Functional Plan and are reflected in Chapter 1, Table 1.2 in this plan.

Analysis demonstrated that the above considerations did not adequately or cost-effectively address the congestion problem. As such, additional significant capacity projects were recommended for inclusion in this plan.

Initially, 3 seven-lane arterial street improvements and 2 eight through-lane freeways were proposed for inclusion in the 2020 Preferred System. As a result of taking the projects through a congestion management system "check-list," four arterial streets were assumed to require more than five lanes for limited segments: Scholls Ferry Road south of Washington Square regional center, Farmington Road south of Beaverton regional center, Walker Road north of Beaverton regional center and Sunnyside Road in the Clackamas regional center. In most cases, projects with this capacity will be constructed. Likewise, the following freeways were assumed to have more than six lanes: I-5 south of Highway 217 to I-205, I-205 north of Oregon City, Highway 217 and miscellaneous auxiliary lanes sections on numerous freeways. However, these capacities were assumed as "placeholders" for which more detailed corridor studies are needed before such capacity is constructed. In addition, 99W in Tigard between I-5 and Greenburg Road was assumed to have seven lanes. See Chapter 6 for more information on future studies related to these and other corridors.

While the 2020 Preferred System meets regional congestion management "systems level" planning requirements, there remain local congestion management system requirements at the project level. As projects proceed through corridor planning and when projects are more specific at the local level, local governments must still address localized congestion management system requirements. Further detail of local transportation project analysis under congestion management system requirements is described in Chapter 6 of this plan.

3.3 2020 Preferred System Analysis

3.3.1 Regional Performance[1]

Population and employment is expected to increase by 46 percent and 68 percent respectively between 1994 and 2020 within the urban growth boundary. Growth in population and employment is predicted to result in a corresponding increase in travel demand during the same time period for both people and freight movement. Between 1994 and 2020, the number of person trips beginning and ending within the urban growth boundary are expected to increase by 55 percent, to 7.5 million trips per day. Since employment in the region is expected to increase faster than population, the number of trips devoted to work is also expected increase faster than trips for non-work purposes such as shopping and recreation. The number of work trips is predicted to grow by nearly 65 percent between 1994 and 2020, while non-work trips are predicted to increase by 54 percent.

In addition, despite a nearly 50 percent increase in the average vehicle miles traveled overall and a 2.3 percent increase in vehicle miles traveled on a per capita basis between 1994 and 2020, vehicle miles traveled per employee are expected to decline by 11 percent. Table 3.4 summarizes changes in trips made in the region between 1994 and 2020. Table 3.5 summarizes changes in vehicle miles traveled between 1994 and 2020.

Table 3.4

2020 Preferred System Average Weekday Trips[1]

	1994	2020	Percent Change
Average weekday person trips	*4,864,738*	*7,534,953*	*+ 55%*
Average weekday work trips	*939,578*	*1,547,213*	*+ 65%*
Average weekday non-work trips	*3,925,162*	*6,036,811*	*+ 54%*
Average home-based work trip length	*6.45 miles*	*6.62 miles*	*+ 3%*

Note: These numbers exclude trucks and through traffic.
1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

[1] Based on Appendix 1.2.

Table 3.5
2020 Preferred System Vehicle Miles of Travel[1]

	1994	2020	Percent Change
Average weekday vehicle miles traveled	*16,112,462*	*24,049,650*	*+ 49%*
Average weekday vehicle miles traveled per person	*14.10*	*14.43*	*+ 2.3%*
Average weekday vehicle miles traveled per employee	*20.36*	*18.11*	*- 11%*

Note: These numbers exclude trucks and through traffic.
1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Assuming implementation of the 2020 Preferred System and travel behavior remains static, average motor vehicle speeds are expected to decrease from 25 mph in 1994 to 22 mph in 2020 during the evening two-hour peak period. This reduction in travel speed reflects an increase in the proportion of the region's freeway and arterial street network experiencing congestion during the evening two-hour peak period.

In 1994, slightly less than 15 percent of the region's freeway network experienced congestion during the evening two-hour peak period. By 2020, slightly more than 28 percent of the region's freeway network is expected to experience congestion during the evening two-hour peak period. Assuming the 2020 Preferred System is implemented, the proportion of the region's arterial streets experiencing congestion is predicted to more than double, increasing from 6 percent in 1994 to more than 15 percent in 2020 period. Delay on the region's freeway and arterial street networks also is also expected to increase between 1994 and 2020, with the greatest amount of delay predicted to occur on the arterial street network, reflecting several "hotspots" throughout the region. Table 3.6 summarizes changes in the amount and extent of congestion within the Metro urban growth boundary between 1994 and 2020.

Table 3.6
2020 Preferred System Motor Vehicle System Performance[1]

	1994	2020	Percent Change
Average motor vehicle speed	*25 mph*	*22 mph*	*- 12%*
Average motor vehicle travel time	*11 minutes*	*12 minutes*	*+ 9%*
Percent of freeway miles experiencing congestion (v/c >0.9)	*14.9%*	*28.6%*	*+ 92%*
Percent of arterial street miles experiencing congestion (v/c >0.9)	*6.0%*	*15.3%*	*+ 156%*
Total motor vehicle hours of delay (v/c >0.9)	*7,764*	*33,102*	*+ 326%*
Motor vehicle hours of delay on freeway (% of total)	*2,325 (1.84%)*	*9,684 (4.4%)*	*+ 317%*
Motor vehicle hours delay on arterial streets (% of total)	*5,438 (4.29%)*	*23,418 (10.6%)*	*+ 330%*

Note: These numbers are based on the evening two-hour peak period.
1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Drive-alone trips as a percentage of all person trips decrease by almost 5 percent between 1994 and 2020. In 1994, drive-alone trips represented 62 percent of all person trips within the Metro urban growth boundary. In 2020, drive alone trips are expected to represent 59 percent of all trips within the urban growth boundary. By comparison, bicycle and pedestrian travel are expected to increase between 1994 and 2020. In 1994, bicycling or walking (not including walk trips to transit) represented slightly more than 6 percent of all person trips inside the urban growth boundary. By 2020, bicycle and pedestrian travel is expected to represent more than 8 percent of all person trips made inside the urban growth boundary. Transit service hours are expected to increase by nearly 214 percent between 1994 and 2020. Transit trips as a proportion of all person trips are expected to more than double during the plan period, increasing from 3.55 percent of all person trips in 1994 to more than 7.3 percent of all person trips in 2020. Table 3.7 summarizes alternative mode performance. When implemented as a package, the preferred alternative mode strategies stabilize growth in single-occupant vehicle reliance, stabilize growth in vehicle miles traveled per capita and offer a number of choices for travel in this region.

Table 3.7

2020 Preferred System Alternative Mode Performance[1]

	1994	2020	Percent Change
Walk trips (as a percent of total person trips)	*5.18%*	*6.81%*	*+ 31%*
Bike trips (as a percent of total person trips)	*.97%*	*1.25%*	*+ 28%*
Transit trips (as a percent of total person trips)	*3.55%*	*7.32%*	*+ 106%*
Average weekday transit revenue hours	*4,400*	*13,836*	*+ 214%*
Percent of households within 1/4-mile of transit	*78%*	*83%*	*+ 6.6%*
Percent of jobs within 1/4-mile of transit	*86%*	*89%*	*+ 3.5%*

1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Trucks are a critical part of moving goods within the Portland metropolitan region. Of the total goods moving into, out of and within the region, 62 percent complete all or part of the trip by truck. Other modes that move goods are barge, rail and air. In 1994, the region handled more than 17,000 truck trips daily. This number is expected to grow by nearly than 18,000 truck trips daily, representing an increase of 32 percent between 1994 and 2020. Of this total, approximately 11 percent are expected to be on the regional transportation system during the evening two-hour peak period. With the average trip length of 24 miles, the total truck miles traveled during the evening two-hour peak period is 195,000 miles. Of this total, approximately 28 percent are traveling through congestion during the evening two-hour peak period. Truck hours of delay are expected to increase by more than five-fold during the evening two-hour peak period between 1994 and 2020. This represents a change from 4 percent of truck hours experiencing delay in 1994 to nearly 13 percent of truck hours experiencing delay during the evening two-hour peak period. Table 3.8 summarizes performance of the regional freight system assuming implementation of the 2020 Preferred System. Overall, the preferred system results in adequate mobility and access for freight movement in the region.

Table 3.8
2020 Preferred System Freight System Performance[1]

	1994	2020	Percent Change
AWD total truck trips	*54,598*	*72,118*	*+ 32%*
AWD truck average trip length	*22.64*	*23.90*	*+ 5%*
Two-hour peak period truck vehicle hours of delay	*132*	*713*	*+ 440%*
Two-hour peak period average truck travel time	*36.53*	*42.86*	*+ 17%*

Note: This summary of freight system performance reflects Metro's regional truck travel forecasting model.

1 Within the four-county region, includes Clark, Clackamas, Multnomah and Washington counties.

Source: Metro

3.3.2 Regional Travel Times

In most parts of the region, evening two-hour peak period auto travel times will increase from 1994 travel times while overall transit travel times decrease. The largest increases in auto travel times are expected to occur along I-205 from I-5 to Gateway; I-5 north of the central city to Vancouver, Wash.; Highway 224 from Milwaukie regional center to Clackamas regional center and between T-6 and I-205 along Northeast Portland Highway.

Transit travel times, in contrast, are faster throughout much of the region, reflecting expanded service, including rapid bus and light rail, and transit preferential improvements in many corridors. The largest decreases in transit travel times are expected to occur in corridors where rapid bus or light rail service is proposed. Table 3.9 summarizes auto and transit travel times along major corridors that link key 2040 land-use components consistent with RTP transit objectives. Transit travel times are less than 1.5 times the two-hour peak period auto travel time for the same corridor, in all of the corridors examined except for I-205 between Gateway and Oregon City regional centers.

Table 3.9

2020 Preferred System Major Corridor Auto and Transit Travel Time Comparison

Major Travel Corridor	Auto Travel Times (in minutes) 1994	Auto Travel Times 2020 (%change)	Transit Travel Times[1] (in minutes) 1994	Transit Travel Times 2020 (%change)
Central city to Beaverton on Highway 217	20.63	21.49 (+ 4%)	34.35*	22.61 (- 34%)
Central city to Vancouver on I-5	23.46	30.73 (+ 31%)	28.65*	32.87 (+ 13%)
Central city to Milwaukie on 99E	19.57	23.72 (+ 21%)	26.54*	23.46 (- 13%)
Washington Square to Oregon City on Highway 217, I-5 and I-205	28.45	48.78 (+ 71%)	70.72*	51.12* (- 28%)
Gateway to Gresham on Division St.	17.77	19.55 (+ 10%)	18.29	17.96 (- 2%)
Gateway to Oregon City on I-205	21.75	30.78 (+ 42%)	80.91*	47.92* (- 41%)
Milwaukie to Clackamas on Highway 224	10.48	13.14 (+ 25%)	11.56*	12.54 (8%)
Beaverton to Hillsboro on TV Highway	19.62	17.08 (-13%)	35.41*	25.44 (-29%)
T-6 to I-205 on NE Portland Highway	23.10	26.76 (+ 16%)	n/a	n/a
Portland International Airport to Gateway on Airport Way and I-205	9.98	15.72 (+ 58%)	n/a	12.01

1 Transit travel times are on light rail unless noted by an asterisk that denotes rapid bus service. Travel times are based on Round 3 model results.

Source: Metro

3.3.3 Regional Travel Patterns

In addition to an increase in the number of trips being made, travel patterns in the region are also expected to change as a result of planned land uses and expected population and employment growth during the next 20 years. Figure 3.6 shows 1994 motor vehicle and transit person trips between RTP subareas. Figure 3.7 shows 2020 motor vehicle and transit person trips between RTP subareas.

The following are key findings, reflecting analysis of Figures 3.6 and 3.7[2].

- Expected urban area expansion and growth in the Pleasant Valley and Damascus subarea is expected to result in widespread effects on the regional transportation system. Because of the limited number of expected jobs in this part of the region, many residents are predicted to commute to other parts of the region, placing increased traffic pressure on I-205 and other eastside routes. The number of daily motor vehicle trips from this part of the region is expected to increase by more than 700 percent between 1994 and 2020. In 1994, more than 16,000 motor vehicle trips were made from this part of the region. In 2020, the number of motor vehicle trips is expected to grow to be more than 132,000. Most of these motor vehicle trips are expected to travel to Subarea 3 (East Multnomah County) and Subarea 5 (Urban Clackamas County), reflecting 34,815 and 33,510 motor vehicle trips respectively.

- The number of daily motor vehicle trips from the North and South Washington County subareas to the Portland central city subarea is expected to decline while the number of transit trips are expected to significantly increase between 1994 and 2020. In 1994, more than 111,000 motor vehicle trips were

[2] These numbers represent one-way trips from production zone to attraction zone and are based on Round 3 model results.

destined for the Portland central city subarea. In 2020, the number of motor vehicle trips destined for the Portland central city subarea is predicted to decrease to almost 110,800 motor vehicle trips. In contrast, the number of transit trips are expected to more than triple between 1994 and 2020, increasing from 9,201 in 1994 to more than 35,000 in 2020. The dramatic increase in the number of transit trips reflect substantially improved transit service between Washington County and the Portland central city subarea, including opening of westside light rail, rapid bus improvements on Barbur Boulevard and an expanded network of regional transit routes that connect to westside light rail.

- The number of daily motor vehicle trips from Clark County, Wash. to the Portland metropolitan region is expected to increase by 74 percent between 1994 and 2020. In 1994, more than 75,000 motor vehicle trips were destined for the region. In 2020, the number of trips destined for the Portland metropolitan region is expected to increase to more than 130,000, with the majority of the motor vehicle trips traveling to the Portland central city and West Columbia Corridor subareas. The number of transit trips are expected to increase five-fold between 1994 and 2020, reflecting an extension of light rail from the Portland Metropolitan Exposition (Expo) Center to Clark County, Wash. In 1994, more than 3,200 transit trip were made from Clark County, Wash. to the Portland metropolitan region. In 2020, the number of transit trips destined for the Portland metropolitan region is expected to increase to more than 16,000.

- Freight travel patterns are expected to continue to be first north-south oriented (I-5, I-205) and second easterly oriented (I-84). [3]

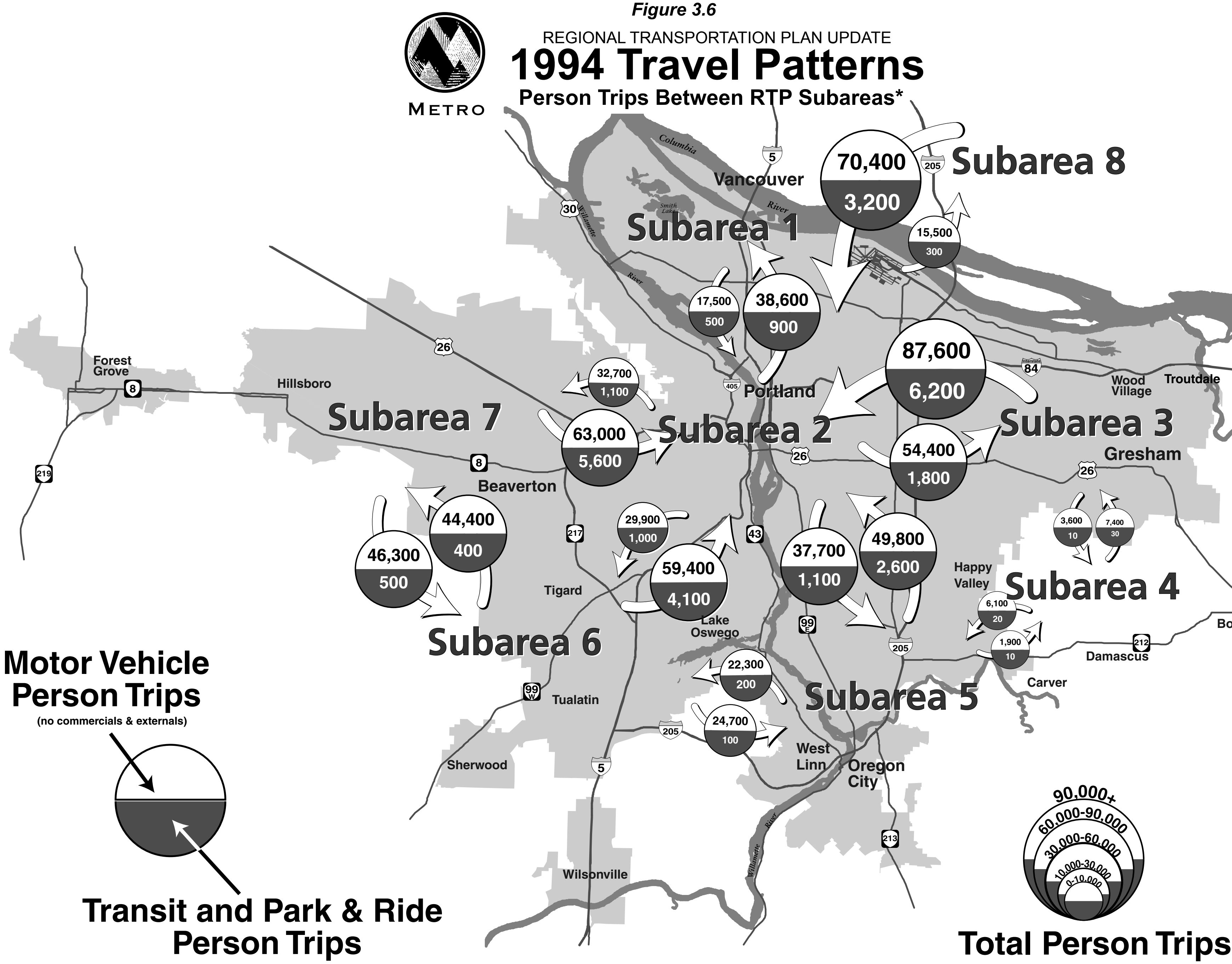
[3] ICF Kaiser, Columbus Group, Reebie Associates, the WEFA Group and Port of Portland, Commodity Flow Analysis for the Portland Metropolitan Area, p. 58.

Figure 3.6

REGIONAL TRANSPORTATION PLAN UPDATE

1994 Travel Patterns

Person Trips Between RTP Subareas*



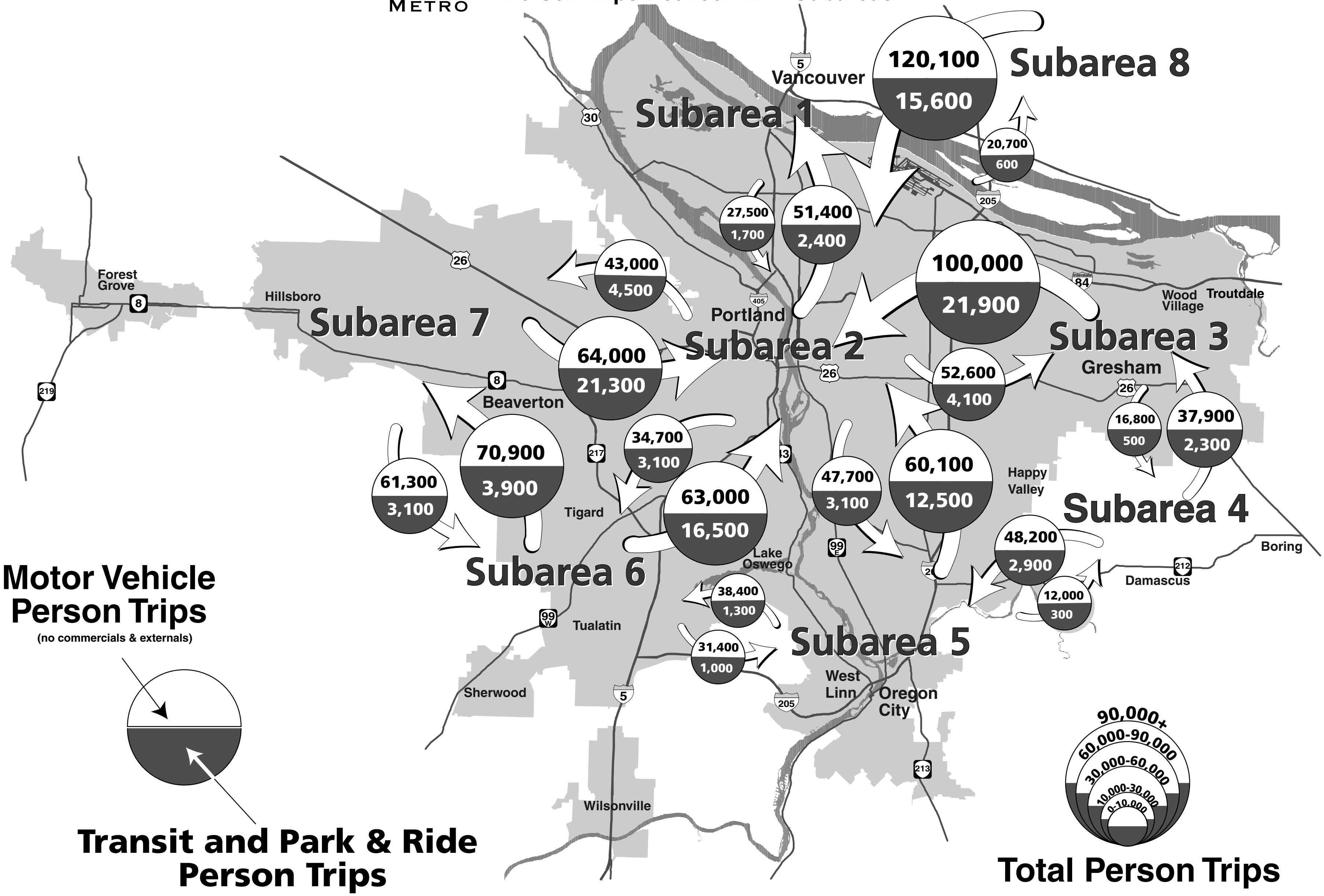
* One-way trips from a production zone to an attraction zone in the Round 3 1994 System.

Figure 3.7

REGIONAL TRANSPORTATION PLAN UPDATE

2020 Travel Patterns

Person Trips Between RTP Subareas*



* One-way trips from a production zone to an attraction zone in the Round 3 Preferred System.

3.3.4 Major Corridor Performance[4]

Motor vehicle and transit volumes are expected to increase along major corridors throughout the region. Major corridors are defined as those corridors in the region that serve as the primary people and goods moving routes. Tables 3.10, 3.11 and 3.12 summarize the percent increase in peak direction auto and transit and peak and off-peak direction truck volumes during the evening two-hour peak period for key corridors in the region. Figure 3.8 and Figure 3.9 highlight auto and transit cutline results for these major corridors in the region. Following Figure 3.9 are key findings on the performance of these major corridors. Further detail on each of the corridors can be found within the subarea findings in Section 3.4 of this chapter.

Table 3.10
2020 Preferred System Motor Vehicle Volumes[1]

Corridor	1994	2020	1994-2020 Change
(A) I-5 North, Martin Luther King Jr. Boulevard, Interstate Avenue and Greeley Avenue	*18,799*	*21,203*	*2,404 (+13%)*
(B) I-5 North Interstate Bridge	*11,504*	*18,487*	*6,983 (+61%)*
(C) I-84, Broadway/Weidler, Burnside, Stark, Belmont, Morrison and Hawthorne streets	*28,267*	*29,794*	*1,527 (+5%)*
(D) Powell, Division and Holgate streets	*7,243*	*8,163*	*920 (+13%)*
(E) I-5 and Barbur Boulevard	*13,716*	*15,300*	*1,584 (+12%)*
(F) US 26, Cornell, Burnside and Beaverton-Hillsdale Highway	*19,156*	*20,824*	*1,668 (+9%)*
(G) Highway 30	*3,123*	*4,026*	*903 (+30%)*
(H) Macadam/17th/McLoughlin Boulevard	*10,215*	*14,999*	*4,784 (+47%)*
(I) Sandy Boulevard and I-84	*12,365*	*14,398*	*2,033 (+16%)*
(J) Halsey, Glisan, Burnside, Stark, Division and Powell streets	*15,626*	*19,803*	*4,177 (+27%)*
(K) 172nd/Foster Road/190th Avenue	*1,783*	*8,133*	*6,350 (+356%)*
(L) US 26, 242nd, Orient and Powell Valley roads	*6,077*	*10,026*	*3,949 (+65%)*
(M) Highway 212, Sunrise Corridor and Sunnyside Road	*6,337*	*18,366*	*12,029 (+190%)*
(N) Highway 213, Molalla Avenue and 99E	*8,615*	*14,794*	*6,179 (+72%)*
(O) 181st, 207th, 223rd, 242nd and Hogan roads	*8,312*	*14,766*	*6,454 (+78%)*
(P) I-205 east of 60th Avenue	*7,103*	*12,168*	*5,065 (+71%)*
(Q) I-5 South and Boones Ferry Road	*15,728*	*19,635*	*3,909 (+25%)*
(R) Tualatin-Sherwood Road, 99W and I-5 to 99W connector	*4,052*	*9,320*	*5,268 (+130%)*
(S) Highway 217, Hall Boulevard, Scholls Ferry and Oleson roads	*15,582*	*18,663*	*3,081 (+20%)*
(T) Tualatin Valley Highway and Farmington Road	*7,184*	*11,076*	*3,892 (54%)*
(U) Cornell Road, Beaverton-Hillsdale Highway, Canyon, Walker and Barnes roads	*20,611*	*22,672*	*2,061 (+10)*
(V) Tualatin Valley Highway and Baseline and Cornell roads	*6,437*	*9,561*	*3,124 (+49%)*
(W) I-205, 82nd and 92nd avenues	*14,315*	*21,528*	*7,211 (+50%)*

1 These volumes reflect the peak direction during the evening two-hour peak period. Refer to Figures 3.8 and 3.9 for actual cut-line locations indicated in parenthesis. These volumes are based on Round 3 model results.

Source: Metro

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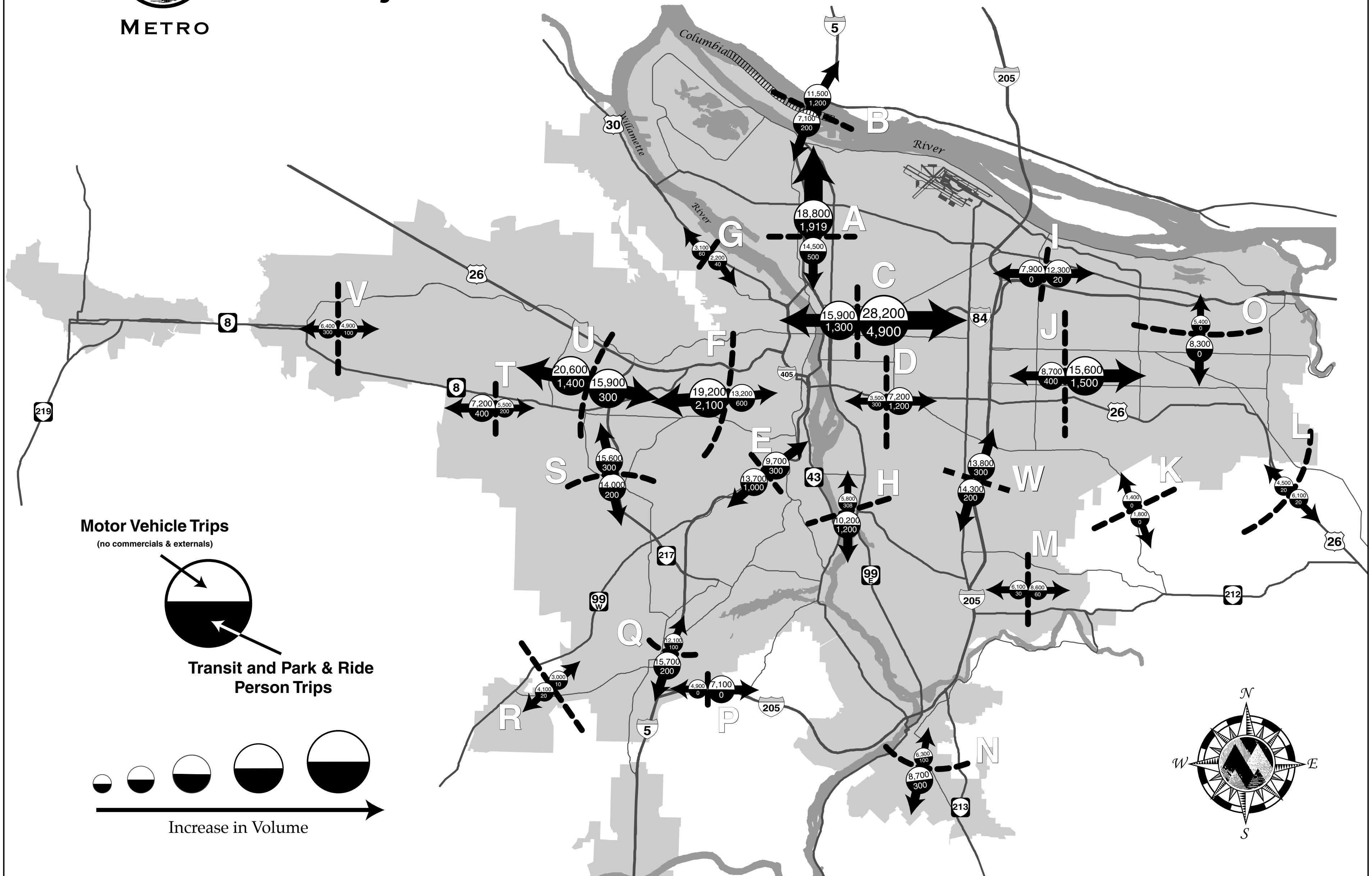
4 Based on PM 2-Hour Major Corridor Cutlines: Auto Volumes handout *(dated 10/15/99)*

Figure 3.8

METRO

REGIONAL TRANSPORTATION PLAN UPDATE

1994 Major Corridor Auto and Transit Volumes*



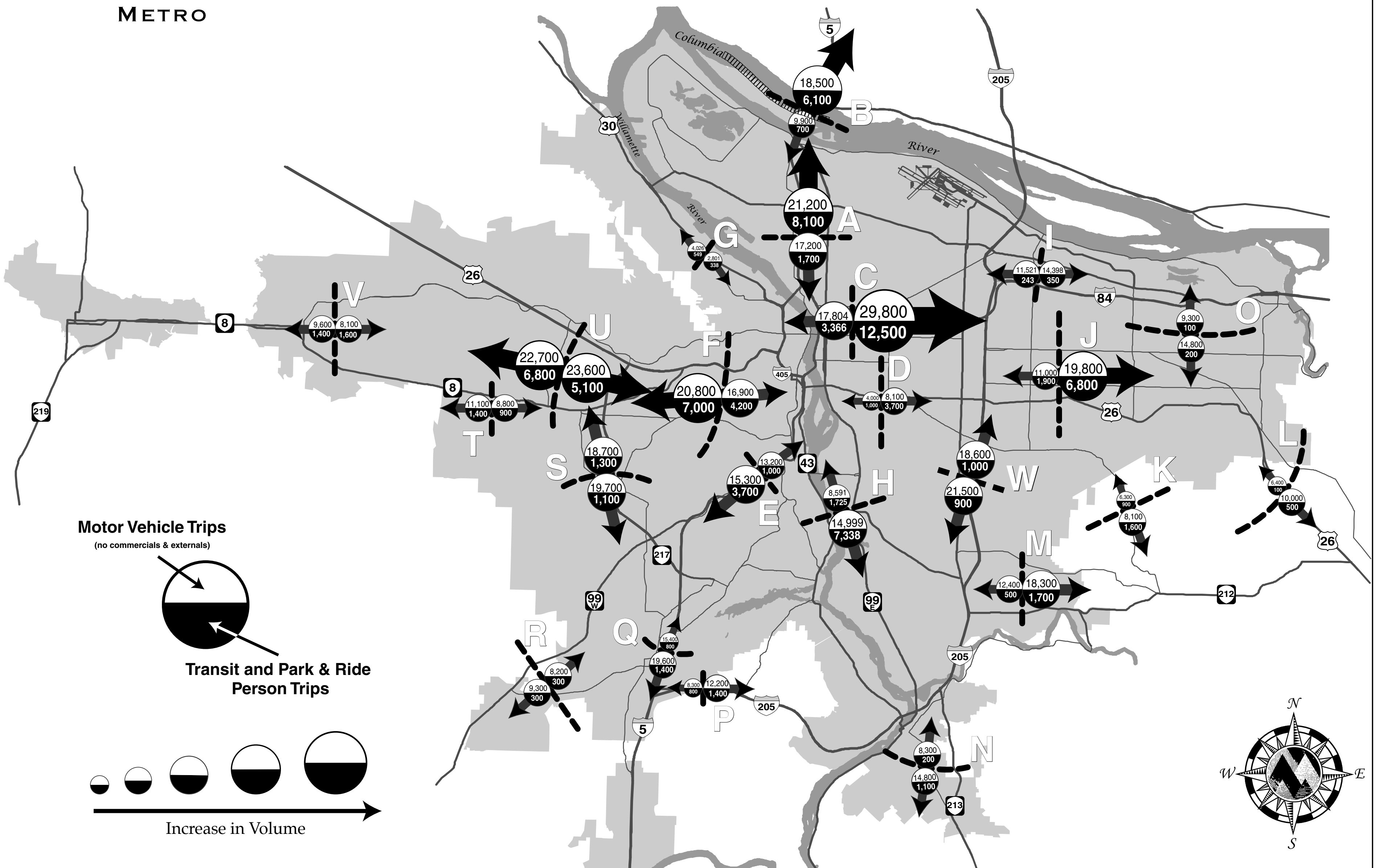
*PM 2-Hour Peak at selected cutlines in the Round 3 1994 System.

METRO

REGIONAL TRANSPORTATION PLAN UPDATE

Figure 3.9

2020 Major Corridor Auto and Transit Volumes*



*PM 2-Hour Peak at selected cutlines in the Round 3 Preferred System.

Table 3.11

2020 Preferred System Selected Transit Volumes[1]

Corridor	1994	2020	1994-2020 Change
(A) LRT, I-5 North, Martin Luther King Jr Boulevard, Interstate Avenue and Greeley Avenue	*1,919*	*8,138*	*6,219 (+324%)*
(B) LRT, I-5 North Interstate Bridge	*1,227*	*6,126*	*4,899 (+400%)*
(C) LRT, I-84, Broadway/Weidler, Burnside, Stark, Belmont, Morrison and Hawthorne streets	*4,905*	*12,493*	*7,588 (+155%)*
(D) Powell, Division and Holgate streets	*1,226*	*3,721*	*2,495 (+204%)*
(E) I-5 and Barbur Boulevard	*1,043*	*3,768*	*2,725 (+261%)*
(F) LRT, US 26, Cornell, Burnside and Beaverton-Hillsdale Highway	*2,082*	*7,682*	*5,600 (+269%)*
(H) LRT, Macadam/17th/McLoughlin Boulevard	*1,186*	*7,338*	*6,152 (+519%)*
(J) Halsey, Glisan, Burnside, Stark, Division and Powell streets	*1,525*	*6,777*	*5,252 (+344%)*
(K) 172nd/Foster Road/190th Avenue	*n/a*	*1,579*	*1,579*
(S) Highway 217, Hall Boulevard, Scholls Ferry and Oleson roads	*305*	*1,285*	*980 (+321%)*
(U) LRT, Cornell Road, Beaverton-Hillsdale Highway, Canyon, Walker and Barnes roads	*1,447*	*6,823*	*5,376 (+372%)*
(W) I-205, 82nd and 92nd avenues	*224*	*919*	*695 (+310%)*

1 These volumes reflect average weekday peak direction. Refer to Figures 3.8 and 3.9 for cut-line locations. These volumes are based on Round 3 model results.

Source: Metro

Table 3.12

2020 Preferred System Selected Truck Volumes[1]

Corridor	1994		2020		1994-2020 Change	
	Peak direction	*Off-peak direction*	*Peak direction*	*Off-peak direction*	*Peak direction*	*Off-peak direction*
(B) I-5 North Interstate Bridge	*456*	*493*	*740*	*764*	*284 (62%)*	*271 (55%)*
(E) I-5 and Barbur Boulevard	*519*	*495*	*734*	*776*	*215 (41%)*	*281 (57%)*
(F) US 26, Cornell, Burnside and Beaverton-Hillsdale Highway	*312*	*308*	*506*	*469*	*194 (62%)*	*161 (52%)*
(G) Highway 30	*205*	*182*	*283*	*251*	*78 (146%)*	*69 (158%)*
(I) I-84 and Sandy Boulevard	*460*	*450*	*676*	*689*	*216 (47%)*	*239 (53%)*
(S) Highway 217, Hall Boulevard, Scholls Ferry and Oleson roads	*219*	*169*	*290*	*262*	*71 (33%)*	*93 (55%)*
(W) I-205, 82nd and 92nd avenues	*367*	*374*	*654*	*622*	*287 (78%)*	*248 (66%)*

1 These volumes reflect the peak direction during the evening two-hour peak period. Refer to Figures 3.8 and 3.9 for actual cut-line locations indicated in parenthesis. These volumes are based on Round 3 model results.

Source: Metro

Key findings for the evening two-hour peak period (unless otherwise noted) include:

- The overall highest traffic volumes are expected to remain in the interstate corridors such as I-5, I-84 and I-205.
- The largest percentage increase occurs on highways and roads that serve new growth in urban reserves such as Highway 213 and the Powell Boulevard/Foster Road corridors.
- Average weekday transit ridership is expected to be highest in the radial corridors that lead to the Portland central city and within the most developed areas of the regional centers and neighborhoods. Average weekday transit ridership is expected to be lowest along the peripheral routes, such as I-205 between I –5 and Oregon City.
- Truck volumes are expected to be highest on the interstate routes, particularly I-5 and I-84 east of I-205, during the evening two-hour peak period. Truck volumes are expected to be comparable for both peak and off-peak directions during the evening two-hour peak period. This reflects their distribution-oriented travel patterns compared to commuter-oriented work trip patterns. Unlike auto volumes, truck peaks are expected to be higher at the midday, generally from 10 a.m. to 2 p.m., and they are expected to represent a higher percentage of the overall traffic during that time of day. In general, trucks contribute two to three times their number in terms of congestion because they take up the two to three times the capacity of a passenger vehicle.
- The region's interstate routes are most significant for truck mobility. These corridors carry almost 66 percent of all truck miles of travel. The corridors with the greatest hours of delay are predicted to also be the corridors with the highest truck volumes.

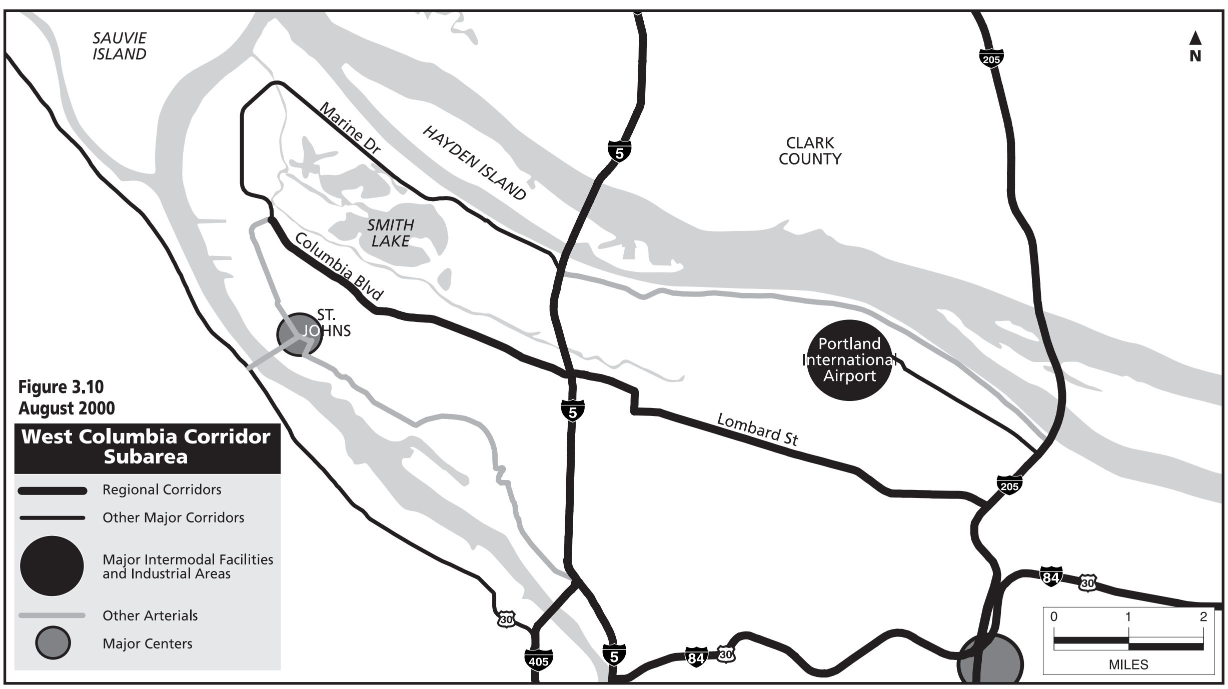
3.4 Subarea Performance

While some congestion is predicted to remain on the regional transportation system during peak periods, the 2020 Preferred System meets the overall travel needs of the Portland metropolitan region for the next 20 years particularly when compared with other scenarios. This section summarizes the performance of proposed 2020 Preferred System improvements on the regional transportation system by RTP Subarea. The discussion focuses on the performance of the regional highway corridors, major arterial street corridors, the central city, industrial areas and intermodal facilities, regional centers and some town centers. A finding that a particular highway or arterial street corridor experiences "congestion" translates to not meeting the motor vehicle performance measure for that corridor as defined in Table 1.1 in Chapter 1 of this plan.

3.4.1 Subarea 1: West Columbia Corridor

This subarea stretches from the Smith and Bybee lakes area west to Interstate 205 and from the Columbia River south to the Interstate 205/Columbia Boulevard/Lombard Street interchange and Swan Island. The Columbia Corridor is an important freight destination in the region – with several employment areas, industrial areas and intermodal facilities located within the area. The subarea includes Hayden Island employment and industrial areas, Terminal 6 marine shipping berths, the Delta Park employment area, Portland International Airport and adjacent employment areas and Swan Island employment and industrial areas. Figure 3.10 shows a map of the subarea.

Figure 3.10
West Columbia Corridor Subarea



Source: Metro

Regional Corridors in the West Columbia Corridor Subarea

Interstate 5 North (Marquam Bridge to Interstate Bridge)

Improvements defined in the 2020 Preferred System for the I-5 north corridor are focused on:
- maintaining an acceptable level of accessibility to the Portland central city from North and Northeast Portland neighborhoods and Clark County, Wash.
- providing a transit alternative to I-5
- maintaining peak and off-peak period freight mobility
- maintaining an acceptable level of access to Swan Island, marine terminals in the Rivergate industrial areas, Marine Drive, Northeast Portland Highway, and Columbia Boulevard

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: I-5 north from the Marquam Bridge to the Columbia River will continue to be congested during the evening 2-hour peak period despite widening to a full six through-lanes from I-84 to the Interstate Bridge, eight through-lanes across the Interstate Bridge, a new bridge connection to West Hayden Island and frequent light rail and bus service in the corridor. Congestion on I-5 north is expected to exceed the motor vehicle performance measure for this corridor (F/E). The congestion is expected to occur primarily on the Lombard Street and Delta Park interchanges and the interstate bridges despite an assumption of widening these segments. Light rail ridership is expected to be high, reflecting more frequent transit service. Arterial streets parallel to I-5 are not expected to be congested as a result of spillover traffic from congestion along I-5 because more through-traffic is accommodated on the freeway itself and because such a large share of traffic is destined for Clark County, Wash. The level and extent of congestion on I-5 is not predicted to affect accessibility from North and Northeast Portland to the central city, but could impact freight mobility to and from the West Columbia Corridor intermodal facilities and industrial areas if congestion spreads to off-peak periods.

Conclusions: The level of congestion in the corridor suggests that despite a range of different improvements to the I-5 interstate bridges and transit service, latent demand exists in the corridor that cannot be addressed with highway capacity improvements alone. Generally, congestion on I-5 north exceeds the motor vehicle performance measure proposed for this corridor at the Interstate Bridge and other segments that will affect travel throughout the corridor. Light rail transit and expanded bus service along parallel arterial streets are effective alternatives to I-5 for access to the Portland central city. Freight movement to intermodal facilities and industrial areas would be affected by the spreading of congestion to off-peak periods. To address these problems, the I-5 Trade Corridor Study will evaluate different capacity and transit improvements in this corridor and make recommendations for inclusion in the Regional Transportation Plan. This study will evaluate the impact of congestion in the corridor on freight movement to port terminals, concentrating on maintaining regional, national and international goods movement and multi-modal solutions for travel along this corridor. The study will also evaluate the impact of capacity increases to I-5 on conditions on I-205, Northeast Portland Highway and north Portland arterial streets and neighborhoods. See Chapter 6 for more detail on the corridor study recommended for I-5.

Northeast Portland Highway (Rivergate industrial area to I-205)

Improvements defined in the 2020 Preferred System for the northeast Portland Highway corridor are focused on:

- developing a streamlined highway connection from Rivergate industrial area to I-205 along the Columbia Boulevard/Lombard Street/Killingsworth Street corridor
- maintaining peak and off-peak period freight mobility
- reducing the need for freight use of Marine Drive east of I-205, the Banfield Freeway and inner northeast portions of I-5

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Implementing improvements proposed by the Columbia Corridor Transportation Plan on Martin Luther King Jr. Boulevard at Columbia Boulevard and Lombard Street is expected to move through-trips currently on Columbia Boulevard to Lombard Street to better utilize excess capacity and thereby improve freight mobility in the corridor. This improved connection between the Rivergate industrial area and I-205 is expected to serve as an alternative to I-5, I-84 and Marine Drive for access to industrial areas and intermodal facilities in this part of the region. Portions of Northeast Portland Highway are predicted to experience some congestion during the evening two-hour peak period.

Conclusions: The proposed improvements in this corridor combine with better utilization of existing capacity to serve east west freight and traffic movement needs. Further study of the area is needed to define improvements for the sections that continue to operate below level of service standards defined for this corridor. See Chapter 6 for more detail on the refinement planning recommended for this corridor.

Interstate 205 North (I-84 to Clark County, Wash.)

Improvements defined in the 2020 Preferred System for the I-205 north corridor are focused on:

- maintaining an acceptable level of accessibility to Portland International Airport
- preserving freight mobility from I-5 to Clark County, Wash., with an emphasis on connections to I-84 east, Northeast Portland Highway and Portland International Airport
- maintaining an acceptable level of access to the Gateway regional center

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Northbound I-205 from Airport Way to Highway 14 in Vancouver, Wash. is expected to exceed the motor vehicle performance measure for this corridor (E/E). Ramp improvements at Airport Way are not expected to alleviate congestion during the evening two-hour peak period. The addition of auxiliary lanes on I-205 from I-84 to Airport Way would allow that segment to operate at an acceptable level of service during the evening two-hour peak period.

Conclusions: Improvements are needed in this corridor to address existing deficiencies and expected growth in travel demand during the next 20 years. A detailed corridor study should consider the potential of auxiliary lanes from I-84 to Airport Way and use of express, peak period pricing or HOV lanes as a strategy for expanding capacity in the corridor. The I-205 north corridor study should also evaluate the potential of high-capacity transit extending north from Gateway regional center into Clark County, Wash. that could serve trips destined for the airport and surrounding employment areas. See Chapter 6 for more detail on the corridor study recommended for I-205.

Other Major Corridors in the West Columbia Corridor Subarea

Marine Drive (west of I-5)

Improvements defined in the 2020 Preferred System for the Marine Drive corridor are focused on:
- maintaining an acceptable level of accessibility from the Rivergate industrial area and West Hayden Island intermodal facilities to I-5 and Northeast Portland Highway

- reducing conflicts between rail and truck freight movement

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Though Marine Drive is expected to function effectively as the primary connection to Rivergate and West Hayden Island terminals, congestion on I-5 may limit access to Marine Drive during the evening peak two-hour period. Access to the Rivergate intermodal facilities and industrial areas from the east and south is predicted to be limited by expected congestion along I-5 during the evening two-hour peak period. Long-term access from the west is predicted to be limited by the structural and design constraints of the St. Johns Bridge and truck movements through the St. Johns town center and surrounding community.

Conclusions: Proposed improvements to I-5, Northeast Portland Highway and Marine Drive west of I-5 will provide access to Rivergate terminals during most hours of the day, with limited access during the evening two-hour peak period. Long-term freight access to the Rivergate industrial area from Highway 30 should be determined during the plan period.

Major Centers in the West Columbia Corridor Subarea

St. Johns Town Center

Improvements defined in the 2020 Preferred System for the St. Johns town center are focused on:
- providing better bicycle and pedestrian connections to and within the town center

- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the town center

- improving pedestrian access to transit along major transit corridors

- reducing the impact of truck traffic traveling from US 30 to Columbia Boulevard and West Hayden Island

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: St. Johns Bridge is expected to experience congestion during the evening two-hour peak period. Frequent bus ridership along Lombard Street shows promising results. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: A long-term freight access plan is needed to help reduce freight traffic impacts on the town center and adjacent neighborhoods. Future updates to this plan should evaluate the effectiveness of a new bridge crossing north of St. Johns Bridge to more directly link US 30 to the Rivergate industrial area and West Hayden Island terminals and address functional limitations of the St. Johns Bridge. See Chapter 6 for more detail on refinement planning for a North Willamette River crossing study in this part of the region. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs in this area through 2020.

Major Intermodal Facilities and Industrial Areas in the West Columbia Corridor Subarea

Portland International Airport

Improvements defined in the 2020 Preferred System for the Portland International Airport are focused on:

- maintaining an acceptable level of accessibility to freight and passenger terminals
- providing a transit alternative to Airport Way and I-205
- improving traffic circulation in the vicinity of the airport to better serve growing industrial and office activities without impacting terminal access

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

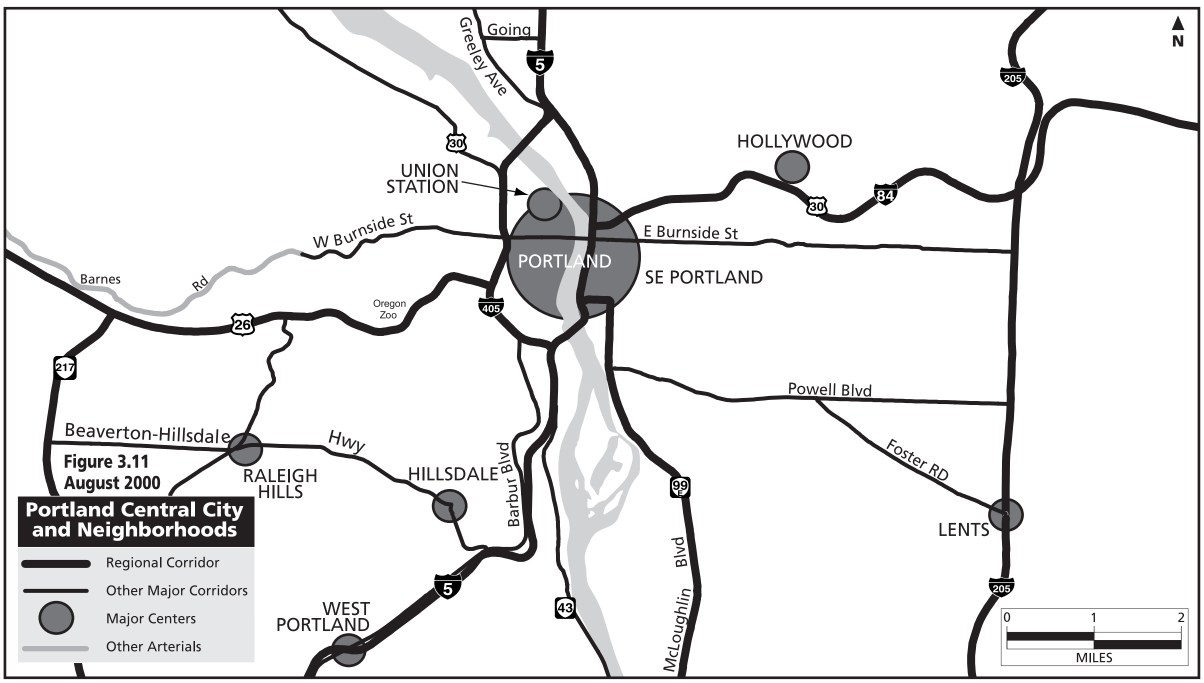
Findings: Airport Way is expected to experience congestion in the vicinity of I-205 during the evening two-hour peak period, despite several ramp improvements. Several routes in the vicinity of the airport and Portland International Center are expected to be congested, despite an aggressive set of capacity improvements

Conclusions: Access to the airport is generally maintained, but requires a relatively large investment in roadway capacity improvements. Light rail access to the airport complements other modes, but does not lessen the need for major capacity improvements to I-205 and Airport Way in the vicinity of the airport. The I-205 north corridor study should also evaluate the potential of high-capacity transit extending north from Gateway regional center into Clark County, Wash. that could serve trips destined for the airport and surrounding employment areas. Transportation demand management measures can help reduce congestion in this area. The Columbia Corridor Association employs a full-time transportation coordinator and is interested in transportation management area (TMA) start-up assistance from Metro. Any recommendations for adding to the operational capacity of Portland international airport (e.g., a new third runway) should be accompanied by a thorough analysis of impacts and mitigation strategies for I-205, I-84, Northeast Portland Highway, airport light rail and Columbia Corridor arterial streets and collectors.

3.4.2 Subarea 2: Portland Central City and Neighborhoods

This subarea includes the City of Portland from the vicinity of the Columbia Corridor on the north to Johnson Creek on the south, and from the vicinity of Sylvan on the west to I-205 on the east. Located in the center of the subarea is the Portland central city, including the downtown business district, the Lloyd District, the Central Eastside Industrial District, the River District and the North Macadam District. Town centers in the subarea include Hollywood, St. Johns, Lents, Hillsdale, Raleigh Hills and West Portland. Figure 3.11 shows a map of the Portland central city subarea.

Figure 3.11
Portland Central City Subarea



Source: Metro

Regional Corridors in the Portland Central City Subarea

I-5 North (Marquam Bridge to Interstate Bridge)

See page 3-31 for key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

I-5 South (Capitol Highway to Marquam Bridge)

Improvements defined in the 2020 Preferred System for the I-5 south corridor are focused on:

- preserving access to and from the central city
- maintaining off-peak freight mobility
- improving connections to the Central Eastside Industrial District and Highway 99E/224 corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Portions of the I-5 south corridor continue to be congested during the evening two-hour peak period, particularly from the Portland central city to Terwilliger interchange, despite the addition of southbound truck climbing lanes and expanded transit service and traffic management strategies on parallel arterial routes. Similarly, bottlenecks and access issues will continue at the Ross Island bridgehead and at Capitol Highway. Parallel rapid bus service along Barbur Boulevard shows promising ridership levels.

Conclusions: Congestion on I-5 south does not exceed the motor vehicle performance measure for this corridor (E/E). Proposed improvements to the I-5 south corridor are adequate to accommodate freight movement and maintain reasonable traffic flows and address key bottlenecks during the evening two-hour peak period, given the proposed transit alternatives in the corridor and significant environmental and physical barriers to further highway expansion.

Interstate 405 Loop (I-5 south to I-5 north)

Improvements defined in the 2020 Preferred System for the I-405 loop are focused on:

- maintaining an acceptable level of accessibility to and from the Portland central city from I-84, US 26 and I-5
- maintaining off-peak freight mobility
- maintaining off-peak freeway to freeway connections between I-84, Sunset Highway and I-5

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Segments of I-405 are congested during the evening two-hour peak period, particularly from the Burnside Street interchange at I-405 to I-5 north.

Conclusions: Congestion on I-405 does not exceed the motor vehicle performance measure for this corridor (F/E). Congestion on this facility appears to be localized in nature and does not significantly limit access to the Portland central city during the evening two-hour peak period. Projects should focus on safety and key bottlenecks.

Banfield Freeway (I-5 to I-205*)*

Improvements defined in the 2020 Preferred System for the Banfield Freeway are focused on:

- maintaining an acceptable level of accessibility to the Portland central city from eastside Portland neighborhoods and East Multnomah County
- providing a transit alternative to I-84
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- mitigating infiltration on adjacent arterial streets due to congestion on I-84

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The Banfield Freeway will continue to be congested during the evening two-hour peak period. Analysis completed by Metro in 1997 demonstrated that congestion would not be eliminated by constructing additional travel lanes on I-84 due to the heavy demand for travel in the corridor. As part of this analysis, despite widening I-84 to ten lanes, the corridor remained congested during the evening two-hour peak period. Light rail ridership is high, reflecting more frequent service in the corridor. Transit volumes parallel to I-84 are also expected to be high. Parallel arterial streets are also congested, particularly south of the Banfield Freeway. The Sandy Boulevard corridor, for example, is expected to experience some congestion during the evening two-hour peak period. Frequent bus service in this corridor is expected to experience high ridership.

Conclusions: Generally, congestion on the Banfield Freeway would not exceed the motor vehicle performance measure for this corridor (F/E). Parallel light rail and expanded bus service are effective alternatives to the Banfield Freeway for accessing the Portland central city and I-5 north. However, congestion on parallel arterial streets, including Halsey, Glisan, Burnside and Stark streets, is not adequately addressed by proposed improvements. Additional consideration of these and other congested parallel streets is needed as part of refinement planning in local transportation system plans. Proposed transit, pedestrian and bicycle improvements along Sandy Boulevard serve expected pedestrian and bicycle travel needs in this corridor through 2020. See Chapter 6 for more detail on the refinement planning recommended for this corridor.

Sunset Highway (I-405 to Sylvan interchange)

Improvements defined in the 2020 Preferred System for this segment of the Sunset Highway are focused on:

- maintaining an acceptable level of accessibility to the Portland central city, I-5 and I-84 from Wash. County
- providing a transit alternative to US 26
- maintaining off-peak freight mobility

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The Sunset Highway to the Sylvan Road interchange is predicted to be congested outbound from the Portland central city during the evening two-hour peak period, despite added truck climbing lanes and more frequent light rail service. Light rail ridership is expected to be high, reflecting more frequent service during the evening two-hour peak period. Streets parallel to this segment of US 26 are also expected to experience some congestion.

Conclusions: Generally, congestion on this portion of the Sunset Highway will not exceed the motor vehicle performance measure for this corridor (F/E). Parallel light rail service is expected to provide an effective, reasonable alternative for accessing the Portland central city. Freight movement to Washington County is enhanced by completion of a westbound truck climbing lane on Sunset Highway through the Sylvan Road interchange; however, it remains limited by congestion during the evening two-hour peak period. Additional refinement planning is recommended for this corridor in terms of the design of projects proposed for US 26; see Chapter 6 for details.

Highway 99E (Portland central city to Highway 224)

Improvements defined in the 2020 Preferred System for this segment of 99E are focused on:

- maintaining an acceptable level of accessibility to the Portland central city
- providing a transit alternative to Highway 99E
- providing a better transition from Highway 99E to Highway 224 in Milwaukie

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Highway 99E is expected to remain congested during the evening two-hour peak period despite widening to six lanes, significant street access limitations and frequent light rail transit and bus service in the corridor. Light rail ridership is expected to be high during the evening two-hour peak period. Parallel arterial streets are not expected to experience congestion during the evening two-hour peak period.

Conclusions: A more detailed evaluation of the timing and scope of proposed improvements, including light rail to Clackamas regional center along Highway 224, is needed to address heavy travel demand in this corridor and along Highway 224 between 99E and I-205. In addition, a LOS policy change to F/E during the evening two-hour peak period is recommended. Metro is currently leading a study to consider transportation alternatives in this corridor to define an interim solution for addressing travel demand in this corridor. The study, called the South Corridor Transportation Alternatives Study, was established to address the above factors as well as in response to the defeat of the November 1998 ballot measure that would have reaffirmed local funding for the South/North light rail project. The study is organized into segment-specific corridor teams based on specific study segments, allowing for solutions that are tailored to the needs of each segment. The transportation strategies for each segment will be integrated into a single transportation strategy for the entire corridor. In the later part of the plan period, parallel light rail service provides an effective, reasonable alternative for accessing the Portland central city. See Chapter 6 for more detail on the South Corridor Transportation Alternatives study.

Other Major Corridors in the Portland Central City Subarea

Going Street/Greeley Avenue

Improvements defined in the 2020 Preferred System for the Going Street/Greeley Avenue corridor are focused on:

- maintaining an acceptable level of accessibility to intermodal facilities at Swan Island
- improving access from the industrial area to regional highways, including I-5, Northeast Portland Highway and I-205
- reducing conflicts between rail and truck freight movement

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Going Street at Greeley Avenue is expected to be congested during the evening two-hour peak period. Interstate light rail ridership is expected to be high. Union Pacific rail yards and Swan Island port facilities are expected to remain accessible during the evening two-hour peak period via Greeley Avenue and Going Street. However, congestion on I-5 during the peak period limits truck access to these routes that serve the UP Yard/Swan Island area.

Conclusions: The transit and system management improvements proposed for this corridor are expected to meet projected travel needs through 2020. Recommended improvements provide access to Rivergate terminals and the Union Pacific rail yard during the 20-year plan period. The Swan Island industrial area has expressed interest in forming a transportation management association (TMA). Localized congestion at the Going Street intersection with Greeley Avenue should be addressed as part of the Portland transportation system plan.

Powell Boulevard/Foster Road Corridor (Portland central city to Lents)

Improvements defined in the 2020 Preferred System for the Powell Boulevard/Foster Road corridor are focused on:

- maintaining an acceptable level of accessibility to the Portland central city from southeast Portland neighborhoods and the Lents town center

- explore possibility of high-capacity transit (e.g., rapid bus service) in corridor

- expanding traffic management and high-capacity transit strategies to better accommodate expected traffic growth in the corridor, especially near Lents town center due to growth in the Pleasant Valley/Damascus area.

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The Powell Boulevard/Foster Road corridor is expected to emerge as a major travel corridor due to expected growth in Clackamas County. The Powell Boulevard/Foster Road corridor is expected to experience congestion during the evening two-hour peak period, including parallel arterial streets. Traffic volumes are expected to increase significantly even though no additional road capacity is proposed for this segment of the corridor, except in the vicinity of the Ross Island Bridge. Rapid bus service is expected to experience promising ridership levels.

Conclusions: Expanded transit service is an essential part of the Regional Transportation Plan's strategy for linking Southeast Portland neighborhoods to the Portland central city. In addition, this corridor connects Portland with rapidly developing areas of Clackamas County, and a detailed combination of transit service and improved management of the roadway system should be addressed as part of a corridor study and through Portland's transportation system plan. Ross Island bridgehead improvements should also be developed through a refinement study. See Chapter 6 for more detail on this corridor study recommended for this part of the region.

Highway 43 (Portland central city to Lake Oswego town center)

Improvements defined in the 2020 Preferred System for the Highway 43 corridor are focused on:

- maintaining an acceptable level of accessibility to the Portland central city from southwest Portland neighborhoods and Lake Oswego town center, and

- expanding traffic management and high-capacity transit strategies to better accommodate expected traffic growth in the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The Highway 43 corridor is expected to experience congestion during the evening two-hour peak period. No additional road capacity is proposed for this corridor due to topographic constraints. Frequent bus service is expected to experience promising ridership levels.

Conclusions: Expanded transit service is an important part of the Regional Transportation Plan's strategy for linking Southwest Portland neighborhoods and Lake Oswego town center to the Portland central city.

Due to the unique topographic constraints of this corridor, expanded transit service should be implemented in this corridor in conjunction with improved roadway system management. A refinement study of the potential for phasing future trolley commuter service from Lake Oswego to Portland central city and commuter rail service from Lake Oswego to Milwaukie is appropriate. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs in this corridor through 2020. See Chapter 6 for more detail on the refinement planning recommended for this corridor.

Barbur Boulevard (Portland central city to Highway 217)

Improvements defined in the 2020 Preferred System for the Barbur Boulevard corridor are focused on:

- maintaining an acceptable level of accessibility to the Portland central city from southwest Portland neighborhoods and Hillsdale and West Portland town centers,

- expanding traffic management and high-capacity transit strategies to better accommodate expected traffic growth in the corridor

- improving the pedestrian and streetscape character of Barbur Boulevard at selected locations

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Segments of Barbur Boulevard are expected to experience congestion, particularly just south of I-405. Rapid bus service along Barbur Boulevard and other expanded bus service in the corridor are expected to experience promising ridership levels.

Conclusions: The combination of proposed transit and system management strategies proposed for this corridor are adequate to meet projected travel needs through 2020 in this corridor. Actual implementation of high-capacity transit service in this corridor should be studied further as part of refinement planning. Proposed pedestrian and bicycle improvements serve expected transit, pedestrian and bicycle travel needs in this corridor through 2020. See Chapter 6 for more detail on the proposed corridor planning identified for I-5 south of the central city, which includes an evaluation of rapid bus service along Barbur Boulevard.

West Burnside Street (Portland central city to Barnes Road)

Improvements defined in the 2020 Preferred System for the West Burnside Street corridor are focused on:

- maintaining an acceptable level of accessibility to the Portland central city from Northwest Portland neighborhoods

- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor

- enhancing the pedestrian and transit environment east of Northwest 23rd Avenue to downtown Portland

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: West Burnside Street is expected to experience congestion during the evening two-hour peak period. Expanded bus service in the corridor is expected to experience promising ridership levels.

Conclusions: The combination of physical and topographic constraints along West Burnside Street, including the tunnel, require a combination of expanded transit service and better roadway system management to be implemented in this corridor to meet projected travel needs through 2020. Proposed pedestrian and bicycle improvements are expected to serve pedestrian and bicycle travel needs in this corridor through 2020.

Highway 30 (Portland central city to Cornelius Pass Road)

Improvements defined in the 2020 Preferred System for the Highway 30 corridor are focused on:

- maintaining an acceptable level of accessibility to the Portland central city from northwest Portland neighborhoods

- maintaining freight mobility between the Northwest industrial area and the Rivergate terminals

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Highway 30 is expected to experience congestion from the Portland central city to the St. Johns Bridge/Germantown Road as a result of traffic using this route to travel to destinations in Washington County and the Rivergate industrial area. The St. Johns Bridge is expected to experience congestion, limiting freight access between the Northwest industrial area and Rivergate terminals.

Conclusions: The combination of proposed transit and system management strategies proposed for this corridor meet projected travel needs through 2020 in this corridor. However, a long-term strategy to serve freight movement should be developed as part of refinement planning for a North Willamette River crossing study and the Portland transportation system plan. See Chapter 6 for more detail on refinement planning for this corridor.

East Burnside Street (Portland central city to Gateway regional center, including other routes parallel to I-84 such as Stark, Glisan and Halsey streets)

Improvements defined in the 2020 Preferred System for the East Burnside Street corridor are focused on:

- maintaining an acceptable level of accessibility to the Portland central city from Southeast Portland neighborhoods to the Gateway regional center and to the Portland central city

- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor.

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: This corridor is expected to experience some congestion during the evening two-hour peak period, possibly as a result of significant congestion on the Banfield Freeway. Frequent bus service along several east/west streets south of the Banfield Freeway is expected to experience high ridership.

Conclusions: Although light rail and expanded bus service on adjacent streets provide effective, reasonable alternatives to this primary route, expected travel local travel demand between Southeast Portland neighborhoods and the central city is not fully addressed by proposed improvements. The combination of proposed transit and system management strategies proposed for this corridor should be evaluated further as part of local transportation system plans. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs in this corridor through 2020.

Major Centers in the Portland Central City Subarea

Portland Central City

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. This area is well served by transit and conducive to bicycle and pedestrian travel. The Willamette River bridges are a key part of the transportation system, connecting the central city and adjacent neighborhoods to the region. Unfortunately, all the bridges have high maintenance and preservation needs. The hilly topography has constrained much of the transportation system in the Northwest and Southwest portions of the central city. The result is high traffic demand on streets such as Cornell Road, Burnside Street and Beaverton-Hillsdale Highway.

The Portland central city is designated as an area of special concern in Chapter 1 of this plan, therefore, improvements defined in the 2020 Preferred System for the Portland central city are focused on:

- achieving targets set for walking, biking, use of transit and shared ride
- improving street connectivity and supporting mixed-use development
- implementing parking ratios

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: The Portland central city has an excellent system of walkways and bikeways that connect the central city to surrounding neighborhoods. Proposed improvements address pedestrian travel deficiencies on the Willamette River bridges and major traffic streets such as West Burnside Street, Naito Parkway and the Grand Avenue/Martin Luther King Jr. Boulevard couplet. The proportion of trips made to and from downtown Portland by walking, bicycling, shared ride and transit represent 67 percent of all trips in this part of the region.

Conclusions: The Portland central city has been identified as an area of special concern. Congestion on the I-405 loop is not expected to limit accessibility to the central city during the evening two-hour peak period. Other arterial streets providing access to the central city operate within the level of service policy. The combination of proposed transit and system management strategies proposed for this corridor is expected to meet projected travel needs through 2020. Proposed pedestrian and bicycle improvements are expected to serve pedestrian and bicycle travel needs within the central city through 2020. Based on substitute performance measures identified in Chapter 6, the transportation system in this part of the region is adequate to serve planned land uses. See Appendix 3.1 for more detail on the substitute performance measures used to make this evaluation.

Union Station

Improvements defined in the 2020 Preferred System for the Union Station area are focused on:

- preserving access to and from Union Station by all modes of travel, including bus, light rail, passenger rail, motor vehicles, walking and bicycles
- further developing Union Station as an intermodal passenger terminal

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Union Station is currently a highly accessible intermodal facility, with passenger connections between public and private bus systems and passenger rail. Motor vehicle, pedestrian and bicycle access to the passenger terminal is also provided. Proposed transit improvements, such as expanded light rail and bus service and transit mall realignment, are expected to further improve transit access to the Union Station passenger terminal.

Conclusions: Existing and proposed transit service and other transportation improvements will provide exceptional, multi-modal access to the Union Station passenger intermodal facility.

Hollywood Town Center

Improvements defined in the 2020 Preferred System for the Hollywood town center are focused on:

- providing better bicycle and pedestrian connections to and within the town center
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the town center
- improving pedestrian access to transit along major transit corridors
- redesigning the diagonal street intersections along Sandy Boulevard to improve pedestrian crossing safety and motor vehicle traffic circulation

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Most radial access routes to the Hollywood town center are expected to function well and provide good motor vehicle access to the town center during the evening two-hour peak period, including Sandy Boulevard, 33rd and 47th avenues and Broadway Street. Halsey Street is expected to experience congestion during the evening two-hour peak period, which could limit bus and motor vehicle access to the Hollywood transit station during peak travel periods. Access to the town center from surrounding southeast Portland neighborhoods is potentially limited by predicted congestion along 39th Avenue during the evening two-hour peak period. No capacity improvements are recommended for 39th Avenue due to constraints presented by the existing built environment along the corridor. Transit ridership along 39th Avenue, connecting to the town center, is also expected to be strong. Bikeway improvements north and south of the town center and along Tillamook Street and Sandy Boulevard are expected to provide bikeway access to the town center from surrounding neighborhoods. Proposed north/south bikeway improvements parallel and east of 39th Avenue are expected to provide a "bypass" of busy intersections along Sandy Boulevard and 39th Avenue. Pedestrian improvements are proposed at a number of locations as part of the draft Hollywood Town Center Plan, addressing many difficult street crossings and sidewalk deficiencies.

Conclusions: Transportation recommendations adopted in the Hollywood Town Center Plan should be incorporated into the Regional Transportation Plan, as appropriate. Proposed transit improvements are particularly appropriate because few roadway projects are possible given the constraints of the built environment. Improved transit service along 39th Avenue should be implemented given the heavy travel demand and mix of land uses in this corridor. Proposed bikeway and pedestrian improvements will provide excellent access to the town center from surrounding neighborhoods. Bikeway and pedestrian improvements should address the difficult crossings and sub-standard pedestrian and bicycle facilities within the town center.

Lents Town Center

Improvements defined in the 2020 Preferred System for the Lents town center and vicinity are focused on:

- providing better bicycle and pedestrian connections to and within the town center
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the town center
- improving pedestrian access to transit along major transit corridors
- reducing the impact of truck traffic from I-205 and the impact of high motor vehicle volumes within the town center
- developing a strategy for the provision and management of adequate on-street parking to support commercial redevelopment

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Foster Road (Foster/Woodstock couplet within the town center) is a major barrier to north/south travel and circulation within the town center due to heavy motor vehicle volumes. Though roadway capacity improvements are not proposed here, the planned growth in the Pleasant Valley/Damascus urban reserve areas to the east require capacity improvements to Foster Road east of 122nd Avenue, thus affecting traffic volumes throughout the corridor. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies. The 82nd Avenue corridor is congested, affecting motor vehicle access to the town center from some nearby Southeast Portland neighborhoods.

Conclusions: The proposed strategy for Foster Road emphasizes an expanded transit network in combination with some capacity improvements and access management strategies to serve growing travel demand in this corridor. Foster Road is expected to be an attractive, important connection between the Damascus/Pleasant Valley area and employment areas in the I-205 corridor and Portland. As a result, future capacity improvements, access management strategies and high-capacity transit service are proposed for this corridor, connecting to the Lents town center and the Portland central city. However, environmental constraints limit future expansion of Foster Road east of 122nd Avenue. These proposed improvements would result in a change in functional classification of Foster Road east of 172nd Avenue, from major arterial to minor arterial to reflect an emphasis on more localized travel, with 172nd Avenue upgraded to major arterial to emphasize longer trips.

Within the town center the potential decoupling of Foster Road-Woodstock Street has been studied and rejected in favor of enhancements to the couplet – additional signalized crossings, wider sidewalks, widening to provide additional on-street parking and bike lanes. Proposed bicycle and pedestrian improvements address difficult street crossings and sidewalk/bikeway deficiencies within the town center. Though proposed system management strategies for 82nd Avenue may not fully address congestion during the peak periods, the proposed frequent bus service provides an appropriate alternative to driving. Local bus service, generally along SE 92nd Avenue, should be considered to directly link the town center and main street to surrounding neighborhoods, Clackamas Town Center, Portland Adventist hospital and Gateway regional center. This combination of system management and transit strategies is a reasonable alternative to capacity improvements that are limited by the topographic and built environment.

St. Johns Town Center

See page 3-33 for key findings and conclusions, reflecting analysis of the performance of the improvements defined for this part of the region.

Hillsdale Town Center

Improvements defined in the 2020 Preferred System for the Hillsdale town center and vicinity are focused on:

- providing better bicycle and pedestrian connections to and within the town center
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the town center
- improving pedestrian access to transit along major transit corridors
- redesigning the intersection of Beaverton-Hillsdale Highway, Capitol Highway and Bertha Boulevard to improve safety and access to the town center by all modes of travel

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Capitol Highway is expected to experience heavy traffic volumes between Barbur Boulevard and Beaverton-Hillsdale Highway, affecting circulation within the Hillsdale town center and creating difficult street crossings for pedestrians. Major streets, including Bertha Boulevard, Capitol Highway, Sunset Boulevard and Beaverton-Hillsdale Highway are generally not expected to be congested during the evening two-hour peak period.

Conclusions: Pedestrian improvements are proposed throughout the town center to address difficult street crossings and inadequate sidewalk facilities. Bikeways are proposed along several routes to address inadequate facilities and provide access from neighborhoods to the town center. A proposed intersection improvement at Bertha Boulevard/Capitol Highway/Beaverton-Hillsdale Highway will address safety and capacity deficiencies that currently exist.

West Portland Town Center

Improvements defined in the 2020 Preferred System for the West Portland town center are focused on:

- providing better bicycle and pedestrian connections to and within the town center
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the town center
- improving pedestrian access to transit along major transit corridors
- redesigning the intersection of Barbur Boulevard, Capitol Highway and Taylors Ferry Road to improve safety and access to the town center by all modes of travel
- investigating potential new southbound freeway access locations between the central city and the town center to relieve the concentration of this function at the existing Barbur/Capitol/Taylors Ferry interchange

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: The complex intersection at Capitol Highway, Barbur Boulevard is expected to create safety and congestion problems in the area, particularly during the evening two-hour peak period. A major problem is that the freeway interchange ramps are located in the center of the town center and that some physical or distance separation of the ramp facilities from the primary arterial intersection of the area is needed. Also, because this location is the first southbound ramp opportunity to I-5 south of the central city, it attracts an excessive amount traffic from southwest Portland and beyond. Much of the town center's vehicular capacity is expected to serve trips that are not destined for town center destinations. An additional southbound I-5 access location between the central city and the town center is expected to significantly relieve congestion at the Barbur Boulevard/Capitol Highway intersection. Bike access to the town center is currently poor, with narrow travel lanes on Capitol Highway and Taylors Ferry Road, and heavy traffic on Barbur Boulevard that acts as an impediment for both bicyclists and pedestrians. I-5 is a major barrier to circulation within the town center, particularly for pedestrians. Pedestrian access to the Barbur transit center is currently limited by heavy traffic volumes along Barbur Boulevard and an absence of pedestrian facilities connecting to the transit center. Proposed rapid bus on Barbur Boulevard shows heavy ridership potential.

Conclusions: A proposed study to examine long term southbound freeway access between the central city and the town center should address the conflicts of regional and local traffic at the Barbur Boulevard/Capitol Highway intersection. In addition, proposed pedestrian overcrossings will connect western neighborhoods to town center destinations, such as the Capitol Hill Library and area schools. In addition to pedestrian and bicycle connections, local street connections would be beneficial to local circulation within the town center and provide some traffic congestion relief. The presence of the transit center offers significant opportunity for attaining mode split goals for the town center, especially with the development of transit-supportive land uses and improved pedestrian access facilities. Boulevard treatment for Barbur will address bicycle and pedestrian design deficiencies along this heavily traveled route and improve pedestrian access to the Barbur Transit Center. Barbur rapid bus should be considered for early implementation as a strategy to address overall transit demand in the BarburBoulevard/I-5 corridor, and reduce the need for capacity improvements on Barbur Boulevard in the West Portland town center. See Chapter 6 for more detail on the proposed corridor planning identified for I-5 south of the central city.

Raleigh Hills Town Center

Improvements defined in the 2020 Preferred System for the Raleigh Hills town center and vicinity are focused on:

- providing better bicycle and pedestrian connections to and within the town center
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the town center
- improving pedestrian access to transit along major transit corridors
- redesigning the intersection of Beaverton-Hillsdale Highway, Scholls Ferry Road and Oleson Road to improve safety and access to the town center by all modes of travel

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: The Raleigh Hills town center is expected to be easily accessed by transit, with service connecting to neighborhoods in four directions. High traffic volumes on Beaverton-Hillsdale Highway, and the scale of this arterial creates a major bicycle and pedestrian barrier within the town center. Scholls Ferry Road is expected to experience congestion during the evening two-hour peak period, limiting motor vehicle access to the town center; physical constraints prevent major capacity expansion of this facility. Transit demand is expected to be strong along this route.

Conclusions: The proposed intersection redesign at Beaverton-Hillsdale Highway/Oleson Road/Scholls Ferry Road (as proposed in Raleigh Hills Town Center Plan) will improve circulation within the town center area and provide safer pedestrian crossings. Proposed bikeway and pedestrian improvements address difficult crossings, deficient bikeway and sidewalk facilities. Proposed transit and bikeway improvements along Scholls Ferry Road are expected to provide reasonable travel alternatives during congested peak periods.

Southeast Portland Neighborhoods

Improvements defined in the 2020 Preferred System for the southeast Portland neighborhoods and vicinity are focused on:

- providing better bicycle and pedestrian connections to the Portland central city
- expanding transit service and traffic management strategies to better accommodate expected traffic growth
- improving pedestrian access to transit along major transit corridors

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: This part of the region is characterized by an extensive grid network of arterial, collector and local streets with less capacity on the major streets when compared to other parts of the region. The regional model does not include the local street network, and, therefore, may be overestimating the demand for travel on the collector and arterial street network. As a result, many of the streets that connect to the central city experience congestion during the two-hour peak period, including Glisan, Burnside, Stark, Belmont, Hawthorne, Division, Powell, Holgate, Woodstock, 20th and 39th streets. This finding is supported by the Regional Connectivity Study conducted in 1997, which used an example from inner southeast Portland to examine the effects of local street connectivity on travel demand on the arterial street network. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, providing better bicycle and pedestrian connections to the central city and adjacent town centers. Expansion of transit service and implementation of traffic management strategies are proposed to better accommodate expected traffic growth on regional streets connecting to these neighborhoods. Other improvements are proposed to improve pedestrian access to transit along major transit corridors.

Conclusions: Proposed bikeway and pedestrian improvements address difficult crossings, deficient bikeway and sidewalk facilities. Proposed transit improvements along Glisan, Burnside, Stark, Belmont, Hawthorne, Division, Powell, Holgate, Woodstock, 20th and 39th streets are expected to provide reasonable travel alternatives during congested peak periods.
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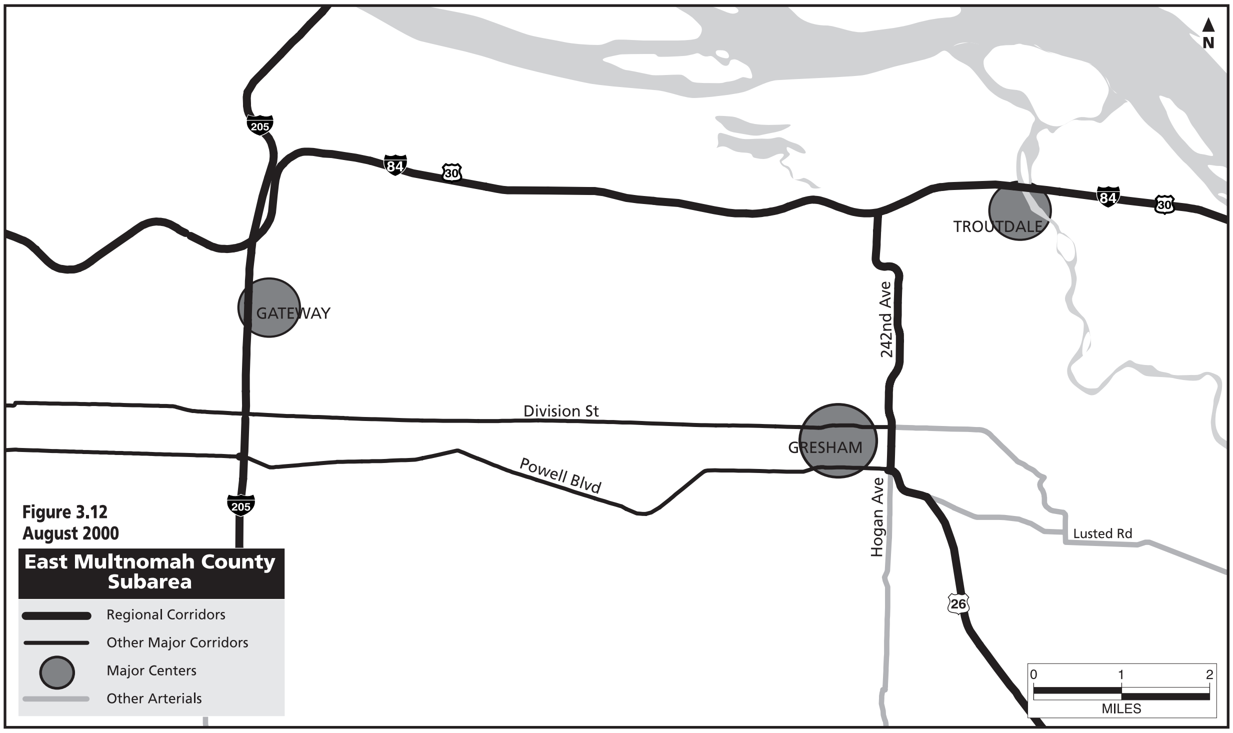
3.4.3 Subarea 3: East Multnomah County

This subarea stretches from Interstate 205 to the eastern urban growth boundary, and from urban Clackamas County to the Columbia River. The cities of Gresham, Troutdale, Fairview and Wood Village make up the east half of the subarea. The west half of the subarea falls within the city limits of Portland. The subarea includes the Gresham and Gateway regional centers, and Rockwood, Fairview/Wood Village and Troutdale town centers. The South Shore industrial area includes most of the area north of Interstate 84. Figure 3.12 shows a map of the East Multnomah County subarea.

Figure 3.12
East Multnomah County Subarea



Source: Metro

Regional Corridors in the East Multnomah County Subarea

Interstate 84 (I-205 to the urban growth boundary)

Improvements defined in the 2020 Preferred System for the Banfield Freeway are focused on:

- maintaining an acceptable level of accessibility to the Portland central city from Gateway regional center and other parts of East Multnomah County
- providing transit as an alternative to I-84
- mitigating infiltration on adjacent arterial streets due to congestion on I-84

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The Banfield Freeway is expected to experience congestion during the evening two-hour peak period as it approaches the Gateway regional center from the west. Light rail ridership is expected to be high, reflecting more frequent service in the corridor. Parallel bus service is expected to generate high ridership in the corridor. Parallel arterial streets entering the Gateway regional center from the west are expected to experience congestion during the evening two-hour peak period. The Banfield Freeway east of I-205 does not experience congestion during the evening two-hour peak period.

Conclusions: Proposed improvements to I-84 east of I-205 are adequate for addressing travel demand to the year 2020. However, congestion on parallel arterial streets, including Glisan, Burnside and Stark streets as they enter the Gateway regional center, is not adequately addressed by proposed improvements. Additional consideration of these and other congested parallel streets is needed as part of refinement planning for the Gateway regional center See Chapter 6 for more detail on proposed refinement planning for this part of the region.

Interstate 84 to US 26 Connector

Improvements defined in the 2020 Preferred System for the Mt. Hood Parkway corridor are focused on:

- interim improvements along the 242nd Avenue corridor for an eventual highway link between I-84 and US 26
- providing transit as an alternative to Hogan Road
- maintaining an acceptable level of accessibility to the Gresham regional center

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Hogan Road/242nd Avenue is predicted to perform well during the evening two-hour peak period with congestion limited to certain intersections.

Conclusions: The long-term need to develop a highway link between I-84 and US 26 exists, but proposed interim improvements to Hogan Road meet projected growth in travel demand through 2020. In addition to proposed improvements, local transportation system plans should consider more aggressive access management between Glisan Street and Powell Boulevard and redesigned intersection improvements at Stark Street, Division Street, Burnside Street and Powell Boulevard to stream-line traffic flow in the corridor.

Other Major Corridors in the East Multnomah County Subarea

Powell Boulevard (I-205 to Gresham regional center)

Improvements defined in the 2020 Preferred System for the Powell Boulevard corridor are focused on:

- maintaining an acceptable level of accessibility to the Gresham regional center
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- improving pedestrian access to transit along the corridor
- providing access to the major growth area of Pleasant Valley/Damascus

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Powell Boulevard is expected to experience congestion during the evening two-hour peak period from the Portland central city to just north of the Pleasant Valley and Damascus urban reserve areas, despite widening to five lanes east of I-205. Capacity improvements for this corridor reflect a strategy to carry longer trips east of I-205 on Powell Boulevard rather than on Division Street to the north or Foster Road to the south. As such, Powell Boulevard is planned as the primary connection to Gresham regional center from the west, with a five-lane capacity improvement from I-205 to Gresham and an emphasis on access management. Frequent bus service is expected to generate high ridership. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Heavy travel demand exists in this corridor in part due to planned growth in the Pleasant Valley and Damascus urban reserve areas. As capacity is added to this corridor, local access should be carefully managed to adequately serve the demand for this route to serve longer trips. Proposed pedestrian and bicycle improvements are adequate to serve expected pedestrian and bicycle travel needs in this area through 2020.

Division Street (I-205 to Gresham regional center)

Improvements defined in the 2020 Preferred System for the Division Street corridor are focused on:

- maintaining an acceptable level of accessibility to the Gresham regional center for shorter trips
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- improving pedestrian access to transit along the corridor, particularly in key main street locations

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Division Street is expected to experience congestion during the evening two-hour peak period from the Portland central city to just north of the Pleasant Valley and Damascus urban reserve areas, reflecting expected growth in east Multnomah County and the urban reserve areas south of Gresham.

Conclusions: In tandem with the upgrade in classification to Powell Boulevard, the classification of Division Street east of 82nd Avenue is be dropped from a major arterial classification to minor arterial, reflecting an increased emphasis on serving more localized travel demand. No capacity changes are assumed for Division Street, but the changed emphasis would require fewer access management efforts in the future and is more compatible with planned land uses in the Division Street corridor.

Major Centers in the East Multnomah County Subarea

Gresham Regional Center

Improvements defined in the 2020 Preferred System for the Gresham regional center are focused on:

- preserving access to and from the regional center by all modes of travel
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the regional center
- improving multi-modal design of major streets that enter the regional center, including Stark Street, Burnside Street, Division Street and 181st Avenue
- emphasizing better bicycle and pedestrian connections and improved pedestrian access to transit

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Gresham regional center is expected to remain accessible from all directions during the evening two-hour peak period, although some congestion exists along the 223rd and 242nd corridors north of the regional center. Light rail performs well as does frequent bus service along Division Street. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Proposed improvements are expected to meet expected growth in travel demand to the year 2020. This supports an emphasis on multi-modal retrofits of major routes in the vicinity of the regional center and system and demand management strategies to manage traffic speed and volumes. Proposed pedestrian and bicycle improvements serve expected travel needs in this area through 2020.

Gateway Regional Center

Gateway regional center has been identified as an area of special concern in Chapter 1 of this plan, therefore, improvements defined in the 2020 Preferred System for the Gateway regional center are focused on:

- defining new access routes serving the regional center that move regional traffic from the center of the regional center to the periphery
- creating a fine-grained network of local streets that meet regional connectivity standards
- optimizing traffic flow within the regional center by coordinating the operation of all traffic control devices serving the regional center
- creating a transit service plan, that maximizes the use of transit to access the regional center
- creating design standards for local and regional streets within the district to address the unique travel needs of bicyclists and pedestrians
- constructing additional pedestrian and bicycle facilities

- examining the role of park-and-ride as a means of accessing light rail

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Much of the congestion in the Gateway regional center is a function of regional traffic passing through the regional center to reach the freeway system. Most of the travel on 102nd Avenue is local, and would benefit from a finer grain of local streets that could provide alternate routes. The impact of the park-and-ride facility at Gateway is perceived to have a much greater impact on the regional center than can be established from empirical measures. The regional center is deficient in bicycle and pedestrian facilities.

Conclusions: Except at a few intersection locations and along Glisan Street between I-205 and NE 102nd Avenue, proposed improvements are adequate to meet expected growth in travel demand in the primary corridors to the year 2020. To the extent possible every effort should be made to route this heavy regional traffic volume outside of the regional center. Other means must be developed to access the light rail service in addition to park & ride facilities. Mobility with should be enhanced within the District by creating better network of local streets. Transit serving the District should be enhanced and expanded. The bicycle and pedestrian network within the District must be expanded to provide greater opportunities for these modes of travel.

Major Industrial Areas in the East Multnomah County Subarea

East Columbia Corridor Industrial Area

Improvements defined in the 2020 Preferred System for the east Columbia Corridor industrial area are focused on:

- improving freight access to Portland international Airport and intermodal facilities in the west Columbia Corridor

- improving substandard rail overcrossings that limit freight mobility on north/south arterial streets in the area

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: East Columbia Corridor industrial area facilities are expected to continue to be accessible during the evening two-hour peak period via Marine Drive, Sandy Boulevard and north/south arterial streets that connect to I-84. Airport Way is predicted to experience some congestion during the evening two-hour peak period.

Conclusions: Proposed improvements provide access to east Columbia Corridor industrial area, Portland International Airport and Troutdale Airport during the 20-year plan period.

Other Centers in the East Multnomah County Subarea

Troutdale, Fairview/Wood Village and Rockwood Town Centers

Improvements defined in the Preferred System for the Troutdale, Fairview/Wood Village and Rockwood Town Centers are focused on:

- maintaining access to the town centers from surrounding areas, especially the growing employment area to the north

- increasing safety and accessibility for transit, pedestrians and bicyclists to and within the town centers

Findings: The Troutdale, Fairview/Wood Village and Rockwood town centers are expected to remain accessible from all directions during the evening two-hour peak period, although some congestion exists along the 223rd and 242nd corridors south of the town centers. Bus service on Sandy, Halsey and 242nd is expected to perform well in the town centers. Bus service on Glisan Street to the Rockwood town center has less success due to competition with parallel transit service on MAX. Pedestrian and bicycle improvements will emphasize completion of planned bicycle/pedestrian networks and safe access to transit.

Conclusions: Proposed improvements are expected to meet expected growth in travel demand to the year 2020.

3.4.4 Subarea 4: Damascus/Pleasant Valley

The Damascus subarea includes portions of rural Clackamas County south of Gresham and east of the existing urban growth boundary. The subarea includes Pleasant Valley and Damascus town centers and adjacent urban reserves.

Metro received a planning grant from the Federal Highways Administration that focuses on identifying the future transportation and land-use needs of the Damascus/Pleasant Valley urban reserves while addressing the impacts of urbanization on local communities and the environment. Metro will work in partnership with Gresham, Portland, Happy Valley, Clackamas County, the Johnson Creek Watershed Council and the community to develop the plan. Issues to be addressed include:

- developing a future transportation system for all types of travel that serves the community, provides good access to the rest of the region and avoids impacts to the environment

- planning for local services, such as grocery stores and medical facilities, to meet the needs of residents

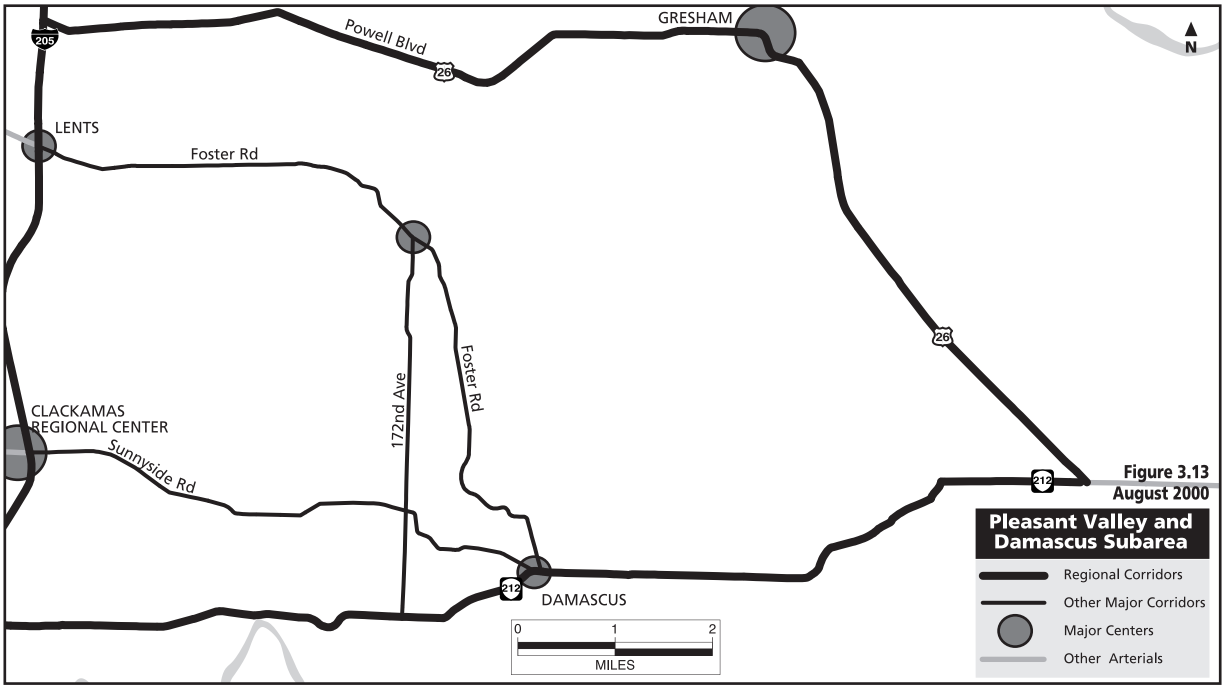
- providing for a range of housing types and prices

- preserving and enhancing streams and wetlands to prevent pollution and downstream flooding

- protecting open spaces and planning for public access to them

Figure 3.13 shows a map of the Pleasant Valley/Damascus subarea.

Figure 3.13
Pleasant Valley/Damascus Subarea



Source: Metro

Regional Corridors in the Pleasant Valley/Damascus Subarea

Sunrise Corridor (I-205 to US 26)

Improvements defined in the 2020 Preferred System for the Sunrise Corridor are focused on:

- developing a new highway link between I-205 and US 26 at Ashley's Village in phases along the Highway 212 corridor

- timing phases to reinforce development of Damascus/Pleasant Valley urban reserves and protect adjacent rural reserves from urban traffic impacts

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The Sunrise Corridor draft environmental impact statement design (southern alignment) used in RTP modeling is based on a 2005 plan year, and is not expected to adequately address travel needs and land use patterns through 2020 in this part of the region. The segment of the new facility along the existing Highway 212 alignment, from 122nd Avenue to Rock Creek, is predicted to experience congestion during the evening two-hour peak period, limiting access to Clackamas industrial area. This bottleneck may also limit accessibility to the east by effectively metering the traffic flow. Consequently, the Sunrise Corridor is expected to operate at a very high level of service east of this congested section.

Conclusions: Proposed capacity of the Sunrise Corridor is adequate to meet expected travel demand in the developing Pleasant Valley/Damascus urban reserve areas. Although a draft environmental impact statement has been prepared for this corridor, the final environmental impact statement should be refined to consider express, toll, peak period pricing or HOV lanes as phases of the Sunrise Corridor are constructed. In addition, the FEIS should address congestion limiting access to the Clackamas industrial area, including consideration of separating the Sunrise Corridor from Highway 212 altogether, which would allow Highway 212 to function as a parallel arterial route. Access locations and configurations should be reviewed as part of the FEIS process to best enhance development of the urban reserve areas and protect adjacent rural reserves. The FEIS should also consider purchase of right-of-way only for sections east of Rock Creek, and phase construction of these segments after development of the Damascus town center. The TCSP urban reserve planning project should emphasize east/west improvements on parallel routes in the Sunnyside/Sunrise Corridor corridor. See Chapter 6 for more detail on refinement planning recommended for this corridor.

Other Major Corridors in the Pleasant Valley/Damascus Subarea

Sunnyside Road (Clackamas regional center to Damascus town center)

Improvements defined in the 2020 Preferred System for the Sunnyside Road corridor are focused on:

- maintaining an acceptable level of accessibility to the Clackamas regional center from the Damascus town center and surrounding neighborhoods
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- improving pedestrian access to transit along the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Sunnyside Road is expected to experience congestion in several "bottleneck" areas, such as from Sunnybrook Road to 122nd Avenue, during the evening two-hour peak period. This segment of Sunnyside Road lacks alternative parallel routes to relieve the bottleneck. Frequent bus service on Sunnyside Road, from Damascus town center to Clackamas regional center, is expected to experience good ridership.

Conclusions: Recommended transit and street improvements meet much of the expected travel demand in this corridor. However, capacity improvements on Sunnyside Road should be completed in tandem with system management strategies and parallel route improvements identified in the Clackamas County transportation system plan. General connectivity on local streets; potential parallel route improvements and system management strategies should be explored through the Transportation and Community System Preservation (TCSP) urban reserve planning project along the eastern portions of Sunnyside Road. Frequent bus service on Sunnyside Road provides a reasonable alternative to the congested roadway during peak travel periods, and warrants early implementation as community or regional bus service in the corridor. This interim bus service should be expanded to frequent bus service as the Sunnyside Road corridor and Damascus town center develop.

172nd Avenue (Foster Road to Sunnyside Road)

Improvements defined in the 2020 Preferred System for the 172nd Avenue corridor are focused on:

- maintaining an acceptable level of accessibility to the Damascus town center

- expanding transit service to better accommodate expected traffic growth in the corridor

- connecting to 182nd Avenue via 190th Avenue and Highland Drive to create a major north-south spine to focus development in the Pleasant Valley/Damascus area and provide a through-route from I-84 to the Sunrise Corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: 172nd Avenue is expected to experience congestion due to heavy traffic volumes during the evening two-hour peak period. Regional bus service between Clackamas regional center and Gresham regional center, via 172nd Avenue and Pleasant Valley town center is expected to generate high ridership.

Conclusions: The conceptual network of supporting streets in the 172nd Avenue corridor resulted in congestion on 172nd Avenue. 172nd Avenue capacity improvement should be accompanied by appropriate access management strategies to ensure mobility for longer trips, consistent with the facility's Major Arterial functional classification. Further, the Pleasant Valley future street plan will be developed as part of Damascus TCSP study, and should focus on providing parallel routes to 172nd Avenue. More direct regional bus service linking Gresham, Pleasant Valley and Clackamas should be considered along the Sunnyside Road/172nd Avenue/Towle Road/Eastman Parkway alignment.

Foster Road (Lents town center to Damascus town center)

Improvements defined in the 2020 Preferred System for the Foster Road corridor are focused on:

- maintaining an acceptable level of accessibility from the developing Pleasant Valley and Damascus town centers to employment areas along the Foster Road/Powell Boulevard corridor and the central city

- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor

- improving pedestrian access to transit along the corridor

- constraining traffic demand due to topographic and environmental constraints

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The Powell Boulevard/Foster Road corridor is expected to emerge as a major travel corridor due to expected growth in Clackamas County and the Pleasant Valley/Damascus urban reserves. The portions of Powell Boulevard/Foster Road corridor leading to this area are expected to experience congestion during the evening two-hour peak period, including parallel arterial streets. Rapid bus ridership is expected to generate good ridership. The Pleasant Valley and Damascus town centers are expected to be accessible by motor vehicle and transit via the future street network developed as part of the master planning process. No specific bicycle or pedestrian improvements were identified for RTP analysis; the master planning process should also address these needs.

Conclusions: Recommended transit and street improvements meet much of the expected travel demand in this corridor. However, capacity improvements on Foster Road should be completed in tandem with system management strategies and parallel route improvements identified in the Portland and Clackamas County transportation system plans and a corridor study identified for this corridor. General connectivity on local streets; potential parallel route improvements and system management strategies should be explored through the TCSP urban reserve planning project along the southeastern portions of Foster Road. Foster Road rapid bus service provides a reasonable alternative to the congested roadway during peak travel periods, and warrants early implementation as community or regional bus service in the corridor. This interim bus service should be expanded to frequent bus service as the Foster Road corridor and Damascus town center develop. See Chapter 6 for more on the corridor study recommended for this part of the region.

Damascus and Pleasant Valley Town Centers

Improvements defined in the 2020 Preferred System for the Damascus and Pleasant Valley town centers are focused on:

- developing a conceptual network of arterial and collector streets adequate to serve planned growth in the Pleasant Valley and Damascus urban reserve areas, while protecting environmentally sensitive areas and adjacent rural reserves from the impacts of urban traffic

- expanding transit service to better accommodate expected traffic growth

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this part of the region.

Findings: The Pleasant Valley and Damascus town centers are expected to be accessible by motor vehicle and transit via a conceptual street network modeled for the 1999 RTP update; however this network experienced congestion based on RTP analysis. No specific bicycle or pedestrian improvements were identified. Master street planning is needed to ensure that critical arterial and collector street connections occur as part of urbanization in this area.

Conclusions: Development of a future street plan for this area should focus on access to the town centers from surrounding areas by all modes of travel. The future street plan to be developed as part of the TCSP project should be for the entire urban reserve area, and anticipate incremental construction of this system as development warrants. See Chapter 6 for more detail on the TCSP project for this part of the region.

Rural Reserve Areas Outside the Pleasant Valley/Damascus Subarea

Improvements defined in the 2020 Preferred System for the rural reserve areas are focused on:

- protecting environmentally sensitive areas and adjacent rural reserves from the impacts of urban traffic

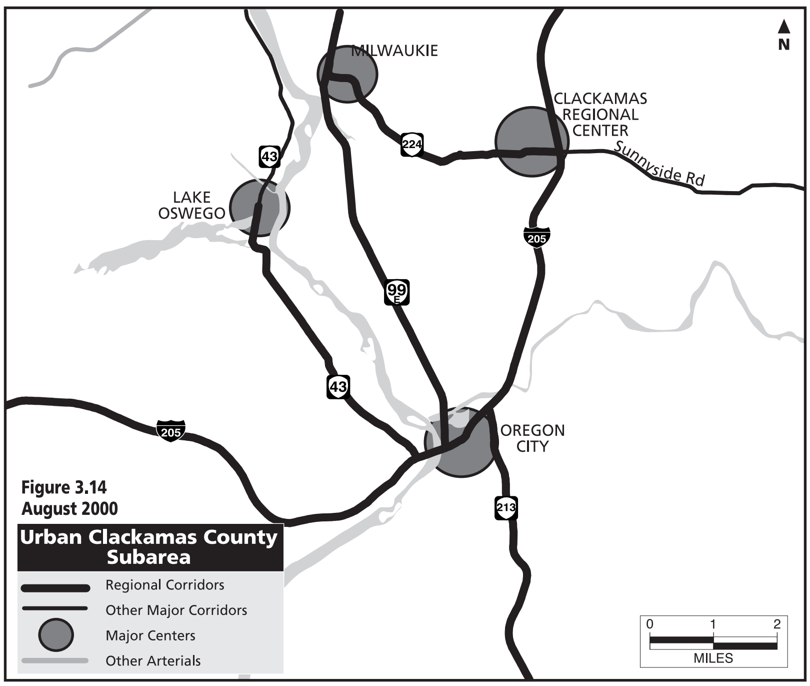
Findings: The proposed Sunrise Corridor offers opportunities to create a "hard edge" to the urban area where the southern alignment skirts the Damascus urban reserves. Congestion is expected to occur on 242nd Avenue, between the proposed Sunrise Corridor and Gresham regional center, during the evening two-hour peak period.

Conclusions: The final environmental impact statement for the Sunrise Corridor should examine opportunities to design the highway as a "hard edge" facility and reconsider the appropriateness of a full interchange at 242nd Avenue, possibly limiting 242nd Avenue access to parallel "old" Highway 212 arterial. Findings and conclusions on performance of the Sunrise Corridor are described on page 3-45. The TCSP planning process should address Scouter's Mountain "island," using the future street plan to define "edges" of this rural reserve. See Chapter 6 for more detail on refinement planning recommended for the Sunrise Corridor and the TCSP planning process.

3.4.5 Subarea 5: Urban Clackamas County

This subarea includes Clackamas County within the urban growth boundary, stretching from the cities along the Willamette River east to Happy Valley, and the northern county boundary to the southern urban growth boundary, east of the Willamette River. The subarea includes Milwaukie, Clackamas and Oregon City regional centers, and Lake Oswego, West Linn, Johnson City, Gladstone and Happy Valley town centers. The Clackamas industrial area and the Beavercreek urban reserve are also located in this subarea. Figure 3.14 shows a map of the urban Clackamas County subarea.

Figure 3.14
Urban Clackamas County Subarea



Source: Metro

Regional Corridors in the urban Clackamas County Subarea

Interstate 205 South (Oregon City to I-5)

Improvements defined in the 2020 Preferred System for the I-205 south corridor are focused on:

- maintaining regional mobility for regional trips during peak travel periods
- maintaining off-peak freight mobility
- maintaining an acceptable level of access to Oregon City regional center

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: This corridor is expected to experience congestion during evening two-hour peak period despite widening to six through-lanes from West Linn to I-5. Cut line results show that trips that travel through this corridor are dispersed to destinations throughout the region. Rapid bus service between Oregon City and Tigard is expected to experience low ridership levels despite good quality, frequent service. Topographic constraints and the urban growth boundary limit parallel route improvements.

Conclusions: Improvements are needed in this corridor to address existing deficiencies and expected growth in travel demand. Low transit ridership in this heavily traveled corridor points to the difficulty of serving the corridor with fixed transit due to the dispersed nature of trips in this corridor. A detailed corridor study should evaluate the potential of express, peak period pricing or HOV lanes as a strategy for expanding capacity. See Chapter 6 for more detail on the corridor study recommended for I-205.

Interstate 205 Middle (Oregon City to I-84)

Improvements defined in the 2020 Preferred System for the I-205 south corridor are focused on:

- maintaining regional mobility for regional trips during peak travel periods through ramp, overcrossing and parallel route improvements
- preserving freight mobility from I-5 to Clark County, with an emphasis on connections to Highway 213, Highway 224 and the Sunrise Corridor
- maintaining an acceptable level of access to the Clackamas and Gateway regional centers

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Additional express lanes in each direction would perform well, preserving freight movement in the corridor. Cut line results show that trips that travel through this corridor are dispersed to destinations throughout the region. Rapid bus service is not expected to perform well; ridership is similar to the I-205 south segment.

Conclusions: Improvements are needed in this corridor to address existing deficiencies and expected growth in travel demand. Low transit ridership in this heavily traveled corridor points to the difficulty of serving the corridor with fixed transit due to the dispersed nature of trips in this corridor. A detailed corridor study should evaluate the potential of express, peak period pricing or HOV lanes as a strategy for expanding capacity. See Chapter 6 for more detail on the corridor study recommended for I-205.

Highway 224 (Milwaukie to Clackamas regional center)

Improvements defined in the 2020 Preferred System for the Highway 224 corridor are focused on:

- preserving access between Milwaukie and the Clackamas regional center
- limiting the impact of through traffic on adjacent residential areas
- maintaining regional mobility along the corridor, including providing a transit alternative to Highway 224
- providing a better connection between Highway 99E and Highway 224 at Milwaukie

- providing improved transit access to Milwaukie and Clackamas regional centers

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Highway 224 is expected to experience congestion during the evening two-hour peak period from Highway 99E in Milwaukie to I-205 despite widening to six through-lanes, aggressive access management, including grade separated intersections, and expanded transit service that includes light rail transit to Clackamas regional center. Congestion is also expected on 17th Avenue and Tacoma Street, reflecting spillover traffic from Highway 99E/224.

Conclusions: A more detailed evaluation of the timing and scope of proposed improvements, including light rail to Clackamas regional center, is needed to address heavy travel demand in this corridor. Metro is currently leading the South Corridor Transportation Alternatives Study to consider transportation alternatives in this corridor to define an interim solution for addressing travel demand in this corridor. The study was established to address the above factors as well as in response to the defeat of the November 1998 ballot measure that would have reaffirmed local funding for the South/North light rail project. The study is organized into segment-specific corridor teams based on specific study segments, allowing for solutions that are tailored to the needs of each segment. The transportation strategies for each segment will be integrated into a single transportation strategy for the entire corridor, including 99E from the Portland central city to Highway 224 in Milwaukie. Local transportation system plans should monitor local collector routes and mitigate spillover effect from congestion on Highway 99E and Highway 224. See Chapter 6 for more detail on the corridor study recommended for Highway 99E/224.

Highway 99E (Milwaukie to Oregon City)

Improvements defined in the 2020 Preferred System for the Highway 99E corridor are focused on:

- maintaining an acceptable level of access to the Oregon City regional center
- supporting the redevelopment of Milwaukie town center
- reducing through-traffic to allow 99E to better serve local needs

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Light rail service in this corridor is expected to generate ridership comparable to end of line on westside and airport light rail, and to rapid bus ridership on Highway 43.

Conclusions: Light rail transit is an appropriate strategy for this corridor as long as Oregon City remains a regional center in the future. Further consideration of McLoughlin Boulevard and I-205 access routes to Oregon City is warranted. Local transportation system plans should monitor local collector routes and mitigate spillover effect from congestion on Highway 99E and Highway 224.

Highway 213 (Oregon City to the urban growth boundary)

Improvements defined in the 2020 Preferred System for the Highway 213 corridor are focused on:

- improving the highway link between I-205 and the Willamette Valley in phases

- addressing development of the Oregon City regional center and expected freight mobility demands

- addressing access needs of Beavercreek urban reserves

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The I-205/Highway 213 interchange and Highway 213 south of Oregon City are expected to experience congestion during the evening two-hour peak period despite capacity and intersection improvements from I-205 to Washington Street and Beavercreek Road to Leland Road. Expanded transit service is not currently proposed for this corridor. Further investigation of transit service in this corridor may occur as part of the current South Corridor Transportation Alternatives Study, or as a part of future studies in this area. New facilities parallel to Highway 213 would also be difficult to construct due to topographic and environmental constraints.

Conclusions: Revisit suitability of Beavercreek urban reserves in light of constraints that limit serving this area by improvements to existing routes. This review should be done in conjunction with comprehensive plan amendments proposed for the landfill site at Highway 213 and Abernethy Road. A more detailed evaluation of Highway 213 congestion should be included in I-205 corridor study. Implement the strategies identified in the Highway 213 corridor study following refinement based on urban reserve and landfill redevelopment decisions. See Chapter 6 for more detail on refinement planning recommended for this corridor.

Highway 43 (Lake Oswego to Oregon City)

Improvements defined in the 2020 Preferred System for the Highway 43 corridor are focused on:

- maintaining an acceptable level of accessibility to the central city, Lake Oswego and West Linn town centers and Oregon City regional center from adjacent neighborhoods

- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor

- improving pedestrian access to transit along the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The Highway 43 corridor is expected to experience congestion during the evening two-hour peak period. No additional road capacity is proposed for this corridor due to topographic, environmental and neighborhood constraints. Frequent bus service is expected to generate good ridership. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Heavy travel demand exists in this corridor, however, physical and environmental constraints preclude major roadway expansion. Therefore, expanded transit service should be implemented in conjunction with improved roadway system management. A long-term traffic management plan should also be developed for this corridor. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs in this area through 2020. See Chapter 6 for more detail on refinement planning recommended for this corridor.

Major Centers in the urban Clackamas County Subarea

Clackamas regional center

Improvements defined in the 2020 Preferred System for the Clackamas regional center are focused on:
- preserving access to and from the regional center by all modes of travel
- improving multi-modal design of major streets that define the regional center, including Sunnyside Road, 82nd Avenue and Fuller Road
- emphasizing more street connectivity, better bicycle and pedestrian connections and improved pedestrian access to transit
- expanding transit service and traffic management strategies to better accommodate expected growth in the regional center

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Sunnyside Road and 82nd Avenue within the regional center are expected to experience congestion which could significantly impact development of the regional center by limiting access from the surrounding trade area. Expanded transit service along Sunnyside Road is expected to generate good ridership. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: New street connections and capacity improvements to streets parallel to 82nd Avenue and Sunnyside Road help improve local circulation. Evaluate ITS or other system and demand management strategies as part of the Clackamas County transportation system plan. Proposed improvements also provide good east/west transit connectivity and good bicycle and pedestrian access with bike lanes and pedestrian improvements on Sunnyside Road, 82nd Avenue, Fuller Road and other streets within the regional center. Sunnyside Road frequent bus service is a necessary component of the region's strategy for maintaining access to the regional center. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs in this area through 2020.

Oregon City regional center

Improvements defined in the 2020 Preferred System for the Oregon City regional center are focused on:

- preserving access to and from the regional center by all modes of travel

- improving multi-modal design of major streets that define the regional center, including McLoughlin Boulevard, Washington Street and 7th Street

- emphasizing better bicycle and pedestrian connections and improved pedestrian access to transit.

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: I-205 is expected to experience congestion west of Oregon City despite capacity improvements and rapid bus service during the evening two-hour peak period. In addition, sections of Highway 99E near the I-205 bridges are also expected to be very congested. Proposed rapid bus service connecting to Clackamas regional center will generate marginal ridership. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Proposed improvements do not adequately maintain access to the Oregon City regional center. In particular, local circulation within and access to the Oregon City regional center is limited by a combination of congestion on I-205, Highway 213, McLoughlin Boulevard, Washington Street and South End Street. The Oregon City transportation system plan should address this congestion in conjunction with proposed corridor studies that will focus on I-205 and Highway 213 and developing strategies for meeting future travel demand in this part of the region. Urban reserve areas to the south of Oregon City are also impacting access to the regional center as planned growth in these areas cannot be adequately served by proposed improvements to Highway 213. Land uses within the urban reserve and the Oregon City landfill site should be evaluated together in order to adequately evaluate impacts and site transportation improvements. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs in this area through 2020.

Lake Oswego town center

Improvements defined in the 2020 Preferred System for the Lake Oswego town center are focused on:

- preserving access to and from the town center by all modes of travel

- improving multi-modal design of major streets that define the town center, including Macadam Avenue, State Street and A Street

- emphasizing better bicycle and pedestrian connections and improved pedestrian access to transit

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Congestion on Highway 43 is expected to impact north and south access to the town center during the evening two-hour peak period. The Stafford Basin urban reserve areas south of the town center are expected to contribute to this congestion, in part due to the lack of connecting streets in this part of the region. The limited network also is expected to be impacted by spillover traffic from I-205 during the two-peak period. Proposed transit service to the town center is north/south oriented. Highway 43 is a barrier between the town center and the Willamette River. Access to the town center from I-5 is constrained by congestion on Kruse Way and Boones Ferry Road during the evening two-hour peak periods. Boulevard retrofits of major streets and bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Upgrade bicycle and pedestrian connectivity in the area surrounding the town center. System management improvements are necessary on Highway 43. Consider system management to manage congestion along Boones Ferry/Kruse Way route to the town center. Conduct a refinement plan to examine rail transit opportunities in the area, including the Macadam/Highway 43 corridor to Portland and existing rail connections to Milwaukie and Tualatin. Consider a transportation management association to address congestion along the Kruse Way/Boones Ferry corridor. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs in this area through 2020. See Chapter 6 for more detail on recommended refinement planning for the Highway 43/Macadam Avenue corridor. In general, the Stafford Basin urban reserves are expected to be more difficult to serve with transportation, particularly absorbing additional traffic from these urban reserves on adjacent transportation facilities, particularly Highway 43. Future urban reserve planning should consider potential transportation solutions to address the impact of this traffic as these areas urbanize.

Milwaukie Town Center

Improvements defined in the 2020 Preferred System for the Milwaukie town center are focused on:

- preserving access to and from the town center by all modes of travel
- improving multi-modal design of major streets that define the town center, including McLoughlin Boulevard, Johnson Creek Boulevard and Lake Road
- emphasizing better bicycle and pedestrian connections and improved pedestrian access to transit

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Highway 99E and Highway 224 within the town center are expected to experience congestion during the evening two-hour peak period. Access from the neighborhoods is expected to be good. Proposed transit service is oriented toward light rail transit in the long-term with rapid bus service along Highway 99E and Highway 224 from Portland central city to Clackamas regional center until light rail service can be provided. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: The Milwaukie transportation system plan should address congestion along 17th Avenue and identify improvements needed to link the Sellwood area to the Milwaukie town center to serve more locally oriented trips and discourage access to the Sellwood Bridge, as well as access to the town center via Highway 212/224. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs in this area through 2020. See Chapter 6 for more detail on recommended corridor planning for the Highway 99E/224 corridor.

Clackamas industrial area

Improvements defined in the 2020 Preferred System for the Clackamas industrial area are focused on:

- improving access from the industrial area to Portland International Airport and other intermodal facilities in the Columbia Corridor

- maintaining freight mobility within the industrial area along the Sunrise Corridor and Highway 224

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

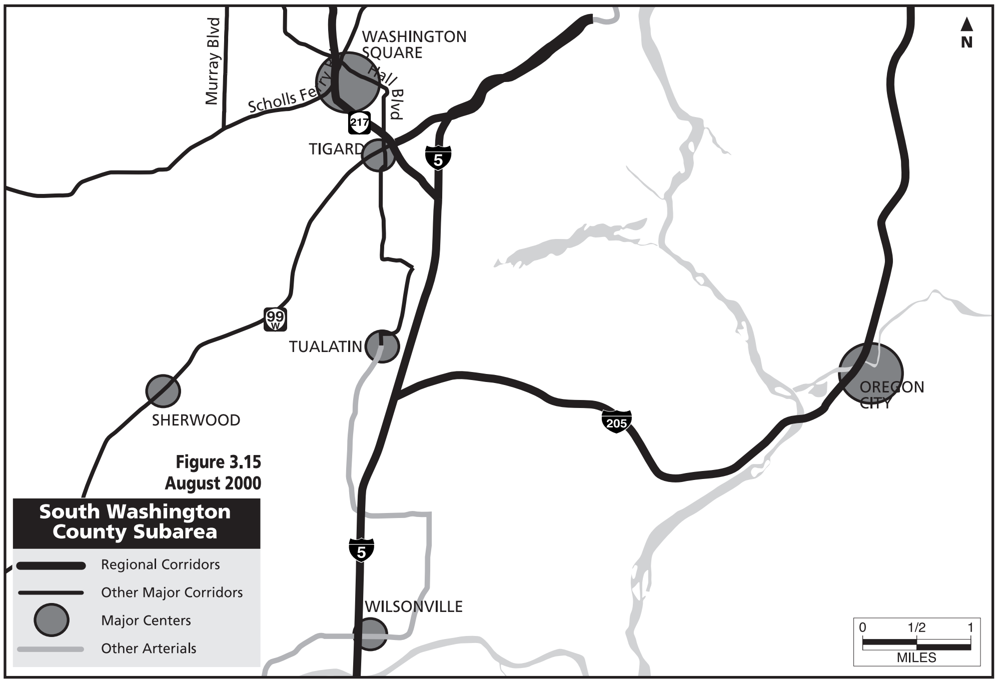
Findings: The Sunrise Corridor is expected to experience congestion during the evening two-hour peak period between 122nd Avenue and the Rock Creek interchange. Jennifer Street and portions of 82nd Drive also are expected to experience congestion during the evening two-hour peak period.

Conclusions: Proposed improvements do not maintain adequate access to the Clackamas industrial area due to congestion on the Sunrise Corridor north of the industrial area and Jennifer Street within the industrial area. Final phasing and alignment of Sunrise Corridor should address the impacts of congestion on the industrial area and consider HOV lanes or peak period pricing to better utilize added capacity for freight movement. Implementation of a transportation management association or other system and demand management strategies should also be considered to better accommodate travel demand the area.

3.4.6 Subarea 6: South Washington County

This subarea stretches from Washington Square south to the city of Wilsonville and from the Willamette River to the southwestern urban growth boundary line. The subarea includes Washington Square regional center and Durham, Tigard, King City, Lake Grove, Murray Hill, Rivergrove, Tualatin, Sherwood and Wilsonville town centers. The Tualatin industrial area and the urban reserves south of Tualatin, south of Sherwood, adjacent to Wilsonville and in the Stafford Basin are also located in this subarea. Figure 3.15 shows a map of the South Washington County subarea.

Figure 3.15
South Washington County Subarea



Source: Metro

Regional Corridors in the South Washington County Subarea

Interstate 5 South (Highway 217 to the Willamette River)

Improvements defined in the 2020 Preferred System for the I-5 south corridor are focused on:

- preserving access to and from I-205 and Highway 217, and to Washington Square regional center
- maintaining off-peak freight mobility
- defining a long-term strategy for managing increased travel demand along I-5 in the Willamette Valley

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The I-5 south corridor is expected to experience congestion during the evening two-hour peak period, particularly from Highway 217 to the Willamette River. This congestion occurs despite expanded transit service in combination with system management strategies and capacity improvements on parallel routes such as Hall Boulevard, 72nd Avenue and Boones Ferry Road. A large percentage of traffic in this corridor is expected to either originate from or be destined to points south of the region. In addition, traffic volumes are expected to be high on parallel routes. Rapid bus service on Hall Boulevard between Tualatin and Tigard is expected to generate good ridership.

Conclusions: Proposed capacity and transit improvements to parallel arterial routes will not adequately address congestion along I-5 south during the evening two-hour peak period. However, without these improvements, traffic congestion on I-5 would be worse. It will be important to conduct a more detailed I-5 south corridor study to better identify future travel demand from outside the region and the effects of this congestion on regional freight mobility. ODOT's Willamette Valley model and the Willamette Valley Livability Forum will help future analysis of this issue. The study should also consider high-capacity transit and demand management solutions. Overall, commuter rail is expected to be an important part of the modal mix of improvements for this part of the region because it offers separate right-of-way for transit service in a corridor that is expected to experience congestion during the morning and evening two-hour peak period. Support of inter-city transit service to the extent that it benefits the I-5 corridor will also be important. See Chapter 6 for more detail on the recommended corridor planning for I-5 in this part of the region.

Interstate 5 to 99W Connector

Improvements defined in the 2020 Preferred System for the I-5 to 99W corridor are focused on:

- improving regional access to 99W and inter-regional connections to Newberg, McMinnville and Highway 18 to the coast

- balancing improvements with impacts on Tualatin and Sherwood town centers, the Tualatin industrial area and adjacent rural reserves

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: A southern alignment of the I-5 to 99W connector is expected to experience higher traffic volumes than the northern alignment during the evening two-hour peak period. 99W through Sherwood is expected to remain relatively uncongested with the southern alignment of the I-5/99W Connector without major improvements to 99W. Northern alignment caused significant congestion on 99W in Sherwood despite major improvements to 99W. Severe access management, frontage road and intersection improvements in Sherwood are not expected to fully address congestion on 99W when implemented in conjunction with the northern alignment. These improvements are not expected to be needed with the proposed southern alignment. I-5 between I-205 and north Wilsonville is expected to be significantly less congested with the northern alignment as compared to the southern alignment.

Conclusions: This new connection is included in the 2040 Growth Concept and was modeled to connect to 99W north of Sherwood in Round 1 and south of Sherwood in Round 2, both of which should be considered further because the need for this connection has been established in this plan. With each alignment, the connector carried significant traffic volumes and successfully diverted traffic from Tualatin-Sherwood Road that would otherwise impact the future development of the Tualatin and Sherwood town centers. Although the connector provides a good regional route in and out of the region via 99W, it is not expected to reduce congestion on sections of 99W north of the connector in King City and Tigard town centers.

An expanded major investment study is needed to further explore I-5 to 99W connector options. This study should further evaluate the potential of express, HOV or peak period pricing as a strategy for expanding capacity. In addition, land use and environmental impacts of a southern or northern alignment need to be addressed as part of the final design of this facility. In particular, examine the impacts on urban and rural reserves adjacent to the southern alignment and existing neighborhoods adjacent to northern alignment. For example, a southern alignment that connects to 99W just south of Sherwood would not only negate difficult and costly access control measures along 99W in Sherwood, this alignment might prove to be more attractive for through-trips, given the higher traffic volumes experienced in the southern alignment. A southern alignment would also suggest the need for auxiliary lanes on I-5 from the connector interchange to I-205. The study should also examine the potential of this highway serving as a "hard edge" in the ultimate urban form of the Sherwood area. Final project phasing should reflect conditions along Tualatin-Sherwood Road and the impacts of congestion on Sherwood and Tualatin town centers and the Tualatin industrial area. See Chapter 6 for more detail on the corridor study proposed for the I-5 to 99W connector.

Highway 217 (I-5 to Washington Square regional center)

Improvements defined in the 2020 Preferred System for the Highway 217 corridor are focused on:

- maintaining regional mobility for regional trips during peak travel periods
- improving parallel routes to accommodate local trips
- maintaining off-peak freight mobility
- maintaining an acceptable level of access to I-5, the sunset corridor industrial area and the Washington Square regional center

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Proposed improvements are expected to accommodate a substantial increase in traffic during the evening two-hour peak period, although a few congested access points are predicted to remain. Highway 217/Kruse Way is expected to operate with an acceptable level of service with proposed improvements identified in the phased Highway 217/Kruse Way project, except for localized congestion on Kruse Way east of I-5. Rapid bus service on Hall Boulevard and commuter rail between Tualatin and Beaverton are expected to generate acceptable ridership.

Conclusions: Proposed capacity and transit improvements to parallel arterial routes address congestion along Highway 217 during the two-hour peak period. Final design, modal mix and phasing of projects should reflect final recommendations from the Highway 217 corridor study, although the need for some level of improvement has been established in this plan. The corridor study should specifically address the competing needs of serving localized trips to Washington Square and Beaverton regional centers and longer trips on Highway 217 from I-5 to the Sunset Corridor. An emphasis on demand management strategies to address Kruse Way congestion is also needed. The corridor study should also investigate the potential for express, HOV or peak period pricing. See Chapter 6 for more detail on this corridor study. Overall, commuter rail is expected to be an important part of the modal mix of improvements for this part of the region because it offers separate right-of-way for transit service in a corridor that is expected to experience congestion during the morning and evening two-hour peak period.

Interstate 205 South (Oregon City to I-5)

See page 3-61 for key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Other Major Corridors in the South Washington County Subarea

Highway 99W (I-5 to Sherwood)

This corridor is designated as an area of special concern in Chapter 1 of this plan, therefore, improvements defined in the 2020 Preferred System for the Highway 99W corridor and vicinity are focused on:

- achieving targets set for walking, biking, use of transit and shared ride
- improving street connectivity and supporting mixed-use development
- implementing parking ratios

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: 99W is expected to experience congestion in Tigard during the two-hour peak period. Existing development patterns and economic constraints limit the ability to expand capacity in this area. Rapid bus service on 99W is expected to generate high ridership. Streets connecting to 99W south of Tigard also are expected to experience congestion during the evening two-hour peak period. Expansion of transit service and implementation of traffic management strategies are proposed to better accommodate expected traffic growth on regional streets connecting to these neighborhoods. Other improvements are proposed to improve pedestrian access to transit along major transit corridors.

Conclusions: More emphasis on demand management, access management, local street connectivity and congestion management is needed to address congestion in the corridor. Proposed rapid bus improvements will require substantial, yet presently undefined street improvements along corridor. A corridor refinement plan is recommended to establish an area of special concern action plan that shall consider land use strategies and transportation solutions for managing the effects of continued traffic growth in this part of the region. See Chapter 6 for more detail on recommended refinement planning for this corridor.

Hall Boulevard (Washington Square regional center to Tualatin town center)

Improvements defined in the 2020 Preferred System for the Hall Boulevard corridor are focused on:

- maintaining an acceptable level of accessibility to the Washington Square regional center from Tigard and Tualatin town centers and adjacent neighborhoods
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the I-5 south corridor
- improving pedestrian access to transit along the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Hall Boulevard is expected to experience congestion at Beaverton and Washington Square regional centers during the evening two-hour peak period. A proposed extension of Hall Boulevard across the Tualatin River is expected to experience high traffic volumes and congestion during the evening two-hour peak period, and is expected to draw traffic from Boones Ferry Road. Rapid bus service on Hall Boulevard is expected to generate acceptable ridership.

Conclusions: A north/south major arterial route parallel to I-5 is lacking south of Highway 217. Further evaluation of the Hall Boulevard extension is warranted as part of local transportation system plans due to the lack of arterial routes parallel to I-5 to serve this part of the region. Environmental constraints may limit the ability to extend Hall Boulevard over the Tualatin River. Consider upgrading Hall Boulevard to Durham Road to Upper Boones Ferry Road to major arterial as part of the Tigard TSP. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020.

Scholls Ferry Road (Hall Boulevard to Beef Bend Road)

Improvements defined in the 2020 Preferred System for the Scholls Ferry Road corridor are focused on:

- maintaining an acceptable level of accessibility to the Washington Square regional center and Murray town center from adjacent neighborhoods
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- improving pedestrian access to transit along the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Scholls Ferry Road is expected to experience localized congestion with five lanes southwest of Washington Square regional center during the evening two-hour peak period. Widening Scholls Ferry Road to seven lanes from Highway 217 to 125th Avenue is expected to reduce congestion in this corridor during the evening two-hour peak period. Primary bus service on Scholls Ferry Road is expected to generate adequate ridership.

Conclusions: Capacity improvements to Scholls Ferry Road address travel demand in the corridor to the year 2020. Any major capacity improvements in this corridor would need to consider the impact to rural reserves. More emphasis on system management and alternative modes is needed in this corridor. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020.

Murray Boulevard (Scholls Ferry Road to Tualatin Valley Highway)

Improvements defined in the 2020 Preferred System for the Murray Boulevard corridor are focused on:

- maintaining an acceptable level of accessibility to the Beaverton regional center from the Murray Scholls town center and adjacent neighborhoods
- improving access to Tigard town center
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- improving pedestrian access to transit along the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Murray Boulevard is expected to experience some congestion just south of Farmington Road and near the US 26 interchange. Primary bus ridership volumes are expected to increase closer to connections with light rail transit. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Capacity improvements to Murray Boulevard address travel demand in the corridor. Localized congestion should be addressed as part of the Washington County transportation system plan, including an evaluation of system and traffic management strategies along corridor to mitigate congestion. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020.

Major Centers in the South Washington County and Urban Clackamas County Subareas

Washington Square regional center

Improvements defined in the 2020 Preferred System for the Washington Square regional center are focused on:

- preserving access to and from the regional center by all modes of travel, consistent with recommendations contained in the Washington Square regional center plan
- providing alternatives to Highway 217 for local travel between the regional center and Beaverton
- improving multi-modal design of major streets that define the regional center, including Hall Boulevard, Greenburg Road and Scholls Ferry Road
- emphasizing more street connectivity, better bicycle and pedestrian connections, especially across Highway 217, and improved pedestrian access to transit

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Washington Square is expected to be accessible during the evening two-hour peak period; although, some congestion is expected at limited access points along Hall Boulevard and Scholls Ferry Road. Widening Scholls Ferry Road to seven lanes from Highway 217 to 125th Avenue is expected to reduce congestion in this corridor during the evening two-hour peak period. Primary bus service on Scholls Ferry Road is expected to generate good ridership.

Conclusions: Complete Highway 217 corridor study. The corridor study should specifically address serving localized trips to Washington Square and Beaverton regional centers and longer trips on Highway 217 from I-5 to the sunset industrial area. Express lanes, HOV or peak period pricing should be considered to serve these longer trips. Proposed improvements provide good north/south and east/west transit connectivity and good regional bicycle and pedestrian access with bike lanes and pedestrian improvements on Scholls Ferry, Greenburg Road, Oleson Road and Hall Boulevard. Any major capacity improvements along Scholls Ferry Road would need to consider impact to rural reserves.

Tualatin town center and adjacent industrial area

Improvements defined in the 2020 Preferred System for the Tualatin center and adjacent industrial area are focused on:

- preserving access to and from the town center by all modes of travel
- maintaining an acceptable level of access to the industrial area from I-5
- improving multi-modal design of major streets that define the town center, including Hall Boulevard, Boones Ferry Road and Tualatin Road
- emphasizing more street connectivity, better bicycle and pedestrian connections and improved pedestrian access to transit

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Localized congestion is expected to occur in the vicinity of the I-5/Nyberg Road interchange despite construction of the I-5/99W Connector. Hall Boulevard and Boones Ferry Road are expected to experience significant congestion entering the town center. The Hall Boulevard crossing of the Tualatin River is expected to experience congestion during the evening two-hour peak period. Rapid bus service on Hall Boulevard is expected to generate good ridership. Both I-5/99W connector alignments are expected to reduce traffic volumes along Tualatin-Sherwood Road.

Conclusions: New street connections and capacity improvements to streets parallel to 99W help improve local circulation. Evaluate ITS or other system management strategies to further address travel demands along Hall Boulevard and Boones Ferry Road as part of the Tualatin transportation system plan. Proposed improvements maintain adequate access to the industrial and employment area in Tualatin. Project phasing of I-5 to 99W connector should reflect conditions along Tualatin-Sherwood Road and the impacts of congestion on Sherwood and Tualatin town centers and the Tualatin industrial area. Proposed improvements also provide good north/south transit connectivity and good bicycle and pedestrian access with bike lanes and pedestrian improvements on Boones Ferry Road, Tualatin Road and Hall Boulevard. Overall, commuter rail is expected to be an important part of the modal mix of improvements for this part of the region because it offers separate right-of-way for transit service in a corridor that is expected to experience congestion during the morning and evening two-hour peak period.

Tigard town center

Improvements defined in the 2020 Preferred System for the Tigard town center are focused on:

- preserving access to and from the town center by all modes of travel
- emphasizing improvements to streets parallel to 99W and I-5
- improving multi-modal design of major streets that define the town center, including Hall Boulevard, 72nd Avenue and Walnut Street
- emphasizing more street connectivity, better bicycle and pedestrian connections and improved pedestrian access to transit

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: 99W is expected to experience significant congestion within the town center during the evening two-hour peak period and at mid-day despite a new I-5 to 99W connector to the south, capacity improvements to facilities parallel to 99W and new street connections in the town center, including extensions of Hunziker Road and Dartmouth Street. Walnut and Gaarde streets experience significant congestion and traffic volumes during the evening two-hour peak period. Rapid bus service on 99W is expected to generate good ridership.

Conclusions: Further emphasis on demand management, access management, local street connectivity and congestion management is needed to address congestion in the corridor in the Tigard Transportation System Plan. Proposed rapid bus improvements along 99W corridor will require substantial, yet presently undefined street improvements within the town center. Proposed improvements provide good north/south transit connectivity and good regional bicycle and pedestrian access with bike lanes and pedestrian improvements on Walnut Street, 72nd Avenue, Scholls Ferry Road and Hall Boulevard. See Chapter6 for more detail on refinement planning recommended for 99W in the town center.

Wilsonville town center

Improvements defined in the 2020 Preferred System for the Wilsonville town center are focused on:

- preserving access to and from the town center by all modes of travel
- improving local access across I-5 with new multi-modal crossings
- improving multi-modal design of major streets that define the town center, including Wilsonville Road and Town Center Loop
- emphasizing more street connectivity, better bicycle and pedestrian connections and improved pedestrian access to transit

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: The Barber Street connection at Town Center Loop is expected to experience congestion during the evening two-hour peak period. The proposed extension of Kinnamon Road is expected to perform as desired, carrying significant traffic volumes parallel to I-5. The Wilsonville Road interchange is expected to experience congestion during the evening two-hour peak period. Grahams Ferry Road, outside of the urban growth boundary, is expected to experience significant congestion during the evening two-hour peak period, in part due to expected growth in the urban reserves west of Wilsonville and rural residential development in Washington County. Peak-hour express bus service to downtown Portland is expected to experience moderate ridership volumes..

Conclusions: New street connections and minor capacity improvements improve local circulation and access across I-5. Overall, commuter rail is expected to be an important part of the modal mix of improvements for this part of the region because it offers separate right-of-way for transit service in a corridor that is expected to experience congestion during the morning and evening two-hour peak period. Support inter-city transit service to the extent that it benefits the I-5 corridor. Proposed improvements provide good north/south transit connectivity and good regional bicycle and pedestrian access with bike lanes and pedestrian improvements on Town Center Loop and Parkway Center Drive. The Wilsonville transportation system plan should consider a TDM/TMA program. An evaluation of the congestion on Grahams Ferry Road and potential system management strategies or other improvements is warranted to address the impact of growing travel demand on adjacent rural reserves as part of the Washington County transportation system plan. Expanded transit service connections to Salem and other Willamette Valley towns should be further evaluated as a potential strategy for reducing traffic volumes entering and existing the region via I-5 during the evening two-hour peak period. An examination of expanded transit service should also involve consideration of an additional park-and-ride lot and commuter rail station for Willamette Valley inter-city service to connect to other parts of the Portland metropolitan region. See Chapter 6 for more detail on corridor planning recommended for I-5 in this part of the region.

Sherwood town center

Improvements defined in the 2020 Preferred System for the Sherwood town center are focused on:

- preserving access to and from the town center by all modes of travel
- improving multi-modal design of major streets that define the regional center, including 99W, Oregon Street and Sherwood Boulevard
- emphasizing more street connectivity, better bicycle and pedestrian connections and improved pedestrian access to transit

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Both proposed I-5/99W connector alignments are expected to reduce traffic volumes along Tualatin-Sherwood Road during the evening two-hour peak period. Pacific Street, entering the town center, is expected to experience congestion during the evening two-hour peak period. 99W through Sherwood is expected to perform better with the southern alignment of the I-5 to 99W connector. Severe access management, frontage road and intersection improvements modeled in Sherwood is not expected to fully address congestion on 99W when implemented in conjunction with the northern alignment.

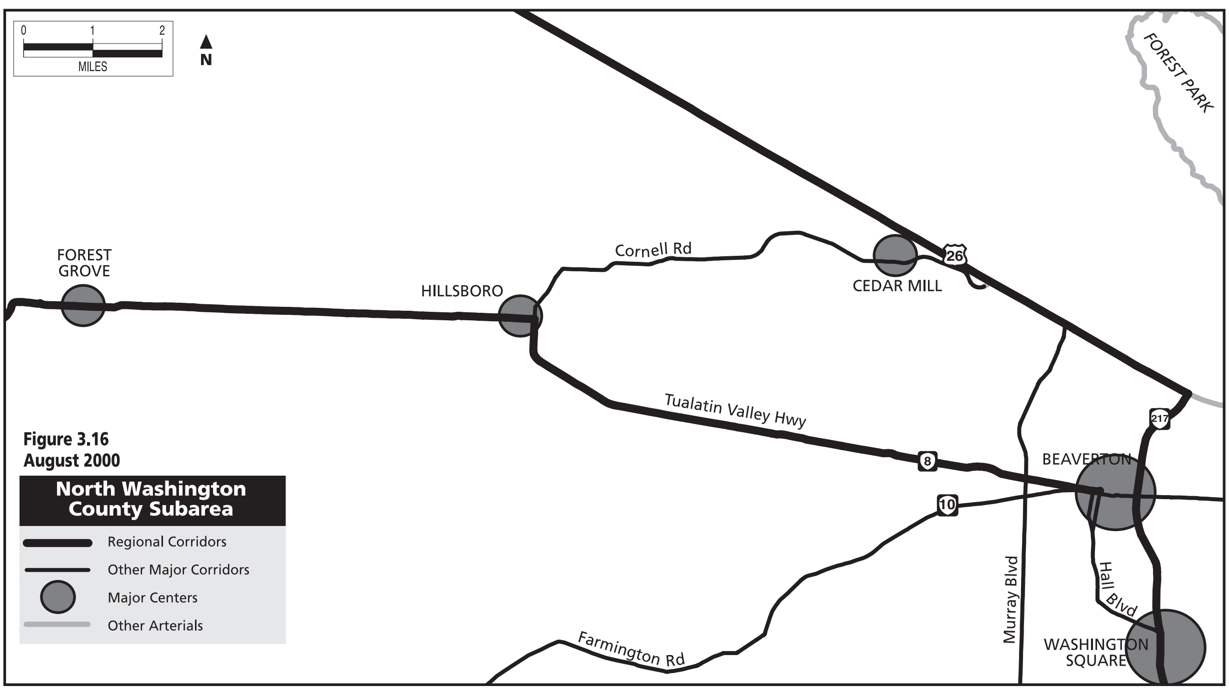
These improvements are not expected to be necessary with a southern alignment of the I-5/99W connector. Proposed improvements are expected to provide good regional bicycle and pedestrian access with bike lanes and pedestrian improvements on Edy Road, Oregon Street and 99W.

Conclusions: Project phasing of I-5 to 99W connector should reflect the impacts of congestion on the Sherwood town center. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020.

3.4.7 Subarea 7: North Washington County

This subarea stretches from Washington Square north to Forest Park and from West Portland and Forest Park to the urban growth boundary, west of Forest Grove. This subarea includes Beaverton and Hillsboro regional centers; and Forest Grove, Cornelius, Sunset, Cedar Mill, Bethany, Tanasbourne and Farmington town centers. The Sunset industrial area, west-side light-rail station communities, Sunset Highway, Tualatin Valley Highway, Highway 217 and several urban reserve areas north of US 26 and south of Tualatin Valley Highway are also located in this subarea. Figure 3.16 shows a map of the South Washington County subarea.

Figure 3.16
North Washington County Subarea



Source: Metro

Regional Corridors in the North Washington County Subarea

US 26 – Sunset Highway (Sylvan interchange to the urban growth boundary)

Improvements defined in the 2020 Preferred System for the US 26 corridor are focused on:

- maintaining an acceptable level of accessibility to the Portland central city and the Sunset industrial area

- maintaining off-peak freight mobility

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Proposed capacity and transit improvements are expected to maintain adequate traffic flows during the evening two-hour peak period. New crossings over US 26 are expected to experience traffic volumes in the range of 10,000 to 20,000 vehicles per day. Westside light rail transit ridership is expected to be high, reflecting more frequent service during the evening two-hour peak period. Parallel streets such as Cornell, Barnes and Walker roads, are generally not expected to experience congestion during peak periods.

Conclusions: The transit and capacity improvements proposed for this corridor, including parallel routes, are adequate to meet travel needs through 2020. More detailed evaluation of future multi-modal crossings of US 26 should be considered as part of local transportation system plans to address congestion at individual interchanges or to meet specific multi-modal access needs. See Chapter 6 for more detail on refinement planning recommended for the US 26 corridor.

Highway 217 (Washington Square to US 26)

See page 3-71 for key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Tualatin Valley Highway (Beaverton to Forest Grove)

Improvements defined in the 2020 Preferred System for the Tualatin Valley Highway corridor are focused on:

- maintaining an acceptable level of accessibility to the Hillsboro and Beaverton regional centers and Hillsboro industrial areas

- managing access and improving parallel routes to accommodate local trips

- improving segment from Murray Boulevard to Brookwood Avenue to maintain primary connection between Beaverton and Hillsboro regional centers

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Aggressive access management along the corridor and an expanded system of parallel routes are expected to limit congestion in this corridor, although the approach segments west of Brookwood Avenue and east of Murray Boulevard are expected to experience congestion during the evening two-hour peak period. Capacity improvements to parallel streets and new street connections are expected to reduce some of the local traffic demand on this route. TV Highway from the Highway 47 Highway Bypass in Forest Grove to the west end of the Baseline/Oak couplet in Hillsboro is expected to experience congestion which exceeds the regional LOS standard during the evening two-hour peak period. Frequent bus service between Forest Grove and Hillsdale transit centers via Tualatin Valley Highway and Beaverton-Hillsdale Highway is expected to generate good ridership.

Conclusions: The 2020 Preferred System identifies the need for additional people moving capacity along the Tualatin Valley Highway corridor. The proposed system of parallel routes significantly reduces some of the local travel demand on this route. A corridor refinement study is recommended to define a phased strategy to implement a largely limited-access facility in this corridor, including traffic management strategies in Beaverton, Aloha and Hillsboro to address congestion. The strategy should also balance the need for additional motor vehicle capacity with the function of this route as a major transit route, including the need to improve pedestrian access to transit along the entire corridor. Develop and adopt an access management plan that supports proposed improvements in the corridor as part of Beaverton, Hillsboro and Washington County TSPs.

See Chapter 6 for detail on the corridor study recommended for Tualatin Valley Highway. In addition, local transportation system plans should further examine the transportation need identified between Hillsboro regional center and Cornelius town center and determine the appropriate strategy or strategies for meeting the need. Strategies to be examined should include, but are not limited to: (1) increasing capacity along Tualatin Valley Highway, (2) increasing capacity along existing parallel facilities, (3) adding new parallel routes, and (4) not making improvements and "accepting" the congestion. Any major capacity improvements in this corridor would need to consider the impact to adjacent rural reserves.

Other Major Corridors in the North Washington County Subarea

Hall Boulevard/Watson Avenue (Beaverton to Washington Square)

Improvements defined in the 2020 Preferred System for the Hall Boulevard corridor are focused on:

- maintaining an acceptable level of accessibility to the Beaverton regional center from adjacent neighborhoods
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- improving pedestrian access to transit along the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: The Hall/Watson couplet south of Beaverton regional center is expected to experience congestion during the evening two-hour peak period. Rapid bus service between Tualatin, Tigard, Beaverton and Sunset transit center is expected to perform well, particularly between Tigard and Beaverton. Proposed bicycle and pedestrian improvements are expected to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Further evaluation of congestion on Hall Boulevard is recommended as part of the Beaverton transportation system plan, including additional system management and access management strategies to address points of congestion prior to recommending the addition of capacity to address increase in travel demand in this corridor. The strategy should also balance the potential need for additional motor vehicle capacity with the function of this route as a major transit route, including the need to improve pedestrian access to transit along the entire corridor. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020.

Cornell Road (Cedar Mill town center to Hillsboro regional center)

Improvements defined in the 2020 Preferred System for the Cornell Road corridor are focused on:

- maintaining an acceptable level of accessibility to the Beaverton and Hillsboro regional centers from adjacent neighborhoods
- maintaining adequate access to the Sunset industrial area from US 26
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- improving pedestrian access to transit along the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Cornell Road is expected to perform well as the primary access route from US 26 to the Sunset industrial area and Hillsboro regional center, with isolated congestion expected in the Tanasbourne and Cedar Mill town centers and entering the Hillsboro regional center. Proposed bicycle and pedestrian improvements are expected to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Cornell Road appears to benefit from improved connectivity through this portion of North Washington County. An additional limited access route from the Sunset industrial area to Hillsboro is not warranted during the 20-year plan period. However, improvements to Cornell Road are appropriate because this route serves as an important access route to jobs in the Hillsboro area. The extent of capacity improvements through the Cedar Mill town center should be determined through the town center planning process. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020.

Farmington Road (Beaverton regional center to Cornelius Pass Road)

Improvements defined in the 2020 Preferred System for the Farmington Road corridor are focused on:

- maintaining an acceptable level of accessibility to the Beaverton regional center from adjacent neighborhoods and the Farmington town center
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- improving pedestrian access to transit along the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Farmington Road is expected to experience some congestion during the evening two-hour peak period from Murray Boulevard to the Farmington town center. Proposed bicycle and pedestrian improvements are expected to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Pursue system and traffic management strategies along corridor to mitigate congestion as part of the Washington County TSP. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020.

Murray Boulevard (Scholls Ferry Road to Tualatin Valley Highway)

See page 3-74 for key findings and conclusions, reflecting analysis of improvements defined for this corridor.

Beaverton-Hillsdale Highway (Raleigh Hills to Beaverton)

Improvements defined in the 2020 Preferred System for the Beaverton-Hillsdale Highway corridor are focused on:

- maintaining an acceptable level of accessibility to the Beaverton regional center from adjacent neighborhoods and Raleigh Hills town center
- expanding transit service and traffic management strategies to better accommodate expected traffic growth in the corridor
- improving pedestrian access to transit along the corridor

The following are key findings and conclusions, reflecting analysis of the performance of the improvements defined for this corridor.

Findings: Beaverton-Hillsdale Highway is expected to approach current capacity during the evening two-hour peak period. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: Limited congestion along corridor does not impact access to the Beaverton regional center due to the availability of alternate uncongested routes such as Canyon Road and Hall Boulevard. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020.

Major Centers in the North Washington County Subarea

Beaverton regional center

The Beaverton regional center is designated as an area of special concern in Chapter 1 of this plan, therefore, improvements defined in the 2020 Preferred System for the regional center are focused on:

- achieving targets set for walking, biking, use of transit and shared ride

- improving street connectivity and supporting mixed-use development
- implementing parking ratios

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Tualatin Valley Highway, Beaverton-Hillsdale Highway and Hall Boulevard entering the regional center are expected to experience congestion during the evening two-hour peak period while downtown streets perform well as a result of proposed street connectivity improvements. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, providing better bicycle and pedestrian connections to the regional center from adjacent neighborhoods. Expansion of transit service and implementation of traffic management strategies are proposed to better accommodate expected traffic growth on regional streets connecting to these neighborhoods. Other improvements are proposed to improve pedestrian access to transit along major transit corridors.

Conclusions: Downtown connectivity improvements are expected to relieve internal congestion, particularly on the north side of the regional center, and provide more bicycle and pedestrian connectivity. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020. Based on substitute performance measures identified in Appendix 3.2, the transportation system in this part of the region is adequate to serve planned land uses. See Appendix 3.2 for more detail on the substitute performance measures used to make this evaluation.

Hillsboro regional center

Improvements defined in the 2020 Preferred System for the Hillsboro regional center are focused on:

- preserving access to, from and within the regional center by all modes of travel
- maintaining Cornell Road and Shute Road as access routes to US 26
- maintaining Tualatin Valley Highway as primary connection between the regional center and Beaverton
- providing better bicycle and pedestrian connections and better access to transit, particularly westside light rail, from neighborhoods

The following are key findings and conclusions, reflecting analysis of the performance of improvements defined for this part of the region.

Findings: Major streets entering the regional center are expected to perform well, with limited congestion along Tualatin Valley Highway and Cornell Road in the eastern part of the regional center. Traffic volumes on Tualatin Valley Highway west of Brookwood Parkway are expected to be comparable to volumes on US 26 from Cornelius Pass Road to Shute Road. Frequent bus service to Hillsboro is expected to generate good ridership. Bicycle and pedestrian improvements are proposed to address difficult street crossings and existing sidewalk/bikeway deficiencies, and improve pedestrian access to transit.

Conclusions: The 2020 Preferred System identifies the need for additional people moving capacity along the Tualatin Valley Highway corridor. A detailed refinement study for the Tualatin Valley Highway corridor should evaluate where limited access should end to better deal with congestion at Brookwood Avenue. Transportation system management along Cornell Road entering the regional center seems appropriate. Proposed pedestrian and bicycle improvements serve expected pedestrian and bicycle travel needs along this corridor through 2020.

Sunset industrial area

Improvements defined in the 2020 Preferred System for the Sunset industrial area are focused on:
- maintaining an acceptable level of access to and from the industrial area via Highway 217 and US 26

Findings: Limited portions of Cornell Road, Cornelius Pass Road and Brookwood Parkway are expected to experience congestion during the evening two-hour peak period.

Conclusions: Proposed improvements accommodate expected growth in traffic in this area. Consider additional traffic management and demand management strategies to address limited congestion in the area. New US 26 overcrossings would help workers access jobs in the industrial area and should be considered as congestion occurs at specific interchanges.

3.5 Environmental Impacts of the 2020 Preferred System

3.5.1 Title 3 and Endangered Species Act Impacts

While transportation projects in the 2020 preferred system would cross areas designated in Title 3 of the Urban Growth Management Functional Plan and watershed areas designated in the Endangered Species Act listing of salmon and steelhead, the transportation impacts on these areas can be identified and mitigated. Metro is working to make sure that regional transportation projects do not block fish passage through the *Green Streets* program. The new *Green Streets* program will propose new regional street connectivity standards tailored to urban reserve areas and provide a handbook that recommends new guidelines for transportation projects to ensure fish-friendly design solutions.

With the 2020 Preferred System, regional transportation projects would be designed so they do not block fish passage. There would be opportunities to fix existing problem culverts when improvements are made to the regional street system. For example, more than 150 culverts around the region were found to need repair to allow fish to pass under roads. Additional federal and state transportation programs may be required to allocate funds to replace or repair existing culverts with fish access problems.

RTP preferred system transportation projects would likely impact many Title 3 areas and watersheds included in the 1999 National Marine Fisheries Service endangered species listing. However, compliance with NEPA requirements and implementation of the *Green Streets* program guidelines would mitigate transportation impacts. An analysis of where proposed capacity improvements intersected with designated Title 3 and ESA areas found:

- In the RTP preferred system there are 4,489 total lane miles of roadways on the regional system.
- About 687 roadway lane miles (15 percent of the regional system) are new or added capacity.
- Of the new or added capacity, about 47 roadway miles (7 percent of the regional system) cross through Title 3 areas.

This analysis includes regional transportation system streets only. Local streets will also impact Title 3 areas, and they are not included in the above analysis.

Light rail projects included the 2020 Preferred System include nearly 47 miles of new track. There are three miles of new light rail tracks in Title 3 areas, including about slightly more than one mile of the South LRT project and slightly less than one mile of the Oregon City extension. Title 3 and ESA impacts of light rail projects would be mitigated through the NEPA process.

CHAPTER 4

Financial Analysis

4.0. Introduction

In order to evaluate whether the 2020 Preferred System defined in the previous chapter is a viable strategy to address the growth in travel demand in the region, it is necessary to analyze transportation revenues and the costs of providing that 2020 Preferred System.

This chapter is organized as follows:

Revenue Sources and Forecast: This section defines existing sources of revenues available for transportation and forecasts the amount of revenue they will produce during the planning period of the years 2000 through 2020.

Projected Costs of the 2020 Preferred System: This section defines several cost categories for constructing, operating and maintaining the Preferred Transportation System and estimates the costs of these categories through the year 2020.

Assignment of Revenues to Costs and Funding Shortfall for the Preferred System: This section compares the revenues available to the costs of providing and maintaining the Preferred Transportation System and defines the revenue shortfalls for the several categories of transportation costs;

Potential New Revenue Sources: This section describes potential revenue options that could be created to provide new revenues for transportation needs that currently have no identified source of funding.

Conclusions: This section summarizes the issues associated with funding the Preferred Transportation System.

4.1 Revenue Sources and Forecast

4.1.1 Traditional Sources

Federal

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 local cities and counties. For transit related projects, Congress provides these revenues to the Metro region through the Federal Transit Administration (FTA) to Tri-Met, South Metropolitan Area Rapid Transit (SMART, providing transit based in the Wilsonville area) and Metro.

Metro allocates the spending of these revenues by transportation agencies and local jurisdictions for projects in this region. The original source of these monies is primarily the federal gas tax and various truck taxes. Allocation and distribution of federal funds, other than routine maintenance, are accounted for in the Metropolitan Transportation Improvement Program (MTIP). Refer to Section 6.5 in Chapter 6 for more discussion on the MTIP. 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 roads, bikeways, sidewalks, transit capital, transportation system management (TSM) and transportation demand management (TDM)/air quality programs.

Metro estimates approximately $874 million of federal trust fund money to be allocated directly to the Metro region during the years 2000 through 2020. This includes:

- $294 million of Regional Surface Transportation Program (STP) funds. These funds may be used for virtually any transportation purpose short of building local residential streets.

- $188 million of Congestion Mitigation/Air Quality (CMAQ) funds. The purpose of CMAQ 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 and demand management programs.

- $90 million of bridge funds. The highway bridge replacement funding program was established to repair or replace bridges that have structural deficiencies and physical deterioration.

- $28 million of 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.

- $28 million of safety funds. The hazard elimination system program funds safety improvement projects that cost less than $500,000.

- $186 million of demonstration funds. These funds are for specific projects designated by Congress to receive funds.

- $59 million of Borders and Corridors funding. This represents a new category of federal funding for the purpose of funding projects vital to economic trade. Projects identified as part of the I-5 Trade Corridor Study could be eligible for these 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 these monies to road preservation and safety projects.

Transit Formula Funds. These funds are primarily for transit capital purchases such as buses and transit maintenance facilities. As the local transit providers, Tri-Met and SMART propose and Metro approves requests to the U.S. Department of Transportation for use of these monies. Approximately $642 million in federal transit formula funds is estimated to be available to the Metro region during the years 2000 through 2020. These funds will be used to maintain Tri-Met'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, Tri-Met applies to the Federal Transit Administration for transit discretionary funds to build the project. Based on the region's past success in acquiring these funds, it is estimated the region will continue to secure transit discretionary funds and could receive approximately $227 million of transit discretionary funds for projects exclusive of light rail during the 20-year plan period.

Additionally, if the region can provide matching funds and comply with federal planning and environmental requirements, transit discretionary funds could be provided to the region in the following amounts for the following light rail projects that are included in the 2020 Preferred System:

- $257.5 million for Interstate Avenue light rail
- $500 million for South light rail (to Clackamas town center)
- $150 million for Interstate Avenue light rail extension to Clark County
- $70 million for South Corridor bus capital projects
- $25 million for commuter rail between Wilsonville and Beaverton
- $100 million to begin a light rail extension to Oregon City

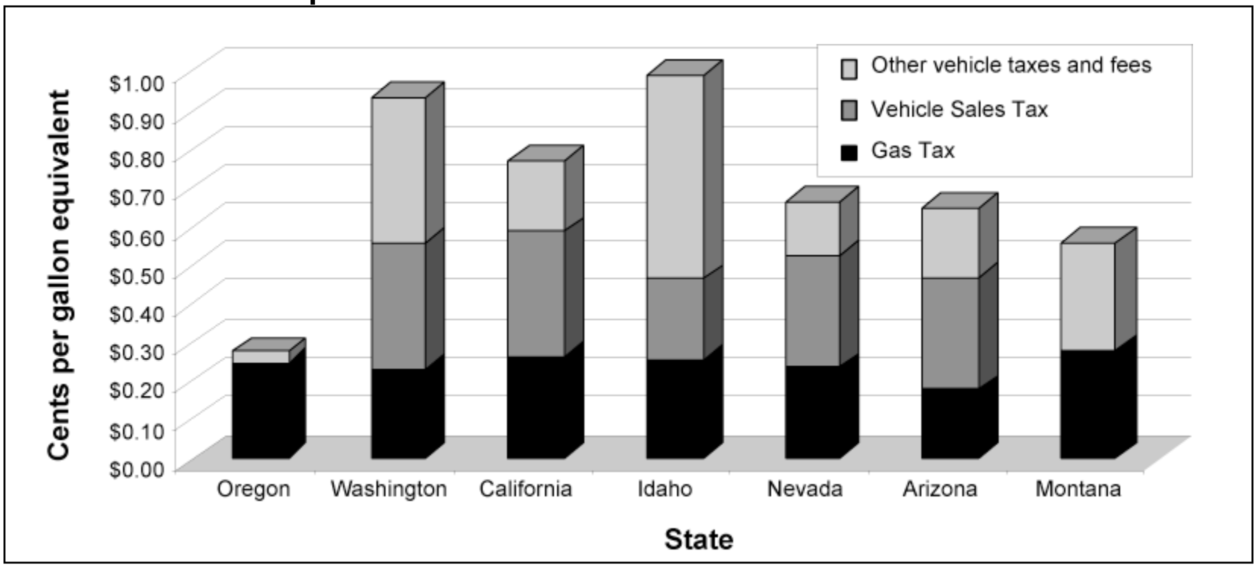
These revenues would only be available to the region if the specific light rail projects are built; the revenues are not transferable to other uses.

Federal Forest Receipts. Forest receipts are revenues sent to counties by the federal government based on the amount of forest logging revenues realized on federal forest land within a county. Counties have historically used these revenues for transportation projects and maintenance. Clackamas and Multnomah counties are expected to receive $17.8 million in federal forest receipts during the 20-year plan period.

State

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 derives its revenues from the statewide gas tax, vehicle registration fee and truck weight/mile tax. Use of trust fund monies is limited to road and bridge construction, maintenance and preservation of the existing transportation system.

Figure 4.1
1999 Comparison of Auto Taxes in the Western United States[1]



[1] Although Figure 4.1 does not factor in the Washington voter-approved rollback of transportation taxes in 1999, motor vehicle related taxes are still significantly higher in Washington than in Oregon.

Source: Metro

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. This amounts to about $53 million in the year 2000, increasing to $65 million in the year 2000. Of that money, approximately $12.7 million will be spent by ODOT for modernization in the Metro region, increasing to $15.8 million in the year 2020.

Of the remaining monies, 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 approximately 16 percent. Of the state highway trust funds distributed to ODOT, the department generally allocates about 24 percent of that money to the Metro region. This amounts to an estimated $135 million in the year 2000, increasing to $165 million by the year 2020.

As prescribed by state statute, the Oregon Transportation Commission distributes the state highway trust fund money to Oregon cities and counties. Generally, 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

Many of the cities and counties in the metropolitan region provide other sources of revenue to operation, maintenance and preservation (OMP) and new construction to 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 Portion of State Highway Trust Fund. As noted, 40 percent of state trust fund revenues are distributed to the cities and counties of Oregon. Based on historical trends, $104 million of state trust fund money is expected to be available to the cities and counties of the metropolitan region in the year 2000, increasing to $126 million by the year 2020.

Local Gas Tax. Multnomah County levies a 3 cents per gallon gas tax and Washington County levies a 1 cent per gallon gas tax. Both counties share these revenues with the cities within their boundaries. These revenues may be used for road maintenance and road expansion. Approximately $9.3 million of local gas tax revenue is expected in the year 2000, increasing to $11.3 million in the year 2020.

Payroll Tax. Tri-Met levies a payroll tax of .6176 percent to all employers in its district, estimated to generate $147 million in the year 2000 and $509 million by the year 2020. Tri-Met's payroll rate is limited to the current rate by state statute. Raising Tri-Met's payroll rate would require action by the state legislature. SMART is funded through a .3 percent payroll tax in the Wilsonville area, estimated to generate $1.7 million in the year 2000 and $3.9 million by the year 2020. This revenue is used to support operations and maintenance of the transit systems. Growth of the regions employment is expected to support approximately a 1.5 percent annual increase in service hours of the transit system.

Tri-Met Passenger Fares and Other Revenues. Tri-Met passenger fare revenues also support operation of the transit system and, if the Preferred Transit system is implemented, expected to generate approximately $54 million in the year 2000 and $167.5 million by the year 2020. SMART is a fareless transit system.

4.1.2 Development-Based Sources

Development-based sources of transportation funding are fees collected by local jurisdictions based on the development or use of land. These include:

- transportation system development charges levied on new development, expected to generate $89.5 million during the planning period,
- traffic impact fees on commercial properties, expected to generate $218.1 million during the planning period, and
- urban renewal funding , expected to generate $129.8 million during the planning period.

These revenues are collected by the cities and counties in the region for use within their jurisdictions. These revenues are generally limited to providing transportation projects to serve the new development on the assessed properties.

4.1.3 Special Funds and Levies

A final source of transportation funding for the Metro region is special funds and levies. This category includes:

- Property taxes such as the Washington County's Major Streets Transportation Improvement Program (MSTIP), which are approved by popular election and expected to generate $242.2 million during the 20-year plan period.

- Local improvement districts (LIDs), 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 CBD, a local improvement district (LID) will contribute to construction of the Portland Streetcar project.

- Vehicle parking fee revenues from the City of Portland public parking garages and meters. These revenues will contribute to construction of the Portland Streetcar project.

- Port of Portland transportation improvement fund revenues, which are expected to provide $138 million during the 20-year plan period. 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 Port of Portland Transportation Improvement Plan (1999) and approval by the Port Commission. These revenues are expected to leverage $42 million of private investment in transportation projects, particularly from freight railroad companies.

4.2 Projected Costs of the 2020 Preferred System

4.2.1 Highway and Road-Related Costs

State highway OMP costs

ODOT had estimated operations, maintenance and preservation (OMP) costs at $135 million in the year 2000, increasing to $199 million in the year 2010 to achieve 90 percent of state highways in fair or better condition with the Metro area by the year 2010. This does not include costs for a safety or access management program. As the use of highways continues to increase and inflation impacts the ability to provide services, OMP costs for state highways are expected to increase to $270 million per year by the year 2020.

State highway capital costs

Construction of new or improved state highway facilities in the 2020 Preferred System, including projects such as the Sunrise Corridor, the I-5 to 99W connector, US 26 and the I-5/Highway 217/Kruse Way interchange, is expected to cost $2.29 billion (1998$).

Regional road OMP costs
Based upon information provided by cities and counties, Metro has estimated that to achieve 90 percent of the roads in the Metro region in fair or better condition by the year 2020, annual operations, maintenance and preservation (OMP) cost is expected to be $180 million in the year 2000. This cost is expected to increase to $365 million per year in the year 2020. To keep roads at their existing level of repair and not increase the size of the backlog of deficient pavement is expected to cost $122 million per year in the year 2000, increasing to $248 million in the year 2020.

Regional road-related capital costs
Construction and improvement of city and county owned regional road facilities in the 2020 Preferred System is expected to cost $2.85 billion (1998$). This includes all projects that expand road capacity and/or improves right-of-way for freight, vehicles, bicycles and pedestrians, and programs such as the regional transportation demand management (TDM) program and the regional transit oriented development (TOD) program.

4.2.2 Transit-Related Costs

Transit operations and maintenance
Implementation of the 2020 Preferred System is expected to occur incrementally during the plan period leading to full implementation by the year 2020. Increasing Tri-Met and SMART service by 4.5 percent each year would fully implement the 2020 Preferred System by the year 2020. Annual operating costs of the 2020 Preferred System are expected to be $254 million in the year 2000 and $899 million in the year 2020, accounting for the approximately doubling of cost due to inflation and a doubling of the amount of 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 2020 Preferred System is expected to be $4.3 billion in 1998 dollars.

4.3 Assignment of Revenues to Costs and Funding Shortfall for the Preferred System

4.3.1 Highway and Road-Related Revenue Shortfall

State Highway Operations, Maintenance and Preservation. The 1999 Oregon Highway Plan describes the Oregon Department of Transportation policy on funding priorities for Oregon highways.[1] This policy describes a progression of four funding levels that range from current funding levels to a significant increase in funding availability.

For the purpose of developing this financial plan, however, it is assumed that all operations, maintenance and preservation of the road network are a priority to receive road-related revenues prior to expansion of the existing road system. Properly maintaining and preserving roads

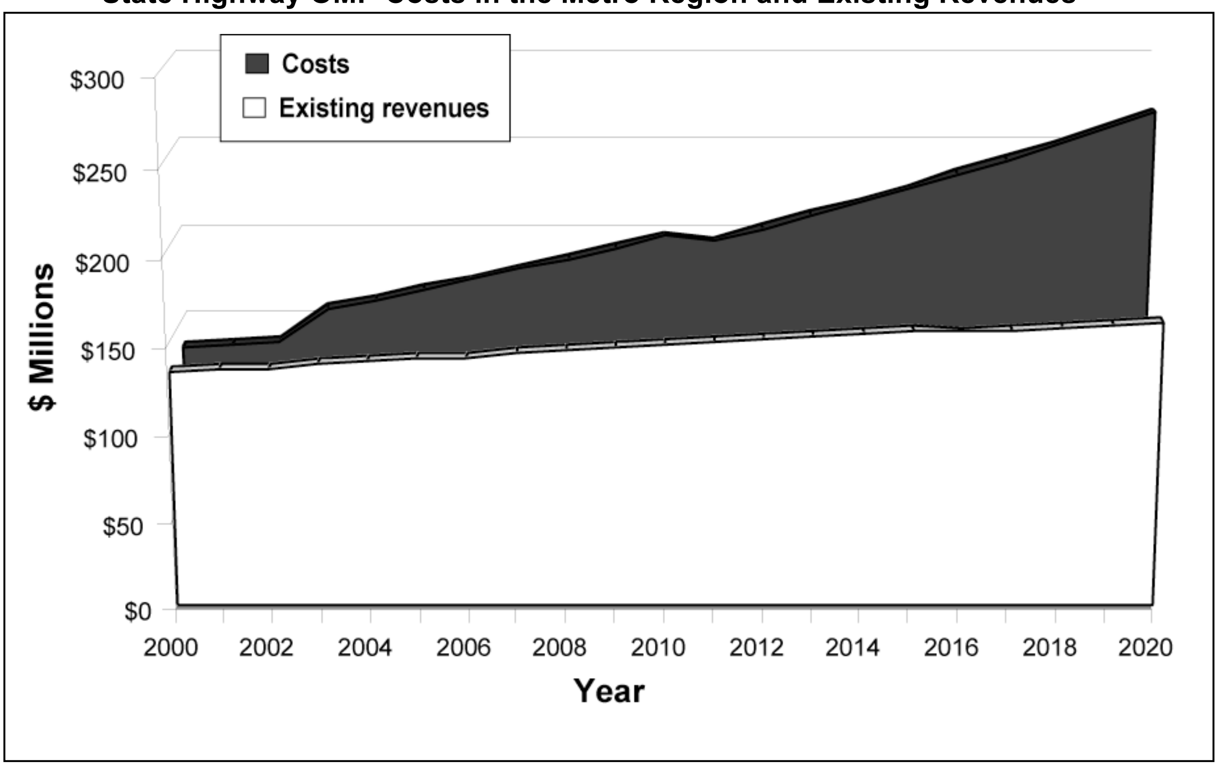
[1] Oregon Highway Plan, pages 5-2.

ensures that more costly road reconstruction of inadequately maintained roads is not necessary at a later date. Therefore, only revenues in excess of road OMP needs and revenue sources specifically dedicated to highway modernization and expansion have been assumed to be available for road capital costs. In addition, State Highway Trust Fund revenues distributed to ODOT have been assigned to state highway OMP costs, with any remaining revenues above defined OMP needs assigned to state highway capital costs.

Assuming this allocation scenario, ODOT will spend an estimated $135 million on highway OMP in the year 2000, increasing to $163 million in the year 2020 and operations, maintenance and preservation of the state highway system is expected to be fully funded in the metropolitan area through the year 2002. After 2002 a combination of inflation, increased road use and an increased percentage of highways and bridges reaching their design-life to require major rehabilitation creates a shortfall of revenue available for needed OMP costs. This shortfall ranges from $8 million in the year 2003 to $107 million in the year 2020.

It is expected that at current funding levels, all state trust fund monies after the year 2002 that are not legally dedicated to road modernization would have to be used for highway OMP purposes. This amount of funding would still fall short of money needed to adequately maintain the state highway system in the metropolitan area. As such, a backlog of maintenance needs will develop and, if not addressed, lead to more expensive reconstruction of these highways. Figure 4.2 shows the growing gap between state highway operations, maintenance and preservation costs and existing revenues.

Figure 4.2
State Highway OMP Costs in the Metro Region and Existing Revenues



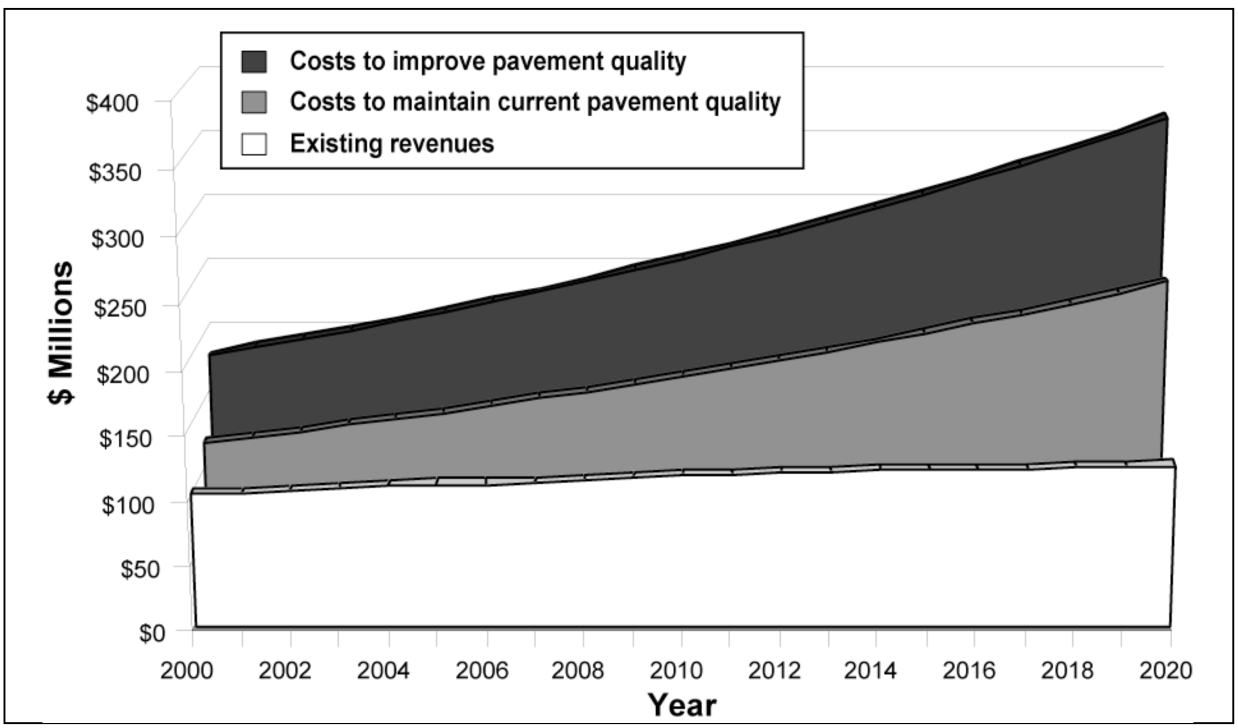
Source: Metro

State Highway Modernization and Expansion. New construction of state highways and freeways in the 2020 Preferred System is expected to cost $2.11 billion (1998$). Approximately $359 million dollars is expected to be available for modernization and expansion of state highways in the metropolitan area during the 20-year plan period. This results in a shortfall of $1.93 billion of revenues to build the 2020 Preferred state highway system. See Figure 4.5 for a comparison between 2020 Preferred System state highway capital costs and existing revenues.

Regional Road Operations, Maintenance and Preservation (OMP). Based on the need to address OMP costs of local roads in the Metro area and the historical spending of these revenues towards OMP costs, State Highway Trust Fund revenues that are distributed to cities and counties are expected to continue to pay for regional road OMP costs. All local gas tax revenues from Multnomah and Washington counties and some City of Portland parking revenues have also been assigned to regional road OMP costs.

With these revenues, a shortfall of $18.6 million is expected in the year 2000 to maintain local roads at current pavement condition (77 percent in fair or better condition). This shortfall is expected to grow to $121.8 million by the year 2020. To address the backlog of maintenance and preservation needs and achieve a pavement standard of 90 percent of roads in fair or better condition by the year 2020, the region is expected to need an additional $76.6 million in the year 2000, growing to an additional $239.5 million by the year 2020. Figure 4.3 shows the growing gap between regional road-related operations, maintenance and preservation costs and projected revenues.

Figure 4.3
Regional Road OM&P Costs and Existing Revenues



Source: Metro

Regional Road Modernization and Expansion. New construction of regional roads and bridges in the 2020 Preferred System is expected to cost $2.85 billion (1998$). Local development based sources and special funds and levies dedicated to road projects have been assigned to regional road capital costs.

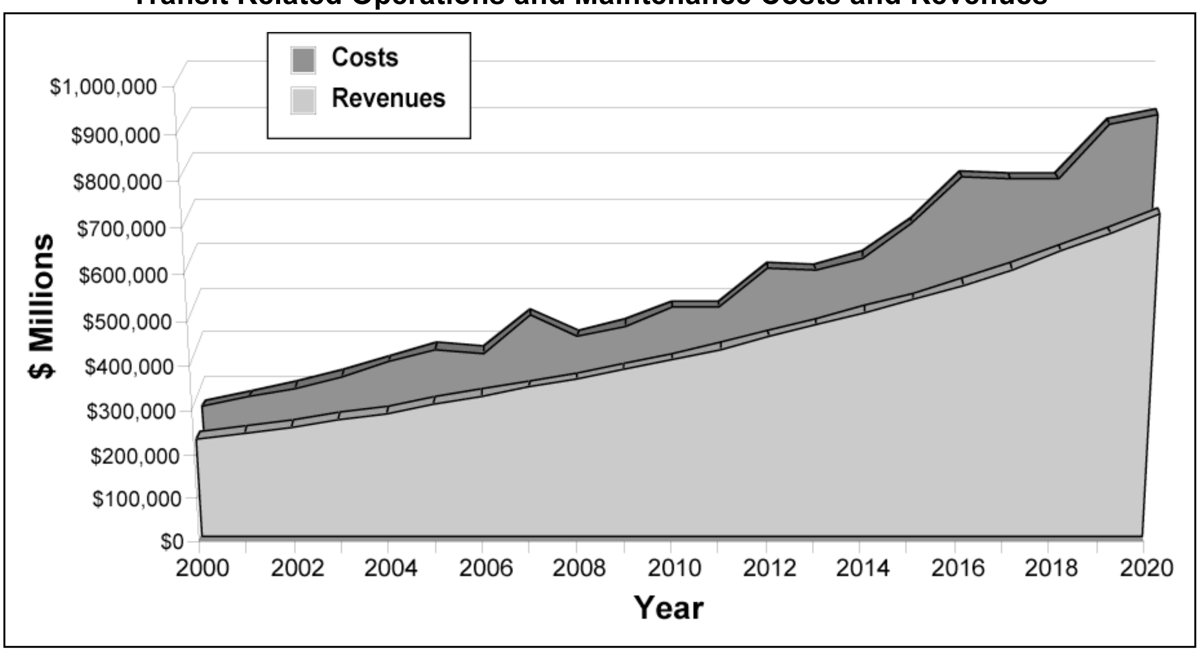
Between these revenues and the local portion of state highway trust fund money, there is expected to be approximately $966 million dollars available for modernization and expansion of regional roads and bridges during the course of the 20-year plan period. This results in a shortfall of $1.88 billion of revenues to construct regional road system projects included in the 2020 Preferred System. See Figure 4.5 for a comparison between the 2020 Preferred System road-related capital costs and existing revenues.

4.3.2 Transit-Related Revenue Shortfall

Operations and Maintenance
All payroll tax revenues and passenger fares revenues are used for transit operations and maintenance costs. Transit formula funds that would be used to replace existing buses and facilities have also been assigned to cover these operations and maintenance costs.

Even with expected payroll tax, passenger fare and transit formula fund revenues, funding operations and maintenance of the preferred transit system is expected to require an additional $31.7 million in the year 2000. In the year 2020, the projected revenue shortfall is expected to be $185.7 million.

Figure 4.4
2020 Preferred System
Transit Related Operations and Maintenance Costs and Revenues



Source: Metro

Capital
All federal transit discretionary and all transit formula funds for buses and facilities that would provide new transit service have been assigned to transit capital costs. There are also assumptions of federal trust fund money to the Interstate light rail transit project. Port of Portland, city of Portland, Tri-Met and private funds have been assumed to fund the light rail transit extension to Portland International Airport. Finally, some Portland parking and local improvement district revenues have been assigned to fund construction of the Portland streetcar project and City of Portland urban renewal district funds have been assigned to fund the construction of the Interstate Avenue light rail project.

With transit capital costs of $4.30 billion dollars ($1998) and expected revenues for transit capital of $1.46 billion (federal discretionary funds and local funds) there is an expected $2.94 billion shortfall of revenue needed for capital costs of the preferred transit system.

See Figure 4.5 for a comparison between the capital costs of building the 2020 Preferred transit system and projected revenues available to build the system.

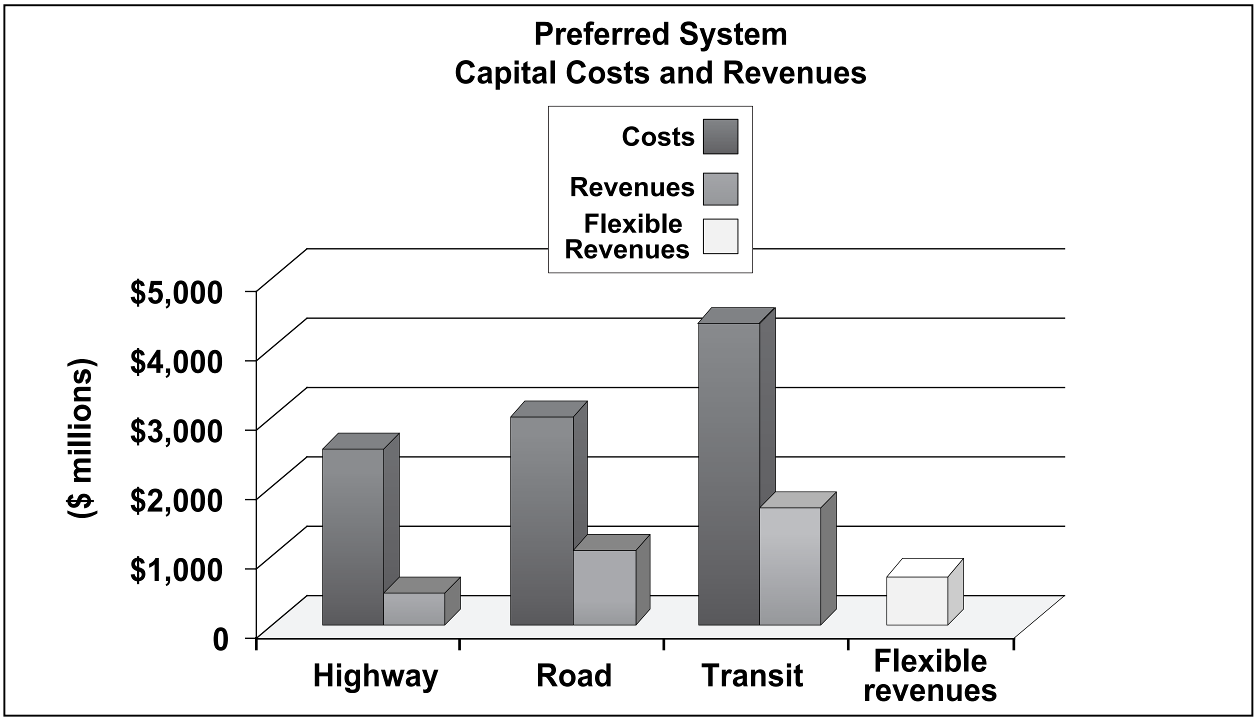
4.3.3 Flexible Revenues

There are several sources of funds that could generally be applied to any of the categories of revenue shortfalls. These include Regional STP funds ($294 million), congestion management and air quality (CMAQ) funds ($188 million), enhancement funds ($28 million), federal forest receipts ($17.8 million) and local urban renewal funds ($130 million). These revenues total $658 million.

These revenues could not be spent on any project in the 2020 Preferred System, but could only be applied to projects that meet the criteria of the particular funding source. However, each category of funding (highway, road, and transit capital and O&M) contain projects that would be eligible for these revenues. See descriptions of these funding sources in Section 4.1 for an explanation of projects that could qualify for funding.

Figure 4.5 demonstrates how these revenue sources compare to the funding shortfalls for state highway, regional roads and transit capital costs. The MTIP process, described in Section 6.5 in Chapter 6, will determine which projects become eligible for the Regional STP, CMAQ and enhancement funds. The jurisdiction within which an urban renewal district is located will determine which projects will get funded with urban renewal funds.

Figure 4.5
2020 Preferred System
Highway, Road and Transit Capital Costs and Revenues

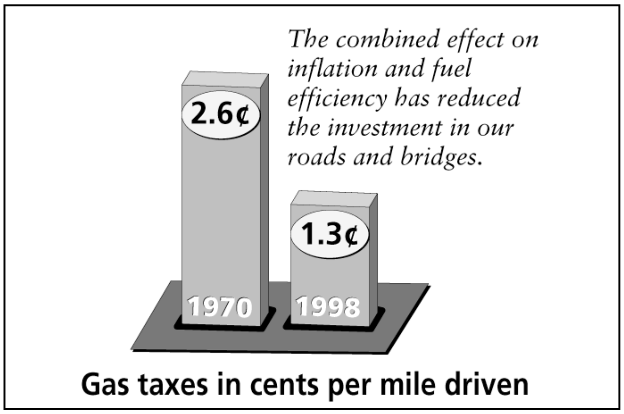


See Section 4.1 for a description of spending restrictions of the flexible revenue sources.
Source: Metro

4.4 Conclusion

The preceding financial analysis identifies a large funding gap in every category of costs to implement the 2020 Preferred System. In addition, the combined effect of inflation and fuel efficiency has reduced the investment in the region's roads and bridges, as shown in Figure 4.5. This demonstrates the need to raise additional revenues to fund the region's transportation system needs.

Figure 4.6
Inflation and Fuel Efficiency



Source: Metro

While operations, maintenance and preservation costs are drastically under-funded in the long term, the short -term gap in funding could be addressed with moderate amounts of additional revenues to keep highways and roads at current pavement conditions. Addressing the backlog of maintenance needs and improving pavement conditions will require more substantial amounts of additional revenue.

Capital costs for modernization and expansion of the highway and regional road system are more severely under-funded. Additional revenue sources and innovative financing methods will be needed to provide additional modernization of the highway system. The regional road system will also require additional revenues; approximately ten times the existing resources currently dedicated to road modernization and expansion. Flexible revenue sources could be applied to either the road or highway capital funding needs, but even if all of the flexible resources were applied to either category, the needs of either category would not be fully funded.

Operation and maintenance of the 2020 Preferred transit system would be 14 percent under-funded in the year 2000, growing to 25 percent under-funded by the year 2020. An additional revenue source that begins to close this funding gap and provides additional stability to funding revenues would be desirable.

Transit capital costs of the 2020 Preferred System are expected to be only 25 percent funded with existing revenue sources. A large portion of the expected revenue sources would only be made available for a few specific light rail projects that also require local match funding, potentially limiting revenues available to other capital projects unless new revenue sources are created.

As an alternative to finding new sources of revenue to fully fund the 2020 Preferred System, Chapter 5 of this plan will identify a transportation system, referred to as the 2020 Priority System, that is less expensive than the 2020 Preferred System. This system would still provide the most critical transportation projects and programs needed to adequately address the impacts of future growth on our regional transportation system. Section 5.4 will identify several strategies for policy makers to consider to generate additional transportation revenues to fund the 2020 Priority System.

CHAPTER 5

Growth and the Priority System

5.0 Introduction

The financial analysis in Chapter 4 shows a dramatic shortfall in the region's ability to fund the 2020 Preferred system identified in Chapter 3, with needed improvements costing more than three times the current revenue projections. The shortfall has profound implications for the region's ability to keep pace with growth, and begin implementing the 2040 Growth Concept. The shortfall could affect all aspects of the regional transportation system, in particular limiting the region's ability to expand existing roadways, transit service as well as adequately serve the region's pedestrian, bicycle and freight needs.

For the purpose of evaluating the impact of funding limitations on our ability to provide needed improvements, this chapter includes a Financially Constrained System analysis. The Financially Constrained System also serves as the basis for complying with federal planning and air quality regulations. In this scenario, the scale of the system is limited to approximately $2.9 billion, which includes existing and proposed funding sources that can reasonably be expected to be available for transportation uses during the 20-year plan period.[1] This includes $900 million of federal transit money that may only be used to expand the light rail system beyond the Interstate Avenue light rail project.

With expected revenue, the financially constrained system is not adequate to meet the region's 20-year transportation needs. The analysis of this Financially Constrained network shows an unacceptable level of congestion, with accompanying impacts on the region's ability to adequately serve expected growth in centers and maintain adequate access to intermodal facilities and industrial areas. As a result, the 2020 Priority System was developed. The 2020 Priority System includes the most critical improvements needed to implement the 2040 Growth Concept. It is not intended to fully meet the region's 20-year needs identified in Chapter 3 as the "preferred" system, but is adequate given current funding limitations. However, the "priority" system of projects described in this chapter would still require a major increase in transportation funding. The resulting priority system would be adequate to serve most of our transportation needs during the next 20 years, but many needs would remain unmet, particularly in developing areas near the urban fringe and on minor routes, underscoring the importance of exploring new and innovative funding strategies for addressing the region's transportation needs.

Therefore, while the 2020 Preferred System is a full statement of need, the 2020 Priority System is a statement of the highest priority need, given current transportation funding constraints, which includes a modest increase of existing resources. Section 5.4 of this chapter describes four possible revenue concepts to address the funding needs of the 2020 Priority System. The accompanying subarea maps show the proposed priority system projects and programs in detail. A summary of the projects included in the Preferred, Priority and Financially Constrained systems is shown in Appendix 1.1. This chapter is organized as follows:

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[1] See Appendix 4.0 for more detail on the revenue assumptions used to develop the financially constrained system.

Effects of Growth on the Financially Constrained System: This section evaluates the performance of the Financially Constrained System and the corresponding impact on implementation of the 2040 Growth Concept on a regional and sub-region basis. For RTP analysis purposes, the financially constrained system was defined to provide a benchmark transportation scenario to compare with the 2020 Preferred and Priority systems and demonstrate that current transportation funding is not adequate to serve this region's 20-year transportation needs. The Financially Constrained System also serves as the basis for complying with federal planning and air quality regulations.

Proposed Priority System Improvements for 2020: This section provides an overview of the process and principles used to identify the 2020 Priority System and generally describes the types of projects and programs included in that system.

2020 Priority System Analysis: This section evaluates the performance of the 2020 Priority System on a regional and sub-region basis, emphasizing major corridors that performed differently when compared to performance of the 2020 Preferred System.

Possible Revenue Strategies for 2020: This section describes three possible revenue strategies to address the funding needs of the 2020 Priority System. One strategy focuses on increasing traditional sources of revenue. A second strategy focuses on growth-related sources of revenue, and emphasizes increasing development-based revenues to pay for transportation needs. The third strategy reflects a combination of the first two strategies and other sources of revenue.

5.1 Effects of Growth on an Financially Constrained System

5.1.1 Financially Constrained System Defined

The financially constrained system is a 20-year transportation scenario that assumes existing and proposed funding sources that can reasonably be expected to be available for transportation uses during the 20-year plan period[2] It is required by federal transportation planning regulations and constitutes the federally recognized plan. The purpose of defining a financially constrained system is to provide a benchmark transportation scenario that will be compared with the 2020 Priority and Preferred systems as part of the RTP analysis. As noted, this system also demonstrates that current transportation funding is not adequate to serve this region's 20-year transportation needs, and is used to determine conformity with federal planning and air quality regulations.[3]

During the 20-year plan period, approximately $2.9 billion in forecasted revenue was allocated for capital improvements.[4] T his amount represents a major shortfall when compared to the cost to implement the needs identified in the preferred system in Chapter 3. As a result, the financially constrained system does not attempt to address all transportation needs. Instead, the financially constrained system attempts to focus limited revenue in key 2040 design types throughout the region, including the central city, industrial areas and intermodal facilities and regional and town centers. Other considerations in developing the financially constrained system focused on prior

[2] See Appendix 4.2 for more detail on the revenue assumptions used to develop the Financially Constrained System.
[3] See Appendix 4.1 for detail on the air quality conformity background and findings of compliance with federal planning regulations.
[4] See Chapter 4, Section 4.1 for more detail on existing revenue sources.

commitments or previously highly ranked projects, smaller, key phases of larger projects and projects that would help complete the bicycle, pedestrian, transit, motor vehicle and freight systems identified in Chapter 1 of this plan.

5.1.2 Regional Performance[5]

Chapter 2 described expected travel demand for the year 2020 based on implementation of the 2040 Growth Concept and predicted population and employment. In summary, population and employment is expected to increase by 46 percent and 68 percent respectively between 1994 and 2020 within the urban growth boundary. This growth is expected to result in a corresponding increase in travel demand during the same time period. The increase in travel throughout the region is expected to have a significant impact on the performance of the regional transportation system. Overall, the financially constrained system is expected to result in slightly less vehicle miles traveled than the preferred system. Table 5.1 shows expected growth in travel within the urban growth boundary.

Though the Financially Constrained System was developed with an emphasis on serving key 2040 Growth Concept centers and industrial areas and intermodal facilities, , the travel demand in these areas is expected to exceeded the ability of proposed motor vehicle and transit improvements to accommodate growth. The motor vehicle system is expected to be very congested during the evening two-hour peak period, exceeding regional motor vehicle performance standards on most principal arterial routes, including the Banfield Freeway west of I-205, portions of the Sunset Highway, Highway 217, Interstate 5 and Interstate 205. Many major arterial routes throughout the region are also expected to experience significant congestion during the evening two-hour peak period, limiting access to the Gresham, Gateway, Oregon City, Clackamas, Beaverton and Hillsboro regional centers. Though the financially constrained transit system carries heavy volumes in the Eastside and Westside light rail corridors, congestion on would significantly impact bus service on parallel arterial routes during the evening two-hour peak period.

Table 5.1

2020 Financially Constrained System Vehicle Miles of Travel[6]

	1994	2020 Preferred System	2020 Financially Constrained System	Difference Preferred and Financially Constrained Systems
Average weekday vehicle miles traveled	*16,112,462*	*24,049,650*	*24,041,362*	*-<1%*
Average weekday vehicle miles traveled per person	*14.10*	*14.43*	*14.43*	*<1%*
Average weekday vehicle miles traveled per employee	*20.36*	*18.11*	*18.10*	*-<1%*

1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

[5] Based on Appendix 1.2: System Performance Measures for Intra-UGB Trips.
[6] Based on Appendix 1.2: System Performance Measures for Intra-UGB Trips.

Motor Vehicle System Performance

Like the preferred system, delay on the region's freeway and arterial street networks is also expected to increase between 1994 and 2020, with the greatest amount of delay predicted to occur on the arterial street network. Assuming implementation of the financially constrained system, 20.3 percent of the region's arterial streets are expected to experience congestion during the evening two-hour peak period. In comparison, in the preferred system, slightly less than 14 percent of the region's arterial streets are expected to experience congestion during the evening two-hour peak period.

If the financially constrained system is implemented, the proportion of the region's freeway network experiencing congestion during the evening two-hour peak period is expected to increase from 15 percent to nearly 39 percent between 1994 and 2020. In contrast, assuming implementation of the preferred system, the proportion of the region's freeway network experiencing congestion during the evening two-hour peak period is expected to be lower, at 28.7percent.

Freeways in the financially constrained system are expected to experience slightly more than 1.5 times the amount of motor vehicle hours of delay as freeways in the preferred system. Likewise, arterial streets in the financially constrained system are expected to experience almost twice as much motor vehicle hours of delay as arterial streets in the preferred system.

As a result of the significant increase in trip-making region-wide, average motor vehicle speeds are expected to decrease from 25 mph in 1994 to 19 mph in 2020 during the evening two-hour peak periods, assuming implementation of financially constrained system improvements. Average motor vehicle speeds are expected to be 22 mph in the 2020 Preferred System during the evening two-hour peak period. Table 5.2 compares the preferred and financially constrained systems, summarizing the differences in the amount and extent of congestion within the Metro urban growth boundary.

Table 5.2

2020 Financially Constrained System Motor Vehicle System Performance[1]

	1994	2020 Preferred System	2020 Financially Constrained System
Average motor vehicle speed	*25 mph*	*22 mph*	*20mph*
Average motor vehicle travel time	*11 minutes*	*12 minutes*	*13 minutes*
Percent of freeway miles experiencing congestion (v/c >0.9)	*14.9%*	*28.7%*	*38.6%*
Percent of arterial street miles experiencing congestion (v/c >0.9)	*6.0%*	*13.7%*	*20.3%*
Total motor vehicle hours of delay (v/c >0.9)	*7,764*	*33,102*	*51,496*
Motor vehicle hours of delay on freeway (% of total)	*2,325 (1.8%)*	*9,684 (4.4%)*	*13,746 (5.6%)*
Motor vehicle hours delay on arterial streets (% of total)	*5,439 (4.3%)*	*23,418 (10.6%)*	*37,750 (15.4%)*

1 Based on evening two-hour peak period. Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Alternative Mode Performance

Drive-alone trips as a percentage of all person trips are expected to decrease by slightly more than one percent between 1994 and 2020, assuming implementation of the financially constrained system. By comparison, bicycle and pedestrian travel are expected to increase between 1994 and 2020. In 1994, bicycling or walking (not including walk trips to transit) represented slightly more than 6 percent of all person trips inside the urban growth boundary. By 2020, bicycle and pedestrian travel is expected to represent almost 8 percent of all person trips made inside the urban growth boundary, similar to the preferred and priority systems.

Transit service hours are expected to increase by 45 percent , increasing from 4,400 hours in 1994 to more than 8,406 hours in 2020. Transit ridership is expected to increase by 40 percent, representing more than 5 percent of all person trips in the region by 2020. The number of average weekday transit trips is expected to more than double between 1994 and 2020, increasing from 172,464 to more than 387,000 transit trips. In comparison, ridership in the preferred system is expected to more than triple as a result of expanded transit service and transit capital improvements. The proportion of households and jobs within 1/4-mile of transit service is expected to decline by 7 percent and 4 percent respectively between 1994 and 2020, assuming implementation of the financially constrained system. In contrast, with the preferred system the proportion of households and jobs within 1/4-mile of transit service is expected to increase by 7 percent and 3 percent respectively between 1994 and 2020. Table 5.3 compares alternative mode performance between the preferred and financially constrained systems within the Metro urban growth boundary.

Table 5.3

2020 Financially Constrained System Alternative Mode Performance[1]

	1994	2020 Preferred System	2020 Financially Constrained System
Walk trips (as a percent of total person trips)	*5.18%*	*6.81%*	*6.79%*
Bike trips (as a percent of total person trips)	*.97%*	*1.25%*	*1.17%*
Transit trips (as a percent of total person trips)	*3.55%*	*7.32%*	*5.11%*
Average weekday transit trips (originating rides)	*172,464*	*551,757*	*387,527*
Average weekday transit revenue hours	*4,400*	*13,836*	*6,402*
Percent of households within 1/4-mile of transit	*78%*	*83%*	*73%*
Percent of jobs within 1/4-mile of transit	*86%*	*88%*	*82%*

1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Freight System Performance

Trucks are a critical part of moving goods within the Portland metropolitan region. Of the total goods moving into, out of and within the region, 62 percent complete all or part of the trip by truck. Other modes that move goods are barge, rail and air. In 1994, the region handled more than 17,000 truck trips daily. This number is expected to grow by nearly than 18,000 truck trips daily, representing an increase of 32 percent between 1994 and 2020. Truck hours of delay are expected to increase by more than eight-fold during the evening two-hour peak period between 1994 and 2020, assuming implementation of the financially constrained system. This represents a change from 4 percent of truck hours experiencing delay in 1994 to more than 17 percent of truck hours experiencing delay during the evening two-hour peak period.

In contrast, assuming implementation of the preferred system, truck hours of delay are expected to increase by more than five-fold during the evening two-hour peak period between 1994 and 2020. This represents a change from 4 percent of truck hours experiencing delay in 1994 to nearly 13 percent of truck hours experiencing delay during the evening two-hour peak period. Table 5.4 summarizes key freight system statistics, assuming implementation of the financially constrained system, and compares performance of the financially constrained system with the preferred system.

Table 5.4

2020 Financially Constrained System Freight System Performance[1]

	1994	2020 Preferred System	2020 Financially Constrained System
AWD total truck trips	*54,598*	*72,118*	*72,118*
AWD truck average trip length (miles)	*22.64*	*23.90*	*23.96*
Two-hour peak period truck vehicle hours of delay	*130*	*713*	*1,026*
Two-hour peak period average truck travel time	*36.53*	*42.86*	*45.90*

Note: This summary of freight system performance reflects Metro's regional truck travel forecasting model.

1 Within the four-county region, includes Clark, Clackamas, Multnomah and Washington counties.

Source: Metro

5.1.3 Subarea Performance

Significant congestion will remain on the regional transportation system, assuming implementation of the Financially Constrained System. As a result, the 2020 Financially Constrained System does not adequately meet the overall travel needs of the Portland metropolitan region for the next 20 years.

This section summarizes the performance of proposed 2020 Financially Constrained System improvements on the regional transportation system by RTP Subarea. The discussion focuses on an evaluation of the overall impact of certain improvements on access to the central city, regional centers, industrial areas and intermodal facilities.

Subarea 1: West Columbia Corridor

Industrial areas and intermodal facilities represent the majority of land-use types in this subarea. As primary land-use components in the 2040 Growth Concept, these areas in the West Columbia Corridor subarea are a focus of most financially constrained system improvements. Exceptions include several seismic retrofit projects and an interchange improvement at 33rd Avenue on Northeast Portland Highway. The financially constrained system assumed limited improvements to I-5 North corridor that included an extension of light rail to Clark County, Wa., widening I-5 North to three lanes in each direction from Lombard Street to the Expo Center and a smaller phase of ramp improvements to I-84 at Greeley Avenue.

Other improvements assumed for this subarea include a light rail extension to the Portland International Airport, capacity improvements to key arterial streets and freight rail lines that access industrial areas and intermodal facilities, system management strategies on arterial streets, bicycle and pedestrian improvements and the establishment of transportation management associations.

Financially Constrained System Performance

Motor vehicle and freight systems assumed in the financially constrained system perform comparably to the priority system, largely because the two systems are nearly identical in terms of the assumptions for the West Columbia Corridor subarea, with the exception of I-5 North. I-5 North experiences more congestion in the financially constrained system when compared to the priority system, reflecting limited improvements to the corridor. Other areas of significant congestion are in the vicinity of Portland International Airport, along Alderwood Road, Marine Drive and Northeast Portland Highway from 33rd Avenue to I-205. A number of new connections and capacity improvements are assumed in the vicinity of Portland International Airport.

Transit service in the West Columbia Corridor subarea is mostly limited to bus and light rail service to Portland Airport. Transit coverage in this subarea did not vary much from the priority system, although both bus and light rail service are less frequent. Transit ridership to and from the subarea is expected to be somewhat lower than the priority system, as a result. New and existing transportation management associations are expected to benefit the overall function of the transportation system in this subarea.

Subarea 2: Portland Central City and Neighborhoods

This subarea is centered on the Portland central city. As a primary land-use component in the 2040 Growth Concept, the Portland central city is a focus of many financially constrained system improvements, with many priority system projects represented in the financially constrained network. Examples of projects not included in the financially constrained system include: I-5 access improvements from Macadam and the Central Eastside Industrial District, Belmont Avenue ramp improvements, some eastside bikeways, some traffic management enhancements, several seismic retrofit projects, pedestrian access-to-transit projects along outer-eastside mainstreets such as Division Street and 82nd Avenue and bikeways connecting southwest Portland neighborhoods to adjacent town centers.

Transit coverage in this subarea did not vary significantly from the priority system, although both bus and light rail service are less frequent. Transit service in this subarea is mostly limited to regional bus service and light rail, extending north to the Portland Metropolitan Exposition (Expo) Center and south to the Milwaukie regional center from the Rose Quarter transit center, and then potentially to Clark County, Wash. The central city street car was extended to the North Macadam area in the financially constrained system. Overall, transit ridership to and from the subarea is expected to be somewhat lower than the priority system as a result of the reduced bus and light rail service.

Financially Constrained System Performance

Motor vehicle and freight systems assumed in the financially constrained system are expected to be more congested than the priority system. In particular, all radial principal arterial corridors exceed the level-of-service policy established in Chapter 1, including I-405, I-5 North, I-5 South, I-84 and US 26. System management strategies, transportation management associations and improvements to the regional bike and pedestrian systems represent a higher percentage of financially constrained system projects within this subarea as a means to provide adequate alternatives to the congested motor vehicle system. Bicycle access to the Portland central city and southwest town centers would likely be affected on major routes like Barbur Boulevard, Macadam Avenue and Powell Boulevard as a result of several southwest Portland bikeways being not included in the financially constrained system.

Without light rail service improvements to the Highway 99E/224 corridor, there is not an adequate alternative to congestion during the evening-two hour peak period. Highway 224 experiences more congestion in the vicinity of the Ross Island and Sellwood bridges in the financially constrained system when compared to the priority system during the evening two-hour peak period. Similarly, Barbur Boulevard and I-5 south of I-405 are expected to experience significantly more congestion than the priority system without an adequate high-capacity transit alternative in the Barbur Boulevard corridor.

Maintenance and preservation of the Willamette River Bridges is expected to fall behind given the funding limitations of the financially constrained system; this could have significant impacts on access to the Portland central city by all modes of travel.

Subarea 3: East Multnomah County

The Gresham and Gateway regional centers and the east Columbia Corridor industrial area are included in this subarea. As primary land-use components of the 2040 Growth Concept, these areas are the focus of most financially constrained system improvements. Examples of projects located outside of these areas that were not included in the financially constrained system include: widening I-84, improvements to I-205, multi-modal retrofits of arterial streets , localized capacity improvements to address significant bottlenecks on Division Street (east of 257th Avenue), 162nd, 201st, Halsey, Glisan, Palmquist and Orient roads and connectivity improvements in the east Columbia Corridor industrial area. Transit service in the East Multnomah County subarea included regional bus service and light rail. Transit coverage in this subarea did not vary from the priority system, although both bus and light rail service are less frequent and there are fewer capital improvements to increase bus speed and reliability.

Financially Constrained System Performance

Motor vehicle and freight systems assumed in the financially constrained system are expected to be more congested than the preferred and priority systems. In particular, I-205, Powell Boulevard and north/south arterial streets that access I-84. The level of congestion on the motor vehicle network does not significantly affect access to the Gresham regional center because assumed transit service and multi-modal retrofits of existing streets provide alternatives. Travel demand from developing areas south of Gresham regional center is expected to cause Division Street, Powell Boulevard and Foster Road to experience significant congestion during the evening two-hour peak period.

In contrast, Gateway experiences significant spillover traffic from the Banfield Freeway corridor. As a result, a number of east/west corridors in the Gateway area, including Halsey, Glisan, Burnside, Stark and Division streets experience more congestion in the financially constrained system as compared to the preferred and priority systems during the two-hour peak period.

In addition, access to the South Shore industrial areas will likely be affected by not constructing the Marine Drive extension, 207th Extension, Sandy Overpass, I-84/Troutdale interchange, and capacity improvements to 162nd and 201st avenues. As a result, travel demand is expected to shift to other routes such as 181st and 223rd avenues.

System management strategies, transportation management associations and improvements to the regional bike and pedestrian systems represent a higher percentage of financially constrained system projects within this subarea as a means to provide adequate alternatives to the congested motor vehicle system.

Subarea 4: Damascus/Pleasant Valley

The Damascus/Pleasant Valley urban reserve areas represent the majority of land uses in this subarea. As a result, most financially constrained system improvements for this area focused on developing a modest base street network to serve planned urbanization in this part of the region. Performance of the financially constrained system in the Pleasant Valley/Damascus area varies significantly from the preferred and priority systems, largely due to the lack of an adequate street network to serve planned urbanization in this part of the region. In addition, due to funding limitations the financially constrained system assumed only Phase 1 of the Sunrise Corridor principal arterial connection, modest capacity improvements to arterial streets, including Foster Road, 172nd Avenue and Sunnyside Road, and modest improvements to the regional bicycle system. Examples of projects not assumed in the financially constrained system to serve this subarea include: a project to widen 242nd Avenue from Gresham regional center to Highway 212, regional bus service expansion, a number of surrogate collector and arterial street network and implementation of a transportation management association.

Transit service in this subarea includes regional bus service that connects to Clackamas and Gresham regional centers. Transit coverage in this subarea was also significantly less in the financially constrained system when compared to the preferred and priority systems, and both bus and light rail service were less frequent.

Financially Constrained System Performance

Despite modest capacity improvements to most existing arterial streets in this subarea, the motor vehicle system experiences significantly more congestion than the preferred and priority systems during the two-hour peak period. In addition, differences in the surrounding Multnomah and Clackamas county networks are expected to affect access to the Damascus and Pleasant Valley areas from the rest of the region. In the financially constrained system, scaled-back improvements to I-205 are expected to make travel in and out of Clackamas County more difficult, which is compounded by the job/housing imbalance between Clackamas County and adjacent subareas to the north and west.

Arterial routes like Foster Road, Sunnyside Road and 182nd Avenue that connect the Damascus-Pleasant Valley area to employment centers outside of Clackamas County are expected to be very congested in the financially constrained system during the evening two-hour peak period. In terms of access to Multnomah County, the lack of a collector and arterial street network north of Foster Road and expected congestion along Foster Road are expected to make travel in and out of Multnomah County more difficult and result in diversion of traffic onto other rural routes. Furthermore, the level of transit service assumed for this area is not expected to provide an adequate alternative to peak hour congestion.

Subarea 5: Urban Clackamas County

The Clackamas and Oregon City regional centers and the Clackamas industrial area are included in this subarea. As primary land-use components in the 2040 Growth Concept, these areas are the focus of most financially constrained system improvements and many priority system projects are represented in the financially constrained network. Key improvements like adding capacity to I-205, Highway 224, the Sunrise Corridor and high-capacity transit to Clackamas and Oregon City regional centers are not retained in the financially constrained system. Transit service in this subarea includes regional bus service and light rail, from the Rose Quarter transit center to the Milwaukie town center. A light rail extension from Milwaukie to Oregon City and Clackamas regional centers is not included in the financially constrained system. Transit coverage and service in this subarea varied significantly from the preferred and priority systems, including less frequent bus and light rail service and fewer capital improvements to increase bus speed and reliability.

Financially Constrained System Performance

Overall, motor vehicle and freight systems assumed in the financially constrained system are expected to be more congested than the preferred and priority system. The urban Clackamas County transportation system is already overburdened in the preferred and priority systems, due to the heavy concentration of urban reserves adjacent to and within this subarea. In addition, a lack of improvements to the arterial and collector street network results in congestion during the evening two-hour peak period on major routes, like Sunnyside Road, 82nd Avenue and McLoughlin Boulevard. This significant congestion is further compounded by not including I-205 and Highway 99E/224 capacity improvements or adequate transit alternatives for these principal and major arterial corridors in the financially constrained system. This has a dramatic effect on both arterial routes and parallel routes, since the job/housing imbalance in urban Clackamas County results in a strong north/south demand between this subarea and the employment areas located in the Portland central city and East Multnomah County subareas. Several bottlenecks in the Clackamas industrial area result when improvements to freight access routes like Jennifer Street, 82nd Drive and Highway 213 are not included. These changes affect access to the industrial area from the rest of the region.

Access to the Oregon City regional center also is expected to be limited by extensive congestion along I-205 and the street network south of the Clackamas River and East of the Willamette River, including Highway 213, Molalla Avenue and Beavercreek Road. Urban reserve areas to the south of Oregon City are also expected to impact access to the regional center as planned growth in these areas cannot be adequately served by proposed improvements to Highway 213.

Most bicycle and pedestrian improvements assumed in the financially constrained system are limited to regional and town centers thus limiting bicycle and pedestrian access along major corridors that connect these centers. System management strategies, transportation management associations and improvements to the regional bike and pedestrian systems represent a higher percentage of financially constrained system projects within this subarea as a means to provide alternatives to the congested motor vehicle system.

Subarea 6: South Washington County

Washington Square regional center and the Tualatin industrial area are included in this subarea. As primary land-use components in the 2040 Growth Concept, these areas are the focus of most financially constrained system improvements. Examples of projects located outside of these areas that were not included in the financially constrained system include: I-5/99W Connector, widening 99W, bike and/or pedestrian improvements in town centers, and several collector and minor arterial connectivity and capacity improvements in Tigard and Wilsonville town centers.

Transit service in this subarea includes regional bus service and peak-hour only commuter rail service connecting Wilsonville to Beaverton. Transit coverage in this subarea varied significantly from the preferred and priority systems, Transit coverage and service in this subarea varied significantly from the priority system, including less frequent bus and light rail service and fewer capital improvements to increase bus speed and reliability.

Financially Constrained System Performance

Motor vehicle and freight systems assumed in the financially constrained system are expected to be more congested than the preferred and priority systems during the evening two-hour peak period. Absence of the I-5/99W Connector is expected to divert traffic onto 99W, Tualatin-Sherwood Road and other rural routes. This in turn is expected to impact access to regional and town centers within the subarea. Local circulation and access to Tigard town center is limited by significant congestion along 99W in the financially constrained system during the two-hour peak period. Highway 217 in the vicinity of Washington Square regional center and I-5 south of Kruse Way are expected to experience significant congestion. Commuter rail between Wilsonville and Beaverton and transit service along the Barbur Boulevard corridor do not provide adequate alternatives to congestion in this part of the region. Highway 217 experiences significant congestion in some sections in the vicinity of Washington Square regional center during

Most bicycle and pedestrian improvements in the financially constrained system are limited to regional and town centers thus limiting bicycle and pedestrian access along major corridors that connect these centers. A relatively strong program of transportation management associations is expected to provide some benefits to the transportation system.

Subarea 7: North Washington County

Beaverton and Hillsboro regional centers and the Sunset industrial area are included in this subarea. As primary land-use components in the 2040 Growth Concept, these areas are the focus of most financially constrained system improvements. Several priority system projects are not included in the financially constrained system, including capacity improvements to US 26 west of Murray Boulevard, portions of Walker Road and arterial streets north of US 26. Bike and/or pedestrian improvements along Walker Road, Denney Road, Springville Road, Western Avenue, Canyon Road, Baseline Road, Allen Boulevard and Tualatin Valley Highway were also not included. Most bicycle and pedestrian improvements assumed in the financially constrained system are limited to projects that also add road capacity.

Transit service in this subarea includes regional bus service, peak-hour only commuter rail service connecting Wilsonville to Beaverton and light rail. Transit coverage and service in this subarea varied significantly from the preferred and priority systems, including less frequent bus and light rail service and fewer capital improvements to increase bus speed and reliability.

Financially Constrained System Performance

Overall, motor vehicle and freight systems assumed in the financially constrained system are expected to be more congested than the preferred and priority systems during the evening two-hour peak period. In particular, sections of US 26 and Walker Road near the Sunset industrial area are expected to experience significant congestion during the evening two-hour peak period. In addition, Tualatin Valley Highway, Beaverton-Hillsdale Highway, Farmington Road, Jenkins Road, portions of Murray Boulevard, Scholls Ferry Road and West Union Road experience significant congestion in the financially constrained system during the evening two-hour peak period. Bus transit service does not provide an adequate alternative to this congestion.

Highway 217 between Beaverton and Washington Square regional centers is expected to experience in part due to the amount of local trips using Highway 217 to access the regional centers. Local connectivity improvements assumed in downtown Beaverton provide some alternatives to congestion on major arterials entering Beaverton regional center. Commuter rail service does provide an alternative to this congestion for some types of trips, but better bus feeder service is needed. A relatively strong program of transportation management associations is expected to provide some benefits to the transportation system.

5.2 Proposed Priority System Improvements for 2020

These proposed Priority System Improvements are the regional Transportation System Plan improvements which comprise an "adequate" system required by the state Transportation Planning Rule (TPR).

5.2.1 Process to Identify System Needs and Projects

While the primary mission of the 2020 Regional Transportation Plan is to implement the 2040 Growth Concept, the plan must also address other state and federal transportation planning requirements that may not directly assist in implementing the growth concept. Chapter 1 of this plan identifies specific transportation needs for each 2040 Growth Concept land-use component and policies for defining a balanced regional transportation system, including mode share targets and regional performance measures. Specific principles for identifying 2020 Priority System needs and projects to meet those needs are summarized in Table 5.5.

Table 5.5
2020 Priority System
Principles for Identifying Needs and Projects

Vision for consistency with the 2040 Growth Concept
- Implements the most significant primary land-use components transportation needs
- Addresses many secondary land-use components transportation needs
- Addresses some needs for other 2040 Growth Concept land-use components
- Substantially preserves "Regional Highways" function

Structure for consistency with the 2040 Growth Concept
- Central city and most regional centers served by light rail transit have direct access to regional highway system and contain a mix of arterial street, pedestrian and bicycle systems improvements
- Most industrial areas have strong connections to regional highway system and intermodal facilities
- Most town centers, corridors and main streets served by regional transit and contain a mix of arterial street, pedestrian and bicycle systems improvements
- Many neighborhoods and employment areas served by community transit, arterial capacity improvements and some improvements to the pedestrian and bicycle systems

2020 Priority System Performance
- Meets many Chapter 1 modal targets *(from Chapter 1)*
- Meets most regional motor vehicle performance measures *(from Chapter 1)*
- Meets intent of Oregon Transportation Planning Rule requirements *(from Chapter 6)*
- Serves as policy determination of "adequate" transportation system *(from Chapter 6)*
- Maintains current regional operations, maintenance and preservation needs
- Meets many 20-year benchmarks for 2040 Growth Concept implementation *(from Chapter 6)*

Source: Metro

5.2.2 Sources of Priority System Projects

Similar to the 2020 Preferred System, the list of priority system projects was generated during the last two years, based on extensive input from the residents of this region and our state, regional and local government partners. The initial list of transportation projects and programs were identified at technical workshops held with local jurisdiction staff in September 1997, a citizen advisory committee workshop in October 1997 and a series of public workshops held throughout the region in November 1997. Since November 1997, the list has continued to be refined to reflect local planning decisions. See Chapter 3, Table 3.2 for more detail on project sources.

5.2.3 Scale and Scope of 2020 Priority System Projects

While the Preferred System represents a statement of need, the Priority System represents a statement of the highest priority need. More than 820 projects have been identified for the preferred system. The 2020 Priority System represents a scaled back 2020 Preferred System and is made up of more than 650 of the most critical preferred system projects and programs that are needed to keep pace with expected growth in this region. The transportation investments included in the priority system address key bottlenecks throughout the region and focus on leveraging the most important 2040 land-use components, including the central city, industrial areas and intermodal facilities, regional centers, town centers and major transit corridors. The 2020 Priority System meets Chapter 1 mode share targets in most areas, most regional performance measures, intent of the Oregon transportation planning rule requirements and maintains current regional system operations, maintenance and preservation needs. The 2020 priority system relies on all currently identified revenue sources and assumes some new unspecified revenue sources at the local, regional, state or federal level.

5.2.4 Overview of Key 2020 Priority System Projects

The improvements and programs described on the following pages represent the region's commitment to establishing an adequate transportation system for the next 20 years. Table 5.6 provides a general overview of the priority system. Figure 5.1 graphs the number of road-related projects proposed in the priority system by mode. (Note: Throughout the document, cost estimates referring to "road-related" improvements include the full modal mix reflected in Figure 5.1). The number of proposed transit capital projects are not included in Figure 5.1.

Table 5.6

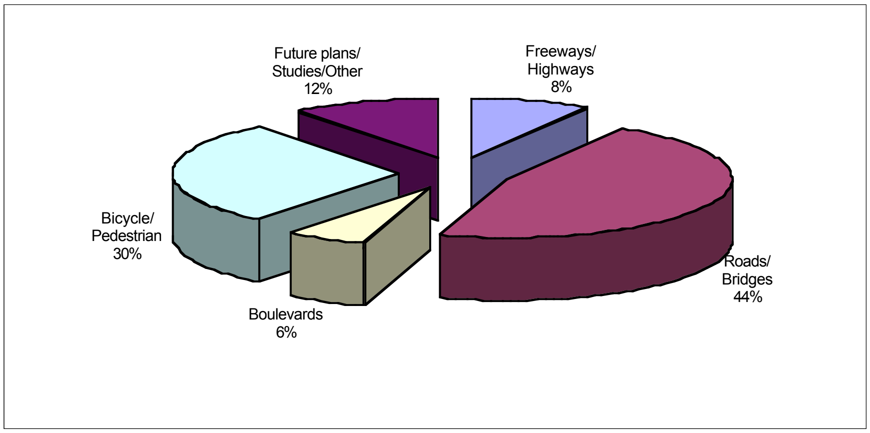
General Overview of the 2020 Priority System[1]

	1994	2020	Percent Change
Freeway lane miles	*570*	*667*	*+17%*
Arterial lane miles	*3,231*	*3,696*	*+14%*
Freight network miles[2]	*623*	*647*	*+4%*
Light rail miles	*15*	*60*	*+ 300%*
Rapid/Frequent bus route miles	*none*	*225*	*n/a*
Local bus route miles	*958*	*1,144*	*+19%*
Bicycle network miles added	*not available*	*447*	*n/a*
Pedestrian network miles added	*not available*	*457*	*n/a*

Note: This table includes arterial and freeway lane/route miles.
1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).
2 Freight network miles are also accounted for in freeway and arterial streets.

Source: Metro

Figure 5.1
2020 Priority System
Road-Related Projects



Note: All "Road" and "Boulevard" projects include a bicycle and pedestrian component.

Source: Metro

Similar, to the preferred system, examples of the types of projects included in Figure 5.1 include:

- *Willamette River Bridges preservation.* Adequate preservation and maintenance of the Willamette River Bridges, including sidewalk/multi-use path repair, deck replacement, painting and lift span repair, and improved bicycle and pedestrian bridge access.

- *Expanded regional trails network.* Critical bike and pedestrian connections to the regional trails network and construction of many new multi-use paths throughout the region.

- *Freight improvements*. Key rail and road expansions to maintain access for national and international rail, air and marine freight to reach its destination with limited delay.

- *Highway expansion.* Major highway expansions to maintain regional mobility and access to industrial areas and facilities where goods move from one transportation mode to another.

- *Arterial street expansion*. Most critical arterial street expansions needed to maintain access to the regional highway system and maintain circulation and access between the central city, regional centers and town centers.

- *New street connections*. New street connections across and parallel to regional highways to slow increases in traffic congestion and provide alternate routes and within regional and town centers to improve access by all modes of travel.

- *Retrofit of major streets for walking, biking and transit.* Wider sidewalks, safer street crossings, landscaped buffers, improved bus stops and bikeways along major streets that serve the central city and regional centers, most town centers, corridors and main streets and some neighborhoods and employment areas.

- *Transportation system management*. System management strategies where full improvements would be too costly. Examples of these strategies include ramp metering, signal timing and access management, to better manage the flow of traffic on existing freeways and arterial streets to achieve maximum efficiency of the current road system without adding major new infrastructure. Improve transit service reliability through the use of transit preferential treatments and service adjustments such as reserved bus lanes, signal preemption, modified stop spacing and more direct routes.

- *Transportation Demand Management*. Demand management strategies to eliminate or delay the need for some improvements. Examples of these strategies include transportation management associations (TMAs) in the central city, regional centers and some town centers and employment areas. TMAs and other demand management strategies attempt to increase transit ridership, vehicle occupancy, walking and biking and reduce the length of some trips, move some trips to off-peak travel periods or eliminate some trips altogether.

- *Future studies*. Town center plans to define long-term transportation needs for all modes of travel in these areas. Corridor refinement plans to develop phased strategies for implementing proposed improvements in a particular corridor. Regional highway corridor studies to identify phased road and transit improvements to maintain regional mobility and address travel demand in the corridor.

Other projects that are included in the priority system, but are not identified in Figure 5.1 include:

- *State and local road maintenance.* Adequate maintenance and preservation of the existing road system without the current pavement condition level slipping from approximately 77 percent of regionally significant roads in fair or better condition.

- *Expanded transit service.* A 3.8 percent increase per year in transit service hours, with an emphasis on light rail transit to the central city and regional centers, commuter rail between Wilsonville and Beaverton and streetcar service in downtown Portland. Faster and more direct transit connections to regional and town centers, corridors and main streets, minimizing the need to go to downtown Portland to transfer. New community and local routes to better serve neighborhoods and employment areas. Figure 5.2 shows the regional transit service strategy assumed for the 2020 Priority System.

- *Transit capital improvements to enhance expanded transit service.* Provide new park-and-ride facilities, low-floor air-conditioned buses, transit station upgrades that include ticket machines and bicycle parking and better passenger amenities at bus stops, including maps, phones, electronic displays showing actual bus locations and arrival times, covered shelters, curb extensions, special lighting and benches.

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Figure 5.2
Regional Transit Service Strategy

Figure 5.2
Regional Transit Service Strategy

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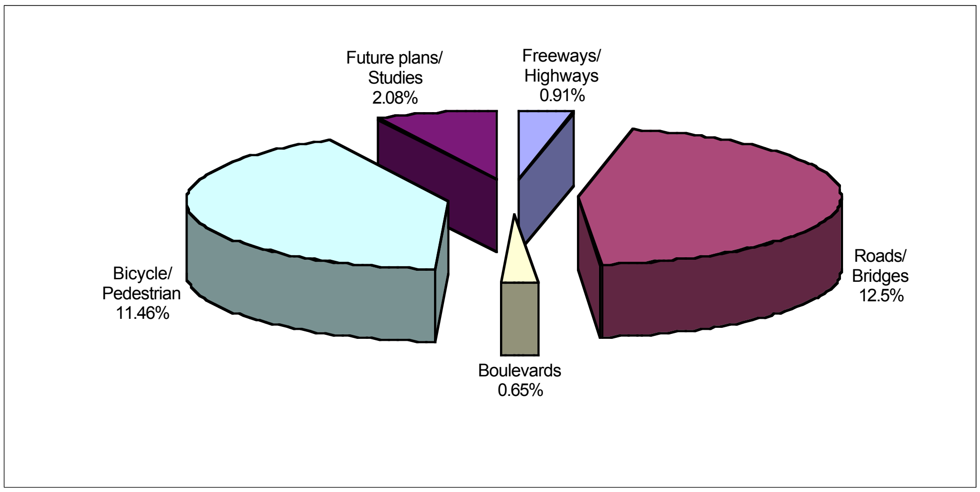
5.2.5 Overview of Projects Not Included in the 2020 Priority System

Figure 5.3 shows the breakdown of road-related projects not included in the 2020 Priority System as a proportion of the preferred system. Approximately 26 percent of projects identified in the preferred system were not included in the priority system. The types of projects not included in the priority system were primarily arterial street expansions and bicycle and pedestrian improvements. Figure 5.3 does not include transit capital improvements.

Figure 5.3
Road-Related Projects Not Included in the 2020 Priority System
(as a percentage of the preferred system)



Source: Metro

5.3 2020 Priority System Analysis

The 2020 priority system is intended to meet the state Transportation Planning Rule (TPR) definition of an "adequate" system. This definition means that while the 2020 priority system does not address all identified transportation needs, it adequately addresses the region's 20-year transportation needs, given current funding limitations. As such, the 2020 priority system is designed to fully serve the most significant land-use components of the 2040 Growth Concept first, including the central city, regional centers and industrial areas and intermodal facilities. Many transportation needs are also addressed in secondary 2040 Growth Concept components, including town centers, station communities, main streets and corridors. Some transportation needs are addressed in other areas, such as neighborhoods and employment areas. The overall land-use strategy of the priority system is to meet 20-year implementation benchmarks established for the 2040 Growth Concept.

The 2020 priority system maximizes transportation system efficiency by careful phasing of needed improvements, and the use of system management and demand management strategies to better use the existing system and delay the need for some major road expansion projects. As a result, the priority system outperforms the preferred system by a number of measures, including less growth in VMT per capita, less single-occupancy vehicle travel and shorter average vehicle trips. This performance results from an increased emphasis on transit, pedestrian, bicycle and demand and system management projects in the 2020 Priority System, where more costly road capacity improvements could not be funded. However, like the other systems studied, there will still be congestion in some places following implementation of the priority system. See Chapter 6 for more detail on proposals for addressing, or in some cases, tolerating that congestion.

5.3.1 Regional Performance[7]

Population and employment is expected to increase by 46 percent and 68 percent respectively between 1994 and 2020 within the urban growth boundary. Growth in population and employment is expected to result in a corresponding increase in travel demand during the same time period. When compared to the 2020 Preferred System, performance of the 2020 Priority System is expected to vary little. Between 1994 and 2020, the number of person trips beginning and ending within the urban growth boundary is expected to increase by 55 percent, to more than 7.5 million trips per day.

Since employment in the region is expected to increase faster than population, the number of trips devoted to work is expected to increase faster than trips for non-work purposes such as shopping and recreation. The number of work trips is expected to grow by nearly 65 percent between 1994 and 2020, while non-work trips is expected to increase by 54 percent. The significant increase in the number of trips to work is expected to have a significant impact on the performance of the transportation system. The additional work trips generally compete for space on the highway and transit systems when it is least available – during the morning and evening peak hours.

Table 5.7 compares the preferred and priority systems with 1994, highlighting expected changes in trips made in the region between the two systems. Table 5.8 compares the preferred and priority systems with 1994, highlighting changes in vehicle miles traveled between the two systems and comparing the preferred and priority systems performance with 1994.

Table 5.7

2020 Priority System Average Weekday Trips[1]

	1994	2020 Preferred System	2020 Priority System	Difference 1994-2020 Priority
Average weekday person trips	*4,864,738*	*7,534,953*	*7,548,706*	*+55%*
Average weekday work trips	*939,578*	*1,547,213*	*1,549,214*	*+65%*
Average weekday non-work trips	*3,925,162*	*6,036,811*	*6,046,674*	*+54%*
Average home-based work trip length	*6.45 miles*	*6.62 miles*	*6.52 miles*	*+3 %*

1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Although the priority system is expected to result in more person trips than the preferred system overall, the priority system is expected to result in fewer vehicle miles traveled than the preferred system, as evidenced in Table 5.8.

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[7] Based on System Performance Measures for Intra-UGB Trips, Appendix 1.2.

Table 5.8

2020 Priority System Vehicle Miles of Travel[1]

	1994	2020 Preferred System	2020 Priority System	Difference 1994-2020 Priority
Average weekday vehicle miles traveled	*16,112,462*	*24,061,990*	*23,929,850*	*+48.5%*
Average weekday vehicle miles traveled per person	*14.10*	*14.44*	*14.36*	*+1.8%*
Average weekday vehicle miles traveled per employee	*20.36*	*18.12*	*18.02*	*-11.5 %*

1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Motor Vehicle System Performance

In the priority system, the proportion of the region's arterial streets experiencing congestion is expected to more than double, increasing from 6.0 percent in 1994 to slightly more than 15 percent in 2020. In the preferred system, slightly more than 16 percent of the region's arterial streets are expected to experience congestion during the evening two-hour peak period. Delay on the region's freeway and arterial street networks also is also expected to increase between 1994 and 2020, with the greatest amount of delay predicted to occur on the arterial street network. Table 5.9 compares the preferred and priority systems, summarizing the differences in the amount and extent of congestion within the Metro urban growth boundary.

Table 5.9

2020 Priority System Motor Vehicle System Performance[1]

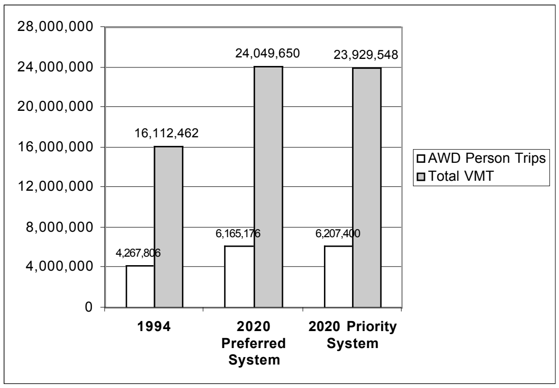
	1994	2020 Preferred System	2020 Priority System
Average motor vehicle speed	*25 mph*	*22 mph*	*21 mph*
Average motor vehicle travel time	*11 minutes*	*13 minutes*	*13 minutes*
Percent of freeway miles experiencing congestion (v/c >0.9)	*14.9%*	*28.6%*	*26.6%*
Percent of arterial street miles experiencing congestion (v/c >0.9)	*6.0%*	*15.3%*	*16.3%*
Total motor vehicle hours of delay (v/c >0.9)	*7,509*	*34,280*	*37,690*
Motor vehicle hours of delay on freeway (% of total)	*2,441 (1.91%)*	*10,182 (4.4%)*	*10,984 (4.7%)*
Motor vehicle hours delay on arterial streets (% of total)	*5,068 (3.97%)*	*24,098(10.4%)*	*26,706(11.4%)*

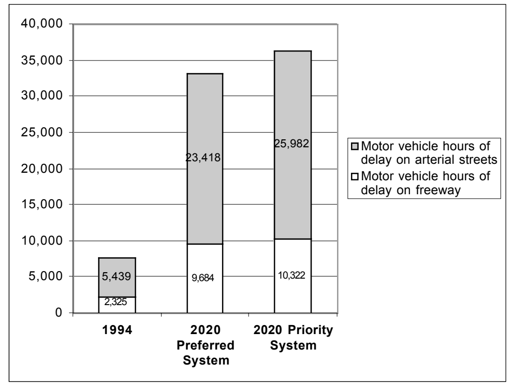
1 Based on evening two-hour peak period. Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Figure 5.4 graphs data listed in Tables 5.7, 5.8 and 5.9, comparing expected increases in person trips, vehicle miles of travel and motor vehicle hours of delay on the region's freeway and arterial street network from 1994 for both the 2020 preferred and priority systems.

Figure 5.4
Comparison of Travel and Delay[1]





1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

As a result of the significant increase in trip-making region-wide, average motor vehicle speeds are expected to decrease from 25 mph in 1994 to 21 mph in 2020 during the evening two-hour peak periods, assuming implementation of priority system improvements. Average motor vehicle speeds are expected to be 21 mph in the 2020 Preferred System during the evening two-hour peak periods. Assuming the priority system is implemented, the proportion of the region's freeway network experiencing congestion during the evening two-hour peak period is expected to increase from 1.05 percent in 1994 to 1.97 percent in 2020, representing an increase from 32 miles to 64 miles of the freeway network experiencing congestion. In contrast, assuming implementation of the preferred system, the proportion of the region's freeway network experiencing congestion during the evening two-hour peak period is expected to be slightly higher, at 2.19 percent.

Alternative Mode Performance

Similar to the preferred system, drive-alone trips as a percentage of all person trips decrease by 4 percent between 1994 and 2020, from nearly 62 percent to 59 percent. By comparison, bicycle and pedestrian travel are expected to increase between 1994 and 2020. In 1994, bicycling or walking (not including walk trips to transit) represented slightly more than 6 percent of all person trips inside the urban growth boundary. By 2020, bicycle and pedestrian travel is expected to represent about 8 percent of all person trips made inside the urban growth boundary. Transit service hours are expected to more than double, increasing from 4,426 hours in 1994 to more than 12,000 in 2020. Transit ridership is expected to increase by 89 percent, representing almost 7 percent of all person trips in the region by 2020. The number of average weekday transit trips is expected to triple between 1994 and 2020, increasing from 172,464 to more than 522,000 transit trips. Increased transit ridership largely results from the expanded transit service and transit capital improvements assumed in the priority system. Of the new transit service provided to the region on an average weekday, the forecast is that:

- 31 percent would provide new coverage
- 36 percent would expand the length and increase the frequency of peak-hour service on existing routes
- 23 percent would provide more frequent service during off-peak hours on existing routes
- 10 percent would provide longer service days on existing routes

Table 5.10 summarizes alternative mode performance.

Table 5.10

2020 Priority System Alternative Mode Performance[1]

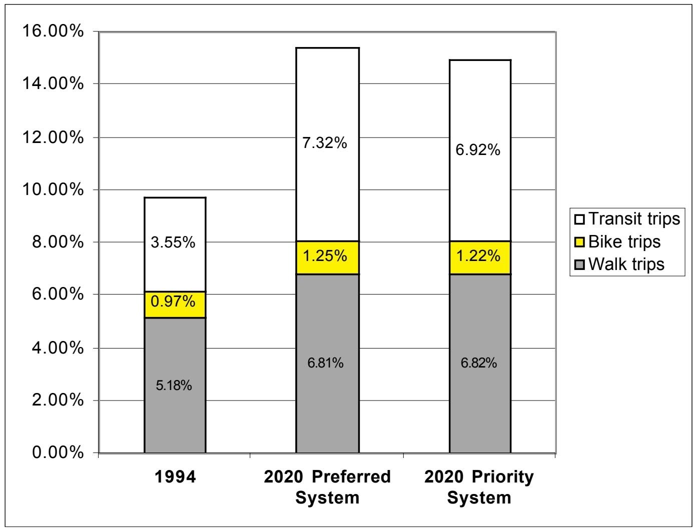
	1994	2020 Preferred System	2020 Priority System	Difference 1994-2020 Priority
Walk trips (as a percent of total person trips)	*5.18%*	*6.81%*	*6.82%*	*+ 32%*
Bike trips (as a percent of total person trips)	*.97%*	*1.25%*	*1.22%*	*+ 26%*
Transit trips (as a percent of total person trips)	*3.55%*	*7.32%*	*6.92%*	*+ 95%*
Average weekday transit trips (originating rides)	*172,464*	*551,757*	*522,700*	*+ 203%*
Average weekday transit revenue hours	*4,400*	*13,836*	*12,950*	*+ 194%*
Percent of households within 1/4-mile of transit	*78%*	*83%*	*83%*	*+ 6.4%*
Percent of jobs within 1/4-mile of transit	*86%*	*88%*	*88%*	*+ 2.9%*

1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Figure 5.5 highlights alternative mode performance for 1994 and the 2020 preferred and priority systems.

Figure 5.5
Alternative Mode Performance[1]



1 Within Metro urban growth boundary (excludes Clark County, Wash. and areas of Clackamas, Multnomah and Washington counties outside of the Metro urban growth boundary).

Source: Metro

Freight System Performance

Trucks are a critical part of moving goods within the Portland metropolitan region. Of the total goods moving into, out of and within the region, 62 percent complete all or part of the trip by truck. Other modes that move goods are barge, rail and air. In 1994, the region handled more than 17,000 truck trips daily. This number is expected to grow by nearly 18,000 truck trips daily, representing an increase of 32 percent between 1994 and 2020. Of this total, approximately 11 percent are expected to be on the regional transportation system during the evening two-hour peak period. With the average trip length of 24 miles, the total truck miles traveled during the evening two-hour peak period is 195,000 miles. Of this total, approximately 28 percent are traveling through congestion during the evening two-hour peak period. Truck hours of delay are expected to increase by more than six-fold during the evening two-hour peak period between 1994 and 2020. This represents a change from 4 percent of truck hours experiencing delay in 1994 to 14 percent of truck hours experiencing delay during the evening two-hour peak period. The priority system has 77 more truck hours of delay than the preferred system. Despite the expected increases in delay, the priority system results in adequate mobility and access for freight movement in the region. Table 5.11 summarizes key freight system statistics, assuming implementation of the priority system, and compares performance of the priority system with 1994 and the preferred system.

Table 5.11
2020 Priority System Freight System Performance[1]

	1994	2020 Preferred System	2020 Priority System	Difference 1994-2020 Priority
AWD total truck trips	*54,598*	*72,118*	*72,118*	*+ 32%*
AWD truck average trip length (miles)	*22.64*	*23.90*	*23.91*	*+ 5%*
Two-hour peak period truck vehicle hours of delay	*130*	*732*	*809*	*+ 522%*
Two-hour peak period average truck travel time	*36.53*	*43.28*	*43.98*	*+ 20%*

Note: This summary of freight system performance reflects Metro's regional truck travel forecasting model.

1 Within the four-county region, includes Clark, Clackamas, Multnomah and Washington counties.

Source: Metro

5.3.2 Major Corridor Performance

Motor vehicle and transit volumes are expected to increase along major corridors throughout the region. Major corridors are defined as those corridors in the region that serve as the primary people and goods moving routes. Tables 5.12 and 5.13 summarize the percent increase in peak direction auto and transit volumes for key corridors in the region. Figure 5.6 and Figure 5.7 highlight auto and transit cut-line results for these major corridors in the region. Further detail on corridors that performed significantly different in the priority system as compared to the preferred system can be found in Section 5.3.3 of this chapter.

Table 5.12
Comparison of Motor Vehicle Volumes[1]

Corridor	1994	2020 Preferred System	2020 Priority System	Difference 1994-2020 Priority
(A) I-5 North, Martin Luther King Jr. Boulevard, Interstate Avenue and Greeley Avenue	*18,799*	*21,203*	*20,777*	*1,978 (+11%)*
(B) I-5 North Interstate Bridge	*11,504*	*18,487*	*17,348*	*5,844 (+51%)*
(C) I-84, Broadway/Weidler, Burnside, Stark, Belmont, Morrison and Hawthorne streets	*28,267*	*29,794*	*29,698*	*1,431 (+5%)*
(D) Powell, Division and Holgate streets	*7,243*	*8,163*	*8,226*	*983 (+14%)*
(E) I-5 and Barbur Boulevard	*13,716*	*15,300*	*15,147*	*1,431 (+11%)*
(F) US 26, Cornell, Burnside and Beaverton-Hillsdale Highway	*19,156*	*20,824*	*20,834*	*1,678 (+9%)*
(G) Highway 30	*3,123*	*4,026*	*4,014*	*891 (+29%)*
(H) Macadam/17th/McLoughlin Boulevard	*10,215*	*14,999*	*15,195*	*4,980 (+49%)*
(I) Sandy Boulevard and I-84	*12,365*	*14,398*	*14,369*	*2,004 (+16%)*
(J) Halsey, Glisan, Burnside, Stark, Division and Powell streets	*15,626*	*19,803*	*20,274*	*4,648 (+30%)*
(K) 172nd/Foster Road/190th Avenue	*1,783*	*8,133*	*8,575*	*6,792 (+381%)*
(L) US 26, 242nd, Orient and Powell Valley roads	*6,077*	*10,026*	*9,887*	*3,810 (+63%)*
(M) Highway 212, Sunrise Corridor and Sunnyside Road	*6,337*	*18,366*	*18,956*	*12,619 (+199%)*
(N) Highway 213, Molalla Avenue and 99E	*8,615*	*14,794*	*14,653*	*6,038 (+70%)*
(O) 181st, 207th, 223rd, 242nd and Hogan roads	*8,312*	*14,766*	*15,528*	*7,216 (+87%)*
(P) I-205 east of 60th Avenue	*7,103*	*12,168*	*12,009*	*4,906 (+69%)*
(Q) I-5 South and Boones Ferry Road	*15,728*	*19,635*	*20,804*	*5,076 (+32%)*
(R) Tualatin-Sherwood Road, 99W and I-5 to 99W connector	*4,052*	*9,320*	*9,139*	*5,087 (+126%)*
(S) Highway 217, Hall Boulevard, Scholls Ferry and Oleson roads	*15,582*	*18,663*	*21,016*	*5,434 (+35%)*
(T) Tualatin Valley Highway and Farmington Road	*7,184*	*11,076*	*11,146*	*3,962 (55%)*
(U) Cornell Road, Beaverton-Hillsdale Highway, Canyon, Walker and Barnes roads	*20,611*	*22,672*	*22,050*	*1,439 (+7%)*
(V) Tualatin Valley Highway and Baseline and Cornell roads	*6,437*	*9,561*	*9,710*	*3,273 (+51%)*
(W) I-205, 82nd and 92nd avenues	*14,315*	*21,528*	*18,752*	*4,437 (+31%)*

1 These volumes reflect the peak direction during the evening two-hour peak period. Refer to Figures 5.6 and 5.7 for actual cut-line locations indicated in parenthesis. Volumes are based on Round 3 model results.

Source: Metro

Table 5.13

Comparison of Selected Transit Volumes[1]

Corridor	1994	2020 Preferred System	2020 Priority System	Difference 1994-2020 Priority
(A) LRT, I-5 North, Martin Luther King Jr. Boulevard, Interstate Avenue and Greeley Avenue	*1,919*	*8,138*	*7,860*	*5,941 (+310%)*
(B) LRT, I-5 North Interstate Bridge	*1,227*	*6,126*	*5,891*	*4,664 (+380%)*
(C) LRT, I-84, Broadway/Weidler, Burnside, Stark, Belmont, Morrison and Hawthorne streets	*4,905*	*12,493*	*12,369*	*7,464 (+152%)*
(D) Powell, Division and Holgate streets	*1,226*	*3,721*	*3,575*	*2,349 (+192%)*
(E) I-5 and Barbur Boulevard	*1,043*	*3,768*	*3,675*	*2,632 (+252%)*
(F) LRT, US 26, Cornell, Burnside and Beaverton-Hillsdale Highway	*2,082*	*7,682*	*7,487*	*5,405 (+260%)*
(H) LRT, Macadam/17th/McLoughlin Boulevard	*1,186*	*7,338*	*7,552*	*6,366 (+536%)*
(J) Halsey, Glisan, Burnside, Stark, Division and Powell streets	*1,525*	*6,777*	*6,439*	*4,914 (+322%)*
(K) 172nd/Foster Road/190th Avenue	*n/a*	*1,579*	*1,427*	*1,427*
(S) Highway 217, Hall Boulevard, Scholls Ferry and Oleson roads	*305*	*1,285*	*1,195*	*890 (+292%)*
(U) LRT, Cornell Road, Beaverton-Hillsdale Highway, Canyon, Walker and Barnes roads	*1,447*	*6,823*	*6,372*	*4,925 (+340%)*
(W) I-205, 82nd and 92nd avenues	*224*	*919*	*817*	*593 (+265%)*

1 These volumes reflect the peak direction during the evening two-hour peak period. Refer to Figures 5.6 and 5.7 for actual cut-line locations indicated in parenthesis. Volumes are based on Round 3 model results.

Source: Metro

Figure 5.6

1994 Major Corridor Auto and Transit Volumes

Figure 5.7
2020 Priority System
2020 Major Corridor Auto and Transit Volumes

5.3.3 Subarea Performance

While, some congestion is expected to remain on the regional transportation system, the 2020 Priority System adequately meets the overall travel needs of the Portland metropolitan region for the next 20 years. The priority system represents the most critical improvements needed to implement the 2040 Growth Concept.

This section summarizes the performance of the regional transportation system by RTP Subarea based on implementation of projects and strategies included in the 2020 Priority System. A map of each subarea is provided that identifies the primary modal focus and general location of each Priority System project. The map is for illustrative purposes only. Projects that are also included in the Financially Constrained System are labeled with a diamond symbol. ◇

The map is followed by a discussion of key differences between performance of the preferred and priority systems based on improvements recommended in the plan. The discussion summarizes what types of projects are not included in the priority system as well as an evaluation of the overall impact of certain improvements on access to the central city, regional centers, industrial areas and intermodal facilities within the subarea. A brief description of each priority project follows the discussion. Projects that are also included in the Financially Constrained System are labeled with a diamond symbol.◇

Each project description also includes a potential time period for implementation. Actual timing for construction of the proposed project is contingent upon more detailed project planning by the sponsoring jurisdiction(s) and funding availability. See Appendix 1.1 for project cost estimates and sponsoring jurisdiction.

Figure 5.8
West Columbia Corridor Subarea Map

Figure 5.8

West Columbia Corridor Subarea Map

West Columbia Corridor Projects

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

1000 1002 Light Rail Expansion
Extend light rail service from the Rose Quarter transit center north to the Portland Metropolitan Exposition Center and then potentially to Vancouver, Washington. *(2000-2020)*

1135 MLK/Lombard Frequent Bus
Provide capital improvements that enhance new frequent bus service along MLK Boulevard and Lombard Street from downtown Portland to St. Johns. *(2006-2010)*

1139 St. Johns Bridge Restoration
Complete restoration improvements to the bridge. *(2006-2010)*

1152 Freight Mobility Study
Study to identify improvements to N. Lombard Street to provide better truck access to Rivergate and protect adjacent neighborhoods from freight truck traffic. *(2000-2005)*

2068 I-205 Direct Ramp
Redesign the I-205 off-ramp at Airport Way. *(2006-2010)*

2069 I-205 Interchange Improvement
Construct a new I-205 northbound on-ramp from Airport Way. *(2011-2020)*

2070 I-205 Interchange Improvement
Widen the existing I-205 southbound on-ramp from Airport Way. *(2011-2020)*

2071 I-205 Auxiliary Lane
Construct new north- and southbound auxiliary lanes from Airport Way to Columbia Boulevard. *(2011-2020)*

2072 I-205 Auxiliary Lane
Construct new north- and southbound auxiliary lanes from I-84 to Columbia Boulevard. *(2011-2020)*

4000 Airport Light Rail
Complete new light rail transit service from Gateway regional center to the Portland International Airport terminal. *(2000-2005)*

4001 Killingsworth Frequent Bus
Provide capital improvements that enhance new frequent bus service along Killingsworth Street from Swan Island to the Clackamas regional center. *(2006-2010)*

4002 Transit Station and Park-and-Ride Lot Upgrades
Construct, expand and/or upgrade transit stations and park-and-ride lots throughout the subarea, including facilities in St. Johns, Linnton, Parkrose and Kenton. *(2000-2020)*

4003 I-5 Interstate Bridge and I-5 Widening
Add capacity to the I-5/Columbia River bridge and widen I-5 from Columbia Boulevard to the Interstate Bridge based on final recommendations from I-5 Trade Corridor Study. *(2000-2005)*

4004 I-5 Reconstruction and Widening
Reconstruct and widen I-5 from I-84 to Greeley Avenue in addition to various bridge and ramp improvements along this section of I-5 to improve access to the Lloyd District and Rose Quarter. *(2000-2005)*

4005 I-5 North Improvements
Widen I-5 to three lanes in each direction from Lombard Street to the Expo Center exit. *(2000-2005)*

4006 I-5/Columbia Boulevard Improvement
Construct a full direction access interchange at I-5 and Columbia Boulevard based on recommendations from the I-5 North Trade Corridor Study. *(2006-2010)*

4008 I-205 North Corridor Study
Develop a long-term traffic management plan for I-205 from I-84 to the Columbia River to limit congestion and improve traffic flow. *(2006-2010)*

4009 I-5 Trade Corridor Study
Study to define an appropriate mix of improvements from I-405 to I-205, including adding capacity and transit service within the corridor. *(2000-2005)*

4011 NE Marine Drive Bikeway
Retrofit existing street with bike lanes from I-5 to 122nd Avenue to improve access to the Columbia Corridor. *(2000-2005)*

4012 N./NE Lombard/Killingsworth Traffic Management Improvements
Implement comprehensive traffic management plan in the corridor to improve traffic flow. This project includes better signalization at MLK Boulevard, Interstate Avenue, Greeley Avenue, Portsmouth Avenue and Philadelphia Avenue message signs; fiber optic interconnection and communication with the city of Portland's central management computer. *(2006-2010)*

4013 US 30 Bypass – Phase 1 Refinement Study
Study to refine long-term improvements defined in the Columbia Corridor Study, including consideration of additional system and access management strategies from I-5 to I-84. *(2000-2005)*

4014 US 30 Bypass Study- Phase 2
Study to define improvements needed to support US 30 Bypass as a long-term primary freight route from I-5 to US 30. *(2000-2005)*

4015 US 30 Bypass Improvements Study
Study to define improvements needed for better transition of freight movement from Lombard Street to Columbia Boulevard within the US 30 Bypass corridor. *(2000-2005)*

4016 North Willamette Crossing Study
Study to determine the need for a new bridge from US 30 to the Rivergate industrial area. *(2006-2010)*

4017 SW Quad Access
Construct street access from 33rd Avenue into SW Quad. *(2011-2020)*

4019 Light Rail Station/Track Realignment
Constructs new light rail station in conjunction with development of the Portland International Center. *(2000-2005)*

4020 Airport Way Improvements, East
Widen Airport Way to three lanes in both directions from 82nd Avenue to I-205. *(2000-2005)*

4021 Airport Way Improvements, West
Widen Airport Way to three lanes in both directions from 82nd Avenue to the airport terminal. *(2006-2010)*

4022 East End Connector
Constr uct an at-grade intersection connection from Columbia Boulevard at 82nd Avenue to US 30 Bypass/I-205 interchange and widen I-205 southbound on-ramp at Columbia Boulevard. This project is intended to better distribute traffic between Columbia Boulevard and Lombard Street. *(2000-2005)*

4023 Marx Drive Extension
Construct a two-lane extension of Marx Drive to 82nd Avenue. *(2006-2010)*

4024 Alderwood Road Extension
Construct a three-lane extension of Alderwood Road to Clark Road. *(2000-2005)*

4025 International Parkway Extension – Phase 1
Construct a three-lane extension of International Parkway to Cascade Avenue. *(2000-2005)*

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

4026 Cascades Parkway Connection
Construct a two-lane connection between Cascades Parkway and Alderwood Road. *(2000-2005)*

4027 Airport Way/Cascade Grade Separation
Construct a grade-separated crossing at the intersection of Airport Way and Cascade Avenue and widen Airport Way to four lanes in each direction from a new overcrossing to I-205. *(2000-2005)*

4028 Airport Way/82nd Grade Separation
Construct a grade-separated overcrossing at the intersection of Airport Way and 82nd Avenue. *(2011-2020)*

4030 NE 11/13th Avenue Connector
Construct a new three-lane roadway and bridge at Columbia Boulevard. *(2000-2005)*

4031 Airport Way Return Roadways
Relocate Airport Way exit roadway and construct new return roadway. *(2011-2020)*

4032 Airport Way Terminal Entrance Roadway Relocation
Relocate and widen Airport Way at the terminal entrance to maintain access and circulation in the terminal area. *(2000-2005)*

4033 Airport Way East Terminal Access
Construct Airport Way East Terminal access roadway. *(2011-2020)*

4037 Columbia and Lombard Intersection Improvements
Widen turn lanes at the intersection of MLK and Columbia boulevards and MLK Boulevard and Lombard Street. *(2000-2005)*

4038 82nd Avenue/Alderwood Road Improvement
Modify the traffic signal at the intersection of 82nd Avenue and Alderwood Road and construct a right turn lane on southbound 82nd Avenue and a second right turn lane on westbound Alder-wood Road. *(2000-2005)*

4039 NE 92nd Avenue
Improve the street between Columbia Boulevard and Alderwood Road to better facilitate circulation in the Portland International Center development. Scope of project is not fully defined. *(2011-2020)*

4040 47th Avenue Intersection and Roadway Improvements
Widen and reconfigure intersection at 47th Avenue and Cornfoot Road to better facilitate truck turning movements to the cargo area located within the airport area. This project includes sidewalks and bikeways. *(2000-2005)*

4041 Columbia Boulevard/ Alderwood Improvements
Widen and signalize the intersection at Alderwood Road and Columbia Boulevard to better facilitate truck turning movements to the cargo area located within the airport area. *(2000-2005)*

4042 Cornfoot Road Intersection Improvement
Widen turn lanes and signalize the intersection at Alderwood Road and Cornfoot Road. *(2000-2005)*

4043 33rd/Marine Drive Intersection Improvement
Signalize the intersection at 33rd Avenue and Marine Drive. *(2006-2010)*

4046 NE Alderwood Bikeway
Retrofit the existing street with bike lanes from Columbia Boulevard to Alderwood trail to improve access to the Columbia Corridor industrial and employment areas. *(2006-2010)*

4047 NE 33rd Avenue Bikeway
Retrofit of existing street to add bicycle lanes from the Columbia Slough to Lombard Street. *(2011-2020)*

4049 NE 82nd Avenue Bikeway
Retrofit the existing street with bike lanes from Columbia Boulevard to Airport Way to improve access to the Columbia Corridor. *(2000-2005)*

4050 N./NE Columbia Boulevard Bikeway
Retrofit the existing street with bike lanes from Lombard Street east to MLK Boulevard to improve access to the Columbia Corridor industrial and employment areas. *(2006-2010)*

4051 NE Cornfoot Bikeway
Retrofit of existing street to add bicycle lanes from Alerwood Road to 47th Avenue. *(2011-2020)*

4053 Pedestrian and Bicycle Access Improvements
Improve pedestrian and bicycle connections to the airport terminal. *(2000-2005)*

4054 N. Columbia Pedestrian Improvements – Phases 1 and 2
Construct sidewalks and safer pedestrian crossings. *(2000-2005)*

4055 Airtrans/Cornfoot Intersection Improvement
Signalize the intersection and reconfigure traffic flow to provide efficient movement of traffic to adjacent properties. *(2000-2005)*

4056 Columbia Boulevard – Traffic Management
Implement comprehensive traffic management plan in the corridor to improve traffic flow. This project includes better signalization between N. Burgard Street and I-205, message signs, fiber optic inter-connection and communication with the city of Portland's central management computer. *(2006-2010)*

4057 N./NE Marine Drive Traffic Management
Implement comprehensive traffic management plan in the corridor to improve traffic flow. This project includes three new traffic signals between N. Portland Road and 185th Avenue, better signalization, message signs, fiber optic interconnection and communication with the city of Portland's central management computer. *(2000-2005)*

4058 NE Airport Way Traffic Management
Implement comprehensive traffic management plan in the corridor to improve traffic flow. This project includes three new traffic signals between I-205 and 158th Avenue, better signalization, message signs, fiber optic interconnection and communication with the city of Portland's central management computer. *(2000-2005)*

4059 82nd Avenue Pedestrian Impro ements
Construct sidewalks from Airport Way to Alderwood Road. *(2000-2005)*

4061 West Hayden Crossing
Construct new four-lane bridge from Marine Drive to Hayden Island to serve as the primary access to marine terminals on the island. *(2006-2010)*

4062 Marine Drive Improvement – Phase 1
Reconstruct Marine Drive to five lanes from the Terminal 6/Marine Drive intersection to 2.5 miles east, including bike lanes, sidewalks and vegetated buffer of adjacent trail and natural resource area from the Columbia Slough to the N. Marine Drive overpass. This project also signalizes the intersection at the Terminal 6 entrance and Marine Drive to improve safety. *(2000-2005)*

4063 N. Lombard Improvements
Widen Lombard Street to four lanes from Purdy Street to Ramsey Street. *(2000-2005)*

4064 Marine Drive Improvement – Phase 2
Reroute rail tracks and construct an above-grade rail crossing at the Rivergate West entrance to improve safety and reduce vehicle and rail traffic conflicts. *(2011-2020)*

4065 South Rivergate Entry Overpass
Construct an overpass from the intersection at Columbia Boulevard and Lombard Street to South Rivergate entrance to separate rail and vehicular traffic. *(2000-2005)*

4066 Columbia River Channel Deepening Study
Complete study to determine the feasibility of deepening the Columbia River channel from Astoria to Portland. *(2000-2005)*

4067 Columbia River Channel Deepening
Deepen the Columbia River channel to 43 feet from the mouth of the river in Astoria to Portland to better serve the new class of larger container ships. *(2011-2020)*

4068 Rivergate Rail Expansion
Expand railroad capacity in the Rivergate industrial area to increase bulk capacity for mineral and agricultural products and improve train flows within the industrial area. (2000-2005)

4069 Hayden Island Rail Access
Increase rail access to Hayden Island. *(2006-2010)*

4070 Additional Tracks - Kenton Line
Construct additional rail tracks for staging of Pacific Northwest unit trains. *(2006-2010)*

4071 Barnes Yard Expansion
Construct additional unit train trackage between Bonneville and Barnes Yards. *(2006-2010)*

4072 N. Force/Broadacre/Victory Bikeway
Provide a signed bikeway con-nection to the I-5 river crossing. *(2011-2020)*

4073 Kelley Point Park Access Trail/40 Mile Loop Trail
Construct a multiuse trail for bicycles and pedestrians along the north bank of the Columbia Slough. *(2000-2005)*

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

4074 Rivergate Bicycle and Pedestrian Trail
Construct a multiuse trail for bicycles and pedestrians along the Columbia Slough in the Rivergate area. *(2000-2005)*

4076 Columbia Slough Greenway Trail Study
Study to determine the feasibility of constructing a multiuse trail from Kelley Point Park to Blue Lake Regional Park. *(2000-2005)*

4077 Penn Junction Realignment
Realign track configuration and signaling. *(2006-2010)*

4078 West Hayden Island Rail Yard
Construct seven track rail yard on West Hayden Island. *(2006-2010)*

4079 Additional Tracks - North Rivergate
Construct additional mainline track from Burlington Northern Ford facility to B Yard. *(2011-2020)*

4080 Swan Island TMA
Implement transportation management association with area employers. *(2000-2005)*

4081 Columbia Corridor TMA
Implement transportation management association with area employers. *(2000-2005)*

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Figure 5.9
Portland Central City Subarea

Figure 5.9
Portland Central City Subarea

Portland Central City Projects

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

1000 1001 1002 and 1003 Light Rail Expansion
Extend light rail service from the Rose Quarter transit center north to the Portland Metropolitan Exposition Center and south to Clackamas regional center, then potentially to Vancouver, Wash. Provide interim bus service along McLoughlin Boulevard and Highway 224 from Clackamas regional center to the Portland central city until light rail service can be provided in this corridor. *(2000-2020)*

1004 I-5 South Improvements
Add auxiliary lanes from Terwilliger Boulevard to the Ross Island Bridge, Capitol Highway to 99W and I-205 to the Charbonneau interchange and widen the northbound I-5 on-ramp to north-bound I-205 to two lanes. *(2011-2020)*

1005 1006 and 1007 Willamette River Bridges Rehabilitation
These projects provide a range of improvements to the Broadway, Burnside Morrison and Sauvie Island bridges, including sidewalk repair, deck replacement, painting and lift span repair. *(2000-2020)*

1009 Springwater Trail Connection
Construct multiuse path designed for bicycle and pedestrian use from the Sellwood Bridge to the Springwater Corridor trail. *(2000-2005)*

1011 Transit Station and Park-and-Ride Upgrades
Expand and/or upgrade transit stations and park-and-ride lots in various locations, including the River District, St. Johns, Lents, Hollywood, Parkrose, Hillsdale and Barbur transit centers. *(2000-2020)*

1012 Sellwood Bridge
Implement South Willamette River Crossing Study recommendations for the Sellwood Bridge. *(2006-2010)*

1013 Willamette River Bridges Accessibility Project
Relocate light poles at the Sellwood Bridge. *(2011-2020)*

1014 Central City Streetcar
Construct streetcar between Portland State University and Good Samaritan Hospital. *(2000-2005)*

1015 Central City Streetcar - Phase 2
Extend streetcar from PSU to North Macadam. *(2006-2010)*

1016 Rose Quarter Track Reconstruction
Replace light rail track at the Rose Quarter transit center. *(2000-2005)*

1019 Barbur Boulevard Rapid Bus
Provide improvements that enhance rapid bus service along Barbur Boulevard from downtown Portland to Tigard. *(2000-2005)*

1020 Red Electric Trail
Study feasibility of a multi-use path from Willamette Park to Oleson Road. *(2000-2005)*

1021 Peninsula Crossing Trail
Construct multi-use trail from Portland Road to Marine Drive. *(2000-2005)*

1024 I-5/McLoughlin Ramps
Construct new I-5 southbound off-ramp and I-5 northbound on-ramp at McLoughlin Boulevard. *(2011-2020)*

1025 I-5/North Macadam Access Improvements
Construct new north-bound I-5 off-ramp to Macadam Avenue. *(2011-2020)*

1026 Water Avenue Ramps on I-5
Construct new freeway access from the Central Eastside Industrial District to I-5. *(2011-2020)*

1027 South Portland Improvements
Implement study recommendations to improve access to the central city by all modes. *(2000-2005)*

1028 Kerby Street Interchange
Realign I-405 off-ramp at Kerby Street to improve local access and calm traffic. *(2000-2005)*

1029 Water Avenue Extension
Construct new two-lane extension of street with sidewalks, bicycle lanes and landscaping to improve access to the Willamette River Greenway. *(2000-2005)*

1030 Ross Island Bridge Improvements
US 26 Interchange improvement on east approach to Ross Island Bridge. *(2011-2020)*

1031 I-405/US 26 Connector
Construct new freeway access from the Ross Island Bridge to I-405 to US 26. *(2011-2020)*

1032 Southern Triangle Circulation Improvements
Improve traffic movement and access to the Central Eastside Industrial District and the central city. *(2000-2005)*

1033 Lovejoy Ramp Reconstruction
Remove the Lovejoy ramp to support development of housing in the River District area. Project also will include sidewalks and transit facilities. *(2000-2005)*

1034 Lower Albina RR Crossing
Construct a new roadway overcrossing of rail facilities to separate truck and rail freight movements. This project is intended to eliminate freight truck delay experienced when trains block multiple local street intersections. *(2000-2005)*

1035 SW Columbia Street Reconstruction
Rebuild street to improve access to central city by all modes. *(2000-2005)*

1036 Broadway/Flint Arena Access
Realign intersection to improve access to the Rose Garden arena. *(2000-2005)*

1037 Bybee Boulevard Over-crossing
Replace existing bridge with a 4-lane bridge with standard clearance. *(2006-2010)*

1046 Transit Mall Restoration
Provide improvements to transit mall in downtown Portland in conjunction with construction of light rail transit. *(2000-2005)*

1047 SE 7th/8th Avenue Connection
Construct new street connection from 7th to 8th avenues at Division Street. *(2006-2010)*

1048 North Macadam Pedestrian and Bicycle Access Improvements
Implement pedestrian and bicycle access improvements identified in the North Macadam Framework Plan, including overcrossings of I-5 and improvements to Sheridan-Corbett Streets and the Greenway trail. *(2000-2005)*

1049 North Macadam Transit Improvements
Implement transit improvements identified in the North Macadam Framework Plan. *(2000-2005)*

Portland Central City Projects (continued)

1050 North Macadam Transportation Management Association Startup
Implement a transportation management association program with employers in the district. *(2000-2005)*

1051 Burnside Street Traffic Management
Boulevard retrofit of street from SE 12th Avenue to NW 23rd Avenue, including pavement reconstruction, wider sidewalks, curb extensions, safer crossings and traffic management to limit motorist delays. *(2000-2005)*

1052 North Macadam Improvements and Traffic Management
Implement improvements identified in the North Macadam Framework Plan. *(2000-2005)*

1053 Naito Parkway Improvements and Traffic Management
Boulevard retrofit of street from NW Davis Street to SW Market Street, including pavement reconstruction, median islands, bicycle lanes, wider sidewalks, curb extensions, safer crossings and traffic management to limit motorist delays. *(2000-2005)*

1054 Broadway/Weidler Improvements – Phase 2 and 3
Boulevard retrofit of street from 15th Avenue to 24th Avenue including wider sidewalks, curb extensions, safer crossings, street trees and traffic signals. *(2000-2005)*

1055 MLK/Grand Improvements
Retrofit existing street with boulevard design features, including construction of wider sidewalks, curb extensions, safer street crossings and street trees. *(2011-2020)*

1056 Lloyd District TMA
Implement transportation management association with area employers. *(2000-2005)*

1058 1060 1061 1064 1069 Bicycle Lane Retrofits
Retrofit existing streets with bicycle lanes throughout the central city, along SW Moody, SW Salmon/Taylor/Madison/Main, SE 11th/12th Avenue bikeway, N. Interstate bikeway and E. Burnside. *(2000-2005)*

1062 Willamette River Bridges Accessibility Project
Improve bicycle and pedestrian access to the Morrison Bridge. *(2000-2005)*

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

1063 1065 1066 1068 1156 Bike Lane Retrofits
Retrofit existing streets with bicycle lanes. *(2011-2020)*

1075 Willamette River Bridges Accessibility Project
Improve bicycle and pedestrian access to the Burnside Bridge. *(2006-2010)*

1079 Steel Bridge Pedestrian Way (RATS Phase 1)
Construct bicycle and pedestrian overcrossing to improve access to the Steel Bridge and the East Bank esplanade. *(2000-2005)*

1080 Hawthorne Boulevard Pedestrian Improvements
Make street safer for pedestrians and improve access to transit from 20th Avenue to 60th Avenue with better lighting, safer street crossings, bus shelters and benches. This project also will include bicycle parking and bicycle facility upgrades on parallel streets. *(2000-2005)*

1081 Eastbank Esplanade
Construct multi-use trail from Steel Bridge to OMSI. *(2000-2005)*

1084 Clay/Second Avenue Pedestrian Vehicle Signal
Install a new traffic signal to make street safer for pedestrian crossings. *(2000-2005)*

1093 Central City Pedestrian Enhancements Study
Study to identify needed pedestrian improvements to address locations lacking pedestrian crossings, difficult bridge crossings and access over freeways. *(2000-2005)*

1096 Barbur/I-5 Corridor Study
Study to identify needed improvements for motor vehicle, truck, bicycle, pedestrian and transit travel in the corridor. *(2000-2005)*

1100 Central City Traffic Management
Limit traffic congestion and improve traffic flow in the central city by improving traffic signal operations along arterial streets. *(2000-2005)*

1101 1102 1103 1105 Traffic Management
Implement comprehensive traffic management plan along Jefferson Street, Macadam Avenue, Going Street and SW/NW 14th/16th Avenue to limit traffic congestion and improve traffic flow. These projects include better signalization, message signs, fiber optic interconnection and communication with the city of Portland's central management computer. *(2006-2010)*

1104 1207 Traffic Management
Limit traffic congestion and improve traffic flow in the central city by using computer technology to improve traffic signal operations along NW Yeon/St. Helens and Barbur Boulevard. *(2000-2005)*

1106 Eastside Streetcar Feasibility Study
Study to determine the feasibility of Streetcar service for eastside Portland neighborhoods. *(2006-2010)*

1109 Going Street Rail Overcrossing
Widen intersection at Swan Island entrance to improve access to industrial area. *(2000-2005)*

1113 Going Street Bikeway
Retrofit existing street with bicycle lanes to improve access to employment and industrial areas in Swan Island. *(2000-2005)*

1118 Sandy Boulevard Frequent Bus
Construct improvements that benefit frequent bus service along Sandy Boulevard. *(2006-2010)*

1119 Sandy Boulevard/Burnside/ 12th Avenue Intersection
Redesign existing intersection to make it safer for all modes of travel. *(2000-2005)*

1120 Sandy Boulevard Multi-Modal Improvements – Phase 1
Retrofit existing street with multi-modal boulevard improvements, redesign selected intersections to add turn lanes and improve pedestrian crossings, on-street parking, ITS and safety improvements. *(2000-2005)*

1122 Sandy Boulevard Improvements - Phase 2
Retrofit existing street from 57th Avenue to 102nd Avenue with multi-modal street improvements, redesign selected intersections to improve pedestrian crossings, and other streetscape and safety improvements. *(2006-2010)*

Portland Central City Projects (continued)

1126 NE/SE 50s Bicycle Boulevard Retrofits
Retrofit existing streets with a bicycle boulevard design, providing an important connection between Northeast Portland and Southeast Portland. *(2000-2005)*

1130 Hollywood Town Center Pedestrian District Improvements
Retrofit existing street with improvements that enhance pedestrian access to transit, and connections to the transit center, improve safety and enhance the streetscape. This project will include new traffic signals on Halsey Street and travel lane restriping. *(2000-2005)*

1135 MLK/Lombard Frequent Bus
Provide capital improvements that enhance new frequent bus service along MLK Boulevard and Lombard Street from downtown Portland to St. Johns. *(2006-2010)*

1139 St. Johns Bridge Restoration
Complete restoration improvements to the bridge. *(2006-2010)*

1143 N/NE Lombard Bikeway
Retrofit existing street with bicycle lanes from N. Columbia Boulevard to Martin Luther King, Jr. Boulevard. *(2006-2010)*

1144 N./NE Portland Road Bikeway
Retrofit existing street with bicycle lanes from Martin Luther King, Jr. Boulevard to Willamette Boulevard to improve access to the town center. *(2011-2020)*

1145 N. St. Louis/Fessenden Bikeway
Retrofit bicycle lanes on existing street from Columbia Way to Willamette Boulevard. *(2000-2005)*

1146 N. Greeley/Interstate Bikeway
Retrofit bicycle lanes on existing street from Willamette Boulevard to Russell Street. This project provides a regional corridor bikeway from North Portland to the central city. *(2000-2005)*

1147 Willamette Cove Shoreline Trail
Study feasibility of multi-use trail from Edgewater to Cathedral Park. *(2000-2005)*

1150 St. Johns Town Center Pedestrian District
Enhance pedestrian access to transit, improve safety and enhance the streetscape, such as better lighting and crossings. *(2000-2005)*

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

1151 St. Johns Town Center Plan
Study to identify long-term transportation needs for motor vehicle, truck, bicycle, pedestrian and transit travel in the town center. *(2000-2005)*

1152 I-5 Freight Mobility Study
Study to identify improvements to N. Lombard Street to provide better truck access to Rivergate and protect adjacent neighborhoods from freight truck traffic. *(2000-2005)*

1157 SE 92nd Avenue Bikeway
Retrofit bicycle lanes on existing street from Stark Street to Lincoln Street and Powell Boulevard to Foster Road. *(2000-2005)*

1158 Lents Town Center Pedestrian District
Retrofit existing streets with pedestrian facility improvements to key links accessing the Foster/Woodstock couplet. *(2006-2010)*

1159 Foster Road Pedestrian Access to Transit Improvements
Make street safer for pedestrians and improve access to transit from Powell Boulevard to the town center with wider sidewalks, lighting, safer crossings, bus shelters and benches. *(2000-2005)*

1160 Foster-Woodstock - Phase 1
Implement Lents Town Center Business District Plan along Foster-Woodstock couplet between 87th and 94th Avenues. This project includes new traffic signals, pedestrian amenities, wider sidewalks, pedestrian crossings, street lighting and more on-street parking. *(2000-2005)*

1161 Foster-Woodstock - Phase 2
Implement Lents Town Center Business District Plan along the Foster-Woodstock couplet between 94th and 101st avenues. This project includes new traffic signals, pedestrian amenities, wider sidewalks, pedestrian crossings, street lighting and on-street parking, as appropriate. *(2006-2010)*

1162 Foster Road Improvements
Implement Lents Town Center Business District Plan between 79th and 87th avenues. This project includes new traffic signals, pedestrian amenities, wider sidewalks, pedestrian crossings, street lighting and on-street parking, as appropriate. *(2011-2020)*

1164 I-205 Ramp Study
Study possible I-205 ramp improvements at Powell Boulevard and Foster Road. *(2000-2005)*

1168 Hillsdale Intersection Improvements
Redesign the intersection at Beaverton-Hillsdale Highway, Capitol Highway and Bertha Boulevard to improve safety. *(2000-2005)*

1169 SW Vermont Bikeway – Phase 1 and 2
Retrofit existing street with bicycle lanes from Oleson Road to Terwilliger Boulevard to improve access to the town center. *(2011-2020)*

1171 SW 30th Avenue Bikeway
Retrofit existing street from Beaverton-Hillsdale Highway to Vermont Street with bicycle lanes to improve access to the town center. *(2011-2020)*

1172 SW Bertha Bikeway Improvements
Widen street from Vermont Street to Beaverton-Hillsdale Highway to construct bicycle lanes. *(2000-2005)*

1176 SW Beaverton-Hillsdale Highway Pedestrian and Bicycle Improvements
Retrofit existing street from Capitol Highway to 65th Avenue to include better sidewalks and crossings, bicycle lanes and other improvements that enhance access to transit such as curb extensions. *(2011-2020)*

1177 SW Sunset Pedestrian and Bicycle Improvements
Construct bicycle lanes, sidewalks and crossing improvements for pedestrian and bicycle safety and improve access to transit. *(2006-2010)*

1181 Beaverton-Hillsdale Highway Traffic Management Improvements
Implement comprehensive traffic management plan along Beaverton-Hillsdale Highway to limit traffic congestion and improve traffic flow. This project includes better signalization, message signs, fiber optic interconnection and communication with the city of Portland's central management computer. *(2006-2010)*

1184 Beaverton-Hillsdale Highway/Scholls Redesign
Redesign Beaverton-Hillsdale Highway and Scholls Ferry Road intersection to improve safety for all modes of travel. *(2006-2010)*

1185 Oleson Road Improvements
Upgrade existing street to urban standards from Fanno Creek to Hall Boulevard. This project involves constructing bicycle lanes and sidewalks where they do not currently exist and providing lighting, better crossings, bus shelters, benches and a new traffic signal at 80th Avenue. *(2006-2010)*

1186 Scholls Ferry Bikeway
Retrofit existing street with bicycle lanes from Beaverton-Hillsdale Highway to the Multnomah County line to improve access to the town center. *(2011-2020)*

1189 SW 62nd Avenue at Beaverton-Hillsdale Highway
Install a median refuge to make it safer for pedestrians to cross Beaverton-Hillsdale Highway. *(2000-2005)*

1193 West Portland Town Center Safety Improvements
Construct safety improvements, including traffic signals at the intersection of Capitol Highway, Taylors Ferry Road, Huber Street and Barbur Boulevard, and better sidewalks and crossings. *(2000-2005)*

1195 Barbur Boulevard Design
Retrofit existing street from Terwilliger Boulevard to south Portland city limits to include better sidewalks, curb extensions and safer street crossings. *(2000-2005)*

1198 SW Taylors Ferry Bikeway
Retrofit existing street from Capitol Highway to city limits to include bicycle lanes and will involve widening the shoulder and drainage improvements. *(2000-2005)*

1200 Pedestrian Overpass near Markham School
Construct a pedestrian crossing over I-5 connecting SW Alfred Street and 52nd Avenue. *(2000-2005)*

1201 West Portland Town Center Pedestrian District
Retrofit Barbur Boulevard and Capitol Highway and intersecting streets within the town center to include better sidewalks and crossings, curb extensions, bus shelters and benches. *(2011-2020)*

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

1202 SW Capitol Highway Pedestrian and Bicycle Improvements
Retrofit existing street from Multnomah Boulevard to Taylors Ferry Road to construct bicycle lanes, sidewalks and safer street crossings for pedestrian and bicycle safety and to improve access to transit. *(2000-2005)*

1206 West Portland I-5 Crossings Study
Study to identify possible new connections over I-5 to serve motor vehicle, pedestrian and bicycle travel. *(2000-2005)*

1211 Garden Home/ Oleson/Multnomah Improvements
Reconstruct intersection and provide better sidewalks and crossings to improve access to town center from Multnomah Boulevard to 71st Avenue. *(2000-2005)*

1212 1213 1246 1248 1257 Bike Lane Retrofits
Retrofit existing streets with bicycle lanes. *(2011-2020)*

1214 Division Street Transit Improvements – Phase 1
Construct improvements that enhance pedestrian access to transit, improve safety and enhance the streetscape, such as traffic signals, better lighting, bus shelters, benches and crossings. *(2000-2005)*

1217 Multnomah Pedestrian District
Construct improvements in Multnomah along Capitol Highway and Multnomah Boulevard that enhance pedestrian access to transit, improve safety and enhance the streetscape, such as traffic signals, better lighting, bus shelters, benches and crossings. *(2000-2005)*

1219 Belmont Pedestrian Improvements
Identify improvements along Belmont from 12th to 43rd Avenue that enhance pedestrian access to transit, improve safety and enhance the street-scape, such as traffic signals, better lighting, bus shelters, benches and crossings. *(2000-2005)*

1220 Fremont Pedestrian Improvements
Identify improvements along Fremont from 42nd Avenue to 52nd Avenue that enhance pedestrian access to transit, improve safety and enhance the streetscape, such as traffic signals, better lighting, bus shelters, benches and crossings. *(2000-2005)*

1221 Killingsworth Pedestrian Improvements
Identify improvements along Killingsworth from Williams to 33rd and 42nd to Cully that enhance pedestrian access to transit, improve safety and enhance the streetscape, such as traffic signals, better lighting, bus shelters, benches and crossings. *(2000-2005)*

1222 SE Milwaukie Pedestrian Improvements
Identify improvements along Milwaukie from Yukon Street to Tacoma Street that enhance pedestrian access to transit, improve safety and enhance the streetscape, such as traffic signals, better lighting, bus shelters, benches and crossings. *(2011-2020)*

1223 NE Alberta Pedestrian Improvements
Construct improvements along Alberta from MLK Boulevard to 33rd Avenue that enhance pedestrian access to transit, improve safety and enhance the streetscape, such as traffic signals, better lighting, bus shelters, benches and crossings. *(2000-2005)*

1224 NE Cully/57th Pedestrian and Bicycle Improvements
Construct improvements that enhance pedestrian access to transit, improve safety and enhance the streetscape, such as traffic signals, better lighting, bus shelters, benches and crossings. *(2000-2005)*

1227 SE Tacoma Main Street Improvements
Implement boulevard-design improvements from the Sellwood Bridge to McLoughlin Boulevard based on Tacoma Main Street Study recommendations and incorporated McLoughlin Neighborhoods Project recommendations. *(2000-2005)*

1228 Powell Boulevard/Foster Road High-Capacity Transit Corridor Study
Study the potential for high-capacity transit service or other improvements from the Ross Island Bridge to Damascus town center to address travel demand in the corridor. *(2000-2005)*

1229 SE Woodstock Main Street
Study to identify improvements along Woodstock from 39th to 49th Avenue that enhance pedestrian access to transit, improve safety and enhance the streetscape, such as better lighting, bus shelters, benches and crossings. *(2000-2005)*

1230 1231 Traffic Management
Implement comprehensive traffic management along Tacoma Street and 122nd Avenue to limit traffic congestion and improve traffic flow. These projects include better signalization, message signs, fiber optic interconnection and communication with the city of Portland's central management computer. *(2006-2010)*

1232 NW 23rd/Mt. Tabor Frequent Bus
Provide improvements that benefit new frequent bus service along Belmont connecting to NW 23rd Avenue. *(2000-2005)*

1233 Hawthorne Boulevard Frequent Bus
Provide improvements that enhance new frequent bus service along Hawthorne Boulevard. *(2000-2005)*

1239 1240 1242 Traffic Management Improvements
Implement comprehensive traffic management plan along Sandy Boulevard, 82nd Avenue and MLK/Interstate Avenue to limit traffic congestion and improve traffic flow. These projects include traffic count stations, better signalization, message signs, fiber optic interconnection and communication with the city of Portland's central management computer. *(2000-2005)*

1245 Capitol Highway - Phase 2
Implement West Portland town center study recommendations. *(2000-2005)*

1247 SE Holgate Bikeway - Phase 1
Stripe bicycle lanes along street from 42nd Avenue to the Portland city limits. *(2000-2005)*

1253 NE Prescott Pedestrian and Bicycle Improvements
Construct bicycle lanes, sidewalks and crossing improvements for pedestrian and bicycle safety and to improve access to transit. *(2000-2005)*

1259 N./NE Skidmore Bikeway
Retrofit the existing street to add a bicycle boulevard from N. Interstate Avenue to NE Cully Boulevard. *(2000-2005)*

1263 Banfield Pedestrian Improvements
Retrofit existing streets along eastside MAX and at intersecting streets to include better sidewalks and crossings, curb extensions, bus shelters and benches. *(2006-2010)*

Project number and System	
4002 Financially Constrained System	4002 Priority System

1264 Ventura Park Pedestrian District
Retrofit existing streets along eastside MAX to include better sidewalks and crossings, curb extensions, bus shelters and benches at major transit stops. *(2000-2005)*

2025 Division Street Frequent Bus
Provide capital improvements that benefit frequent bus service along Division Street from downtown Portland to Gresham. *(2000-2005)*

7023 Powell/Foster Corridor Rapid Bus
Provide improvements that enhance new rapid bus service along Powell/Foster corridor from downtown Portland to Damascus. *(2011-2020)*

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Figure 5.10
East Multnomah County Subarea

Figure 5.10
East Multnomah County Subarea

East Multnomah County Projects

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

1157 SE 92nd Avenue Bikeway
Retrofit bicycle lanes on existing street from Stark Street to Lincoln Street and Powell Boulevard to Foster Road. *(2000-2005)*

1164 I-205 Ramp Study
Study possible I-205 ramp improvements at Powell Boulevard and Foster Road. *(2000-2005)*

1263 Banfield Pedestrian Improvements
Retrofit existing streets along eastside MAX and at intersecting streets to include better sidewalks and crossings, curb extensions, bus shelters and benches. *(2006-2010)*

1264 Ventura Park Pedestrian District
Retrofit existing streets along Eastside MAX to include better sidewalks and crossings, curb extensions, bus shelters and benches at major transit stops. *(2000-2005)*

1266 99th Avenue Reconstruction - Phases 2 & 3
Reconstruct primary local main street from Glisan Street to Market Street. *(2006-2010)*

2000 Hogan Corridor Improvements
Widen the street from Stark Street to Palmquist Road and implement access management strategies. *(2000-2005)*

2001 Hogan Corridor Improvements
Construct a new interchange at I-84 and extend new interchange connection south to Stark Street. *(2000-2005)*

2002 I-84/US 26 Connector Right-of-Way Preservation
Preserve right-of-way for future construction of a principal arterial connection along the 242nd Avenue corridor from Palmquist Road to US 26. *(2000-2005)*

2003 Hogan Corridor Improvements
Construct a new four-lane principal arterial from Palmquist Road to US 26. *(2011-2020)*

2004 I-84 Widening
Widens I-84 to six lanes from 238th Avenue to the Sandy River Bridge. *(2011-2020)*

2007 Transit Station and Park-and-Ride Lot Upgrades
Construct, expand and/or upgrade transit stations and park-and-ride lots throughout the subarea, including Troutdale, Gateway, Gresham, Rockwood and Fairview/Wood Village. *(2000-2020)*

2008 102nd Avenue Boulevard and Safety Improvements - Phase 1
Implement Gateway Regional Center Plan with boulevard retrofit of the street, new traffic signals, improved pedestrian facilities and crossings, street lighting and multi-modal safety improvements from Weidler Street to Glisan Street. *(2000-2005)*

2010 Halsey/Weidler Boulevard and Traffic Managment
Implement Gateway Regional Center Plan with boulevard retrofit of these streets within the regional center, new traffic signals, improved pedestrian facilities and crossings, street lighting and bicycle facilities. *(2011-2020)*

2011 Glisan Street Boulevard and Traffic Management
Implement Gateway Regional Center Plan with boulevard retrofit of these streets within the regional center, new traffic signals, improved pedestrian facilities and crossings, street lighting and bicycle facilities. *(2006-2010)*

2012 SE Stark/Washington Boulevard/ITS Improvements
Implement Gateway Regional Center Plan with boulevard retrofit of the street from 92nd to 118th Avenue, new traffic signals, improved pedestrian facilities and crossings, street lighting and multi-modal safety improvements. *(2006-2010)*

2013 Halsey Street Bikeway
Retrofit the existing street with bike lanes from 162nd Avenue to 181st Avenue.

2014 Glisan Street Bikeway
Retrofit the existing street with bike lanes from 162nd Avenue to 202nd Avenue to improve access to the regional center. *(2000-2005)*

2015 102nd Avenue Boulevard and Safety Improvements - Phase 2
Implement Gateway Regional Center Plan with boulevard retrofit of the street, new traffic signals, improved pedestrian traffic facilities and crossings, street lighting and multi-modal safety improvements from Glisan Street to Market Street. *(2006-2010)*

2016 NE Halsey Bikeway
Retrofit the existing street with bike lanes from 39th Avenue to 102nd Avenue to improve accessto the regional center. *(2000-2005)*

2017 SE Stark/Washington Bikeway
Retrofit the existing street with bike lanes from SE 75th Avenue to the Portland city limits (excluding from 92nd to 111th avenues) to improve access to the regional center. *(2000-2005)*

2018 SE 111th/112th Avenue Bikeway
Retrofit existing streets with bike lanes from Mt. Scott Boulevard to Market Street. *(2011-2020)*

2019 NE Glisan Bikeway
Retrofit the existing street with bike lanes from 47th to 162nd Avenue to improve access to the regional center. This project excludes the segment from I-205 to NE 106th Avenue. *(2000-2005)*

2020 Gateway Regional Center Pedestrian District - Phase 1
High priority local street and pedestrian improvements in regional center. *(2000-2005)*

2021 Gateway Regional Center Pedstrian District Improvements - Phase 2
High priority local street and pedestrian improvements in regional center. *(2006-2010)*

2022 Gateway Traffic Management
Implement comprehensive traffic management plan throughout the regional center to reduce cut-through traffic on residential streets and improve traffic flow on regional streets. This project also includes utility improvements. *(2006-2010)*

2023 Gateway Transportation Management Association Startup
Implement a transportation management association program with employers in the regional center. *(2006-2010)*

2024 Gateway Regional Center Pedestrian District Improvements - Phase 3
High priority local street and pedestrian improvements in regional center. *(2011-2020)*

2025 Division Street Frequent Bus
Provide capital improvements that benefit frequent bus service along Division Street from downtown Portland to Gresham. *(2000-2005)*

2026 99th Avenue/Pacific Avenue Recon struction - Phase 1
Reconstruct primary local main streets in Gateway Regional Center. *(2006-2010)*

2027 Civic Neighborhood Light Rail Station/Plaza
Complete redevelopment of the land adjacent to the Gresham City Hall MAX stop to include a new light rail station with retail services. *(2000-2005)*

2028 Powell Boulevard Improvements
Widen the street to five lanes from I-205 to Eastman Parkway including sidewalks and bike lanes. *(2006-2010)*

2031 Hogan Corridor Improvements
Move the regional freight route designation from 181st/Burnside Road to 242nd Avenue from I-84 to US 26 and revise road signs in that corridor. *(2011-2020)*

2032 Burnside/Hogan Intersection Improvement
Improve safety of the intersection by adding a southbound through-lane on Hogan Road. *(2011-2020)*

2035 Cleveland Street Reconstruction
Reconstruct the existing street from Stark Street to Powell Boulevard. *(2006-2010)*

2036 Wallula Street Reconstruction
Reconstruct the existing street from Division Street to Stark Street. *(2011-2020)*

2041 257th Avenue Improvements
Construct arterial improvements from Division Street to Powell Valley Road including bike lanes, sidewalks, traffic signals, landscaping, lighting and drainage. *(2000-2005)*

2042 257th Avenue Intersection Improvements
Realign the intersection of 257th Avenue/Palmquist Road/US 26 to increase safety for all modes of travel. *(2000-2005)*

2045 190th/Highland Drive Improvements
Reconstruct and widen the street to five lanes from Butler Road to Powell Boulevard with sidewalks and bike lanes. *(2006-2010)*

2047 Division Street Improvements
Boulevard retrofit of street from Wallula Street to Hogan Road including bike lanes, wider sidewalks, curb extensions and safer street crossings. *(2000-2005)*

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

2048 Burnside Street Improvements
Complete boulevard retrofit of street from Wallula Street to Hogan Road including bike lanes, wider sidewalks, curb extensions and safer street crossings. *(2000-2005)*

2049 Powell Boulevard Improvements
Boulevard retrofit of street from Birdsdale Road to Hogan Road including bike lanes, wider sidewalks, curb extensions and safer street crossings. *(2000-2005)*

2053 Gresham/Fairview Trail
Construct a 5.2-mile multiuse path designed for bicycle and pedestrian use from the Springwater Corridor Trail to Marine Drive. *(2000-2005)*

2054 Springwater Trail Connections
Provide bicycle access to the Springwater Corridor Trail at 182nd Avenue and 190th Avenue. *(2011-2020)*

2055 SW Walters Road/ Springwater Trail Access
Provide bicycle access to the Springwater Corridor Trail from Seventh Avenue to Powell Boulevard. Upgrade the pedestrian signal to a full traffic signal at Walters Road. *(2011-2020)*

2056 Division Street Bikeway
Retrofit the existing street with bike lanes from 174th to Wallula Avenue. *(2006-2010)*

2057 Gresham Regional Center Pedestrian and Ped-to-MAX Improvements
Retrofit existing streets within the regional center and pedestrian corridors linking to Eastside MAX to include better sidewalks and crossings, lighting, curb extensions, bus shelters and benches. *(2000-2005)*

2058 Springwater Trail Pedestrian Access
Provide pedestrian access to the Springwater Corridor Trail at Eastman Parkway, Towle Road, Roberts Road, Regner Road and Hogan Road. This project includes wider sidewalks and lighting. *(2011-2020)*

2059 Division Street Pedestrian-to-Transit Access Improvements
Make street safer for pedestrians and improve access to transit from 175th Avenue to Wallula Avenue with wider sidewalks, lighting, crossings, bus shelters and benches. *(2011-2020)*

2062 Gresham Regional Center Transportation Management Association Startup
Implement a transportation management association program with employers in the regional center. *(2006-2010)*

2063 Study Light Rail Extension to Mt. Hood Community College
Study the feasibility of extending light rail to Mt. Hood Community College. *(2011-2020)*

2065 Phase 3 Signal Optimization
Implement comprehensive traffic management plan throughout Gresham and Multnomah County to limit traffic congestion and improve traffic flow. This project includes traffic cameras, better signalization, variable message signs, highway advisory radio emitters throughout city and county facilities for detection and management of arterial incidents, especially near I-84. *(2000-2005)*

2074 Sandy Boulevard Widening
Widen the street to three or five lanes from 122nd Avenue to 238th Avenue. This project will include sidewalks and bike lanes. *(2011-2020)*

2077 181st Avenue Widening
Widen the street to three lanes southbound from Halsey Street to eastbound on-ramp at I-84. *(2000-2005)*

2079 185th Railroad Crossing Improvement
Reconstruct and widen a narrow railroad overcrossing to more safely accommodate motor vehicles, trucks, buses, pedestrians and bicycles. *(2011-2020)*

2080 202nd Railroad Crossing Improvement
Reconstruct and widen a narrow railroad overcrossing to more safely accommodate motor vehicles, trucks, buses, pedestrians and bicycles. *(2000-2005)*

2081 223rd Railroad Crossing Improvement
Reconstruct and widen a narrow railroad overcrossing to more safely accommodate motor vehicles, trucks, buses, pedestrians and bicycles. *(2000-2005)*

2082 Columbia River Highway Railroad Crossing Improvement
Reconstruct and widen a narrow railroad overcrossing to more safely accommodate motor vehicles, trucks, buses, pedestrians and bicycles. *(2011-2020)*

East Multnomah County Projects (continued)

2084 181st Avenue Intersection Improvement
Improves the intersection of 181st Avenue and Glisan Street. *(2011-2020)*

2085 181st Avenue Intersection Improvement
Improve the intersection of 181st Avenue and Burnside Road. *(2011-2020)*

2086 NE 138th Avenue Improvements
Replace the deteriorating timber bridge to improve safety and access to the Columbia Corridor industrial and employment areas. *(2000-2005)*

2087 NE 158th Avenue Improvements
Upgrade the existing street to urban standards from Sandy Boulevard to Marine Drive. This project addresses storm drainage issues and includes constructing bike lanes, sidewalks and a bridge to replace culverts along the Columbia Slough. *(2000-2005)*

2088 NE Marine Drive/122nd Avenue Improvements
Add a traffic signal to the intersection and widen the dike to install a left turn lane on Marine Drive. *(2000-2005)*

2091 NE/SE 148th Avenue Bikeway
Retrofit the existing street with bike lanes from Marine Drive to Knott Street, and Glisan Street to Division Street. *(2006-2010)*

2101 Stark Street Improvements
Complete the boulevard retrofit of the street from 190th Avenue to 197th Avenue including bike lanes, wider sidewalks, curb extensions and crossing improvements. *(2006-2010)*

2102 Stark Street Improvements
Complete the boulevard retrofit of the street from 181st Avenuently under construction along 207th Avenue. *(2000-2005)*

2103 181st Avenue Improvements
Complete the boulevard retrofit of street from Glisan Street to Yamhill Street including bike lanes, wider sidewalks, curb extensions and safer street crossings. *(2006-2010)*

2104 Burnside Road Boulevard Improvements
Complete the boulevard retrofit of the street from 181st Avenue to 197th Avenue including bike lanes, wider sidewalks, curb extensions and safer street crossings.

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

2105 Rockwood Town Center Pedestrian and Ped-to-MAX Improvements
Retrofit the existing streets within the town center and pedestrian corridors linking to Eastside MAX to include better sidewalks and crossings, lighting, curb extensions, bus shelters and benches. *(2011-2020)*

2108 Halsey Street Improvements – Wood Village
Widen the street to three lanes from 223rd Avenue to 238th Avenue including sidewalks and bike lanes.

2111 207th Connector
Complete the project currently under construction along 207th Avenue.

2113 Halsey Street Improvements
Widen the street to three lanes from 190th Avenue to 207th Avenue with sidewalks and bike lanes. *(2000-2005)*

2116 NE 223rd Avenue Bikeway and Pedestrian Improvements
Retrofit the existing street with bike lanes and sidewalks from Halsey Street to Marine Drive. *(2006-2010)*

2123 Stark Street Improvements
Widen the street to five lanes from 257th Avenue to Troutdale Road including sidewalks and bike lanes. *(2000-2005)*

2124 Halsey Street Improvements
Widen the street to three lanes with a boulevard design from 238th to 257th Avenue including bike lanes, wider sidewalks, curb extensions and safer street crossings. *(2006-2010)*

2126 257th Avenue Pedestrian Improvements
Retrofit the existing street from Cherry Park Road to Stark Street to widen sidewalks, move overhead utilities underground and install a raised median, traffic signals, lighting and landscaping. *(2000-2005)*

2130 162nd Avenue Bikeway
Retrofit the existing street with bike lanes from Sandy Boulevard to Halsey Street and Stark Street to Powell Boulevard. *(2000-2005)*

2133 I-205 Multiuse Path Crossing Improvements
Construct safer bicycle and pedestrian crossings, improving access to the I-205 multiuse path at various locations. *(2000-2005)*

4008 I-205 North Corridor Study
Develop a long-term traffic management plan for I-205 from I-84 to Columbia River to limit congestion and improve traffic flow. *(2006-2010)*

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Figure 5.11
Pleasant Valley/Damascus Subarea

Figure 5.11
Pleasant Valley/Damascus Subarea

Pleasant Valley and Damascus Projects

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

1228 Powell Boulevard/Foster Road High-Capacity Transit Corridor Study
Study the potential for high-capacity transit service or other improvements from the Ross Island Bridge to Damascus town center to address travel demand in the corridor. *(2000-2005)*

5003 Sunrise Highway
Construct a new four-lane highway from I-205 to Rock Creek/152nd Avenue. This project includes construction of interchanges at 122nd Avenue and 152nd Avenue and modification of I-205 interchange. *(2000-2005)*

5004 Sunrise Highway Right-of-Way Preservation
Preserve right-of-way for future four-lane highway from 152nd Avenue to 242nd Avenue. *(2000-2005)*

5005 Sunrise Highway
Construct a new four-lane highway from Rock Creek/152nd Avenue to 242nd Avenue. *(2011-2020)*

5006 Sunrise Highway
Construct a new four-lane highway from 242nd Avenue to US 26. *(2011-2020)*

5066 East Sunnyside Road Improvements
Widen the street to five lanes from 122nd Avenue to 172nd Avenue. *(2006-2010)*

7000 172nd Avenue Improvements
Widen the street to five lanes from Foster Road to Highway 212. This project includes sidewalks and bike lanes. *(2011-2020)*

7001 East Sunnyside Road Improvements
Widen the street to three lanes from 172nd Avenue to Highway 212. This project includes sidewalks and bike lanes. *(2006-2010)*

7002 Foster Road Improvements
Widen the street to three lanes from 172nd Avenue to Highway 212. This project includes sidewalks and bike lanes. *(2011-2020)*

7005 190th Avenue Extension
Construct a new five-lane connection from 190th/Butler Road to 172nd/Foster Road with sidewalks and bike lanes. *(2006-2010)*

7006 SE Foster Improvements
Widen the street to three lanes from 136th Avenue to Jenne Road. *(2006-2010)*

7007 SE Jenne Road Improvements
Widen the street to three lanes from Foster Road to Powell Boulevard. *(2006-2010)*

7008 147th Avenue Improvements
Realign 147th Avenue to 142nd Avenue at Sunnyside Road to provide additional access into town center. *(2006-2010)*

7009 SE 145th/147th Bike Lanes
Widen the street from Clatsop Street to Monner Road to include bike lanes. *(2006-2010)*

7010 SE 162nd Avenue Bike Lanes
Widen the street from Monner Road to Sunnyside Road to include bike lanes. *(2011-2020)*

7011 SE Monner Bike Lanes
Widen the street from 147th Avenue to 162nd Avenue to include bike lanes. *(2011-2020)*

7012 Highland Corridor Plan
Study Highland Drive from Powell Boulevard to Foster Road to develop a corridor plan to address north-south access to urban reserves. *(2006-2010)*

7013 Foster Road Corridor Plan
Future study to identify right-of-way and transportation needs along the Foster Road corridor from I-205 to Highway 212 in Damascus. *(2000-2005)*

7014 Damascus/Pleasant Valley Future Street Plan
Develop street plan for Damascus and Pleasant Valley urban reserves to serve planned growth in the area. Throughout the 20-year planning period, implement a multi-modal local and collector street system as development occurs. *(2000-2005)*

7015 Towle/Eastman Corridor Plan
Study Towle Road/Eastman Parkway from Powell Boulevard to 190th Avenue to develop a corridor plan to address north-south access to urban reserves. *(2006-2010)*

7016 Jenne Road Traffic Management Plan
Develop a comprehensive traffic management plan for the street from Powell Boule-vard to Foster Road to manage the impacts of planned growth in the urban reserves. *(2006-2010)*

7019 242nd Avenue Improvements
Reconstruct and widen street to three lanes from Highway 212 to Multnomah Coutny line. *(2011-2020)*

7020 Regner/222nd Corridor Plan
Study to develop traffic management plan for the street from Roberts Avenue to Highway 212 to manage the impacts of planned growth in nearby urban reserves and identify an urban-to-urban connector route that serves the corridor. *(2011-2020)*

7021 Hogan/242nd Corridor Plan
Study to develop traffic management plan for the street from Palmquist Road to Highway 212 to manage the impacts of planned growth in nearby urban reserves and identify an urban-to-urban connector route that serves the corridor. *(2011-2020)*

7022 Sunnyside Road Frequent Bus
Provide improvements that enhance new frequent bus service along Sunnyside Road from Clackamas regional center to Damascus. *(2006-2010)*

7023 Powell/Foster Corridor Rapid Bus
Provide improvements that enhance new rapid bus service along Powell Boulevard/ Foster Road corridor from downtown Portland to Damascus. *(2011-2020)*

7024 Transit station
Construct a new transit station in support of expanded transit service to this area. *(2011-2020)*

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Figure 5.12
Urban Clackamas County Subarea

Figure 5.12
Urban Clackamas County Subarea

Urban Clackamas County Projects

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

1001 and 1003 Light Rail Expansion
Extend light rail service from the Rose Quarter transit center north to the Portland Metropolitan Exposition Center and south to Clackamas regional center, then potentially to Vancouver, Wash. Provide interim bus service along McLoughlin Boulevard and Highway 224 from Clackamas regional center to the Portland central city until light rail service can be provided in this corridor. *(2000-2020)*

5001 Transit Station and Park-and-Ride Lot Upgrades
Construct, expand and/or upgrade transit stations and park-and-ride lots throughout the subarea including Oregon City, Milwaukie, Gladstone, Happy Valley, West Linn, Damascus and Pleasant Valley. *(2000-2020)*

5003 Sunrise Corridor
Construct a new four-lane highway from I-205 to Rock Creek/152nd Avenue. Project includes construction of interchanges at 122nd Avenue, 135th Avenue and the Rock Creek Junction, and modification of I-205 interchange. *(2000-2005)*

5004 Sunrise Corridor Right-of-Way Preservation
Preserve right-of-way for future four-lane highway from 152nd Avenue to 242nd Avenue. *(2000-2005)*

5007 Highway 212
Construct climbing lanes to 172nd Avenue. *(2000-2005*

5009 I-205 Improvements
Add capacity to the freeway based on recommendations from the I-205 Corridor Study from West Linn to I-5. *(2006-2010)*

5011 I-205 North Auxiliary Lane Improvements
Complete construction of auxiliary lanes north of Sunnyside Road to the interchange at Johnson Creek Boulevard and south of Sunnyside Road to the interchange at Sunnybrook Road. *(2000-2005)*

5012 I-205 Bridge Improvements
Widen the Oregon City bridge to six lanes with auxiliary lanes in each direction. *(2006-2010)*

5013 I-205 Climbing Lanes
Construct a new southbound truck climbing lane at the I-205 bridge from Highway 43 to 10th Street in West Linn. *(2006-2010)*

5014 I-205 Auxiliary Lanes
Construct a new auxiliary lane in each direction from 82nd Drive to Highway 212. *(2006-2010)*

5015 Highway 99E/224 Improvements
Add capacity from Ross Island Bridge to I-205. Based on recommendations from corridor plan for the corridor. Project may include access management strategies along corridor, particularly from Highway 224 to I-205. *(2006-2010)*

5016 Highway 213 Grade Separation
Grade separate southbound Highway 213 at the intersection of Washington Street and add a northbound lane to Highway 213 from just south of Washington Street to the I-205 on-ramp. *(2006-2010)*

5017 Highway 213 Intersection Improvements
Modify intersections at Abernethy Road to improve safety. *(2006-2010)*

5018 Highway 213 Intersection Improvements
Reconstruct the intersection of Beavercreek Road and Highway 213 to include a new traffic signal, two left turn lanes and bicycle and pedestrian facilities. *(2000-2005)*

5022 Highway 213 Widening
Widen the highway to add a southbound land from I-205 to Redland Road. *(2000-2005)*

5023 I-205/Highway 213 Interchange Improvement
Reconstruct the I-205 southbound off-ramp to Highway 213 to provide more storage and enhance freeway operations and safety. *(2000-2005)*

5026 Portland Traction Co. Multiuse Trail Planning
Complete planning, design and construction of a multiuse trail from Milwaukie to Gladstone. *(2000-2005)*

5027 I-205 South Corridor Study
Develop long-term traffic management plan for I-205 from I-5 to I-84 to limit congestion and improve traffic flow. *(2000-2005)*

5029 Highway 99E/224 Corridor Plan
Develop long-term strategy for corridor from Tacoma Street to I-205 to limit congestion and improve traffic flow, including access management, transit and capacity improvements. *(2006-2010)*

5030 Highway 213 Green Corridor Plan
Develop a green corridor plan for Highway 213 south of Leland Road to protect rural uses from the impacts of urban travel. *(2006-2010)*

5031 Highway 213 Corridor Study
Complete long-term traffic management plan, identifying projects to implement the plan for Highway 213 south of I-205. *(2000-2005)*

5032 North Clackamas Greenway Corridor Study
Study to determine the feasibility of constructing a multiuse trail for bicyclists and pedestrians from Milwaukie to Clackamas regional center. *(2000-2005)*

5033 Willamette River Greenway Corridor Study
Study to determine the feasibility of constructing a multiuse trail for bicyclists and pedestrians from the Sellwood Bridge to Lake Oswego town center. *(2000-2005)*

5035 McLoughlin Boulevard Rapid Bus
Provide improvements that enhance rapid bus service along McLoughlin Boulevard between Milwaukie and Oregon City. *(2000-2005)*

5036 King Road Improvements/34th Avenue Extension
Construct a two-lane extension of King Road from 32nd Avenue to 42nd Avenue to improve local street connectivity for all modes. This project will include sidewalks, bike lanes and new traffic signals at Oak Street, Monroe Street, Harrison Street and 34th Avenue. *(2000-2005)*

5037 Lake Road Improvements
Reconstruct the street to narrow travel lanes and add sidewalks, landscaped median and bikelanes. *(2000-2005)*

5038 Johnson Creek Boulevard Phase 2 Improvements
Reconstruct the street from 32nd Avenue to 45th Avenue. This project will include sidewalks, bike lanes and landscaping along the south side of the street. *(2000-2005)*

5040 Railroad Avenue Bike/Pedestrian Improvement
Retrofit bike lanes and sidewalks on the existing street from 37th Avenue to Linwood Road. *(2006-2010)*

5045 Linwood/Harmony/Lake Road Improvements
Modify the intersection to include turn lanes on Harmony and Linwood roads. This project also grade separates UPRR. *(2000-2005)*

Project number and System	
4002 Financially Constrained System	4002 Priority System

5046 Railroad Crossing Improvements
Make railroad crossings at Harrison Street, 37th Avenue and Oak Street safer for all modes of travel. *(2006-2010)*

5049 McLoughlin Boulevard Improvements
Retrofit the street with a boulevard design from Highway 224 to River Road including wider sidewalks, curb extensions and better crossings. *(2000-2005)*

5050 Harrison Street Bikeway
Retrofit bike lanes on the existing street from Highway 99E to King Road. *(2000-2005)*

5051 Lake Road Bikeway
Retrofit bike lanes on the existing street from 21st Avenue to Oatfield Road. *(2000-2005)*

5059 King Road Boulevard Improvement
Boulevard retrofit of the street from 42nd Avenue to Linwood Avenue, including bike lanes, wider sidewalks, a median and access management. *(2006-2010)*

5062 Milwaukie Transportation Management Association Startup
Implement a transportation management association program with employers in the town center. *(2006-2010)*

5064 I-205 Frequent Bus
Construct improvements that enhance frequent bus service. *(2000-2005)*

5065 Clackamas Regional Center Transportation Management Association Startup
Implement a transportation management association program with employers in the regional center. *(2000-2005)*

5066 West Sunnyside Road Improvements
Widen the street to five lanes from 122nd Avenue to 172nd Avenue. *(2006-2010)*

5067 Johnson Creek Boulevard Interchange Improvements
Upgrade the interchange at I-205 and Johnson Creek Boulevard to include a loop ramp, new northbound on-ramp and realign the southbound off-ramp. *(2006-2010)*

5068 Johnson Creek Boulevard Improvements
Widen the street to three lanes and widen the bridge over Johnson Creek to improve freight access to I-205. *(2006-2010)*

5069 Harmony Road Improvements
Widen the street to five lanes from Sunnyside Road to Highway 224. *(2006-2010)*

5071 William Otty Road Extension
Construct a two-lane extension of street from a new frontage road east of I-205 to Valley View Terrace to improve east-west circulation. This project includes sidewalks and bike facilities. *(2006-2010)*

5072 West Monterey Extension
Construct a two-lane extension of street from 82nd Avenue to Price Fuller Road to improve east-west connections by all modes of travel. *(2006-2010)*

5073 Monterey Improvements
Widen street to five lanes from 82nd Avenue to new overcrossing of I-205. This project will include sidewalks and bike lanes. *(2000-2005)*

5074 Causey Avenue Extension
Construct a three-lane extension of the street over I-205 to new frontage road east of freeway to improve east-west circulation. This project includes sidewalks and bike facilities. *(2006-2010)*

5077 Summers Lane Extension
Construct three-lane extension from 122nd to 142nd avenues with sidewalks and bike lanes. *(2006-2010)*

5080 Fuller Road Improvements
Widen the street to three lanes from Harmony Road to Monroe Road to improve north-south circulation in the regional center area. This project includes removing auto access to King Road. *(2006-2010)*

5081 Boyer Drive Extension
Construct a two-lane extension of street from 82nd Avenue to Fuller Road to improve east-west circulation. This project includes sidewalks and bike facilities. *(2006-2010)*

5082 82nd Avenue Multi-Modal Improvements
Widen the street to construct sidewalks and bike lanes, better crossings and street lighting. Project also includes new traffic signals. *(2006-2010)*

5083 Causey Avenue Extension
Construct a two-lane extension of the street from the I-205 frontage road to William Otty Road to improve east-west circulation. This project includes sidewalks and bike facilities. *(2006-2010)*

5084 Fuller Road Extension
Construct a two-lane extension of the street from Otty Road to 82nd Avenue at King Road to improve north-south circulation. This project includes sidewalks and bike facilities. *(2006-2010)*

5085 Clackamas Regional Center Bike/Pedestrian Corridors
Construct bicycle and pedestrian facilities as part of new and existing developments in the Clackamas regional center. *(2006-2010)*

5086 82nd Avenue Boulevard Design Improvements
Retrofit the street with a boulevard design from Monterey Avenue to Sunnybrook Road including wider sidewalks, curb extensions and safer street crossings. *(2000-2005)*

5089 Sunnyside Road Bikeway
Retrofit bike lanes to existing street from 82nd Avenue to I-205. *(2006-2010)*

5090 5092 and 5093 Bikeways
Retrofit existing streets with bike lanes. *(2006-2010)*

5091 Causey Avenue Bikeway
Retrofit bike lanes to existing street from I-205 to Fuller Road. *(2006-2010)*

5094 Clackamas Town Center Connector
Construct a multiuse path for bicyclists and pedestrians from the North Clackamas Park to Philips Creek. *(2006-2010)*

5095 Phillips Creek Greenway Trail
Construct a multiuse trail for bicyclists and pedestrians from Causey Avenue to Mt. Scott Greenway Trail. *(2000-2005)*

5096 District Park Trail
Construct a multiuse trail for bicyclists and pedestrians from Phillips Creek Trail to Mt. Scott Trail. *(2000-2005)*

5097 Hill Road Bike Lanes
Retrofit bike lanes on the existing street from Oatfield Road to Thiessen Road. *(2000-2005)*

5100 Fuller Road Pedestrian Improvements
Widen the street from Harmony Road to King Road to construct new curbs and sidewalks. *(2000-2005)*

5101 Clackamas Regional Center Pedestrian Improvements
Retrofit existing streets within the regional center to include better sidewalks and street crossings, lighting, curb extensions, bus shelters and benches. *(2006-2010)*

5103 Clackamas County Transportation Management Plan
Implement advanced transportation system management and intelligent transportation system plan for county facilities, including signal timing, signal interconnects and traffic control and incident management strategies. *(2000-2005)*

5106 82nd Drive Improvements
Widen street to five lanes from Highway 212 to Lawnfield Road. *(2006-2010)*

5108 Jenifer Street/135th Avenue Extension
Extend Jennifer Street to 135th Avenue and widen to three lanes. This project includes sidewalks and bike lanes. *(2006-2010)*

5109 82nd Drive Bicycle Improvements
Widen the street from Jennifer Street to the Fred Meyer store to include bike lanes. *(2006-2010)*

5110 Jennifer Street Bicycle Improvements
Construct a shared bicycle and pedestrian path along the south side of street from 106th Avenue to 120th Avenue. *(2000-2005)*

5115 Roethe Road Bicycle Improvements
Widen the street from River Road to Highway 99E to include shared bike and pedestrian path. This project also installs curbs and drainage. *(2000-2005)*

5116 Warner Milne Bikeway
Retrofit the street with bike lanes from Central Point Road to Highway 213 to provide access to Oregon City employment area. *(2006-2010)*

5117 Linwood Road Bike Lanes
Widen the street from Monroe Street to Johnson Creek Boulevard to include bike lanes. *(2000-2005)*

5122 Portland Avenue Bikeway
Retrofit the street with bike facilities from Clackamas Boulevard to Jersey Street. Bikeway design to be determined. *(2006-2010)*

Project number and System	
4002 Financially Constrained System	4002 Priority System

5123 Clackamas Boulevard Bikeway
Retrofit the street with bike facilities from 82nd Drive to McLoughlin Boulevard. Bikeway design to be determined. *(2006-2010)*

5128 Oregon City Rapid Bus
Provide improvements that enhance rapid bus service between Tigard, Tualatin and Oregon City transit centers. *(2006-2010)*

5129 Oregon City Rapid Bus
Provide improvements that enhance rapid bus service along I-205 between Vancouver and Oregon City. *(2006-2010)*

5130 99E/2nd Avenue Realignment
Realign intersection. *(2000-2005)*

5132 Main Street Extension
Extend Main Street to 99E with bike lanes. *(2006-2010)*

5133 Washington/Abernethy Connection
Construct new two-lane street between Washington Street and Abernethy Road with sidewalks and bike lanes. *(2006-2010)*

5135 McLoughlin Boulevard Improvements
Boulevard retrofit of the street from River Road to the Southern Pacific railroad tunnel in Oregon City, including bike lanes, wider sidewalks, curb extensions and better crossings. *(2006-2010)*

5136 Seventh Street Improvements
Retrofit the street from High Street to Taylor Street to make it safer for bicyclists and pedestrians and to improve access to transit. This project includes bike lanes, better sidewalks and crossings, lighting, curb extensions, bus shelters and benches. *(2006-2010)*

5137 Washington Street Improvements
Retrofit the street with a boulevard design from Abernathy Road to Fifth Street including wider sidewalks, curb extensions and safer street crossings. *(2006-2010)*

5138 Washington Street Improvemnts
Retrofit the street with boulevard design from Abernethy to Highway 213. *(2006-2010)*

5143 Oregon City Pedestrian Improvements
Retrofit streets within regional center to include wider sidewalks, safer crossings, bus shelters and benches. *(2006-2010)*

5144 Oregon City River Access
Retrofit streets to improve pedestrian access to the Willamette River from downtown to Oregon City. *(2006-2010)*

5149 Oregon City Bridge Study
Study to evaluate the long-term capacity of the bridge. *(2006-2010)*

5150 Oregon City Transportation Management Association Startup Program
Implement a transportation management association program with employers in the regional center. *(2006-2010)*

5151 Willamette River Multi-Use Path
Construct multi-use path from Clackamette Park to Smurfit. *(2000-2005)*

5152 Clackamas River Multi-Use Path
Construct Multi-use path from I-205 to Clackamette park. *(2000-2005)*

5153 Beavercreek Road Improvements – Phase 2
Widen the street to five lanes from Highway 213 to Clackamas Community College. This project includes access management, a median, bike lanes and sidewalks. *(2000-2005)*

5154 Beavercreek Road Improvements – Phase 3
Widen the street to four lanes from Clackamas Community College to Henrici Street. This project includes access management strategies in addition to bike lanes and sidewalks. *(2006-2010)*

5156 Beavercreek Road Improvements – Phase 1
Widen the street to five lanes from Highway 213 to Molalla Avenue. This project includes access management strategies and a boulevard design with bike lanes, wider sidewalks, lighting and safer street crossings. *(2006-2010)*

5157 Mollala Avenue Bikeway
Retrofit existing street with bike lanes from 7th Street to Highway 213. *(2006-2010)*

5161 Macadam Frequent Bus
Provide improvements that enhance frequent bus service along Macadam Avenue between Lake Oswego and downtown Portland. *(2000-2005)*

5163 A Avenue Reconstruction
Reconstruct the street from State Street to Third Avenue to address deteriorating pavement conditions and rebuild sidewalks. *(2006-2010)*

Project number and System	
4002 Financially Constrained System	4002 Priority System

5164 A Avenue Bikeway
Retrofit the street from Iron Mountain Road to State Street to include a bicycle facility. *(2006-2010)*

5165 Willamette Greenway Path
Construct a multiuse path for bicyclists and pedestrians from Roehr Park to George Rogers Park. *(2006-2010)*

5169 Trolley Trestle Repairs
Repair trestles along rail line from Lake Oswego to Portland. *(2000-2005)*

5170 Highway 43 Traffic Management Plan
Study to develop long-term comprehensive traffic management plan for corridor from McVey Road to I-205 to limit traffic congestion, improve traffic flow and address alternative mode needs in the corridor. *(2000-2005)*

5172 Lake Oswego Trolley Study
Study to evaluate phasing of future trolley commuter service between Lake Oswego and Portland. *(2000-2005)*

5192 Highway 43/Willamette Falls Intersection Improvements
Add capacity and make the intersection safer for all modes of travel. *(2006-2010)*

5193 Willamette Falls Drive Improvement
Reconstruct the street from 10th Street to Highway 43 to include sidewalks and bike lanes. *(2000-2005)*

5194 Highway 43 Intersection Improvements
Improve the intersection with Pimlico Drive to be safer for all modes of travel. *(2006-2010)*

5195 Highway 43 Improvements
Retrofit the street with a boulevard design from West A Street to the existing Oregon City Bridge, including wider sidewalks, curb extensions and better crossings. *(2000-2005)*

5198 Highway 43 Improvements
Retrofit the street with a boulevard design from Shady Hollow Lane to Robin Wood Main Street including wider sidewalks, curb extensions and safer crossings. *(2006-2010)*

5203 Stafford Road Improvements
Realign the intersection at Borland Road and add a traffic signal and left turn lanes to improve safety and access within the Stafford urban reserve areas. *(2000-2005)*

5204 Stafford Road
Realign the intersection and construct turn lanes at Rosemont Road. This project will include construction of a traffic signal. *(2006-2010)*

5208 Idleman Road Improvements
Reconstruct and widen the street to three lanes from Johnson Creek Boulevard to Mt. Scott Boulevard. *(2006-2010)*

5209 122nd/129th Improvements
Widen the street to three lanes from Sunnyside Road to King Road. *(2006-2010)*

5211 Scott Creek Lane Pedestrian Improvements
Construct a pedestrian path from 129th Avenue to Mountain Gate Road including a bridge crossing of Scott Creek. *(2000-2005)*

5215 Beavercreek Future Street Plan
Develop a future street plan for the Beavercreek urban reserves to serve planned growth in the area. *(2006-2010)*

7022 Sunnyside Road Frequent Bus
Provide improvements that enhance new frequent bus service along Sunnyside Road from Clackamas regional center to Damascus. *(2006-2010)*

Figure 5.13
South Washington County Subarea

Figure 5.13
South Washington County Subarea

South Washington County Projects

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

1185 Oleson Road Improvements
Construct bicycle lanes and side-walks where they do not currently exist and provide lighting, better crossings, bus shelters, benches and a new traffic signal at 80th Avenue from Fanno Creek to Hall Boulevard. *(2006-2010)*

3051 Hall Boulevard Pedestrian Access to Transit Improvements
Construct wider sidewalks, better crossings, bus shelters and benches to improve pedestrian access to transit from Beaverton to Tigard. *(2006-2010)*

6000 Beaverton-Wilsonville Commuter Rail
Provide new peak-hour commuter rail service from Wilsonville to Beaverton. *(2000-2005)*

6002 Wilsonville-Salem Commuter Rail Extension
Study to extend commuter rail service from Wilsonville to Salem using existing railroad tracks. *(2011-2020)*

6003 Tualatin-Portland Commuter Rail Extension
Study to extend commuter rail service from Tualatin to Union Station via Lake Oswego and Milwaukie. This project uses existing railroad tracks. *(2011-2020)*

6004 Tualatin-Sherwood Highway Major Investment Study
Conduct major investment study and complete environmental design work for I-5 to 99W principal arterial connection. *(2000-2005)*

6005 Tualatin-Sherwood Connector
Construct a four-lane tollway connection from I-5 to 99W. This project would be designed to have limited access. Final alignment of the project will be determined based on recommendations from a study. *(2006-2010)*

6006 Transit Station and Park-and-Ride Lot Upgrades
Construct, expand and/or upgrade transit stations and park-and-ride lots throughout the subarea, including Tualatin, Washington Square, Sherwood, Lake Oswego, Lake Grove, King City, Murray/Scholls and Wilsonville. *(2000-2020)*

6007 Fanno Creek Greenway Extension
Plan and design a multi-use path from Tigard to Tualatin. *(2000-2005)*

6008 Washington Square Connectivity Improvements
Implement new local street connections based on regional center plan recommendations. *(2011-2020)*

6010 Highway 217 Interchange Improvements
Modify on- and off-ramps at Denney Road to include lights and covered culverts. *(2011-2020)*

6012 Western Avenue Corridor Improvements
Implement transportation system management strategies in the corridor between Allen Boulevard and Canyon Road, and extend Western Avenue north to connect to Canyon Road near Walker Road. *(2011-2020)*

6013 Hall Boulevard Improvements
Widen the street to five lanes from Scholls Ferry Road to Locust Street. This project includes bike lanes and sidewalks. *(2006-2010)*

6014 Greenburg Road Improvements
Widen the street to five lanes from Washington Square Road to Shady Lane. This project includes a northbound Highway 217 off-ramp improvement and boulevard design treatment of the street, such as wider sidewalks, landscaped buffer, safer street crossings and lighting. *(2000-2005)*

6015 Greenburg Road Improvements, North
Widen the street to five lanes from Hall Boulevard to Washington Square Road. This project includes sidewalks and bike lanes. *(2000-2005)*

6016 Greenburg Road Improvements
Widen the street to five lanes from Shady Lane to North Dakota Street. This project includes sidewalks and bike lanes. *(2000-2005)*

6017 Taylors Ferry Road Extension
Construct a three-lane extension of the street from Washington Drive to Oleson Road. This project includes bikeways and sidewalks. *(2011-2020)*

6018 Scholls Ferry Intersection Improvement
Realign the intersection at Allen Boulevard to improve safety. *(2006-2010)*

6019 Oak Street Improvements
Construct sidewalks and bike lanes along street from Hall Boulevard to 80th Avenue. This project also upgrades a traffic signal. *(2000-2005)*

6020 Powerline Trail Corridor
Plan, design and construct a mulit-use path from Scholls Ferry Road to Lower Tualatin Greenway. *(2000-2005)*

6022 Washington Square Regional Center Pedestrian Improvements
Retrofit streets within the regional center to make them safer and improve access to transit including Palm Boulevard, Scholls Ferry Road, Eliander Road Hall Boulevard, Greenburg Road, Oleson Road, Cascade Avenue and streets within and through the mall area. This project includes better sidewalks and crossings, lighting, curb extensions, bus shelters and benches. *(2011-2020)*

6023 Scholls Ferry Pedestrian Improvements
Make the street safer for pedestrians and improve access to transit from Beaverton-Hillsdale Highway to Hall Boulevard. This project includes better sidewalks and crossings, lighting, curb extensions, bus shelters and benches. *(2011-2020)*

6025 Scholls Ferry Road Traffic Management Improvements
Implement appropriate system management strategies such as signal interconnects, signal re-timing and lane channelization to improve traffic flow from Highway 217 to 125th Avenue. *(2000-2005)*

6026 Washington Square Regional Center TMA Startup Program
Implement a transportation management association program with employers in the regional center. *(2000-2005)*

6027 I-5/217 Interchange
Complete Phase 2 reconstruction of I-5/Highway 217 interchange. *(2006-2010)*

6028 I-5/217 Interchange
Complete the Phase 3 reconstruction of I-5/Highway 217 interchange. Project includes new southbound Highway 217 to northbound I-5 fly-over ramp. *(2006-2010)*

6029 Hall/Kruse Frequent Bus
Provide improvements that enhance frequent bus service. *(2006-2010)*

6030 Hall Boulevard Improvements
Widen the street to five lanes from Locust Street to Durham Road. This project includes bike lanes and sidewalks. *(2000-2005)*

6033 Walnut Street Improvements – Phase 1
Install a traffic signal at 121st Avenue. *(2000-2005)*

6034 Walnut Street Improvements – Phase 3
Widen the street to three lanes from Gaarde Street to 121st Avenue. This project includes bikeways and sidewalks. *(2006-2010)*

6036 Bonita Road Improvements
Widen the street to four lanes from Hall Boulevard to Bangy Road. This project includes bikeways and sidewalks. *(2006-2010)*

6037 Durham Road Improvements
Widen the street to five lanes from Upper Boones Ferry Road to Hall Boulevard. This project includes bikeways and sidewalks. *(2006-2010)*

6039 99W Improvements
Widen the highway to seven lanes from I-5 to Greenburg Road with access management to limit congestion and improve traffic flow. *(2011-2020)*

6040 72nd Avenue Improvements
Widen the street to five lanes from 99W to Hunziker Road. This project includes a median, bike lanes and sidewalks with planter strips. *(2000-2005)*

6041 72nd Avenue Improvements
Widen the street to five lanes from Hunziker Road to Bonita Road. This project includes center turn lane, bike lanes and sidewalks. *(2006-2010)*

6042 72nd Avenue Improvements
Widen the street to five lanes from Bonita Road to Durham Road. This project includes bike lanes and sidewalks. *(2006-2010)*

6043 Upper Boones Ferry Road
Widen the street to five lanes from I-5 to Durham Road. *(2011-2020)*

6044 Dartmouth Street Extension
Construct a three-lane extension of the street over Highway 217 to Hunziker Road to limit congestion on 99W in Tigard. *(2011-2020)*

6045 Dartmouth Street Improvements
Widen the street to four lanes from 72nd Avenue to 68th Avenue. This project includes turn lanes, bike lanes and sidewalks. *(2006-2010)*

6046 Walnut Street Improvements – Phase 2
Modifies intersection at Gaarde Street. *(2000-2005)*

6047 Highway 217/72nd Avenue Interchange Improvements
Complete the interchange reconstruction with additional ramps and a two-lane overcrossing extending from Hunziker Road to 72nd Avenue. *(2006-2010)*

Project number and System	
4002 Financially Constrained System	4002 Priority System

6049 Highway 99W Bikeway
Retrofit the street from Hall Boulevard to Greenburg Road to include bike lanes. *(2006-2010)*

6051 Hall Boulevard Bikeway and Pedestrian improvements
Retrofit the street from Oak Street to 99W to include bike lanes, sidewalks and better street crossings to improve safety. *(2000-2005)*

6052 Highway 217 Overcrossing
Construct a two-lane crossing of Highway 217 from Nimbus Drive to the mall area. This project will include sidewalks and bike lanes. *(2011-2020)*

6053 Nimbus Drive Extension
Extend the street to connect to Greenburg Road. This project includes sidewalks and bike lanes. *(2011-2020)*

6054 Highway 99W Access Management Plan
Develop an access management plan for 99W from I-5 to Durham Road. *(2000-2005)*

6055 Highway 99W System Management
Interconnect traffic signals along 99W from I-5 to Durham Road to limit congestion and improve traffic flow. *(2006-2010)*

6056 Highway 99W Intersection Improvements
Modify the traffic signal and add turn lanes at Hall Boulevard. *(2006-2010)*

6058 Durham Road Improvements
Widen the street to five lanes from Hall Boulevard to 99W. This project will include sidewalks and bike lanes. *(2011-2020)*

6059 Beef Bend Improvements
Widen the street to three lanes from King Arthur to 131st Avenue. This project includes sidewalks. *(2000-2005)*

6062 King City Town Center Plan
Study to identify long-term transportation needs for motor vehicle, truck, bike, pedestrian and transit travel in the town center. *(2006-2010)*

6064 Hall Boulevard Frequent Bus
Provide improvements that enhance frequent bus service between Tualatin, Tigard, Beaverton and Sunset transit centers. *(2006-2010)*

6066 I-5 Interchange Improvement
Widen the Nyberg Road over-crossing to four lanes and widen the southbound off-ramp from I-5 to Nyberg Road to limit congestion and improve traffic flow. This project includes sidewalks along over-crossing. *(2000-2005)*

6067 Boones Ferry Road Improvements
Widens street to three lanes from Durham Road to Elligsen Road in Wilsonville. This project includes completion of sidewalks and bikeways. *(2006-2010)*

6069 Hall Boulevard Extension
Construct a two-lane extension of the street from Durham to Tualatin Road. This project crosses the Tualatin River and includes sidewalks and bikeways. *(2011-2020)*

6070 Lower Boones Ferry Improvements
Retrofit the street from Boones Ferry Road to Bridgeport to include bike lanes, sidewalks and interconnected traffic signals. *(2000-2005)*

6071 Tualatin-Sherwood Road Improvements
Widen the street to five lanes from 99W to Teton Avenue. This project includes bike lanes, sidewalks and traffic signal modifications at Oregon and Cipole streets. *(2006-2010)*

6072 Tualatin Road Improvements
Widen the street from 115th Avenue to Boones Ferry Road to include sidewalks, bike lanes and safer railroad crossings. *(2000-2005)*

6073 124th Avenue Improvements
Construct a new three-lane street from Tualatin Road to Tualatin-Sherwood Road to improve access to the industrial area. This project includes bikeways and sidewalks. *(2006-2010)*

6074 65th/Tualatin River Crossing
Construct new crossing of Tualatin River and connections to 65th Avenue and Lower Boones Ferry Road. *(2011-2020)*

6077 Tualatin-Sherwood Road Bikeway
Retrofit the street from I-5 to Lower Boones Ferry Road to include bike lanes.

6078 Boones Ferry Road-Martinazzi Bike/Ped Path
Construct a new multiuse path for use by bicyclists and pedestrians from Boones Ferry Road to Martinazzi Street. *(2011-2020)*

6079 Tualatin Town Center Pedestrian Improvements
Retrofit the streets within the town center to include better sidewalks and street crossings, lighting, curb extensions, bus shelters and benches. Streets included in this project are Nyberg Road, Boones Ferry Road, Tualatin Road, Tualatin-Sherwood Road, Sagert Road and intersecting neighborhood streets. *(2000-2005)*

6080 Tualatin River Pedestrian Bridge
Construct a cantilevered pedestrian and bicycle multiuse path on railroad trestle across the Tualatin River from Durham City Park to Tualatin Community Park. *(2000-2005)*

6081 Nyberg Road Pedestrian and Bike Improvements
Retrofit the street from 65th Avenue to I-5 to complete sidewalks and bicycle facilities. *(2000-2005)*

6082 Tualatin Freight Access Plan
Develop an interim freight circulation plan for the Tualatin industrial area to address traffic congestion and freight access issues in the Tualatin-Sherwood Road corridor. *(2000-2005)*

6083 Tualatin Transportation Management Association Startup
Implements a transportation management association with area employers. *(2000-2005)*

6086 Kinsman Road Extension
Construct a two-lane extension of the street from Kinsman Road to Boeckman Road with sidewalks and bike lanes. This project provides an alternate north-south route parallel to I-5 for local travel needs. *(2006-2010)*

6087 Kinsman Road Extension
Construct a two-lane extension of the street from Boeckman Road to Ridder Road with sidewalks and bike lanes. This project provides an alternate north-south route parallel to I-5 for local travel needs. *(2006-2010)*

6090 Boeckman Road Extension
Construct a three-lane extension of the street from Boeckman Road to Grahams Ferry Road with sidewalks and bike lanes. This project increases east-west street connectivity to serve local travel needs. *(2006-2010)*

6091 Boeckman Road I-5 Overcrossing
Widen the street to five lanes from Parkway Avenue to 100th Avenue. This project includes sidewalks and bike lanes. *(2006-2010)*

Project number and System	
4002 Financially Constrained System	4002 Priority System

6097 Stafford Road Safety Improvements
This project addresses safety issues from I-205 to Boeckman Road. *(2006-2010)*

6101 Wilsonville Road Bikeway
Retrofit the street from Rose Lane to Willamette Way West to include bike lanes. *(2006-2010)*

6102 Parkway Avenue Bikeway
Provide signs and re-stripe the street from Boeckman Road to Town Center Loop to create wide outside lanes that are shared by bikes and motor vehicles, and a center turn lane. *(2006-2010)*

6105 Town Center Loop Bike and Pedestrian Improvements
Retrofit the street from Parkway Avenue to Wilsonville Road to include bike lanes and sidewalks. *(2006-2010)*

6109 Beef Bend/175th Avenue
Realign intersection to eliminate offset Beef Bend Road with 175th Avenue. *(2011-2020)*

6110 Highway 99W Circulation Improvements Study
Study to evaluate the potential use of frontage roads along 99W to manage access in the corridor, limit congestion and improve traffic flow. *(2000-2005)*

6111 Beef Bend/Elsner Road Extension
Construct a two-lane realignment of the street from Scholls Ferry Road to 99W. This extension would be designed with limited access. *(2000-2005)*

6113 Oregon Street Improvements
Widen the street to three lanes from the Tualatin-Sherwood Road to Murdock Street. This project includes a new traffic signal at Tualatin-Sherwood Road.

6117 Sherwood Town Center Pedestrian Improvements
Make street safer for pedestrians and improve access to transit along Sherwood Road, Oregon Street, Pacific Street and intersecting streets. This project includes better sidewalks and crossings, lighting, curb extensions, bus shelters and benches. *(2011-2020)*

6119 Murray/Scholls Town Center Connectivity Improvements
Construct a two-lane Teal Road collector extension to Town Center Loop Road and Barrows Road, transit collectors from Murray Boulevard to Town Center Loop Road and new neighborhood route connections. *(2011-2020)*

6121 Murray Boulevard Extension
Construct a four-lane extension of the street from Scholls Ferry Road to Barrows Road at Walnut Street. This project includes sidewalks and bike lanes. *(2000-2005)*

6122 Davies Road Connection
Construct a three-lane extension of the street from Scholls Ferry Road to Barrows Road. This project includes bikeways and sidewalks. *(2006-2010)*

6124 Carmen Drive Improvements
Reconstruct and widen the street to four lanes from I-5 to Quarry Road to improve access from I-205 to the Kruse Way employment area. This project will include left turn lanes at major intersections. *(2006-2010)*

6125 Bangy Road Improvements
Widen the street to four lanes from Bonita Road to Kruse Way to improve internal access and circula-tion within the Kruse Way employment area. This project will include left turn lanes at major intersections. *(2006-2010)*

6126 Meadows Road Improvements
Widen the street to four lanes from Bangy Road to Carmen Drive to improve internal access and circulation within the Kruse Way employment area. This project will include left turn lanes at major intersections. *(2006-2010)*

6127 Boones Ferry Road Improvements
Widen the street to five lanes from Kruse Way to Washington Court. This project include sidewalks and bike lanes. *(2006-2010)*

6128 Carmen Drive Intersection Improvements
Realign the intersection at Meadows Road, including a new traffic signal and turn lanes. *(2006-2010)*

6129 Bangy Road Intersection Improvements
Add traffic signals and turn lanes to the intersection at Bonita Road. *(2006-2010)*

6130 Bangy Road Intersection Improvements
Add traffic signals and turn lanes to the intersection at Meadows Road. *(2006-2010)*

6131 Willamette River Greenway
Construct a multiuse path for bicyclists and pedestrians from Roehr Park to Tryon Creek. *(2006-2010)*

6133 Bonita Road Improvements
Reconstruct and widen the street to three lanes from Bangy Road to Carmen Drive. This project will include sidewalks and bike lanes. *(2006-2010)*

6135 Boones Ferry Road Bike Lanes
Retrofit the existing street with bicycle lanes from Kruse Way to Knaus Road. *(2000-2005)*

6137 Lake Grove Town Center Plan
Study to identify long-term transportation needs for motor vehicle, truck, bike, pedestrian and transit travel in the town center. *(2000-2005)*

Project number and System	
4002 Financially Constrained System	4002 Priority System

Figure 5.14
North Washington County Subarea

Figure 5.14
North Washington County Subarea

North Washington County Projects

RTP Project number and System	
4002 Financially Constrained System	4002 Priority System

3000 Highway 217 Improvements
Add capacity to the freeway based on recommendations from the Highway 217 corridor study. *(2011-2020)*

3001 Highway 217 Improvements
Widen the northbound Highway 217 to three lanes from Tualatin Valley Highway to US 26 with ramp improvements. *(2006-2010)*

3002 US 26/217 Interchange Improvement
Reconfigure the interchange with braided ramps. *(2006-2010)*

3006 US 26 Improvements
Complete Phase 2 and 3 of US 26 improvements from Camelot Court to Sylvan Road by adding third through lane and collector distributor system. *(2000-2005)*

3007 US 26 Improvements
Widen eastbound US 26 to three lanes from Highway 217 to Camelot Court. *(2006-2010)*

3009 US 26 Improvements
Widen the freeway to six lanes from Murray Boulevard to 185th Avenue with possible high-occupancy vehicle lane. *(2011-2020)*

3012 Rock Creek Greenway Multiuse Path
Completes a multiuse path along Rock Creek Greenway from Tualatin Valley Highway to Evergreen Parkway. This project includes several bridges and street crossing improvements in addition to construction of the multiuse path. *(2000-2005)*

3013 Bronson Creek Greenway Study
Study to determine the feasibility of new multiuse trail along Bronson Creek Greenway. *(2000-2005)*

3014 Powerline Beaverton Trail Corridor Study
Complete planning, design and construction of new multiuse trail that connects Bronson Creek Greenway to Farmington Road. *(2000-2005)*

3015 Beaverton Creek Greenway Study
Study to determine the feasibility of new multiuse trail along Beaverton Creek Greenway from Rock Creek to Fanno Creek Greenway. *(2000-2005)*

3016 Washington County Traffic Management Improvements
Purchase hardware for new traffic operations center to serve Washington County and conduct needs analysis. *(2000-2005)*

3017 Beaverton-Hillsdale Highway Frequent Bus
Provide Improvements that enhance frequent bus service. *(2000-2005)*

3018 Transit Center and Park-and-Ride Upgrades
Construct, expand and/or upgrade the transit stations and park-and-ride lots throughout the subarea, including Cornelius, Westside MAX stations, Forest Grove, Beaverton, Hillsboro, Aloha and Cedar Mill transit centers. *(2000-2020)*

3019 Beaverton Connectivity Improvements 1
Complete several downtown Beaverton street connections to improve access and circulation within the regional center by all modes of travel. *(2000-2005)*

3020 Beaverton Connectivity Improvements 2
Complete several downtown Beaverton street connections to improve access and circulation within the regional center by all modes of travel. *(2006-2010)*

3022 Jenkins Road Improvement
Widen the street to five lanes from Murray Boulevard to 158th Avenue. This project also will include sidewalks and bike lanes. *(2006-2010)*

3023 Highway 217 Interchange Improvements
Construct a new frontage road adjacent to the highway from Walker Road to Tualatin Valley Highway, braided ramps at Tualatin Valley Highway and other ramp improvements at Beaverton-Hillsdale Highway, Walker Road and Allen Boulevard. Final design of this project will be determined through Highway 217 corridor plan. *(2000-2005)*

3025 Tualatin Valley Highway Improvements
Add capacity to the highway from Cedar Hills Boulevard to 10th Avenue based on recommendations from refinement planning for this corridor. *(2011-2020)*

3026 Millikan Extension
Construct a new three-lane extension of Millikan Way to connect to Cedar Hills Boulevard at Henry Street with sidewalks and bike lanes. *(2000-2005)*

3027 Davis Improvements
Widen the street to three lanes from 160th Avenue to 170th Avenue, and include sidewalks and bike lanes to improve safety. *(2000-2005)*

3028 Hart Improvements
Widen the street to three lanes from Murray Boulevard to 165th Avenue. Project also will include sidewalks, bike lanes and a traffic signal at 155th Avenue to improve safety. *(2000-2005)*

3029 Lombard Improvements
Realign the street and add turn lanes from Broadway Avenue to Farmington Road to improve access to the regional center. This project also will include sidewalks. *(2000-2005)*

3030 Farmington Road Improvements
Widen the street to five lanes from Hocken Avenue to Murray Boulevard. This project also will include sidewalks, bike lanes, an additional left turn lane at Murray and intersection improvements at Hocken to improve safety. *(2000-2005)*

3031 Allen Boulevard Improvements
Widen the street to five lanes from Highway 217 to Murray Boulevard. The project will include sidewalks and bike lanes. *(2011-2020)*

3032 Cedar Hills Boulevard Improvements
Widen the street to five lanes from Farmington Road to Walker Road. This project also will include sidewalks and bike lanes. *(2006-2010)*

3033 125th Avenue Extension
Construct a two-lane extension of the street with turn lanes from Brockman Street to Hall Boulevard. This project also will include sidewalks and bike lanes to improve safety. *(2000-2005)*

3034 Hall Boulevard Extension
Extend Hall Boulevard from Cedar Hills Boulevard to Hocken/Terman Avenue. This project is a three-lane extension that includes sidewalks and bike lanes. *(2000-2005)*

3036 158th/Merlo Road Improvements
Widen the street to five lanes from 170th Avenue to Walker Road. The project will include sidewalks and bike lanes. *(2011-2020)*

3038 Center Street Improvements
Widen street to three lanes from Hall Boulevard to 113th Avenue. Project also will include sidewalks and bike lanes. *(2011-2020)*

North Washington County Projects (continued)

3041 Hall/Watson Improvements
Retrofit the street with a boulevard design from Allen Boulevard to Cedar Hills Boulevard, including wider sidewalks, curb extensions and safer street crossings. *(2000-2005)*

3042 Tualatin Valley Highway/Canyon Road Boulevard Improvements
Retrofit the street with a boulevard design from Murray Boulevard to Highway 217, including wider sidewalks, curb extensions, safer street crossings, bus shelters and benches. *(2006-2010)*

3045 Farmington Road Bikeway
Retrofit bike lanes on existing street from Hocken Avenue to Highway 217. *(2006-2010)*

3046 Hall Boulevard Bikeway
Retrofit bike lanes on the existing street from Beaverton-Hillsdale Highway to Cedar Hills Boulevard. *(2000-2005)*

3047 Watson Avenue Bikeway
Retrofit bike lanes on the existing street from Beaverton-Hillsdale Highway to Hall Boulevard. *(2000-2005)*

3049 Downtown Beaverton Pedestrian Improvements
Make the street safer for pedestrians within the regional center along Hocken Avenue, Cabot Street, 110th Avenue, 113th Avenue and Tualatin Valley Highway. This project includes wider sidewalks, bike lanes, lighting and safer crossings. *(2000-2005)*

3051 Hall Boulevard/Watson Pedestrian-to-Transit Improvements
Make the street safer for pedestrians and improve access to transit within the regional center from Cedar Hills Boule-vard to Tigard. This project includes wider sidewalks, lighting and better crossings. *(2006-2010)*

3052 110th Avenue Pedestrian Improvements
Complete the sidewalks where they are missing from Beaverton-Hillsdale Highway to Canyon Road. *(2000-2005)*

3053 117th Avenue Pedestrian Improvements
Make the street safer for pedestrians and improve access to light rail at Center Street with wider sidewalks, lighting and safer street crossings. *(2000-2005)*

3054 Murray Boulevard Bike/Pedestrian Improvements
Make the street safer for bicycles and pedestrians from Scholls Ferry Road to Tualatin Valley Highway by constructing pedestrian refuges and better crossings at intersections and filling in gaps in the bicycle network. *(2011-2020)*

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3055 Beaverton-Hillsdale Highway Pedestrian and Bicycle Improvements
Make the street safer for bicyclists and pedestrians and improve access to transit from 65th Avenue to Highway 217, with bike lanes, wider sidewalks, better crossings, bus shelters and benches. *(2011-2020)*

3056 Canyon Road/Tualatin Valley Highway Bike and Pedestrian Improvements
Make the street safer for bicyclists and pedestrians from 91st Avenue to Highway 217 with bike lanes, sidewalks and better crossings. *(2011-2020)*

3058 Beaverton Regional Center TMA
Implement a transportation management association with area employers. *(2000-2005)*

3060 Tualatin Valley Highway Access Management
Implement access management strategies from 117th Avenue to Hillsboro. *(2006-2010)*

3061 Tualatin Valley Highway System Management
Interconnect traffic signals from 209th Avenue to Highway 217 to limit congestion and improve traffic flow. *(2006-2010)*

3063 Murray Boulevard Improvements
Interconnect the traffic signals from Tualatin Valley Highway to Allen Boulevard to limit traffic congestion and improve traffic flow in the corridor.

3067 185th Avenue Improvements
Widen the street to five lanes from West View High School to Springville Road. This project will include sidewalks and bike lanes. *(2006-2010)*

3069 Scholls Ferry Road Improvements
Widen street to three lanes with sidewalks and bike lanes from Hamilton Street to Garden Home Road. *(2011-2020)*

3071 Fanno Creek Greenway Multiuse Path
Construct a multiuse path along Fanno Creek Greenway from Allen Boulevard to Denney Road east of Highway 217 and from Highway 217 east to Allen Boulevard near Scholls Ferry Road intersection. *(2000-2005)*

3072 Beaverton Powerline Multiuse Trail
Construct a new multiuse trail fro bicyclists and pedestrians from Farmington Road to Scholls Ferry Road. *(2000-2005)*

3074 Hall Boulevard Bikeway
Complete the regional bicycle system from Farmington Road to Highway 217 by constructing bike lanes from 12th Avenue to south of Allen Boulevard. *(2000-2005)*

3075 Cedar Hills Boulevard Improvements
Improve pedestrian and bicycle safety and access to transit with wider sidewalks, lighting, safer street crossings, bike lanes, bus shelters and benches. *(2000-2005)*

3076 Allen Boulevard Improvements
Widen the street to five lanes from Highway 217 to Western Avenue. This project will include sidewalks and bike lanes. *(2011-2020)*

3078 Canyon Road Bicycle and Pedestrian Improvements
Retrofit the existing street with sidewalks and bike lanes from US 26 to 110th Avenue. *(2006-2010)*

3079 Allen Boulevard Bike and Pedestrian Improvements
Retrofit the existing street with bike lanes and missing sidewalks from Western Avenue to Scholls Ferry Road. *(2006-2010)*

3084 170th Avenue Improvements
Widen the street to five lanes from Alexander Road to Merlo Road. This project will include sidewalks and bike lanes. *(2011-2020)*

3085 170th Avenue Improvement
Widen the street to three lanes from Rigert Road to Blanton and to five lanes from Blanton to Alexander Road with sidewalks and bike lanes to improve safety. *(2000-2005)*

3086 158th Avenue Improvements
Widen the street from Walker Road to Jenkins Road to include bike lanes. *(2011-2020)*

3087 Millikan Way Improvements
Widen the street to five lanes from Tualatin Valley Highway to 141st Avenue. This project will include sidewalks and bike lanes. *(2011-2020)*

3088 Millikan Way Improvements
Widen the street to three lanes from 141st Avenue to Hocken Road. This project will include sidewalks and bike lanes. *(2011-2020)*

3091 Quatama Street Improvements
Widen the street to three lanes from 205th Avenue to 227th Avenue and extend the street south to Baseline Road at 227th Avenue. This project will include sidewalks and bike lanes. *(2006-2010)*

3092 Powerline/Rock Creek Multiuse Trail
Construct a multiuse path for bicyclists and pedestrians just north of US 26 from Bethany/Kaiser Road to Evergreen Road. *(2000-2005)*

3093 Murray Boulevard Bikeway
Retrofit bike lanes on existing street from Farmington Road to Tualatin Valley Highway. *(2011-2020)*

3094 Cornell Road Bikeway
Retrofit bike lanes on existing street from Elam Young Parkway to Ray Circle. *(2000-2005)*

3095 170th Avenue Pedestrian Improvements
Improve pedestrian safety and access to light rail transit by completing missing sidewalks from Tualatin Valley Highway to Elmonica light rail station. *(2000-2005)*

3096 Pedestrian Access to MAX
Improve pedestrian safety and access to light rail transit with wider sidewalks, lighting and better crossings in areas adjacent to light rail stations. *(2000-2005)*

3098 Walker Road Bike/Pedestrian Improvements
Retrofit bike lanes and sidewalks on existing street from Canyon Road to Cedar Hills Boulevard. *(2011-2020)*

3102 Baseline Road Improvements
Widen the street to three lanes from 201st Avenue to 231st Avenue. This project also will include sidewalks and bike lanes to improve safety. *(2000-2005)*

3104 NW Aloclek Drive Extension
Construct a three-lane extension of the street from Amberwood Drive to Cornelius Pass Road. This project will also include sidewalks and bike lanes. *(2000-2005)*

3105 East/West Collector
Construct a new three-lane street from 185th Avenue to 231st Avenue. This project also will include sidewalks and bike lanes. *(2000-2005)*

3106 229th/231st/234th Avenue Connector
Construct a new three-lane street from Century High School to light rail transit. This project will also include a new bridge, sidewalks, bike lanes and widening 231st Avenue to three lanes. *(2000-2005)*

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4002 Financially Constrained System	4002 Priority System

3107 SW 205th Avenue Improvements
Widen the street to five lanes from light rail to Baseline Road. This project will include a new bridge, sidewalks and bike lanes. *(2006-2010)*

3108 Baseline Road Improvements
Widen the street to three lanes from Lisa Avenue to 201st Avenue. This project also will include sidewalks and bike lanes to improve safety. *(2000-2005)*

3110 Jackson School Road Improvements
Reconfigure the intersection at US 26 to improve safety. This project restricts turn movements and cross-intersection travel. *(2000-2005)*

3111 First Avenue Improvements
Make the street safer for pedestrians from Grant Street to Glencoe High School, with wider sidewalks, better street crossings and transit improvements. *(2000-2005)*

3112 First Avenue Improvements
Reconfigure First Avenue to provide protected left turn lanes and update signal phasing at Oak Street and Baseline Street. *(2000-2005)*

3113 10th Avenue Improvements
Construct a new right turn lane and widen sidewalks in light rail station area from Main Street to Baseline Road. *(2000-2005)*

3114 NE 28th Avenue Improvements
Widen the street to three lanes from Grant Street to Main Street. The project also improves safety and access to light rail with bike lanes, wide sidewalks, better lighting, safer crossings and landscaped buffers. *(2000-2005)*

3115 10th Avenue Improvements
Construct third northbound travel lane from Washington Street to Main Street to improve traffic flow and relieve vehicle queuing at light rail crossing. *(2006-2010)*

3116 10th Avenue Improvements
Construct additional northbound turn lane from Walnut Street to Baseline Street and reconfigure westbound Baseline Street approach to 10th Avenue to improve safety. *(2006-2010)*

3119 Tualatin Valley Highway Improvements
Make boulevard retrofit of street within the regional center from Shute Park to 10th Avenue including wider sidewalks, curb extensions and safer street crossings. *(2000-2005)*

3121 Tualatin Valley Highway Refinement Planning
Refinement planning to identify phased strategy to implement a limited-access facility in this corridor. Study area is from Cedar Hills Boulevard to Minter Bridge. *(2000-2005)*

3122 St. Mary's Urban Reserves Future Street Plan
Study the area to define a future street plan for the urban reserve areas located south of Tualatin Valley Highway in Washington County. *(2000-2005)*

3123 Hillsboro Regional Center Transportation Management Association Startup
Implement a transportation management association program with employers in the regional center. *(2000-2005)*

3124 Tualatin Valley Highway System Management
Interconnect the traffic signals from 209th Avenue to 10th Avenue in Hillsboro to limit traffic congestion and improve traffic flow in the corridor. *(2000-2005)*

3126 Cornelius Pass Road Improvements
Widen street to five lanes from TV Highway to Baseline Road. *(2006-2010)*

3127 Hillsboro Regional Center Pedestrian Improvements
Improve pedestrian safety and access to transit within the regional center with wider sidewalks, lighting, safer street crossings, bus shelters and benches. *(2000-2005)*

3128 Cornell Road Improvements
Widen the street to five lanes from Arrington Road to Main Street. This project will include sidewalks and bike lanes. *(2011-2020)*

3130 Evergreen Road Improvements
Widen the street to three lanes from Glencoe Road to 15th Avenue. This project also will include sidewalks and bike lanes to improve safety. *(2000-2005)*

3131 Evergreen Road Improvements
Widen the street to five lanes from 15th Avenue to 253rd Avenue. This project also will include sidewalks and bike lanes. *(2006-2010)*

3132 Cornelius Pass Road Improvements
Widen the street to five lanes from US 26 to West Union Road. This project also will include sidewalks and bike lanes to improve safety. *(2000-2005)*

3133 Cornelius Pass Road Interchange Improvement
Construct a full diamond interchange and southbound auxiliary lane to facilitate traffic flows on and off US 26. *(2000-2005)*

3134 Cornelius Pass Road Improvements
Widen the street to five lanes from Tualatin Valley Highway to Baseline Road. This project also will include sidewalks, bike lanes and traffic signals to improve safety. *(2000-2005)*

3135 Cornelius Pass Road Improvements
Widen the street to five lanes from Baseline Road to Aloclek Drive. This project also will include sidewalks and bike lanes to improve safety. *(2000-2005)*

3136 Brookwood/Parkway Avenue Improvements
Widen the street to three lanes from Baseline Road to Airport Road and five lanes from Cornell Road to Airport Road. This project also will include sidewalks and bike lanes to improve safety. *(2000-2005)*

3137 Brookwood Avenue Improvements
Widen the street to three lanes from Tualatin Valley Highway to Baseline Road. This project also will include sidewalks and bike lanes to improve safety. *(2000-2005)*

3138 Murray Light Rail Overcrossing and Pedestrian Improvements
Widen the existing light rail crossing to four lanes. This project also will include bike lanes, wider sidewalks, lighting, better crossings and landscaped buffers. *(2000-2005)*

3139 US 26 Overcrossing
Construct a new crossing of US 26 from Bennett Avenue to Wagon Way. *(2011-2020)*

3140 229th Avenue Extension
Construct a three-lane extension of street from Wagon Way to West Union Road. This project also will include sidewalks and bike lanes. *(2006-2010)*

3141 170th/173rd Improvements
Widen the street to three lanes from Baseline Road to Walker Road. This project also will include sidewalks and bike lanes. *(2006-2010)*

Project number and System	
4002 Financially Constrained System	4002 Priority System

3142 Johnson Street Extension
Construct a three-lane extension of the street from 170th Avenue to 209th Avenue with sidewalks and bike lanes. *(2000-2005)*

3143 Walker Road Improvements
Widen the street to five lanes from Cedar Hills Boulevard to 158th Avenue. This project also will include sidewalks and bike lanes. The project is three lanes in the financially constrained system. *(2006-2010)*

3144 Walker Road Improvements
Widen the street to five lanes from Amberglen Parkway to 158th Avenue. This project also will include sidewalks and bike lanes. The project is three lanes in the financially constrained system. *(2006-2010)*

3147 25th Avenue Improvements
Widen the street to three lanes from Cornell Road to Evergreen Road. This project will also include bike lanes to improve safety. *(2006-2010)*

3148 Walker Road Improvements
Widen street to three lanes with sidewalks and bike lanes from Highway 217 to Cedar Hill Boulevard. *(2006-2010)*

3150 Cornell Road System Management
Interconnect traffic signals from 185th Avenue to 25th Avenue to limit traffic congestion and improve traffic flow in the corridor. *(2000-2005)*

3152 Westside Transportation Management Association
Implement a transportation management association with area employees. *(2000-2005)*

3153 David Hill Road Connection
Construct a new two-lane street from Thatcher Road to Sunset Drive to link the northwest sector of the city to Highway 47. *(2011-2020)*

3154 Forest Grove Northern Arterial
Construct a new three-lane arterial connection from Quince Street to Highway 47. This project also will include sidewalks and bike lanes to improve safety. *(2000-2005)*

3156 Forest Grove Connectivity Improvements
Construct two-lane collector streets parallel to Tualatin Valley Highway to improve local circulation and access within the town center. *(2011-2020)*

3157 Sunset Drive Improvements
Widen the street to three lanes from University Avenue to Beal Road. This project also will include sidewalks, bike lanes and a new traffic signal. *(2000-2005)*

3158 Forest Grove to US 26 Improvements
Realign Martin Road and Cornelius-Schefflin Road with widened paved shoulders to improve safety. *(2000-2005)*

3159 Highway 8 Improvements
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. *(2006-2010)*

3160 Verboort Road Intersection Improvements
Signalize intersection at Highway 47 to improve safety. *(2006-2010)*

3162 Tualatin Valley Highway (Pacific/19th) Bikeway
Retrofit bike lanes on existing street from Hawthorne Street to E Street. *(2000-2005)*

3163 Forest Grove Town Center Pedestrian Improvements
Improve pedestrian safety and access to transit within the town center with wider sidewalks, lighting, crossings, bus shelters and benches. *(2000-2005)*

3164 Tualatin Valley Highway Frequent Bus
Provide improvements that enhance frequent bus service between Forest Grove and Hillsdale via Tualatin Valley Highway and Beaverton-Hillsdale Highway. *(2000-2020)*

3166 Highway 8 Intersection Improvement
Widen the intersection at 10th Avenue to support freight traffic. *(2006-2010)*

3167 Highway 8 Intersection Improvement
Install traffic signals at 19th/20th Avenue and reconfigure intersection to improve safety. *(2000-2005)*

3168 Baseline Street/Adair Street Couplet Intersection Improvements
Install a traffic signal at the intersection of 14th Avenue to improve safety. *(2006-2010)*

3169 Main Street Improvements
Retrofit the street with a boulevard design from 10th Avenue to 19th Avenue, including wider sidewalks, curb extensions and safer street crossings. *(2000-2005)*

3170 West Couplet Enhancement
Retrofit the street with a boulevard design from First Avenue to 10th Avenue, including wider sidewalks, Scholls Ferry Road. *(2006-2010)*

3171 Highway 8/4th Avenue Improvement
Install a traffic signal. *(2006-2010)*

3175 Barnes Road Improvements
Widen streets to five lanes from Hwy 217 to 119th Avenue. This project will include sidewalks and bike lanes. *(2006-2010)*

3176 90th/98th Avenue Extension
Construct a two-lane extension of the street with bicycle and pedestrian facilities from Leahy Road to Barnes Road. *(2011-2020)*

3177 Cedar Hills Boulevard/Barnes Road Intersection Improvement
Reconstruct intersection and approaches to add new travel lanes and turn lanes and upgrades traffic signals. *(2000-2005)*

3178 Westhaven Road Pathways
Improve access to Sunset transit center by constructing off-road pathway between Morrison Street to Springcrest Road west of 95th Avenue. *(2006-2010)*

3180 119th Avenue Improvements
Extend 119th Avenue to Cornell Road with sidewalks and bike lanes. *(2006-2010)*

3181 Cornell Road Improvements
Widen the street to five lanes from US 26 to 143rd Avenue. This project will also include sidewalks and bike lanes. *(2011-2020)*

3183 Cornell Road Improvements
Widen the street to three lanes from 143rd Avenue to Saltzman Road. This project will also include sidewalks and bike lanes. *(2000-2005)*

3184 Cornell Road Improvements
Widen the street to three lanes from Saltzman Road to Miller Road. This project will include safer street crossings and bus shelters. *(2011-2020)*

3185 Barnes Road Improvement
Widen the street to five lanes from Saltzman Road to 119th Avenue. This project also will include sidewalks and bike lanes. *(2000-2005)*

3186 Murray Boulevard Improvement
Widen the street to five lanes from Science Park Drive to Cornell Road. This project also will include sidewalks and bike lanes. *(2000-2005)*

3188 Saltzman Road Improvements
Widen the street to three lanes from Cornell Road to Burton Street. This project will include sidewalks and bike lanes. *(2011-2020)*

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4002 Financially Constrained System	4002 Priority System

3190 143rd Avenue Improvements
Widen the street to three lanes from Cornell Road to West Union Road. This project will also include sidewalks and bike lanes. *(2006-2010)*

3191 Cornell Road Intersection Improvements
Modifiy the intersections at Saltzman Road, Barnes Road, Murray Boulevard and Trail Avenue to make them safer for all modes. *(2011-2020)*

3192 Cedar Mill Connectivity Improvements - Phase 1
Construct new local street connections to improve traffic circulation. *(2000-2005)*

3193 Cornell Road Boulevard Treatment
Retrofit the street with boulevard design, including wider sidewalks, raised medians, landscaping, street furniture, curb extensions and safer street crossings. *(2000-2005)*

3194 Cedar Mill Multi-Use Path
Construct a multiuse path north of Cornell Road from 113th Avenue to 119th Avenue and help fill the gap between existing bicycle and pedestrian facilities. *(2000-2005)*

3195 Saltzman Pedestrian Improvements
Construct sidewalks on west side of street from Marshall to Dogwood roads. *(2000-2005)*

3197 Bethany Boulevard Improvements – Phase 1
Widen the street to three lanes from Bronson Road to West Union Road. This project also will include sidewalks, bike lanes and a soundwall. *(2000-2005)*

3198 Bethany Boulevard Improvements – Phase 2
Widen the street to five lanes from Bronson Road to West Union Road. This project will include sidewalks and bike lanes. *(2011-2020)*

3204 Cornell Road Improvements
Widen the street to five lanes from 179th Avenue to Bethany Boulevard. This project also will include sidewalks and bike lanes. *(2006-2010)*

3205 173rd/174th Undercrossing
Construct a new two-lane undercrossing from Cornell Road to Bronson Road. This project also will include sidewalks and bike lanes. *(2011-2020)*

3208 Tanasbourne Town Center Pedestrian Improvements
Improve pedestrian safety and access to transit within the town center with wider sidewalks, safer street crossings, lighting, bus shelters and benches. *(2011-2020)*

3210 185th Avenue Pedestrian Improvements
Improve pedestrian safety and access to transit from Westview High School to West Union Road, filling in gaps in the sidewalk system and constructing better crossings, lighting, bus shelters and benches. *(2011-2020)*

3214 Farmington Road Improvements
Widen the street to five lanes from 172nd Avenue to 185th Avenue. This project also will include sidewalks and bike lanes. *(2011-2020)*

3215 Kinnaman Road Improvements
Widen the street to three lanes from Farmington Road to 209th Avenue. This project also will include sidewalks and bike lanes. *(2011-2020)*

3216 185th Avenue Improvements
Widen the street to three lanes from Kinnaman Road to Bany Road. This project will include sidewalks and bike lanes. *(2006-2010)*

3217 Farmington Rd Improvements
Widen the street to three lanes from 185th Avenue to 209th Avenue. This project also will include sidewalks and bike lanes. *(2006-2010)*

3218 Cornelius Pass Road Extension
Construct a three-lane extension from Tualatin Valley Highway to 209th Avenue. This project will include sidewalks and bike lanes. *(2011-2020)*

3220 Farmington Town Center Pedestrian Improvements
Improve pedestrian safety and access to transit within town center with wider sidewalks, better crossings, lighting, bus shelters and benches. *(2011-2020)*

3223 185th Avenue Improvements
Widen the street to five lanes from Tualatin Valley to Kinnaman Road. This project will include sidewalks and bike lanes. *(2011-2020)*

6000 Beaverton-Wilsonville Commuter Rail
Provide new peak-hour commuter rail service between Wilsonville to Beaverton. *(2000-2020)*

6064 Hall Boulevard Frequent bus
Provide improvements that enhance frequent bus service between Tualatin, Tigard, Beaverton and Sunset transit centers. *(2000-2020)*

5.4 Priority System Financing

5.4.1 Principles for Funding the Priority System

Funding the 2020 Priority System will require additional revenue sources. The following is an illustrative list of principles that should be evaluated when elected officials and others consider a strategy for pursuing additional revenue sources. The principles are not exclusive of one another; there will be a dynamic tension between competing principles. It will be up to decision-makers to balance these natural tensions in adopting a financial strategy. Additional principles may also be developed as further work is completed on a funding strategy for the 2020 Priority System as outlined in Section 6.8.14.

Adequacy

- *Adequacy in addressing funding shortfall.* A new source should make a significant contribution to the funding shortfall identified in this RTP.

- *Fee revenue should grow with increased use and inflation*.

- *Source of fee revenue should contribute to diversity of transportation revenue sources for overall stability of funding.* A revenue source should not be vulnerable to the same variable conditions, such as fuel efficiency or economic slowdowns, as existing transportation revenue sources.

Flexibility

- *Projects/programs supported should encourage public/private partnerships.* Fees should allow spending on projects that leverage private investments that produce transportation benefits.

- *Fee revenue should be flexible with ability to address changing transportation priorities.* Fees should allow spending on whichever transportation project is the priority for the implementing jurisdiction.

- *Existing flexible funding (STP, CMAQ and Enhancement funds) should remain flexible and available for any eligible priority project.* The region should continue to advocate to Congress to maintain the flexibility of these funds when applied to regional priorities and not dedicate this funding to any particular type or mode of transportation improvement.

Fairness

- *Fee related to use.* Fees paid should be related to use or beneficiaries of the improvements or maintenance. The gas tax costs drivers more the more they drive but does not address differences in fuel efficiency between drivers nor does it address whether the driver is using the system at congested periods of the day. System development charges (SDC's) are a method of charging growth for its effect on the transportation system. While there will always be baseline charges everyone pays for the benefits everyone receives from having a transportation system, fees should provide the capacity to increase or decrease relative to the use of or impact to the transportation system.

- *Fee should have equitable geographic burden relative to area of benefit.* Maintaining access through the region and to regional facilities should receive fee contributions from throughout the region. Transportation facilities that only serve sub-regional or local purposes should be funded from sub-regional or local resources.

- *Fee should not unduly burden low and fixed-income populations.* While fees should provide capacity to increase or decrease with use of the transportation system, the sliding scale of transportation costs should recognize the burden that large, irregular charges pose to persons on fixed or limited incomes. Alternatives to these charges, such as alternative or reduced payment options or equitable transportation services, should be provided. An evaluation of new revenues should also include an analysis of the overall affordability of transportation fees for low and fixed income households.

Implement Policy Objectives

- *Fees should support 2040 land use objectives.* New fees should be evaluated for potential effects on 2040 land use goals. For example, fees should not provide a disincentive for developing in Centers or promote development in rural areas.

- *Fees should help the region meet mode-split targets.* New fees should help the region meet mode-split targets by providing relative cost advantages to alternative modes to the single occupant vehicle.

Address Public Accountability

- *Fees generated able to support identifiable projects with tangible benefits*. Fees should have the capacity to allow policy makers the ability to clearly define the relationship between the payment of the fee and the projects and/or maintenance to be provided. This capacity will allow policy makers to educate the public about the benefits of the transportation improvements provided relative to the fees paid.

5.4.2 Potential New Revenue Sources

This section provides a description of revenue sources currently in use in the Metro region that could provide additional revenue as well as new sources of revenue that have been recently studied as potential sources of transportation funding. These revenue sources are divided into four broad categories: user-pay systems, development-based systems, special funds and levies and other transportation financing options. Additional sources of transportation funding may be considered as policy-makers develop a long-term transportation funding strategy for this region.

User Pay Systems

- **Increase in State gas tax**. Under current rates of distribution of state gas taxes, an additional 1 cent in the state gas tax would initially result in an additional $5 million annually for the regional road system and an additional $3.9 million annually for the state highway system within the Metro area. By the year 2020, that same one cent increase would result in an additional $6 million for the regional road system and $4.6 million for state highways in the Metro region.

- **Increase in State vehicle registration fee.** An increase in the state vehicle registration fee of $10 would result in an additional $92 million in year of expenditure dollars for highway capital projects and $86 million in year of expenditure dollars for road capital projects during the 20-year plan period in the Metro region.

- **Tri-county gas tax**. Revenue could be created for transportation maintenance or capital projects with a uniform gas tax in Clackamas, Multnomah and Washington counties. Raising the tax in Clackamas and Washington counties to equal Multnomah County's 3 cents per gallon gas tax would create an additional $4.7 million of revenue in the year 2000 for the regional road system, increasing to $6.8 million by the year 2020. Each additional 1 cent per gallon would create an additional $3.7 million of revenue in the year 2000 for the regional system, increasing to $5.4 million by the year 2020.

- **Tri-county vehicle registration fee**. Authority already exists for the three counties or Metro to refer to voters a vehicle registration fee up to the amount of the state vehicle registration fee. At $40 per biennium, approximately $25 million could be raised in the region in the year 2000, increasing to $33.5 million in the year 2020.

- **Peak period pricing.** Electronic tolling of highway use during congested periods can provide some revenues for needed highway expansions. In addition, peak period pricing can manage congestion on new highway lanes, thereby extending their life and reducing the need for future expansions. The Traffic Relief Option Study, undertaken with the guidance of a citizen's task force and completed in 1999 by Metro and ODOT, examined the potential of various types of roadway pricing to meet regional transportation, environmental and land use goals. The citizen's task force recommended that pricing be considered whenever major new highway capacity was planned. The study found that congested roadways had the potential to generate some revenue towards the cost of construction.

  The evaluation of the performance of eight specific pricing options is contained in *Working Paper 9* dated May 10, 1999. The study recommended further consideration of peak period pricing on all major, new highway capacity projects. A regional analysis of the effect of this approach to pricing is currently being conducted. Further analysis is recommended as part of individual highway projects.

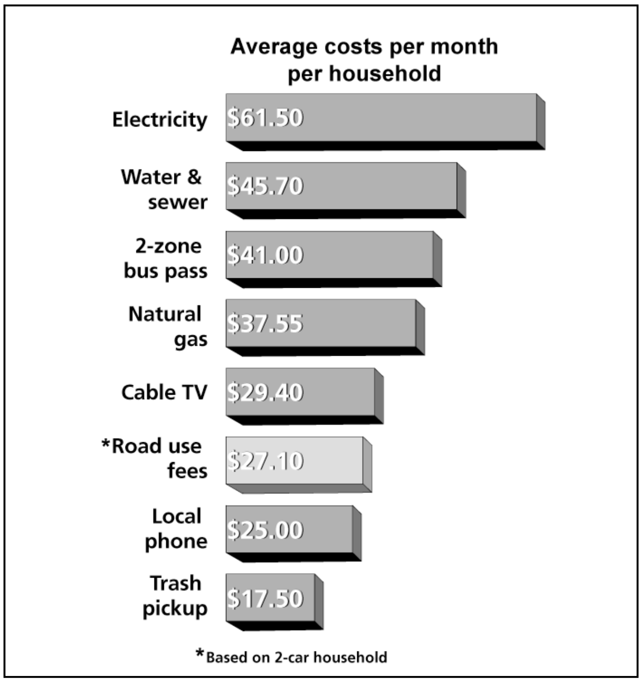
Development-Based Systems

- **Increase in system development charges.** Cooperation among most or all of the jurisdictions of the region to pursue a partial or full cost-recovery strategy for transportation infrastructure with system development charges would result in additional revenues available for transportation purposes. The amount of revenue available would depend on the exact nature of the policy, the number of jurisdictions participating, and the costs of providing infrastructure in each jurisdiction.

Special Fees and Levies

- **Road maintenance – transit utility fee**. A road maintenance or transit utility fee is a general assessment of properties for maintenance and/or operation of the transportation system that serves the property. Figure 5.15 shows that, on average, transportation fees are among the least expensive utilities when compared to other utilities in the Portland metropolitan region. The city of Tualatin has such a system that assesses property by the number of vehicle trips typically generated by the developed use of that property. The fee is collected as a part of the city utility bill. This fee could be implemented by ordinance within any city or county in the Metro region. A road maintenance utility fee similar to Tualatin's, implemented by all of the local jurisdictions on property within the Metro region, could generate approximately $22 million in the year 2000, increasing to $32 million in the year 2020. Rates could be adjusted to collect revenues equal to all or some portion of the cost to maintain each jurisdiction's road system or to provide transit service to an area.

Figure 5.15
1999 Comparative Utility Costs



Source: Metro

- **Payroll tax rate increase for transit**. A potential source of additional revenue for transit operations would be to raise the rate of the payroll tax for either Tri-Met or SMART. An increase of .1 percent of the payroll tax rate would raise $21 million annually in the Tri-Met district or approximately $500,000 annually in the SMART district ($1998). Tri-Met’s payroll tax rate is limited by state statute.

- **Property tax general obligation bond**. General obligation bonds, backed by property taxes have been used for transportation improvements in the Metro region, especially for capital projects. These taxes must be approved by voters in a general election. A tax of 1 cent per $1,000 of assessed property value would raise $770,000 annually in the Metro region in the year 2000, increasing to approximately $1.5 million by the year 2020. Bonding this revenue stream for capital projects would incur bonding and interest costs but save money on project inflationary costs by constructing the projects earlier than would otherwise be possible.

- **Vehicle miles traveled fee**. A fee on the miles of travel for non-commercial vehicles registered in the three metro counties (or some portion thereof) could be implemented. A fee of 1 cent per mile, indexed to inflation, for residents of the Metro region would generate $1.33 billion over the course of the 2000 - 2020 plan period. At one cent per mile, the average cost per vehicle would be approximately $10 per month.

- **Parking Fee for non-residential spaces**. A fee for each non-residential off-street parking space could be levied within the Metro region. A fee at the rate of $1 per month per space, indexed to inflation would generate $197 million over the course of the 2000 - 2020 planning period. This total assumes a 10 percent reduction in parking spaces per capita by year 2020 as a result of parking ratios defined in Title 2 of the Urban Growth Management Functional Plan and is consistent with state transportation planning rule requirements.

Other Transportation Financing Options

The Oregon Department of Transportation has recently published the final report of the "Innovative Finance Study," a review of potential new sources of transportation funding. In addition to several of the potential sources described, the study investigated the potential for funding transportation projects with:

- **Value Capture:** private interests compensating a public agency for a portion of the economic value created to the private interest with the creation of the transportation facility

- **State Infrastructure Bank:** A revolving fund that can offer loans and credit assistance to sponsors of certain highway or transit capital projects.

- **Federal Credit - Transportation Infrastructure Finance and Innovation Act:** This act authorizes state transportation departments to provide secured loans, loan guarantees and standby lines of credit to sponsors of certain highway and transit projects.

- **Grant Anticipation Notes:** This allows state transportation departments to generate up-front capital for large capital projects by allowing recovery of interest payments and other bond issue costs on anticipation of receipt of future federal grant monies.

The Metro region, in cooperation with the Oregon Department of Transportation, could pursue these finance options for eligible transportation improvements. Other sources of revenue new to this region could also be considered to fund transportation needs.

5.4.3 Finance Concepts for Funding the Priority System

The following is a general description of what would be necessary to provide revenues to fund the 2020 Priority System. A more detailed financial analysis is necessary to accurately identify how much revenue would be raised by increases in existing revenue sources or by the creation of new revenue sources. Further study and engineering is also needed to more accurately estimate the project costs of the 2020 Priority System.

Each agency or jurisdiction that administers a revenue source has the authority to control the spending of additional revenues from those sources in accordance with any laws governing the revenue source. The following scenarios are only to illustrate the magnitude of what would be required to fund the 2020 Priority System. Four possible scenarios for raising the revenues necessary to fund the 2020 Priority System are described for comparative purposes but do not constitute an adopted financial strategy for the region.

The Problem

Many jurisdictions in the region have traditionally relied on the State Legislature to increase the state gas tax as a primary means of funding their transportation needs. As such, revenues from the State Highway Trust Fund, which is funded from the state gas tax revenues and related truck fees and vehicle registration fees, has become the primary source of transportation funding for many jurisdictions in the region. The problem the region is facing by relying primarily on this revenue source is that it is subject to two factors that reduce its purchasing power over time; inflation and increasing vehicle fuel efficiency. Therefore, the gas tax cost per mile driven in Oregon (in current $) has decreased from 2.6 cents per mile in 1970 to 1.3 cents per mile today.

This reduction in revenues relative to road use in the state has reduced the ability of ODOT and local jurisdictions to maintain the transportation system at optimum levels and to respond to growth with modernization projects. There is currently a backlog of maintenance work to be completed on both state highways and on the regional arterial and major collector road system. There is a need to not only address this backlog of maintenance needs but to increase fees just to address further reductions in purchasing power of the existing state gas tax revenues which would result in further deterioration of maintenance levels. In addition to maintenance needs, there are highway, road, and transit modernization projects that need funding to address current needs and needs that will be created by the growth of population and jobs in the region. An increase in transit operating revenues will also be needed to address growth in transit service needs in the region.

A major challenge in transportation financing is funding road and highway maintenance and preservation at optimum levels (defined here in general terms as keeping pavement at 90 percent in fair or better condition). To extend the life cycle of existing facilities, transportation agencies generally attempt to achieve this standard as a priority for spending over building new facilities that would then add to future maintenance and preservation costs. On average, most agencies in the region have only been able to maintain pavement condition at approximately 77 percent fair or better condition. This has created a backlog of maintenance needs. The first three funding concepts below address this backlog and fully fund maintenance and preservation costs, in addition to new capital projects. The fourth funding concept does not attempt to address the backlog of maintenance needs and demonstrates what level of funding is necessary to maintain existing pavement conditions. It should be noted that this funding concept does not account for any increase in capital funding necessary that may result from premature failure of existing facilities due to not being optimally maintained.

Four funding concepts are described below that would address these needs. The concepts are summarized in Table 5.14. More detailed information on how each of the following funding sources would address 2020 Priority transportation system needs can be found in the Appendix.

Concept 1: Annual 4¢ State Gas Tax Increase

Continuing to rely on annual increases to the state gas tax would require action by the State Legislature to increase the state gas tax by 4 cent every year for the next 20 years. This would address the declining purchase power of the gas tax revenues, fund the backlog of maintenance needs, fully fund modernization of the 2020 Priority system and provide additional revenue for local road capital projects.

Under this concept, it will be necessary to provide additional funds to expand transit operations to levels anticipated in the 2020 Priority system. Increasing the rate of the payroll tax by .1 percent from current rates (Tri-Met = .6 percent, SMART = .3 percent) would significantly address the funding shortfall needed to operate the 2020 Priority System transit network.

Current law does not allow State Highway Trust Fund revenues to be used for transit capital or operations. However, fully funding the highway and road maintenance and modernization needs with increases in the state gas tax would allow the maximum amount of existing flexible revenues (STP, CMAQ and Enhancement funds) to be used for transit; an additional $284 million over the course of the planning period. General obligation property tax bonds could provide the remaining $699 million needed for transit capital projects to implement the 2020 Priority transit system. An average annual cost for the owner of a home assessed at $150,000 in value would be approximately $58 between the years 2005 and 2040 to retire the bonds. Actual annual costs would vary depending on the bond terms and conditions.

Concept 2: Fund Maintenance Locally

Another alternative concept to funding the 2020 Priority transportation system would be to address the funding shortfall for City and County road maintenance locally and fund capital projects and ODOT highway maintenance with state gas tax increases when action from the state Legislature is feasible.

Several funding tools could potentially be used to provide additional revenues for maintenance. Additional local gas taxes and a local vehicle registration fee could be used for City and County maintenance needs. If the three Metro area counties implemented a uniform 3 cent per gallon gas tax with an annual 1 cent increase and a local $15 vehicle registration fee, a significant portion of the City and County maintenance backlog could be addressed, maintaining road conditions at improved conditions from today.

A street utility fee, similar to such fees already in place in cities such as Tualatin, Wilsonville, and Grants Pass, could be implemented throughout the region. Street utility fees are typically included as part of a city or special district water and sewer or other utility billing. The City of Tualatin's fee structure is based on average vehicle trips generated by the land use classification of the property. A fee at two and a half times the current City of Tualatin rate implemented throughout the region would address a significant portion of the City and County maintenance backlog. At this rate the cost to a single family home would be $3.56 per month. Costs to other land uses (commercial, industrial, etc.) would vary. Rates could be set to achieve any level of maintenance desired by the implementing jurisdiction.

Road maintenance districts are property tax based assessments for the purpose of maintaining the transportation system under the premise that every property in the billing area benefits from the access provided by the transportation system. Washington County currently has a road maintenance district for unincorporated areas. If such a district were put in place throughout the region at approximately twice the current rate of Washington County's district, city and county roads would continue to be maintained at current standards through the planning period (to year 2020). This would cost the owner of a home assessed at $150,000 approximately $6.25 per month.

Any one of or a combination of the above new revenue sources could be implemented throughout the region to address city and county maintenance needs. This would demand that ODOT highway maintenance and road and highway capital project funding to be addressed at the state level. To fully fund the needs in these areas and stay even with inflation, as defined by the 2020 Priority system, would require a 2 cent increase in the state gas tax every year throughout the planning period. A $9 increase in the state vehicle registration fee could be implemented in lieu of a 1 cent increase in the state gas tax.

As ODOT's share of the annual 2 cent increase in the state gas tax would be used to meet highway maintenance needs, the City and County share of the state gas tax increases would need to pay for the modernization of both road and highway projects of the 2020 Priority system. Tolling revenues would also be needed for highway capital costs. [8] Therefore, cities and counties would need other sources of new revenue to pay for the construction of local roads. This financial concept assumes local jurisdictions would raise system development charges (SDC's) and/or other sources to fund the costs of constructing local streets.

If a street utility fee were considered throughout the region for street maintenance, it could also be considered for transit operations. A transit utility fee with rates at or slightly higher than the City of Tualatin's street maintenance fee would generate revenues to address revenue needed to operate the 2020 Priority transit system. At the Tualatin rate, the cost to a single family home would be $1.42 per month while costs to other land uses would vary according average vehicle trip generation rates.

The "Fund Maintenance Locally" concept would not raise as much revenue for the road system as an annual 4 increase to the state gas tax. The additional funding, however, could allow some additional flexible revenues to be allocated to transit capital projects. An additional $53 million of flexible revenues would bring expenditures on transit capital to half of the available flexible funds. General obligation property tax bonds could provide the remaining $932 million needed for transit capital projects to implement the 2020 Priority transit system.

[8] An analysis of potential toll revenues that could be used to help fund Priority system projects is underway at the time of this draft of the RTP. Specific information from that analysis will included in future drafts of the RTP produced following adoption of the Traffic Relief Options study.

Concept 3: Fund Modernization Locally

Another alternative concept to funding the 2020 Priority transportation system would be to address the funding shortfall for maintenance with state gas tax increases and fund capital projects with new local sources.

To fully fund the maintenance needs of the state highway and city and county road system would require a 2 cent increase in the state gas tax every year throughout the planning period. A $9 increase in the state vehicle registration fee could be implemented in lieu of a 1 cent increase in the state gas tax.

With maintenance addressed by state funding sources, local jurisdictions could attempt to fund highway and road modernization locally. Two new potential sources of transportation revenue could be considered for modernization projects; a fee on vehicle miles traveled (VMT) and a fee on non-residential parking spaces.

At a rate of 1cent per mile and indexed to inflation, a VMT fee on residents of the Metro region would generate $1.33 billion over the course of the planning period. This represents approximately one half of the funding shortfall of road and highway capital projects in the 2020 Priority system.

A $7 per space, per month parking fee on all non-residential parking spaces in the region, indexed to inflation, would generate $1.38 billion over the course of the planning period. This represents approximately one half of the funding shortfall of road and highway capital projects in the 2020 Priority system. This financial concept assumes local jurisdictions would raise system development charges (SDC's) and/or other sources to fund the costs of constructing local streets.

As with the "Annual 4¢ State Gas Tax Increase" concept, increasing the rate of the payroll tax by .1 percent from current rates (Tri-Met = .6 percent, SMART = .3 percent) would significantly address the funding shortfall needed to operate the 2020 Priority Transit network.

The "Fund Modernization Locally" concept would also not raise as much revenue for the road system as an annual 4 cent increase to the state gas tax. The additional funding, however, could allow some additional flexible revenues to be allocated to transit capital projects. An additional $53 million of flexible revenues would bring expenditures on transit capital to half of the available flexible funds. A combination of system development charges and general obligation property tax bonds could provide the remaining $932 million needed for transit capital projects to implement the 2020 Priority transit system.

Concept 4: Accept Current Maintenance Levels

A final funding concept to be presented in the RTP is for agencies and jurisdictions in the region would be to accept the current level of maintenance of area roads and bridges. Today, approximately 77 percent of regional roads and highways are maintained at fair or better pavement condition. While maintaining the road system at 90 percent fair or better pavement condition provides the longest life of the facility and safest operating conditions, the agencies and jurisdictions of the region may decide that it is simply not feasible to fund maintenance at this level.

An annual increase of 1 cent in the State gas tax would allow ODOT to continue to maintain highways in the region at current levels. The same annual 1 cent increase in the State gas tax would allow cities and counties to use their share to maintain roads in the region at current maintenance levels.

Funding modernization of the highway and road system to implement the 2020 Priority transportation system would take additional resources. A second annual increase of 1 cent in the state gas tax, for a total of 2 cent annual increase, in conjunction with an increase in system development charge revenues and tolling of new highway lanes could fund modernization of the 2020 Priority road and highway system.

As described in the other concepts, an increase in the payroll tax rate could fund additional transit service to implement the Priority transit system.

In this funding concept, no additional flexible revenues would be shifted from road and highway projects to transit projects. A combination of system development charges and general obligation property tax bonds could provide the additional $985 million of local revenues needed for transit capital projects to implement the Priority transit system.

Conclusions

- The Priority transportation system is not too large or expensive relative to past per capita expenditures in transportation or in relative utility costs.

- The region will need actions at both the state and local levels to successfully fund the 2020 Priority System and keep up with inflation.

- The region will need new, creative sources of transportation revenue to successfully fund the Priority system and keep up with inflation.

- In the short-term, until new funding sources are established, setting clear priorities for spending will be increasingly important as funding will be limited to less than the identified need.

Table 5.14
RTP Priority Transportation System Funding Concepts

Transportation Cost Category	**Funding Shortfall to Address**	**Concept 1** Annual 4¢ State Gas Tax Increases	**Concept 2** Maintenance Funded Locally	**Concept 3** Modernization Funded Locally	**Concept 4** Accept Current Maintenance Level
A City/County OM&P	$77 m to $240 m annually [1]	*Improve pavement conditions* - Local share of 2¢/gal annual increase in state gas tax [3]	*Improve pavement conditions* Pursue local sources • Gas tax + local vehicle registration fees and/or • Street utility fees and/or • Road maintenance districts	*Improve pavement conditions* - Local share of 2¢/gal annual increase in state gas tax [3]	*Accept current pavement conditions* - Local share of 1¢/gal annual increase in state gas tax [3]
B Highway OM&P	$44 m to $166 m annually [1]	*Improve pavement conditions* - State share of 2¢/gal annual increase in state gas tax [3]	*Improve pavement conditions* - State share of 2¢/gal annual increase in state gas tax [3]	*Improve pavement conditions* - State share of 2¢/gal annual increase in state gas tax [3]	*Accept current pavement conditions* - State share of 1¢/gal annual increase in state gas tax [3]
C Highway, Road, Bike and Pedestrian Modernization	$1.65 b Highways and $.89 b Roads [2]	- Additional 2¢/gal annual increase in state gas tax [3] ($1.5 b to local streets)	• Local share of 2¢/gal annual increase in state gas tax [3] • Tolling of new highway lanes	Pursue local sources • Household fee on vehicle miles traveled • Business fee on parking spaces	- Additional 1¢/gal annual increase in state gas tax [3] • System development charges • Tolling of new highway lanes
D Transit Operations & Routine Capital	$32 m to $186 m annually [1]	- Increase in rate of payroll tax	• Street utility fees	- Increase in rate of payroll tax	• Increase in rate of payroll tax
E Transit Capital	$1.73 b [2]	• Maximize allocation of regional flex funds • G.O. bonds	• Increase allocation of regional flex funds • G.O. bonds	• Increase allocation of regional flex funds • System development charges • G.O. bonds	• System development charges • G.O. bonds
Total New Revenue to Address Funding Shortfall		Mod-Capital (C+E) = $4.27 b [2] OM&P (A+B+D) = $153 to $592 m annually [1]	Mod-Capital (C+E) = $4.27 b [2] OM&P (A+B+D) = $153 to $592 m annually [1]	Mod-Capital (C+E) = $4.27 b [2] OM&P (A+B+D) = $153 to $592 m annually [1]	Mod-Capital (C+E) = $4.27 b [2] OM&P (A+B+D) = $93 to $389 m annually [1]

[1] In year-of-expenditure dollars based on existing funding resources forecast through the year 2020.
[2] In 1998 dollars based on financially constrained revenue forecasts allocated to priority projects of the RTP Strategic System. Does not include potential private revenue sources.
[3] An increase in the state vehicle registration fee of $9 could be used in lieu of a 1 cent per gallon increase in the state gas tax.

CHAPTER 6

Implementation

6.0 Introduction

The policies and transportation strategy in this plan reflect federal, state and regional planning requirements, while balancing the need for transportation improvements with increasingly limited funding. As such, the plan serves as a 20-year blueprint for transportation improvements in the region. However, there is much work to be done. Implementing this plan will require a cooperative effort by all jurisdictions responsible for transportation planning in the region, and will involve the following:

- adoption of regional policies and transportation strategies in local plans
- a concerted regional effort to secure needed funding to build planned transportation facilities and maintain and operate an expanded transportation system
- construction of the transportation improvements needed to serve expected growth and address existing safety concerns
- focusing strategic improvements that leverage key 2040 Growth Concept components
- periodic updates of the plan to respond to development trends and the associated changes in travel demand
- incorporating transportation solutions from corridor-level or subarea refinement plans
- ongoing monitoring for consistency with the local TSP development and other implementing agency plans, including the Oregon Department of Transportation's Six-Year Program and Tri-Met's Transit Development Plan

The transportation strategy described in Chapter 5 of the plan will not meet all of the region's 20-year transportation needs, but it is a significant first step towards achieving the preferred system. Instead, it represents a pragmatic balance between the need to maintain existing infrastructure and keep pace with expected growth in the region and the realities of limited transportation funding. As the region moves forward with implementation of this plan, a new paradigm for how we view the transportation system must evolve. Like other urban utilities, transportation infrastructure must increasingly be viewed as a scarce commodity that should be managed and allocated to reflect the growing cost and complexity of expanding the system.

This chapter describes the steps necessary to implement the plan, including:

- compliance with federal, state and regional planning requirements
- implementation of the plan through local TSPs
- relationship to the Metropolitan Transportation Improvement Plan

- process for updating and amending the plan
- process for completing refinement plans, and locations where refinement plans must be completed
- outstanding issues that cannot be addressed at this time, but must be considered in future updates to the plan

Following this chapter are other important resources for implementing the plan, including appendices that describe proposed transportation projects and strategies in more detail, and a separate background document that describes much of the methodology used to develop this plan.

6.1 Demonstration of Compliance with Federal Requirements

6.1.1 Metropolitan Planning Required by TEA-21

The metropolitan planning process outlined by Congress in the federal Transportation Equity Act for the 21st Century (TEA-21) establishes a cooperative, continuous and comprehensive framework for making transportation investment decisions in metropolitan areas throughout the United States. Program oversight is a joint FHWA/FTA responsibility. The federal planning requirements were originally promulgated as part of the 1992 federal Intermodal Surface Transportation Efficiency Act (ISTEA), and were substantially reaffirmed by TEA-21 in 1998.

Among the most significant continuing provisions of TEA-21 for the Metro region are the following planning requirements:

- Metro, in cooperation with the ODOT, Tri-Met and other transit operators, remain responsible for determining the best mix of transportation investments to meet metropolitan transportation needs.
- Metro is responsible for adopting the Regional Transportation Plan.
- Metro is responsible for adopting the MTIP. ODOT must include the MTIP without change in the STIP. The Governor is designated to resolve any disagreements between Metro's MTIP and ODOT's STIP.
- The RTP must provide a 20-year planning perspective, addressing air quality consistency, fiscal constraint and public involvement requirements established under the original ISTEA.
- The Oregon Department of Environmental Quality must adopt an Oregon State Implementation Plan (SIP). The SIP includes actions that must be adopted by Metro and results in an emissions budget for carbon monoxide and ozone. Metro must demonstrate progress toward implementing the actions identified in the SIP and demonstrate conformity with the carbon monoxide and ozone emissions budget.

- A Congestion Management System (CMS) is required in larger metropolitan areas that are designated as air quality maintenance or non-attainment areas. The Portland metropolitan region was designated as a maintenance area in 1997. Highway projects that increase single-occupant vehicle capacity must be consistent with the CMS.

- The CMS continues the requirement that alternatives to motor vehicle capacity increases be evaluated prior to adding single-occupant vehicle projects.

- Federal Highway Administration and Federal Transit Administration certification of the planning process is required in larger metropolitan areas, including the Metro region.

TEA-21 consolidated the 16 planning factors from the original ISTEA into seven broad areas to be considered in the planning process (contained in section 1203(f) of the federal act). These factors are advisory, and failure to consider any one of the factors is not reviewable in court. However, the seven factors seek to:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency

- Increase the safety and security of the transportation system for motorized and non-motorized users

- Increase the accessibility and mobility options available to people and for freight

- Protect and enhance the environment, promote energy conservation and improve quality of life

- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight

- Promote efficient system management and operation

- Emphasize the preservation of the existing transportation system

Each of these factors has been addressed through RTP policies identified in Chapter 1 of this plan and selection of the proposed transportation projects and programs identified in Chapter 3 of this plan. Specific sections that address the seven federal planning factors are detailed in the RTP Background Document.

In addition to changes to the ISTEA planning factors and scope of regional transportation planning, TEA-21 also modified several other elements of the federal ISTEA. Under the revised provisions, the Regional Transportation Plan must:

- Include operation and management of the transportation system in the general objectives of the planning process

- Address transportation planning area boundary relationship to non-attainment area boundaries; boundaries established on date of enactment remain as is, but future expansions of non-attainment area boundaries do not force expansion of transportation planning area unless agreed to by the Governor and Metro

- Coordinate with neighboring MPOs where a project crosses planning area boundaries

- Specifically identify freight shippers and users of public transit on the list of stakeholders to be given opportunity to comment on plans and TIPs

- Cooperate with ODOT and transit agencies in the development of financial estimates that support plan and TIP development

- Identify projects that will be implemented within a forecast of revenues that can be reasonably expected to be available over the life of the Regional Transportation Plan. The Regional Transportation Plan may also include additional projects that may be identified for illustrative purposes, and would be included in plans and TIPs if additional resources were available. Additional action by ODOT, Metro and the Secretary of Transportation is required to advance such projects

The RTP meets the TEA-21 provisions through its policies and project selection criteria. A summary of RTP compliance with these provisions is included in the RTP Background Document.

6.1.2 Air Quality Conformity: Criteria that Constitutes a Conformed Plan

The 2020 Preferred and Priority Systems both require new revenue sources and go beyond federal requirements that long-range transportation plans be based upon "constrained resources." Air quality conformity of this plan will be based on a scaled-down 2020 Priority System that can likely be implemented within the federally defined fiscally constrained level of reasonably available resources. This system will be termed the 2020 Fiscally Constrained System. Air quality conformity entails:

- Making reasonable progress on Transportation Control Measures as identified in the SIP

- Staying within the carbon monoxide and ozone emissions budgets set for transportation with the SIP based upon a fiscally constrained transportation network

Portland is currently designated a maintenance area for the National Ambient Air Quality Standards (NAAQS) for ozone and carbon monoxide under the Clean Air Act Amendments of 1990.

6.1.3 Demonstration of Air Quality Conformity

The Financially Constrained System and the 2020 Priority System have been found to conform to federal air quality requirements. Appendix 4.0 provides detailed information to support this finding.

6.2 Demonstration of Compliance with State Requirements

This section identifies the applicable state regulations for the regional transportation system plan and identifies the corresponding provisions contained in this RTP. Findings of Fact and Conclusions of Law explaining TPR compliance, which were adopted with the 2000 RTP, are found in Appendix 5.0.

6.2.1 System Plan Required by Oregon Transportation Planning Rule

The Oregon Transportation Planning Rule (TPR) sets forth a number of requirements for Metro's Transportation System Plan (TSP). This RTP has a number of purposes. This Plan is adopted as the regional functional plan for transportation and the federal metropolitan transportation plan, as well as the regional TSP under state law. The RTP as regional TSP, must address provisions of Oregon Administrative Rule 660.012.000 applicable to regional TPSs. The following TPR provisions are addressed in the portions of this multipurpose plan indicated under each applicable TPR requirement. Together, these portions of the 2000 RTP comprise the regional TSP. Other portions of the RTP not indicated under the applicable TPR requirement address regional and federal planning issues beyond the regional TSP under this administrative rule.

- **660.012.0015(2) - MPOs shall prepare TSPs in compliance with TPR**
  Metro is required to prepare a Transportation System Plan (TSP) for facilities of regional significance within Metro's jurisdiction. The portions of the 2000 RTP which constitutes the regional transportation system plan are provisions of Chapters 1, 2, 5, 6 and the Appendix which address regional TSP issues, including the priority system of improvements.

- **660.012.0020 - TSP adequately serves regional transportation needs**
  The RTP fully addresses this requirement by identifying the region's 20-year transportation needs in Chapter 2, including the future motor vehicle, public transportation, bicycle, pedestrian and freight system improvements, and complementary demand management, parking and financing programs in Chapter 5 adequate to respond to these identified needs.

- **660.012.0025 - Complying with Statewide Planning goals**
  This is the first regional TSP adopted in the metro region. As such, the 2000 RTP identifies transportation needs for regional facilities for the purpose of informing regional and local transportation and land-use planning. In some cases where a need has been established, decisions regarding function, general location and mode are deferred to a refinement plan or local TSP. In these cases, the findings in Chapter 5 describe how these needs are met for the purpose of RTP analysis, and Sections 6.7.5 and 6.7.6 of this chapter establish the need for refinement planning, and base assumptions for specific refinement plans that are needed to ensure consistency with the RTP.

- **660. 012.0025(3) - Refinement plans allowed**
  A number of refinement plans are proposed in the 2000 RTP, including 16 corridor plans and three area plans. Section 6.7 of this chapter describes the purpose and scope of refinement plans.

- **660.012.0030 - Determination of transportation needs**
  The project development phase of the 2000 RTP followed the congestion management requirements of Section 6.6.3 of this chapter, which incorporates the TPR requirements for determining transportation needs.

- **660.012.0035 - Transportation system evaluation required**
  This 2000 RTP is built on an extensive foundation of modeling and analysis. The Region 2040 project included five separate land use and transportation scenarios, including the alternative adopted and acknowledged in the 1995 Regional Urban Growth Goals and Objectives as the 2040 Growth Concept. A detailed transportatoin system was developed and modeled for each scenario, and the lessons learned from this effort were the starting point for the 2000 RTP update. Next, a level-of-service alternatives analysis was developed to further refine the region's system performance standards. Finally, the system development component of the 2000 RTP update included four separate rounds of modeling and analysis that combined the principles of the Region 2040 project and the level of service analysis.

  For the purpose of complying with this requirement, the Priority System in Chapter 5 of the 2000 RTP establishes a scale of the improvements that are adequate to meet state and regional travel needs in the Metro area, including the needs of the disadvantaged, the movement of goods and the protection of farm and forest resources within rural reserves.

- **660.012.0035(4) - Reduction in vehicle miles traveled per capita**
  The 2000 RTP addresses this requirement through the non-SOV modal targets set forth in Table 1.3 of this plan. The modal targets are linked to the 2040 Growth Concept, and if met, would result in satisfying the required 10 percent reduction in vehicle miles traveled per capita over the 20-year plan period. The non-SOV modal targets set the context for transportation improvements proposed in this plan. The analysis in Chapter 5 establishes that the region is making substantial progress toward meeting this TPR requirement, though the modal targets would not be met in all areas, due to the relative state of urbanization at the conclusion of the planning period. Areas with the greatest concentration of mixed-use development and quality transit service will easily meet the targets, while areas that are still developing are expected to meet the targets beyond the 20-year plan period.

  These findings represent the good faith effort required to comply with this element of the TPR. An outstanding issue in Section 6.8.10 of this chapter directs future updates of the RTP to expand on alternative measures that both comply with the TPR, and improve on the plan's ability to identify appropriate transportation projects to meet identified needs.

- **660.012.0035(6) - Measures and objectives required for non-auto travel**
  The non-SOV modal targets in Table 1.3 of this plan provide the basic framework for compliance with this TPR provision, which requires a number of measures for demonstrating reduced reliance on the automobile. Other policies in Chapter 1 of this plan complement the non-SOV modal targets, and findings in Chapter 5 of this plan demonstrate a reduced reliance on the automobile based on the proposed system improvements.

- **660.012.0040 - Transportation funding program**
  The project descriptions in Appendix 1.1 and financial analysis in Chapter 4 of this plan satisfy the various TPR trnasportation funding requirements. Benchmarks in Section 6.5.3 of this chapter will address TPR requirements for implementation of the RTP through the MTIP.

- **660.012.0050 - Transportation project development**
  Section 6.7 of this chapter establishes the regional project development requirements for improvements included in the RTP. These and other related requirements are consistent with TPR provisions for project development.

Metro's adoption of the 2000 RTP provisions that address these applicable provisions of the TPR establishes the regional TSP for the Metro region. Through the consistency review process, local TSPs will be evaluated to ensure that local strategies needed to satisfy the above regional planning requirements are implemented. However, local TSPs are not required to make specific findings on these TPR provisions for the regional system, since the RTP establishes compliance for the Metro region. Appendix 5.0 includes full findings of compliance with the TPR.

6.2.2 Regional TSP Provisions Addressed Through Local TSPs

The 2000 RTP establishes compliance for regional TSP requirements with the policies, projects and financial analysis contained in this plan. Local consistency with the 2000 RTP is described in Section 6.4.1. However, implementation of some regional TSP requirements will occur only through local implementation of RTP policies. These include adoption of the modal targets specified in Policy 19.0 of Chapter 1, and in parking management requirements contained in Title 2 of the Urban Growth Management Functional Plan. Local adoption of the Chapter 1 modal targets is necessary to demonstrate compliance with the VMT/Capita reduction findings described in Chapter 5 of the plan.

6.2.3 Special Designations in the Oregon Highway Plan (OHP)

The Oregon Highway Plan (OHP) establishes three special district designations for certain areas along state-owned facilities. The purpose of the designations is to respond to unique community access and circulation needs, while maintaining statewide travel function. Though these special districts are generally identified jointly between ODOT and local jurisdictions, the RTP establishes a policy framework that supports these OHP designations through the 2040 Growth Concept and corresponding regional street design classifications contained in Section 1.3.5. The following is a summary of how RTP street design designations correspond to the OHP special district classifications:

- ***Special Transportation Area (STA):*** This designation is intended to provide access to community activities, businesses and residences along state facilities in a downtown, business district or community center. In these areas, the OHP acknowledges that local access issues outweigh highway mobility, except on certain freight routes, where mobility needs are more balanced with local access.

The RTP addresses this OHP designation through the boulevard design classifications, located in the 2040 central city, regional center, town center and main street land use components. In the Metro region, state routes designated as boulevards that also meet other standards as defined in the OHP, are eligible to be designated STAs. Further, the application of the boulevard design classifications also factors in major freight corridors, and this design classification is generally not applied to such routes.

- ***Commercial Center:*** This designation applies to relatively large (400,000 square feet) commercial centers located along state facilities. In these areas, the OHP allows for consolidate access roads or driveways that serve these areas, but such access is subject to meeting OHP mobility standards on the state highway serving the center. If the center has consolidated access roads and meets other OHP standards, the OHP mobility standard may be reduced.

The RTP supports this OHP designation with the throughway design classifications, which include freeway and highway design types. The throughway designs are mobility-oriented, and generally apply to routes that form major motor vehicle connections between the central city, regional centers and intermodal facilities. The throughway design classifications support the concept of limiting future access on a number of state facilities in the region that are designated as principal routes in the RTP.

- ***Urban Business Area (UBA):*** This designation recognizes existing commercial strips or centers along state facilities with the objective of balancing access need with the need to move through-traffic.

In the Metro region, these areas are generally designated as mixed-use corridors and neighborhoods in the 2040 Growth Concept, and a corresponding regional or community street design classification in the RTP which calls for a balance between motor vehicle mobility, and local access. These designs are multi-modal in nature, and include transit, bicycle and pedestrian design features, consistent with the OHP designation. The regional and community street classification can also be found in some regional and town centers, and where these are state routes, the facility is eligible for the OHP designation of Urban Business Area.

6.3 Demonstration of Compliance with Regional Requirements

In November 1992, the voters approved Metro's Charter. The Charter established regional planning as Metro's primary mission and required the agency to adopt a Regional Framework Plan (RFP). The plan was subsequently adopted in 1997, and now serves as the document that merges all of Metro's adopted land-use planning policies and requirements. Chapter 2 of the Regional Framework Plan describes the different 2040 Growth Concept land-use components, called “2040 Design Types,” and their associated transportation policies. The Regional

Framework Plan directs Metro to implement these 2040 Design Types through the RTP and Metropolitan Transportation Improvement Program (MTIP). These requirements are addressed as follows:

- Chapter 1 of the updated RTP has been revised to be completely consistent with applicable framework plan policies, and the policies contained in Chapter 1 of this plan incorporate all of the policies and system maps included in Chapter 2 of the framework plan. These policies served as a starting point for evaluating all of the system improvements proposed in this plan, and the findings in Chapter 3 and 5 of the RTP demonstrate how the blend of proposed transportation projects and programs is consistent with the Regional Framework Plan and 2040 Growth Concept.

- The MTIP process has also been amended for consistency with the Regional Framework Plan. During the Priorities 2000 MTIP allocation process, project selection criteria were based on 2040 Growth Concept principles, and funding categories and criteria were revised to ensure that improvements critical to implementing the 2040 Growth Concept were adequately funded.

Prior to completion of this updated RTP, several transportation planning requirements were included in the *Urban Growth Management Functional Plan* (UGMFP), which was enacted to address rapid growth issues in the region while the Regional Framework Plan and other long-range plans were under development. This 2000 RTP now replaces and expands the performance standards required for all city and county comprehensive plans in the region contained in Title 6 of the UGMFP. *See Sections 6.4.4 through 6.4.7, 6.6, 6.6.3 and 6.7.3.* In addition, parking policies contained in this plan were developed to complement Title 2 of the UGMFP, which regulates off-street parking in the region. *See Section 1.3.6, Policy 19.1.* Therefore, this RTP serves as a discrete functional plan that is both consistent with, and fully complementary of the UGMFP.

6.4 Local Implementation of the RTP

6.4.1 Local Consistency with the RTP

The comprehensive plans adopted by the cities and counties within the Metro region are the mechanisms by which local jurisdictions plan for transportation facilities. These local plans identify future development patterns that must be served by the transportation system. Local comprehensive plans also define the shape of the future transportation system and identify needed investments. All local plans must demonstrate consistency with the RTP as part of their normal process of completing their plan or during the next periodic review. Metro will continue to work in partnership with local jurisdictions to ensure plan consistency.

The 2000 RTP is Metro's regional functional plan for transportation. Functional plans by state law include "recommendations" and "requirements." The listed RTP elements below are all functional plan requirements. Where "consistency" is required with RTP elements, those elements must be included in local plans in a manner that substantially complies with that RTP element. Where "compliance" is required with RTP elements, the requirements in those elements must be included in local plans as they appear in the RTP.

For inconsistencies, local governments, special districts or Metro may initiate the dispute resolution process detailed in this chapter prior to action by Metro to require an amendment to a local comprehensive plan, transit service plan or other facilities plan. Specific elements in the 2000 RTP that require city, county and special district compliance or consistency are as follows:

Chapter 1 — *Consistency with policies, objectives, motor vehicle level-of-service measure and modal targets, system maps and functional classifications including the following elements of Section 1.3:*

- *regional transportation policies 1 through 20 and objectives under those policies*
- *all system maps (Figures 1.1 through 1.19, including the street design, motor vehicle, public transportation, bicycle, pedestrian and freight systems)*
- *motor vehicle performance measures (Table 1.2), or alternative performance measures as provided for in Section 6.4.7(1)*
- *regional non-SOV modal targets (Table 1.3)*

Chapter 2 — *Consistency with the 2020 population and employment forecast contained in Section 2.1 and 2.3, or alternative forecast as provided for in Section 6.4.9 of this chapter, but only for the purpose of TSP development and analysis.*

Chapter 6 — *Compliance with the following elements of the RTP implementation strategy:*

- *Local implementation requirements contained in Section 6.4*
- *Project development and refinement planning requirements and guidelines contained in Section 6.7*

For the purpose of local planning, all remaining provisions in the RTP are recommendations unless clearly designated in this section as a requirement of local government comprehensive plans. All local comprehensive plans and future amendments to local plans are required by state law to be consistent with the adopted RTP. For the purpose of transit service planning, or improvements to regional transportation facilities by any special district, all of the provisions in the RTP are recommendations unless clearly designated as a requirement. Transit system plans are required by federal law to be consistent with adopted RTP policies and guidelines. Special district facility plans that affect regional facilities, such as port or passenger rail improvements, are also required to be consistent with the RTP.

The state Transportation Planning Rule (TPR) requires most cities and counties in the Metro region to adopt local Transportation System Plans (TSPs) in their comprehensive plans. These local TSPs are required by the TPR to be consistent with the RTP policies, projects and performance measures identified in this section.

Upon adoption by ordinance, local TSPs shall be reviewed for consistency with these elements of the RTP. A finding of consistency and compliance for local TSPs that are found to be consistent with applicable elements of the RTP will be forwarded to the state Department of Land

Conservation and Development (DLCD) for consideration as part of state review of local plan amendments. A finding of non-compliance for local TSPs that are found to be inconsistent with the RTP will be forwarded to DLCD if conflicting elements in local plans or the RTP cannot be resolved between Metro and the local jurisdiction. Tentative findings of consistency and compliance shall be provided to local jurisdictions as part of the public record during the local adoption process to allow local officials to consider these findings prior to adoption of a local TSP.

6.4.2 Local TSP Development

Local TSPs must identify transportation needs for a 20-year planning period, including needs for regional travel within the local jurisdiction. Needs are generally identified either through a periodic review of a local TSP or a specific comprehensive plan amendment. Local TSPs that include planning for potential urban areas located outside the urban growth boundary shall also include project staging that links the development of urban infrastructure in these areas to future expansion of the urban growth boundary. In these areas, local plans shall also prohibit the construction of urban transportation improvements until the urban growth boundary has been expanded and urban land use designations have been adopted in local comprehensive plans.

Once a transportation need has been established, an appropriate transportation strategy or solution is identified through a two-phased process. The first phase is system-level planning, where a number of transportation alternatives are considered over a large geographic area such as a corridor or local planning area, or through a local or regional Transportation System Plan (TSP). The purpose of the system-level planning step is to:

- consider alternative modes, corridors, and strategies to address identified needs
- determine a recommended set of transportation projects, actions, or strategies and the appropriate modes and corridors to address identified needs in the system-level study area

The second phase is project-level planning (also referred to as project development), and is described separately in this chapter in Section 6.7.

Local TSP development is multi-modal in nature, resulting in blended transportation strategies that combine the best transportation improvements that address a need, and are consistent with overall local comprehensive plan objectives.

6.4.3 Process for Metro Review of Local Plan Amendments, Facility and Service Plans

Metro will review local plans and plan amendments, and facility plans that affect regional facilities for consistency with the RTP. The following procedures are required for local plan amendments:

1. When a local jurisdiction or special district is considering plan amendments or facility plans which are subject to RTP local plan compliance requirements, the jurisdiction shall forward the proposed amendments or plans to Metro prior to public hearings on the amendment.

2. Within four weeks of receipt of notice, the Transportation Director shall notify the local jurisdiction whether the proposed amendment is consistent with RTP requirements, and what, if any, modifications would be required to achieve consistency. The Director's finding may be appealed by both the local jurisdiction or the owner of an affected facility, first to JPACT and then to the Metro Council.

3. A jurisdiction shall notify Metro of its final action on a proposed plan amendment.

6.4.4 Transportation Systems Analysis Required for Local Plan Amendments

This section applies to city and county comprehensive plan amendments or to any local studies that would recommend or require an amendment to the Regional Transportation Plan to add significant single occupancy vehicle (SOV) capacity to the regional motor vehicle system, as defined by Figure 1.12. This section does not apply to projects in local TSPs that are included in the 2000 RTP. For the purpose of this section, significant SOV capacity is defined as any increase in general vehicle capacity designed to serve 700 or more additional vehicle trips in one direction in one hour over a length of more than one mile. This section does not apply to plans that incorporate the policies and projects contained in the RTP.

Consistent with Federal Congestion Management System requirements (23 CFR Part 500) and TPR system planning requirements (660-12), the following actions shall be considered when local transportation system plans (TSPs), multi-modal corridor and sub-area studies, mode specific plans or special studies (including land-use actions) are developed:

1. Transportation demand strategies that further refine or implement a regional strategy identified in the RTP

2. Transportation system management strategies, including intelligent Transportation Systems (ITS), that refine or implement a regional strategy identified in the RTP

3. Sub-area or local transit, bicycle and pedestrian system improvements to improve mode split

4. The effect of a comprehensive plan change on mode split targets and actions to ensure the overall mode split target for the local TSP is being achieved

5. Improvements to parallel arterials, collectors, or local streets, consistent with connectivity standards contained in Section 6.4.5, as appropriate, to address the transportation need and to keep through trips on arterial streets and provide local trips with alternative routes

6. Traffic calming techniques or changes to the motor vehicle functional classification, to maintain appropriate motor vehicle functional classification

7. If upon a demonstration that the above considerations do not adequately and cost-effectively address the problem, a significant capacity improvement may be included in the comprehensive plan

Upon a demonstration that the above considerations do not adequately and cost-effectively address the problem and where accessibility is significantly hindered, Metro and the affected city or county shall consider:

1. Amendments to the boundaries of a 2040 Growth Concept design type

2. Amendments or exceptions to land-use functional plan requirements

3. Amendments to the 2040 Growth Concept

4. Designation of an Area of Special Concern, consistent with Section 6.7.7.

Demonstration of compliance will be included in the required congestion management system compliance report submitted to Metro by cities and counties as part of system-level planning and through findings consistent with the TPR in the case of amendments to applicable plans.

6.4.5 Design Standards for Street Connectivity

The design of local street systems, including "local" and "collector" functional classifications, is generally beyond the scope of the 2000 RTP. However, the aggregate effect of local street design impacts the effectiveness of the regional system when local travel is restricted by a lack of connecting routes, and local trips are forced onto the regional network. Therefore, streets should be designed to keep through trips on arterial streets and provide local trips with alternative routes. The following mapping requirements and design standards are intended to improve local circulation in a manner that protects the integrity of the regional transportation system.

Cities and counties within the Metro region are required to amend their comprehensive plans, implementing ordinances and administrative codes, if necessary, to comply with or exceed the following mapping requirements and design standards:

1. Cities and counties must identify all contiguous areas of vacant and redevelopable parcels of five or more acres planned or zoned for residential or mixed-use development and prepare a conceptual new streets plan map**.** The map shall be adopted as a part of the Transportation System Plan element of the local Comprehensive Plan. The purpose of this map is to provide guidance to land-owners and developers on desired street

connections that will improve local access and preserve the integrity of the regional street system.

The conceptual street plan map should identify street connections to adjacent areas in a manner that promotes a logical, direct and connected street system. Specifically, the map should conceptually demonstrate opportunities to extend and connect to existing streets, provide direct public right-of-way routes, and limit the potential of cul-de-sac and other closed-end street designs.

2. In addition to preparing the above conceptual street plan map, cities and counties shall require new residential or mixed-use development that will require construction of new street(s) to provide a street map that:

   a. Responds to and expands on the conceptual street plan map as described in Section 6.4.5(1) for areas where a map has been completed.

   b. Provides full street connections with spacing of no more than 530 feet between connections except where prevented by barriers such as topography, railroads, freeways, pre-existing development, lease provisions, easements, covenants or other restrictions existing prior to May 1, 1995 which preclude street connections or water features where regulations implementing Title 3 of the Urban Growth Management Functional Plan do not allow construction of or prescribe different standards for street facilities.

   c. When full street connections are not possible provides bike and pedestrian accessways on public easements or rights-of-way in lieu of streets. Spacing of accessways between full street connections shall be no more than 330 feet except where prevented by barriers such as topography, railroads, freeways, pre-existing development, lease provisions, easements, covenants or other restrictions existing prior to May 1, 1995 which preclude accessway connections or water features where regulations implementing Title 3 of the Urban Growth Management Functional Plan do not allow construction of or prescribe different standards for construction of accessway facilities.

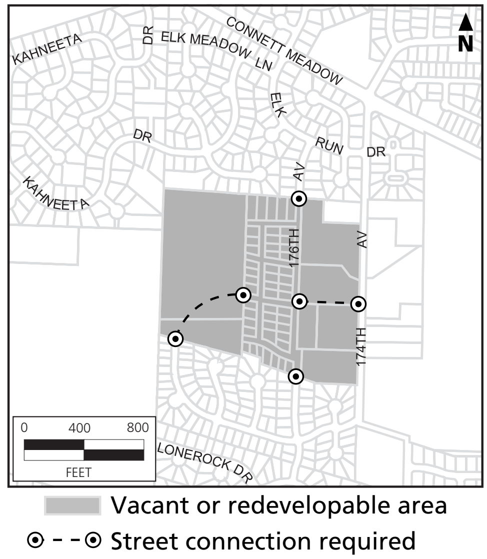
   d. Limits the use of cul-de-sac designs and other closed-end street systems to situations where barriers prevent full street extensions.

   e. Includes no closed-end street longer than 200 feet or with more than 25 dwelling units.

   f. Includes street cross-sections demonstrating dimensions of right-of-way improvements, with streets designed for posted or expected speed limits.

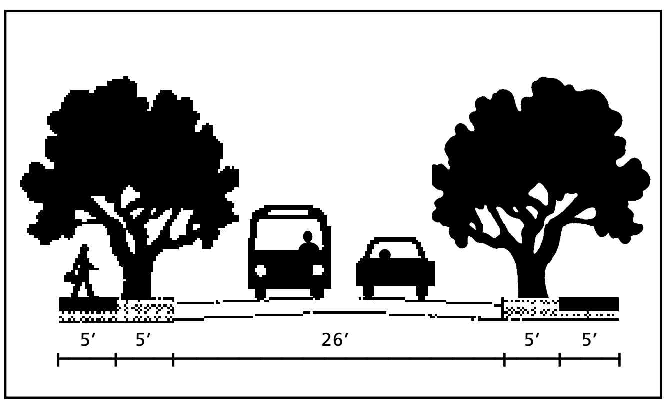
Figure 6.1 demonstrates a street map that a developer would provide to meet code regulations for the subdivision of a single parcel. Figure 6.2 shows a street cross-section that could be submitted by a developer for approval during the permitting process.

Figure 6.1
Street Connectivity Map



Source: Metro

Figure 6.2
Street Cross Section – Local Street, mid-block



Source: Metro

3. Street design code language and guidelines must allow for:

   a. Consideration of narrow street design alternatives. For local streets, no more than 46 feet of total right-of-way, including pavement widths of no more than 28 feet, curb-face to curb-face, sidewalk widths of at least 5 feet and landscaped pedestrian buffer strips that include street trees. Special traffic calming designs that use a narrow right-of-way, such as woonerfs and chicanes, may also be considered as narrow street designs.

b. Short and direct public right-of-way routes to connect residential uses with nearby commercial services, schools, parks and other neighborhood facilities.

c. Consideration of opportunities to incrementally extend streets from nearby areas.

d. Consideration of traffic calming devices to discourage traffic infiltration and excessive speeds on local streets.

4. For redevelopment of existing land-uses that require construction of new streets, cities and counties shall develop local approaches to encourage adequate street connectivity.

6.4.6 Alternative Mode Analysis

Improvement in non-SOV mode share will be used as the key regional measure for assessing transportation system improvements in the central city, regional centers, town centers and station communities. For other 2040 Growth Concept design types, non-SOV mode share will be used as an important factor in assessing transportation system improvements. These modal targets will also be used to demonstrate compliance with per capita travel reductions required by the state TPR. This section requires that cities and counties establish non-SOV regional modal targets for all 2040 design types that will be used to guide transportation system improvements, in accordance with Table 1.3 in Chapter 1 of this plan:

1. Each jurisdiction shall establish an alternative mode share target (defined as non-single occupancy vehicle person-trips as a percentage of all person-trips for all modes of transportation) in local TSPs for trips into, out of and within all 2040 Growth Concept land-use design types within its boundaries. The alternative mode share target shall be no less than the regional modal targets for these 2040 Growth Concept land-use design types to be established in Table 1.3 in Chapter 1 of this plan.

2. Cities and counties, working with Tri-Met and other regional agencies, shall identify actions in local TSPs that will result in progress toward achieving the non-SOV modal targets. These actions should initially be based on RTP modeling assumptions, analysis and conclusions, and include consideration of the maximum parking ratios adopted as part of Title 2, section 3.07.220 of the *Urban Growth Management Functional Plan*; regional street design considerations in Section 6.7.3, Title 6, transportation demand management strategies and transit's role in serving the area. Local benchmarks for evaluating progress toward achieving modal targets may be based on future RTP updates and analysis, if local jurisdictions are unable to generate this information as part of TSP development.

6.4.7 Motor Vehicle Congestion Analysis

Motor Vehicle Level-Of-Service (LOS) is a measurement of congestion as a share of designed motor vehicle capacity of a road. Policy 13.0 and Table 1.2 of this plan establish motor vehicle level-of-service policy for regional facilities. These standards shall be incorporated into local comprehensive plans and implementing ordinances to replace current methods of determining motor vehicle congestion on regional facilities. Jurisdictions may adopt alternative standards that do not exceed the minimum LOS established in Table 1.2. However, the alternative standard must not:

- result in major motor vehicle capacity improvements that have the effect of shifting unacceptable levels of congestion into neighboring jurisdictions along shared regional facilities;

- result in motor vehicle capacity improvements to the principal arterial system (as defined in Figure 1.12) that are not recommended in, or are inconsistent with, the RTP.

- increase SOV travel to a measurable degree that affects local consistency with the modal targets contained in Table 1.3.

By definition, the RTP addresses congestion of regional significance through the projects identified in Chapter 5 or refinements plans contained in this chapter of the plan. Other, more localized congestion is more appropriately addressed through the local TSP process, and includes any locations on the regional Motor Vehicle System (Figure 1.12) that are not addressed by the RTP. Localized congestion occurs where short links within the transportation system are exceeding LOS standards, though the overall system in the vicinity of the congested link is performing acceptably. In cases where these localized areas of congestion are located on Principal Arterial routes (as defined in Figure 1.12) or the Regional Freight System (Figure 1.17), they shall be evaluated as part of the local TSP process to determine whether an unmet transportation need exists that has not been addressed in the RTP. Should a local jurisdiction determine that an unmet need exists on such a facility, the jurisdiction shall identify the need in the local TSP, and propose one of the following actions to incorporate the need and recommended solution into the RTP:

- Identify the unmet need and proposed projects at the time of Metro review of local TSPs for consistency, but incorporate the project into the regional TSP during the next scheduled RTP update; or

- Propose an amendment to the RTP for unmet needs and resulting projects where a more immediate update of the regional TSP is appropriate or required.

Intersection analysis and improvements also generally fall outside of the RTP, and capacity improvements recommended in this plan generally apply to links in the regional system, not intersections.

For the purpose of demonstrating local compliance with Table 1.2 as part of a periodic review or plan amendment, the following procedure for conducting the motor vehicle congestion analysis shall be used:

1. *Analysis* – A transportation need is identified in a given location when analysis indicates that congestion has reached the level indicated in the "exceeds deficiency threshold" column of Table 1.2 and that this level of congestion will negatively impact accessibility, as determined through Section 6.4.7(2). The analysis should consider a mid-day hour appropriate for the study area and the appropriate two-hour peak-hour condition, either A.M. or P.M. or both, to address the problem. Other non-peak hours of the day, such as

mid-day on Saturday, should also be considered to determine whether congestion is consistent with the acceptable or preferred operating standards identified in Table 1.2. The lead agency or jurisdictions will be responsible for determining the appropriate peak and non-peak analysis periods.

An appropriate solution to the need is determined through requirements contained in this chapter. For regional transportation planning purposes, the recommended solution should be consistent with the acceptable or preferred operating standards identified in Table 1.2. A city or county may choose a higher level-of-service operating standard where findings of consistency with section 6.4.4 have been developed as part of the local planning process. The requirements in Section 6.6.2 shall also be satisfied in order to add any projects to the RTP based on the higher level-of-service standard.

2. *Accessibility* – If a deficiency threshold is exceeded on the regional transportation system as identified in Table 1.2, cities and counties shall evaluate the impact of the congestion on regional accessibility using the best available quantitative or qualitative methods. If a determination is made by Metro that exceeding the deficiency threshold negatively impacts regional accessibility, cities and counties shall follow the transportation systems analysis and transportation project analysis procedures identified in Sections 6.4.2 and 6.7.3.

3. *Consistency* – The identified function or the identified capacity of a road may be significantly affected by planning for 2040 Growth Concept design types. Cities and counties shall take actions described in Section 6.7 of this chapter, including amendment of their transportation plans and implementing ordinances, if necessary, to preserve the identified function and identified capacity of the road, and to retain consistency between allowed land-uses and planning for transportation facilities.

6.4.8 Future RTP Refinements Identified through Local TSPs

The 2000 RTP represents the most extensive update to the plan since it was first adopted in 1982. It is the first RTP to reflect the 2040 Growth Concept, Regional Framework Plan and state Transportation Planning Rule. In the process of addressing these various planning mandates, the plan's policies and projects are dramatically different than the previous RTP. This update also represents the first time that the plan has considered growth in urban reserves located outside the urban growth boundary but expected to urbanize during the 20-year plan period. As a result, many of the proposed transportation solutions are conceptual in nature, and must be further refined.

In many cases, these proposed transportation solutions were initiated by local jurisdictions and special agencies through the collaborative process that Metro used to develop the updated RTP. However, the scope of the changes to the RTP will require most local governments and special agencies to make substantial changes to comprehensive, facility and service plans, as they bring local plans into compliance with the regional plan. In the process of making such changes, local jurisdictions and special agencies will further refine many of the solutions included in this plan.

Such refinements will be reviewed by Metro and, based on a finding of consistency with RTP policies, specifically proposed for inclusion in future updates to the RTP. This process will occur concurrently with overall review of local plan amendments, facility plans and service plans, and is subject to the same appeal and dispute resolution process. While such proposed amendments to the RTP are not effective until a formal amendment has been adopted, the purpose of endorsing such proposed changes is to allow local governments to retain the proposed transportation solutions in local plans, with a finding of consistency with the RTP.

6.4.9 Local 2020 Forecast – Options for Refinements

The 2000 RTP is a 20-year plan, with a 2020 forecast developed from 1994 base data. Metro produced an updated 2020 forecast that accounts for urban reserve actions, and estimates the amount of jobs and housing expected in urban reserves in 2020. Local TSPs using the 2020 forecast may experience different modeling outcomes in these areas than were observed during the development of the RTP. Therefore, Metro will accept local plans under the following four options:

1. Local plans in areas unaffected by urban reserve actions may be developed using the RTP forecast for 2020 (which is based on 1994 data).

2. Local plans already under way at the time of RTP adoption, and which include areas affected by urban reserve actions, may be developed using the RTP forecast for 2020 (based on 1994 data), with population and employment allocations adjusted by the local jurisdiction to reflect urban reserve actions. However, adjustments to population and employment allocations shall (a) remain within the holding capacity of a traffic zone or area, as defined by Metro's productivity analysis, and (b) not exceed traffic zone or area assumptions of the updated 2020 forecast.

3. Local plans in areas affected by urban reserve actions may use the updated 2020 forecast, and any subsequent differences in proposed transportation solutions will be reconciled during Metro's review of the local plan.

4. Local plans may be based on updated, locally developed population and employment data, conditions and 2020 forecasts. However, population and employment data and forecasts, and the methodology for generating the data and forecasts shall be coordinated at the county level, and accepted by Metro technical staff and TPAC as statistically valid. Subsequent adjustments to the population and employment allocations for traffic zones may be made in the local planning to reflect updated population and employment data and 2020 forecasts. Metro shall consider the updated locally developed data and forecasts in future RTP forecasts of population and employment. Subsequent differences in local TSP project recommendations that result from the differences in population and employment forecasts will be resolved in the next scheduled RTP update.

Metro will update the 2020 population and employment allocations periodically to reflect local and regional land-use decisions. For example, changes to the 2020 population and employment allocations could result if an urban reserve area is reduced in size or taken out altogether if the urban growth boundary is expanded or if local zoning capacity is amended to increase or decrease. The provisions in this section are for the purpose of TSP development and analysis, and do not necessarily apply to other planning activities.

6.4.10 Transit Service Planning

Efficient and effective transit service is critical to meeting mode-split targets, and the regional transit functional classifications are tied to 2040 Growth Concept land-use components. Local transportation system plans shall include measures to improve transit access, passenger environments and transit service speed and reliability for:

- rail station areas, rapid bus and frequent bus corridors where service is existing or planned

- regional bus corridors where services exists at the time of TSP development

To ensure that these measures are uniformly implemented, cities and counties shall:

1. Adopt a transit system map, consistent with the transit functional classifications shown in Figure 1.16, as part of the local TSP.

2. Amend development code regulations to require new retail, office and institutional buildings on sites at major transit stops to:

    1. Locate buildings within 20 feet of or provide a pedestrian plaza at the major transit stops

    2. Provide reasonably direct pedestrian connections between the transit stop and building entrances on the site

    3. Provide a transit passenger landing pad accessible to disabled persons (if not already existing to transit agency standards)

    4. Provide an easement or dedication for a passenger shelter and underground utility connection from the new development to the transit amenity if requested by the public transit provider

    5. Provide lighting at a transit stop (if not already existing to transit agency standards).

3. Consider designating pedestrian districts in a comprehensive plan or other implementing land use regulations as a means of meeting or exceeding the requirements of OAR 660-012-0045 (4a-c) and this plan section 6.4.10(2) above. Pedestrian district designation shall address the following criteria:

    (a) A connected street and pedestrian network, preferably through a local street and pedestrian network plan covering the affected area.

(b) Designated pedestrian districts should specifically consider, but are not limited to these elements: Transit/pedestrian/bicycle interconnection; parking and access management; sidewalk and accessway location and width; alleys; street tree location and spacing; street crossing and intersection design for pedestrians; street furniture and lighting at a pedestrian scale; and traffic speed. When local transportation system plans are adopted, designated pedestrian districts should be coordinated with the financing program required by the Transportation Planning Rule.

4. Provide for direct and logical pedestrian crossings at transit stops and marked crossings at major transit stops.

5. Consider street designs which anticipate planned transit stop spacing, location, and facilities (such as shelters, benches, signage, passenger waiting areas) and are consistent with the Creating Livable Streets design guidelines.

Public transit providers shall consider the needs and unique circumstances of special needs populations when planning for service. These populations include, but are not limited to, students, the elderly, the economically disadvantaged, the mobility impaired and others with special needs. Consideration shall be given to:

1. adequate transit facilities to provide service

2. hours of operation to provide transit service corresponding to hours of operation of institutions, employers and service providers to these communities

3. adequate levels of transit service to these populations relative to the rest of the community and their special needs

6.5 Metropolitan Transportation Improvement Program (MTIP)

6.5.1 The Role of the MTIP in Regional Planning

An important tool for implementing the RTP is the Metropolitan Transportation Improvement Program (MTIP). The region's four-year funding document, 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. In developing the MTIP, the region gives top priority to strategic transportation investments that leverage and reinforce the urban form outlined in Chapter 1, of this plan. The MTIP is adopted by Metro and the Oregon Transportation Commission for inclusion into a unified State TIP (STIP), that integrates regional and statewide improvement plans. The MTIP is updated every two years.

ISTEA and TEA-21 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, Tri-Met 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. For the purpose of this plan, the assumptions used to develop the financially constrained system are defined in Appendix 4.2. Projects included in the financially constrained system are identified by an asterisk (*) in Figures 5.8 through 5.14 in Chapter 5. However, while the financially constrained system should provide the basis for most MTIP funding decisions, other projects from the RTP may also be selected for funding. In the event that such projects are drawn from the plan for funding, the RTP financially constrained system will be amended to include the project or projects. In addition, when the financially constrained system is amended, continued financial constraint must be demonstrated by identifying additional revenues or removal of other projects from the financially constrained system. Except in the case of exempt projects (as defined by the federal and state conformity rules) such actions require an air quality conformity determination.

6.5.2 How the MTIP is Developed

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).

In 1999, more than $75 million in regional funds were allocated to a wide variety of projects, ranging from safety improvements and system expansion to projects that leverage the 2040 Growth Concept. Priorities 2000 was the process for developing the fiscal year 2000 to 2003 MTIP. The first step in Priorities 2000 was developing criteria for ranking projects by transportation modes. The second step was a solicitation for project submittals. Local governments, Tri-Met and the Port of Portland submitted 150 transportation projects, with a cost of more than $300 million, for funding consideration. In the third step, projects were ranked by technical and administrative criteria. Next, the Priorities 2000 projects were reviewed at a series of public workshops and hearings held throughout the region.

The final funding recommendation included 65 projects. The funding package broke new ground in Metro's objective of creating strong linkages between planned land-uses and the allocation of transportation funding. Based on the flow of federal transportation funding, the "Priorities" process for updating the MTIP and allocating revenues will occur every two years.

6.5.3 RTP Implementation Benchmarks

The RTP establishes an 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 1 objectives 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 1
- relative change in system performance measures
- progress toward land use objectives related to the RTP
- relative comparisons with similar metropolitan regions on key measures

6.5.4 Improvements in Urban Reserves

During the MTIP process, improvements that add capacity or urban design elements to rural facilities in urban reserves should:

- be coordinated with expansion of the urban growth boundary
- not encourage development outside of the urban growth boundary
- not disrupt the economic viability of nearby rural reserves
- be consistent with planned urban development or other transportation facilities

6.6 Process for Amending the RTP

6.6.1 RTP Policy, System Map and Compliance Criteria Amendments

When Metro amends policies or system maps in Chapter 1 of this plan or compliance criteria in this chapter, it will evaluate and adopt findings regarding consistency with the Regional Framework Plan. Decisions on amendments made at this level are land-use decisions for need, mode, corridor, general scope and function of a proposed project. Subsequent land-use decisions on final project design and impact mitigation will be needed prior to construction. Such analysis to evaluate impacts could lead to a "no-build" decision where a proposed project is not recommended for implementation, and would require reconsideration of the proposed project or system improvements. As such, amendments at this level shall be reviewed through the post-acknowledgement process. However, a decision on an amendment to the Regional Transportation Plan should not foreclose or appear to foreclose full and fair consideration of all relevant goal issues at such time that specific projects and programs are adopted by a local jurisdiction.

It is Metro's responsibility to adopt findings based on project need, mode, corridor, general scope and function of projects proposed in the Regional Transportation Plan. The affected jurisdiction is responsible for preparing the specific local plan amendments and findings related to specific location, project design and impact mitigation and for scheduling them for hearing before the governing body in time for action by that body by the time required.

6.6.2 RTP Project Amendments

The RTP establishes a comprehensive policy direction for the regional transportation system and recommends a balanced program of transportation investments to implement that policy direction. However, the recommended investments do not solve all transportation problems and are not intended to be the definitive capital improvement program on the local transportation system for the next 20 years.

Rather, the RTP identifies the projects, programs or further refinement studies required to adequately meet regional transportation system needs during the 20-year planning period. Local conditions will be addressed through city and county TSPs, and will require additional analysis and improvements to provide an adequate transportation system. Section 6.7 of this chapter anticipates such refinements, particularly given the degree to which this RTP has been updated from previous plans. Similarly, refinements to the RTP may result from ongoing corridor plans or area studies. The following processes may be used to update the RTP to include such changes:

1. Amendments resulting from major studies: as the findings of such studies are produced, they will be recommended by a resolution of JPACT and the Metro Council. These amendments must be incorporated into the RTP through a quasi-judicial or legislative process, as needed.

2. Amendments resulting from local TSPs: new roadway, transit, bikeway, pedestrian, freight and demand management projects necessary to meet the objectives of the RTP shall be accompanied by an demonstration of consistency with the RTP based on the following criteria:

a. The objectives to be met by the proposed projects(s) are consistent with RTP goals, policies and objectives (Chapter 1).

b. The proposed action is consistent with the modal function of the facility as defined in Chapter 1.

c. The impact of the proposed projects(s) on the balance of the regional system is evaluated through a CMS analysis.

d. The proposed action is needed to achieve the motor vehicle level-of-service performance criteria identified in the RTP, or alternative performance criteria adopted in local TSPs under the provisions of Section 6.4.7, as follows:

   A) principal, major and minor arterial capacity improvements are necessary to maintain compliance with Policy 13.0, Table 1.2, or alternative performance criteria adopted in local TSPs. Improvements that are designed to provide a higher level of service than the minimum acceptable standard established in Policy 13.0 can be designed and/or provided at the option of the implementing jurisdiction. Such actions must be consistent with the RTP as outlined in this section and demonstrate that either:

      i) a long-range evaluation of travel demand indicates a probable need for right-of-way preservation beyond that necessary for the 20-year project design, or

      ii) the additional service provided by the higher level design is the result of a design characteristic necessary to achieve the minimum motor vehicle performance measure

   B) local transportation system improvements must be consistent with the following:

      i) the local system must adequately serve the local travel demands expected from development of the land-use plan to the year 2020 to ensure that the regional system is not overburdened with local traffic

      ii) local analysis shall incorporate required street connectivity plans

      iii) the local system provides continuity between neighboring jurisdictions, consistency between city and county plans for facilities within city boundaries and consistency between local jurisdictions and ODOT plans

e. The need for the proposed action based on Metro's adopted population and employment projections, or refinements as noted in Section 6.4.8.

f. The proposed action is consistent with the regional non-SOV modal targets specified in Table 1.3 of Chapter 1.

g. The proposed action represents the lowest cost system alternative solution acceptable.

h. The proposed action is not prohibited by unacceptable environmental impacts or other considerations.

i. A goal, policy or system plan element in the federal RTP would likely change as the result of a "no-build" project decision later in the process.

j. The project is in the local jurisdiction's TSP, or a final local land-use action occurred.

k. The project is contained in or consistent with the RTP, adopted comprehensive plan, or implementation plan(s) of any other affected jurisdictions.

l. Sufficient public involvement activities have occurred regarding the proposed action.

The amount of information required to address these criteria shall be commensurate with the scope of the project. Such additions will be amended into the RTP as part of the project update process described in this section. Operations, maintenance and safety improvements are deemed consistent with the policy intent of the RTP if (a) they are needed to serve the travel demand associated with Metro's adopted population and employment forecasts, and (b) they are consistent with affected jurisdictional plans.

3. Amendments resulting from updates to the Regional Framework Plan or related functional plans.

6.6.3 Congestion Management Requirements

This section applies to any amendments to the Regional Transportation Plan to add significant single occupancy vehicle (SOV) capacity to multi-modal arterials and/or highways. Consistent with Federal Congestion Management System requirements (23 CFR Part 500) and TPR system planning requirements (OAR 660-12), the following actions shall be considered through the RTP when recommendations are made to revise the RTP to define the need, mode, corridor and function to address an identified transportation needs, and prior to recommendations to add significant SOV capacity:

1. Regional transportation demand strategies

2. Regional transportation system management strategies, including intelligent transportation systems (ITS)

3. High occupancy vehicle (HOV) strategies

4. Regional transit, bicycle and pedestrian system improvements to improve mode split

5. Unintended land-use and transportation effects resulting from a proposed SOV project or projects

6. Effects of latent demand from other modes, routes or time of day from a proposed SOV project or projects

7. If upon a demonstration that the considerations in 1 through 6 do not adequately and cost-effectively address the problem, a significant capacity improvement may be included in the regional transportation plan

6.6.4 Plan Maintenance

The RTP is updated every three to five years, and covers a minimum 20-year plan period. Periodic amendments to the plan will also occur, as needed, to reflect recommendations from corridor or sub-area planning studies. As preparation for each scheduled update, development throughout the region will be monitored to determine whether growth (and the associated travel demand) occurs as forecast. Metro will review its population and employment forecasts annually and update them at least every five years for the following conditions:

- national or regional growth rates differ substantially from those previously assumed
- significant changes in growth rate or pattern develop within jurisdictions
- changes to the urban growth boundary are adopted
- a jurisdiction substantially changes its land-use plan

New information gathered during the course of the year on such issues as energy price and supply, population and employment growth, inflation and new state and federal laws may result in different conditions to be addressed by the plan. These modifications will be incorporated as needed during periodic updates to the plan. Each update will occur in cooperation with affected jurisdictions, state agencies and public transit providers.

6.7 Project Development and Refinement Planning

6.7.1 Role of RTP and the Decision to Proceed with Project Development

After a project has been incorporated in the RTP, it is the responsibility of the local sponsoring jurisdiction to determine the details of the project (design, operations, etc.) and reach a decision on whether to build the improvement based upon detailed environmental impact analysis and findings demonstrating consistency with applicable comprehensive plans. If this process results in a decision not to build the project, the RTP will be amended to delete the recommended improvement and an alternative must be identified to address the original transportation need.

6.7.2 New Solutions Re-submitted to RTP if No-Build Option is Selected

When a "no-build" alternative is selected at the conclusion of a project development process, a new transportation solution must be developed to meet the original need identified in the RTP, or a finding that the need has changed or been addressed by other system improvements. In these cases, the new solution or findings will be submitted as an amendment to the RTP, and would also be evaluated at the project development level.

6.7.3 Project Development Requirements

Transportation improvements where need, mode, corridor and function have already been identified in the RTP and local plans must be evaluated on a detailed, project development level. This evaluation is generally completed at the local jurisdiction level, or jointly by affected or sponsoring agencies. 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 and potential environmental impacts. The project need, mode, corridor, and function do not need to be addressed at the project level, since these findings have been previously established by the RTP.

The TPR and Metro's Interim 1996 Congestion Management System (CMS) document require that measures to improve operational efficiency be addressed at the project level, though system-wide considerations are addressed by the RTP. Therefore, demonstration of compliance for projects not included in the RTP shall be documented in a required Congestion Management System report that is part of the project-level planning and development (Appendix D of the Interim CMS document). In addition, this section requires that street design guidelines be considered as part of the project-level planning process. This section does not apply to locally funded projects on local facilities. Unless otherwise stipulated in the MTIP process, these provisions are simply guidelines for locally funded projects.

Therefore, in addition to system-level congestion management requirements described in Section 6.6.3 in this chapter, cities, counties, Tri-Met, ODOT, and the Port of Portland shall consider the following project-level operational and design considerations during transportation project analysis:

1. Transportation system management (e.g., access management, signal inter-ties, lane channelization, etc.) to address or preserve existing street capacity.

2. Street design policies, classifications and design principles are contained in Chapter 1 of this plan. See Section 1.3.5, Policy 11.0, Figure 1.4. Implementing guidelines are contained in *Creating Livable Streets: Street Design Guidelines for 2040* (1997) or other similar resources consistent with regional street design policies.

6.7.4 Refinement Planning Scope and Responsibilities

In some areas defined in this section, the need for refinement planning is warranted before specific projects or actions that meet and identified need can be adopted into the RTP. Refinement plans generally involve a combination of transportation and land use analysis, multiple local jurisdictions and facilities operated by multiple transportation providers. Therefore, unless otherwise specified in this section, Metro or ODOT will initiate and lead necessary refinement planning in coordination with other affected local, regional and state agencies. Refinement planning efforts will be multi-modal evaluations of possible transportation solutions in response to needs identified in the RTP. The evaluation may also include land use alternatives to fully address transportation needs in these corridors. Appendix 3.1 describes the 2000 RTP prioritization for refinement plans. Refinement plan prioritization and specific scope for each corridor is subject to annual updates as part of the Unified Work Plan (UWP).

6.7.5 Specific Corridor Refinements

The system analysis in Chapter 3 identifies a number of corridor refinement studies that must be completed before specific transportation solutions can be adopted into the RTP. In these corridors, both the need for transportation improvements, and a recommended action have been determined. At this stage, these proposed transportation projects must be developed to a more detailed level before construction can occur. This process is described in Section 6.7.3 of this chapter.

The project development stage determines design details, and a project location or alignment, if necessary, after evaluating engineering and design details, and environmental impacts. While all projects in this plan must follow this process before construction can occur, the following projects must also consider the design elements described in this section:

Banfield (Interstate 84) Corridor

Despite the relatively heavy investments made in transit and highway capacity in this corridor in the 1980s, further improvements are needed to ensure an acceptable level of access to the central city from Eastside Portland neighborhoods and East Multnomah County. However, physical, environmental and social impacts make highway capacity improvements in this corridor unfeasible. Instead, local and special district plans should consider the following transportation solutions for this corridor:

- mitigate infiltration on adjacent corridors due to congestion along I-84 through a coordinated system of traffic management techniques (ITS)
- improve light rail headways substantially to keep pace with travel demand in the corridor
- improve bus service along adjacent corridors to keep pace with travel demand, including express and non-peak service
- consider additional feeder bus service and park-and-ride capacity along the eastern portion of the light rail corridor to address demand originating from East Multnomah and North Clackamas Counties
- develop TSM strategies for the Gateway regional center to mitigate expected spillover effects on the development of the regional center

Northeast Portland Highway

As radial urban highways such as the Banfield and Interstate-5 are increasingly burdened by peak period congestion, freight mobility will rely more heavily on circumferential routes, including I-205 and Northeast Portland Highway, for access to industrial areas and intermodal facilities. Northeast Portland Highway plays a particularly important role, as it links the Rivergate marine terminals and PDX air terminals to industry across the region (this route includes Killingsworth and Lombard streets from I-205 to MLK Jr. Boulevard, and Columbia Boulevard from MLK Jr. Boulevard to North Burgard). Though Northeast Portland Highway appears to have adequate capacity to serve expected 2020 demand, a number of refinements in the corridor are needed. Local and special district plans should consider the following transportation solutions as improvements are made in this corridor:

- improve Northeast Portland Highway as a strategy for addressing Banfield corridor and east Marine Drive congestion
- develop a long-term strategy to serve freight movement between Highway 30 and Rivergate
- implement aggressive access management along Northeast Portland Highway
- implement and refine Columbia Corridor improvements to address full corridor needs of Northeast Portland Highway, from Rivergate to I-205
- consider future grade separation at major intersections
- streamline the Northeast Portland Highway connection from the Lombard/Killingsworth section to Columbia Boulevard with an improved transition point at MLK Jr. Boulevard
- improve the Columbia Boulevard interchange at I-5 to provide full access to Northeast Portland Highway
- construct capacity and intersection improvements between 82nd Avenue and I-205

Interstate-84 to US 26 Connector

The long-term need to develop a highway link between I-84 and Highway 26 exists, but a series of interim improvements to Hogan Road are adequate to meet projected demand through 2020. 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. They also benefit transit-oriented development along the MAX light rail corridor, as they would move freight traffic from its current route along Burnside, where it conflicts with development of the Rockwood town center and adjacent station communities. In addition to planned improvements to the Hogan Road corridor, local plans should consider:

- 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.

Sunrise Corridor

The full Sunrise Corridor improvement from I-205 to Highway 26 is needed during the 20-year plan period, but should be implemented with a design and phasing that reinforces development of the Damascus town center, and protect rural reserves from urban traffic impacts. Though a draft environmental impact statement has been prepared for this corridor, the final environmental impact statement should be refined to consider the following design elements:

- Construct the segment from I-205/Highway 224 interchange to existing Highway 212 at Rock Creek as funds become available

- preserve right-of-way (ROW) from Rock Creek to Highway 26 as funds become available

- consider phasing Sunrise construction as follows: (a) complete I-205 to Rock Creek segment first, followed by (b) ROW acquisition of remaining segments, then (c) construction of 222nd Avenue to Highway 26 segment and (d) lastly, construction of middle segment from Rock Creek to 222nd Avenue as Damascus town center develops

- consider express, peak period pricing and HOV lanes as phases of the Sunrise Corridor are constructed

- reflect planned network of streets in Damascus/Pleasant Valley area in refined interchange locations along the Sunrise Route, including a connection at 172nd Avenue, the proposed major north/south route in the area

- implement bus service in parallel corridor from Damascus to Clackamas regional center via Sunnyside Road

- avoid premature construction that could unintentionally increase urban pressures in rural reserves east of Damascus

- examine the potential for the highway to serve as a "hard edge" in the ultimate urban form of the Damascus area

- develop a concurrent plan to transition the function of the existing Highway 212 facility into a major arterial function, with appropriate access management and intersection treatments identified

I-5 to 99W Connector

An improved regional connection between Highway 99W and I-5 is needed in the Tualatin area to accommodate regional traffic, and to move it away from the Tualatin, Sherwood and Tigard town centers. This connection will have significant effects on urban form in this rapidly growing area, and the following design considerations should be addressed in a corridor plan:

- balance improvement plans with impacts on Tualatin and Sherwood town centers and adjacent rural reserves

- in addition to the northern alignment considered in the Western Bypass Study, examine the benefits of a southern alignment, located along the southern edge of Tualatin and Sherwood, including the accompanying improvements to 99W that would be required with either alignment

- identify parallel capacity improvements to Tualatin-Sherwood Road and 99W in Tigard from I-5 to Highway 217 that could be used to phase in, and eventually complement future highway improvements

- link urban growth boundary expansion in this area to the corridor plan and examine potential the proposed highway to serve as a "hard edge" in the ultimate urban form of the Sherwood area

- develop an access management and connectivity plan for 99W in the Tigard area that balances accessibility needs with physical and economic constraints that limit the ability to expand capacity in this area

- consider express, peak-period pricing and HOV lanes

Sunset Highway

Improvements are needed in this corridor to preserve access to and from the central city and the Sunset Corridor employment area, and provide access to Hillsboro regional center. The following design elements should be considered as improvements are implemented in this corridor:

- maintain off-peak freight mobility
- phase in capacity improvements from the Sylvan interchange to 185th Avenue, expanding to a total of three general purpose lanes in each direction
- improve light rail service, with substantially increased headways
- construct major interchange improvements at Sylvan, Cedar Hills Boulevard and Cornelius Pass Road
- identify and construction additional overcrossings in the vicinity of interchanges to improve connectivity and travel options for local traffic, thus improving interchange function
- consider express, peak period pricing or HOV lanes when adding highway capacity, especially west of Highway 217

Highway 213

Improvements to this highway link between I-205 and the Willamette Valley should be built in phases, and consider the following:

- continued development of the Oregon City regional center
- interim improvements identified in the 1999 Highway 213 Urban Corridor Study (and included in this plan)
- freight mobility demands
- access needs of Beavercreek urban reserves, including a re-evaluation of the suitability of Oregon City urban reserves in light of transportation constraints

Macadam/Highway 43

Though heavy travel demand existing along Macadam/Highway 43, between Lake Oswego and the central city, physical and environmental constraints preclude major roadway expansion. Instead, a long-term strategy for high-capacity transit that links the central city to southwest neighborhoods and Lake Oswego town center is needed. As this service is implemented, the following design options should be considered in local and special district plans:

- interim repairs to maintain Willamette Shores Trolley excursion service
- implement frequent bus service from Lake Oswego town center to Portland central city in the Macadam corridor
- phasing of future streetcar commuter service or commuter rail in this corridor to provide a high-capacity travel option during congested commute periods, using either the Willamette Shore Line right-of-way, the Macadam Corridor Design Guidelines (1985) rail alignment or other right-of-way as appropriate.
- implement bicycle safety improvements where appropriate south of the Sellwood Bridge

6.7.6 Specific Corridor Studies

Major corridor studies will be conducted by state or regional agencies working in partnership with local governments in the following areas. In each case, a transportation need has been established by the RTP. A transportation need is identified when regional standards for safety, mobility, or congestion are exceeded. In many of these corridors, RTP analysis indicates several standards are exceeded.

The purpose of the corridor studies is to develop an appropriate transportation strategy or solution through the corridor planning process. For each corridor, a number of transportation alternatives will be examined over a broad geographic area or through a local TSP to determine a recommended set of projects, actions or strategies that meet the identified need. The recommendations from corridor studies are then incorporated into the RTP, as appropriate. This section contains the following specific considerations that must be incorporated into corridor studies as they occur:

Interstate-5 North (I-84 to Clark County)

This heavily traveled route is the main connection between Portland and Vancouver. In addition to a number of planned highway refinements, light rail is proposed along Interstate Avenue to the Expo Center, and may eventually extend to Vancouver. As improvements are implemented in this corridor, the following design considerations should be addressed:

- consider HOV lanes and peak period pricing
- transit alternatives from Vancouver to the Central City
- maintain an acceptable level of access to the central city from Portland neighborhoods and Clark County
- maintain off-peak freight mobility, especially to numerous marine, rail and truck terminals in the area
- maintain an acceptable level of access to freight intermodal facilities and to the Northeast Portland Highway

- construct interchange improvements at Columbia Boulevard to provide freight access to Northeast Portland Highway

- address freight rail network needs

- construct additional Interstate Bridge capacity

- develop actions to reduce through-traffic on MLK and Interstate to allow main street redevelopment

Interstate-5 South (Highway 217 to Wilsonville)

This facility serves as the major southern access to and from the central city. The route also serves as an important freight corridor, 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. For this reason, 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 major corridor study is proposed to address the following issues:

- the effects of peak period congestion in this area on regional freight mobility

- the 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

- the ability to maintain off-peak freight mobility with capacity improvements

- the potential for better coordination between the Metro region and valley jurisdictions on land-use policies

- the effects of a planned long-term strategy for managing increased travel along I-5 in the Willamette Valley

In addition, the following design elements should be considered as part of the corridor study:

- peak period pricing and HOV lanes for expanded capacity

- provide rapid bus service on parallel Barbur route, connecting Wilsonville to the central city

- provide additional overcrossings in West Portland town center to improve local circulation and interchange access

- add capacity to parallel arterial routes, including 72nd Avenue, Boones Ferry, Lower Boones Ferry and Carmen Drive

- add overcrossings in vicinity of Tigard Triangle 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

Interstate 205

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

- shape urban form in the Stafford urban reserve area with physical configuration of highway improvements

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 from Oregon City to Gateway

- potential for extension of rapid bus service 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 urban reserve, based on ability to serve the area with adequate regional transportation infrastructure

McLoughlin-Highway 224

Long-term improvements are needed in this corridor to preserve access to and from the Central City from the Clackamas County area, to provide access to the developing Clackamas regional center and to support downtown development in the Milwaukie town center. The recently completed South/North light rail study demonstrated both a long-term need for high-capacity transit service in this corridor, and a short-term opposition to construction of light rail. However, the long-term transit need is still critical, as demonstrated in the RTP analysis, where both highway and high-capacity transit service were needed over the 20-year plan period to keep pace with expected growth in this part of the region. The 2040 Growth Concept also calls for the regional centers and central city to be served with light rail. Therefore, the recommendations for this corridor study assume a short-term rapid bus, or equivalent, transit service in the corridor, and light rail service is retained in the long-term as a placeholder. Transportation solutions in this corridor should address the following design considerations

- institute aggressive access management throughout corridor, including intersection grade separation along Highway 224 between Harrison Street and I-205

- design access points to McLoughlin and Highway 224 to discourage traffic spillover onto Lake Road, 34th Avenue, Johnson Creek boulevard, 17th Avenue and Tacoma Street

- monitor other local collector routes and mitigate spillover effect from congestion on McLoughlin and Highway 224

- consider an added reversible HOV or peak-period priced lane between Ross Island Bridge and Harold Street intersection

- expand highway capacity to a total of three general purpose lanes from Harold Street to I-205, with consideration of express, HOV lanes or peak period pricing for new capacity

- provide a more direct transition from McLoughlin to Highway 224 at Milwaukie to orient long trips and through traffic onto Highway 224 and northbound McLoughlin

- provide improved transit access to Milwaukie and Clackamas regional centers, including rapid bus in the short term, and light rail service from Clackamas regional center to Central City in the long term

Powell Boulevard/Foster Road

The concentration of urban reserves in Clackamas County and southeast Multnomah County will place heavy demands on connecting routes that link these areas with employment centers in Portland and Multnomah County. Of these routes, the Foster/Powell corridor is most heavily affected, yet is also physically constrained by slopes and the Johnson Creek floodplain, making capacity improvements difficult. More urban parts of Foster and Powell Boulevard are equally constrained by existing development, and the capacity of the Ross Island Bridge.

As a result, a corridor study is needed to explore the potential for high capacity transit strategies that provide access from the developing Pleasant Valley and Damascus urban reserves to employment areas along the Foster/Powell corridor, Gresham regional center, Columbia South Shore industrial area and central city. Such a study should consider the following transportation solutions:

- aggressive transit improvements, including rapid bus service from Central City to Damascus town center via Powell and Foster roads, and primary bus on 172nd Avenue and to the Gresham regional center, Eastside MAX and Columbia South Shore

- capacity improvements that would expand Foster Road from two to three lanes from 122nd to 172nd avenues, and from two to five lanes from 172nd Avenue to Highway 212, phased in coordination with planned capacity improvements to Powell Boulevard between I-205 and Eastman Parkway

- extensive street network connection improvements in the Mount Scott and Pleasant Valley areas to reduce local travel demand on Foster Road and Powell Boulevard, and to improve access between these areas and adjacent East Multnomah and northeast Clackamas Counties

- ITS or other system management approaches to better accommodate expected traffic growth on the larger southeast Portland network, East Multnomah and northeast Clackamas County network

Highway 217

Improvements in this corridor are needed to accommodate expected travel demand, and maintain acceptable levels of access to the Beaverton and Washington Square regional centers. The following design and functional considerations should be included in the development of transportation solutions for this corridor:

- expand highway to include a new lane in each direction from I-5 to US 26

- address the competing needs of serving localized trips to the Washington Square and Beaverton regional centers and longer trips on Highway 217

- consider express, HOV lanes and peak period pricing when adding new capacity

- design capacity improvements to maintain some mobility for regional trips during peak travel periods
- design capacity improvements to preserve freight mobility during off-peak hours
- retain auxiliary lanes where they currently exist
- improve parallel routes to accommodate a greater share of local trips in this corridor
- improve light rail service with substantially improved headways
- coordinate with planned commuter rail service from Wilsonville to Beaverton regional center

Tualatin Valley Highway

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 design considerations should be addressed as part of a corridor study:

- manage access as part of a congestion management strategy
- implement TSM and other interim intersection improvements at various locations between Cedar Hills Boulevard and Brookwood Avenue
- the 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. seven-lane 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 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

North Willamette Crossing

The RTP analysis shows a strong demand for travel between Northeast Portland Highway and the adjacent Rivergate industrial area and Highway 30 on the opposite side of the Willamette River. The St. Johns Bridge currently serves this demand. However, the St. Johns crossing has a number of limitations that must be considered in the long term in order to maintain adequate freight and general access to the Rivergate industrial area and intermodal facilities. Currently, the St. Johns truck strategy is being developed (and should be completed in 2000) to balance freight mobility needs with the long-term health of the St. Johns town center. The truck strategy is an interim solution to demand in this corridor, and does not attempt to address long-term access to Rivergate and Northeast Portland Highway from Highway 30. Specifically, the following issues should be considered in a corridor plan:

- build on the St. Johns Truck Strategy recommendations to adequate freight and general access to Rivergate, while considering potentially negative impacts on the development of the St. Johns town center

- incorporate the planned development of a streamlined Northeast Portland Highway connection from I-205 to Rivergate to the crossing study

- include a long-term management plan for the St. John's Bridge, in the event that a new crossing is identified in the corridor plan recommendations

6.7.7 Areas of Special Concern

Section 660.012.0060 of the state Transportation Planning Rule (TPR) allows local plans to "modify planned function, capacity and performance standards, as needed, to accept greater motor vehicle congestion to promote mixed-use, pedestrian friendly development where multi-modal choices are provided." Facilities in the areas or corridors described in this section are expected to exceed the motor vehicle level of service policy set forth in this plan, and fall under this designation, as they are planned mixed use areas that will be with a wide range of transportation alternatives.

However, in each case, the range of transportation solutions needed to address an RTP motor vehicle deficiency represents an unacceptable social, financial or environmental impact, and would be inconsistent with other local, regional and statewide planning goals. Further, each of these areas or corridors represents a relatively localized impact on the overall regional system, and other, alternative travel routes that would continue to conveniently serve regional travel needs. Strategies for managing traffic impacts and providing adequate transportation performance in these areas could include bicycle, pedestrian and transit improvements, demand management programs or changes to land-use plans.

In these areas where motor vehicle performance measures will be exceeded, local TSPs shall adopt one of the following approaches for establishing other transportation performance standards for Areas of Special Concern:

1. Adopt the following performance measures, and provide an analysis that demonstrates progress toward meeting these measures in the local TSP:

    a. Non-SOV modal targets consistent with Table 1.3 in Chapter 1 of this plan

    b. parking ratios consistent with Title 2 of the Urban Growth Management Functional Plan (UGMFP)

    c. a street connectivity plan for the Area of Special Concern that meets the connectivity requirements set forth in Section 6.4.5 of this chapter

    d. a plan for mixed-use development

2. Establish an Area of Special Concern action plan that:

    a. anticipates the growth and subsequent impacts of motor vehicle traffic on multi-modal travel in these areas

    b. establishes an action plan for mitigating the growth and subsequent impacts of motor vehicle traffic

    c. establishes performance standards for monitoring and implementing the action plan

    The action plan shall consider land-use strategies, as well as transportation solutions for managing the effects of continued traffic growth.

For either strategy, the adopted approach and performance measures shall be incorporated into Appendix 3.6 of the RTP during the next scheduled update. For an Area of Special Concern, adopted performance measures consistent with this section are required at the time of a plan amendment that significantly affects a regional facility, consistent with OAR 660.012.0060.

The following Areas of Special Concern where refinement planning to establish performance measures shall occur as part of the local TSP process, in accordance with this section:

Highway 99W

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. The RTP establishes the proposed I-5 to 99W connector as the principal route connecting the Metro region to the 99W corridor outside the region. This emphasis is intended to change in the long term the function of 99W, north of Sherwood, to a major arterial classification, with less need to accommodate longer, through trips.

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 the latent travel demand in the Highway 99W corridor is too great to be reasonably offset solely by capacity projects. 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 and accommodating traffic in the corridor is needed.

Since statewide, regional and local travel will still need to be accommodated and managed for sometime ODOT, Metro, Washington County and Tigard should cooperatively address the means for transitioning to the future role of the facility to emphasize serving circulation within the local community. This will include factoring in the social, environmental and economic impacts that congestion along this facility will bring. Additionally the analysis should specifically document the schedule for providing the alternatives for accommodating the regional and statewide travel. Similarly the local TSPs should include the agreed upon action plans and benchmarks to ensure the local traffic and access to Highway 99W is managed in a way that is consistent with broader community goals. Additional alternative mode choices should be ensured for Tigard and King City town centers. Tri-Met should be a major participant in the alternative mode analysis. The results of this cooperative approach should be reflected in the local TSPs and the RTP.

In addition, other possible solutions, such as ODOT's new program for local street improvements along highway corridors, may provide alternatives for managing traffic growth on 99W. Finally, the local TSPs should also consider changes to planned land use that would minimize the effects of growing congestion.

Gateway Regional Center

Gateway is at a major transportation crossroads, and suffers and benefits from the level of access that results. 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 1.2 on a number of east/west corridors in the Gateway area, including Halsey, Glisan, Burnside, Stark and Division streets.

The local TSP should examine the ability of local streets in these areas to absorb travel demand to a degree that cannot be measured in the regional model. A traffic management plan for these streets should be integrated with the overall TSP strategy, but should establish specific action plans and benchmarks for facilities determined to exceed the LOS policy in the local analysis.

Alternative mode choices should be identified to further reduce travel demand. The local TSP should also consider strategies for providing better access to LRT, including park and ride facilities at station areas.

Tualatin Town Center

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 1.2, including Hall Boulevard and Boones Ferry Road. The Tualatin transportation system plan should further evaluate ITS or other system management strategies to further address travel demands and peak-hour expected congestion along Hall Boulevard and Boones Ferry Road entering the town center. In addition, the local TSP should examine the ability of local streets in these areas to absorb travel demand to a degree that cannot be measured in the regional model. A traffic management plan for these streets should be integrated with the overall TSP strategy, but should establish specific action plans and benchmarks for facilities determined to exceed the LOS policy in the local analysis. Alternative mode choices should be identified to further reduce travel demand in addition to placing an emphasis on connectivity, including new development, retrofits and interconnected parking lots in commercial/employment areas. Overall, commuter rail is expected to be an important part of the modal mix of improvements for this part of the region because it offers separate right-of-way for transit service in a corridor that is expected to experience congestion during the morning and evening two-hour peak period. The local TSP should also consider strategies for providing better access to commuter rail.

6.8 Outstanding Issues

The section describes a number of outstanding issues that could not be addressed at the time of adoption of this plan, but should be addressed in future updates to the RTP.

6.8.1 Green Streets Initiative and the ESA

Metro has been awarded a TGM grant to conduct a Green Streets project to address the growing relationship between transportation planning and stream protection. The Green Streets project will address potential conflicts between good transportation design and the need to protect streams and wildlife corridors. The Oregon Salmon and Watershed Plan and recent federal listing of steelhead trout further bolster the need to develop strategies to improve water quality in our region's streams and address declining fish populations in water bodies determined to support salmon and steelhead populations.

Impervious surfaces are hard surfaces that do not allow water to soak into the ground and increase the amount of storm water running into the storm water drainage system. Streets and driveways combine to form the largest source of impervious surfaces in our urban landscape, followed by buildings and parking lots. The public right-of-way covers some 20 percent of our urban landscape. As this region continues to grow, so will the amount of land dedicated for use as public right-of-way. It has become increasingly important to acknowledge the effect of this right-of-way on the health of our environment and identify strategies that minimize conflicts between uses within the right-of-way and our region's lakes, streams and wildlife corridors.

Elements of the Green Streets project include:

- A regional culvert inventory and database that will provide jurisdictions with the latest information on transportation impacts on stream corridors.

- New street connectivity provisions that consider tradeoffs between improved connectivity and potential stream crossing impacts.

- A demonstration project that tests connectivity and environmental design proposals as part of the Pleasant Valley-Damascus urban reserve plan.

- A best practices *Green Streets* guidebook that defines acceptable design solutions where major streets and streams meet.

Final recommendations from the Green Streets project will be incorporated, as appropriate, into the RTP. The project is scheduled for completion in July 2001.

6.8.2 Damascus-Pleasant Valley TCSP Planning

Metro was recently awarded a special federal TCSP grant from the US Department of Transportation to complete an urban reserve plan for the Damascus-Pleasant Valley area of Clackamas County. The work scope for the project is broad, encompassing land-use, transportation, and environmental planning. The project is scheduled to begin in early 2000. The objective of the study is to prepare concept plans for this large urban reserve area in anticipation of future urbanization. Metro will work with a number of local partners to complete the project, including the cities of Portland, Gresham and Happy Valley, and Multnomah and Clackamas counties. A citizen policy advisory committee that includes residents and key stakeholders will guide the project.

The Damascus-Pleasant Valley planning effort will include conceptual transportation planning for regional facilities in the area, and more detailed street planning for northern portions of the area that are already included in the urban area. Transportation and land use scenarios will be developed to reflect a variety of land-use alternatives for the area, and will be analyzed with the regional transportation model.

The preferred alternative will likely include refinements to the Damascus-Pleasant Valley street functional classifications and transportation improvements included in this plan. Proposed amendments to the RTP would be considered upon completion of the study, which is scheduled to conclude in Fall 2002. The preferred alternative will also include future street plans for some local streets that may be incorporated into local TSPs.

6.8.3 Regional Transportation Model Enhancements

Multi-modal Performance Measure Development

Section 660.012.0060 of the state Transportation Planning Rule allows for the development of alternative measures for evaluating transportation function and efficiency. Though the principal measure in this plan measures motor vehicle performance, future updates to the plan should uses a multi-modal measure that better reflects transportation needs and potential solutions. Such measures are already used for Areas of Special Concern identified in Chapter 1 of this plan, but should also be considered in other areas to better evaluate both the need and relative effectiveness of multi-modal transportation solutions.

Tour-Based Modeling and TRO Enhancements

Tour-based modeling represents a departure from the current trip-based model used to develop the RTP. In contrast to the current model, tour-based modeling allows for a much more detailed analysis, since it does not rely on the somewhat generalized assumptions that accompany the current model. In the current system, land-use and transportation assumptions are created for each of 1,260 traffic zones that form the smallest building block for analysis. Tour-based modeling will allow data to be evaluated to the tax lot or parcel level, which will result in a much more detailed and flexible system for testing proposed transportation improvements.

The recently completed Traffic Relief Options (TRO) project was the first Metro effort to use tour-based modeling. This study tested the effects of congestion pricing on travel in the region, and allows relative pricing costs to be evaluated in terms of the ability to redistribute travel and manage congestion. The tour-based model with TRO enhancements could offer a unique new tool for future RTP updates, as the concepts of congestion pricing and tolling are likely to be considered as major transportation strategies.

Bicycle and Pedestrian Modeling

The existing regional transportation model probably 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. While pedestrian trips are generally short enough to make a network assignment impractical, bicycle trips are of sufficient length to be assigned to a network and evaluated at this level. As part of a future update to the RTP or the Regional Bicycle Plan, Metro will develop a bicycle network modeling process that will improve the region's ability to plan for bicycle travel.

The ODOT Willamette Valley Model

ODOT has developed a more detailed set of travel zones for the Willamette Valley, which will allow Metro to better predict travel demand at "gateway" points where Willamette Valley 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 Valley

Model has been used in other Metro transportation projects, and should be considered for the next RTP update.

6.8.4 Connectivity Research

In1996, Metro completed the Regional Street Design study, a project that resulted in new regional street design classifications in the RTP and connectivity provisions in the UGMFP. The connectivity provisions were based on a series of five case studies of subareas within the Metro region. These areas averaged two square miles in area, and ranged from a very urbanized neighborhood in Portland, to developing areas in Clackamas and Washington counties. For each subarea, conceptual street systems were used to evaluate the benefits of varying levels of street connectivity. The results of this analysis are published in Metro's technical report Street Connectivity Analysis (1997).

The connectivity analysis in the 1996 study was limited to motor vehicles, and while the findings from the study are conclusive, the consultant for the project recommended an expanded analysis of one or two of the subareas to confirm the sensitivity analysis included in the original study.

A follow-up study is proposed to confirm the motor vehicle findings of the 1996 study, and expand the analysis to examine the effects of varying levels of connectivity on pedestrian, transit and bicycle travel. This follow-up study could result in proposed changes to existing UGMFP connectivity requirements. This follow-up study is scheduled to be conducted by Metro upon completion of the 2000 RTP update, and recommendations from the study could be considered for adoption in 2001.

6.8.5 Ramp Metering Policy and Implications

During the 1990s, ODOT has increasingly managed access to the principal arterial system (freeways and highways) with ramp metering. This system of signaled ramp controls allows ODOT to remotely manage traffic flows onto the system to streamline merges and prevent bottlenecks during peak travel periods. Ramp meters provide a low-cost alternative for adding system capacity and enhancing safety. However, as traffic volumes continue to increase on the principal arterial system as well as connecting major and minor arterial routes, the practice of ramp metering will become more complex. Already, local concerns about ramp "storage" capacity forcing backups onto local routes have required ramp expansions in some locations where metering is used.

As part of the next update of the RTP, the policy considerations raised by ramp metering should be addressed. The fundamental principle behind ramp metering is to maintain traffic flows on principal routes as a priority over local arterial routes. However, this assumption should be carefully evaluated on the basis of the performance and reliability requirements of the freeway system in the context of the new land use patterns and street classifications and configurations evolving out of the Region 2040 growth concept.

6.8.6 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. During the next several years, Metro will continue to work with ODOT and affected local jurisdictions to complete IGAs for the remaining green corridors, and develop plans for necessary improvements. Such improvements should be incorporated into future updates of the RTP.

6.8.7 2040 Land-use and Transportation Evaluation

Though the RTP contains a number of land-use recommendations, more work is needed to further evaluate RTP and 2040 Growth Concept to determine potential land-use changes that would be beneficial to the transportation system. This evaluation would consider directing growth away from areas that do not have adequate transportation systems, and focusing growth in areas with surplus transportation capacity, as well as improving the balance of jobs and housing to reduce long-distance commuting on the principal arterial system. The evaluation would also include an analysis of the effect of relative wages on the mix of jobs and housing needed to realize transportation benefits.

- *Damascus & Pleasant Valley Urban Reserves:* The overall jobs/housing imbalance in Clackamas County results in heavy travel demand on routes like I-205 and Highway 224 that link Clackamas County to employment areas. A review of the Damascus and Pleasant Valley Urban Reserves should consider the potential for improving jobs/housing balance in these areas. This review should include areas in the Pleasant Valley areas that have been recently incorporated into the urban area, but are largely undeveloped.

- *Beavercreek Urban Reserves:* Urbanization of these reserves would require major improvements to Highway 213 and connecting arterial streets that may be inappropriate in scale and cost, and could negatively impact adjacent areas in Oregon City.

6.8.8 Industrial Lands Evaluation

Additional work is needed in Tier 2, 3 and 4 urban reserve lands to determine where strategic transportation improvements could be implemented to make industrial land more viable for development. This evaluation would identify key areas for industrial development where non-transportation actions would enable industrial development that complements the planned transportation system.

6.8.9 TDM Program Enhancements

The TDM program should be continually updated to include new strategies for regional demand management. One such strategy that should be considered is the Location Efficient Mortgage (LEM). The LEM is a mortgage product that increases the borrowing power of potential homebuyers in "location efficient" neighborhoods. Location efficient neighborhoods are pedestrian friendly areas with easy access to public transit, shopping, employment and schools. The LEM recognizes that families can save money by living in location efficient neighborhoods because the need to travel by car is reduced. Instead of owning two cars, a family living in a location efficient neighborhood could get by with one - or none. The LEM requires bankers to look at the average monthly amount of money that applicants would be spending on transportation if they had to use a car for day-to-day transport and applies it to the servicing of a larger mortgage. This increases the purchasing power of borrowers when buying a home in location efficient neighborhoods, stimulating home purchases in existing urban areas.

6.8.10 Transportation Performance Measures

The 2000 RTP marks the first time in the 18-year evolution of the plan that a performance measure other than congestion is adopted as regional policy. The newly incorporated Area of Special Concern designation allows for a broader definition of performance in mixed use centers and corridors, where transportation solutions solely aimed at relieving congestion are inappropriate for functional, physical, financial or environmental reasons.

However, the Area of Special Concern designation is only a first step toward a more broadly defined set of performance measures. Future updates of the RTP should continue to expand the definition of performance to encompass all modes of travel as they relate to planned land uses. While congestion should be factored into a more diverse set of measures, it should be evaluated in a more comprehensive fashion to ensure that transportation solutions identified in future RTP updates represent the best possible approaches to serving the region's travel demand.

Section 6.8.11 Transit Stop Planning

Tri-Met, in cooperation with regional partners, defined most of the major transit stops as a part of the Primary Transit Network planning process in 1997. Planning for the location of transit station continues as Tri-Met and other transit providers participate in specific corridor planning or implements elements of their strategic plan. Amendments to Figure 1.16 will be necessary as these planning efforts continue. As these planning efforts will include participation from the affected local jurisdictions, amendments to their transportation system plans should be made as planning is completed.

As a part of these planning efforts, transit providers may consider policy standards for station spacing for particular types of service lines, amenities to be provided at transit stops and design standards for those amenities. Jurisdictions are also encouraged to undertake transit stop area plans at major transit stops on rapid bus lines, similar to previous planning efforts for light rail stations.

6.8.12 Special Needs Transportation Study

A collaborative effort is underway for special transportation planning in the tri-county area. As sponsors of this plan, the Areas Agencies on Aging and Disabilities of Washington, Multnomah and Clackamas counties, Tri-Met and the Special Transportation Fund Advisory Committee are coordinating a broad-based effort to create an elderly and disabled transportation services plan. The plan will develop special needs transportation options for both the urban and rural portions of the tri-county area and will be included in the Regional Transportation Plan.

The special needs transportation plan requires a unique, broad-based and inclusive planning process. The plan's sponsors created an Elderly and Disabled Transportation Plan Steering Committee made up of over 20 representative from the tri-county area. Representatives include senior and disabled advocates, agencies and advisory committees, county commissioners, service providers, system users, Metro staff, city staff and other regional transit districts.

In 2000-01, the Steering Committee will meet monthly to:

1. Produce a vision statement for elderly and disabled transportation and assure this vision is included in the RTP;

2. Define the need for transportation services over the next five to ten years;

3. Adopt a service, capital and information plan to meet those needs;

4. Identify financing mechanisms and phasing to implement the plan;

5. Assess organizational and institutional arrangements to best meeting the plan's goals; and

6. Present the plan and advocate for the plans implementation at the local, regional and state levels.

In anticipation of completing this program, interim policies and objectives have been included in the RTP. These policies will be updated during the next RTP update, reflecting the recommendations from the special needs transit plan.

6.8.13 Job Access and Reverse Commute

The Transportation Efficiency Act (TEA-21) of 1998 included the Job Access and Reverse Commute Program to address the mobility challenges facing welfare recipients and low-income persons. This grant program requires States to develop solutions collaboratively with Metropolitan Planning Organizations (MPOs), local and regional transportation agencies and social service providers. The federal Job Access and Reverse Commute Program provides grants to help States and localities develop a coordinated, regional approach to new or expanded transportation services that connect welfare recipients and other low-income persons to jobs and other employment services. Job Access projects support developing new or expanded transportation services such as shuttles, vanpools, new bus routes, guaranteed ride home programs and other transit service expansion for welfare recipients and low-income persons. Reverse Commute projects provide transportation services to suburban employment centers from urban, rural and other suburban locations for all persons.

In response to the federal legislation, the purpose of the Portland Job Access Plan is to connect low-income persons and those receiving Temporary Assistance to Needy Families (TANF) with employment areas and related services in the Portland metropolitan region. The community to be served includes approximately 220,000 people with incomes 150 percent below the poverty level. In 1999, Phase I funding for Portland's Job Access Plan matched existing local resources with federal funds to provide over 87,000 new transit rides for low-income and welfare recipients in Washington, Clackamas and Multnomah counties. The new services improved connections and services to both urban and rural areas of the tri-county area using a combination of public, non-profit and private providers. This has allowed individuals with limited resources to enhance their access to the regional transit network and reduce their transportation burdens. The Regional Job Access Committee represents more than 20 organizations, including Metro, transit providers, social service agencies, child care providers and employers.

Many of today's entry-level positions do not work traditional work hours and the public transportation system is less efficient or non-existent during off-peak shift times. More than 75 employers, representing more than 25,000 employees, have new transportation options for these "hard to serve" shifts from the first year federal Job Access funds. New transportation options range from carpool incentives to evening or early morning shuttle services which allow low-income job seekers access to otherwise unattainable employment locations.

While job training is a key to job placement, the Portland Job Access Plan recognizes that travel training is a key to job retention. Knowing how to use the available transportation services can ease the commute and provide options for childcare. The plan stresses regional coordination and information access as a key to preparing welfare recipients for their commute.

6.8.14 Financial Implementation

JPACT will convene a committee to address transportation funding issues. This committee will consider the information and concepts addressed in Section 5.4 and report back to JPACT with a funding implementation strategy and an analysis of how the strategy addresses the principles identified in Section 5.4.1. JPACT and its transportation funding committee will work with other government agencies, private sector and non-profit agency efforts to address transportation funding in the state and region as it considers its implementation strategy. This effort will lead to proposals for new sources of transportation revenue to build, operate and maintain the RTP Priority system.

Glossary of Transportation Definitions

Accessibility – The ability to move easily from one mode of transportation to another mode or to a given land-use destination. The more places that can be reached for a given cost, the greater the accessibility. Of equal importance is the quality of travel choices to a given destination. Accessibility is governed by both land-use patterns and the number of travel alternatives provided by the transportation system.

Access management – The principles, laws and techniques used to control access off and onto streets, roads and highways from roads and driveways. One of the primary purposes of controlling access is to reduce conflicts between motor vehicles, pedestrians and bicyclists. Examples of access management include limiting or consolidating driveways, selectively prohibiting left-turn movements at and between intersections and using physical controls such as signals and raised medians.

Air quality conformity – This term refers to the Clean Air Act Amendments of 1990, which require the metropolitan region to document with computer modeling that regionally significant transportation projects, if built, would result in (1) automotive emissions lower than those estimated to have occurred in 1990 (2) lower emissions than would result without building the project and (3) total emissions lower than the "mobile source budget" adopted in the regional air quality maintenance plan.

Alternative transportation mode – This term refers to all passenger modes of travel except for single-occupancy vehicle, including bicycling, walking, public transportation, carpooling and vanpooling.

Advanced traffic management system (ATMS) – This term refers to traffic management techniques that use computer processing and communications technologies to optimize performance of motor vehicle, freight and public transportation systems. ATMS is a subset of intelligent transportation system (ITS) technologies and must be addressed as one of the 16 ISTEA planning factors.

Americans With Disabilities Act (ADA) of 1990 – Civil rights legislation enacted by Congress that mandates the development of a plan to address discrimination and equal opportunity for disabled persons in employment, transportation, public accommodation, public services and telecommunications. Tri-Met's ADA transportation plan outlined the requirements of the ADA as applied to Tri-Met services, the deficiencies of the existing services when compared to the requirements of the new act and the remedial measures necessary to bring Tri-Met and the region into compliance with the act. Metro, as the region's metropolitan planning organization (MPO) is required to review Tri-Met's ADA Paratransit Plan annually and certify that the plan conforms to the Regional Transportation Plan. Without this certification, Tri-Met cannot be found to be in compliance with the ADA. ADA also affects the design of pedestrian facilities being constructed by local governments.

Areas of special concern – Designated areas that are planned for mixed-use 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.

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 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.

Bicycle network – A system of connected bikeways that provide access to and from local and regional destinations and to adjacent bicycle networks.

Bikeway – A bikeway is created when a road has the appropriate design treatment for bicyclists, based on motor vehicle traffic volumes and speeds. On-road bikeways include shared roadway, shoulder bikeway, bike lane or bicycle boulevard design treatments. Another type of bikeway design treatment, the multi-use path, is separated from the roadway.

Boulevard intersections – Boulevard design classifications are usually focused on centers and some main streerts where a pedestrian and transit-oriented street design can best complement dense development patterns. However, there many locations where corridors and some main streets intersect along major streets. At these intersections, the confluence of motor vehicle traffic must be managed to limit negative impacts on multi-modal travel and the development of planned land-uses. While boulevard intersections accommodate a significant amount of motor vehicle travel, they are designed with special amenities that promote pedestrian, bicyle and public transportation travel. Pedestrian improvements are substantial, including wide sidewalks, special lighting, crossings on all streets and special crossing features where unusually heavy motor vehicle traffic is present.

Branch railroad – Non-Class I rail lines.

Capacity – The maximum number of vehicles (vehicle capacity) or passengers (person capacity) that can pass over a given section of roadway or transit line in one or both directions during a given period of time under prevailing roadway and traffic conditions.

Citizen advisory committee (CAC) – Selected for a specific issue, project or process, a group of citizens volunteer and are appointed by Metro to represent citizen interests. The RTP citizen advisory committee reviews regional transportation issues.

Clean Air Act Amendments of 1990 – Amendments to the Clean Air Act which specify that no transportation project, whether federally or locally funded, may interfere with attainment or maintenance of federal air quality standards. With respect to transportation planning, this requirement means that the Federal Highway Administration and the Federal Transit Administration must affirm that all regionally significant transportation projects must be identified in the Metro Transportation Improvement Program and must be demonstrated to conform with the 1982 Oregon State (Air Quality) Implementation Plan (SIP). Note: The SIP is currently being amended to show Portland-area attainment of national air quality standards and methods adopted to maintain the standards for a 20-year period. EPA approval of the SIP amendment is expected in late 1997.

Closed-end street – A street that has only one egress to any other existing street or planned street identified in the local Transportation System Plan. Cul-de-sacs, dead-end and looped streets are examples of closed-end streets.

Collector of regional significance – This term refers to routes that connect the regional arterial system and the local collector system by collecting and distributing neighborhood traffic to arterials streets. Collectors of regional significance have three purposes. First, these facilities ensure adequate access to the primary and secondary land-use components of the 2040 Growth Concept. Second, collectors of regional significance allow dispersion of arterial traffic over a number of lesser facilities where an adequate local network exists. Third, collectors of regional significance help to define appropriate collector level movement between juridictions.

Community – For the purposes of the RTP, this term refers to informal subareas of the region, and may include one or more incorporated areas and adjacent unincorporated areas that share transportation facilities or other urban infrastructure. For example, references to the east Multnomah County community usually includes the cities of Gresham, Troutdale, Fairview and Wood Village and unincorporated areas that abut these jurisdictions (see "Regional").

Community connector bikeway – These bikeways connector smaller town centers, main streets, station areas, industrial areas and other regional attractors to the regional bikeway system.

Connector roadway route – A road that connects freight facilities or freight generation areas to the main roadway route.

Congestion management system (CMS) – The CMS is one of the six management systems required by ISTEA. The CMS is to provide "information on transportation system performance and alternative strategies to alleviate congestion and enhance mobility." A key provision of CMS is that consideration must be given to a variety of demand reduction and operational management strategies as alternatives to increases in single-occupant vehicle capacity when addressing deficiencies. This includes methods to monitor and evaluate performance, identify alternative actions, assess and implement cost-effective actions and evaluate the effectiveness of implemented actions.

Contiguous parcels – Parcels of land that are adjacent to one another; not separated by other parcels, public right-of-way or an easement that prevents construction of a street.

Density bonus – This term refers to allowing developers to build at higher densities than stated in local zoning code. This incentive is designed to promote more compact development, reduce trip lengths and promote alternative modes of travel.

Distribution facility – A facility where freight is reloaded from one land-based model to another for further distribution.

Employee Commute Options (ECO) Rule – The ECO Rule is part of House Bill 2214 adopted by the 1992 Oregon Legislature. The rule directs the Department of Environmental Quality to institute an employee trip reduction program. The rule is designed to reduce 10 percent of commuter trips for all businesses that employ 50 or more persons at a single site.

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, etc.)

Functional plan – A limited purpose multi-jurisdictional plan for an area or activity having significant district-wide impact upon the orderly and responsible development of the metropolitan area that serves as a guideline for local comprehensive plans consistent with ORS 268.390.

Greater metropolitan region – Defined as the greater area surrounding and including Metro's jurisdictional area, including parts of Multnomah, Clackamas and Washington counties as well as urban areas in Marion, Columbia and Yamhill counties (see "Metropolitan Region").

Growth Concept – A concept for the long-term growth management of our region, stating the preferred form of the regional growth and development, including if, where, and how much the urban growth boundary should be expanded, what densities should characterize different areas, and which areas should be protected as open space.

High Capacity Transit (HCT) corridor – This is a corridor designation that indicates that the right-of-way in this corridor would allow for future fixed guideway LRT or high-speed, high-quality regional rapid bus that emulates LRT.

High-occupancy vehicle (HOV) – This term refers to vehicles that are carrying two or more persons, including the driver. An HOV could be a transit bus, vanpool, carpool or any other vehicle that meets the minimum occupancy requirements of the specific facility. In practice, only vehicles with two or three or more persons would be able to use a designated "HOV" travel lane.

Impervious surfaces – This term refers to hard surfaces that do not allow water to soak into the ground and increase the amount of stormwater running off into the stormwater drainage system. The majority of total impervious surfaces is from roads, sidewalks, parking lots and driveways. Stormwater runoff from these impervious surfaces reduces the amount of recharge of water to ground water and increases the capacity requirements of the storm water drainage system.

Intermodal facility – A transportation element that accommodates and interconnects different modes of transportation and serves the statewide, interstate and international movement of people and goods. For example, an intermodal yard is a railyard that facilities the transfer of containers or trailers. *See also passenger intermodal facility and freight intermodal facility definitions.*

Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 – The federal highway/public transportation funding reauthorization that, among other features, funds the national highway system and gives states and local governments more flexibility in making transportation decisions. The act places significant emphasis on broadening public participation in the transportation planning process to include key stakeholders, including the business community, community groups, transit operators, other governmental agencies and those who have been traditionally underserved by the transportation system. Among other things, the act requires the metropolitan area planning process to consider such issues as land-use planning, energy conservation, intermodal connectivity and enhancement of transit service. Finally, the act integrates transportation planning with achievement of the air quality conformity requirements embodied in the Clean Air Act Amendments of 1990 and state air quality plans.

Job Access and Reverse Commute Program – A federal program that provides grants to help states and localities develop a coordinated regional approach to new or expanded transportation services that connect welfare recipients and other low-income persons to jobs and other employment services.

Joint Policy Advisory Committee on Transportation (JPACT) – A 17-member committee that consists of elected officials from area cities and counties as well as leaders from public agencies in the region with an interest in transportation. This committee's role is to evaluate transportation needs and coordinate transportation decisions for the region, and give recommendations to the Metro Council.

Land Conservation and Development Commission (LCDC) – The seven-member directorship of Oregon's statewide planning program. The LCDC is responsible for approving comprehensive land-use plans promulgating regulations for each of the statewide planning goals.

Light rail transit– A frequent and high-capacity service that operates on a fixed guideway within an exclusive right-of-way to the extent possible, connecting the central city with regional centers.

Local comprehensive plan – A generalized, coordinated land-use map and policy statement of the governing body of a city or county that inter-relates all functional and natural systems and activities related to the use of land, consistent with state law.

Main roadway route – A road linking major cities, regions of the state or other states.

Major transit stop - Major bus stops, transit centers and light-rail stations on the regional transit network as defined in Figure 1.16.

Marine facility – A facility where freight is transferred between water-based and land-based modes.

Marked pedestrian crossing – Any portion of a roadway at an intersection or elsewhere that is distinctly indicated for pedestrian crossing by lines or other markings on the surface of the roadway.

Metro –The regional government and designated metropolitan planning organization (MPO - see below) of the Portland metropolitan area. It is governed by a 7-member Metro Council elected by and representing districts within Metro's jurisdictional boundaries: Multnomah County and generally the urban portions of Clackamas and Washington counties. Metro is responsible for the Oregon Zoo, solid waste landfills, the Oregon Convention Center, the Portland Center for the Performing Arts, establishing and maintaining the urban growth boundary, and for regional transportation planning activities such as the preparation of the RTP, and the planning of regional transportation projects including light-rail.

Metro Committee for Citizen Involvement (MCCI) – A committee composed of citizen representatives from the tri-counties area, to "advise and recommend actions to the Metro Council on matters pertaining to citizen involvement."

Metro Council – A decision-making body composed of seven members elected from districts throughout the metropolitan region (urban areas of Clackamas, Multnomah and Washington counties). The Council approves Metro policies, including transportation plans, projects and programs recommended by the Joint Policy Advisory Committee on Transportation.

Metro Policy Advisory Committee (MPAC) – A committee established by the Metro charter and composed of local elected officials (including representatives from Clark County, Wash. and the state of Oregon), MPAC is responsible for recommending to the Metro Council adoption of or amendment to any element of the charter-mandated Regional Framework Plan.

Metropolitan Planning Organization (MPO) – An individual agency designated by the state governor in each federally recognized urbanized area to coordinate transportation planning for that metropolitan region. Metro is that agency for Clackamas, Washington and Multnomah Counties; for Clark County, Wash., that agency is the

Southwest Washington Regional Transportation Council (SWRTC, formally the Intergovernmental Resource Center).

Metropolitan region – Defined as the area included within Metro's jurisdictional boundary, including parts of Multnomah, Clackamas and Washington counties (see "Greater Metropolitan Region").

Metropolitan Transportation Improvement Program (MTIP) – A staged, multi-year, intermodal program of transportation projects which is consistent with the metropolitan transportation plan.

Mobility – The ability to move people and goods from place to place, or the potential for movement. Mobility improves when the transportation network is refined or expanded to improve capacity of one or more modes, thus allowing people and goods to move more quickly toward a particular destination.

Motor vehicle level of service (LOS) – A qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort, convenience and safety. An LOS rating of "A" through "F" describes the traffic flow on streets and highways and at intersections. The following table describes general traffic flow characteristics for each level of service on a street or highway:

LOS	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
Greater than F	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)

Multi-use path – A path that is physically separated from motor vehicle traffic by an open space or barrier and is either within the highway right-of-way or within an independent right-of-way, used by bicyclists, pedestrians, joggers, skaters and other non-motorized travelers.

Multi-use path with bicycle and pedestrian transportation function – These paths are paved off-street regional facilities that accommodate bicycle and pedestrian travel and meet the requirements of the Amercian with Disabilities Act. Multi-use paths with a bicycle and/or pedestrian transportation function are connections that are likely to be used by people bicycling or walking to work or school, to access transit or to get to a store, library or other local destination. These paths are generally located near or in residential areas or near centers. Bicycle/pedestrian sidewalks on bridges are also included in this functional classification.

Neighbor city – Nearby incorporated cities with separate urban areas from the Metro urban area, but connected to the metropolitan area by major highways. Neighbor cities include Sandy, Estacada, Canby, Newberg, North Plains and Scappoose.

Oregon Bicycle and Pedestrian Plan – An element of the Oregon Transportation Plan, this plan offers the general principles and policies that ODOT follows to provide bikeways and walkways along state highways. This plan also provides guidance to cities and counties, as well as other organizations and private citizens, in establishing bicycle and pedestrian facilities on local transportation systems.

Oregon's Statewide Planning Goals – The 19 goals that provide a foundation for the state's land-use planning program. The 19 goals can be grouped into four broad categories: land-use, resource management, economic development, and citizen involvement. Locally adopted comprehensive plans and regional transportation plans must be consistent with the statewide planning goals.

Oregon Transportation Plan (OTP) – The state's official statewide, intermodal transportation plan that will set priorities and state policy in Oregon for the next 40 years. The plan, developed by the Oregon Department of Transportation through the statewide transportation planning process, responds to federal ISTEA requirements and Oregon's Transportation Planning Rule.

Park–and-ride – A mode of travel, usually associated with movements between work and home that involves use of a private auto on one portion of the trip and a transit vehicle (i.e., a bus or a light-rail vehicle) on another portion of the trip. A park-and-ride trip could consist of an auto trip from home to a parking lot, and transfer at that point to a bus in order to complete the trip to work.

Parking cash-out – This term refers to 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 for a parking space, or pocket it and then use an alternative mode to travel to work. Measures such as parking cash-out provide disincentives for commuting by single-occupancy vehicles.

Passenger intermodal facility – The hub for various statewide, national and international passenger modes and transfer points between modes (e.g., airport, bus and train stations).

Peak period pricing – Peak period pricing, also known as value, variable or congestion pricing, is a transportation management tool that applies market pricing principles to roadway use. This tool involves the use of user surcharges or tolls on congested facilities during peak traffic periods and may allow a reduced price for HOV use. It is the only user fee that is both location and time specific. Charging drivers per mile of travel during the congested times of the day has been used to relieve traffic congestion by discouraging some vehicle trips and shifting others to alternative modes, facilities, destinations or times of travel.

Pedestrian – A person on foot, in a wheelchair or walking a bicycle.

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

All streets in pedestrian districts are important pedestrian connections.

Pedestrian facility – A facility provided for the benefit of pedestrian travel, including walkways, crosswalks, signs, signals, illumination and benches.

Posted Speed – This term refers to 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.

Public transportation – This term refers to both publicly and privately funded transportation serving the general public, including fixed-route bus and rail service, inter-city passenger bus and rail service, dial-a-ride and demand responsive services, client transport services and commuter/rideshare programs. For the purposed of the RTP, school buses and taxi subsidy programs are not included in this definition.

Rail main line – Class I rail lines (e.g., Union Pacific and Burlington Northern/Sante Fe).

Regional – For the purposes of the RTP, this term refers to large subareas of the region, or the entire region, and usually includes many incorporated areas and adjacent unincorporated areas that share major transportation facilities or other urban infrastructure (see "Community").

Regional access bikeway – The function of regional access bikeways is to focus on accessibility to annd within the central city, regional centers and some of the larger town centers. Bicyclist travel time to and from activity centers is an important consideration on regional access bikeways. Regional access bikeways generally have higher bicyclist volumes because they serve areas of higher population and employment density.

Regional corridor bikeway – Regional corridor bikeways function as longer routes that provide point-to-point connectivity between the central city, regional centers and larger town centers. Regional corridor bikeways are generally of longer distance than regional access bikeways and community connector bikeways. Regional corridor bikeways generally have higher automobile speends and volumes than community connector bikeways.

Regional facility – Any transportation facility designated on the system maps in Chapter 1 of the plan, including:

Regional Street Design System (Figure 1.4)
Regional Motor Vehicle System (Figure 1.12)
Regional Public Transportation System (Figure 1.16)
Regional Freight System (Figure 1.17)
Regional Bicycle System (Figure 1.18)
Regional Pedestrian System (Figure 1.19)

Regional Framework Plan – Required of Metro under the Metro charter, the Regional Framework Plan must address nine specific growth management and land-use planning issues (including transportation), with the consultation and advice of MPAC. To encourage regional uniformity, the plan shall also contain model terminology, standards and procedures for local land-use decision making that may be adopted by local governments.

Regional frequent bus – Frequent bus provides slightly slower but more frequent bus service (service runs at least every 10 minutes) along selected corridors and provides for enhanced passenger amenities (such as covered bus shelters, lighting, curb extensions, signal preemption) along the corridor and at major bus stops.

Regional rapid bus – Rapid bus emulates LRT in speed, frequency and comfort (service runs at least every 15 minutes during the weekday and weekend midday base periods).

Passenger amenities are concentrated at transit centers (such as schedule information, ticket machines, bicyle parking, covered bus shelters, lighting).

Regional Transportation Plan (RTP) – The official intermodal transportation plan that is developed and adopted thorough the metropolitan transportation planning process for the metropolitan planning area.

Regional Urban Growth Goals and Objectives (RUGGOs) – An urban growth policy framework that represents the starting point for the agency's long-range regional planning program.

Reload facility – An intermediary facility where freight is reloaded from one land-based mode to another.

Right-of-way (ROW) – This term refers to publicly-owned land, property or interest therein, usually in a strip, within which the entire road facility (including travel lanes, medians, sidewalks, shoulders, planting areas, bikeways and utility easements) must reside. The right-of-way is usually defined in feet and is acquired for or devoted to multi-modal transportation purposes including bicycle, pedestrian, public transportation and vehicular travel.

Rural area – Those areas located outside the Metro urban growth boundary (UGB).

Rural arterials – These routes serve urban reserve areas, rural reserve areas and green corridors. There are two function categories of rural arterial – urban-to-urban and farm-to-market. Urban-to-urban rural arterials provide key connections to the regional motor vehicle sysytem and 2040 Growth Concept design types within the urban growth boundary. While principal arterials provide primary connections from the Metro region to neighboring cities, urban-to-urban rural arterials also function as secondary connections to neighboring cities. Farm-to-market rural arterials provide farm to market access between urban and rural areas.

Shared roadway – A type of bikeway where bicyclists and motor vehicles share a travel lane.

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.

Significant increase in SOV capacity – For major and minor arterials an increase in SOV capacity is 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 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. For principal arterials, 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.

Single-occupancy vehicle (SOV) – This term refers to vehicles that are carrying one person.

State Transportation Improvement Program (STIP) – A federally required document that allocates transportation funds to a staged, multi-year, statewide, intermodal program of transportation projects **–** consistent with the statewide transportation plan and planning processes and metropolitan plans, TIPs and processes. The metropolitan TIP must be included in the STIP without change.

Technical Advisory Committee (TAC) – A group of technical staff from government agencies participating in the project. The TAC is responsible for producing the base technical information that will ultimately be used by local decision-makers to complete the project purpose.

Telecommute – This term refers to a transportation demand management strategy whereby an individual substitutes working at home for commuting to a work site on either a part-time or full-time basis.

Traffic – The number of motor vehicles in a given location at a given point in time.

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, this technique has been applied to local residential streets and collectors and may include speed bumps, curb extensions, planted median strips or rounds and narrowed travel lanes.

Transit – For purposes of the RTP, this term refers to publicly funded and managed transportation services and programs within the urban area, including light-rail, regional rapid bus, frequent bus, primary bus, secondary bus, minibus, paratransit and park-and-ride.

Transit level of service – The comfort, safety, convenience and utility of transportation service, measured differently for various types of transportation systems.

Transit/mixed-use corridor – Transit/ mixed-use corridors (referred to only as corridors in the 2040 Growth Concept) are priority areas for pedestrian travel. They served by good quality transit lines and provide for densities that are somewhat higher than today. These corridors will generate substantial pedestrian traffic near neighborhood-oriented retail development, schools, parks and bus stops. These corridors should include such design features as wide sidewalks with buffering from traffic, street crossings at least every 660 feet (unless there are no interesections, bus stops or other pedestrian attractions) with special street crossing amenities at some locations, pedestrian scale lighting, benches, bus shelters, awnings and street trees. This designation includes multi-modal bridges.

Transit–oriented development – A mix of residential, retail and office uses and a supporting network of roads, bicycle and pedestrian ways focused on a major transit stop designed to support a high level of transit use. Key features include a mixed-use center and high residential density.

Transportation Control Measures (TCMs) – A measure that is for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions.

Transportation demand management (TDM) – Actions, such as ridesharing and vanpool programs, the use of alternative modes, and trip-reduction ordinances, which are designed to change travel behavior in order to improve performance of transportation facilities and to reduce need for additional road capacity.

Transportation disadvantaged/persons potentially underserved by the transportation system – Individuals who have difficulty in obtaining transportation because of their age, income, physical or mental disability.

Transportation management area (TMA) – As defined in federal regulations, this term refers to "an urbanized area with population over 200,000" and "applies to the entire metropolitan planning area." All locations must meet certain standards and non-attainment TMAs must meet additional planning requirements.

Transportation management associations (TMA) – This term refers to non-profit coalitions of local businesses and/or public agencies dedicated to reducing traffic congestion and pollution and improving commuting options for employees.

Transportation Planning Rule (TPR) – The implementing rule of statewide land-use planning goal (#12) dealing with transportation, as adopted by the state Land Conservation and Development Commission (LCDC). Among its many provisions, the rule includes requirements to preserve rural lands, reduce vehicle miles traveled (VMT) per capita by 20 percent in the next 30 years, reduce parking spaces and to improve alternative transportation systems.

Transportation Policy Alternatives Committee (TPAC) – Senior staff-level policy committee that reports and makes policy recommendations to JPACT. TPAC's membership includes technical staff from the same governments and agencies as JPACT, plus representatives of the Federal Highway Administration and the Southwest Washington Regional Transportation Council (SWRTC); there are also six citizen representatives with strong public involvement skills and diverse backgrounds appointed by the Metro Council.

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. This may include signal improvements, intersection channelization, access management, HOV lanes, ramp metering, incident response, targeted traffic enforcement and programs that smooth transit operations.

Transportation system plan (TSP) – A plan for one or more transportation facilities that are planned, developed, operated and maintained in a coordinated manner to supply continuity of movement between modes, and within and between geographic and jurisdictional areas.

Tri-Met – Tri-County Metropolitan Transportation District, which is the transit agency for most of Clackamas, Multnomah and Washington counties.

Truck terminal – A facility that serves as a primary gateway for commodities entering or leaving the metropolitan area.

Urban area – Those areas located within the Metro urban growth boundary (UGB).

Urban growth boundary – The politically defined boundary around a metropolitan area outside of which no urban improvements may occur (sewage, water, etc.). It is intended that the UGB be defined so as to accommodate all 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 accurately reflects projected population and employment growth.

Urban Growth Management Functional Plan **–** A regional functional plan with requirements binding on cities and counties 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 accessibility on the regional transportation system. All cities and counties in the Metro region shall adopt changes to local comprehensive plans and zoning codes to address these issues within 24 months after the adoption of the plan ordinance by the Metro Council.

Walkway – A hard-surfaced transportation facility built for use by pedestrians, including persons using wheelchairs. Walkways include sidewalks, 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.