Transportation System Plan

December 2013

Community Development Plan

Volume IV

CITY OF GRESHAM

Table of Contents

Acknowledgments

Gresham Staff

Kelly Clarke, Project Manager

Katherine Kelly, Transportation Planning Manager

Steve Fancher, Director, Department of Environmental Services

John Dorst

Ron Papsdorf

Jim Gelhar

Jeff Shelley

Jim Wheeler

Randy Shannon

Ken Koblitz

Pam Nooyen

Jill Bradley

Jean Harrison

Kate Dreyfus

Jonathan Harker

Michelle Kimble

Lauren McGuire

Brian Martin

Jim Burch

Tina Osterink

Janet Young

City Council

Mayor Shane Bemis

Jerry Hinton

Karylinn Echols

Josh Fuhrer

Mario Palmero

Michael McCormick

Lori Stegmann

Planning Commission

Richard Anderson

Bill Bailey, Chair

Hermann Colas, Jr.

Randy Emery

Joy Gannett

Darren A. Hippenstiel

Clint Holly

Transportation Subcommittee

Richard Anderson

Jeffrey Corcoran

Steve Entenman

Jeffrey A. Nelson

Greg Olson

David Russell

Kent Sparby

Craig Totten

Active Transportation Stakeholder Team

Jeff Corcoran, Gresham Transportation Subcommittee

Curtis Duval, Land Use Chair of the Wilkes East Neighborhood Association

Jessica Engleman,TriMet

Roger Geller, City of Portland

Mara Gross, Coalition for a Livable Future

Heidi Guenin, Upstream for Public Health

Jonathan Harker, Director of the Urban Design and Planning Department

Stacy Humphrey, Gresham Urban Design and Planning Department

Christina Hur, Southwest Neighborhood Association member

Colin Maher, TriMet

Jane McFarland, Multnomah County

John Mermin, Metro

Greg Olson, Gresham Transportation Subcommittee

Susan Peithman, Bicycle Transportation Alliance

Steph Routh, Willamette Pedestrian Coalition

Freight Expert Panel

Ron Cazeres, FedEx

Mark Childs, Capacity Commercial

Phil Healy, Port of Portland

Jeff Nelson, Forte Transportation Logistics

Kent Sparby, Roma Foods

David Ulmer, Gresham Transfer

Paul Burkhart, Seko Logistics

School Expert Panel

Charlie McAlister, Transportation Supervisor– Centennial School District

Dr. Chuck Rhoads, Executive Director of Business Services – Reynolds School District

Jerry Jones, Assistant Superintendent and Chief Financial Officer– Gresham-Barlow School District

Rick Larson, Director of Business Services – Centennial School District

Neighborhood Coalition and Associations

ASERT

Centennial

Central City

Coalition

Gresham Butte

Gresham Pleasant Valley

Hollybrook

Kelly Creek

Mt. Hood

North Central

North Gresham

Northeast

Northwest

Powell Valley

Rockwood

Southwest

Wilkes East

Special thanks to Carol Rulla for her dedicated involvement.

East Multnomah County Transportation Committee

Diane McKeel, Multnomah County Commissioner

Deborah Kafoury, Multnomah County Commissioner

Lisa Barton Mullins, Fairview Councilor

Mike Weatherby, Fairview Mayor

Josh Fuhrer, Gresham Councilor

Karylinn Echols, Gresham Councilor

Doug Daoust, Troutdale Mayor

Rich Allen, Troutdale Councilor

Tim Clark, Wood Village Councilor

Pat Smith, Wood Village Mayor

Susie Lahsene, Port of Portland

Phil Healy, Port of Portland

East Multnomah County Transportation Committee Technical Group Members

John Mermin, Metro

Sean Files, Multnomah County

Brian Vincent, Multnomah County

Joanna Valencia, Multnomah County

Kate McQuillan, Multnomah County

Rachel Ferdaszewski, Multnomah County

Allan Berry, City of Fairview

Katherine Kelly, City of Gresham

Mark Gunter, City of Wood Village

Philip Healy, Port of Portland

Steve Kautz, TriMet

Vanessa Vissar, TriMet

Steve Gaschler, City of Troutdale

Rich Watanabe, Region 1 ODOT

Ross Kevlin, ODOT

Rich Faith, City of Troutdale

CHAPTER 1:

Guiding Tenets and Planning Framework

All of Gresham's residents, neighbors and visitors, whether as pedestrians, bicyclists, motorists, transit riders or large freight and service drivers, rely upon a transportation network that's safe, efficient and accessible. This document, Gresham's 2035 Transportation System Plan (TSP), is a 20-year blueprint for implementing this multimodal transportation network. It establishes policies and provides strategies that support the development of Gresham as an economically vital and livable community.

Top: A pedestrian walks along NW Eastman Parkway in downtown Gresham.
Bottom: Transit riders board the MAX Blue Line at Gresham City Hall.

A key objective of the TSP is to create a balanced transportation system where pedestrians, bicyclists and motorists have equal opportunity to get around. The TSP also identifies strategies to facilitate freight and goods movement, improve neighborhood connections and provide an adequate funding forecast.

The TSP not only provides the framework for addressing the transportation needs for Gresham's diverse and vital community, but is also consistent with state, regional and surrounding local plans.

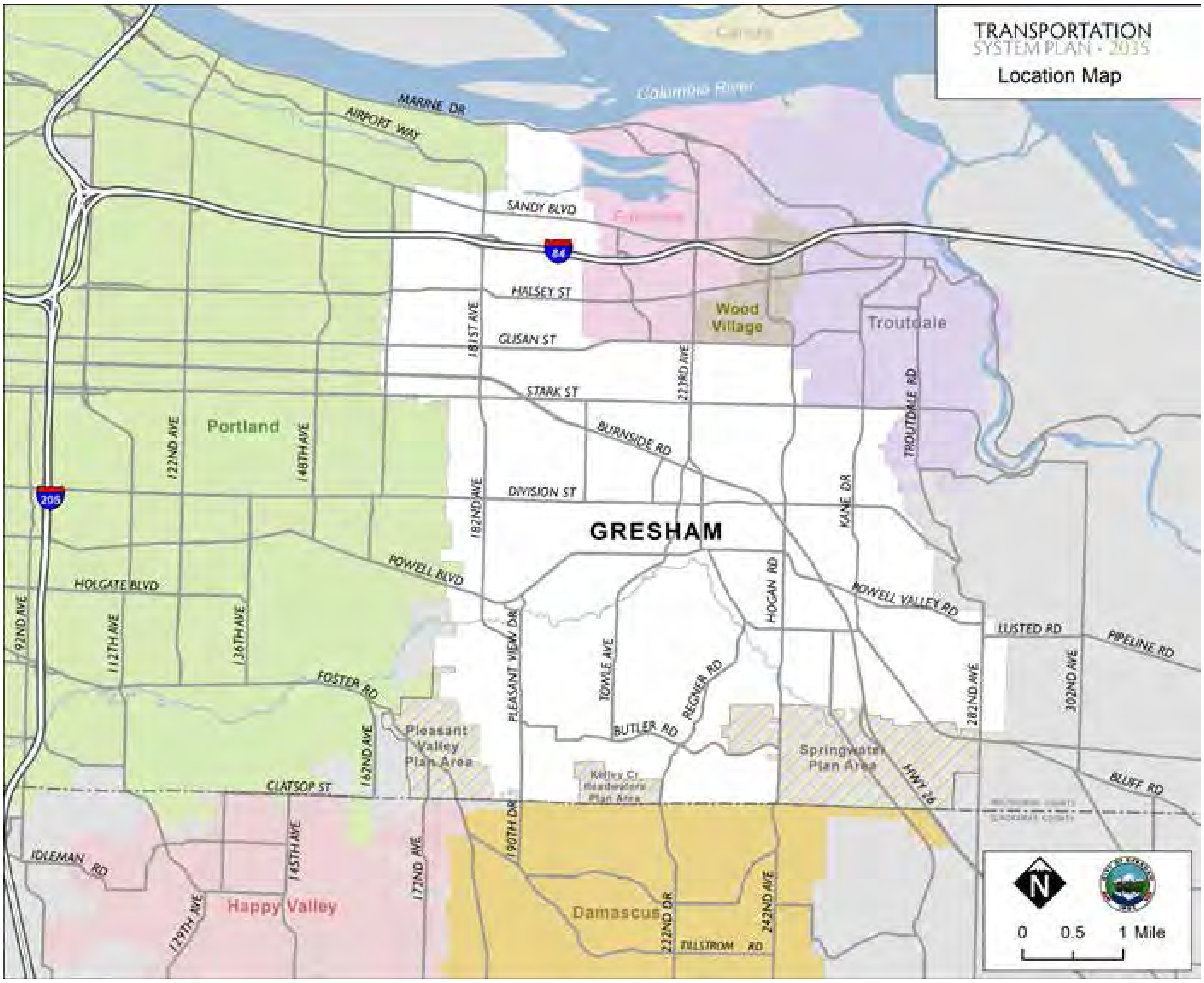
The Gresham City Council adopted the City's first TSP in 2002. From 2002 to 2013, that 2020 TSP served the Gresham community in the development of its multimodal transportation system. During that period Gresham and the region experienced substantial growth and change:

- Gresham's population grew.
- Gresham adopted the Springwater, Pleasant Valley and Kelley Creek Headwaters Plan Areas, which include transportation infrastructure plans for each of these new communities.
- Gresham obtained jurisdiction from the Oregon Department of Transportation (ODOT) and Multnomah County of all roads within its boundary with the exception of Interstate 84 and Highway 26 south of Powell Boulevard.
- Regionally, in 2010 an update to the Regional Transportation Plan was adopted by Metro, the regional Metropolitan Planning Organization.

Accordingly, Gresham began updating its TSP in summer 2010. The update included major review and refinement of the 2002 document, as well as the transportation components of the Springwater, Pleasant Valley and Kelley Creek Headwaters concept plans. Those plans address areas that are planned for future annexation into the City of Gresham. The update process included extensive citizen involvement from a wide spectrum of Gresham's citizens and its regional partners to ensure the TSP meets the community's vision for its transportation system.

While the TSP is a long-range plan for transportation, it is not a static document. The TSP is to be periodically reviewed and updated so that it always reflects the needs and priorities of the community. This chapter establishes the TSP's vision, guiding principles and goals. It also outlines the citizen involvement process and regulatory framework guiding this TSP update.

Map 1: Study Area Location Map



Vision

Gresham's Transportation System Plan will support the growth and development of the city of Gresham as an economically vital and livable community by providing its residents and all transportation system users' safe, pleasant and convenient access and travel within, to and through the city.

The vision statement, created with citizen input in the 2002 and 2035 TSP public processes, drives the guiding principles and goals for Gresham's multimodal transportation network in the 2035 TSP.

Wayfinding signage throughout Gresham provides bicyclists pleasant travel through the city.

Guiding Principles

- Ensure the transportation system provides a safe, secure and attractive travel experience that supports livability and community interaction.
- Ensure access and mobility by increasing multimodal travel options and providing a continuous, interconnected transportation system.
- Facilitate development of a transportation system that aligns with adopted local and regional land use plans, is responsive to the surrounding community and is cost effective to develop and maintain.
- These guiding principles provide a bridge between the vision statement and the more specific policies and strategies listed in Chapter 4.

Goals

The TSP's vision is further defined by the following goals that are explicit themes woven through the TSP's system plans, policies, action measures, project list and funding forecast. The TSP aims to ensure:

Purchasing a MAX light rail ticket in Gresham. A TSP goal is easy accessibility to reaching destinations.

- **Accessibility** – The ability to reach desired goods, services, activities and destinations with relative ease, within a reasonable time, at a reasonable cost and with reasonable choices.
- **Economic Development** – Constructing and maintaining a transportation system that supports new business as well as business retention, expansion and relocation.
- **Efficiency** – Constructing and maintaining a transportation system that performs and functions as fluidly as possible.
- **Environmental Stewardship** – Meeting the needs of the present generation without compromising future needs and resources.
- **Healthy Equity** – Promoting health with adequate biking and walking routes and trails among all transportation system users.
- **Livability** – Tying the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, quality schools and safe streets.
- **Mobility** – The ability to move people and goods to destinations efficiently and reliably.
- **Safety** – Minimizing dangers or risks in the transportation system so users feel safe driving, biking, walking and taking transit.
- **Sustainable Funding** – Ensuring the establishment of funding mechanisms sufficient to support the continuous and safe operation of the transportation system.

Kent Sparby, Freight Expert panelist and City of Gresham Transportation Subcommittee member, summed up the ideal transportation system from a freight perspective: "Continuous movement." While specific to freight movement, Sparby's comment is transferable to all travel modes. How does Gresham's transportation system continue to support the movement of people and goods? How does it provide travel choices? How does it support the city's land uses today and tomorrow? Following the vision, guiding principles and goals, this TSP is the policy and implementation guide to ensure continuous movement.

Citizen Involvement in the TSP Update

Residents provide feedback for the TSP update at a Northwest Neighborhood Association Fair.

Extensive citizen feedback representing all major travel modes contributed to the updated 2035 TSP.

Citizens of Gresham played an integral role in the TSP update through several venues.

Transportation Subcommittee: The Transportation Subcommittee advises the City Council and City staff on transportation and traffic issues, federal, state and local policies, standards, plans and capital programs. The Transportation Subcommittee advised staff on the update of all components of the TSP.

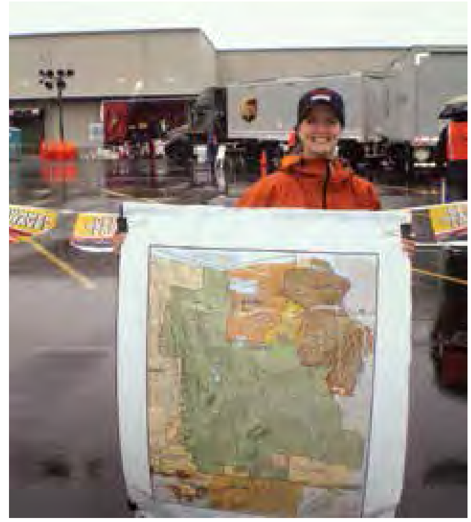
Neighborhood Coalition and Associations: Staff visited the Neighborhood Coalition and all active Neighborhood Associations throughout the TSP update process to receive feedback regarding the current transportation system and proposed changes to address identified opportunities and issues. Staff also attended Neighborhood Information Fairs held by the Neighborhood Associations in order to provide TSP update information and to receive feedback.

Business Associations: Staff visited Gresham business associations, including the Gresham Downtown Development Association, Historic Gresham Downtown Business Association, the Gresham Redevelopment Commission and the Gresham Area Chamber of Commerce throughout the TSP update process to receive feedback regarding the current transportation system and proposed changes to address identified opportunities and issues.

Active Transportation Stakeholder Team: An Active Transportation Stakeholder Team was established for the TSP update and comprised of Gresham's regional partners and health experts including representatives from: Upstream Public Health, Coalition for a Livable Future, Bicycle Transportation Alliance, Willamette Pedestrian Coalition, TriMet, Metro, Multnomah County and the City of Portland. The team advised on refinements to the 2035 TSP's vision, goals, guiding principles, policies and action measures with a focus on further integrating the bicycle, pedestrian and transit travel modes into the City's multimodal transportation system.

Metro and the East Metro Connections Plan (EMCP): Metro led a two year planning effort to analyze present and future transportation challenges within the east-Metro area. The study boundary included the cities of Gresham, Fairview, Troutdale and Wood Village and portions of Multnomah and Clackamas Counties. Plan partners included the study area jurisdictions as well as the City of Portland, ODOT, the Port of Portland, TriMet, Multnomah County Health Department, East Metro Economic Alliance, Coalition of Gresham Neighborhoods, Mt. Hood Community College, Multnomah County Bicycle and Pedestrian Citizen Advisory Committee, the cities of Happy Valley and Damascus, El Programa Hispano, local businesses and the Columbia Slough Watershed. The EMCP was the first mobility corridor refinement plan to be conducted following adoption of the 2035 Regional Transportation Plan. It implemented a new approach to allocating limited transportation dollars to ensure regional transportation investments support local land use, community, economic development and the environment. The EMCP analysis contributed to the baseline and forecasting data utilized for this TSP update. It also helped to frame the TSP update's policy direction. Finally, findings from the EMCP included a list of transportation projects that is incorporated into the 2035 TSP project list as prioritized projects.

Freight Stakeholders and Freight Expert Panel: Staff coordinated with Metro through the EMCP to convene a Freight Expert Panel and to reach out to freight stakeholders. The freight experts identified two types of freight movement with differing needs: regional and local. Regional freight movement prefers continuous movement while local freight must be able to access the local businesses. Above all, the freight community values safety, maintaining capacity and mobility on roadways, and limiting conflicts between large service vehicles and pedestrians/bicyclists.



City staff attended a Truck Driving Championship to get feedback on driving freight through Gresham and east Multnomah County.

School Expert Panel: Staff coordinated with Metro through the EMCP to convene a Schools Experts Panel comprised of members from the Centennial, Reynolds and Gresham-Barlow School Districts. Members stressed the importance of sidewalks, recognition of year-round school transportation needs, varying times school days start and end, limited funding for transportation needs, and safety.

Community Forums: Staff held two TSP community forums to present and receive feedback regarding all elements of the TSP. Staff also participated in two forums held for the City's Urban Design and Planning Department's Healthy Eating Active Living (HEAL) project, as the transportation system plays an important role in each resident's ability to access such amenities as parks and grocery stores and to live actively.

City transportation fairs for the public featured TSP update project information.

Gresham Transportation Fair: The Transportation Planning Division held two Transportation Fairs during the TSP update process. The Fairs included a bike rodeo, bike helmet sales for children, a semi-truck set up to show blind spots and TSP update project information.

Social Media: Staff used several social media outlets throughout the TSP update process including a project webpage providing project updates and materials for public review, Facebook, Twitter, newspaper ads and email groups. Staff also coordinated with Metro through the EMCP to launch and promote an online survey available to all of East Metro residents and transportation system users. The online survey gathered feedback regarding opportunities and constraints within the transportation existing system as well as priorities for future improvements.

A freight truck passes through Gresham on Interstate 84. The City must maintain a TSP that complies with the state's transportation system plan.

Regulatory Framework

The following documents provided a regulatory framework for the TSP update:

Transportation Planning Rule:

The state of Oregon has adopted 19 statewide planning goals that are required to be implemented through a comprehensive plan for each city and county. These comprehensive plans must specify the manner in which the land, air and water resources of the jurisdictions will be used and must also determine the need for improved public facilities.

With the adoption of the statewide Goal 12, the Transportation Planning Rule (TPR), Gresham must adopt and maintain a Transportation System Plan (TSP) that complies with the TPR, the State of Oregon Transportation System Plan (OTP), and Metro's Regional Transportation Plan (RTP). In addition, the TPR describes specific elements and analysis that local and regional transportation system plans must include. It requires the plans to target enhanced transportation choices, reductions in vehicle miles traveled and a strong connection between land use and transportation planning.

Local and regional transportation system plans must also examine possible land use solutions to transportation problems and identify multimodal, system management and demand management strategies to address transportation needs.

Regional Transportation Plan:

The Regional Transportation Plan (RTP) is developed and maintained by Metro, the Portland regional Metropolitan Planning Organization. Gresham participates on regional committees responsible for the on-going development of the Regional Transportation Plan. These include the Joint Policy Advisory Committee on Transportation (JPACT), comprised of elected officials, and the Transportation Policy Alternatives Committee (TPAC), comprised of technical staff.

Interstate 84 at the 181st Avenue Exit in Gresham. Gresham's TSP must maintain consistency with policies established by the Regional Transportation Plan.

The key objective of the Regional Transportation Plan is to identify a transportation system that will adequately serve the travel needs of the Portland Metropolitan area for the next 20 years. The RTP is based on projections for 20-year regional population and employment growth, evaluates expected travel demands and patterns, and examines the impacts of expected travel on the current "committed" transportation system (i.e., projects with committed construction funding). It also recommends an alternative plan needed to meet Year 2035 travel demands and regional goals and recommends funding mechanisms and other implementing options to achieve the preferred regional plan. Gresham's TSP must maintain consistency with polices established by the RTP.

Urban Growth Management Functional Plan:

The Urban Growth Management Functional Plan establishes regional policies that apply to all 24 cities and counties within the Metro region. The purpose of the functional plan is to implement regional goals and objectives adopted by the Metro Council as the Regional Urban Growth Goals and Objectives (RUGGO), including the Metro 2040 Growth Concept. The functional plan is the primary regional policy tool and contains both "recommendations" and "requirements" for changes in local transportation plans.

Region 2040:

The Region 2040 Growth Concept Plan states the preferred form of regional growth and development and identifies the location of future land uses and activity centers. Fundamental to the Growth Concept is a multimodal transportation system that assures mobility of people and goods throughout the region.

Within the framework of the Growth Concept is a network of multimodal corridors and regional through-routes that connect major urban centers and destination. Through-routes provide for high-volume auto and transit travel at a regional scale, and ensure efficient movement of freight. Within multimodal corridors, the transportation system will provide a broader range of travel options, including auto, transit, bicycle, and pedestrian networks that allow choices of how to travel in the region. These travel options will encourage the use of alternatives to the auto, a shift that has clear benefits for the environment, the quality of neighborhoods and urban centers, and addresses the needs of those without access to automobiles.

Oregon Transportation Plan:

The Oregon Transportation Plan sets polices and investment strategies for Oregon's multimodal transportation system. The statewide plan calls for a transportation system marked by modal balance, efficiency, accessibility, environmental responsibility, connectivity among places, connectivity among modes and corridors, safety, and financial stability.

Interstate 84 in Gresham is part of a multi-modal transportation system throughout the region.

CHAPTER 2:

Existing conditions

Overview

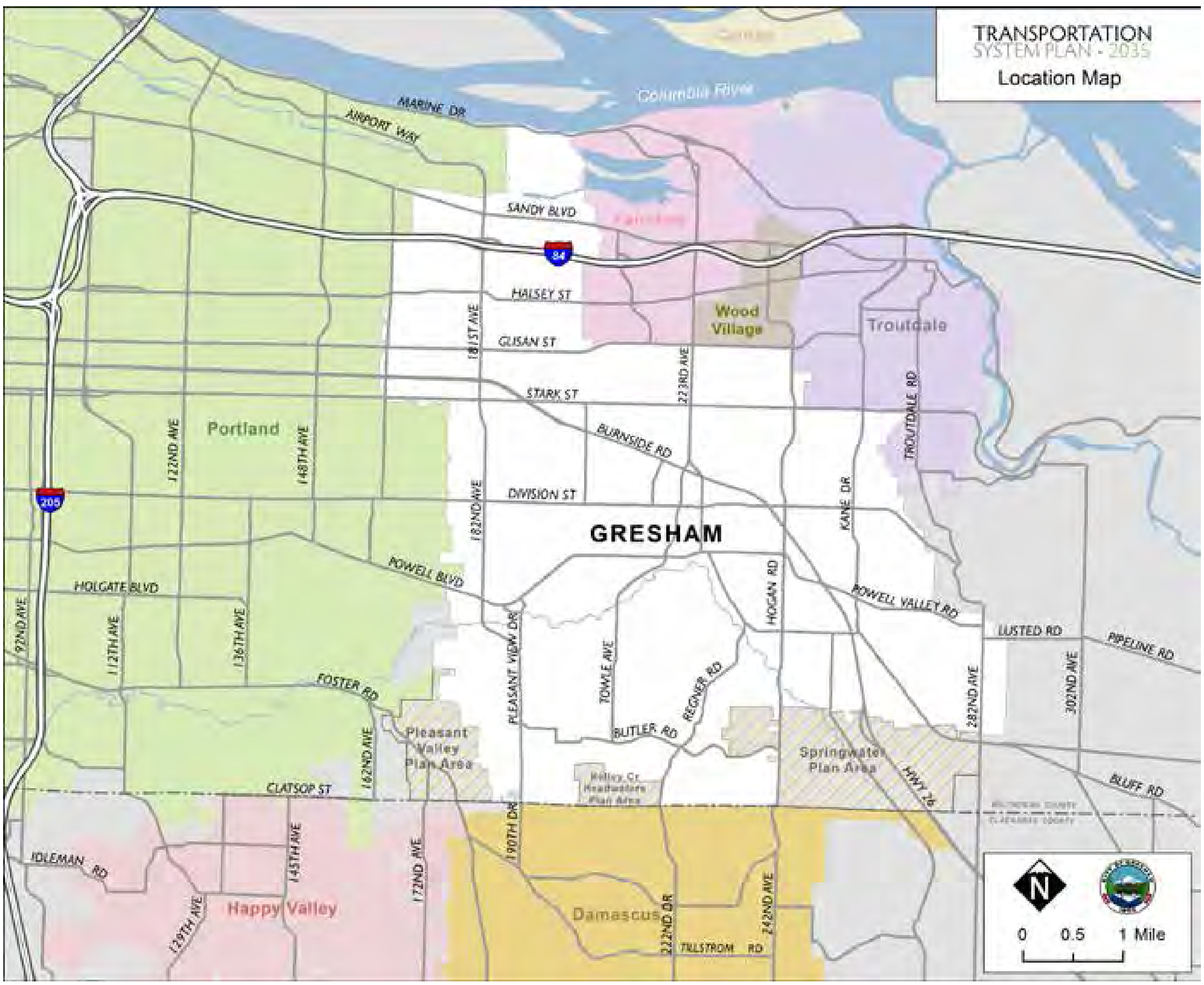
This chapter presents an inventory and assessment of existing conditions that impact and are related to Gresham's transportation facilities and programs.

1. Study Area

Gresham's city limits and the Springwater, Pleasant Valley and Kelley Creek Headwaters Plan Areas are considered the study area for this TSP (Map 2).

Pleasant Valley and its future development is part of Gresham's study area for the TSP update.

Map 2: Study Area Location Map



2. Community Development Plan

City of Gresham

Gresham's Community Development Plan is the guide for the City's development over the next 20 years and beyond. The TSP supports Gresham as it builds out to the Community Plan's ultimate vision and respects the city's natural features through sustainable design.

As shown on the City's Community Plan Map (Map 3) and Graphic 1, 60% of the city, Pleasant Valley and Springwater lands are zoned as low density residential development. Low density residential lands are located throughout the city and Pleasant Valley and are clustered in Springwater's western half. Medium and high density residential lands comprise 10% of the City's land uses. They are located primarily north of Powell Boulevard. Mixed-use and centers districts also have residential components. They are located along transit streets and within the City, Pleasant Valley and Springwater centers as discussed below.

While commercial lands comprise only 4% of the City's land use districts, mixed-use and centers districts have a strong commercial component and make up 9% of these land use districts. Commercial districts are centrally located in Gresham around Powell Boulevard, Eastman Parkway, Burnside Road and Hogan Drive. The City's mixed-use districts are located along transit streets and within the city, Pleasant Valley and Springwater's centers as discussed below.

Industrial lands make up 16% of the City's land uses. Gresham's major industrial lands are located primarily west of 223rd Avenue between Stark Street and Glisan Street and in north Gresham between Halsey Street and the Columbia River. Other smaller scale employment centers exist in Rockwood and Downtown as discussed below. Springwater includes regionally significant industrial lands, also discussed below.

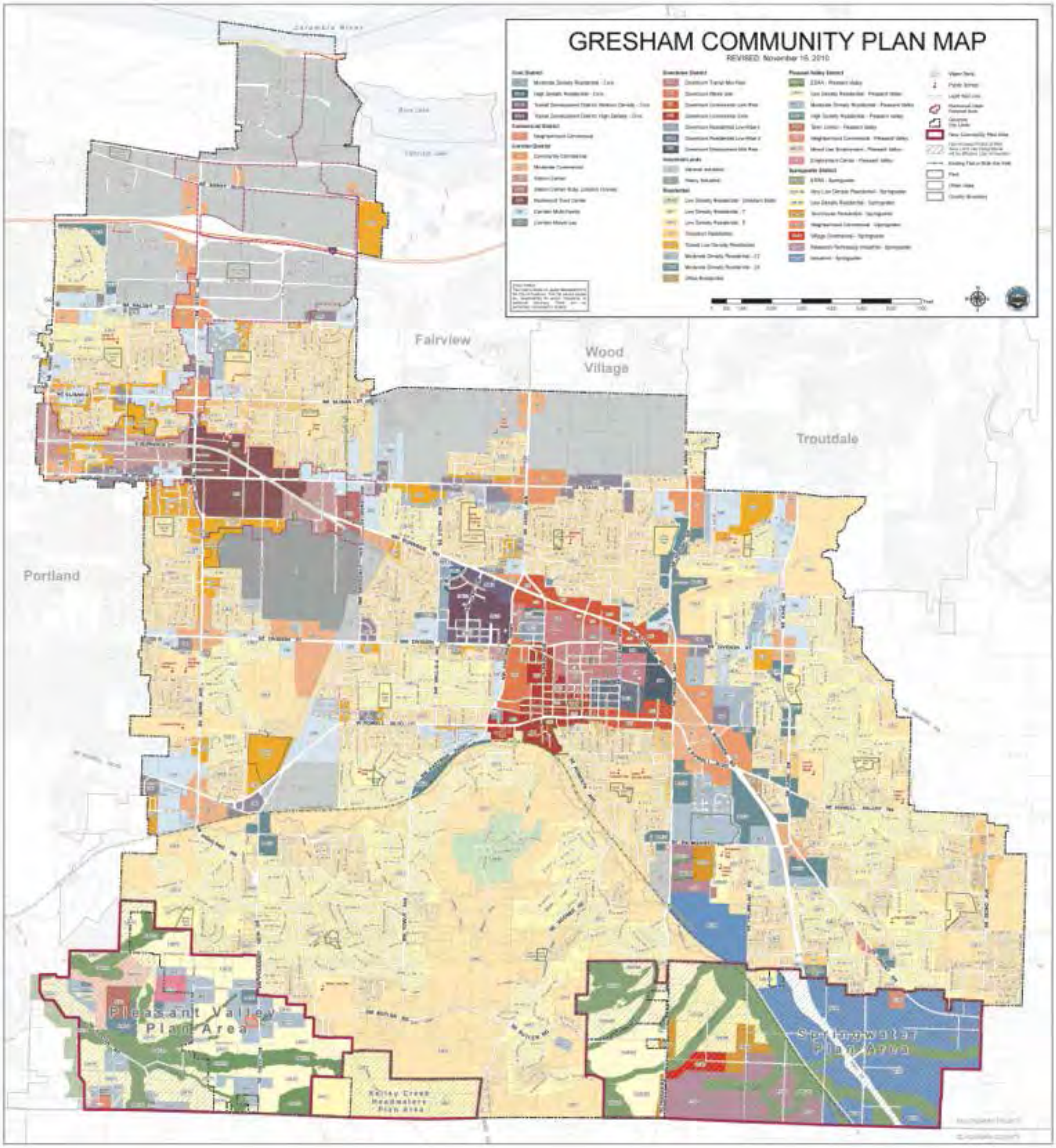
Top: MAX light rail serves The Crossings at Gresham Station, a mixed-use district located along TriMet's transit line.

Bottom: Watershed restoration work at the Fairview Creek Headwaters within the City boundary.

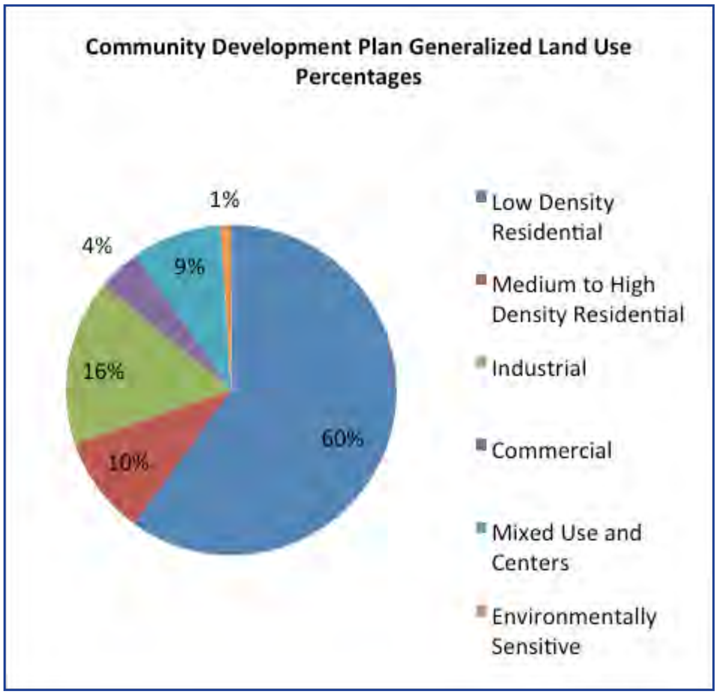
The City's land use policies encourage housing mixed with commercial uses in transit corridors, near MAX light rail stations and within the Central Rockwood Plan area, Downtown and Civic Neighborhood Plan Districts. Associated transportation strategies support efforts to fully implement these land use policies.

The study area protects environmentally sensitive lands through land use districts (zoning) in Pleasant Valley and Springwater and overlay districts (i.e. Habitat Conservation Area and Floodplain) within the City boundary. The environmentally sensitive land district designations located within Pleasant Valley and Springwater comprise 1% of the study area's overall land districts. The intent of these land use districts is protection of the Springwater and Pleasant Valley area's environmentally sensitive lands. The City's land use program protects habitat with a habitat conservation overlay and hillsides with a hillside protection overlay. Wetlands and flood plains are also protected through the land use overlays and code that establishes development regulations for these environmentally valuable areas. The land use overlays are shown in the environmental section of this chapter.

Map 3: Gresham Community Plan Map



Graphic 1: Land Use Percentages



The Gresham Station retail area in the Gresham Regional Center serves multiple transportation modes.

The following are additional land use designations that receive unique planning consideration (Map 4):

Regional and Town Centers

The Portland Metro region, which includes Gresham, has identified regional and town centers as areas of focus for investment and forecasted growth. Regional centers are intended for commerce and local government services, serving a market area of hundreds of thousands of people. Regional centers are also focus areas for transit, bicycle, pedestrian and roadway improvements. Town centers are meant to provide localized services to tens of thousands of people and be well served by transit as well as bicycle and pedestrian facilities.

Gresham Regional Center

The Gresham Regional Center encompasses the Downtown and Civic Neighborhood Plan Districts. The Downtown area's vision is to be one of the region's great urban settings – a lively, diverse and appealing place to live, work, shop and play as the basis for a truly sustainable city. It incorporates intensive commercial, residential and mixed-use development and provides a bicycle and pedestrian-oriented, transit supportive environment.

Civic Neighborhood is west of, and adjacent to, Downtown. It is conceived as an extension of Downtown as a mixed-use and transit-oriented neighborhood. Planned land uses are designed to work together to result in a lively, prosperous neighborhood that serves as an attractive place to live, work, shop and recreate with less reliance on the automobile that is typical elsewhere in the community.

Rockwood Town Center

The Central Rockwood Plan Area is an important sub-center in Gresham. It is envisioned as a "live-work" district, where jobs, commercial services and a variety of housing is encouraged. The organizing principle for the area consists of a central core at the triangle formed by NE 181st Avenue, Burnside Street and Stark Street and a strong orientation to MAX stations within the center (181st Avenue, 188th Avenue and 197th Avenue).

Pleasant Valley Town Center

The planned Pleasant Valley Town Center will primarily serve the needs of the local Pleasant Valley community and will include a mix of retail, office, civic and housing opportunities. It will be located south of Giese Road and east of 172nd Avenue.

Transit Corridors and Light Rail Station Centers

Transit Corridors are identified along high frequency transit lines while station centers are areas within one-quarter mile of a light rail station. Both corridors and station centers feature a high-quality pedestrian environment and provide convenient access to transit. Typical new developments in these areas include row houses, duplexes, one to three story office and retail buildings and mixed commercial and residential developments.

Title 4 Land

The study area includes 19,900 acres of industrial and employment land, also known as **"Title 4"** land, including two Regionally Significant Industrial Areas (RSIAs). The RSIAs are located near the region's most significant transportation facilities that enable the efficient movement of freight. The two RSIAs in Gresham are north of Sandy Boulevard and in the Springwater Plan area east of Telford Road.

To improve the economy, Title 4 seeks to provide and protect a supply of sites for employment by limiting the types and scale of non-industrial uses in Regionally Significant Industrial Areas (RSIAs), Industrial and Employment Areas. Title 4 also seeks to provide the benefits of "clustering" to those industries that operate more productively and efficiently in proximity to one another than in dispersed locations. Title 4 further seeks to protect the capacity and efficiency of the region's transportation system for the movement of goods and services and to encourage the location of other types of employment in Centers, Corridors, Main Streets and Station Communities.
- Metro

Plan Areas and Non-Annexed Areas

The study area includes three plan areas: Pleasant Valley, Springwater and Kelley Creek Headwaters. Small portions of these districts have been annexed into the City of Gresham proper since 2005.

Pleasant Valley Plan Area

Pleasant Valley was added to the Urban Growth Boundary in December 1998 to accommodate the region's forecasted population growth and provide a more balanced distribution of housing and employment within the region. Gresham City Council adopted the Pleasant Valley Plan District and incorporated it into the City's Comprehensive Plan in January 2005. It is comprised of 1,532 acres of planned residential and employment uses located south and east of Gresham's current city limits and is anticipated to be a community of 12,000 residents and to produce more than 5,000 new jobs. A Transportation System Plan was adopted as part of that process and includes new streets, bikeways and pedestrian facilities.

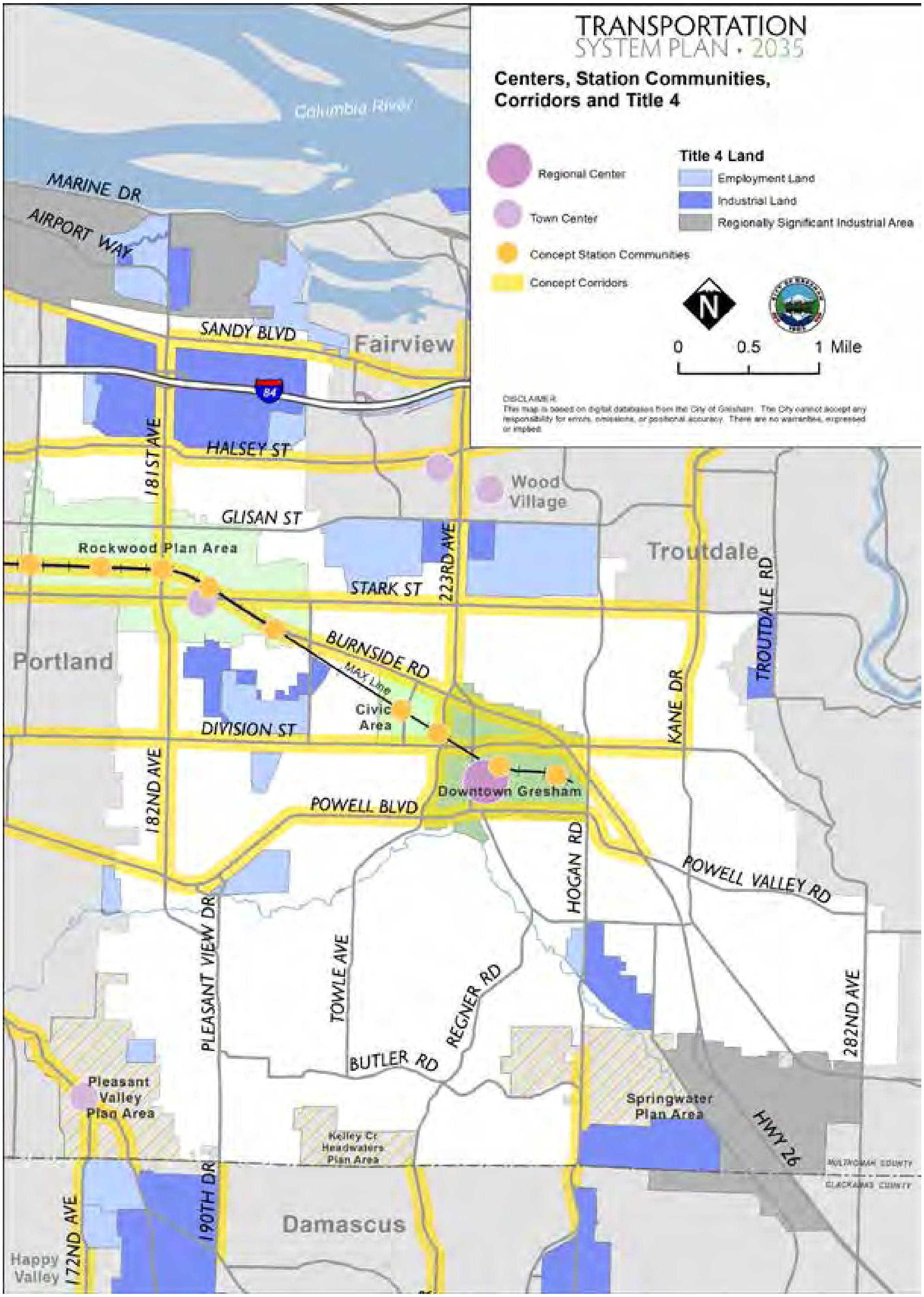
Springwater Plan Area

Metro added most of Springwater's 1,272 acres to the Urban Growth Boundary in 2002, in large part to address the short supply of industrial employment land in Gresham and region. The area is located southwest and adjacent to Gresham, along US Highway 26. Springwater is planned as a community with 4,500 residents and a focus on industrial/high-tech campuses that attract business and bring an infusion of 15,000 new jobs to Gresham. A master plan for the area was adopted in 2005 and includes a Transportation System Plan. In 2011, an amendment to that Transportation System Plan was adopted by Gresham City Council. The amendment, an Interchange Area Management Plan, identified a preferred alternative for the location of an interchange near the intersection of US Highway 26 and 267th Avenue and associated road, bicycle and pedestrian networks.

Kelley Creek Headwaters Plan Area

The Kelley Creek Headwaters Plan Area encompasses 163 acres and its urbanization plan applies low density residential zoning with natural resources protection and steep slope development restrictions to the entire area.

Map 4: Centers, Station Communities, Corridors and Title 4



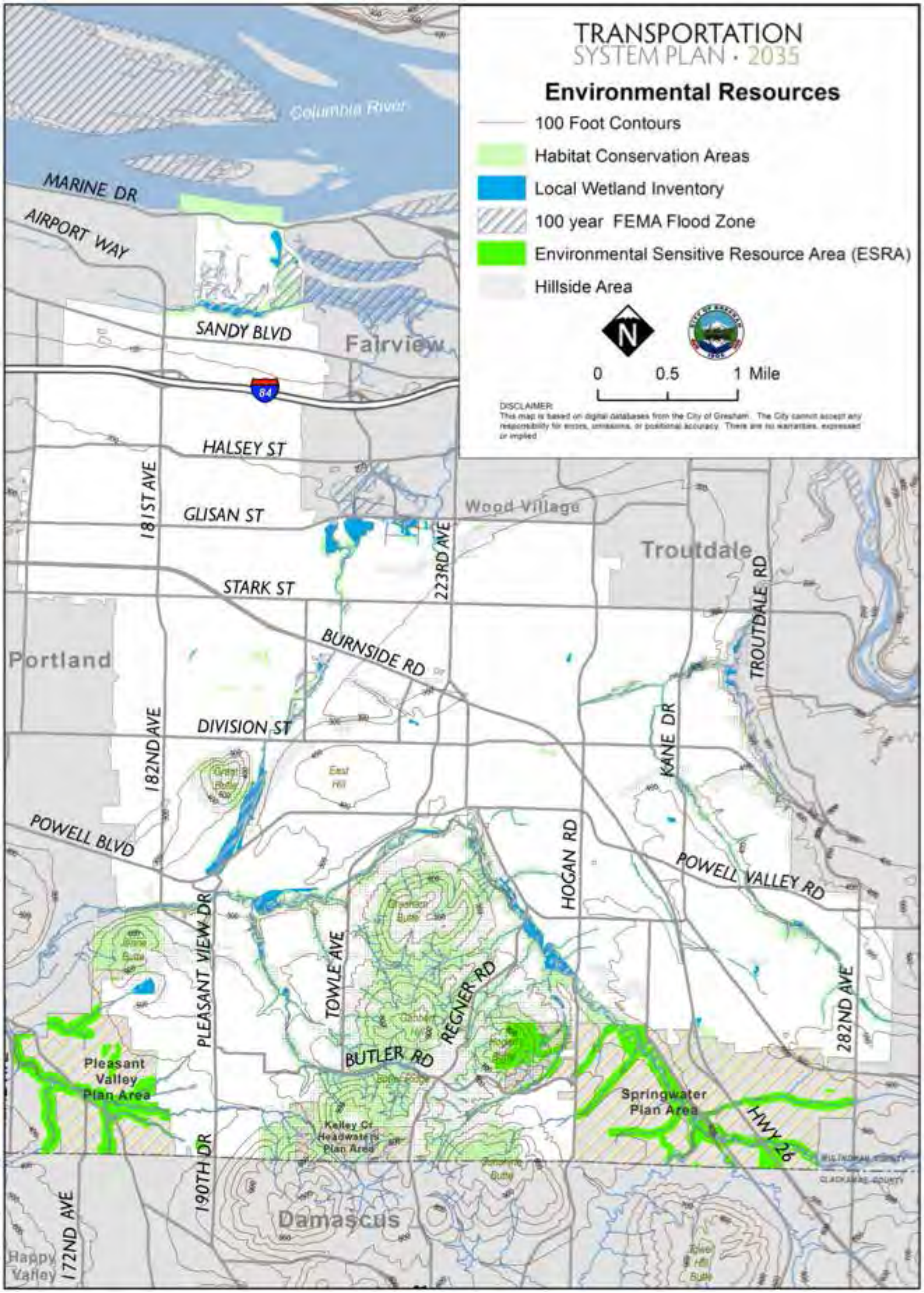
3. Environmental Conditions

The Gresham landscape north of Powell Boulevard consists of nearly level to gently rolling terrain. The City's boundary extends north to the Columbia River. The Columbia Slough parallels Sandy Boulevard to the north. Fairview Creek and Kelly Creek are the prominent water bodies flowing in a northerly direction through Gresham. A significant wetland is situated north of Powell Boulevard and east of Birdsdale Avenue. Grant Butte provides elevation to the area north of Powell Boulevard.

South of Powell Boulevard, the City's terrain is much more dramatic with Gresham Butte, Gabbert Hill, Butler Ridge, Hogan Butte and Towle Butte as defining features. Johnson Creek and its tributaries define this area as a regionally significant water body. Pleasant Valley and Springwater both feature environmentally sensitive lands and rolling topography.

View of Gresham Butte from E. Powell Boulevard.

Map 5: Environmental Resources



4. Demographics and Socioeconomic Conditions

Based on 2010 Census data, 34.2 percent of Gresham's residents are younger than 18. © Susan Frost

Gresham has evolved from a small agricultural community to the Portland Metro region's second largest city and Oregon's fourth largest city. It has experienced rapid population growth over the past three decades, growing from 33,005 residents in 1980 to 105,594 in 2010 - a 220% increase.

Based on 2010 Census data, 34.2% of Gresham's residents are younger than 18. This is a younger population than Oregon's population as a whole, which, based on 2010 Census data, is 28.8% under the age of 18. Gresham's population by race is shown in Table 1.

Table 1: Population by Race

City of Gresham Race per 2010 US Census	Percent of Total Population
White/Caucasian	76%
Black/African American	3.5%
American Indian/Alaskan Native	1.3%
Asian	4.3%
Native Hawaiian/Pacific Islander	0.7%
Two or more races	4.5%
Hispanic or Latino all races	18.9%

Population growth is likely to continue in Gresham and will also begin to occur in the Plan Areas of Pleasant Valley and Springwater.

Gresham's socioeconomic conditions were evaluated in order to conduct the environmental justice analysis for transportation needs. The Environmental Protection Agency describes environmental justice as, "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."[1] In the context of this TSP, environmental justice analysis seeks to help the City meet the environmental justice fundamental principles established by the US Department of Transportation:

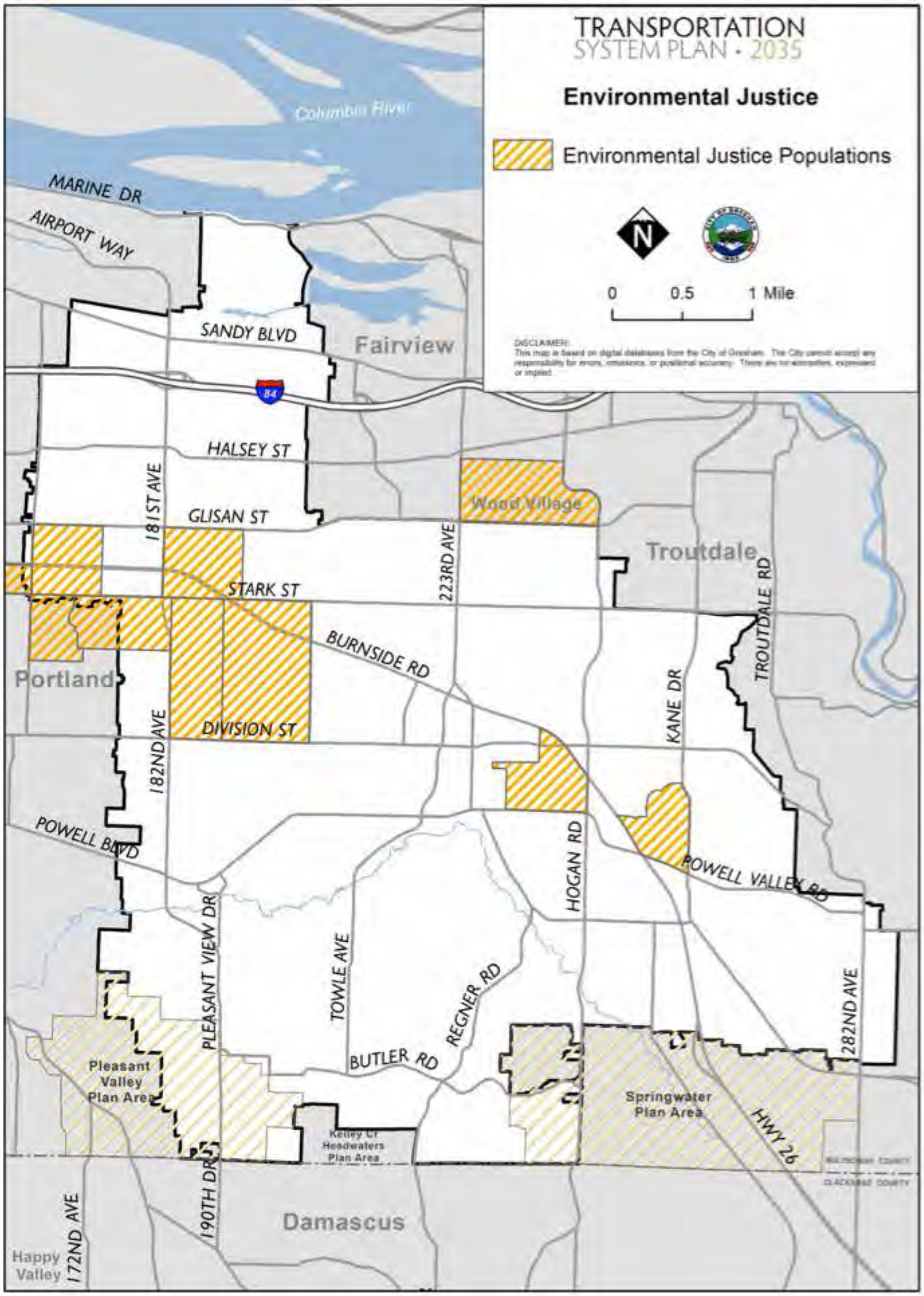
- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including interrelated social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations. [2]

1 *United States Environmental Protection Agency, Compliance and Enforcement, Website, 2013*

2 *United States Department of Transportation, Federal Highway Administration, Environmental Justice Facts, Website, 2013*

The approach to identify environmental justice populations included using the American Community Survey data to find block groups whose inhabitants represent a population that is greater than or less than one standard deviation from the regional mean for categories including low income, minority populations, non-English speaking, elderly and disabled. These areas are averaged and shown on the Environmental Justice map to indicate higher numbers of underserved citizens. While it is known that this data can have a margin of error at the block group level, care is taken to ensure the most accurate representation.

Map 6: Environmental Justice



5. Commute Sheds

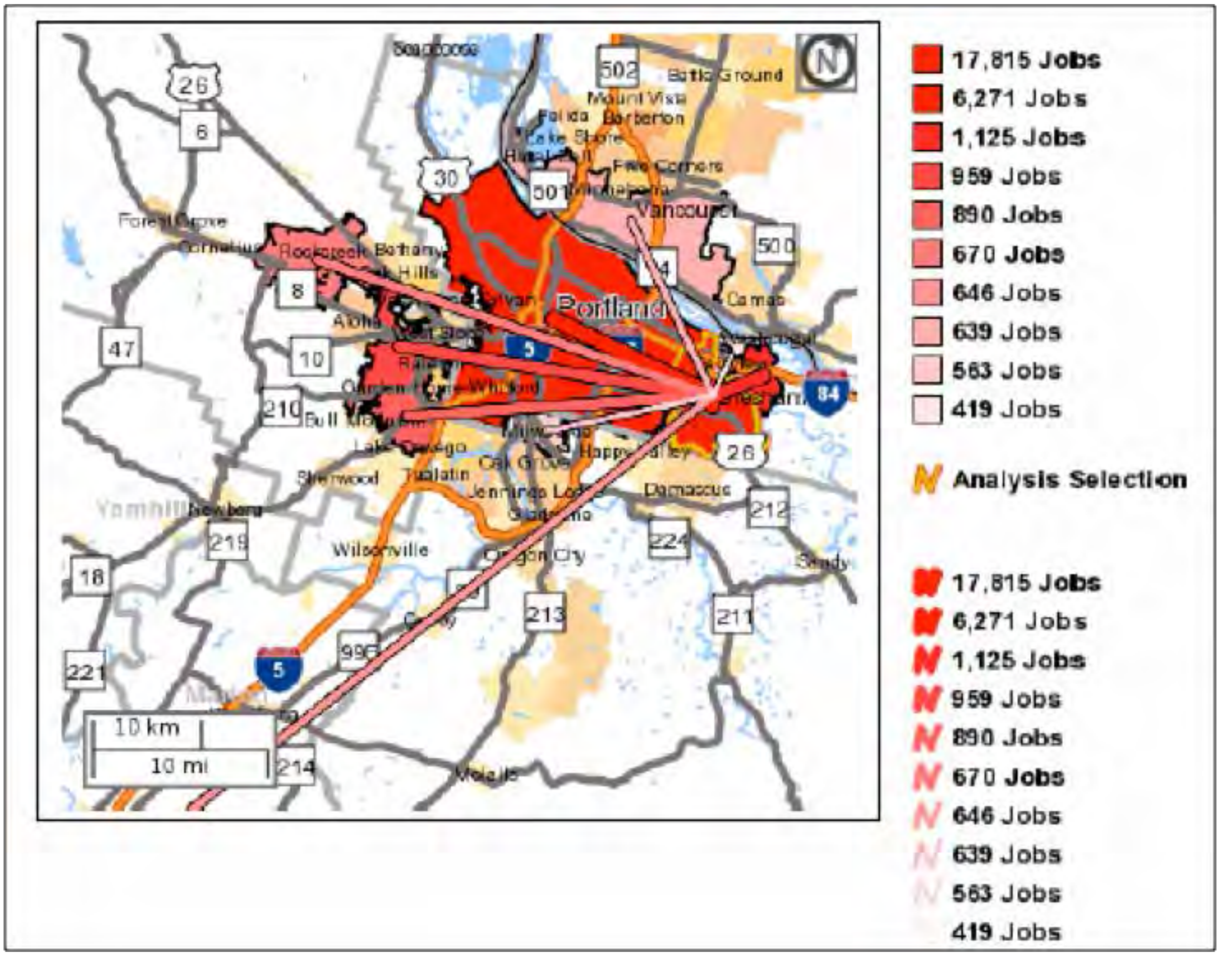
Commute sheds describe where Gresham's workers live and where they are employed. Gresham has 39,267 workers. Table 2 and the associated Graphic 2 below show where these workers commute for their job. Of the total workers, 45.4% commute to Portland for their job, 16% work in Gresham and the remaining travel throughout the Metro region and other locations for their work. This data was compiled by WorkSource Oregon Metro East.

Table 2: Where Gresham Workers are Employed

Location	Jobs Count	Percentage
Portland city, OR	17,815	45.40%
Gresham city, OR	6,271	16.00%
Troutdale city, OR	1,125	2.90%
Beaverton city, OR	959	2.40%
Tigard city, OR	890	2.30%
Hillsboro city, OR	670	1.70%
Salem city, OR	646	1.60%
Vancouver city, WA	639	1.60%
Milwaukie city, OR	563	1.40%
Fairview city, OR	419	1.10%
All Other Locations	9,270	23.60%
Total Primary Jobs	**39,267**	**100.00%**

Commuters get off the MAX train at Gresham City Hall.

Graphic 2: Where Gresham Workers are Employed



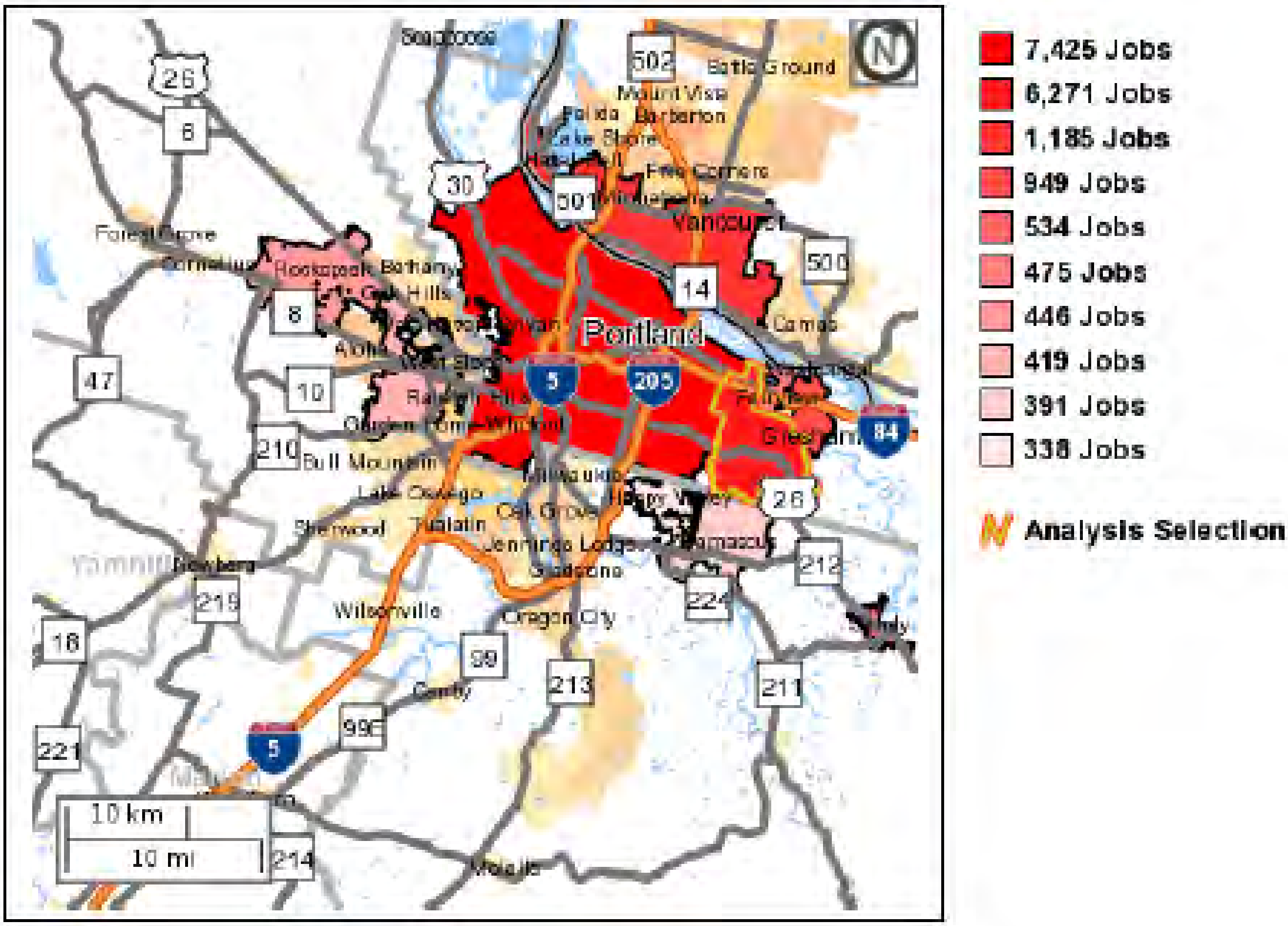
Gresham employs 30,937 workers. The majority (40%) of workers lives and commutes from locations other than those listed in Table 3 below. Portland and Gresham provide 24% and 20.3% workers respectively. The remaining 15.3% of Gresham's workers live and commute from surrounding cities as shown in Table 3 and Graphic 3 below.

Table 3: Where People Who Are Employed in Gresham Live

Location	Jobs Count	Percentage
Portland city, OR	7,425	24.00%
Gresham city, OR	6,271	20.30%
Vancouver city, WA	1,185	3.80%
Troutdale city, OR	949	3.10%
Sandy city, OR	534	1.70%
Fairview city, OR	475	1.50%
Hillsboro city, OR	446	1.40%
Beaverton city, OR	419	1.40%
Damascus city, OR	391	1.30%
Happy Valley city, OR	338	1.10%
All Other Locations	12,504	40.40%
Total Primary Jobs	**30,937**	**100.00%**

Graphic 3: Where People Who Are Employed in Gresham Live

These commute patterns mean there are large volumes of commuters at peak morning and afternoon times entering and exiting the city. Per 2010 US Census, the mean commute travel time for Gresham's residents is 26.9 minutes. This commute time is higher than the statewide average travel time of 22.3 minutes.



6. Street Network

Overview of Existing Street Network

This section provides an inventory of Gresham's existing street network and associated amenities.

Traffic on Kane Drive in Gresham.

Inventory of Existing Street Network

Street Jurisdiction

The City of Gresham maintains jurisdiction for the majority of streets within its boundary. As shown in Table 4, the City maintains 326.9 miles (centerline) of streets classified from arterial to local. The Oregon Department of Transportation (ODOT) maintains jurisdiction of 4.5 miles (centerline) of streets classified as Freeway (I-84) and Highway (US Highway 26 immediately south of Powell Boulevard).

Table 4: Mileage of Street Jurisdiction by Functional Classification

Functional Classification	City of Gresham – centerline street mileage	ODOT– centerline street mileage
Local	225.5	
Minor, Standard and Major Collector	33.0	
Minor Arterial	23.0	
Major and Standard Arterial	45.4	
ODOT Freeway (including ramps) and Highway		4.5
Planned Collector and Arterial	16.5	
Total	**326.9**	**4.5**

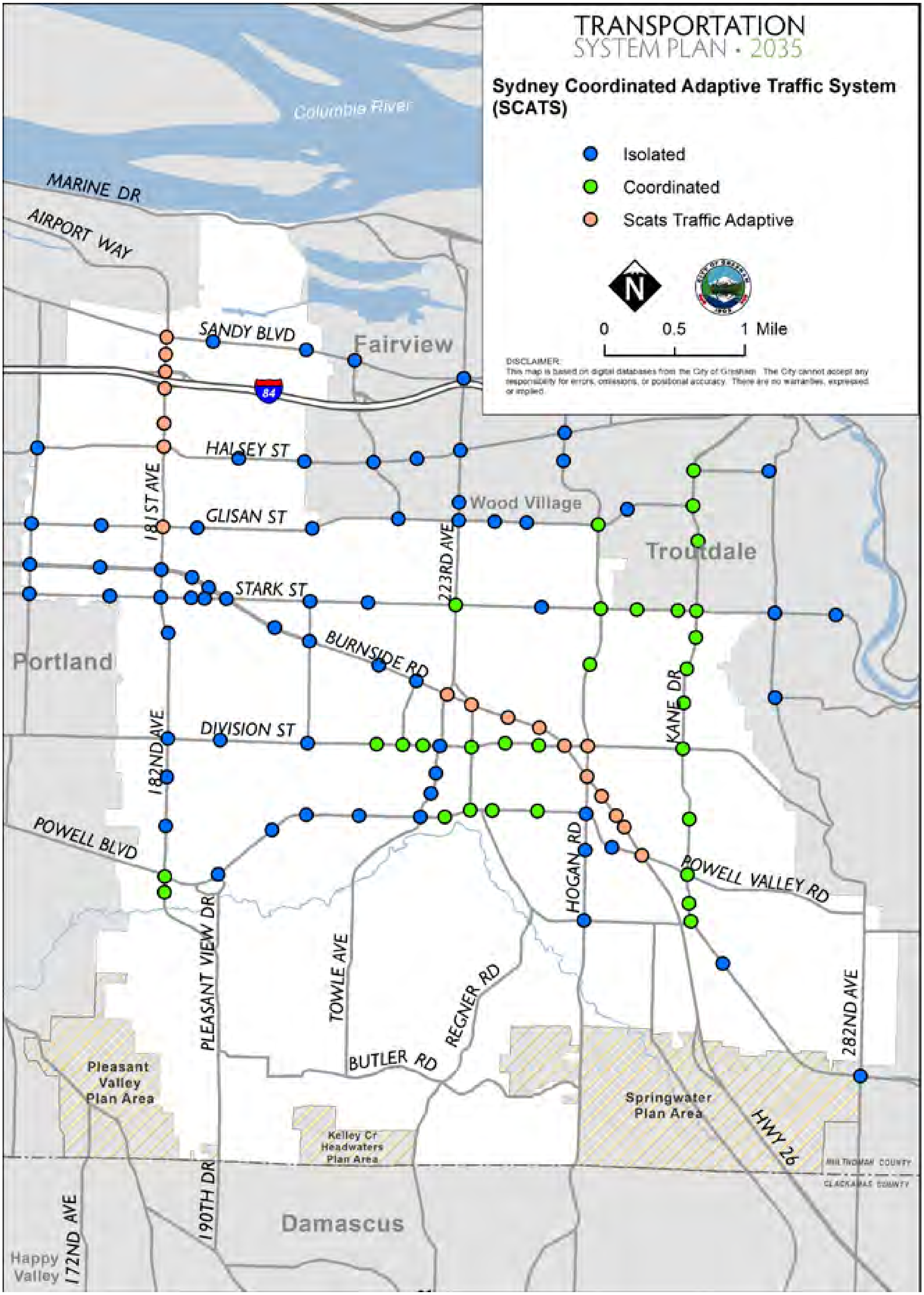
Traffic Signal System

Gresham maintains all traffic signals within its city limits. The majority of these 62 signals run fully actuated, with phase timing solely determined by traffic demand at the individual intersection. Twenty-three signals on five corridors operate as coordinated systems, with fixed cycle times to allow one or two-way progression along the corridor, depending on time of day. In 2007 Gresham implemented a "smart" traffic signal optimization system (Sydney Coordinated Adaptive Traffic System, or "SCATS") that continuously adjusts cycle and phase times. This system maintains the coordination on the arterial corridor while minimizing delays to traffic on the side streets. Since 2007, 18 signals on the arterial roads have been updated with SCATS (Map 7).

Gresham maintains all traffic signals within its city limits.

SCATS and coordinated signal-timing have been a cost-effective means of reducing congestion and vehicle hours of travel within Gresham. For example, an independent review performed by Portland State University of the impact of SCATS on Burnside Road in Gresham found that travel times along this corridor were reduced by at least 10% when compared to the optimized signal coordination that was in place previously. Funding is in place to expand the Gresham SCATS system to another seven intersections, and the City intends to implement more SCATS and additional signal optimization measures. These systems reduce the need to widen intersections or build new roadways while maintaining and even improving the efficient movement of all vehicles.

Map 7: Sydney Coordinated Adaptive Traffic System (SCATS)



Access Management

Access management is a set of techniques to manage the frequency and magnitude of conflict points at access points such as driveways. The purpose of an access management program is to balance mobility along a roadway with the need to access adjacent land uses. Access management is a critical element in roadway planning and design as it "…is the application of roadway design and traffic operations considerations to the location and design of access from the highway to adjacent land uses. The objective is to ensure roadway safety and efficient operations while providing reasonable access to the adjacent land use."[1]

Gresham applies access management techniques to development. These techniques include median barriers, standards for intersection and driveway spacing, driveway setbacks from intersections, limiting the number and width of driveways, requiring joint access and driveway channelization, and imposing turn restrictions.

Underground Utilities

Gresham requires overhead wires be placed underground with new construction and new streets. Because of this requirement, Gresham has a pleasant, uncluttered streetscape without overhead wires in many newer residential and commercial districts. On existing streets that carry older, above ground utilities, it is more challenging and expensive to convert them to underground.

The area at SE 188th Avenue at SE Stark Street in Rockwood features underground utilities.

If a utility is in the public right-of-way by permit and a transportation project requires the relocation of that utility, then the utility must relocate their facilities at their expense. However, if the project does not require relocation of the utilities and it is requested that overhead utilities be relocated underground, either the City or the utility rate payers must pay for the additional cost. The City can request the utility to pass those costs back to the ratepayer and those costs can be spread over the entire jurisdictional boundary or a small area that receives the benefit. The State Public Utility Commissioner has adopted Oregon Administrative Rules that apply to "forced conversion" of utility facilities, which is the term used for undergrounding overhead utilities. The City has yet to require a utility to underground its overhead utilities, although in some cases utilities have voluntarily done so.

The costs to underground overhead utilities can be significant. Gas tax monies cannot be used to underground overhead utilities. Therefore, financing has to come from the City's General Fund or the Council has to direct the utility to bill costs to the ratepayer.

The benefits of underground utilities are mainly aesthetic, although there is also the added benefit of less maintenance cost due to power outages from storms or auto accidents that can result in service disruptions. In addition, overhead utilities and their related infrastructure in the public right-of-way can create obstructions for pedestrians and bicyclists.

1. "A Guidebook for Including Access Management in Transportation Planning." National Cooperative Highway Research Program Report 548, Transportation Research Board of the National Academies. 2005, page 3.

Street Lighting

The City has 7,500 street lights and contracts with Portland General Electric (PGE) for energy and maintenance. The City working on a major streetlight replacement project converting Gresham's high pressure sodium lights to high-efficiency LED lights. The project will be completed in 2017 and will translate to savings of $500,000 per year.

For new development, adequate street lighting is required on all adjacent frontages of the site. However, there are developed areas in the city where street lighting is inadequate or non-existent. This is particularly true along the major arterials. Upgrades to those areas are done on a case by case basis based on funding availability.

Neighborhood Circulation and Access

In older parts of Gresham near downtown and areas on the north and west sides of the city, shorter block lengths are grid-like and allow convenient local circulation. In contrast, some areas built during a time when cul-de-sacs, loops and maze-like layouts in residential subdivisions were popular have less circulation and access. There are also parts of the city where temporary and permanent dead-end local street systems exist and multiple streets tie into a single point of access to the major street system.

Some local street circulation problems are slowly being resolved as development related local streets are connected. The City requires Neighborhood Circulation Plans and Future Street Plans for most new developments. Along with local street standards, these requirements lead to the implementation of a more connected local street system with smaller block sizes.

Top: New streetlights on NE Hood Avenue in historic downtown Gresham.

Bottom: A sharrow on Main Street in Gresham indicates shared auto and bicycle roadways.

Hazardous Signage

Gresham maintains 10,500 street signs and more than 120 bicycle/pedestrian wayfinding and directional signs. The City also has begun to implement on-street markings in the form of sharrows to indicate shared automobile and bicycle roadways.

A majority of signage is fabricated and maintained by the City. Signs along and within the public right-of-way can have significant impacts on public safety. The City prohibits a broad class of signs that are identified as hazardous, including flashing and moving signs that distract or confuse motorists and signs that mimic traffic control devices. Sign standards must also consider the physical impact of signs on sight distance and the confusing or distracting effect of sign clutter near congested intersections.

Bridges

Gresham has jurisdiction over 11 bridges within the city boundary. Two within the Pleasant Valley and Springwater Plan Areas are currently within Multnomah County jurisdiction. Each bridge is inspected periodically through the ODOT Bridge Inspection Program. The results of these inspections are reported to the local jurisdiction and listed on ODOT's TransGIS website[2]. Inspection results are shown in Table 5 below.

Table 5: Bridge Inspection Results

Bridge Location		Bridge ID	Condition
Gresham City Limits	Airport Way over Pacific Railroad	17985	Functionally Obsolete
	185th Avenue over Columbia Slough	51C38	Not Deficient
	NW Wallula Avenue over TriMet light rail	51C37	Not Deficient
	SW Highland Drive and Johnson Creek	51B002	Not Deficient
	SE 190th Avenue and Johnson Creek	51C21	Functionally Obsolete
	Towle Avenue and Johnson Creek	16383	Not Deficient
	SW 7th Street and Johnson Creek	19195	Not Deficient
	SE Walters Road and Johnson Creek	25T10	Not Deficient
	North Main Avenue and Johnson Creek	51B001	Not Deficient
	SE Regner Road and Johnson Creek	25T09	Not Deficient
	SE 242nd Avenue and Johnson Creek	25T07A	Not Deficient
Springwater	SE 252nd Avenue and Johnson Creek	25T08	Functionally Obsolete
Pleasant Valley	SE 174th Avenue at Johnson Creek	25T16	Functionally Obsolete

Street Connectivity

A well-connected transportation network efficiently distributes travel demand along multiple parallel roadways. The network should be designed to provide for trips through or across the region on throughways, shorter trips through portions of the region on arterial streets and the shortest trips on collector and local streets. [5] The Metro Regional Transportation Functional Plan (RTFP) requires that, "To improve connectivity of the region's arterial system and support walking, bicycling and access to transit, each city and county shall incorporate into its TSP, to the extent practicable, a network of major arterial streets at one-mile spacing and minor arterial streets or collector streets at half-mile spacing…" [6]

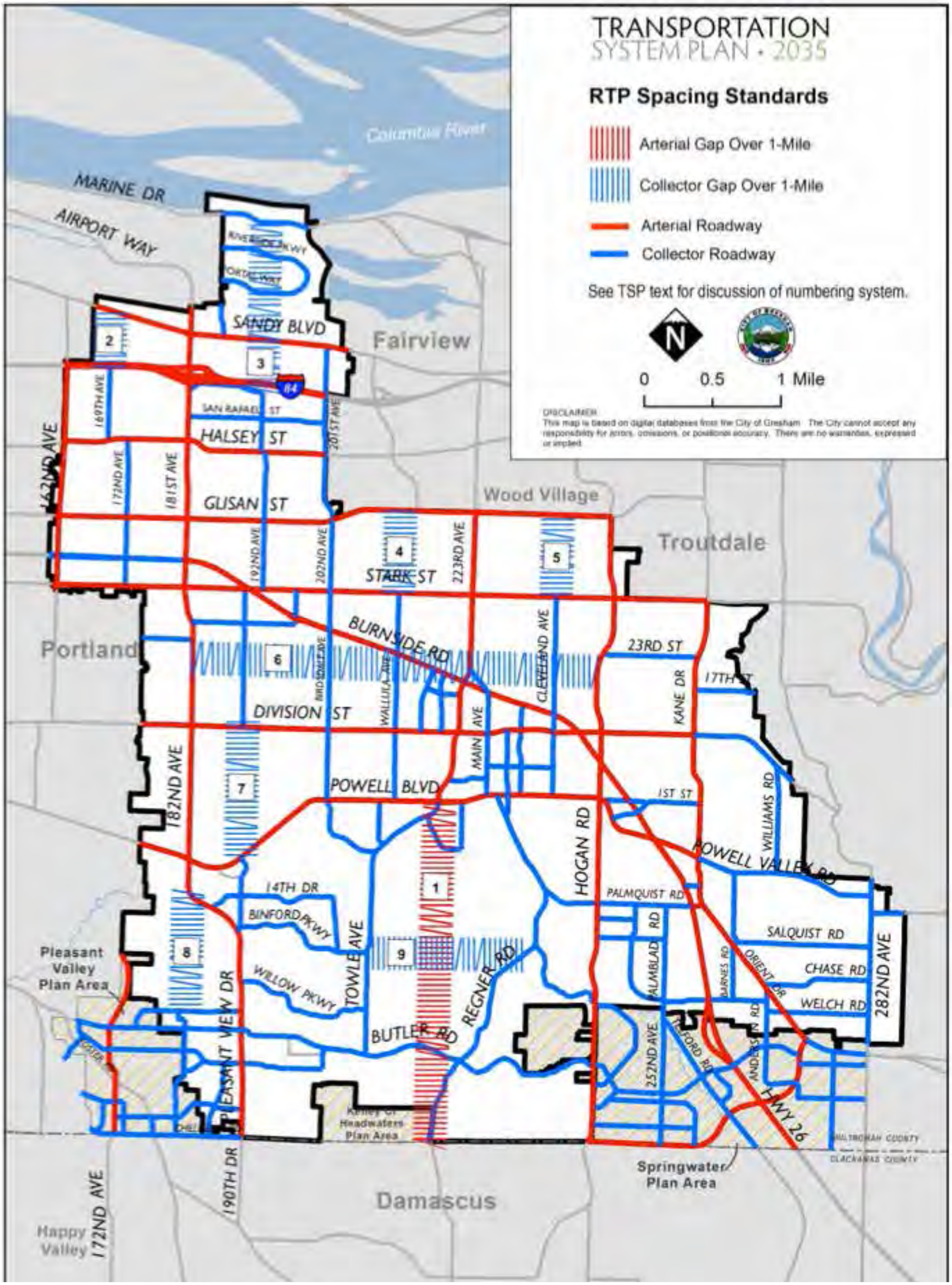
Overall, Gresham has a well established network of arterial and collector roads adequately spaced for connectivity and meeting the RFTP requirements. As shown on Map 8, there is one area where the arterial spacing standard is not met and eight segments where the minor arterial/collector spacing standard is not met. Right-of-way and development costs are prohibitive to developing new arterials or collectors throughout the City of Gresham. The following provides more detailed discussion of each segment where the spacing standard is not met (numbers correspond with Map 8):

1. Gresham's south-central area does not meet the 1-mile arterial spacing standard. Extending 223rd Avenue/ Eastman Avenue to the south is prohibited by the topography of this area, which features Gresham Butte and Gabbert Hill, and existing development patterns.

4. *https://gis.odot.state.or.us/transgis/*
5 *Metro 2035 Regional Transportation Plan. Page 2-30.*
6 *Metro Regional Transportation Functional Plan, Section 3.08.110 Street System Design Requirements*

2. Extending 169th Avenue north of I-84 to connect with Sandy Boulevard is not feasible as I-84 provides a barrier. Additionally, prime industrial land is located north of I-84, much is already developed.
3. Extending 192nd Avenue north of I-84 to connect with Sandy Boulevard or the Riverside Drive/Portal Way loop is not feasible due to I-84, significant industrial development (i.e. Boeing), railroad, Columbia Slough and wetlands crossings.
4. Extending SE 212th Avenue/Wallula Avenue north to connect with Fairview Parkway was discussed regionally through the East Metro Connections Plan process. The adopted finding was not to extend due to adverse impact to future industrial development and significant wetlands. Additionally, traffic modeling showed this extension would not provide necessary capacity to the system.
5. Extending NE Cleveland Avenue north to connect with Glisan Street is not feasible due to adverse impact to significant industrial Port of Portland owned land.
6. The east-west area between Stark and Division Streets does not meet the RTP spacing standard for a minor arterial/collector street. Existing development patterns are prohibitive to a future minor arterial/collector street within this area.
7. Extending 190th Avenue south of Division Street to connect with Powell Boulevard is not feasible due to topography (Grant Butte), significant wetlands and habitat, a BPA easement and existing development patterns.
8. 182nd Avenue curves to the east south of Powell Boulevard to merge into Highland Drive/190th Avenue. Development patterns and topography (Jenne Butte) prohibit the extension of 182nd Avenue straight south into Pleasant Valley.
9. The south-central area of Gresham does not meet the minor arterial/collector street spacing requirement. The topography of this area, featuring Gresham Butte and Gabbert Hill, and existing development patterns are prohibitive to future minor arterial/collector street development.

Map 8: RTP Spacing Standards



Assessment of Existing Street Conditions

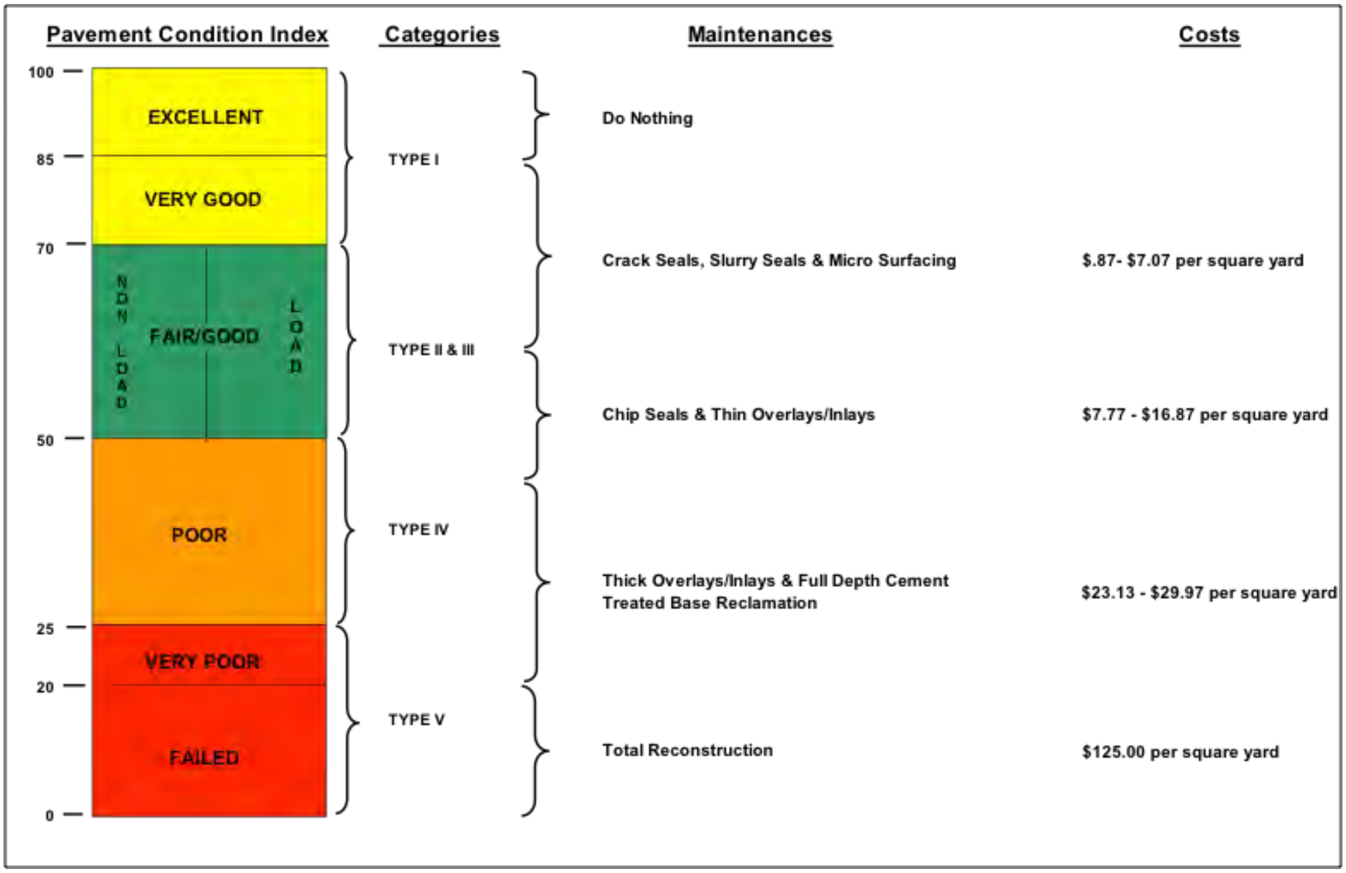
The City's street system is evaluated for maintenance by Transportation Operations based on pavement condition. (Gresham maintains an extensive pavement condition inventory for about 286 centerline miles, or 900 lane miles, of arterial, collector and local roads. Each road section is evaluated through visual inspection and the severity levels of several different kinds of distress are counted, measured and recorded. The kinds of distress utilized in the evaluation are: weathering/raveling, block cracking, longitudinal/ transverse cracking, alligator cracking, distortions, localized failed area/utility cut patching and rutting/expression.

This data is entered into a pavement management software (PMS) program called Street Saver which assigns a pavement condition index (PCI) to each street section evaluated. The PCI is a number between zero (worse) and 100 (best). Graphic 4 provides the range of PCI values and what road condition they represent. It also shows the most appropriate maintenance for each value and the associated maintenance costs.

Left: City Transportation Operations crews repair a street's pavement.

Right: Alligator cracking is one type of street distress monitored by the City's Transportation Department.

Graphic 4: Pavement Condition Index, Maintenance and 2013 Costs



The City classifies its roads into one of four functional classifications for the purposes of inventorying pavement condition: arterial, collector, residential/local and neighborhood connector. These classifications differ from the TSP's functional classifications; they represent current, not planned, traffic volumes and travel lanes in order to determine and prioritize treatment.

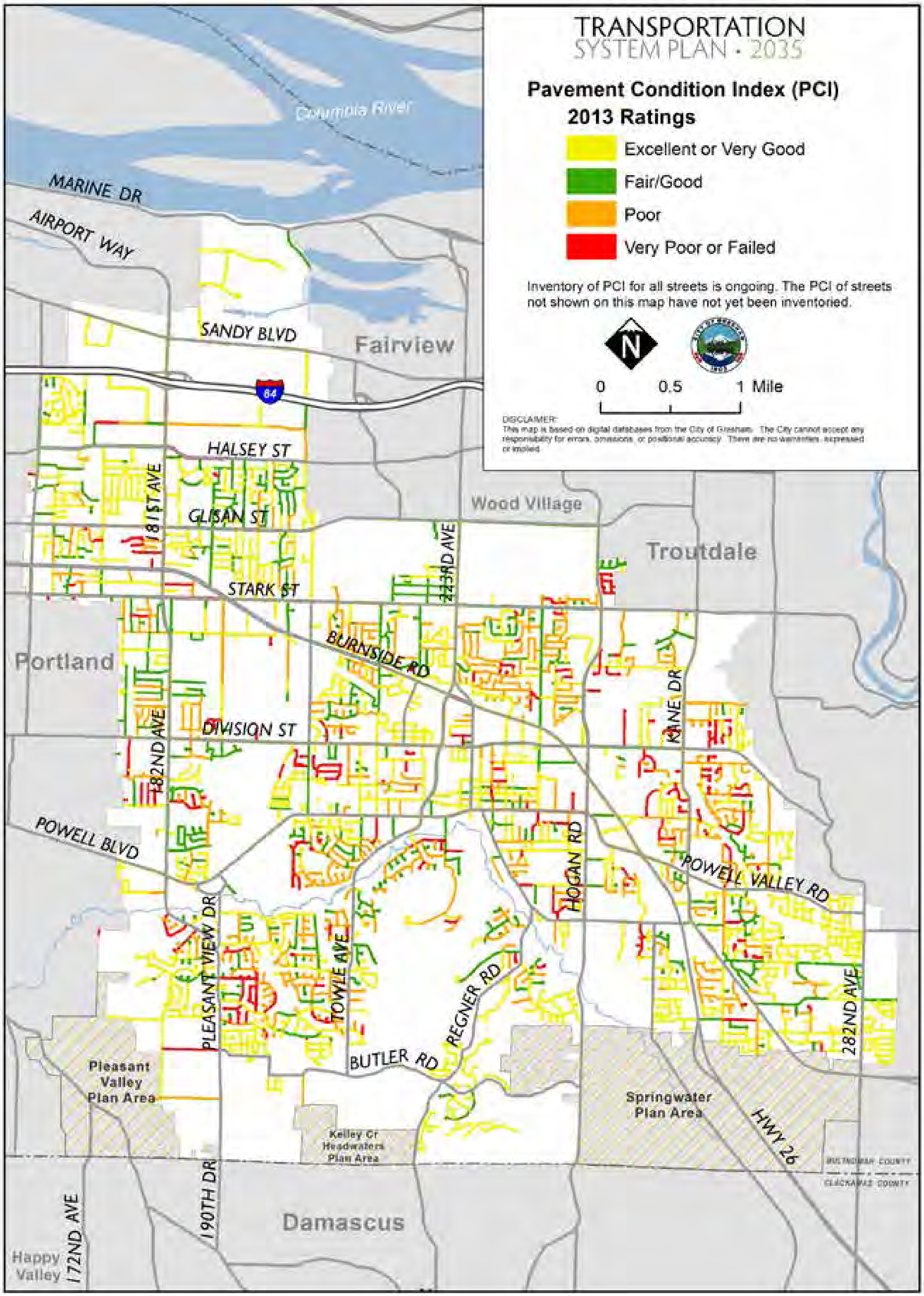
The City has a goal of maintaining an overall PCI of 75. The average PCI range per functional classification is shown in Table 6. It shows a fairly consistent PCI of 60 averaged across all streets.

Table 6: Average PCI per PCI Functional Classification

PCI Functional Classification	Average PCI
Arterial	60
Collector	58
Neighborhood Collector/Other	60
Residential/Local	61

Map 8 shows the roads included in the PCI inventory with their 2013 PCI conditions.

Map 9: Pavement Condition Index (PCI)



More specifically, Table 7 breaks down the PCI rating per the TSP functional classes and Map 8 depicts the PCI of each road segment included in the inventory.

Table 7: Average PCI per TSP Functional Class

	Excellent (71-100)	Good (51-70)	Fair (26-50)	Poor (0-25)
Arterial				
Major Arterial	55%	42%	3%	0%
Standard Arterial	54%	36%	10%	0%
Minor Arterial	54%	24%	20%	2%
Collector				
Major Collector	80%	20%	0%	0%
Standard Collector	65%	30%	3%	2%
Minor Collector	53%	25%	19%	3%
Local				
Local	52%	24%	19%	4%

Due to inadequate revenue, only a small percentage of the City's needed maintenance work is completed. Streets that receive maintenance treatments are prioritized first by safety related issues. Next are streets that need extensive utility/underground improvements or half-street improvements spurred by private development where a conglomeration of work efforts is cost effective. The most optimal candidates are chosen for preservation maintenance with any remaining funds.

Based upon projected year 2035 area development, traffic growth, documented capacity deficiencies or safety problems, many of the below-standard roads will need upgrading within this TSP's 20-year time frame.

A segment of Burnside Road, a major arterial, after a microseal treatment.

7. Pedestrian System

Pedestrian System Overview

Gresham is committed to providing pedestrian facilities that ensure safety and convenience for all users. Accommodating and enhancing pedestrian needs promotes a more desirable and livable community; the personal health, environmental, and economic benefits are well documented. In addition, a pedestrian friendly environment supports the use of other modes such as transit, ridesharing and bicycling by making these modes easier to access. Walking may be one of the most cost effective pollution reduction strategies because it displaces shorter automobile trips – the most polluting on a per mile basis. The objective is to enhance Gresham's pedestrian network so that it is inviting for all users.

Walking is fundamental. Walking is healthy. Walking is sustainable. Regardless of age, occupation or physical ability; regardless of the time or day of the week; we are all pedestrians.

– Getting Around on Foot Action Plan

The goal of Gresham's pedestrian plan is to encourage walking as a viable mode of transportation by increasing awareness and establishing a framework to improve and maintain the city's pedestrian facilities.

Walking on the Gresham-Fairview Trail.

Inventory of Existing Pedestrian System

Gresham's inventory of existing pedestrian facilities includes the City's network of sidewalks and multi-use paths as well as the other elements that enhance the pedestrian experience. These elements are: lighting, street and rail crossing signals, corner ramps, traffic calming devices, planter strips that separate pedestrian from auto and bike traffic, street trees, decorative sidewalk paving, waste receptacles and benches.

Sidewalks and multi-use paths

Gresham's pedestrian facilities are made up of both sidewalks and a growing multi-use path network. The topography of the city is relatively flat, with the exception of Gresham and Jenne Buttes, making walking a very viable transportation option.

Paths are paved, off-street travel ways designed to serve non-motorized travelers. Trails provide both recreation and transportation routes through natural environments and urban areas. Trails are not necessarily paved and tend to be more recreational in nature, serving a variety of activities including biking and hiking.

– Federal Highway Administration

This TSP and Gresham's Development Code require sidewalks on both sides of major, standard and minor arterials and major, standard and minor collector streets. Sidewalks are also required on industrial, commercial, transitional and queuing local streets. Code also requires them to be consistent with federal Americans with Disabilities Act regulations, which establishes requirements related to features such as width and grade.

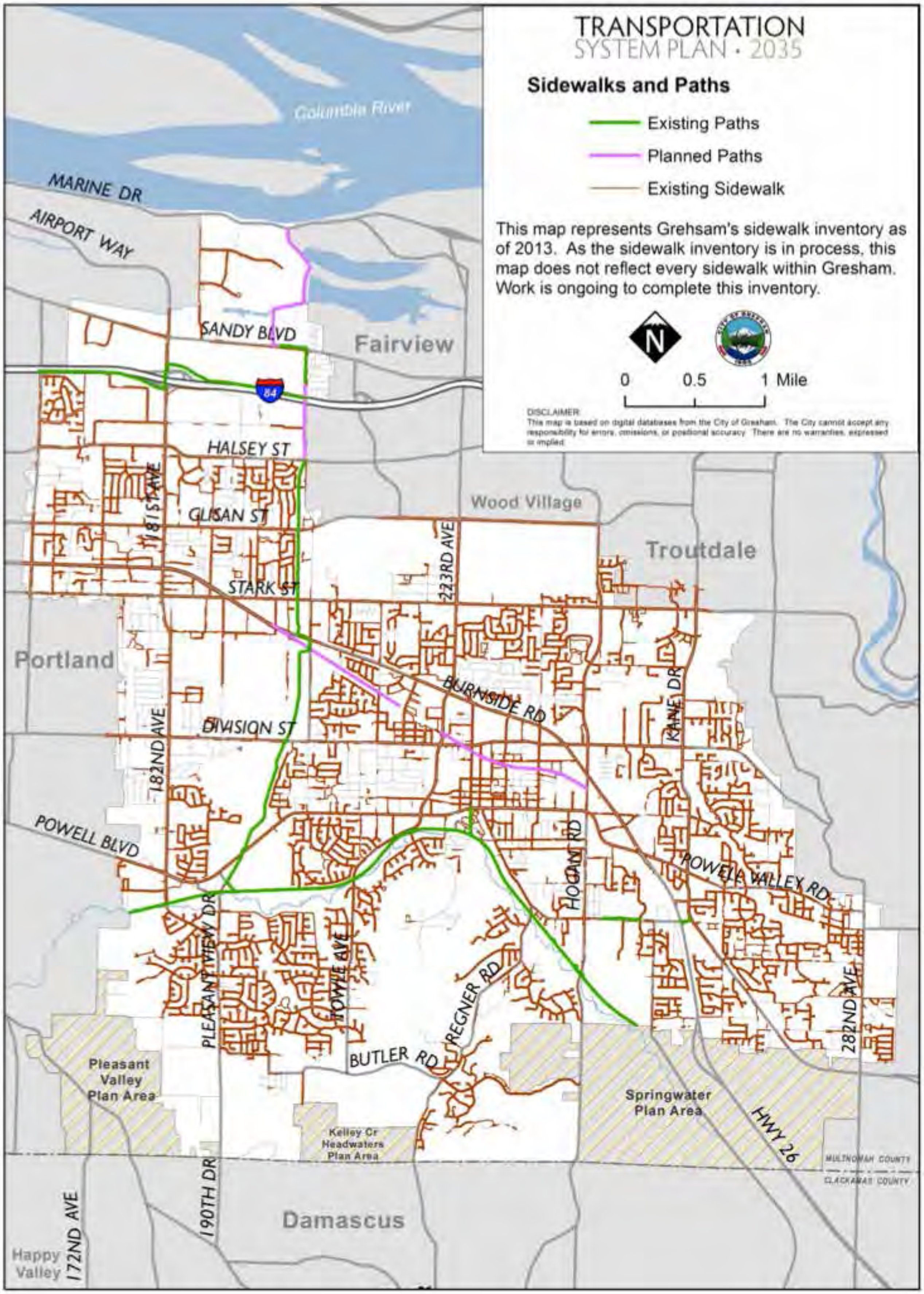
Gresham's sidewalk network includes approximately 392 miles of sidewalks. In general, the Centennial Neighborhood has a majority of curb-only streets. Adding sidewalks to these curb-only sections of street is a priority to the City, particularly in areas that serve schools or transit stations. North Central Gresham and Southwest Gresham are best equipped with sidewalks, whereas the Mt. Hood and Asert neighborhoods have the least.

Multi-use paths are a vital piece of the pedestrian network. Gresham's primary paved multi-use paths are the Springwater Corridor Trail, Gresham-Fairview Trail and the I-84 Path. The combined mileage of these paths is 11 miles. The network will soon boast an additional path located parallel to the MAX light rail line between the Ruby Junction/197th transit station and Hogan Drive, approximately 2.5 miles long. An additional future planned facility runs along the eastern boundary of Gresham and into neighboring jurisdictions, from the Sandy River in the City of Troutdale to the Springwater Plan Area and Springwater Corridor Trail. The length of that path will be approximately five miles long, of which one mile is planned within the Springwater Plan Area. This system of paths offer an off-street pedestrian experience on 10-12 foot wide, paved facilities. They are a part of the planned regional pedestrian and bicycle system, and Gresham is actively involved in their planning and implementation. Map 10 is the current inventory of Gresham's sidewalks and paths.

Top: Adding sidewalks to curb-only sections of street is a City priority.

Bottom: The Springwater Corridor Trail is one of Gresham's most popular multi-use paths.

Map 10: Existing Sidewalks and Paths



Lighting, Street and Rail Crossings and Traffic Calming

Street lighting, safer street and rail crossings and traffic calming devices promote higher levels of walking.

Gresham maintains 7,500 street lights and requires all new developments to provide adequate lighting for all adjacent street frontages.

Oregon law considers every intersection a crosswalk. Gresham typically stripes crosswalks where warrants are met. The City policy is to stripe a crosswalk where a minimum of 20 pedestrians cross during one hour. Markings are a typically a ladder or continental design with longitudinal lines parallel to traffic flow. Two parallel lines spaced at least six feet apart are maintained on legacy location intersections only. Crosswalks may also be delineated with enhanced paver or paint design, particularly within the City's Plan Areas. The photo below shows a pedestrian crossing area created with a paver design within the Civic Neighborhood.

Since 2010 the City has installed seven mid-block crossings with pedestrian actuated Rectangular Rapid Flashing Beacons. These crossings are located on arterial streets frequently crossed by pedestrians. Current locations are at Powell Boulevard and Roberts Road, on Eastman Parkway north of the City Hall Max light rail crossing, Division Street at the Gresham Fairview Trail, Halsey Street at 172nd Avenue, Stark Street at 179th Avenue, 182nd Avenue at Main Avenue, and at the Civic Station Max light rail crossing. Building off the success of these crossings, Gresham is planning on installing additional mid-block crossings annually.

Crossings also occur at rail intersections. The MAX light rail Blue Line runs through the Rockwood, Civic Neighborhood and Downtown Districts and intersects with the Gresham-Fairview Trail as well as the path adjacent to the MAX line from Ruby Junction to Hogan Road that is planned for completion in 2014. Gresham coordinates crossing design with TriMet and ODOT to ensure that all safe crossing regulatory standards are met.

Top: The City's policy is to stripe a crosswalk where a minimum of 20 pedestrians cross per hour.

Bottom: A pedestrian crossing area created with a paver design in Gresham's Civic Neighborhood.

Gresham also employs traffic calming strategies and devices which serve to slow traffic and create a more pedestrian-friendly environment. Such strategies and devices include:

- Curb extensions and median islands, which narrow traffic lanes and reduce pedestrian crossing distances.
- Speed humps spaced to slow traffic while allowing fire-rescue vehicles to pass without slowing.
- Pavement treatments including special pavers intended to create a sense of place through design and textures to slow traffic.
- Street trees planted in the landscape strip, which create a sense of enclosure and enhance the pedestrian experience.
- Woonerfs, or streets with mixed vehicle and pedestrian traffic, where vehicles are required to drive very slow speeds. Beech Street is Gresham's one constructed woonerf.
- Speed display devices that provide oncoming motorists' their speeds.

Each of these traffic calming devices and strategies serve to slow traffic and create a safer, more pedestrian scaled environment.

Top: Street trees planted in the landscape strip along Stark Street in Rockwood.

Bottom: Walking the Gresham-Fairview Trail: the City counts pedestrian volumes to document usage.

Pedestrian Volumes

Gresham has limited data about pedestrian volumes. In the future Gresham plans to purchase pedestrian counters to gather this data at various locations throughout the city. Since 2008, though, Gresham has performed annual pedestrian counts on the regional trail system. The program expanded to bi-annual counts that are performed largely by volunteers each May and September at six locations (Map 11) on the Springwater and Gresham-Fairview trails. The September count is a part of the National Bicycle and Pedestrian Documentation Project which is managed by Metro. Counts conducted in May are led by the City in an effort to document variations in seasonal usage of the facilities. The counts help to create a database of pedestrian volumes similar to those readily available for automobiles. They also serve to track facility usage, conditions and future demand.

The trail counts for 2011 through 2013 are shown in Table 8 below.

Table 8: Pedestrian Volumes – Springwater Corridor and Gresham-Fairview Trails

		September, 2011			May, 2012			September, 2012			May, 2013		
		9/13/2011	9/18/2011		5/15/2012	5/20/2012		9/11/2012	9/15/2012		5/14/2013	5/18/2013	
Site ID	Count Location	Tue	Sun	SUM	Tue	Sun	SUM	Tue	Sat	SUM	Tue	Sat	SUM
501	Springwater Corridor @ Pleasant Valley Drive	33	63	**96**	48	61	**109**	49	65	**114**	85	49	**134**
505	Springwater Corridor @ Main City Park	54	65	**119**	0	86	**86**	54	103	**157**	111	88	**199**
508	Springwater Corridor @ Hogan Road	43	45	**88**	51	45	**96**	47	74	**121**	74	53	**127**
514	Gresham Fairview Trail @ 201st/Halsey	44	9	**53**	12	5	**17**	6	17	**23**	6	7	**13**
517	Gresham Fairview Trail @ Burnside	12	26	**38**	18	8	**26**	21	40	**61**	16	13	**29**
518	Gresham Fairview Trail @ Division	8	14	**22**	4	19	**23**	14	12	**26**	39	34	**73**

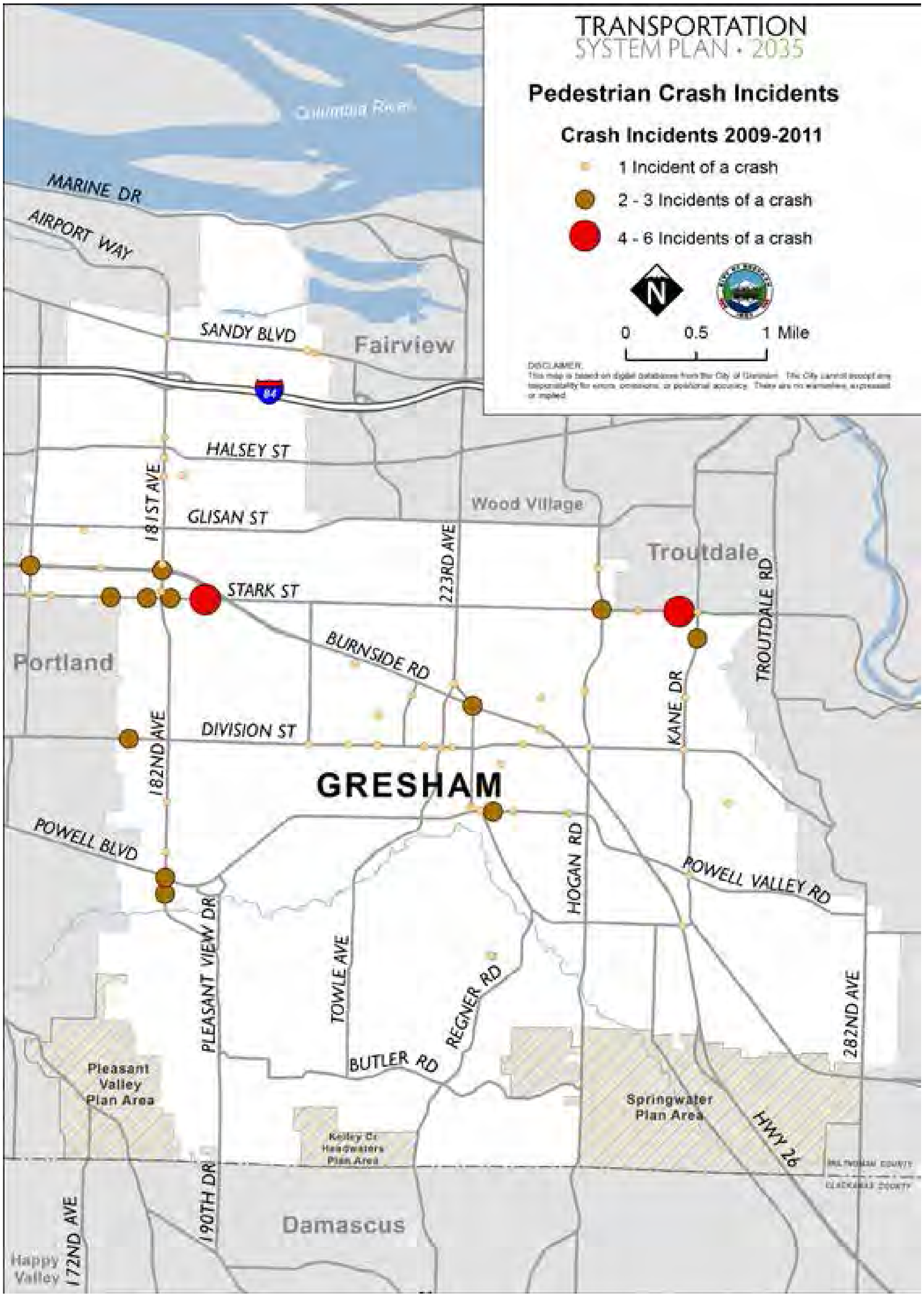
Areas of highest pedestrian volumes on the trails are on the Springwater Corridor Trail. The Gresham-Fairview Trail, which opened in 2010, has experienced consistent volumes. The City will be able to analyze trends in pedestrian volumes and to assess future demand as the data continues to be collected and analyzed.

Map 11: Pedestrian and Bicycle Volume Count Locations

Pedestrian Crashes

From 2009 through 2011, 61 pedestrian-related crashes were reported in Gresham (Map 12). Of these crashes, 59 resulted in injury, one in fatality and one in property damage only. Weather conditions were cloudy for five incidents, clear for 38 and rainy for 17 (unknown for one). Areas of highest crash rates were along the City's major and standard arterials; particularly where these two street types intersect. The majority, 77% of the crashes were a result of pedestrian or motorist failure to yield and non-motorists in the roadway.

Map 12: Pedestrian Crashes



Assessment of Existing Pedestrian Conditions

Sidewalks

A well-connected street network with sidewalks on both sides is recommended as the primary means of providing safe, direct and convenient pedestrian routes. Areas of top priority for sidewalk installation where they currently do not exist are where transit and school zones overlap. Other criteria to determine priority for sidewalk installation is along arterials and collectors; within ¼ mile of schools and transit stops; along corridors linking commercial and residential areas; and near schools, parks and other public facilities.

The City's minimum preferred sidewalk width is 6', exclusive of curb and obstructions. This width allows two pedestrians (including wheelchair users) to walk side by side, or pass each other comfortably. The minimum width may be 5' if right-of-way or other constraints are present.

The City's Missing Sidewalk Links Program inventories where sidewalks are missing.

Gresham has approximately 388 miles of existing sidewalk on one or both sides of streets. It is currently unknown what percent of city streets are missing sidewalks. The City's Missing Sidewalk Links Program and Future Streets Plan both work to complete sidewalks and associated city streets. The Missing Sidewalk Links Program is a large-scale effort to inventory where sidewalks are missing. The City initiated this project in 2009 to meet multiple objectives, including prioritizing projects for the City's Capital Improvements Program, updating the City's Transportation System Plan, ensuring compliance with the Americans with Disabilities Act (ADA), and the larger mission to improve walking conditions throughout the City.

Landscape Strips

Landscape strips provide a buffer between a street and sidewalk, providing a physical and psychological separation between pedestrians and adjacent auto traffic. This space also accommodates stormwater management systems, street trees, street furniture, pedestrian amenities and utility structures such as street lights, signal poles, fire hydrants and street signs.

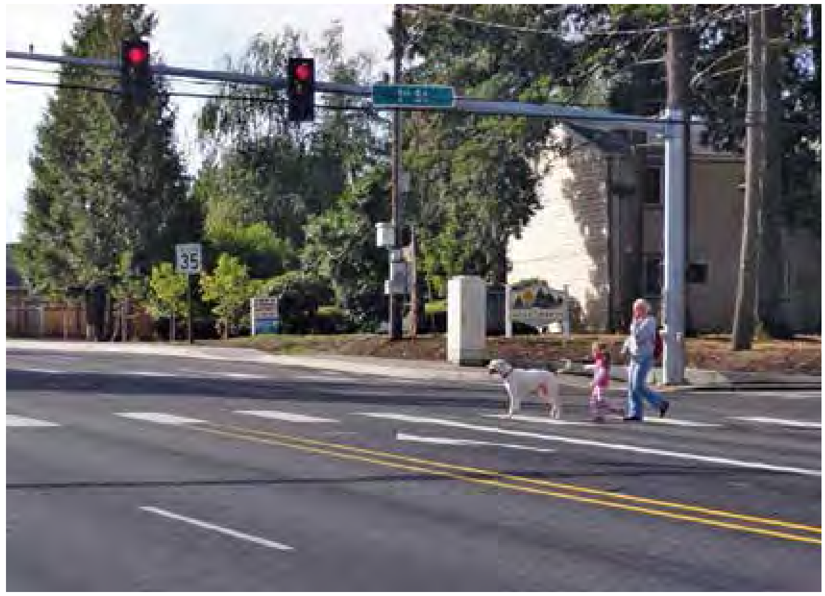
Landscape strips are currently required on all arterials and collectors. They are also required on industrial, commercial, transitional and queuing local streets.

Crosswalks

One of the key indicators of the quality of the pedestrian environment is the degree to which one may safely and comfortably cross a street. Crossing distance, signal timing, speed and traffic volumes are factors affecting the safety and convenience of pedestrian crosswalks. Improvements that enhance a pedestrian's experience while crossing intersections include refuge islands, curb extensions, reduced curb radii, crossings at right angles and slower traffic speeds.

Raised medians benefit pedestrians by allowing them to cross only one direction of traffic at a time.

Several design measures can be implemented to improve pedestrian safety at crosswalks. The primary objective is to shorten the crossing distance for pedestrians and reduce their exposure to traffic. Raised medians benefit pedestrians by allowing them to cross only one direction of traffic at a time. Island refuges can be created between intersections and other accesses where it is not possible to provide a continuous raised median. Medians should be located across from high pedestrian generators such as schools, park entrances, libraries and parking lots. Curb extensions are another design feature that will reduce the crossing distance and improve the visibility of pedestrians by motorists.



Top: A crosswalk assists pedestrians in safely crossing SE Kane Drive at SE First Street.

Bottom: The Civic Drive MAX station serves the pedestrian district in the Gresham Regional Center.

Providing adequate crossing opportunities is a high priority for the City because of the many arterials that traverse Gresham. Many arterials are a minimum of five lanes wide, some with rights-of-way more than 90 feet. Many arterial intersections include left and right turn lanes as well as wide shoulders or bicycle lanes. Crosswalks are indicated at all major intersections.

Pedestrians may be permitted to move easily and safely across arterials if a pedestrian-friendly environment is to be created. Intersections should be designed to provide direct pedestrian connections between core commercial areas, employment areas, parks, schools, residential areas and other designations. Crosswalks should be provided at all signalized intersections to facilitate easy and safe pedestrian movement to cross an arterial and reach destinations. Pedestrian-activated signals can be located at strategic intersections, such as where a connection is available to a transit stop or core commercial area. Underpasses or pedestrian bridges are discouraged because they are expensive and create generally long circuitous routes that are often underused.

Pedestrian Districts

Pedestrian districts are areas where special emphasis is placed on improving the pedestrian environment through physical improvements and development requirements that promote pedestrian orientation. The City has identified two pedestrian districts: the Gresham Regional Center (made up of both the Downtown and Civic Neighborhood) and the Rockwood Town Center. Future development and City investment will build a majority of improvements in these districts.

Transit Connections

Invariably, using public transit involves a pedestrian component prior to and after the transit ride. Investments in pedestrian improvements to access transit not only promote walking but also increase the cost effectiveness of large public investments in transit systems.

Gresham is working to improve its pedestrian connections to light rail and primary bus routes through the Pedestrian-to-MAX program. Since the 2002 TSP several enhancements have been made, including sidewalk and lighting improvements to the Cleveland Avenue and Rockwood 188th Stations. Access to bus stops is also critical and Gresham continues to improve sidewalk connections to, and facilities at, those stops.

A non-compliant ADA ramp at SE Division Street and SE 182nd Avenue.

Right-of-Way Management

Demands for right-of-way access are increasing as development and land use activity increase. In the past, utilities, signs, fire hydrants and more have been placed in sidewalk areas to provide maximum travel lane capacity. However, this practice creates dangerous pedestrian obstructions.

The right-of-way management program is an ongoing effort to mitigate pedestrian hazards citywide and establish a management program for future right-of-way improvements. Gresham Development Code design standards prioritize pedestrian facilities within the existing right-of-way with stricter standards within the pedestrian districts and transit station areas. The right-of-way management program will identify and catalog the many obstacles to pedestrians and a final list of projects to correct those deficiencies will be incorporated into the City's Capital Improvement Program (CIP) for implementation.

Accommodating the Disabled

The Americans with Disabilities Act (ADA) requires transportation facilities accommodate the disabled. The ADA requires a minimum sidewalk width of 4'. Those standards are anticipated to change to a minimum of 5' and thus Gresham has adopted a standard 5' foot width minimum. Gresham requires 6' wide sidewalks on all arterials and 5' wide sidewalks on all collector and local streets. The City has an on-going CIP to retrofit existing sidewalks with curb ramps. Those areas prioritized first include schools, parks, transit corridors and high pedestrian activity generators.

Pedestrian Accessways

A direct, well-connected street system provides the most desirable pedestrian system. However, where a street connection is not feasible, pedestrian accessways are a reasonable alternative. Pedestrian accessways can connect cul-de-sacs, link residential and commercial areas and provide essential access to parks, schools, transit stops and neighborhood centers.

An accessway is, "A pathway designed for pedestrian and bicycle movement to provide direct and continuous access between transportation facilities and points of interest."

– City of Gresham Development Code

The TSP update includes Safe Routes to School pedestrian planning in school zones.

Safe Routes to School

Safe Routes to School (SRTS) programs use a blend of engineering, enforcement and education to make routes safer for children to walk and bicycle to school. The program also uses strategies to encourage more children to use these safer routes. Engineering, enforcement, education and encouragement are referred to as the "Four E's" of Safe Routes to School.

Safe Routes to School has been a component of Gresham's transportation planning since 2002 when Gresham issued its first TSP. The program has evolved to involve a partnership of government and community agencies, such as the Reynolds and Gresham Barlow School Districts, the City of Gresham, Multnomah County and the Bicycle Transportation Alliance.

Recent SRTS projects include the following:

- Gresham completed a Transportation Growth Management (TGM) grant from the Oregon Department of Transportation (ODOT) to review engineering solutions to enhance access to six Gresham schools.
- An ODOT infrastructure grant-funded project at HB Lee is under construction.
- Gresham has conducted and currently is conducting enforcement operations in vicinity of schools. Police officers serve as "decoy" pedestrians and either ticket or warn drivers, pedestrians, or bicyclists who violate rules of the road.
- Gresham supports Bicycle Transportation Alliance initiatives such as the "Jump Start" program, which aims to provide bike safety education classes at all schools.
- Gresham distributes pedestrian and bicycle safety education and encouragement materials, as well as low-cost bicycle helmets.
- Gresham holds other educational events such as bike rodeos at the annual Transportation Fair, which is held in conjunction with the Teddy Bear Parade.

Efforts are underway to fund a second edition of the Gresham Bike Guide, to be published in both English and Spanish, with companion education programs.

8. Bicycle System

Bicycle System Overview

Bicycles are widely available, do not pollute the environment, are quiet and are an efficient mode of active transportation for commuting and recreation trips. Bicycling provides health, safety, and economic benefits that increase the incentive for jurisdictions to provide on- and off-street bicycle accommodations. In addition, federal, state, and regional funding programs are more focused on these types of facilities than in the past and for the foreseeable future.

Gresham has expanded and improved its bicycle network tremendously over the past decade. In 2010 the League of American Bicyclists (LAB) rated Gresham as a "bronze" level "Bicycle Friendly Community" and the city is aiming towards a higher LAB rating level during its next review opportunity in 2014. In addition to the LAB rating the June 2012 edition of Sunset magazine ranked Gresham within the top "10 Best Burbs for Biking" in the western U.S. The city is building on this momentum to provide superior bicycle facilities for all types of users.

Top: Bicycling along the Springwater Corridor Trail in Gresham.

Bottom: Gresham Bicycle Guide

Inventory of Existing Bicycle System

Gresham is developing a comprehensive bicycle network that includes both on- and off-street facilities to serve all types of riders – from those just learning to ride to the "fearless" rider. The City's inventory of existing bicycle facilities includes the on-street bike network, multi-use paths, directional/wayfinding signage and bike parking facilities.

Existing Facilities

City Council adopted a "Bicycle Guide" in 2010. As shown on Map 13 below, bike routes are comprised of on-street bike lanes, shared use streets and off-street multi-use paths. The map also provides information about caution areas, traffic lights, elevation, light rail stops, park and amenity locations points of interest and bicycle safety.

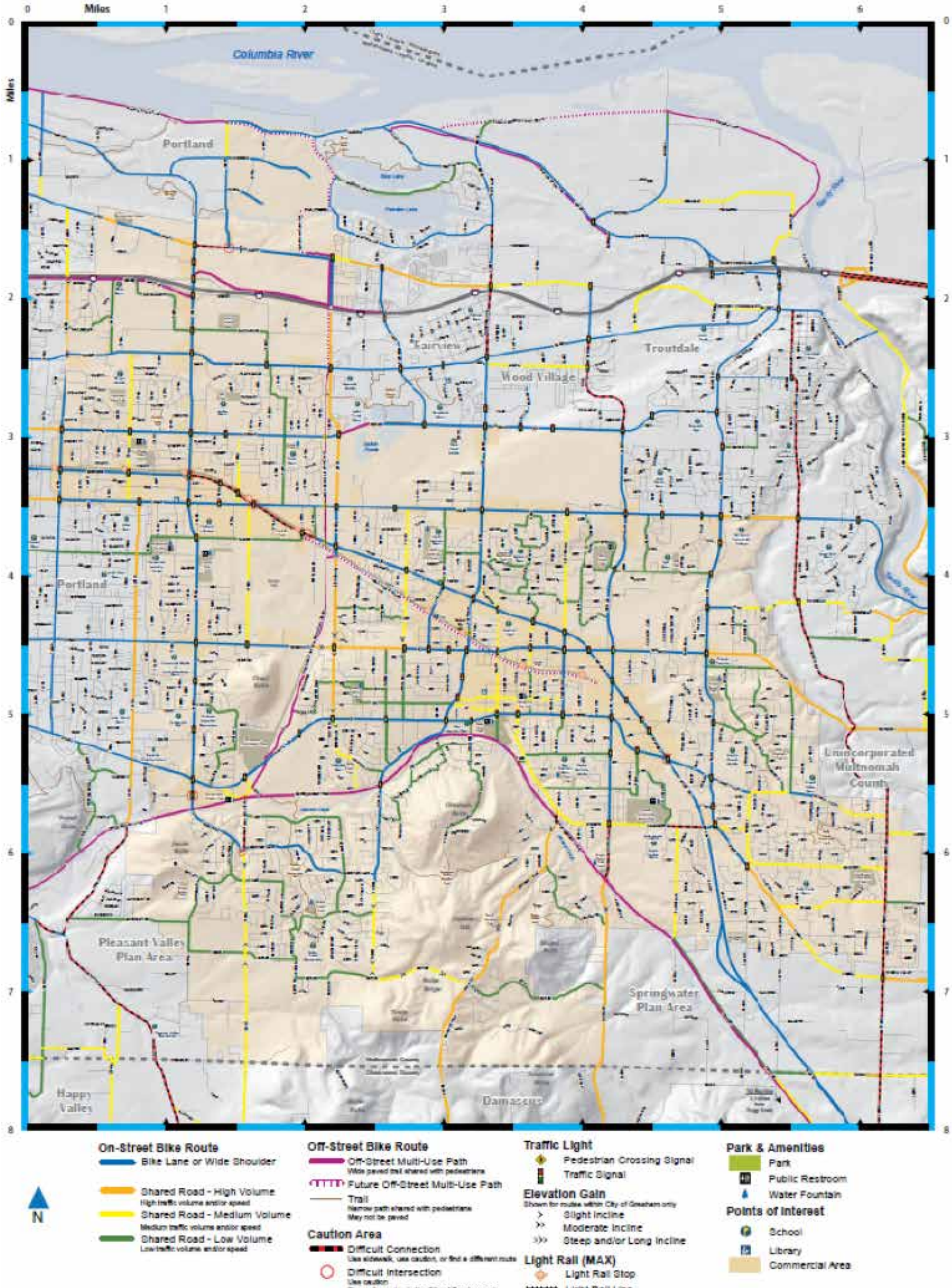
Each bicycle facility has a functional classification in the same way streets are identified based on volume and speed characteristics. Improvements to the bicycle system have been made since the map was published. The majority of the "Future Bike Lanes" are now "Bike Lanes" and pieces of the "Off Street Multi-Use Path" routes have been either completed or are in the design and engineering phase of project completion. The route types, their descriptions, mileage and status (if any changes from the Bicycle Guide) are shown in Table 9 below.

Table 9: Gresham Bicycle Guide Routes

Bike Route Type	Description	Miles of Route and Status
Bike Lane or Wide Shoulder	Roads with 5 to 6 foot wide striped bike lanes or a shoulder adequate for biking. Examples include Stark Street and 181st Avenue the entire city length. Major, Standard and Minor Arterial Streets as well as Major and Standard Collectors are to have 6 foot wide striped bike lanes.	47.4 The following "Future Bike Lanes" on the Bicycle Guide are now "Bike Lanes:" • Halsey Street between 162nd and 181st avenues • Glisan Street between 182nd and 201st avenues • Division Street between 175th Avenue and the Gresham-Fairview Trail • 242nd Avenue between Glisan and Stark streets • Kane Drive between 8th Street and Powell Valley Road
Future Bike Lane	Bike Lanes identified for future implementation.	There are no "Future Bike Lanes" other than in the Pleasant Valley and Springwater Plan Areas.
Shared Road – High Volume	Roads with high traffic volume and/or high speed. Examples include 201st Avenue/Birdsdale between Thompson Street and Powell Boulevard and Regner Road between Roberts Avenue and the southern city limits.	9.6 miles
Shared Road – Medium Volume	Roads with medium traffic volume and/or speed. Examples include Cleveland Avenue between Stark Street and Burnside Road and Roberts Avenue between Powell Boulevard and Hogan Road.	18.9 miles
Shared Road – Low Volume	Roads with low traffic volume and/or speed. Examples include Butler Road between Hogan Road and Regner Road and Yamhill Street between 197th Avenue and 175th Avenue.	35.5 miles
Off-Street Multi-Use Path	Wide paved trail shared with pedestrians. Gresham has four: Marine Drive Trail, Gresham-Fairview Trail, I-84 Trail and Springwater Corridor Trail.	12.1 miles
Future Off-Street Multi-Use Path	Future off-street multi-use paths include: • Two unbuilt portions of the Gresham-Fairview Trail, 1) between the Marine Drive Trail and Sandy Boulevard, and 2) on 201st between I-84/Union Pacific Railroad underpass and Halsey Street. • A new trail between the Ruby Junction/197th Avenue MAX light rail station and Hogan Drive. The trail is scheduled for completion in 2014. • The portion of the Marine Drive Trail crossing through Gresham. • The planned Sandy River to Springwater Multimodal Corridor from the Sandy River area in Troutdale to the Springwater Corridor Trail (not currently on the Bicycle Guide).	4.3 miles The MAX Path will be completed in 2014 and will add 2.5 miles to the Off-Street Multi-Use Paths The Sandy River to Springwater Multimodal Corridor is not currently on the Guide but will add approximately 2 miles to the "Future Off-Street Multi-Use Paths." Mileage is dependent upon alignment.

Cyclists pass the Arts Plaza on NE Hood Avenue.

Map 13: Gresham Bicycle Guide



Directional Signage

More than 100 wayfinding signs providing directional information are located throughout the city based on the Bicycle Guide routes and key destinations within the city. Destinations include Gresham's Regional and Town Centers, major employment areas, transit stops, recreation areas, schools, government offices and multi-use paths.

The wayfinding signage indicates the direction to each destination with an arrow pointing toward the destination, as well as mileage and the number of estimated minutes to arrive at the destination, based upon a rider traveling at 10 miles per hour. The signage is intended to provide needed information to bicyclists, promote Gresham's retail and food service areas, as well as to help with safety by increasing the awareness of automobile drivers to watch for bicyclists.

Bicycle Parking Facilities

Gresham's Development Code includes requirements for bicycle parking based upon land use types. The purpose is to encourage the use of bicycles by providing safe and convenient parking places. Design requirements "ensure that bicycle parking is visible from the street, is convenient to cyclists in its location, and provides sufficient security from theft and damage" (Gresham Development Code, Section 9.0830). The City's inventory of bicycle parking will increase as new development and redevelopment occurs.

TriMet provides a bike and ride facility at its Gresham Central Transit Center. The Park and Ride Garage facility is accessible via a keycard purchased through TriMet or bicycles may park within for a nominal hourly fee. TriMet also has bike lockers for rent at the following MAX stations: Civic Drive, Gresham Central, Gresham City Hall and Cleveland Avenue.

Top: Gresham has more than 100 wayfinding signs to key destinations in the city.

Bottom: Directional signage provides needed information to bicyclists.

Bicycle Volumes

Similar to the pedestrian volume data, Gresham has limited data about bicycle volumes. In the future Gresham plans to purchase bicycle counters to gather this data at various locations throughout the city. Gresham has conducted annual bicycle counts on the Springwater Corridor and Gresham-Fairview trails since 2008. The program has expanded to bi-annual counts that are performed largely by volunteers each May and September at six locations on the Springwater and Gresham-Fairview Trails (Table 10). The September count is a part of the National Bicycle and Pedestrian Documentation Project managed by Metro. Counts conducted in May are led by the City in an effort to document variations in seasonal usage of the facilities. The counts help to create a database of bicycle volumes similar to those readily available for automobiles. They also serve to track facility usage, conditions and future demand. Gresham does not currently perform on-street bicycle counts. Results are shown in Table 10 below.

A cyclist passes the Springwater Trailhead at Main City Park. Gresham conducts annual bicycle volume counts at this location.

Table 10: Bicycle Volumes

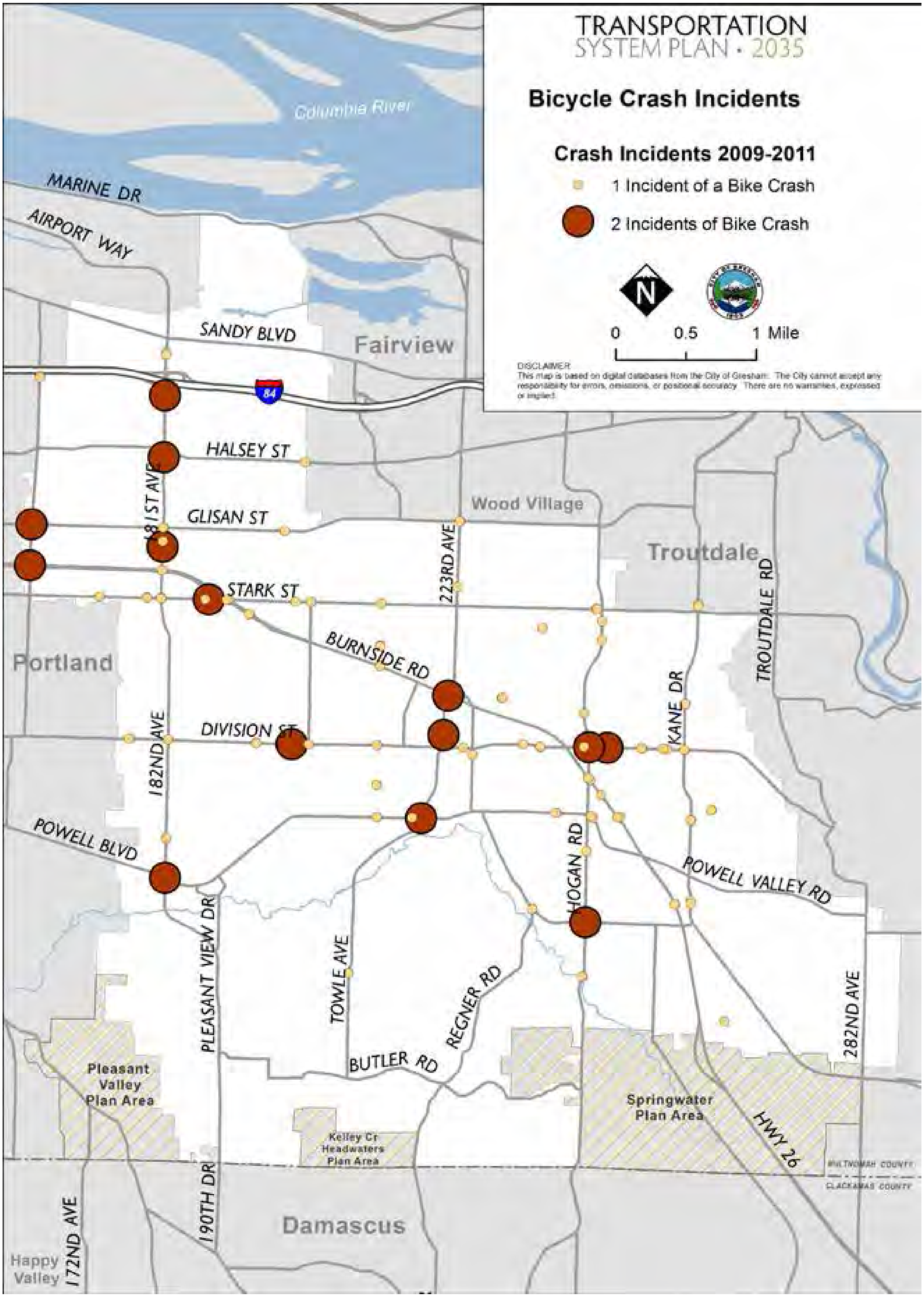
		September, 2011			May, 2012			September, 2012			May, 2013		
		9/13/2011	9/18/2011		5/15/2012	5/20/2012		9/11/2012	9/15/2012		5/14/2013	5/18/2013	
Site ID	Count Location	Tue	Sun	**SUM**	Tue	Sun	**SUM**	Tue	Sat	**SUM**	Tue	Sat	**SUM**
501	Springwater Corridor @ Pleasant Valley Drive	121	32	**153**	161	51	**212**	126	194	**320**	187	54	**241**
505	Springwater Corridor @ Main City Park	82	30	**112**	143	111	**254**	117	207	**324**	177	68	**245**
508	Springwater Corridor @ Hogan Road	71	17	**88**	122	60	**182**	94	121	**215**	112	32	**144**
514	Gresham Fairview Trail @ 201st/Halsey	35	9	**44**	16	4	**20**	21	5	**26**	25	3	**28**
517	Gresham Fairview Trail @ Burnside	22	25	**47**	19	14	**33**	12	28	**40**	21	3	**24**
518	Gresham Fairview Trail @ Division	42	10	**52**	28	21	**49**	12	30	**42**	43	15	**58**

Areas of highest bicycle volumes are on the Springwater Corridor Trail. The Gresham-Fairview Trail, which opened in 2010, has trended toward fairly consistent volumes. The City will be well suited to analyze trends in bicycle volumes and assess future demand as the data continues to be collected each May and September.

Bicycle Crashes

From 2009 through 2011, 85 bicycle-related crashes were reported in Gresham (Map 14). Of these crashes, 81 resulted in injury, 0 in fatality and 4 in property damage only. Weather conditions were cold for 12 incidents, clear for 64, foggy for one, rainy for six and unknown for two. Areas of highest crash rates were along the City's major and standard arterials, particularly where these two street types intersect. The majority, 61% of the crashes, were a result of bicyclist or motorist failure to yield.

Map 14: Bicycle Crash Incidents



Assessment of Existing Bicycle Conditions

Removing perceptions of danger and establishing good bicycle routes is fundamental to increasing bicycle use. If bicycle facilities are designed to allay safety concerns and access to destinations equals the access motorists have come to expect, then bicycling in Gresham will continue to increase.

All roads except urban freeways should be accessible by bicycle. Appropriate bicycle lane facilities must be included to accommodate bicyclists' needs whenever streets are constructed or reconstructed. This is State law; ORS 366.514. Adopted in 1971, it states "Footpaths and bicycle trails, including curb cuts or ramps as part of the project, shall be provided wherever a highway, road or street is being reconstructed, constructed or relocated."

Bicycle lanes on busy Kane Drive connect cyclists safely to the 40-Mile Loop.

Bicycle Lanes

Bicycle lanes on arterial and collector roadways are usually the most direct routes for bicyclists. Gresham's existing bicycle lane network on arterials within Gresham is nearly complete and intends to facilitate safe bicycle travel through the city.

Bicycle lanes improve access to destinations and commute options. Bicycle lanes on arterials:

- Establish the correct position of bicyclists on the roadway.
- Reduce bicycle/pedestrian conflicts as fewer cyclists ride on sidewalks.
- Provide bicyclists a space to travel at their own speed next to motorists.
- Guide bicyclists through intersections

Bicycle lanes on existing streets can be implemented by 1) narrowing existing travel lanes 2) removing a travel lane 3) removing parking when it is not deemed essential to serve adjacent land uses and 4) shoulder widening. Bicycle lanes may be implemented through stand-alone projects, through roadway construction or reconstruction, and through routine roadway resurfacing when the street configuration can be modified without parking removal or serious additional congestion.

Some streets have width constraints and parking needs that make bicycle lane installation very difficult. These circumstances include 1) difficulty of eliminating travel lanes or reducing lane widths 2) severe topographical constraints 3) harm to the natural environment or character of the natural environment due to additional pavement and 4) economic or aesthetic necessity of retaining parking on one or both sides of the street. These circumstances are to be carefully considered before a decision is made to implement an alternative treatment. Removal of a travel lane should be considered even if traffic congestion may increase and the additional congestion weighed against the benefit to the bicycling environment. If careful investigation proves that bicycle lanes are simply unfeasible, traffic calming improvements or a wider outside lane may be substituted. Alternative parallel bicycle lanes may also be developed.

Hazard Mitigation

Many small improvements can make a big difference, such as connecting existing bicycle lanes and other bicycle facilities, widening shoulders, making utility covers flush with the pavement, modifying storm sewer inlet grates, and regular bicycle lane sweeping.

Intersections are of primary concern to the City because it is generally at intersections where the highest bicycle crash rates happen. Good intersection design indicates to those approaching the intersection what path they must follow and who has the right-of-way, including bicyclists, whose movements are complicated by their lesser speeds and visibility.

A general solution is to better indicate positioning for both cyclists and motorists at the intersection. Bicycle lanes are striped to a marked crosswalk or a point where turning vehicles would normally cross them. The lane resumes at the other side of the intersection. Good design for bicyclists creates a path that is direct, logical, and close to the path of motor vehicle traffic. Only in rare cases should cyclists proceed through intersections as pedestrians.

Linking bicycles with mass transit such as buses helps overcome barriers to poor weather and riding at night.

Linking to Transit

Linking bicycles with mass transit (both bus and light rail) helps overcome such barriers as lengthy trips, riding at night, poor weather, or severe terrain. Connection to mass transit also enables bicyclists to reach more distant areas and increases transit ridership on weekends and days. TriMet manages most aspects of bicycle-transit integration and provides bicycle parking at transit stations, transit transfer stations and TriMet owned park-and-ride lots. TriMet also allows bicycles to be carried onboard MAX light rail and via racks on buses.

Long term, secure, covered bicycle parking is also essential to better link bicycle travel to transit use. Gresham is administering a park-and-ride program for bicyclists at TriMet's parking garage at the Gresham Central MAX Station.

Signs and Traffic Signals

Clear destination signs must be provided that direct riders to key activity centers, such as shopping areas, transit stops, recreation facilities, schools and bicycle parking facilities. The City installed directional signage throughout Gresham to provide bicyclists information regarding key destination locations and approximate time to reach those destinations. Current effort is underway to ensure the signage is consistent with regional wayfinding, particularly with standards developed by the Intertwine Alliance.[3]

The City installed directional signage throughout Gresham to provide bicyclists information regarding key destinations.

The City has bicycle loop detectors at several signalized intersections so that bicycles can trigger a signal without having to dismount. To be detected, bicyclists need to be correctly positioned over a signal detector loop, which has a sensitive wire buried in the pavement, usually in the shape of a diamond. The loop detects the presence of metal, and then relays the information to a signal control box.

3 The Intertwine Alliance is a coalition of private firms, public agencies and nonprofit organizations working together to tap new sources of funding, better leverage existing investments, and more fully engage residents with the outdoors and nature. The Alliance was built over many years, but was formally launched as a nonprofit in July 2011. The Alliance exists to ensure the region's trail network gets completed; that natural areas get restored, and that people of all ages discover they can enjoy the outdoors near where they live.

Parking

Bicycle parking is needed at likely destination points to provide a comprehensive bicycle system. The same consideration needs to be given to bicyclists as to motorists, who expect convenient and secure parking at all destinations. Both long-term and short-term parking are necessary. Long-term parking is intended for situations where the bicycle is left unattended for long periods of time and provides complete protection from the weather. Short-term parking provides a secure place to lock the bicycle, but not bicycle accessories. The bicycle is typically left for short periods of time and is visible and convenient to the building entrance. Weather protection is not necessarily provided. The City is currently in the process of updating its bicycle parking code to include both short-term and long-term bicycle parking requirements.

The City will continue to expand its bicycle rack inventory for both long-term and short-term parking.

Bike racks at the Center for the Arts Plaza in historic downtown Gresham.

Education

Education is an important element in increasing bicycling and improving safety. While one of the most effective ways to improve the safety of cycling is simply to improve the quality of Gresham's bicycle facilities, these cannot do it alone. There is also a need for proper education of both youth and adult cyclists and motorists. In collaboration with the Bicycle Transportation Alliance (BTA) and other advocacy groups, Gresham has offered education and training programs on bike safety annually since 2006. The City continues to work with the BTA to provide education about bike safety within schools, at major employment sites, and to the Gresham community.

9. Motor Vehicle

Overview of Existing Motor Vehicle Conditions

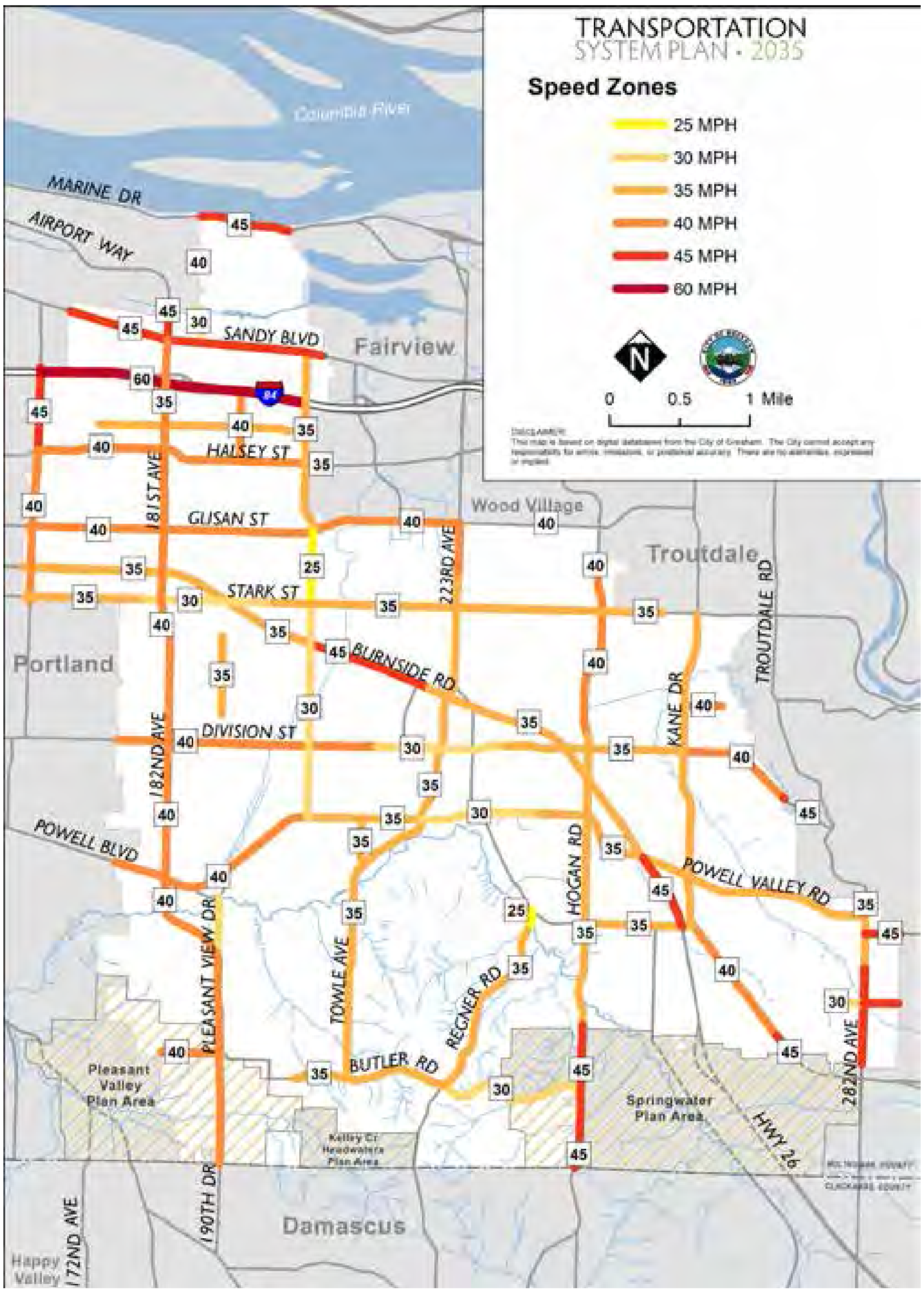
The automobile is the dominant means of travel in the Gresham area and will continue to be through 2035. This section provides an inventory and assessment of the motor vehicle travel mode.

Inventory of Existing Motor Vehicle Conditions

Speed Zones

Speed zones on Gresham's arterial and collector streets are shown in Map 15. Typical posted speeds are 30, 35 and 40 miles per hour. Speeds are lowered to 30 as streets cross Gresham's centers and increase to 40 or 45 as streets transition to less dense areas or to higher functioning streets.

Map 15: Speed Zones



Motor Vehicle Volumes

The City collected Average Daily Traffic volumes (ADT) at 241 locations throughout the city in 2010 and 2011. In addition to the ADT volumes, the data included directional travel information, heavy vehicle counts, and travel speeds. The data was utilized to refine the City's functional classification system and is used frequently to maintain an analysis of problem areas and ongoing monitoring.

Table 11 provides the directional and daily volumes per location. Map 16 displays the daily count data. An annualization factor is applied to the ADT to estimate the Annual Average Daily Traffic (AADT) at each locate on. The AADT represents an entire year's traffic volumes averaged out per day.

Motor vehicle volume on Division Street east of Birdsdale Avenue.

Table 11: Motor Vehicle Volumes

Trailer Location	Posted Speed	Date	North-bound Count	South-bound Count	West-bound Count	East-bound Count	Overall Count	AADT
300' south of NE Division St (Toyota Parking lot)	35	1/13/2010	11,459	11,483			22,942	25,993
475' west of SE 182nd Ave(GI Joes Parking lot)	35	1/25/2010			9,724	9,894	19,618	21,796
at the intersection of NW 16th St (west side)	25	1/27/2010	3,352	2,607			5,959	6,752
200' east of SE 185th Ave (old freddies lot)	35	2/1/2010			7,483	5,778	13,261	13,795
In the Set-N-Me-Free parking lot	35	2/2/2010			7,629	7,071	14,700	14,990
260' west of SE 202nd Ave	35	2/4/2010			7,654	7,773	15,427	14,936
In the Family service center parking lot	40	2/16/2010	12,699	13,975			26,674	27,199
on SE Cherry Park Rd (in cul-de-sac near Hogan)	40	2/17/2010	14,842	14,348			29,190	30,968
In Kmart parking lot near council chambers	35	2/17/2010	14,842	14,348			29,190	30,968
30' south of stop sign on NE 219th Ave	40	2/22/2010			12,819	14,342	27,161	28,256
40' south of NE Glisan St	25	2/23/2010	130	885			1,015	1,035
30' south of NW Division St on NW Battaglia Ave	40	3/8/2010			12,273	12,640	24,913	25,162
east end of Powell Loop behind Fall leaf bin.	40	3/9/2010			11,682	11,934	23,616	23,380
30' south of SE Powell Valley Rd on SE Robin Way	35	3/15/2010			5,052	6,808	11,860	11,979
in Schucks auto parts parking lot	35	3/16/2010			6,496	7,135	13,631	13,495
in the ERA parking Lot 330' west of SE Hogan Rd	30	3/17/2010			11,701	11,840	23,541	24,247
in cul-de-sac of NE View Pl	40	3/31/2010	15,337	14,819			30,156	31,061
30' west of Hogan on NE 20th St	35	4/1/2010	16,215	16,190			32,405	31,070
in Cascade RV parking lot	35	4/14/2010	8,743	7,397			16,140	16,957
30' west on SE 4th St	35	4/15/2010	7,827	7,442			15,269	14,640
Ops north yard(parks side of yard)	35	4/20/2010	4,876	4,985			9,861	9,958
in Al's Nursery parking lot	45	4/21/2010	3,945	4,376			8,321	8,742
30' west on 19th St	35	4/27/2010	3,770	3,922			7,692	7,767
30' north on Wilson Ave	35	4/28/2010			10,911	10,900	21,811	22,915
30' north on Miller Ave	30	5/4/2010			10,365	11,630	21,995	21,557
30' south on NE Hood Ave	30	5/5/2010			10,836	10,834	21,670	22,097
southeast corner of Tobacco Outlet Parking Lot	35	5/13/2010			10,128	10,621	20,749	19,309

Trailer Location	Posted Speed	Date	North-bound Count	South-bound Count	West-bound Count	East-bound Count	Overall Count	AADT
30' north on SE 176th Pl	40	5/19/2010			14,445	14,328	28,773	29,340
in Covenant Church parking lot	40	5/25/2010			13,086	13,418	26,504	25,977
30' South on Towle	40	5/26/2010			11,466	11,329	22,795	23,244
Red Robin parking lot	30	5/27/2010			11,765	12,050	23,815	22,162
30' north on NW Overlook	30	6/2/2010			11,377	11,834	23,211	22,234
40' south on 176th PL	35	6/3/2010			11,335	11,203	22,538	19,703
front of address 17727, Providence clinic	35	6/8/2010			3,798	3,479	7,277	6,700
30' south on NE 176th AVE	45	6/9/2010			8,207	7,601	15,808	15,142
30' north on NE 178th AVE	40	6/10/2010			7,859	7,103	14,962	13,080
40' south on SE 217th	35	6/14/2010			8,094	8,119	16,213	15,229
400' west of Eastman in Kmart Parking lot	35	6/15/2010			11,580	11,915	23,495	21,632
30' north on SE 24th ST	45	6/16/2010			4,749	4,846	9,595	9,191
30' south on SE 197th AVE	35	8/11/2010			7,545	7,427	14,972	14,496
30' East on SE El Camino DR	35	9/7/2010	7,404	8,600			16,004	15,527
30' W on NE 2nd CT	35	9/8/2010	8,234	9,362			17,596	17,761
30' north on NE Linden AV	30	9/9/2010			11,836	12,226	24,062	22,166
parking strip between court house and church	30	9/13/2010			14,472	12,720	27,192	26,915
30' north on NW Bellavista AV	35	9/14/2010			10,407	10,444	20,851	20,230
30' north on NE Cochran	35	9/20/2010			9,067	9,529	18,596	18,042
Safeway parking lot (south)	35	9/22/2010			10,292	8,785	19,077	19,256
30' east on NE 15th ST	35	9/27/2010	14,421	14,926			29,347	29,048
In theater parking lot	35	9/28/2010	12,258	13,832			26,090	25,313
30' west on NE Davis	40	10/4/2010	15,668	16,338			32,006	31,680
30' south on NE 186th	40	10/5/2010			6,837	6,747	13,584	13,179
30' west on NE Pacific ST	40	10/6/2010	16,057	16,539			32,596	32,902
McDonald's parking lot	40	10/7/2010	19,782	19,151			38,933	35,865
across from 637 SE 181st Ave	40	10/11/2010	12,211	11,863			24,074	23,828
50' west on SE Stephens St	40	10/12/2010	11,355	11,830			23,185	22,494
50' west on NW 1st St	40	10/13/2010	9,548	9,586			19,134	19,314
Safeway parking lot near east entrance	40	10/18/2010	8,338	6,839			15,177	15,022
1000' south of 3000 Block	40	10/20/2010	11,787	11,757			23,544	23,765
1000' south of NE Riverside	40	10/21/2010	5,566	5,174			10,740	9,894
1000' east of NE 172nd	45	10/25/2010			6,082	5,831	11,913	11,791
300' west of NE 185th	45	10/26/2010			7,501	7,347	14,847	14,405
Stormwater field across from Boeing Main Building	45	10/27/2010			5,946	5,735	11,681	11,791
16220 NE corner of field	40	11/1/2010			7,958	7,191	15,149	16,831
30' south on ne 167th Pl	40	11/2/2010			7,359	7,412	14,771	16,086
30' south on NE 184th Pl	40	11/3/2010			7,976	8,238	16,214	18,370
18699 NE Marine Dr parking lot	45	11/9/2010			4,950	4,687	10,495	10,495
30' south on NE 197th Ave	40	11/15/2010			-	-	-	-

Map 16: Motor Vehicle Volumes

Motor Vehicle Crashes

From 2009 through 2011, 1,169 motor vehicle related crashes were reported in Gresham (Map 17). Weather conditions were cold for 74 incidents, clear for 798, foggy for 2, rainy for 225, sleeting for one, snowy for 14 and unknown for 55. The majority, 61%, of the crashes were a result of bicyclist or motorist failure to yield. Areas of highest crash rates were along the City's major and standard arterials; particularly where these two street types intersect. The seven intersections with the highest crash rates are:

- 181st Avenue and Halsey Street
- 181st Avenue and Stark Street
- 181st Avenue and Division Street
- 181st Avenue and Powell Boulevard
- Hogan Drive and Stark Street
- Hogan Drive and Division Street
- Hogan Road and Burnside Road

Gresham Fire and Emergency Services personnel respond to a motor vehicle crash.

Map 17: Motor Vehicle Crashes

The intersection at SE Powell Valley Road and SE Burnside Road is periodically evaluated for congestion levels.

Intersection Performance (Volume to Capacity Measure)

Gresham periodically evaluates and monitors intersection performance as a measure for the level of congestion motorists' experience. Intersection traffic operation is represented as a volume to capacity (V/C) ratio which is a measure of the amount of traffic in a given intersection in relation to the amount of traffic the intersection was designed to handle. The level of traffic congestion experienced at an intersection is described in Table 12 below. Table 13 details an inventory of the volume to capacity ratio for 67 intersections throughout Gresham.

Table 12: Volume to Capacity Ratio

V/C Ratio	Congestion Level
V/C <= 0.8	No/Low congestion
V/C >0.8 and <=0.90	Moderate congestion
V/C > 0.90 and <= 1.0	High congestion
V/C > 1.0	Severe congestion

Currently only two of the 67 intersections monitored are operating at a high congestion level:

- Mt. Hood Highway & SE Palmquist Street, which is operating at 0.95.
- SW Pleasant View Drive & SW Highland Drive, which is operating at 0.93.

Gresham is evaluating alternatives to bring these two intersections to a higher operating performance.

Table 13: Intersection Performance Inventory

Intersection	Signalized?	2013 V/C
NE 162nd Ave & E Burnside St	Y	0.57
SE 172nd Ave/NE 172nd Ave & E Burnside St	Y	0.42
SE 181st Ave/NE 181st Ave & E Burnside St	Y	0.72
SE 185th Ave & E Burnside St	Y	0.27
SE 188th Ave & E Burnside St	Y	0.36
E Burnside St & SE Stark St	Y	0.49
SE 197th Ave & E Burnside St	Y	0.33
NW Birdsdale Ave/SE 202nd Ave & E Burnside St/NW Burnside Rd	Y	0.61
NW Wallula Ave/SE 212th Ave & NW Burnside Rd	Y	0.46
NW Civic Dr & NW Burnside Rd	Y	0.76
NW Eastman Pkwy & NW Burnside Rd	Y	0.78
Main Ave/Fairview Dr & NW Burnside Rd/NE Burnside Rd	Y	0.66
NE Kelly Ave & NE Burnside Rd	Y	0.51
NE Cleveland Ave & NE Burnside Rd	Y	0.64
NE Burnside Rd & NE Division St	Y	0.75
NE Hogan Dr & NE Burnside Rd	Y	0.87

Intersection	Signalized?	2013 V/C
SE Burnside Rd & SE 1st St	Y	0.55
SE Burnside Rd & SE 3rd St	Y	0.52
Mt. Hood Hwy/SE Burnside Rd & E Powell Blvd/SE Powell Valley Rd	Y	0.71
Mt. Hood Hwy & SE Palmquist St	Y	0.95
NE 162nd Ave & NE Halsey St	Y	0.53
NE Halsey St & NE 169th Ave	N	0.29
NE 172nd Ave & NE Halsey St	N	0.49
NE 181st Ave & NE Halsey St	Y	0.88
NE Halsey St & NE 192nd Ave	Y	0.51
NE 201st Ave & NE Halsey St	Y	0.56
NE 162nd Ave & NE Glisan St	Y	0.64
NE 172nd Ave & NE Glisan St	Y	0.38
NE 181st Ave & NE Glisan St	Y	0.86
NE 188th Ave & NE Glisan St	N	0.57
NE 192nd Ave & NE Glisan St	N	0.29
NE 194th Ave & NE Glisan St	N	0.28
NE 202nd Ave & NE Glisan St	Y	0.69
NE Hogan Dr/NE 238th Dr & NE Glisan St/SW Cherry Park Rd	Y	0.86
NE 162nd Ave & SE Stark St	Y	0.71
SE Stark St & SE 172nd Ave	N	0.56
SE 174th Ave & SE Stark St	Y	0.54
SE 181st Ave & SE Stark St	Y	0.74
KFC Drwy/SE 185th Ave & SE Stark St	Y	0.45
SE Stark St & SE 188th Ave	N	0.3
SE Stark St & SE 192nd Ave	N	0.24
SE Stark St & SE 194th Ave	N	0.24
SE 202nd Ave & SE Stark St	Y	0.69
SE 212th Ave & SE Stark St	N	0.43
SE 217th Ave & SE Stark St	N	0.36
SE 223rd Ave & SE Stark St	Y	0.88
NE Cleveland Ave & SE Stark St	Y	0.65
NE Hogan Dr & SE Stark St	Y	0.87
NE Kane Dr/SW 257th Ave & SE Stark St	Y	0.83
SE 182nd Ave & SE Division St	Y	0.85
SE 190th Ave & SE Division St	Y	0.55
NW Birdsdale Ave & SE Division St/NW Division St	Y	0.71
NW Wallula Ave & NW Division St	Y	0.41
NW Civic Dr & NW Division St	Y	0.51
NW Eastman Pkwy & NW Division St	Y	0.81
NW Division St/NE Division St & Main Ave	Y	0.54
NE Kelly Ave & NE Division St	Y	0.53

Intersection	Signalized?	2013 V/C
NE Cleveland Ave & NE Division St	Y	0.7
NE Hogan Dr & NE Division St	Y	0.72
NE Kane Dr & NE Division St	Y	0.81
NE Williams Ave & SE Division Dr	N	0.15
SW Highland Dr/SE 182nd Ave & W Powell Blvd	Y	0.68
E Powell Loop & W Powell Blvd	Y	0.59
SW Birdsdale Dr/NW Birdsdale Ave & W Powell Blvd	Y	0.65
SW Towle Ave/Towle Ave & W Powell Blvd	Y	0.59
SW Eastman Pkwy/NW Eastman Pkwy & W Powell Blvd	Y	0.72
SE Walters Dr & W Powell Blvd	Y	0.38
Main Ave & W Powell Blvd/E Powell Blvd	Y	0.61
Hood Ave & E Powell Blvd	Y	0.57
Cleveland Ave & E Powell Blvd	Y	0.51
SE Hogan Rd/NE Hogan Dr & E Powell Blvd	Y	0.83
Rene Ave & E Powell Blvd	Y	0.44
SE Kane Dr/NE Kane Dr & SE Powell Valley Rd	Y	0.59
SE Barnes Rd/SE Barnes Ave & SE Powell Valley Rd	N	0.56
SE 282nd Ave & SE Powell Valley Rd	N	0.56
NE 185th Ave & NE Marine Dr	N	0.45
NE Sandy Blvd & NE 185th Ave	N	0.65
NE 181st Ave/NE Airport Way & NE Sandy Blvd	Y	0.73
NE 181st Ave & US Bancorp	Y	0.54
NE 181st Ave & I 84 West	Y	0.53
NE 181st Ave & I 84 East	Y	0.6
NE 181st Ave & San Rafael St	Y	0.86
SE 182nd Ave/SE 181st Ave & SE Yamhill St	Y	0.55
SE 190th Ave & SE Yamhill St	N	0.27
SE 182nd Ave & SE Tibbetts St	Y	0.46
SW Highland Dr & SW 11th St	Y	0.4
SW Pleasant View Dr & SW Highland Dr	N	0.93
SW Pleasant View Dr & SW Willow Pkwy	N	0.42
SE 190th Ave/SW Pleasant View Dr & SE Giese Rd/SE Butler Rd	N	0.42
SE 190th Ave & SE Richey Rd	N	0.42
NE 201st Ave & NE Sandy Blvd	Y	0.46
SE 223rd Ave & SE Salmon St	N	0.4
NW Eastman Pkwy & NW 3rd St	Y	0.36
SW Towle Rd/SW Eastman Pkwy & SW Towle Ave	N	0.36
SW Towle Rd & SW Birdsdale Dr	N	0.38
SW Towle Rd & SW Binford Lake Pkwy	N	0.27
SW Towle Rd & SW Willow Pkwy	N	0.13
SW Butler Rd & SW Towle Rd	N	0.28

Intersection	Signalized?	2013 V/C
SW Butler Rd & SE Regner Rd	N	0.33
SE Regner Rd & SE Cleveland Ave	N	0.11
SE Regner Rd & SE Roberts Rd	N	0.11
NE Hogan Dr & NE Red Sunset Dr/NE 23rd St	Y	0.62
SE Hogan Rd & SE 5th St	Y	0.53
SE Hogan Rd & SE Roberts Dr/SE Palmquist St	Y	0.43
SE Hogan Rd & SE Cleveland Dr	N	0.31
SE Hogan Rd & SE Butler Rd	N	0.28
SE Fleming Ave & SE Palmquist St	N	0.1
SE Palmblad Rd & SE Palmquist St	N	0.46
NE Kane Dr & NE 29th St/Mt. Hood Hwy (US 26)	Y	0.59
NE Kane Dr & NE 23rd St	N	0.69
NE Kane Dr & NE 17th St	Y	0.61
NE Kane Dr & SE 1st St	Y	0.49
SE Kane Dr & SE 11th St	Y	0.41
SE Orient Dr/SE Kane Dr & SE Palmquist St	Y	0.65
SE Barnes Rd/SE Salquist Rd & SE Orient Dr	Y	0.54
SE Orient Dr & SE Chase Rd	N	0.28
SE Orient Dr & SE Welch Rd	N	0.1
SE 282nd Ave & SE Lusted Rd	N	0.24
SE 282nd Ave & SE Salquist Rd	N	0.29
SE 282nd Ave & SE Chase Rd	N	0.28
SE 282nd Ave & SE Welch Rd	N	0.28
Boeing/OPUS & NE Sandy Blvd	Y	0.62
NE Glisan St & NE Fairview Pkwy	Y	0.7
NE Glisan St & NE Wood Village Blvd	Y	0.59
Kaiser Dwy & SE Stark St	N	0.55
SE 197th Ave & SE Stark St	N	0.33
SE 199th Ave & SE Stark St	N	0.2
SE Burnside Rd/NE Burnside Rd & Oregon Trail	Y	0.57
NW Eastman Pkwy/SE 223rd Ave & NW 20th St/Fairview Dr	N	0.36
Berry Ridge & W Powell Blvd	Y	0.82
SE 182nd Ave & Centennial High School	Y	0.44
SE Roberts Rd & SE Hood Ave	N	0.15
NW Eastman Pkwy & Gresham Town Fair	Y	0.44
NE Cleveland Ave & NE 8th St	N	0.65
SE 190th Ave & SE Stark St	Y	0.39
Mt. Hood Hwy & SE 11th St	N	0.67
NE Glisan St & NE 185th Ave	Y	0.27
SE 3rd St & SE 1st St	N	0.67
NE 223rd Ave & NE Glisan St	Y	0.73

Assessment of Existing Motor Vehicle Conditions

For capital improvement purposes, the most important measures of a facility's condition are several of those criteria used for project priority setting:

- Safety deficiency
- Unacceptable congestion measured by volume to capacity ratio
- Pavement Condition

Metro has established regional safety and congestion targets. The TSP's system plans, policies, action measures and projects support working towards achieving the targets.

- Per Table 2.3 of the RTP, the regional safety target is to, "By 2035, reduce the number of pedestrian, bicyclist and motor vehicle occupant fatalities plus serious injuries each by 50% compared to 2005."
- Per Table 3.08-2 of the RTFP, deficiency thresholds and operating standards are:

Location	Standard	Standard	
	Mid-Day One-Hour Peak (V/C)	PM 2-Hour Peak (V/C)	
		1st Hour	2nd Hour
Central City Regional Centers Town Centers Main Streets Station Communities	.99	1.1	.99
Corridors Industrial Areas Intermodal Facilities Employment Areas Inner Neighborhoods Outer Neighborhoods	.90	.99	.99

For the third criteria, Gresham prioritizes maintenance improvements with the pavement management system, which inventories pavement and establishes optimal maintenance schedules as discussed above. The City of Gresham has adopted a PCI benchmark of 75.

10. Freight

Overview of Existing Freight Conditions

The movement of freight by truck and rail plays in important role in Gresham and the region's economy. If local employers are to remain competitive, the capacity of roads and rails must be adequate to efficiently transport raw materials and finished products within, to and through the city.

A semi-truck is loaded at a dock in Rockwood.

Inventory of Existing Freight Conditions

Truck Freight

The Metro region identifies primary freight routes using two designation types:

- **Main roadway routes.** These are the trunk of the freight system with higher volumes and major connections with other regions. The main roadway routes in Gresham are I-84 and Burnside Road east of Hogan Drive to US Highway 26 and beyond Gresham's eastern boundary
- **Roadway connectors.** These have lesser volumes, provide connectivity to industrial/employment land and connect those more significant main roadway routes. Gresham's roadway connectors are:
  - Sandy Boulevard
  - 181st/182nd Avenues
  - Highland Drive/190th Drive
  - 223rd Avenue between Glisan Street and Burnside Road
  - 242nd Avenue/Hogan Drive/Road
  - 257th Avenue/Kane Drive
  - Orient Drive
  - Glisan Street between Fairview Parkway and Hogan Drive
  - Burnside Road between 223rd Avenue/Eastman Parkway and Hogan Drive
  - Powell Boulevard
  - The planned Springwater Plan Area arterial road

The East Metro Connections Plan identifies transportation and other investments that advance economic and community development. This 2-year effort analyzed present and future transportation challenges to prioritize solutions that reflect community values. Working within the cities of Gresham, Fairview, Troutdale, Wood Village and Multnomah County, the East Metro Connections Plan relied on collaboration across jurisdictional boundaries to advocate for the prosperity of the East Metro area.

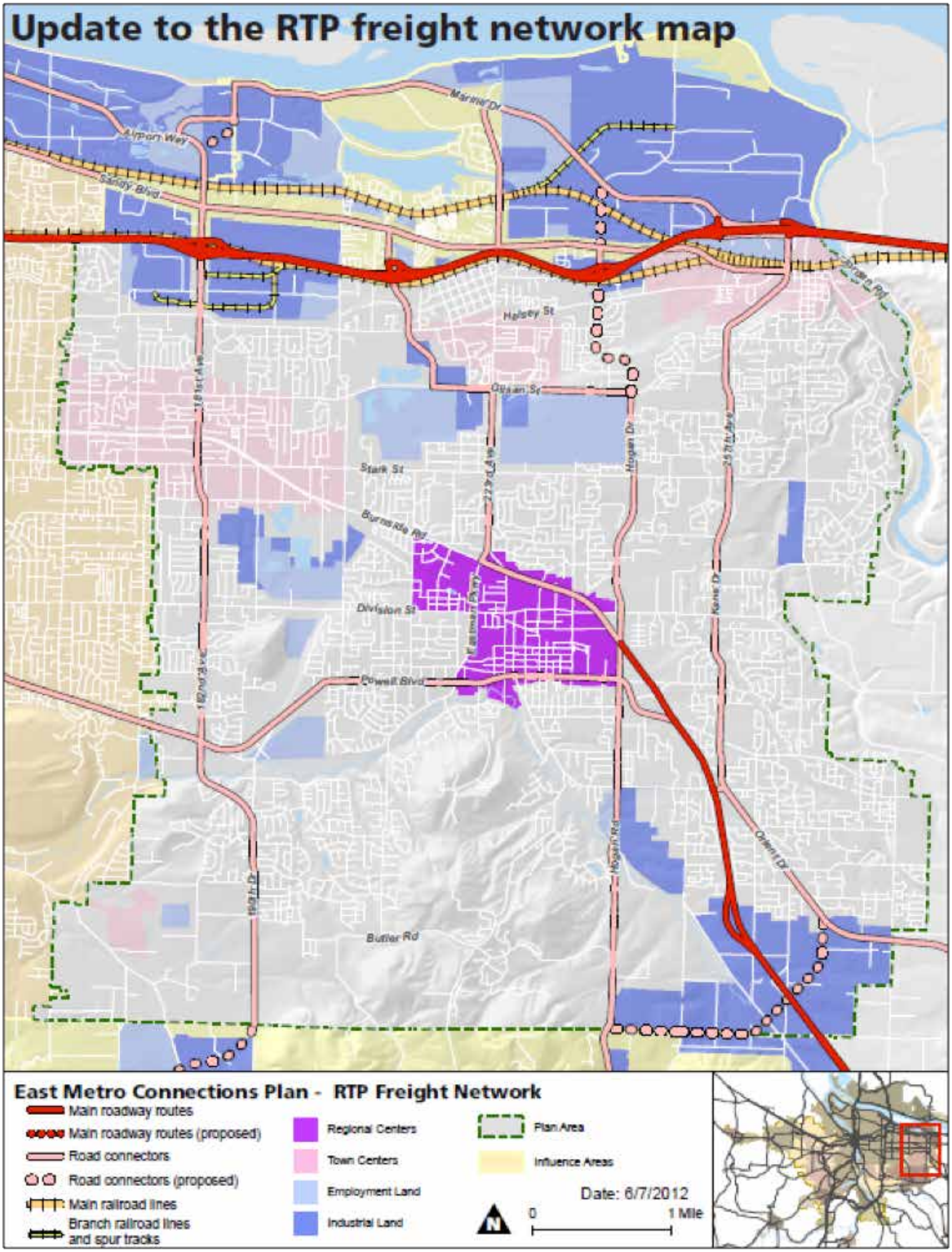
– Metro

Through a regional planning effort in 2011-2013 called the **"East Metro Connections Plan (EMCP)"**, portions of the Burnside Road main roadway route were proposed to be redesignated:

- From 181st Avenue to 223rd Avenue proposed to no longer be a freight route
- From 223rd/Eastman Parkway to 242nd/Hogan Drive it is proposed as a "Roadway Connector".

The updated freight network (Map 18) brings the use and function of the roads more in line with their intended uses and resolves conflicts with land uses adjacent to these roads. For example, the portion of Burnside that was previously identified as part of the freight network is within a town center and surrounded by residential and retail areas.

Map 18: Regional Transportation Plan Freight Network Map



The U.S. Department of Transportation's National Highway System (NHS) consists of roadways important to the nation's economy, defense and mobility.[4] It includes a subsystem of roadways:

A traffic sign at NE 181st Avenue in Gresham directs motorists to Interstate 84.

- **Interstate:** The Eisenhower Interstate System of highways retains its separate identity within the NHS.
- **Other Principal Arterials:** These are highways in rural and urban areas which provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility.
- **Strategic Highway Network (STRAHNET):** This is a network of highways which are important to the United States' strategic defense policy and which provide defense access, continuity and emergency capabilities for defense purposes.
- **Major Strategic Highway Network Connectors:** These are highways which provide access between major military installations and highways which are part of the Strategic Highway Network.
- **Intermodal Connectors:** These highways provide access between major intermodal facilities and the other four subsystems making up the National Highway System.

In Gresham there are 20.41 miles of NHS route facilities on Gresham-owned and maintained roads. The following (Table 14) is a list of NHS facilities within Gresham's boundaries:

Table 14: National Highway System Facilities

Road Description	NHS Description	Functional Classification
I-84 within Gresham	Intermodal Connector	
181st Avenue between Yamhill Street and Sandy Boulevard	NHS Mainline	Other Urban Principal Arterial
Halsey Street west of 181st Avenue	NHS Mainline	Other Urban Principal Arterial
182nd Avenue between Powell Boulevard and Yamhill Street	NHS Mainline	Other Urban Principal Arterial
223rd Avenue between Burnside Road and Glisan Street	NHS Mainline	Other Urban Principal Arterial
Hogan Drive between Stark Street and Glisan Street	NHS Mainline	Other Urban Principal Arterial
Glisan Street	NHS Mainline	Other Urban Principal Arterial
Burnside Street between 181st Avenue and Highway 26	NHS Mainline	Other Urban Principal Arterial
Eastman Parkway between Powell Boulevard and Burnside Road	NHS Mainline	Other Urban Principal Arterial
Division Street west of Burnside Road	NHS Mainline	Other Urban Principal Arterial
Hogan Drive between Burnside Road and Stark Street	NHS Mainline	Other Urban Principal Arterial
Powell Boulevard	NHS Mainline	Other Urban Principal Arterial
Sandy Boulevard	NHS Mainline	Other Urban Principal Arterial

4 *http://www.fhwa.dot.gov/planning/national_highway_system/*

The focal point for freight-related industries in Gresham is the intersection of I-84 and 181st Avenue where one of Gresham's highest trafficked arterials intersects with I-84, a NHS route facility. This area is a gateway to the Portland International Airport to the west, the Columbia Southshore industrial area to the north and the Rockwood industrial area and Banfield Corporate Park to the south. Additional significant industrial land is located to the east and situated for good I-84 access at the Fairview Parkway interchange and convenient access to US Highway 26 via 238th Avenue/242nd Avenue/ Hogan Road and 257th Avenue/Kane Drive, major arterial streets.

Truck volumes as a percentage of all vehicles were analyzed through the EMCP project at two screenlines. Metro performed traffic counts in March, 2011 during a one hour PM peak timeframe (5 - 6 p.m.). One screenline captured north/south movement at 181st and Burnside; 223rd and Stark; Hogan and Stark; and 257th and Stark. A second screenline captured east/west movement at 181st and Halsey; 181st and Glisan; 181st and Burnside; 181st and Stark; 182nd and Division; and 182nd and Powell. Types of freight vehicles counted included light/medium trucks and heavy duty trucks.

Light/medium trucks were buses and single unit trucks. Heavy duty trucks were trucks larger than a single unit truck. Tables 15 and 16 provide the truck volumes as totals and as percentages of all vehicles. Graphics 5 and 6 show the screenlines and count locations.

Table 15: Truck Volumes at North/South Screenline

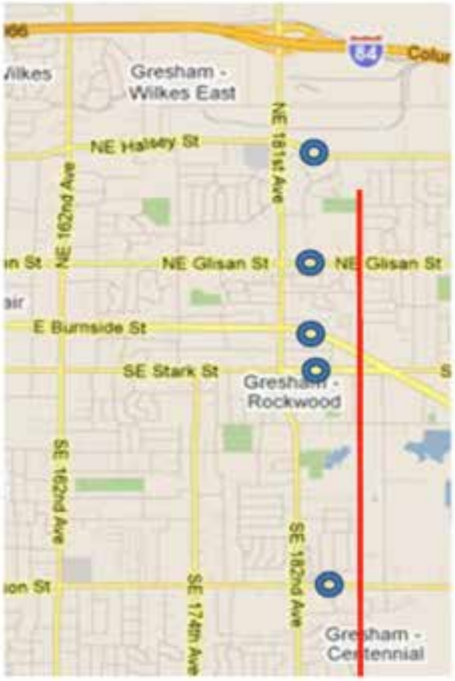
Location	Total # of Vehicles	Light/Medium Trucks	Heavy Trucks	Total Trucks	% of total trucks at this screenline	% of Total Vehicle Volumes
181st and Burnside	2442	17	10	27	24.1%	1.1%
223rd and Stark	2663	14	8	22	19.6%	0.5%
242nd and Stark	2130	24	11	35	31.3%	1.6%
257th and Stark	2116	14	14	28	25.0%	1.3%
Total	**9351**	**69**	**43**	**112**	**100%**	**1.2%**

Graphic 5: North/South Screenline

Table 16: Truck Volumes at East/West Screenline

Location	Total # of Vehicles	Light/ Medium Trucks	Heavy Trucks	Total Trucks	% of total trucks at this screenline	% of Total Vehicle Volumes
181st and Halsey	1141	18	2	20	13.3%	1.8%
181st and Glisan	1210	25	1	26	17.3%	2.4%
181st and Burnside	924	8	23	31	20.6%	3.4%
181st and Stark	1715	19	1	20	13.3%	1.2%
182nd and Division	2236	16	0	16	1.06%	0.7%
182nd and Powell	1810	Unknown	Unknown	37	24.9%	2.0%
Total	**9036**	**86**	**27**	**150**	**100%**	**1.7%**

Graphic 6: East/West Screenline



Heavy Rail

Gresham is served by one heavy rail (non-public transit) line. The Union Pacific Railroad crosses the north side of the city and has two parallel branches: the mainline north of and parallel to Sandy Boulevard (1.8 miles) and the branch line parallel to I-84 (2 miles). The south branch provides direct rail service to the Rockwood and Banfield Corporate Park industrial areas and several large manufacturing and distribution uses. The north Gresham industrial areas served by Union Pacific allows the City to more efficiently encourage the location of businesses needing direct and efficient rail service with the assurance that rail service will continue to be provided for those businesses.

Both the Rockwood and Banfield industrial parks have rail access via a spur and sidings off the Kenton Line. There are no other active sidings in Gresham and no evidence of additional demand, as the existing sidings are underutilized.

There are two at-grade heavy rail crossings in Gresham. The first is a signalized crossing of 181st Avenue between San Rafael and Halsey Streets. This crossing has potential for conflicts with motor vehicles but has little rail traffic. The second crossing is over San Rafael near 192nd Avenue. This industrial area has low traffic volumes and the rails are seldom used. An increase in rail volume in the future would not create any significant conflicts.

Freight improvements at NE 181st Avenue and Wilkes Road allow easier access to Interstate 84.

In addition, there are railroad bridges crossing 162nd Avenue, 181st Avenue, 185th Avenue and 201st Avenue. Gresham has jurisdiction over the 185th Avenue bridge and also recently acquired jurisdiction over the 181st Avenue and 201st Avenue bridges from Multnomah County as a result of a 2006 road transfer between Gresham and the County. Gresham recently completed improvements to the 185th Avenue bridge and its span currently is sufficient for freight traffic on 185th Avenue. The spans of the 162nd and the 201st Avenue bridges are insufficient to construct the planned roadway facilities and they create a barrier to safe motor vehicle, transit, freight, pedestrian and bicycle circulation.

Assessment of Existing Freight Conditions

High truck volumes are not always compatible with areas where streets are intentionally designed to support high bicycle, pedestrian and transit activity such as Gresham's regional and town centers. Trucks must compete for limited space in the right-of-way along with the other modes, causing greater potential for delay for through movement of freight vehicles. Thus, an important consideration for freight operators to monitor is the ability of the street system to provide for efficient commercial delivery, particularly in regional and town centers where lower peak hour levels-of-service may be accepted. The City should develop standards for loading zones and consider system management techniques such as limited delivery times for freight in regional and town centers.

The 2011 Oregon Rail Freight Plan did not identify any rail capacity or facility improvements in Gresham.

11. Public Transit System

Overview of the Public Transit System

Public transportation plays a vital role in the transportation system, as it provides a choice for those who have a car and is a primary means of transportation for individuals who do not have a car. It eases traffic congestion and reduces air pollution, working toward regional sustainability goals. TriMet is the Portland Metro region's transit service agency. It serves Gresham and a small portion of the northeastern corner of the Springwater Plan Area with bus and light rail public transportation.

TriMet buses wait for riders at the Gresham Central Transit Center on NE Eighth and Kelly avenues.

Map 19: Public Transportation

Inventory of Existing Public Transit System

Light Rail

The Metropolitan Area Express (MAX) is a 52 mile regional light rail system connecting the cities of Gresham, Beaverton, Hillsboro and Portland and serving Multnomah, Washington and Clackamas counties as well as the Portland International Airport. Gresham is served with the Blue Line, which stretches 15 miles from downtown Portland to the Cleveland Station in Gresham's Downtown (Map 19).

Top: The Rockwood/East 188th Avenue MAX station in Rockwood.

Bottom: The Gresham City Hall MAX station provides transportation to jobs, shopping, education facilities and medical centers.

Within Gresham, there are nine light rail stations, including one transit center:

- **The East 162nd Avenue Station** features shelters on both platforms.
- **The East 172nd Avenue Station** features shelters on both platforms.
- **The East 181st Avenue Station** is located within the Central Rockwood Plan Area and provides access to local restaurants, businesses and high density residential development. This station features shelters on both platforms.
- **The Rockwood/East 188th Avenue Station** is located within the Central Rockwood Plan Area and provides access to local restaurants, businesses and high density residential development. This station was remodeled in 2011 to enhance use and access. The design incorporated a shelter and art as shown in the photo below. Additional projects from 2010 to 2011 improved pedestrian access to serve Rockwood's active pedestrian culture.
- **The Ruby Junction/East 197th Avenue Station** is located within the Central Rockwood Plan Area and provides access to the restaurants, businesses and high density residential development located within this area. The station features a shelter.
- **The Civic Drive Station** is Gresham's newest light rail station. It began operation in 2010 and is located within Gresham's Civic Neighborhood, and provides access to the Gresham Station Shopping Center, Gresham Station North, high density residential development, and educational and medical centers. It features shelters on both platforms.
- **The Gresham City Hall Station** is located within Gresham's Civic Neighborhood. It provides access to the Gresham Station Shopping Center, Gresham Station North, high density residential areas, education facilities, and medical centers. It features shelters on both platforms.
- **The Gresham Central Transit Center** is a major transit hub that provides connections to the MAX Blue Line as well as bus lines 4 (Division/Fessenden); 9 (Powell Blvd); 20 (Burnside/Stark); 21 (Sandy Blvd/223rd); 80 (Kane/Troutdale Rd); 81 (Kane/257th); 84 (Powell Valley/Orient Dr); and 87 (Airport Way/181st). This

station is located within Gresham's historic downtown and provides access to local restaurants, shops and civic buildings. It has a shelter and a food/beverage concession. The Gresham Parking Garage is located just north.

- **The Cleveland Avenue Station** is the easternmost stop for the entire length of the Blue Line. It features a shelter and transit tracker sign. A park and ride is located to the north of the station.

Light rail service headways (time between trains) are attractive to riders and exceed most bus lines in frequency. During peak hours, headways are typically 7-10 minutes in the peak direction; midday headways are typically 15 minute and night headways are typically 15-30 minutes.

Table 17 shows light rail ridership per TriMet's 2011 Spring Census. The nine stations within Gresham experienced a total ridership of 19,594 per day. Ridership accounts for bi-directional travel and riders getting on and off the light rail. Gresham's 2020 TSP identified 16,618 ridership volumes per TriMet

2002 Census. Based upon this data, the light rail ridership has increased by 18% since 2002.

Bottom right: A City of Gresham employee commutes to work via light rail.

Table 17: Light Rail Ridership

Station	Direction	Ons	Offs	Total
E 162nd Ave MAX Station	Eastbound	511	1,332	1,843
E 162nd Ave MAX Station	Westbound	1,359	544	1,903
E 172nd Ave MAX Station	Eastbound	164	531	695
E 172nd Ave MAX Station	Westbound	491	150	641
E 181st Ave MAX Station	Eastbound	293	874	1,167
E 181st Ave MAX Station	Westbound	896	297	1,193
Rockwood/E 188th Ave MAX Station	Eastbound	259	876	1,135
Rockwood/E 188th Ave MAX Station	Westbound	915	258	1,173
Ruby Junction/E 197th Ave MAX Station	Eastbound	278	504	782
Ruby Junction/E 197th Ave MAX Station	Westbound	362	185	547
Civic Drive MAX Station	Eastbound	73	319	392
Civic Drive MAX Station	Westbound	271	68	339
Gresham City Hall MAX Station	Eastbound	122	854	976
Gresham City Hall MAX Station	Westbound	925	125	1,050
Gresham Central TC MAX Station	Eastbound	70	1,471	1,541
Gresham Central TC MAX Station	Westbound	1,326	87	1,413
Cleveland Ave MAX Station	Westbound	0	1,356	1,356
Cleveland Ave MAX Station	Westbound	1,448	0	1,448
Totals		**9,763**	**9,831**	**19,594**

Source: TriMet, 2011 Spring Census

Bus

TriMet provides bus service within, to and through Gresham and also a small portion of the northeast corner of the Springwater Plan Area. There are 10 lines with 513 bus stops serving Gresham. The lines are:

TriMet Bus line 87 (Airport Way/181st) provides weekday service between Gateway Transit Center and Gresham Transit Center, Rockwood and Parkrose, along 102nd, Sandy, 105th, Airport Way, 181st/182nd, Highland, 14th, Heiney, Binford Lake Parkway, Towle, Eastman Parkway, and Division. This line does not provide service on Saturday or Sunday.

TriMet Bus line 77 (Broadway/Halsey) travels through Gresham on Halsey Street connecting Montgomery Park, NW Portland, the Pearl District, Union Station/Greyhound, Portland city Center, the Rose Quarter, Irvington, Hollywood, outer NE Portland, Fairview and Troutdale, via Vaughn, Thurman, 21st, Everett/Glisan, Multnomah, Broadway/Weidler and Halsey. It operates both weekdays and weekends.

TriMet Bus line 25 (Glisan/Rockwood) provides weekday service between Gateway Transit Center and Rockwood, along Glisan, 181st Avenue, Stark Street and 185th Avenue. This line does not provide weekend service.

TriMet Bus line 21 (Sandy Blvd/223rd) connects the Gresham Transit Center and Parkrose Transit Center, via Sandy, 238th, Halsey, 223rd/Fairview and Division. It provides service both weekdays and weekends.

TriMet Bus line 20 (Burnside/Stark) connects the Gresham Transit Center and Beaverton Transit Center via Division, Kane and Stark through Gresham west to Burnside, Portland City Center, Barnes and Cedar Hills Boulevard. It provides service both weekdays and weekends.

TriMet Bus line 20 travels on Stark Street in Rockwood.

TriMet Bus line 80 (Kane/Troutdale Rd) runs between Gresham Transit Center and Troutdale, along Powell, Kane/257th, Stark, Troutdale Road, Cherry Park, Buxton, Columbia Way, 257th and Frontage. It provides service both weekdays and weekends.

TriMet Bus line 4 (Division/Fressenden) is a **frequent service line** connecting the Gresham Central Transit Center with SE Portland, Portland city center, Old Town/Chinatown, Union Station, the Rose Quarter, NE Portland and St. Johns, via Division, 5th/6th, Everett/Glisan, Williams/Vancouver, Mississippi, Albina, Lombard, Fessenden and St. Louis. Buses run about every 15 minutes during the weekday morning and afternoon rush hours.

TriMet Bus line 81 (Kane/257th) provides weekday service between Gresham Transit Center and Troutdale, along Powell, Kane/257th and Frontage. It does not provide weekend service.

TriMet Bus line 9 (Powell Blvd) connects the Gresham Central Transit Center, SE Portland, and Portland city center, via Powell, and 5th/6th Avenues. During the weekday morning and afternoon rush hours, buses run to Gresham every 30 minutes.

TriMet Bus line 84 (Kelso/Boring) provides weekday rush-hour service between Gresham and Boring along Hood, Powell and Boring Rd/282nd, or between Gresham, Orient and Kelso along Hood, Powell, Orient, Bluff and Kelso Road. This line does not provide weekend service.

Frequent Service bus lines run about every 15 minutes during the morning and afternoon rush hours on weekdays. They connect the regional hubs where many riders live and work. These lines also have a number of features designed to make trips easier, faster and more comfortable:

- *new shelters and sign poles with service information and Stop ID numbers*
- *ADA-compliant landings and curb ramps*
- *bus stop re-spacing and curb extensions*
- *better pedestrian access*
- *traffic signal priority*
- *bus-only lanes*

57% of all bus trips are on Frequent Service lines.

Source: http://trimet.org/schedules frequentservice.htm

Bus stops along each line vary in amenities including shelters, lighting, benches, pavement at front and/or back door of bus, sidewalks and/or cross walks, schedule display and curb ramps. TriMet's "Bus Stops Guidelines" July 2010 revision states, "The public's first impression of TriMet and its services is the bus stop." The Guidelines "…provide a framework for maintaining and developing bus stops. They promote consistency for good design and the provision of bus stop amenities, making stops easier to identify and better matched to their use, location and potential for attracting riders." Further, the "guidelines identify and encourage partnerships with the community and property owners. TriMet is working with communities to improve access to bus stops, including sidewalks, safe street crossings, accessible curb ramps and bicycle lanes."

Table 18 shows bus ridership by route per TriMet 2011 Spring Census. Passenger boardings and alightings (ons and offs) are provided for both directions of line travel for all stops within Gresham. The 11 lines within Gresham experienced a total ridership of 14,312 per day. Line 20 has the most ridership, with 6,229 passengers, or 44% of total passengers within Gresham. Line 4 follows with 2,031 passengers, or 14% of Gresham's total ridership. Line 20 may experience such high passenger volumes as it is the city's centrally located north/south line and connects the Gresham Transit Center north to Wood Village and Fairview.

Table 18: Bus Ridership *Source: TriMet, 2011 Spring Census*

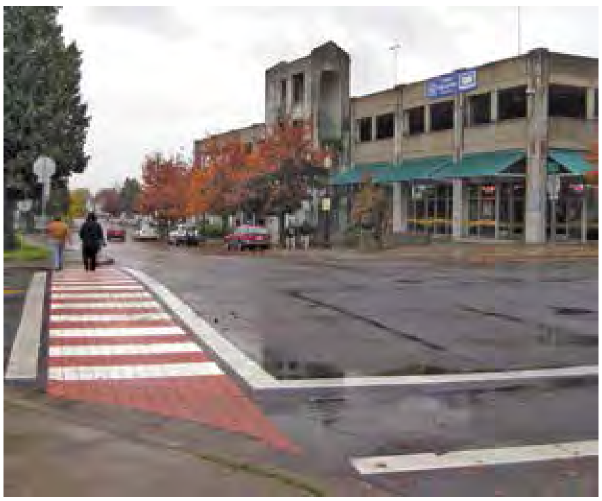
Line Number	Route Description	Direction Description	Ons	Offs	Total	Monthly Lifts
4	4-Division/Fessenden	To Gresham TC	214	694	908	167
4	4-Division/Fessenden	To St Johns	864	259	1123	194
					All # 4 Stops within Gresham -> 2,031	
9	9-Powell/Broadway	To Powell & 98th or Gresham TC	248	645	893	200
9	9-Powell/Broadway	To Saratoga & 27th	674	244	918	197
					All #9 stops within Gresham -> 1,811	
12	12-Barbur/Sandy Blvd	To Parkrose/Sumner or Gresham TC	112	489	601	92
12	12-Barbur/Sandy Blvd	To Sherwood	509	195	704	101
					All #12 stops within Gresham -> 1,305	
20	20-Burnside/Stark	To Gresham TC	1060	1917	2977	434
20	20-Burnside/Stark	To 23rd & Burnside or Beaverton TC	2041	1211	3252	437
					All #20 stops within Gresham -> 6,229	
25	25-Glisan/Rockwood	To Rockwood	10	39	49	11
25	25-Glisan/Rockwood	To Gateway TC	34	7	41	8
					All #25 stops within Gresham -> 90	
77	77-Broadway/Halsey	To Troutdale	101	272	373	22
77	77-Broadway/Halsey	To Montgomery Park	334	127	461	22
					All #77 stops within Gresham -> 834	
80	80-Kane/Troutdale Rd	To Troutdale	176	119	295	70
80	80-Kane/Troutdale Rd	To Gresham Transit Center	155	199	354	86
					All # 80 stops within Gresham -> 649	
81	81-Kane/257th	To Troutdale	244	131	375	53
81	81-Kane/257th	To Gresham TC	130	208	338	81
					All #81 stops within Gresham -> 713	
82	82-Eastman/182nd	To Gresham TC	87	106	193	68
82	82-Eastman/182nd	To Rockwood	155	119	274	72
					All #82 stops -> 467	
84	84-Kelso/Boring	To Kelso - Boring	10	6	16	0
84	84-Kelso/Boring	To Gresham TC	1	2	3	0
					All #84 stops within Gresham -> 19	
87	87-Airport Way/181st	To Rockwood	26	59	85	0
87	87-Airport Way/181st	To Parkrose/Sumner Transit Center	54	25	79	1
					All #87 stops within Gresham -> 164	1

Park and Ride

There are four park and ride lots in Gresham, all located along the MAX light rail line. The four lots are:

- **The East 181st Avenue Park and Ride** is located at 181st Avenue and Burnside Street. It has 247 total spaces and bicycle lockers available and is open 24 hours every day. It is served by the MAX Blue Line, and bus lines 20 (Burnside/Stark); 25 (Glisan/Rockwood); and 87 (Airport Way/181st Avenue). Per TriMet inventory in 2012, this Park and Ride was **12% full** and is the most underutilized of the four park and rides.

Usage data is based upon TriMet's inventory of Park and Ride usage. Counts were performed in the fall of 2012.



Top: TriMet's Park and Ride at NE Eighth Street and Kelly Avenue serves bus and light rail users at the Gresham Central Transit Center.

Bottom: The transit system in Gresham includes bus service on Main Street in historic downtown.

- **The Gresham City Hall Park and Ride** is located at Eastman Parkway and Division Street. It has 305 total spaces, bicycle lockers available and is open 24 hours, every day. It is served by the MAX Blue Line, and bus lines 4 (Division/Fessenden); 21 (Sandy Blvd/223rd); and 87 (Airport Way/181st). Per TriMet inventory in 2012, the Gresham City Hall Park and Ride was 69% full.
- **The Gresham Parking Garage** is located at Kelly Avenue and 8th Street and serves the Gresham Central Transit Center. It has a total of 540 parking spaces and bicycle lockers available. It is open 24 hours every day. The Gresham Parking Garage serves the following connections: MAX Blue Line; 4 (Division/Fessenden); 9 (Powell Blvd); 20 (Burnside/Stark); 21 (Sandy Blvd/223rd); 80 (Kane/Troutdale Rd); 81 (Kane/257th); 84 (Powell Valley/Orient Dr); and 87 (Airport Way/181st). Per TriMet inventory in 2012, this park and ride was 23% full.
- **The Cleveland Avenue Park and Ride** has 392 spaces and bike lockers available. It is open 24 hours each day every day. It is served by the MAX Blue Line. Per TriMet inventory in 2012, it was 69% full.

Assessment of Public Transit Conditions

Transit system improvements should focus on supporting Gresham's land use plans and promoting development and redevelopment of the Rockwood Town Center, the Gresham Regional Center and employment/education centers. Based upon local priorities identified in the 2020 TSP adopted in 2002 and confirmed during public outreach for the 2035 TSP, the city's transit needs are:

1. Enhanced north/south transit access.
2. Improved frequency and service hours on lines serving Wood Village, Troutdale, Sandy, Mt.. Hood Community College, Powell, Glisan.
3. Light rail extension or other high capacity transit connection to Mt.. Hood Community College.

4. High capacity transit (7-8 minutes all day service) connecting the Gresham Regional Center, Town Center and other major destinations and employment centers.
5. Primary transit (15 minutes all day service) on all other arterial corridors serving higher density and mixed-use, transit-oriented land uses and community destinations.
6. Fixed-route neighborhood transit service in moderate and lower density residential areas connecting to transfer points and major destinations.
7. Light rail station improvements and downtown shuttle needs.
8. Fareless zone for areas along light rail within Gresham Regional Center.
9. Improvements at high-ridership stops, such as shelters and improved pedestrian access.

12. Travel Demand Management

Overview of Travel Demand Management

The overall goal of a Transportation Demand Management (TDM) program is to maximize the efficiency of the existing transportation system by reducing the number of single occupant vehicles using the road system. The program of strategies and actions can also help meet mobility, air quality, and livability goals, as well as achieve Vehicle Miles Traveled (VMT) per capita and parking per capita reduction requirements of the state's Transportation Planning Rule. Reduction in travel can be accomplished through the provision of a wide variety of mobility options including transit, walking, biking carpooling and telecommuting.

TDM is not one action but rather a set of actions or strategies that encourage drivers to not drive alone, especially during heavily congested peak travel periods of the day. TDM therefore includes measures and/or incentives to:

- Provide pedestrian/bicycle amenities and urban design elements to help provide pedestrian interest and scale, as well as improved transit connections and amenities to increase non-auto trips.
- Reduce single occupant vehicle traffic with an emphasis on the peak travel periods which may incorporate carpools, vanpools, express buses, park and ride lots, transit pass incentive programs, etc.
- Spread traffic volumes away from the peak travel periods, which may include flex-time, staggered work hours, trip reduction ordinances, impact fees, etc.
- Improve traffic flow, which may include signal optimization, one-way streets, reversible travel lanes, ramp metering, etc.
- Remove vehicle trips completely from the roadway, such as telecommuting, conference calling and compressed work weeks, etc.

Top: Cyclists on W. Powell Boulevard in Gresham.

Bottom: Gresham Station shopping center and urban housing are served by MAX light rail.

Inventory of Transportation Demand Management Strategies

Gresham currently uses several travel demand management strategies. The System Development Charge (SDC) ordinance provides 30% fee reductions for development near light rail and 10% fee reductions for development near designated transit streets. These districts require increased density, pedestrian friendly buildings, street frontage and direct building orientation with primary building entrances to the street. Well planned and connected pedestrian systems link developments to each other, light rail stations, transit centers and transit stops. Additional pedestrian amenities and urban design elements help provide pedestrian interest and scale.

SDCs can also be reduced for development implementing a TDM plan that reduces peak hour vehicle trips. The program allows developments located outside transit districts or corridors to utilize innovative or creative strategies to reduce travel impacts.

The City also provides tax incentives to promote transit oriented development (TOD) and transit supportive public or private facilities through a Transit Oriented Development Tax Exemption (TOTE) program. The TOTE program is available in Gresham's Downtown, Civic Neighborhood and Rockwood areas. The program provides at 10 year property tax abatement for TODs that meet program criteria.

Finally, as a major employer, the City of Gresham uses regional rideshare assistance and guaranteed ride home programs. The City provides transit incentives by reducing daily and monthly transit ticket costs and encourages employees to commute by walking, bicycling, taking transit or another active form of transportation by providing materials and information through city announcements, transportation fairs and City bicycle fleet programs.

Assessment of Transportation Demand Management Conditions

A TDM Plan must establish measurable objectives to accomplish reductions in Vehicle Miles Traveled including:

- An increase in the modal share of non-auto trips.
- An increase in average automobile occupancy.
- A decrease in number of automobile trips through TDM strategies, rearranging land uses or other means.
- Promote effective employer incentive programs that reduce the number of employees driving alone and dependence on the automobile.
- Promote, establish and support transportation management associations (TMAs) in regional centers, industrial areas, town centers and employment centers.
- Promote end-of-trip facilities that support active transportation modes.
- Promote private and public sector programs and services that encourage employees to use non-single occupant vehicle modes or changes to commuting patterns.

13. Transportation System Management and Operations/Intelligent Transportation Systems

Overview of Transportation System Management and Operations/Intelligent Transportation Systems

The City of Gresham uses various strategies to manage the existing and forecasted supply of traffic through means other than expanding roadways. These strategies are referred to as "Transportation System Management" (TSM) or Intelligent Transportation Systems (ITS). The purpose of these strategies is to enhance travel time efficiency and reliability, safety, and use of existing roadway capacity. Strategies include multimodal traffic management, traffic incident management, and traveler and real-time information. Projects referenced in other modal plans and in the Transportation Demand Management section support and work in concert with TSM.

Inventory of Transportation System Management and Operations/Intelligent Transportation Systems

Typical Gresham TSM/ITS projects include use of technologies such as:

City of Gresham electrician Tony Sepich adjusts the traffic light signals.

Signal Optimization - interconnect and program traffic signals to work together as a coordinated system (or adaptive coordinated system) to move traffic along a corridor or through an arterial network more efficiently.

In 2001 Gresham, Multnomah County, and the Oregon Department of Transportation updated the Traffic Signal System and Communications Master Plan for East Multnomah County. Many of the TSM strategies outlined in that plan have been implemented:

Phase 2B of the City and County's signal optimization project, which was implemented in 2001-2002 before the transfer of the County's arterial roads to the City, expanded the traffic signal interconnect system to Troutdale.

Phase 3A, which was also begun before the arterials transfer, installed the State of Oregon's first adaptive traffic signal system: the Burnside Road SCATS system.

Subsequent to Phase 3A, the City expanded its SCATS system onto the NE 181st Avenue corridor, which was consistent with the Master Plan.

Transit Signal Priority - program traffic signals to preempt their normal operation upon request from passing transit vehicles to improve transit reliability

The City received a grant from TriMet in 2012 to upgrade controllers and communications along the Division Street corridor between the City of Portland boundary and Gresham Transit Center. TriMet route 4, which has the highest total ridership of any TriMet bus route, terminates at Gresham Transit Center. The goal is to improve schedule reliability for the bus route while limiting the impact to other traffic crossing Division. The system has been deployed, and the evaluation is currently underway as of September, 2013.

Real-time Traveler Information and Incident Management - provide drivers and transit riders with reliable information of traffic incidents, system delays, and suggested alternate routes by way of changeable message signs or internet

Access management used via planted median barriers on Stark Street west of 185th Avenue.

The City has worked together with ODOT to provide local information in ODOT's TripCheck online service. Information provided to TripCheck Local Option was primarily notices of City construction projects that were expected to impact travel within the City.

Access Management - limit the access to roadways by consolidating driveways and installing median barriers and thereby reducing the delays caused by turns to and from a roadway

The Division Street Boulevard, Stark Street Boulevard (Phases I and II), and Powell Boulevard widening projects, which were completed during the middle of the last decade, all had Access Management elements in the form of planted median barriers. Such treatments have proved unpopular with local businesses fronting these arterials, so plans were modified to construct additional locations along these new medians to allow left turns through them.

Assessment of Transportation System Management and Operations/Intelligent Transportation Systems

The TSM/ITS strategies listed support many regional transportation goals:

- Improve travel time reliability
- Reduce crashes
- Improve transit on-time arrival
- Reduce travel delay
- Reduce fuel use
- Reduce air pollution and carbon emissions

14. Parking Management

Overview of Parking Management

Parking is an integral part of the transportation system. As such, on- and off-street parking management is key to meeting the City's goals to facilitate the movement of people and goods and foster economic development while reducing congestion, urban sprawl, and air pollution. One way to accomplish this is to more effectively utilize existing roadway capacity by encouraging alternatives to single-occupant vehicle (SOV) travel, i.e. carpooling, transit, walking, biking, and telecommuting, when feasible and appropriate.

The Park and Ride lot at NW Division Street and NW Eastman Parkway serves transit riders.

The availability of abundant and free trip-end parking is one of several factors that make SOV travel convenient and attractive, and therefore, is a disincentive to using alternative modes of transportation.

On the other hand, if the parking supply is pinched too severely, it could put new Gresham businesses and institutions at an economic disadvantage and drive city residents to use goods and services outside the city. This outcome could, in the long run, lead to increased vehicle miles traveled (VMT) or result in spillover parking into nearby residential areas. Therefore, Gresham has developed parking requirements that encourage the provision of an adequate, but not excessive, supply of on- and off-street parking. Moreover, parking strategies are tied to a program to aggressively develop alternative modes of transportation so that those who choose not to drive (and park) alone have reasonable, safe, and convenient alternatives.

The City has developed Public Parking Management Plans for the Gresham Regional Center and the Rockwood Town Center. These plans evaluated the use of public parking spaces (on-street and off-street) and analyzed future parking demand, location, financing and operation and evaluated program alternatives.

Inventory of Parking Management

Gresham Regional Center

Parking standards are typically written with the assumption that each separate business or business complex needs off-street parking for each of its customers. Many newer Gresham business areas are developed in a space-extensive, auto-oriented development pattern where customers park and walk to separate businesses rather than park and walk to multiple nearby businesses. The downtown core of the Central Area has a small-block lot pattern and a compact mix of small businesses on separate small lots. This pattern lends itself to high pedestrian activity and consolidated off-street parking facilities for multiple businesses. In this area it is inefficient and sometimes unfeasible for each small business to provide required off-street parking. With conveniently located common parking facilities, the downtown core area can remain compact and function efficiently as a single shopping center.

Parking along Main Avenue downtown in the Gresham Regional Center, © Susan Frost.

There are over 7,200 parking spaces in the downtown Gresham area, including approximately 1,500 on-street spaces. Nearly two-thirds of the existing parking inventory is privately owned.

The City provides 324 off-street public parking spaces in seven lots in a Parking Assessment District within the downtown core, bounded by Powell Boulevard, 3rd Street, NW Miller Street, and NE Hood Street. These lots satisfy off-street parking requirements for businesses within the District, which were assessed to construct these lots. Within these blocks there are also 172 private off-street spaces, for a total of 496 spaces.

An October 1998 survey of downtown parking found a 57% peak weekday occupancy of all off-street spaces (public and private) within the Parking District blocks. If each business in this area were required to provide its own parking lot, 836 parking spaces would be required, resulting in a substantial oversupply. Surveyed peak weekday parking occupancy for all off-street spaces in the wider commercial area between the Gresham Central Station and Powell Boulevard was a similar 58%. Parking occupancy is estimated to reach 83% within the next 20 years within the area. Generally, parking becomes difficult when an occupancy rate of 85% or more is reached (TDA, Inc., Parking Recommendations, Central Area Market Report, May 1986).

While an adequate parking supply presently exists within the downtown area, future development will create the need for additional consolidated private and public parking. City development standards contain provisions that support efficient parking within the downtown area, including parking reductions near transit stations, allowing joint parking for complementary uses and allowing off-site parking within 250 feet of a business. The City will monitor downtown parking and development trends, and facilitate additional consolidated parking, when and where appropriate.

Rockwood Town Center

The existing and forecast parking conditions analysis of the Rockwood Town Center shows parking pressures in some isolated areas, including on-street parking spaces. However, the existing parking supply total is adequate to meet overall existing and future demands. The challenge in the Rockwood area is that a significant portion of the parking supply is privately controlled. This limits the flexibility of the City to manage the existing parking supply. The existing parking inventory in the Rockwood area is approximately 2,825 spaces, of which nearly 2,600 (92%) are in surface parking lots for designated users. Adjacent parking areas are generally experiencing high vacancy rates.

The Kmart parking lot off of NW Burnside Road at NW Eastman Parkway.

Assessment of Parking Management Conditions

Parking standards that achieve the desired goal of "adequate but not excessive" parking must take into account employment density, patron and customer travel patterns, availability of alternative transportation modes, site size and configuration, and land use requirements. Several important conclusions are apparent from a review of the literature and field observations within Gresham.

1. There are examples of existing development in Gresham, primarily big-box retail, large office and multi-family housing projects that appear to have an excessive amount of parking. That is, a significant portion of parking lots are vacant most of the time.

2. From both a public policy and economic perspective, it is not desirable to permit parking to exceed peak annual demand; this means spaces are only needed once or twice a year and stand vacant the rest of the year.

3. The establishment of realistic minimum parking rates for each land use is a major component of a successful parking program. A minimum ratio should be high enough to accommodate average peak demand, so as not to impair the user's competitive advantage and/or encourage parking spillover, but not so high as to result in significant under-utilization. Because suburban areas are typically more auto-oriented than central city areas, suburban jurisdictions have tended to set their minimum ratios higher than necessary. Moreover, minimum ratios only establish the "floor" for parking; developers can build parking as far above the minimum as they choose, unless regulated by maximum parking ratios. As noted above, this in turn can result in the development of land use patterns and travel behavior that reinforces SOV use.

4. Incentives to voluntarily reduce parking below the minimum required can be successful. This is illustrated in Gresham where, according to a 1994 building permit survey, several developers took advantage of the option provided in the Community Development Code to reduce parking for residential projects located within 1/4 mile of transit. This suggests that many developers inherently recognize the benefit of reducing parking if reliable alternatives, particularly transit, are available. There are also examples in the survey where owners used the concept of shared parking to eliminate or reduce the need for additional parking to support a site expansion. This suggests that over the long-term, the total number of new parking spaces provided can be significantly reduced through a comprehensive program of parking reduction incentives and public education about the true economic costs of under-utilized parking.

5. Encouraging the use of shared parking, where two or more users share the same parking supply, can result in significant reductions of parking construction. If the uses operate at different times of the day or week, e.g., church and day-care center, there is essentially a 100% savings because both users use the same space. Even when the demand overlaps somewhat, or where a patron may visit several of the uses in the same mixed-use development, substantial economies-of-scale can be achieved through shared parking. Estimated savings in parking spaces can range between 6% and 64%. Mixed-use projects where such economies have been observed include residential/daytime employment; retail and restaurants/office; and office/night- and weekend-oriented entertainment.

6. Increasing the number of compact car spaces, which are 7.5 - 8.0 feet compared to the standard 9.0 feet wide, can significantly increase parking lot efficiency. When 50% of spaces in a parking lot are designated as compact, up to 10% more spaces can be accommodated in the same land area. Re-striping existing lots to permit more compact spaces is one way of creating additional parking without increasing the land area devoted to parking. Significantly changing the proportion of compact spaces presents a risk as the automobile market goes through cyclical changes in vehicle size. Gresham already allows up to 50% compact spaces in new parking lots by right.

7. Although a significant proportion of developers build at or slightly above the minimum, there is a role for establishing maximum parking ratios for all land uses. The combination of maximum and minimum ratios sets the acceptable range of parking construction, giving developers the flexibility to accommodate the project-specific conditions without permitting unneeded parking.

8. The Oregon Transportation Planning Rule (TPR) sets a goal to reduce non-residential per capita parking by 10% in the next 20 years and the RTFP requires parking policies and a parking plan in a TSP or other planning document. The TSP's Chapter 4 provides parking policies targeted to achieve the TPR goal. The Gresham Development Code establishes motor vehicle parking minimums and bicycle parking requirements also targeted to meet the TPR goal.

15. Passenger Rail

Gresham is not served by passenger rail.

Gresham is not served by passenger rail. The High Capacity Transit Plan assessed demand for commuter rail between Gresham and Hood River. The line would generally travel along Highway I-84 and connect Hood River to the MAX Red Line at the Parkrose/ Sumner Transit Center. It was determined that this is a nonviable corridor given current and projected conditions.

The Oregon Department of Transportation is studying options for improved passenger rail service between the Columbia River in the Portland urban area and the Eugene-Springfield urban area through the Oregon Passenger Rail project. Through this project a general trail alignment and communities where stations would be located will be determined. Gresham will coordinate with ODOT on this project as needed.

16. Air Transportation

Portland International Airport is the major aviation facility serving Gresham and the region.

There are no existing or planned public or private airports in Gresham. There is one helicopter landing facility located at the Gresham City Hall complex. The Aeronautics Division of ODOT has site approval authority for all airports and helicopter landing facilities. The Federal Aviation Administration regulates public use airports. There is specific approval criteria for the location of helicopter landing facilities in the Gresham Community Development Code.

Portland International Airport (PDX) is the major aviation facility serving the region. It was originally developed in the 1940s as a replacement for the Swan Island Airport and grew to its present size of about 3,200 acres to accommodate airfield expansion needs and to ensure that adjacent land uses were compatible with airport operations. In addition to aviation facilities and support uses (such as rental cars), present uses include airfield dependent uses (air cargo) at the Airtrans Center and a variety of commercial and industrial uses in the Portland International Center (PIC). The Port of Portland operates PDX. The Port of Portland also operates general aviation airports in Troutdale, Hillsboro, and Mulino, which are becoming increasingly important as "reliever" airports for PDX by serving corporate aircraft and training flights.

Land Use Compatibility

Cone-shaped "safety zones" are designated at the end of each runway where land uses and building heights are restricted to provide for safe aircraft landings and take-offs. No portions of Gresham are within the safety zones of either the Portland International or Troutdale Airports. There are no special design review requirements that would apply to proposed developments in Gresham. Each land use district has building height limits. State guidelines indicate that local jurisdictions should consider safety-related factors such as exhaust, smoke, building height, lighting, and disruption of radio communications or navigational aids in design review for industrial lands close enough to be affected by noise levels.

Motor vehicle and freight access to the Portland International Airport through Gresham travels primarily via Airport Way. Any access to that segment of Airport Way within the Gresham city limits from adjoining properties must be carefully considered to ensure that freight access is not negatively affected.

17. Pipeline

Pipelines serve an important transportation function in the transmission of large quantities of liquid and gas products. They are more safe and efficient than moving the same products by rail, truck or barge. There are currently six major pipelines crossing Gresham within four corridors.

Four major water pipelines (Bull Run Conduits) cross east/west through Gresham, with a fifth conduit planned (Table 19). The Portland Water Bureau maintains these pipelines and five metering facilities where water is transferred to the local reservoir storage and distribution system in Gresham. Conduits 2, 3, and 4 are currently in service and provide water used in the Portland metropolitan area. Conduit 5 is planned.

Table 19. Bull Run Conduits in Gresham

Conduit #	Year Built	Diameter	Status
1			Abandoned in place
2	1911	44"	In Service
3	1925	50"	In Service
4	1953	56"	In Service
5	N/A	TBD	Planned

The Bull Run Watershed in the Mt. Hood National Forest. Four major water pipelines (Bull Run conduits) cross east/west through Gresham.

Two high-pressure natural gas pipelines also cross Gresham in north/south corridors. A 20" pipeline built in 1964 is almost entirely within the Hogan Road right-of-way through Gresham. A 30" pipeline, built in 1996, generally follows the PP&L utility corridor and passes through the eastern part of the city. Northwest Pipeline Corporation operates these two pipelines as well as two metering stations in Gresham where natural gas is transferred to a local distribution company. Both pipelines transport natural gas from the mainline in Washougal, Washington, down the Willamette Valley, and south to the terminus at Grants Pass via a series of large compressors. They provide over 90% of the natural gas used in Oregon west of the Cascades.

Existing pipelines have sufficient capacity to accommodate the anticipated growth in demand over the next 20 years. If replacement of the 20" pipeline is needed due to significant changes in the Hogan corridor (i.e. construction of the Mt.. Hood Parkway), there is adequate right-of-way or permanent easement in the eastern corridor for a second pipeline. No additional future corridors through Gresham have been identified.

The City of Gresham has a very limited role in determining pipeline routes and regulating their construction. The Federal Energy Regulatory Commission (FERC) regulates the siting and construction of natural gas pipelines. The Gresham Community Development Code exempts major transmission lines from design review, but requires construction in each Special Purpose District to meet particular approval criteria.

The operation, maintenance and repair of existing regional pipeline facilities is also ordinarily exempt from land use regulation. The Office of Pipeline Safety, a branch of the US Department of Transportation (DOT) sets special design and operating requirements for natural gas pipelines in urban areas and conducts annual audits of operations, maintenance and safety procedures for all interstate pipelines. The Oregon Public Utility Commission regulates intrastate pipelines and distribution lines in the public right-of-way. However, three ruptures of high-pressure natural gas pipelines in rural Washington in recent years has increased awareness and concern about the safety of pipelines passing through residential areas in Gresham. According to Department of Transportation statistics, the greatest risk to pipelines is from damage caused by third parties, primarily from excavation.

Damage prevention measures used for the natural gas pipelines through Gresham include:

- Active participation in the One-Call Utility Locate System.
- Encroachment permits required for activities in the pipeline right-of-way.
- On-site inspection of excavation near the pipeline.
- Weekly aerial surveillance.
- Coordination with local planning and emergency response personnel.
- Markers on the right-of-way including an emergency 800 number.
- Annual contacts with adjacent landowners.
- Semi-annual leak detection surveys.

Land movement is the primary cause of natural gas pipeline damage in the Northwest. Slopes typically become unstable as a result of excessive soil moisture, increased loads from fills, or erosion at the toe of the slope. Contributing factors to land movement include:

- Unstable soils on steep slopes.
- Changes in drainage patterns due to unusually heavy rainfall, clear-cutting, grading, or diversion of surface water.
- Uncontrolled runoff from other land use activities.

The City's Development Code regulates all land use activities likely to affect drainage patterns. It is important to monitor drainage along this corridor. The City should adopt a process of coordination and notification of the pipeline of all developments within 300' to 600' of the natural gas pipelines. This could be accomplished by adding a special "tag" to the pipelines in the Geographic Information System that would alert staff to notify the district office in Battleground, Washington.

18. Aesthetic Quality

Streets are a dominant part of the urban landscape. Both street design and development standards need to consider the visual quality of the street system. The aesthetic impact of the street system and the character of the public space within the right-of-way directly affects Gresham's overall community image.

Two key components, which contribute to the aesthetic quality of the streets, are the building to street relationships and the street design features. The building location relative to the street right-of-way (the building setback) can dramatically influence the character of the street. Typically buildings set closer to the street create a sense of enclosure and provide a more comfortable human scale space for people. Building facades can positively influence the aesthetic quality of the street and enliven the public realm by creating interesting and comfortable pedestrian oriented spaces. Street design elements include features such as the vehicular drive lanes, bike lanes, amenity areas with street tree and landscaping, and pedestrian walkways.

Street trees and lighting lend to the aesthetic quality along Main Street in Downtown.

Inventory of Existing Conditions for Aesthetic Quality

Right-of-Way Amenities: Street Trees, Landscaping, Paving, Lighting, Signage and Site Furnishings

Right-of-way amenities are critical to the aesthetic quality of public streets. Amenities consist of street trees, landscaping in the right-of-way, special paving treatments, decorative lighting, unique signage and street furnishings such as benches, tables and chairs, newspaper stands and trash receptacles.

Street trees and landscaping within the right-of-way are vital elements of street design. Street trees and green landscaping offer many visual, social and environmental benefits to the public. Trees and landscaping can enhance the appearance of the street by softening the urban environment with green infrastructure. A thoughtful street tree and landscape design can establish a distinct character and sense of place for a community. Properties with street trees typically have more visual appeal and thus can have higher property values. Trees also help create a more pleasant and healthy environment for people by providing shade, blocking winds, cooling streets and buildings and filtering noise and air pollution. Trees and landscaping help protect our natural environment by providing wildlife habitat, absorbing stormwater run-off, controlling erosion and cooling the water that enters our streams.

Special paving, decorative lighting, unique signage and attractive site furnishings are all elements that can contribute in a positive fashion to a distinct streetscape identity.

Attractive Streets

The city has several interesting and visually appealing street right-of-ways. Main Avenue in Downtown Gresham offers a small human scale street cross-section with street trees, special lighting, decorative paving and benches that establishes a true sense of place for the Downtown. Powell Boulevard in the Downtown area has a heavily landscaped center median to provide a lush green environment and a refuge for people entering the street.

The city also has some streets that are not attractive. Some streets completely lack landscaping and buffering while others incorporate landscaping and buffering features in an incomplete fashion. Additionally some streets utilize excessive pavement or have poor street design, inadequate pedestrian facilities, poor maintenance, or insensitivity to existing topographic and natural features. All these characteristics contribute to streets that are not appealing either to the motorist, bicyclist or pedestrians. Examples of these types of streets include Hogan Drive and Halsey Street.

Another interesting contributor to unattractive streets are sound walls and high fences. On arterial streets, standard concrete sound walls or fences without landscape treatments can create a "walled city" or "back alley" appearance to the street system. Examples of these types of unattractive streets include:

- Salquist Road, east of Orient Drive
- Burnside Road, east of 202nd Avenue
- Stark Street, east of 223rd Avenue

Top: Powell Boulevard in the Downtown area has a heavily landscaped center median to provide a lush refuge.

Bottom: SE Stark Street west of NW 223rd Avenue lacks landscaping and buffering.

Right-of-Way Amenities: Street Trees, Landscaping, Paving, Lighting, Signage and Site Furnishings

Currently the right-of-way in Gresham occupies approximately 2,332 total acres and the street tree canopy coverage is approximately 10%. The city Code typically requires one tree to be planted every 30 feet of a type elected from the City's Approved Street Tree List. The city has several landscaped boulevard streets, including:

- Powell Boulevard
- Eastman Parkway
- Division Street

There are a few streets in the city that have had a specific plan for attractive, consistent streetscape elements as part of a Capital Improvement Project. Main Avenue and Powell Boulevard in Downtown are two such streets in where street trees, landscaping, paving and lighting were part of the streetscape improvement plan.

Assessment of Existing Conditions for Aesthetic Quality

Attractive Streets

The City needs to promote more streets that are visually appealing and user-friendly for people. The city can enhance the aesthetic quality of the street system by closely reviewing all elements of the street system for visual impacts. The elements that make up the street system and the adjacent urban landscape need to be tied together in a cohesive manner that promotes a special sense of place and community for Gresham.

Street landscaping needs to be enhanced. Excessive pavement and poor design of street systems, including insensitivity of natural or topographic features should be eliminated. Adequate pedestrian facilities should be provided to ensure safer, effective people movement on the streets. The City needs to address street amenities, street trees and landscape maintenance.

Sound walls and high fences on the street, while mitigating noise impacts, can isolate the street system from the urban environment and provide surface for graffiti. The walls and fences have generally not created more attractive streets than more traditional methods of separating streets and adjacent land uses through setbacks and buffers and should not be encouraged.

SE 188th Avenue between SE Stark Street and E. Burnside Street in Rockwood is an attractive street that promotes a special sense of place and community.

Right-of-Way Amenities: Street Trees, Landscaping, Paving, Lighting, Signage and Site Furnishings

The City does not currently have an inventory of the existing street trees. A street tree inventory would help catalog the location, species, size and health of existing trees. An inventory such as this would help the City to manage the street trees within the right-of-way in a comprehensive fashion and work toward increasing the overall street tree canopy within the city. Additional tree canopy would create more attractive streets and a more attractive community. The inventory would also be helpful in monitoring the placement of the right tree in the right location to ensure that the street trees can grown to their full potential and continue to provide visually appealing green infrastructure for years to come.

Cross-sections of city streets are clearly defined in this document and in the Public Works Standards. There are also specific lighting standards for certain sections of the city such as in Downtown. The City is in a need of a more comprehensive plan for what the character of its individual streets should look like with regard to the right-of-way, special paving treatments, decorative lighting, unique signage and durable, attractive site furnishings.

19. Stormwater Management and Green Streets

Overview of Stormwater Management and Green Streets

The City has established green development practices for stormwater management. When applied within the right-of-way, these technologies have an important impact on the visual character of the public streets. Typically the practices implement lushly landscaped stormwater planter areas and rain gardens to help slow down and filter street water runoff. The intent is to help mimic the natural pre-development hydrology while also maintaining aesthetic appeal.

Inventory of Stormwater Management and Green Streets

The City is actively working to require its Green Street Standards where possible to install street trees and landscape plantings to help capture stormwater runoff and filter soil pollutants. Recent green street projects include:

- Powell Boulevard
- Northeast Holladay Street
- Northeast 201st Avenue, south of Sandy Boulevard
- Streets surrounding the Center for the Arts Plaza
- Beech Street
- Hogan Road
- Kane Road
- Stark Street
- Burnside Road

Assessment of Stormwater Management and Green Streets

Green Streets are essential to both the aesthetic appeal of the city and to the health of Gresham's natural areas. As development increases, it is critical to increase the green infrastructure within our right-of-ways. This green infrastructure creates a more appealing streetscape and reduces runoff volume by collecting, infiltrating and/or evaporating stormwater, replenishing groundwater and controlling flow into streams and ponds.

Beech Street captures stormwater runoff and filters soil pollutants.

CHAPTER 3:

Forecasting Future Growth and Travel

Overview
This chapter discusses forecasts for growth in land use types and densities that are key factors for predicting future travel demand and transportation needs to meet the demand.

Forecast

To evaluate the Metro region's transportation system needs, including Gresham, Metro maintains a travel forecasting computer model called "Metroscope". The model is based on existing and planned land uses and population densities, and where those land uses will happen. Projected land use types, locations, and densities for Gresham, Pleasant Valley and Springwater are based on the city's Comprehensive Plan.

Cyclists and autos cross the MAX tracks on NW Eastman Parkway.

Projected Land Use Growth

The number of households and employment in Gresham, Pleasant Valley, and Springwater have been calculated and assigned to TAZs to determine the volume of auto trips that would be generated in year 2035 and how their travel would be distributed. Table 20 summarizes the forecasted households and employment information for 2010 and 2035 cumulative of all TAZs for Gresham, Pleasant Valley and Springwater.

Table 20: Gresham, Pleasant Valley and Springwater Land Use Assumptions

Land Use	2010	2035	Percent Change from 2010 to 2035
Households	39,710	53,896	36%
Employment Total	32,791	61,480	87%
Employment Retail	7,353	12,879	75%
Employment Service	8,912	21,104	137%
Employment Other	16,526	27,497	66%

The study area is projected to experience an 87% increase in employment by 2035. The Pleasant Valley and Springwater Plan Areas will add a significant amount of employment opportunities within this TSP's 20-year horizon.

Map 20: 2035 Motor Vehicle Volumes

Motor Vehicle Travel Volumes

Based upon the household and employment projections, 2035 motor vehicle volumes are projected and shown in Map 20.

Trip Distribution

The distribution of internal, external and through trips is evaluated in Table 21.

Internal trips are trips that start and end within the study area;

External trips are trips that either start in the study area and end outside the study area, or start outside the study area and end within the study area; and

Through trips are trips that pass through the study area without having an origin or a destination in the study area.

The trip distribution percentages are expected to remain fairly consistent between 2010 and 2035 (Table 21).

Top: The TSP addresses future motor vehicle travel volumes and transportation needs.

Bottom: Traffic on E. Powell Boulevard.

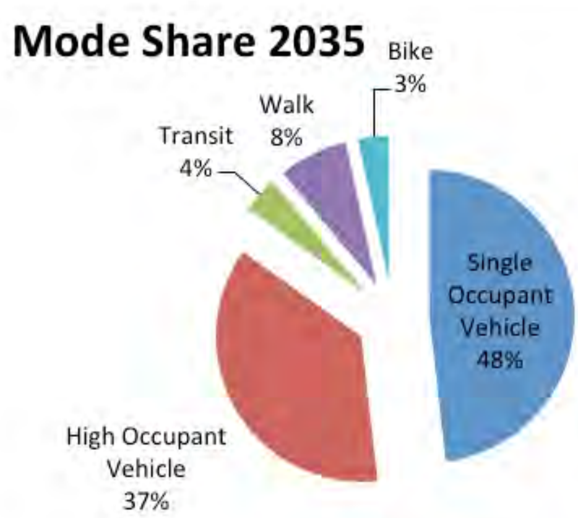
Table 21: Trip Distribution

Trip Type	2010	2035	Growth	2010 Share	2035 Share	Change
Internal (within Gresham)	8,312	12,735	4,424	22%	22%	0%
External (from/to Gresham)	22,609	33,954	11,345	59%	57%	-2%
Through* (via Gresham)	7,271	12,420	5,149	19%	21%	2%

* *Excludes through trips on I-84*

Mode Share

Mode share indicates how many trips in 2035 will be made by high and single occupant vehicles, pedestrians, bicyclists and transit riders. The greatest number of trips will be made by single occupant vehicles and high occupant vehicles. Pedestrians, bicyclists and transit riders will make up 15% of trips.



Graphic 7: Mode Share 2035

Traffic in the intersection of E. Powell Boulevard and NE Hogan Road.

Future Intersection Traffic Operations

Gresham evaluates future intersection traffic operation with 20 year traffic volume forecasts developed by Metro as described above. The intersection traffic operation is represented as a volume to capacity (V/C) ratio, which is a measure of the amount of traffic on a given intersection in relation to the amount of traffic the intersection was designed to handle. It represents the level of traffic congestion experienced at the intersection as described in Table 22 below.

Table 22: Volume to Capacity Ratio

V/C Ratio	Congestion Level
V/C <= 0.8	No/Low congestion
V/C >0.8 and <=0.90	Moderate congestion
V/C > 0.90 and <= 1.0	High congestion
V/C > 1.0	Severe congestion

Regional policy states that intersection traffic operating standards should be a V/C ratio of 0.99 in Metro Regional and Town Centers and a V/C ratio of 0.90 outside of Centers. Gresham monitors existing and future intersection operation to ensure these standards are met.

SDCs are a one-time charge collected by the City when a development permit is issued. The City uses the revenue to construct or improve intersection and roadway projects on the SDC list.

Table 23 shows two levels of intersection evaluation and forecast; an unimproved and an improved V/C ratio 2033 scenario. Column "2033 Unimproved V/C" shows the V/C ratio for each intersection with the assumption that the only improvements made are minor modifications and/or updated signal timing. The intersections on this list that fail to meet the regional standards are added to the City's **System Development Charges (SDC)** list and further evaluated to determine improvements necessary to bring them to standard. The improvements were fine-tuned through simulations using SimTraffic modeling software to ensure acceptable operation. Column "2033 Improved V/C" shows the V/C ratio with the identified improvements, bringing each intersection into compliance with standards.

Table 23: Future Intersection Operations

Intersection	Signalized	2013 V/C	2033 Unimproved V/C	2033 Improved V/C	SDC Project Intersection
E Burnside St & 162nd Ave	Y	0.57	0.90	0.90	N
E Burnside St & 172nd Ave	Y	0.42	0.92	0.90	N
E Burnside St & 181st Ave	Y	0.72	0.90	0.90	Y
E Burnside St & SE 185th Ave	Y	0.27	0.39	0.39	N
E Burnside St & SE 188th Ave	Y	0.36	0.59	0.59	N
E Burnside St & SE Stark St	Y	0.49	0.69	0.69	Y
E Burnside St & SE 197th Ave	Y	0.33	0.49	0.49	N
E Burnside St & SE 202nd Ave	Y	0.61	0.91	0.84	Y
NW Burnside Rd & NW Wallula Ave	Y	0.46	0.77	0.77	N
NW Burnside Rd & NW Civic Dr	Y	0.76	0.85	0.85	N
NW Burnside Rd & NW Eastman Pkwy	Y	0.78	0.92	0.91	Y
Burnside Rd & N Main Ave	Y	0.66	0.88	0.88	Y
NE Burnside Rd & NE Kelly Ave	Y	0.51	0.63	0.61	Y
NE Burnside Rd & NE Cleveland Ave	Y	0.64	0.98	0.86	Y
NE Burnside Rd & NE Division St	Y	0.75	0.84	0.84	Y
NE Burnside Rd & NE Hogan Dr	Y	0.87	1.15	0.84	Y
SE Burnside Rd & SE 1st St	Y	0.55	0.69	0.69	N
SE Burnside Rd & SE 3rd St	Y	0.52	0.67	0.66	N
SE Burnside Rd & E Powell Blvd	Y	0.71	0.94	0.82	Y
Mt Hood Hwy & SE Palmquist St	Y	0.95	1.14	0.97	Y
NE Halsey St & NE 162nd Ave	Y	0.53	0.74	0.74	N
NE Halsey St & NE 169th Ave	N	0.29	0.44	0.44	N
NE Halsey St & NE 172nd Ave	N	0.49	0.35	0.35	N
NE Halsey St & NE 181st Ave	Y	0.88	1.06	0.91	Y
NE Halsey St & NE 192nd Ave	Y	0.51	0.68	0.68	N
NE Halsey St & NE 201st Ave	Y	0.56	0.74	0.91	Y
NE Glisan St & NE 162nd Ave	Y	0.64	1.03	0.92	Y
NE Glisan St & NE 172nd Ave	Y	0.38	0.69	0.69	N
NE Glisan St & NE 181st Ave	Y	0.86	1.01	0.89	Y
NE Glisan St & NE 188th Ave	N	0.57	1.30	0.76	N
NE Glisan St & NE 192nd Ave	N	0.29	0.58	0.58	N
NE Glisan St & NE 194th Ave	N	0.28	0.56	0.56	N
NE Glisan St & NE 202nd Ave	Y	0.69	1.08	0.89	Y
NE Glisan St & NE Hogan Dr	Y	0.86	1.08	0.88	N
SE Stark St & NE 162nd Ave	Y	0.71	1.01	0.91	Y
SE Stark St & SE 172nd Ave	Y	0.56	1.56	0.63	Y
SE Stark St & SE 174th Ave	Y	0.54	0.76	0.69	Y
SE Stark St & SE 181st Ave	Y	0.74	0.99	0.90	Y
SE Stark St & SE 185th Ave	Y	0.45	0.54	0.49	N
SE Stark St & SE 187th Ave	Y	0.30	0.55	0.50	N
SE Stark St & SE 192nd Ave	N	0.24	0.51	0.51	N

Intersection	Signalized	2013 V/C	2033 Unimproved V/C	2033 Improved V/C	SDC Project Intersection
SE Stark St & SE 194th Ave	N	0.24	0.41	0.41	N
SE Stark St & SE 202nd Ave	Y	0.69	0.96	0.89	Y
SE Stark St & SE 212th Ave	N	0.43	0.53	0.53	N
SE Stark St & SE 217th Ave	N	0.36	0.49	0.49	N
SE Stark St & SE 223rd Ave	Y	0.88	1.17	0.99	Y
SE Stark St & NE Cleveland Ave	Y	0.66	0.87	0.87	N
SE Stark St & NE Hogan Dr	Y	0.87	1.04	0.90	Y
SE Stark St & NE Kane Dr	Y	0.83	0.99	0.88	Y
SE Division St & SE 182nd Ave	Y	0.85	0.97	0.89	Y
SE Division St & SE 190th Ave	Y	0.52	0.78	0.78	N
NW Division St & NW Birdsdale Ave	Y	0.71	0.98	0.91	Y
NW Division St & NW Wallula Ave	Y	0.41	0.77	0.77	N
NW Division St & NW Civic Dr	Y	0.51	0.69	0.69	N
NW Division St & NW Eastman Pkwy	Y	0.81	0.92	0.92	N
Division St & N Main Ave	Y	0.54	0.84	0.84	N
NE Division St & NE Kelly Ave	Y	0.53	0.80	0.79	N
NE Division St & NE Cleveland Ave	Y	0.70	0.85	0.85	N
NE Division St & NE Hogan Dr	Y	0.72	0.84	0.84	N
NE Division St & NE Kane Dr	Y	0.81	0.84	0.84	N
SE Division Dr & NE Williams Ave	N	0.15	0.31	0.31	N
W Powell Blvd & SE 182nd Ave	Y	0.68	0.94	0.90	Y
W Powell Blvd & East Powell Loop	Y	0.59	0.73	0.73	N
W Powell Blvd & NW Birdsdale Ave	Y	0.65	0.80	0.80	N
W Powell Blvd & Towle Ave	Y	0.59	0.77	0.77	N
W Powell Blvd & Eastman Pkwy	Y	0.72	0.97	0.95	Y
W Powell Blvd & SE Walters Dr	Y	0.38	0.52	0.52	N
Powell Blvd & Main Ave	Y	0.61	0.84	0.84	N
E Powell Blvd & Hood Ave	Y	0.57	0.91	0.91	N
E Powell Blvd & Cleveland Ave	Y	0.51	0.87	0.87	N
E Powell Blvd & SE Hogan Rd	Y	0.83	1.17	0.95	Y
E Powell Blvd SE Rene Ave	Y	0.44	0.60	0.60	N
SE Powell Valley Rd & SE Kane Dr	Y	0.59	0.64	0.64	N
SE Powell Valley Rd & SE Barnes Rd	N	0.56	0.95	0.49	Y
SE Powell Valley Rd & SE 282nd Ave	N	0.56	1.25	0.85	Y
NE Sandy Blvd & NE 185th Ave	N	0.65	3.89	0.78	Y
NE Sandy Blvd & NE 181st Ave	Y	0.73	1.01	0.82	Y
NE 181st Ave @ US Bancorp Dwy	Y	0.54	0.74	0.73	N
NE 181st Ave & I 84 West	Y	0.53	0.82	0.82	N
NE 181st Ave & I 84 East	Y	0.60	0.70	0.69	N
NE 181st Ave & San Rafael St	Y	0.86	0.86	0.82	Y
SE 182nd Ave & SE Yamhill St	Y	0.55	0.66	0.66	N
SE 190th Ave & SE Yamhill St	Y	0.27	0.68	0.68	N

Intersection	Signalized	2013 V/C	2033 Unimproved V/C	2033 Improved V/C	SDC Project Intersection
SE 182nd Ave & SE Tibbetts St	Y	0.46	0.65	0.65	N
SW Highland Dr & SW 11th St	Y	0.40	0.72	0.71	N
SW Highland Dr & SW Pleasant View Dr	N	0.93	1.06	0.73	Y
SW Pleasant View Dr & SW Willow Pkwy	N	0.42	0.86	0.43	Y
SE 190th Ave & SE Giese Rd/SE Butler Rd	N	0.42	3.27	0.83	Y
SE 190th Ave & SE Richey Rd	N	0.42	1.26	0.59	Y
NE Sandy Blvd & NE 201st Ave	Y	0.46	0.66	0.66	N
SE 223rd Ave & SE Salmon St	N	0.40	0.59	0.59	N
NW Eastman Pkwy & NW 3rd St	Y	0.36	0.45	0.45	N
SW Eastman Pkwy & SW Towle Ave	N	0.36	0.51	0.51	N
SW Towle Rd & SW Birdsdale Dr	N	0.38	2.85	0.94	Y
SW Towle Rd & SW Binford Lake Pkwy	N	0.27	0.79	0.79	N
SW Towle Rd & SW Willow Pkwy	N	0.13	0.19	0.19	N
SW Butler Rd & SW Towle Rd	Y	0.28	4.33	0.84	Y
SW Butler Rd & SE Regner Rd	Y	0.33	> 5.00	0.71	Y
SE Regner Rd & SE Cleveland Ave	N	0.11	0.23	0.23	Y
SE Regner Rd & SE Roberts Dr	N	0.11	0.91	0.91	Y
NE Hogan Dr & NE 23rd St	Y	0.62	0.84	0.84	N
SE Hogan Rd & SE 5th St	Y	0.53	1.18	0.65	Y
SE Hogan Rd & SE Palmquist Rd	Y	0.43	0.87	0.69	Y
SE Hogan Rd & SE Cleveland Dr	N	0.31	0.75	0.47	Y
SE Hogan Rd & SE Butler Rd	Y	0.28	> 5.00	0.77	Y
SE Palmquist Rd & SE Fleming Ave	N	0.10	0.12	0.09	Y
SE Palmquist Rd & SE Palmblad Rd	N	0.46	1.60	0.58	Y
NE Kane Dr & NE 29th St	Y	0.59	0.60	0.60	N
NE Kane Dr & NE 23rd St	Y	0.69	0.69	0.69	N
NE Kane Dr & NE 17th St	Y	0.61	0.64	0.64	N
SE Kane Dr & SE 1st St	Y	0.49	0.60	0.60	N
SE Kane Dr & SE 11th St	Y	0.41	0.51	0.51	N
SE Kane Dr & SE Palmquist Rd	Y	0.65	0.68	0.68	Y
SE Orient Dr & SE Barnes Rd	Y	0.51	0.76	0.76	N
SE Orient Dr & SE Chase Rd	N	0.28	0.44	0.44	N
SE Orient Dr & SE Welch Rd	N	0.10	0.31	0.31	N
SE 282nd Ave & SE Lusted Rd	N	0.24	1.46	0.76	Y
SE 282nd Ave & SE Salquist Rd	N	0.29	0.50	0.50	Y
SE 282nd Ave & SE Chase Rd	N	0.28	0.49	0.49	N
SE 282nd Ave & SE Welch Rd	N	0.28	0.49	0.49	Y

CHAPTER 4

Policies and Action Measures

This chapter provides policies and action measures that together will guide Gresham's transportation decisions toward achievement of the Transportation System Plan's Vision to "support the growth and development of the City of Gresham as an economically vital and livable community by providing its residents and all transportation system users with pleasant and convenient access and travel within, to and through the city."

The policies and action measures are a basis for assessing the transportation needs of the community as it develops. More specifically, the City's Community Development Plan Volume 2: Policies, defines Policies and Action Measures as:

Policy - A policy is a statement identifying Gresham's position and a definitive course of action. Policies are more specific than goals. They often identify the City's position in regard to implementing goals. However, they are not the only actions the City can take to accomplish goals.

Action Measure - An action measure is a statement that outlines a specific City project or standard, which if executed, would implement goals and policies. Action measures also refer to specific projects, standards, or courses of action the City desires other jurisdictions to take in regard to specific issues. These statements can also define the relationship the City desires to have with other jurisdictions and agencies in implementing Comprehensive Plan goals and policies.

The policies are grouped into a series of multi-modal and modal specific categories: Transportation System, Street System, Transit System, Bicycle System, Pedestrian System, Travel Demand Management, Parking Management, Truck and Rail Freight System, Passenger Rail, Air Transportation System, and Pipeline System. Chapters 5 and 6 identify specific projects, programs, and other actions to implement these policies.

Hogan Drive - a major arterial - includes rain gardens, bike lanes, and planted medians.

TRANSPORTATION SYSTEM

The Transportation System policies are the broadest set of policies. They address transportation within and beyond the public right-of-way.

Policy 1: Develop and promote a balanced transportation system that provides a variety of travel options and reduces the need to rely on automobiles.

1. Develop a multi-modal transportation system that enables people walking, biking taking transit and driving to feel equally safe and comfortable.
2. Provide and promote a range of viable transportation options that respond to **all communities'** needs for access, mobility, safety, comfort and convenience.
3. Provide transportation facilities near transit and in **Gresham's Centers** that support bicycle, pedestrian and transit travel options and provide for a mix of land uses.
4. Adopt and monitor targets for Gresham city limits that address safety, vehicle miles travelled per capita, freight reliance, congestions and walking/biking/transit mode share.
5. Promote incentives and commute trip reduction programs, bicycling, walking, taking transit, ridesharing, carpooling, telecommuting, parking management, flexible work hours, and other travel demand management strategies aimed at reducing the number and length of **single occupant vehicle trips.**
6. Support the Metro region's 2040 Growth Concept, which manages growth, protects natural resources and makes improvements to facilities and infrastructure while maintaining the region's quality of life (2040 Growth Concept adopted 1995).
7. Demonstrate that transportation projects will make progress towards the regional Non-Single-Occupancy Vehicle mode share targets per the Regional Transportation Framework Plan (RTFP) Table 3.08-1 for **2040 areas.**
8. Demonstrate that transportation projects will make progress toward the Metro region's **modal targets** (RTFP Table 3.08-2).

Telecommuting reduces commute trips.

All communities *include people of color, people experiencing poverty, people with disabilities, and people who experience language barriers.*

Gresham's Centers: *Per Metro's 2040 Growth Concept Map, Gresham has one Regional Center and one Town Center. The Regional Center's boundary includes the Downtown and Civic Neighborhood plan district. The Town Center boundary is all of Rockwood plan district. Additionally, the Pleasant Valley Plan Area has a planned Town Center.*

A single occupant vehicle *is a motor vehicle occupied by the driver only.*

2040 areas *include Gresham Regional Center (Downtown and Civic Neighborhood), Rockwood Town Center, station areas, corridors, main streets, industrial areas, employment areas and neighborhoods*

Modal targets *are targets intended to increase walking, biking, transit, shared ride and other non-drive alone trips as percentages of all trips.*

– RTP Glossary

Policy 2: Plan, implement and maintain an efficient transportation system.

1. Coordinate transportation capital improvement plans, street design standards, the functional classification of streets, transportation system management actions, review of development with significant transportation impacts, and transportation planning activities:
   - With affected agencies, jurisdictions and special districts such as Oregon Department of Transportation (ODOT), Metro, Multnomah and Clackamas counties, Portland, and the East Multnomah County cities;
   - With TriMet and other transportation service providers; and
   - With local and regional transportation plans.
2. Require new development to provide multi-modal street design and public utilities to serve the site and to extend public infrastructure to provide for the logical continuation of the City's utility and street systems. A development may be required to modify or replace off-site systems to provide adequate public facilities. The City Manager may require a development to provide a traffic analysis by a licensed traffic engineer that evaluates the traffic impacts and mitigation requirements.
3. Coordinate transportation projects, programs, and investment strategies with land use, economic development, noise reduction, air quality, water quality, and other **Goal 5** policies.
4. Adopt and update a 20-year capital improvement plan that addresses all transportation modes every five years, as part of the capital improvement program.
5. Develop a Transportation Financing Plan that:
   - Gives top priority to safety and the preservation and maintenance of existing transportation facilities;
   - Prioritizes investments in the transportation system to best support community goals and responds to needs identified by residents;
   - Maximizes expenditures on pedestrian and bicycle capital improvements, particularly those that connect to transit facilities and schools;
   - Considers the future operating and maintenance costs associated with improvements when making transportation capital investment decisions;
   - Includes funding from a variety of sources such as regional, state, and federal grant programs; state and federal gas taxes and vehicle registration fees; regional congestion pricing, user fees, and employer taxes; city bonds, Bancroft bonds; Local Improvement Districts, benefiting property owners; development impact fees; etc.;
   - Identifies creative, non-traditional funding sources; and
   - Maintains the City's flexibility to take advantage of new funding opportunities, including public/private partnerships.

Goal 5 is Oregon's fifth statewide planning goal: Natural Resources, Scenic and Historic Areas, and Open Spaces. The intent of Goal 5 is, "to protect natural resources and conserve scenic and historic areas and open spaces. Local governments shall adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability."

Maintenance costs include resurfacing.

6. Develop **inter-modal** transportation facilities that make passenger or freight transfers convenient and efficient.

Inter-modal refers to the use of multiple modes of transportation (I.E. rail, truck and ship).

7. Promote the use of energy-efficient or low- and zero-emission vehicles and bicycling, transit and pedestrian travel modes.
8. Allow infrastructure operation, maintenance, repair, preservation, widening, or reconstruction without a development permit within rights-of-way. Allow changes in alignment of proposed projects without plan amendments or future street plans, if such changes fall within a designated transportation corridor, route, or right-of-way in the Community Development Plan or a future street plan.

Policy 3: Provide a transportation system that maximizes accessibility to and within regional centers, town centers, transit corridors, station areas, and employment centers.

1. Protect existing and planned transportation corridors from conflicts with adjacent land uses by the adoption of:
   - Future street plans;
   - Street design standards and classifications that reflect adjacent land use designations;
   - Access management standards;
   - Appropriate land use designations; and
   - Development requirements including setbacks, buffering and landscaping standards, building orientation, density transfer provisions, easements, and right-of-way dedication.
2. Design and build transportation facilities that are safe and consistent with the scale and character of planned land uses.

Policy 4: Provide a safe transportation system.

1. Protect local streets from through traffic, high volumes, and high speeds using appropriate neighborhood street design as well as neighborhood traffic control devices and strategies.
2. Monitor high crash locations and types and develop appropriate programs and projects to address problems.

STREET SYSTEM

The Street System policies are multi-modal and specific to the right-of-way.

Policy 1: Provide a street system that accommodates a variety of travel options.

1. Maintain a functional classification system and street design standards that serve all modes of transportation and support regional and local land use plans.
2. Retain designation of Pedestrian Districts in the Gresham Regional Center (Downtown and Civic Neighborhood), the Rockwood Town Center, transit corridors, and MAX station areas.

MAX at Civic Station

3. Consider new and retain the existing pedestrian oriented boulevard designs along designated major streets within the Regional Center, Rockwood Town Center, and on transit corridors.
4. Develop street design standards that support land uses and reduces barriers for people walking, biking and taking transit. Refer to national best practices such as the National Association of City Transportation Official's Urban Bikeway Design Guide for street design supporting bicycle use.
5. Improve the pedestrian environment of the Street System by requiring coordinated street tree plantings, underground utilities, pedestrian amenities and safety enhancements, and coordinated street signs, light standards, and utility facilities within the public right-of-way.
6. Maintain a Functional Classification system that ensures streets are **context sensitive** with adjacent neighborhoods.
7. In the development of the Street System, and in all land development, provide:
    - Bus loading areas and provision for amenities such as landing pads, shelters, real-time information kiosks, etc. for transit riders;
    - Safe and convenient pedestrian circulation;
    - Safe and comfortable bike network;
    - Off-street parking and maneuvering areas for bicycles and motor vehicles; and
    - Loading areas for freight, as appropriate.

__Context sensitive__ solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist.

– Federal Highway Administration (FHWA)

Policy 2: Develop a street system that meets current needs and anticipated future population growth and development.

1. Maintain and implement a multi-modal street functional classification plan.
2. Work with affected local jurisdictions, Metro, and the Oregon Department of Transportation to maintain a coordinated and regionally consistent multi-modal functional classification plan.
3. Coordinate with the City's Public Works Standards to specify street design standards.
4. Review designs, approve plans, inspect construction, and recommend acceptance of public improvements to the City Council for ownership, operation, and maintenance by the City. Ensure established administrative procedures for the above process to protect the life, safety and welfare of the public.
5. Favor system improvements that: consider using existing roadway capacity, signals, and access more efficiently; reduce and manage single occupant vehicle travel demand or control travel demand growth through transportation-efficient land use and pricing incentives prior to adding roadway capacity in lanes and new facilities; provide safe and convenient travel options. Consider new roadway construction only where it would provide a complete network, enhance system efficiency, or where improvements to the existing street system are not feasible.

6. Preserve and maximize the capacity of existing arterials and other major streets (especially in the vicinity of state highway interchanges) by: access management techniques such as minimizing the number of curb cuts; controlling turn movements with raised medians; requiring adequate right-of-way and setbacks as part of the development process; signal coordination and synchronization; and other appropriate transportation system management and operations (TSMO).
7. Regularly maintain an adequate condition of street pavement on municipal streets by implementing a pavement management system and other cost-effective measures.
8. Identify, adopt and develop acceptable alternatives to address the traffic and transportation needs along primary north-south and east-west corridors; work with Metro, the Oregon Department of Transportation, affected local jurisdictions, TriMet, bicycle and pedestrian groups, development stakeholders, and citizens.
9. Work with Metro, the Oregon Department of Transportation, TriMet, bicycle and pedestrian groups, development stakeholders, affected local jurisdictions, and citizens. The City's planning and decision making for this project will be guided by adopted community objectives. Adopt a specific alternative, if one is acceptable, using the City's Future Street Plan process. Concurrently adopt any required plan amendments or goal exceptions, and applicable changes to the functional classification system.

Policy 3: Provide a street system that maximizes accessibility and mobility within the community.

1. Locate major activity centers in areas that are accessible by a variety of transportation modes.
2. Provide bicycle and pedestrian facilities and transit access to major activity centers.
3. Develop solutions to special traffic problems created around major activity centers that minimize non-local traffic through residential neighborhoods.
4. Implement the Future Street Plan and street connectivity standards to ensure the development and completion of logical and continuous local street patterns within residential and mixed-use areas as development occurs. Per the Future Street Plan and street connectivity standards, new development must provide for the continuation and inter-connection of existing streets and must avoid long dead-end street patterns.

Bicycle rack at the Arts Plaza

5. Implement adopted City code standards for public street and land division that reinforce the public street system as the City's essential framework for safe, convenient, and efficient neighborhood circulation, property access, emergency response, public facilities, and utilities for all properties.
6. Develop a well-connected public street system while minimizing motor vehicle traffic impacts within residential areas and maximizing bicycle and pedestrian connectivity.
7. Ensure that all residential development will be served by a connected local public street system and provide street frontage and access for all residential parcels.
8. Establish a hierarchy of connected collector and local streets. Require Neighborhood Circulation Plans that seek to balance local traffic among local streets, provide multi-directional access to the collector-arterial system, reduce non-local traffic, and ensure optimal emergency response.

Policy 4: Ensure a street system that is safe and supports healthy, active living.

1. Develop and manage a multi-modal street system that meets local, regional, state and federal vehicular emissions and noise level standards.
2. Require adequate street lighting for both motor and non-motor vehicles with street capital improvement projects and private development projects. Additionally, implement a program to provide street lighting in areas where lighting is inadequate or non-existent.
3. Use traffic calming techniques in neighborhood traffic control projects and update street standards to include traffic calming devices.
4. Design and build safe street crossings, bicycle lanes, and sidewalks, prioritizing areas with high pedestrian and bicycle traffic.
5. Adopt specific access management strategies for each roadway classification to separate vehicle conflicts (e.g., reduce the number of driveways, increase the spacing between driveways and intersections, and remove turning vehicles from through lanes). Require greater access control for higher classification streets and less access control for lower classification streets.
6. Require that new street improvements be designed to meet or exceed minimum guidelines set forth in the American Association of State Highway and Transportation Officials Policy on Geometric Design of Highways and Streets and the Institute of Transportation Engineers' recommended practice for urban streets. Traffic impact analyses shall utilize the Institute of Transportation Engineers Trip Generation Manual wherever applicable.
    - Design traffic calming devices in accordance with accepted industry standards such as detailed in the Institute of Transportation Engineers recommended practice for urban streets and Oregon State University Transportation Research Institute's Neighborhood Traffic Management guide.
    - Refer to national best practices resources such as the National Association of City Transportation Official's Urban Bikeway Design Guide for street design supporting bicycle use; Metro's Creating Livable Streets: Street Design Guidelines; the National Center for Bicycling and Walking; the Federal Highway Administration's Designing Streets for Pedestrian Safety Guidelines; and the Transportation Research Board's Multi-Modal Level of Service Analysis, published in the 2010 (or most recent) Highway Capacity Manual.
7. Work with the United States Postal Service to adopt and implement a uniform street naming and addressing system. Develop logical and convenient solutions to resolve problems associated with the present dual address grids and multiple City postal service designations within Gresham.

Traffic calming devices include planted medians, such as this one on Powell Boulevard.

TRANSIT SYSTEM

Policy 1: Advocate convenient, expanded transit service within Gresham and the east Multnomah County area.

TriMet bus stop

1. Encourage TriMet to provide transit service for Gresham that meets or exceeds the service level criteria established by TriMet for:
   - Route coverage;
   - Frequency of service; and
   - Travel time.
2. Work with affected jurisdictions, transit providers, and potential private transit providers in the operation and improvement of the transit system serving Gresham.
3. Encourage the public to utilize mass transit via strategies developed in accordance with the TSP's Transportation Demand Management plan and its policies and action measures so as to make effective use of the transit system investment while reducing single occupant automobile use, maximizing efficient use of the road system, improving air quality and improving public health. Communicate community needs to the agencies responsible for transit planning, programming, and funding.
4. Advocate service enhancements such as peak hour express trains between the Rockwood-Central area stations and Gateway-Downtown Portland — and off-peak discount tickets to encourage off-peak rider use and off-peak direction trips.
5. Promote logical extensions of the transit system such as a Gresham loop to Mount Hood Community College.
6. Promote enhanced north/south transit service.
7. Support TriMet and other entities in the planning and implementation of light rail and bus service improvements, especially **feeder bus service** to MAX stations.

> ***Feeder bus service:*** *Bus service between MAX stations and bus stops.*
>
> ***Paratransit:*** *A shared-ride public transportation service for people who are unable to use regular buses or trains due to a disability or disabling health condition.*
>
> *– TriMet*

Policy 2: Encourage efficient transit services to meet the current and projected transportation needs of the citizens of Gresham.

1. Advocate and support cost-effective and flexible transit service for the Gresham area, such as:
   - Small vehicle bus service on some feeder bus routes;
   - **Paratransit** and demand-responsive services such as bus pools, shared-ride taxis, carpools and van pools as an alternative to fixed route, large bus service and single occupant automobile use; and
   - Contracted, demand-responsive bus service provided by local providers using small vehicles where large bus, fixed route service is not yet justified by existing population and employment.
2. Advocate for and support frequent and connected transit service to and within Gresham, including limited need for transfers between key employment, residential and inter-modal transfer areas.
3. Advocate for enhanced transit service serving primary residential, employment, and commercial areas.

Policy 3: Promote the development of a transit system that maximizes accessibility.

1. Encourage development of a local and regional transit system that benefits Gresham residents and businesses, improves Gresham's regional accessibility, and strengthens system ridership.
2. Work with transit providers to extend transit service to areas of the city that do not have adequate transit service and to improve the route coverage, frequency of service, and ridership for feeder bus and cross-town bus lines. Give funding priority to transit corridors, Mixed-Use Districts, Plan Districts, employment centers, shopping centers, moderate density residential areas, and routes or facilities that serve transit-dependent populations.
3. Work with transit providers to encourage transit service that addresses the special needs of the **transit dependent** e.g., the elderly and people without a car, people with disabilities and/or people experiencing poverty.
4. Encourage safe and convenient access to transit via bicycle and pedestrian modes.
5. Encourage development patterns that provide access to transit services.
6. Implement pedestrian districts as intensive mixed-use districts within light rail and other transit corridor areas. Encourage pedestrian-oriented development and transit-supportive uses within pedestrian districts. Apply special transit design standards to development within pedestrian districts, and along mixed-use transit corridors.
7. Work with TriMet to provide secure and convenient bicycle parking at light rail station and transit centers, considering TriMet's Bicycle Parking Guidelines.
8. Encourage intensive development in the transit corridors and transit station areas. Implement Community Development Plan policies, land use patterns, standards, capital improvement plans, and specific strategies that support increased transit ridership and are compatible with light rail station area design.
9. Locate population concentrations, intensive commercial and employment centers, senior or special needs housing, and public institutions and offices in areas that can be efficiently served by public transit, especially light rail.
10. Encourage intensive new uses and development within the light rail station areas that:
    - Create major destinations for transit riders;
    - Are compatible with and supportive of transit use;
    - Create high levels of pedestrian activity and provide safe, direct, and attractive pedestrian circulation between stations and adjacent commercial and residential areas;
    - Attract transit ridership, reduce the number and length of vehicular trips, and minimize the amount of land used for private off-street parking;
    - Utilize joint access, joint parking, and interior circulation between adjacent uses and parcels;
    - Create a more efficient land use pattern by land assembly, redevelopment of under-utilized parcels, or by infill within an existing developed area; and

__Transit dependent__ are those without private transportation, those over age 65, those under age 18, and persons below poverty or median income levels defined by the U.S. Census Bureau.

– Federal Transit Administration

- Create a cohesive and attractive transition, including comfortable and direct pedestrian and bicycle routes, between station areas and adjacent existing commercial and residential areas.

11. Provide park-and-ride facilities near light rail stations to attract transit riders and minimize on-street parking in station areas. Support development of additional programmed park-and-ride facilities as needed at appropriate station locations. Work to monitor existing park-and-ride facilities and station area parking and seek to resolve transit rider parking problems that may develop.

Policy 4: Assist in the development of a safe transit system.

1. Design and build sidewalks, pathways and crossings to transit that are free of hazards and minimized conflicts with external factors such as noise, vehicular traffic and protruding architectural elements. Refer to TriMet's "Pedestrian Network Analysis," September 2011, for examples.
2. Work with TriMet to identify and implement safety features and enforcement at bus stops, transit centers, and MAX stations; safety features include shelters, lighting, real-time information, and emergency or pay telephones.

BICYCLE SYSTEM

Policy 1: Develop a continuous and convenient bicycle network.

1. Require preferential parking and accessibility for bicycles for all multi-family, commercial, industrial, and **community service uses.**
2. Require secure bicycle parking that meets Gresham bicycle parking code standards.
3. Require bicycle and mass transit accessibility within residential, commercial, industrial, and institutional use (particularly schools) development proposals submitted to the City.
4. Support regional efforts to establish the Metro Regional Active Transportation Plan and implement the adopted regional bicycle network.
5. Coordinate with state, regional, and local agencies as well as community based organizations, nonprofit organizations and other groups in planning and developing the regional trail and greenway segments within Gresham, remaining consistent with Gresham's most recent Parks and Recreation Trails and Natural Areas Master Plan.
6. Support implementation of elements of the Metro regional "Intertwine" that will enhance Gresham's bicycle network.
7. Acquire access easements along major utility corridors and abandoned railroad rights-of-way for the expansion of the bicycle network.
8. Promote TriMet's "Bicycles on Transit," and similar programs that have the intent of increasing the number of bicyclists using transit.

Community service uses include libraries, senior centers, hospitals, parks, churches and schools.

The regional trail network includes the Gresham-Fairview Trail.

9. Integrate on-street bike lanes and facilities with multi-use paths and other bicycle facilities identified in the adopted Gresham Bicycle Guide.
10. Maintain and continue to promote the City owned bicycle fleet for official employee use.
11. Identify criteria and potential routes for bicycle boulevards, parkways, greenways, or other unique bicycle systems.
12. Stripe bicycle lanes with street resurfacing projects or improvements.
13. Implement design options that reduce traffic speed, while providing bicycle facilities as part of the local street improvements and neighborhood traffic control projects.
14. Continue the City's bicycle count program and work with Metro and Portland State University to stream data in to PSU's PORTAL for archiving, visualization and public access.
15. Create a Bicycle and Pedestrian Master Plan that supports a connected, safe, accessible bicycle system.
16. Encourage the state to reconsider its restriction on the use of gas tax revenues for funding facilities outside public street rights-of-way.
17. Coordinate with state, regional and local agencies to:
    - Implement consistent design standards and classifications for bicycle facilities as appropriate to the traffic volume and speed, considering national best practices in such resources as the National Association of City Transportation Official's "Urban Bikeway Design Guide;"
    - Install detector loops and other technologies that allow bicyclists to trigger traffic lights while traveling on the road; and
    - Continue to use consistent local and regional wayfinding signage standards for bicyclists.

Bike sign along the Springwater Trail

Policy 2: Support programs and projects to improve bicycle safety and reduce the rate of bicycle-related crashes.

1. The City's top priorities for bicycle improvements are: redesign of arterial streets into community-friendly boulevards; bike racks and bike lanes; Safe Routes to School projects; multi-use trails; and wayfinding signs. Identify and prioritize these projects in the Transportation and Footpaths Capital Improvement Programs.
2. Pursue infrastructure and advanced technologies proven to promote a safe bicycling environment.
3. Support a Bicycle Safety Program in schools, bicycle "rodeos," and other local events that promote bicycle safety.
4. Work with Multnomah County, adjacent jurisdictions, and Metro to continue Bicycle Commute Month/Week/Day in May and with the Bicycle Transportation Alliance to advocate for Bike Commute Month in September.
5. Work with appropriate jurisdictions to remove and prevent barriers, obstructions and hazards from bicycle facilities.
6. Establish a bicycle facility maintenance schedule and a procedure for quick response to bicycle facility maintenance and safety problems.

7. Create a Safe Routes to School program that includes bicycle elements to present at schools and to the general public.
8. Distribute and periodically update the Gresham Bicycle Map and coordinate with Multnomah County to update the County bicycle map.

PEDESTRIAN SYSTEM

Policy 1: Provide pedestrian facilities that are continuous, accessible, and adaptable to all users.

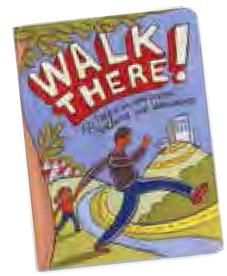
The Footpaths section is funded through a dedicated 1% of the gas tax funding.

1. Design and build sidewalks, pathways and crossings to transit that are free of hazards and minimize conflicts with external factors such as noise, vehicular traffic and protruding architectural elements. Refer to TriMet's "Pedestrian Network Analysis," September 2011, for examples.
2. The City's top priorities for pedestrian improvements are: safe street crossings; sidewalk infill; elimination of pedestrian barriers; access to transit station areas; Safe Routes to School projects; multi-use trails; and wayfinding signs. Identify and prioritize these projects in the **Transportation and Footpaths sections of the Capital Improvement Program.**
3. Work with utility and other agencies to remove obstructions to clear walk zones.

Pedestrian crossing at 1st Street and Kane Road.

4. Coordinate with regional governmental and advocacy partners to develop consistent design standards for pedestrian facilities on arterial and collector streets in Gresham including sidewalks, pedestrian crossings and pedestrian refuges.
5. Require the construction of appropriate pedestrian facilities as part of all transportation capital improvement projects, including road construction, reconstruction, traffic calming and intersection improvement projects.
6. Develop pedestrian facilities consistent with the City of Gresham Parks and Recreation Trails and Natural Areas Master Plan.
7. Support implementation of elements of the Metro regional "Intertwine" that will enhance Gresham's pedestrian network.
8. Incorporate in the trail and park system any special or unique sites for nature trails, scenic walkways, exercise circuits, or other special purpose trails.
9. Require internal pedestrian circulation within residential, commercial, industrial, and community service development proposals submitted to the City.
10. Develop a program for interim pedestrian facilities on substandard arterial and collector streets not scheduled for construction, and prioritize pedestrian projects independent of street projects in the adopted 5 year Capital Improvement Program.
11. Identify project areas for comprehensive pedestrian improvements, including traffic calming, signal improvements, crossing treatments and pedestrian amenities.

12. Adopt a comprehensive set of design guidelines and standards for pedestrian facilities that are adapted to the anticipated level of pedestrian activity. Consider national best practice resources, such as the National Center for Bicycling and Walking, the Federal Highway Administration's "Designing Streets for Pedestrian Safety Guidelines," and the Transportation Research Board's "Multi-Modal Level of Service Analysis" published in the 2010 (or most recent) Highway Capacity Manual. Identify the areas where specific standards apply.
13. Ensure that the needs of pedestrians are considered in the timing plans of all traffic signals.
14. Implement design options that reduce traffic speed, while providing pedestrian facilities as part of local street improvement and neighborhood traffic control projects.
15. Create a Bicycle and Pedestrian Master Plan that supports a connected, safe, accessible pedestrian system.
16. Coordinate with Metro to maintain neighborhood walking guides and the "Walk There" guide book.



Policy 2: Improve pedestrian access to transit from residential, commercial, industrial and institutional developments.

1. Adopt site design and street standards supporting internal and external pedestrian circulation and transit accessibility for residential, commercial, industrial, and institutional developments.
2. Identify needed connections for direct walking routes. Require dedication of right-of-way and pedestrian/bicycle access way improvements with development of adjoining property.
3. Prioritize pedestrian projects that improve access to and within the Gresham Regional Center and Rockwood Town Center.
4. Prioritize pedestrian access to the Springwater Trail and the Gresham-Fairview Trail, and its future extensions, from adjacent residential, commercial, industrial and institutional developments to transit stops.
5. Require pedestrian connections and facilities in areas with planned high levels of pedestrian activity such as mixed-use, high-density districts, school zones, commercial districts, and areas adjacent to transit corridors, considering findings in TriMet's "Pedestrian Network Analysis" 2011.
6. Identify priority improvements for pedestrian access to transit in pedestrian-to-MAX capital improvement projects. Priorities include completing the sidewalk network, providing adequate crossing opportunities and adding pedestrian amenities near transit centers, stations and stops.

Policy 3: Develop and promote safe pedestrian environments.

1. Pursue infrastructure and advanced technologies proven to promote a safe walking environment.
2. Increase traffic law awareness and enforcement in pedestrian districts.
3. Develop pedestrian-focused educational programs and events for Gresham's residents.

***Safe Routes to School Program** is a Federal-Aid program of the U.S. Department of Transportation's Federal Highway Administration aimed at substantially improving the ability of primary and middle school students to walk and bicycle to school safely.*

4. Continue to coordinate with school personnel and parent groups to identify and mitigate obstacles to walking to school through a Safe Routes to School program.
5. Coordinate with public and private utilities to remove obstacles from sidewalks and to provide an alternative location for utilities within the right-of-way or easements.
6. Keep neighborhood walking guides updated.
7. Promote safe pedestrian activities that are coordinated with bicycle and transit programs such as a bicycle safety program and **Safe Routes to Schools.**

TRANSPORTATION DEMAND MANAGEMENT

Policy: Implement transportation demand management programs and strategies that reduce the need for single occupant vehicle (SOV) travel and make walking, bicycling and taking transit more convenient for all trips to and within Gresham.

1. Support public/private partnerships between regional partners, local agencies and local businesses such as Transportation Management Associations.
2. Develop and implement a citywide parking strategy and investigate **other measures** that reduce parking demand. Ensure these strategies are equitably employed to ensure people experiencing poverty are not disproportionally impacted.
3. Adopt transit supportive design standards for developments in **districts near transit station areas and along designated transit corridors.**
4. Provide reduced traffic impact fees for new development in the Gresham Regional Center, Rockwood Town Center, and along designated transit corridors.
5. Continue the City's **Employee Commute Program.**
6. Work with local employers to promote telecommuting, flexible work hours and compressed work weeks, the regional carpool matching database, the statewide carpool, employee SmartTrips program and other demand management strategies.
7. Update and maintain traveler information, including wayfinding signage for users of the bicycle and pedestrian systems.
8. Support the installation of end-of-trip facilities such as short and long-term bicycle parking and showers for bicycle or jogging commuters.
9. Support efforts to reach residents with travel options information through such opportunities as new resident outreach and individualized marketing campaigns.
10. Support state and regional **programs** aimed at reducing greenhouse gases and other harmful emissions.

__Measures__ may include market-based strategies such as parking pricing, parking meters, and congestion pricing to promote more compact land use development, increase bicycle, transit and pedestrian mode share, reduce vehicle miles traveled (VMT), and encourage more efficient use of resources.

See the TSP's transit map for __transit station and transit corridor locations.__

The goal of the __Employee Commute Program__ is to reduce the number of auto trips made by City employees.

__Measures include programs__ that encourage local employers to support employees to reduce single occupant commute trips, especially employers affected by the DEQ Employee Commute Option Rules.

PARKING MANAGEMENT

Policy: Manage the on- and off-street parking supply to ensure there is an adequate but not excessive amount of parking available for all land uses.

Options may include additional bike parking, designating carpool/ vanpool parking, and/or designing the development to improve access to nearby frequent-service transit stops or stations, unbundling the cost of parking from the cost of new housing units, researching trip generation rates, timed parking zones and parking meters, etc.

1. Periodically review the Off-Street Parking and Loading Requirements of the Community Development Standards document to:
   - Review and update as necessary parking requirements for all land uses;
   - Study parking for mixed-use developments and adjust rations to prevent over-supply due to multiple uses.
   - Provide **options** that reduce or manage demand for parking, thereby allowing a developer and the City to consider a variance to provide less than the minimum number of parking spaces required by code.
   - Encourage existing development to convert existing parking to other uses.
   - Develop standards for structured parking including those related to ground-floor non-parking use, lay-out, landscaping, and other design, structural, and functional issues; and
   - Undertake other revisions as necessary to simplify interpretation and administration of parking standards.
2. Encourage construction of structured parking in Transit Districts, Civic Neighborhood, Downtown, and Central Rockwood areas to support transit use and encourage high-density development. If feasible, provide incentives in other districts of the city to encourage developers to provide decked or underground parking to reduce land devoted to parking lots.
3. Develop and implement a master plan for public parking facilities in the Downtown and Rockwood areas to provide consolidated central parking for existing and future residences and businesses and facilitate more intensive development of these areas.
4. Encourage the development of joint-use parking agreements where one or more users share the same pool of parking. Identify existing sites with excess parking that could be shared with new users as an alternative to building new parking spaces. Ensure that Community Development Code regulations are sufficiently flexible to allow joint-use parking agreements.
5. Support the Gresham Downtown Transportation Management Association in its efforts to promote and develop:
   - Parking and transit validation programs;
   - One-stop shopping;
   - Alternative transportation modes for customers and employees;
   - Public parking marketing programs;
   - Intra- and inter-district shuttle service; and
   - Shared-parking agreements.

Street parking in Downtown

6. Support expanding the Downtown Transportation Management Association to include such areas as the Central Rockwood Plan Area and Gresham's high employment industrial areas.
7. Consider phased-in parking strategies and programs that include:
   - Timed parking zones and parking meters to encourage parking turnover in high-demand areas; and
   - Preferential on-street parking programs for residents and businesses adjacent to areas with high on-street parking demand.
8. Provide encouragement and, where appropriate, technical support to employers with more than 100 employees who are, therefore, required to participate in DEQ's Employee Commute Option (ECO) Program designed to reduce the number of cars driven to work.
9. Continue working with Metro and other local jurisdictions to adopt regional strategies and policies to meet the per capita parking reduction mandated by the Transportation Planning Rule.

TRUCK AND RAIL FREIGHT SYSTEM

Policy: Provide for the safe and efficient movement of truck and rail freight through and within Gresham.

1. Provide for efficient and safe movement of freight when conducting traffic analyses and adopting multi-modal street design standards.
2. Require adequate on-site loading facilities and ensure the Gresham Regional Center and Rockwood Town Center have adequate access for street loading facilities.
3. Ensure adequate accessibility and mobility to and between regional freight routes from commercial and industrial districts.
4. Identify and correct safety problems on the freight network including roadway geometry and traffic control deficiencies, at-grade rail crossings, truck-infiltration into neighborhoods, congestion on grades, and the movement of hazardous materials.
5. Cooperate with railroads to provide an adequate level of rail freight service.
6. Preserve the rails to trails conversion of the Portland Traction line to the Springwater Trail as a "railbanked corridor," in accordance with the Federal Rails to Trails Act, ensuring that the integrity of this corridor is maintained for possible return to rail use.

PASSENGER RAIL

Policy: Support federal, state, regional and private investments in **passenger rail** service to the metropolitan area.

1. Support cost-effective commuter and inter-city passenger rail projects that serve a demonstrated need.
2. Support connections that make commuter and inter-city service accessible to Gresham residents by a variety of modes.

__Passenger rail:__ Amtrak's high-speed, inter-state and inter-national rail system.

AIR TRANSPORTATION SYSTEM

Policy: Ensure that land uses in Gresham are compatible with aircraft noise exposure and aircraft safety.

1. Work with Port of Portland officials to identify and resolve land use compatibility issues.
2. Participate in noise abatement activities with the Noise Abatement Advisory Committee and PDX staff.
3. Ensure that the location and use of helicopter landing facilities are compatible with surrounding land uses.

PIPELINE SYSTEM

Policy: Ensure that land uses in Gresham are compatible with established and planned pipeline corridors.

1. Identify and provide for appropriate inter-modal access along pipeline corridors.
2. Protect established and planned pipeline corridors from conflicts with incompatible land use development.
3. Support the development of a regional pipeline system.

CHAPTER 5:

System Plans

Vision: *Gresham's Transportation System Plan will support the growth and development of the city of Gresham as an economically vital and livable community by providing its residents and all transportation system users pleasant and convenient access and travel within, to and through the city.*

Overview

This chapter presents Gresham's preferred transportation system. It consists of a multimodal functional classification system plan and specific system plans for the pedestrian, bicycle, transit, freight and transit modes as well as for travel demand management, transportation system management/intelligent transportation systems and parking management. The system plans provide the framework for how Gresham's multimodal transportation system works to support and respond to the surrounding community and environment. This chapter is organized as follows:

Motorists and cyclists share the road on NE Division Street at NW Eastman Parkway.

1. Functional Classification
2. Pedestrian
3. Bicycle
4. Freight
5. Transit
6. Travel Demand Management
7. Transportation System Management and Intelligent Transportation Systems
8. Parking Management

1. Functional Classification

The functional classification system plan defines the function and design of the city's roadways to serve all **travel modes,** support existing and planned land uses, create aesthetic streets and accommodate stormwater management. Gresham's preferred functional classification system plan was refined for the 2035 TSP through the lens of meeting three objectives:

__Travel mode__ is the specific type of travel: automotive, bicycle, pedestrian, transit and freight are the primary modes of travel considered for this TSP.

- Ensure street function supports existing and future land uses.
- Ensure street design is responsive to the community's needs and vision.
- Ensure feasibility of development costs.

The refinements also create consistency in planning for the transportation network throughout both the incorporated City areas, and also the planned Pleasant Valley and Springwater Plan areas. They meet the automobile and bicycle travel demand between curbs while creating a more inviting pedestrian environment back of curbs. The main refinements to meet the objectives were to:

1. Narrow the curb-to-curb distance adopted in the 2020 TSP to match the majority of existing **curb-to-curb** widths. The 2020 TSP standard right-of-way for arterial and collector streets was wider than most existing and built curb-to-curb widths. In some instances the proposed right-of-way width encroached into existing buildings and historic properties. Since adoption of the 2020 TSP, the city has more often granted waivers for the additional right-of-way that would have been needed to meet that plan's required curb-to-curb width than actually constructing that width.

   Curb-to-curb is the road width between curbs and typically includes travel lanes, a center lane or center median and bike lanes on arterial streets and travel lanes collector streets.

   The narrowing of this distance in the 2035 TSP better reflects actual, on-the-ground existing curb-to-curb widths, thereby minimizing potential negative impacts to adjacent property owners that would otherwise require additional right-of-way acquisition. In large part the curb-to-curb distance is narrowed by transferring stormwater management from swales in the roadway center median to back-of-curb landscape strips and rain gardens. This curb-to-curb width retains safe and adequate widths for all modes to travel.

2. Increase the width of landscape strips. The 2020 TSP provided for 4' wide landscape strips on streets classified as arterial, collector and community street and 8' wide on the principle arterial classification. The 2035 TSP refines the landscape width to 8' on major and standard arterials and 6' on the minor arterial, major, standard and minor collectors. The wider landscape strip enhances the pedestrian experience with a wider and greener buffer from traffic, creates a space for stormwater management systems and allows for larger trees which add to the health and appearance of the community. The larger plantings also tend to encourage motorists to travel safely within speed limits with the regular and substantial trees indicating progress along the street.

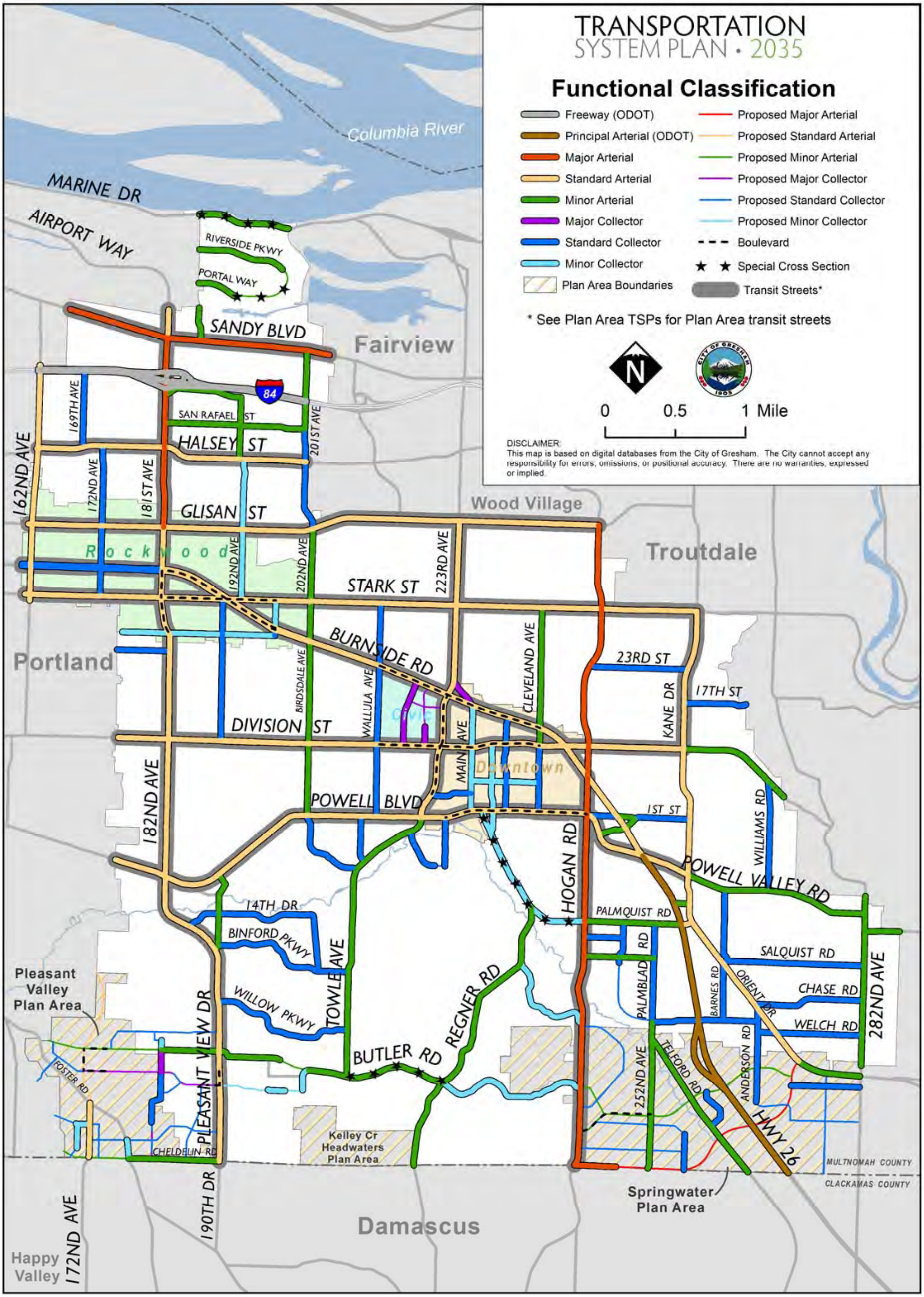
View of NE 181st Avenue north of SE Stark Street.

3. Create a more streamlined system of classifications between the City's three TSPs. The adoption of the 2020 TSP, Pleasant Valley TSP, and Springwater TSP as separate documents during different years and through different processes, resulted in many different functional classifications. This was confusing for developers and for planners. This 2035 TSP standardizes functional classifications for these three Plans. On certain street segments, particularly in the plan areas and design districts, "overlay" design treatments are allowed. The overlay treatments can be wider sidewalks or multi-use paths.

Map 21 shows the updated functional classification system. The classifications vary in their functional parameters (typical traffic volume, design speed and lane number and width) as well as design elements (parking, bicycle facilities, medians, sidewalks and planter strips). Table 24 identifies the functional parameters and design elements for each arterial and collector classification. The stated volume ranges in Table 24 are used as one factor in determining the appropriate classification for a given facility and represent the parameters under which, in most cases, that classification will operate at an acceptable level. The ranges do not represent a standard.

The actual capacity of roadways is typically governed by traffic operations at intersections along with other roadway features such as turning movements, grade, number of lanes and hourly traffic variations. Detailed engineering studies may determine that the actual capacity of a particular road section falls outside these ranges.

The arterial and collector streets create a grid-like network based upon county road spacing. The arterials and collectors generally run parallel, intersecting at right angles. The local streets generally follow this pattern though some follow a spaghetti pattern because of geographic constraints such as buttes or streams. The arterials generally are spaced one mile apart, with the exception of Powell Boulevard to Butler Road spacing over one mile apart, where Gresham Butte creates a topographic barrier. Collectors generally are spaced one-half mile from the arterials. Local streets fill in the spaces between the arterials and collectors, providing internal circulation and connectivity.


TRANSPORTATION
SYSTEM PLAN • 2035
Functional Classification
Freeway (ODOT)
Principal Arterial (ODOT)
Major Arterial
Standard Arterial
Minor Arterial
Major Collector
Standard Collector
Minor Collector
Plan Area Boundaries
Proposed Major Arterial
Proposed Standard Arterial
Proposed Minor Arterial
Proposed Major Collector
Proposed Standard Collector
Proposed Minor Collector
Boulevard
Special Cross Section
Transit Streets*
* See Plan Area TSPs for Plan Area transit streets
N
0
0.5
1 Mile
DISCLAIMER:
This map is based on digital databases from the City of Gresham. The City cannot accept any responsibility for errors, omissions, or positional accuracy. There are no warranties, expressed or implied.
Columbia River
MARINE DR
AIRPORT WAY
RIVERSIDE PKWY
PORTAL WAY
SANDY BLVD
Fairview
84
169TH AVE
SAN RAFAEL ST
201ST AVE
HALSEY ST
162ND AVE
172ND AVE
181ST AVE
GLISAN ST
Wood Village
Troutdale
Rockwood
192ND AVE
202ND AVE
STARK ST
223RD AVE
Portland
BURNSIDE RD
CLEVELAND AVE
23RD ST
17TH ST
KANE DR
BIRDSDALE AVE
WALLULA AVE
Civic
DIVISION ST
MAIN AVE
Downtown
182ND AVE
POWELL BLVD
1ST ST
WILLIAMS RD
HOGAN RD
POWELL VALLEY RD
14TH DR
PALMQUIST RD
BINFORD PKWY
TOWLE AVE
PALMBLAD RD
SALQUIST RD
Pleasant Valley Plan Area
WILLOW PKWY
REGNER RD
BARNES RD
ORIENT DR
CHASE RD
WELCH RD
282ND AVE
BUTLER RD
PLEASANT VIEW DR
FOSTER RD
252ND AVE
TELFORD RD
ANDERSON RD
HWY 26
CHELDELIN RD
Kelley Cr Headwaters Plan Area
MULTNOMAH COUNTY
CLACKAMAS COUNTY
Springwater Plan Area
190TH DR
Damascus
Happy Valley
172ND AVE

Function and Operating Parameters

The following sections describe the general function and operating parameters for each classification. The right-of-way requirements are provided along with generalized cross-sections. More specific design detail and requirements are provided in the Gresham Community Development Code and Gresham Public Works Standards. Some intersections may require auxiliary turn lanes that may necessitate additional right-of-way or easements.

Table 24: Functional Classification System: Arterial and Collector Functional Parameters and Design Elements

	Functional Parameters		Design Elements							
Street Classification	Volume ADT[1]	Design Speed-MPH[2]	Motorist Travel Lanes	Bicycle Lane	Parking	Median	Landscape Strip	Sidewalk	Curb & Gutter Total	Right-of-Way Width
Major Arterial	25,000-60,000	35-45	4 lanes 12' wide	Yes 6' wide	Not allowed except where designated boulevard, then optional.	Yes	Yes 8' wide	Yes 6' wide	2'	104'
Standard Arterial	15,000-40,000	35-45	4 lanes 12' wide	Yes 6' wide	Not allowed except where designated boulevard, then optional.	Yes	Yes 8' wide	Yes 6' wide	2'	96'
Minor Arterial	10,000-20,000	25-40	2 lanes 12' wide	Yes 6' wide	No	Yes	Yes 6' wide	Yes 6' wide	2'	74'
Major Collector	1,000-10,000	25-35	2 lanes 12' wide	Yes 6' wide	Yes 7' wide	No	Yes 6' wide	Yes 6' wide	2'	74'
Standard Collector	1,000-10,000	25-35	2 lanes 12' wide	Yes 6' wide	No	No	Yes 6' wide	Yes 5' wide	2'	60'
Minor Collector	1,000-10,000	25-35	2 lanes 12' wide	No	Yes 7' wide	No	Yes 6' wide	Yes 5' wide	2'	60'

1 Average Daily Trips
2 Miles Per Hour

About Table 24

Where a design element is listed as "no" for a particular classification, that element is not included in the standard design due to the operational characteristics of that classification, particularly design speed and volume. Bicycle lanes are required on all streets except for those designated as minor collectors. Where bicycle lanes are not required, bicycle travel will occur within the travel lanes. Sharrows or other bicycle travel indicators may be used to provide bicyclists directional information and to inform motorists of bicyclists on the road. For other design elements, when "yes" is listed or other guidance is provided, the design element is preferred but may not be included in a particular improvement project depending on specific operational or land use characteristics identified during project development and design. Parking on standard and major arterials designated as boulevard have an "optional" requirement. Where adequate right-of-way allows for on-street parking on boulevards, it should be built. Where adequate right-of-way does not exist, the

Bicycle lanes on SW Towle Avenue between the Springwater Trail and SW 10th Drive. Bicycle lanes are required on all streets except for those designated as minor collectors.

developer may choose to dedicate right-of-way and provide on-street parking. The on-street parking must meet Public Works Standards.

ODOT facilities (I-84 and Highway 26 south of Powell Boulevard) are not included in the Functional Classification System Table because they are within ODOT's jurisdiction and will be managed by ODOT according to state standards.

The following section provides the cross-sections associated with each classification.

Major and Standard Arterials

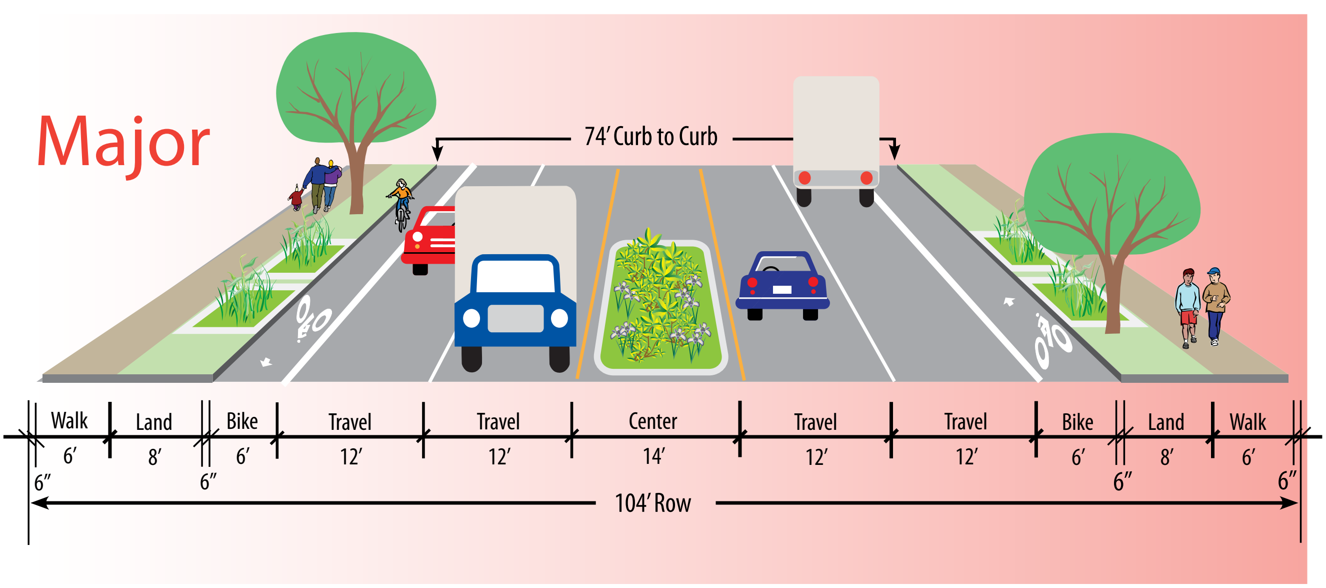
Major and standard arterials are moderate speed, high volume streets that accommodate the majority of regional travel through Gresham. They consist of four travel lanes, bicycle lanes and a center lane designed as a turn lane or raised median as needed for travel safety and mobility. The major and standard arterials provide access to major activity centers and facilitate travel from collector streets to the freeway and principle arterial. They carry traffic volumes typically between 15,000 and 30,000 and maybe as high as 40,000 vehicles per day.

Primary bus routes are provided on the arterial street system, with frequent bus stops located to serve major destinations. Sidewalks and planter strips behind the street curb are also provided for pedestrian mobility, street aesthetics and stormwater management.

Major Arterial

The major arterial is designed to facilitate high demand travel needs of Gresham's valuable industrial and employment land uses. Gresham's major arterials are Sandy Boulevard and Hogan Drive. Sandy Boulevard serves Gresham's **Title 4** industrial/employment land. Hogan Drive serves north/south freight movement and will increase freight volumes as the industrially significant Springwater Plan Area develops. The major

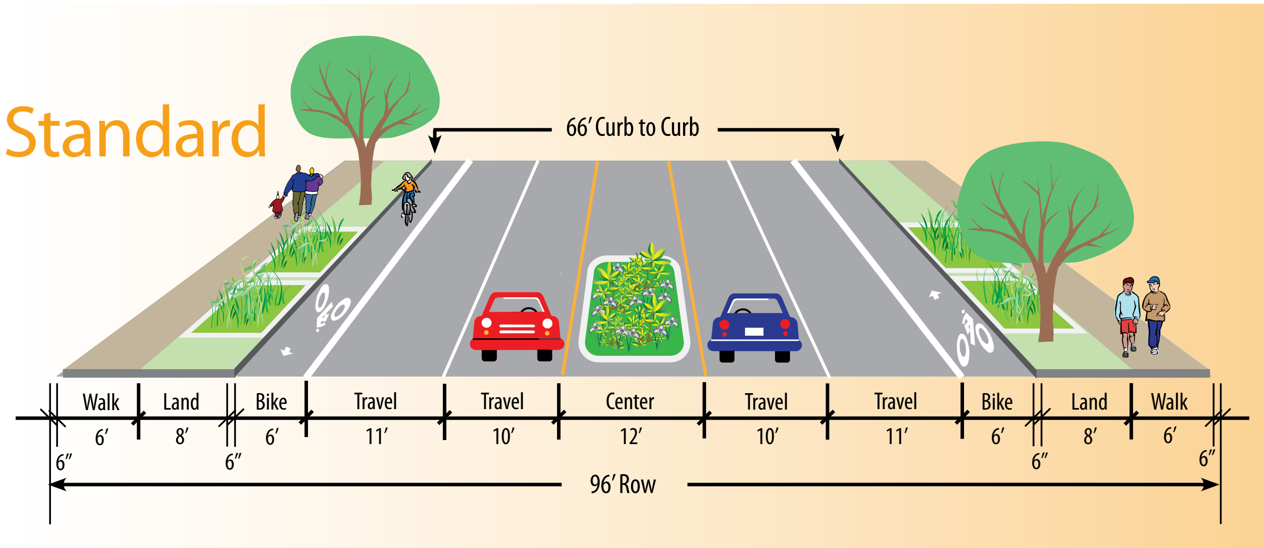
__Title 4__ is established and defined in the Regional Framework Plan. "The Regional Framework Plan calls for a strong regional economy. To improve the economy, Title 4 seeks to provide and protect a supply of sites for employment by limiting the types and scale of non-industrial uses in Regionally Significant Industrial Areas (RSIAs), Industrial and Employment Areas. Title 4 also seeks to provide the benefits of "clustering" to those industries that operate more productively and efficiently in proximity to one another than in dispersed locations. Title 4 further seeks to protect the capacity and efficiency of the region's transportation system for the movement of goods and services and to encourage the location of other types of employment in Centers, Corridors, Main Streets and Station Communities."



arterial has two 12' auto travel lanes in each direction and a 14' median to accommodate turning the radii of large freight vehicles, 6' bicycle lanes, 8' planter strips and 6' sidewalks. A raised median is preferred where functionally appropriate for travel safety and mobility.

Standard Arterial

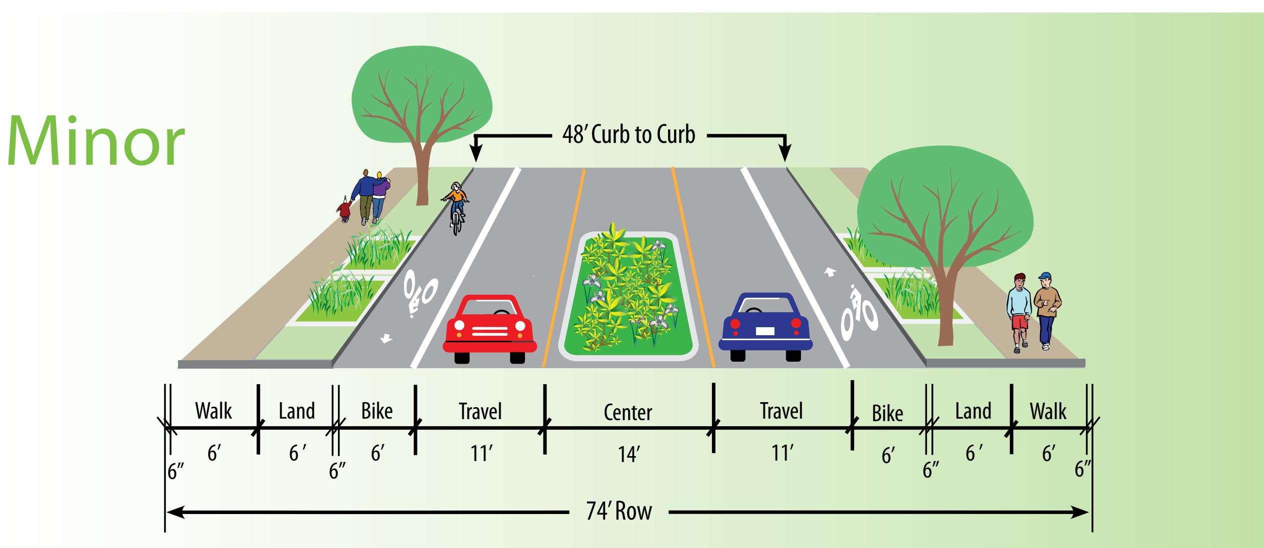
The standard arterial is designed to accommodate high traffic volumes at a community level scale. The standard arterial has one 10' interior and one 11' exterior travel lane in each direction and a 12' center lane



for autos, 6' bicycle lanes, 8' planter strips, and 6' sidewalks. A raised median is preferred where functionally appropriate for travel safety and mobility. The narrower cross-section will support adjacent land uses but is more pedestrian friendly to cross and requires less right-of-way dedication from developments.

Minor Arterial

Minor arterials provide access between neighborhoods or from neighborhoods to the arterial system. Emphasis is on collection and distribution of trips within an arterial grid. Minor arterials consist of one 11' travel lane in each direction with a 14' center lane for a turn lane or planted median, 6' bicycle lanes, 6' planter strips, and 6' sidewalks. Left turn lanes are provided at local streets and major driveways. A continuous left turn lane may be provided where necessary for access within commercial and industrial areas. Raised medians are preferred



where functionally appropriate for travel safety and mobility. Traffic volumes are typically between 10,000 and 15,000 and maybe as high as 20,000 vehicles per day.

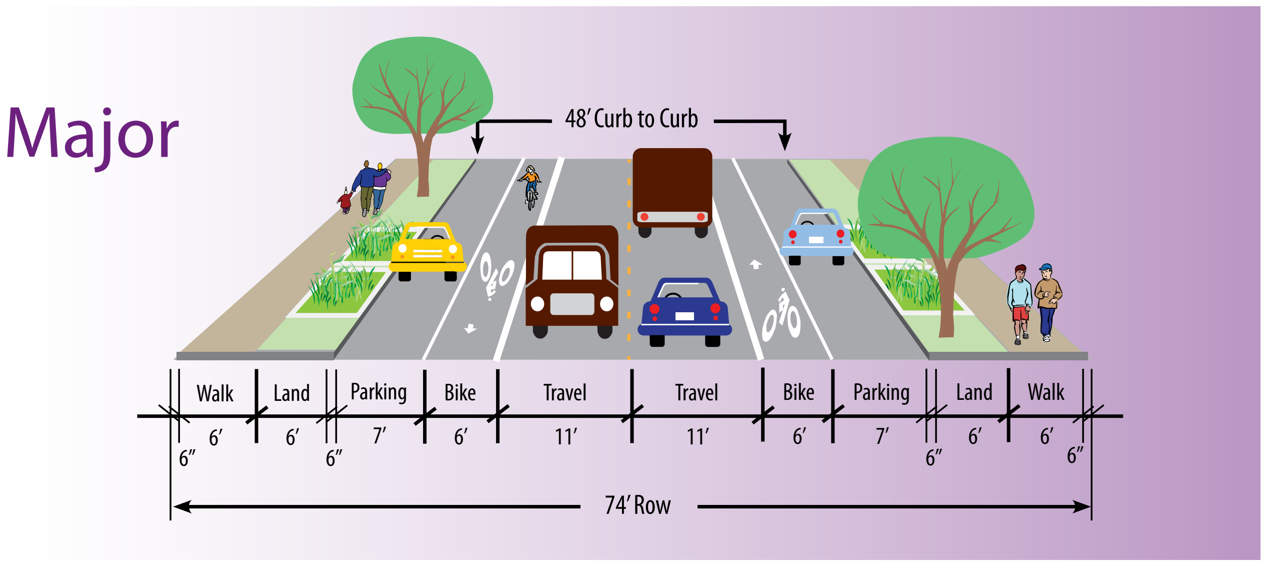
Major, Standard and Minor Collector

Major, standard and minor collectors facilitate travel within the community and neighborhoods, with an emphasis on serving adjacent land uses. Traffic volumes are typically 1,000-10,000 per day.

Transit service, where provided, consists of neighborhood circulation routes. Sidewalks and bicycle lanes or shared automobile/bicycle travel lanes facilitate neighborhood access.

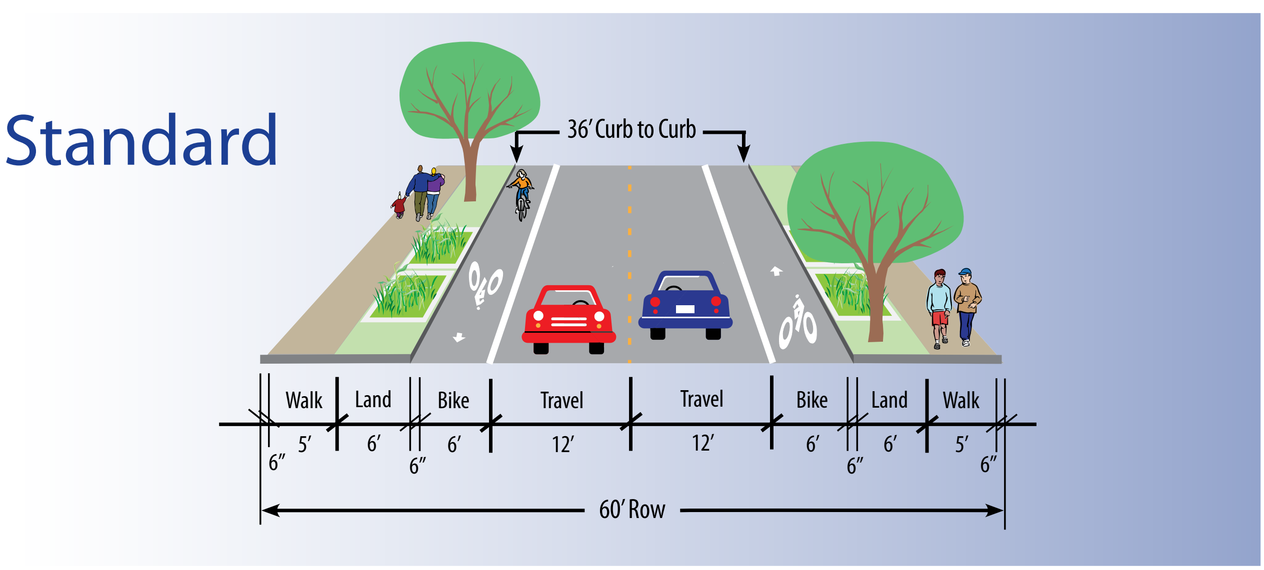
Major Collector

Major collectors consist of two 11' auto lanes, 6' bicycle lanes, 7' parking zones, 6' planter strips, and 6' sidewalks and on-street parking. They are located primarily in the specially planned areas of Civic Neighborhood and Pleasant Valley.

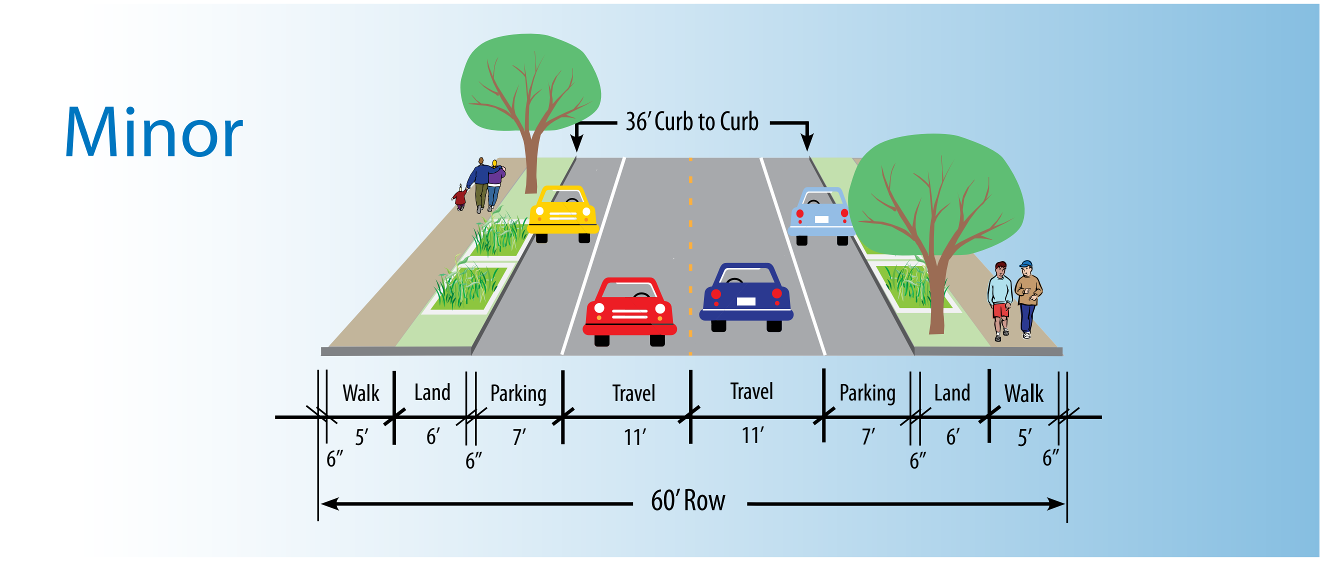


Standard Collector

Standard collectors consist of two 12' auto lanes, 6' bicycle lanes, 6' planter strips, and 5' sidewalks. On-street parking will be provided by the adjacent local street network.



Minor Collector
Minor collectors consist of two 11' auto lanes, 7'on-street parking, 6' planter strips, and 5' sidewalks. Bicycle travel will be provided within the motor lanes. Sharrows, or other bicycle indicators may be utilized to illustrate the shared nature of the Minor Collector's motor/bicycle lane.



Transit Streets
The transit street designation is not a functional classification, per se, but rather relates to specific land development standards to ensure adjacent land uses support the use of adjacent high quality transit service.

The transit design criteria in Gresham's Community Development Code applicable to development along transit streets is intended to provide convenient, direct and accessible pedestrian routes to and from transit facilities via sidewalks and bicycle facilities; provide safe, pleasant and convenient pedestrian circulation by connecting activities within a structure to the adjacent sidewalk and to nearby transit stops; and promote the use of pedestrian and transit modes to access retail and commercial uses. Standards for windows and walls are designed to increase surveillance opportunities, avoid a monotonous pedestrian environment and prevent fortress-like facades along public streets.

Special Street Cross Sections
The functional classification system plan identifies four streets with "special street" cross-sections. These streets are not able to be built to the design standards noted in the sections above due to environmental constraints, impacts to historically designated properties, or unknown development configuration. Alternate designs for these streets must ensure they remain able to adequately serve all modes of travel.

- **Marine Drive**

  Marine Drive is located along the Multnomah County Drainage District's Columbia River levee. The portion of Marine Drive within Gresham is configured with an auto and bicycle lane in each direction but without a planter strip or sidewalk behind the curb. This is due to slope and environmental constraints. However, a multi-use path is planned on top of the levee along this portion of Marine Drive and would accommodate both bicycle and pedestrian traffic. Therefore, the special street designation is applied to Marine Drive because it still serves all modes and includes stormwater management via the levee system. Marine Drive remains a minor arterial due to its expected traffic volumes and function as an east/west arterial.

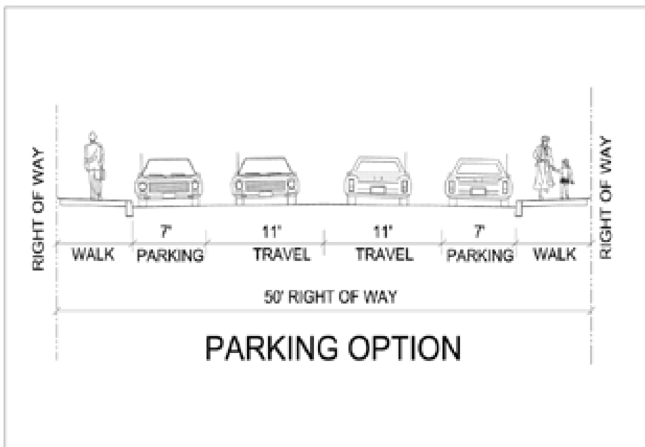
- ## Riverside Parkway

Riverside Parkway is planned to be constructed as a loop that connects with Portal Way. However, should the adjacent property develop in a fashion that does not require the looped connection, per the Development Code and Public Works Standards, (i.e. with a large lot development), the connection may not be required.

- ## Roberts Avenue

Roberts Avenue, between Powell Boulevard and Regner Road, is surrounded by many of Gresham's historic homes and graced by well-established trees. Roberts Avenue is classified as a minor collector but not currently built to that standard; the required 60' right-of-way would encroach on front yards and require removal of several trees. The special street designation, as shown in the graphic below, retains the existing built configuration along Roberts Avenue.

Graphic 8: Roberts Avenue Special Street Design



View of Roberts Avenue, classified in the TSP with "special street" cross-sections.

- ## Butler Road

Butler Road is an important east/west route in southern Gresham. The existing built configuration is comprised of one travel lane in each direction and no sidewalks or bicycle lanes. The special street section of Butler, between Towle Avenue and Regner Road, has Metro owned property to the north and south. The long-term plan for this land is open space. As such, access to the adjacent property may be unnecessary. When Butler Road is considered for redevelopment, multimodal aspects should be incorporated but a center lane may be unwarranted.

Boulevard improvements on SE Stark Street in the Central Rockwood Plan Area.

Boulevards and Multi-use Path Design

Multi-use paths and streets with a boulevard designation are intended to be active multimodal spaces.

Boulevards are located in the Gresham Regional Center and Central Rockwood Plan Area to support adjacent high-density, mixed-use and transit-oriented development. They are designed to slow traffic, encourage commercial activity and provide a pleasant pedestrian atmosphere. Primary bus routes provide services on boulevards with frequent bus stops. On-street bicycle and parking lanes are provided and 10' wide sidewalks accommodate high levels of pedestrian travel.

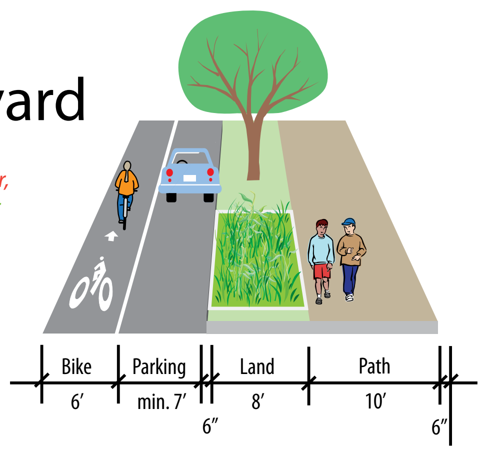
The multi-use paths identified on the functional classification map are adopted in the Regional Transportation Plan and this TSP as shown on Map ##. Where they are adjacent to the City's streets, the streets are to be designed with a 14' multimodal path and a parking lane based upon the adjacent street's functional classification.

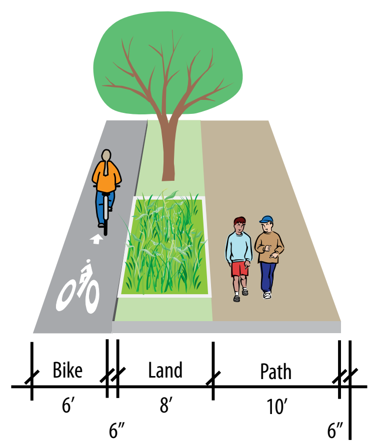
With parking

Without parking

Boulevard

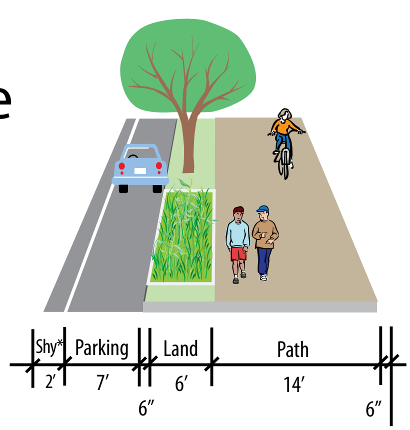
These options ar available for Major, Standard or Minor arterials

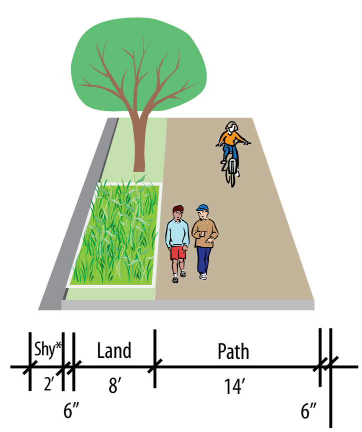




Multiuse Path

These options ar available for Major, Standard or Minor arterials





Gresham's Centers

Major and standard arterial streets within Gresham's Regional Center and Central Rockwood Plan areas that are not designated as boulevard must be designed with a 10' sidewalk in order to create an inviting pedestrian environment within these areas.

Planned Area Street Design

As indicated on the functional classification map, Gresham's Downtown, Civic Neighborhood and Pleasant Valley Plan Areas have adopted street designs. The following plans should be referenced to determine if a street design applies:

- Community Development Plan, Section 4.1100, Downtown Plan District Design Manual
- Community Development Plan, Section 4.1200, Civic Neighborhood Plan District
- Pleasant Valley Transportation System Plan
- Springwater Transportation System Plan.

Local Streets

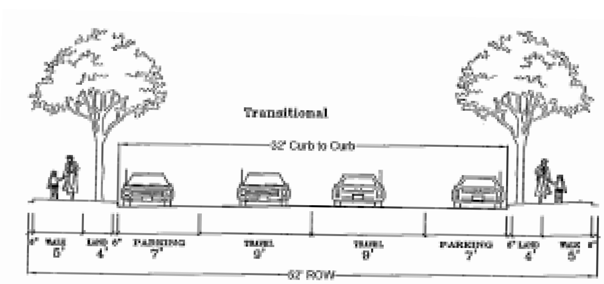
The local street system provides circulation and direct access to individual properties. Local streets carry neighborhood traffic and make up the largest percentage of total street mileage in the city. They are all shared-road bicycle facilities as they carry lower traffic volumes at lower speeds. The local streets are designed with sidewalks and planter strips for a quality pedestrian environment that is also enhanced with lower volume and speeds conditions. There are five local street types. The TSP does not identify the type of each local street. Local street type is determined upon development and as dictated by the City of Gresham's Community Development Plan and Public Works Standards.

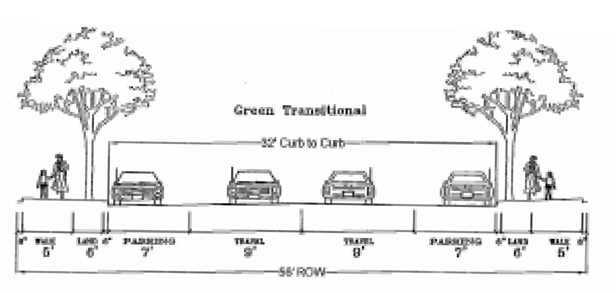
Required local street designs are shown below. Green street design standards for each street is available in the City's Public Works Standards. The green street design features a 6' wide landscape strip that may be utilized for stormwater management.

Transitional

Transitional streets are low volume, low speed local streets that serve neighborhood access needs. They provide two 9' auto lanes and two parking lanes. Traffic volumes are typically 1,000 vehicles or less per day.

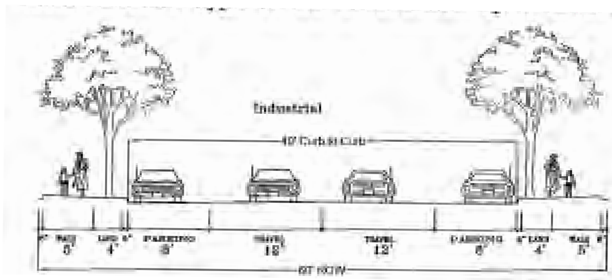
Transitional streets are used to continue existing local streets in established neighborhoods, in mixed-use neighborhoods where density precludes queuing streets due to insufficient off-street parking, on primary emergency response routes, when a street must be terminated in a cul-de-sac, or on local streets where volumes are expected to exceed 800 vehicles per day.

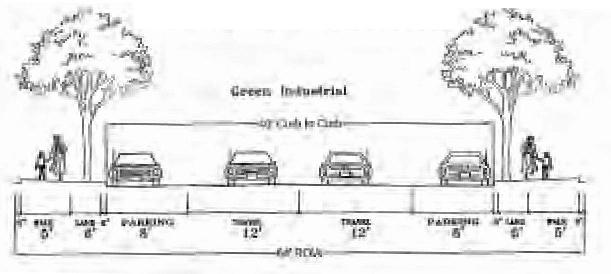




Industrial

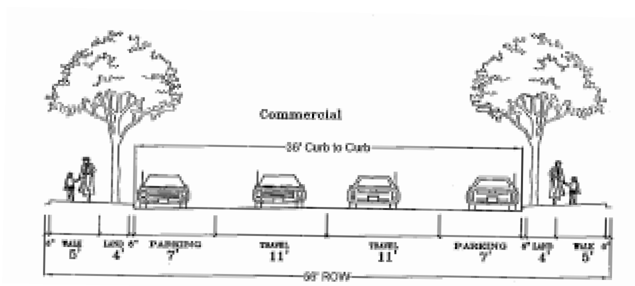
Industrial local streets are low volume, low speed streets that serve primarily industrial access needs. They provide two 12 foot auto travel lanes and two parking lanes. Traffic volumes are typically 1,000 vehicles or less per day.

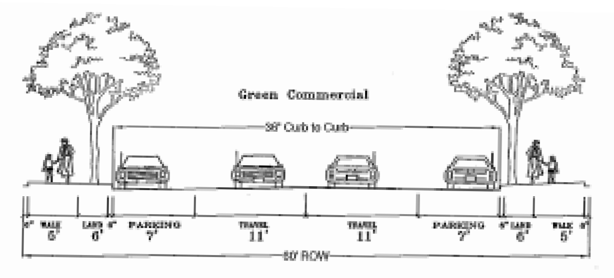




Commercial

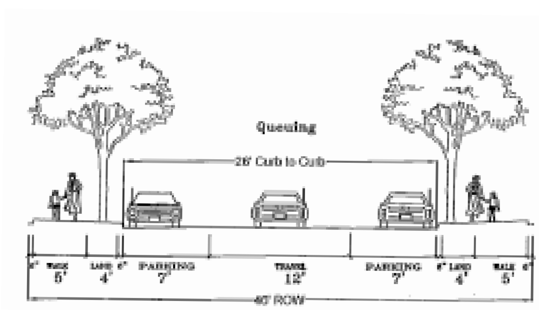
Commercial local streets are low volume, low speed streets that serve primarily commercial access needs. They provide two 11 foot auto travel lanes and two parking lanes. Traffic volumes are typically 1,000 vehicles or less per day.

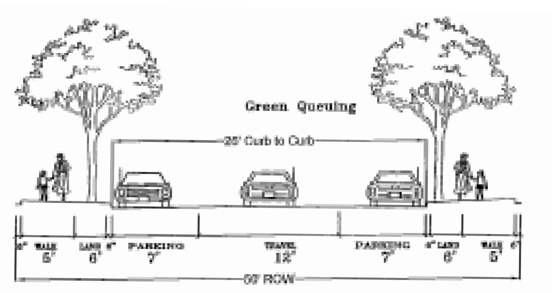




Queuing

Queuing streets are low volume, low speed through streets intended for two-way auto travel. They provide one 12 foot auto travel lane and two parking lanes. When two vehicles meet on a queuing street, one vehicle must yield by pulling into a vacant segment of the adjacent parking lane. Queuing streets are the primary local streets for new residential development. Queuing street block lengths are limited to 400 feet. Traffic volumes are typically 800 vehicles or less per day.





Minor Access

Minor access streets provide public street access to lots created as part of an infill process, where there is no opportunity for connection to another public street by a lane or other local street. A minor access street may serve no more than six dwelling units and may not exceed 150 feet in length. Additional off-street parking for residents and visitors must be provided because no on-street parking is allowed. Sidewalks are not required because of the extremely low traffic volumes on the street.

Alley

Alleys can be useful in providing property access and allowing efficient property use when direct public street access is either not possible or is undesirable. The use of alleys in residential neighborhoods can enhance front yard pedestrian orientation to adjacent streets and reduce the number of individual driveways, improving pedestrian safety. Alleys may also be useful in commercial areas to separate service vehicle traffic from other vehicle and pedestrian traffic.

In all cases, alleys must connect to a street at each end. All adjacent lots must also have frontage on a public street. Additional parking spaces may also be necessary if parking is restricted on the adjacent public street.

ODOT Roads

As discussed in the existing conditions Chapter 2, ODOT maintains jurisdiction of two road sections within Gresham's study area: I-84 and US 26 south of Powell Boulevard. They are shown on the functional classification system plan and discussed below as they perform a vital role in the transportation system plan. However, their design and function is managed by ODOT.

Freeway

Freeways are high speed, high volume corridors that facilitate through movements of regional, statewide and interstate travel. They include grade separated interchanges, four to eight travel lanes with median separation and fully controlled property access. Volumes can be in excess of 60,000 vehicles per day. Interstate 84 is the only freeway facility in Gresham. It is within ODOT jurisdiction and any improvements will be addressed through ODOT and Gresham coordination.

Transit service, if it is provided, consists of express buses or fixed-guideway service such as light rail. Bicycle and pedestrian travel within these corridors is provided on either parallel streets or on dedicated pathways. I-84 features a parallel 10' wide multi-use path, providing bicyclists and pedestrians a major east-west travel arterial.

Principal Arterial

Principal arterials are high speed, high volume arterials that provide a high level of mobility for regional and inter-regional travel. Principal arterials include four to six travel lanes, raised medians and street intersections generally limited to signalized intersections with arterial and collector streets. Traffic volumes are typically between 35,000 and 50,000 vehicles per day, and may be as high as 60,000 vehicles per day.

Transit service will generally consist of regional or express bus service with relatively infrequent stops. On-street bicycle lanes are provided along with wide sidewalks separated from the street.

Highway 26/Mt. Hood Highway south of Burnside Road is Gresham's only principle arterial. It is within ODOT jurisdiction and any improvements will be addressed through ODOT and Gresham coordination.

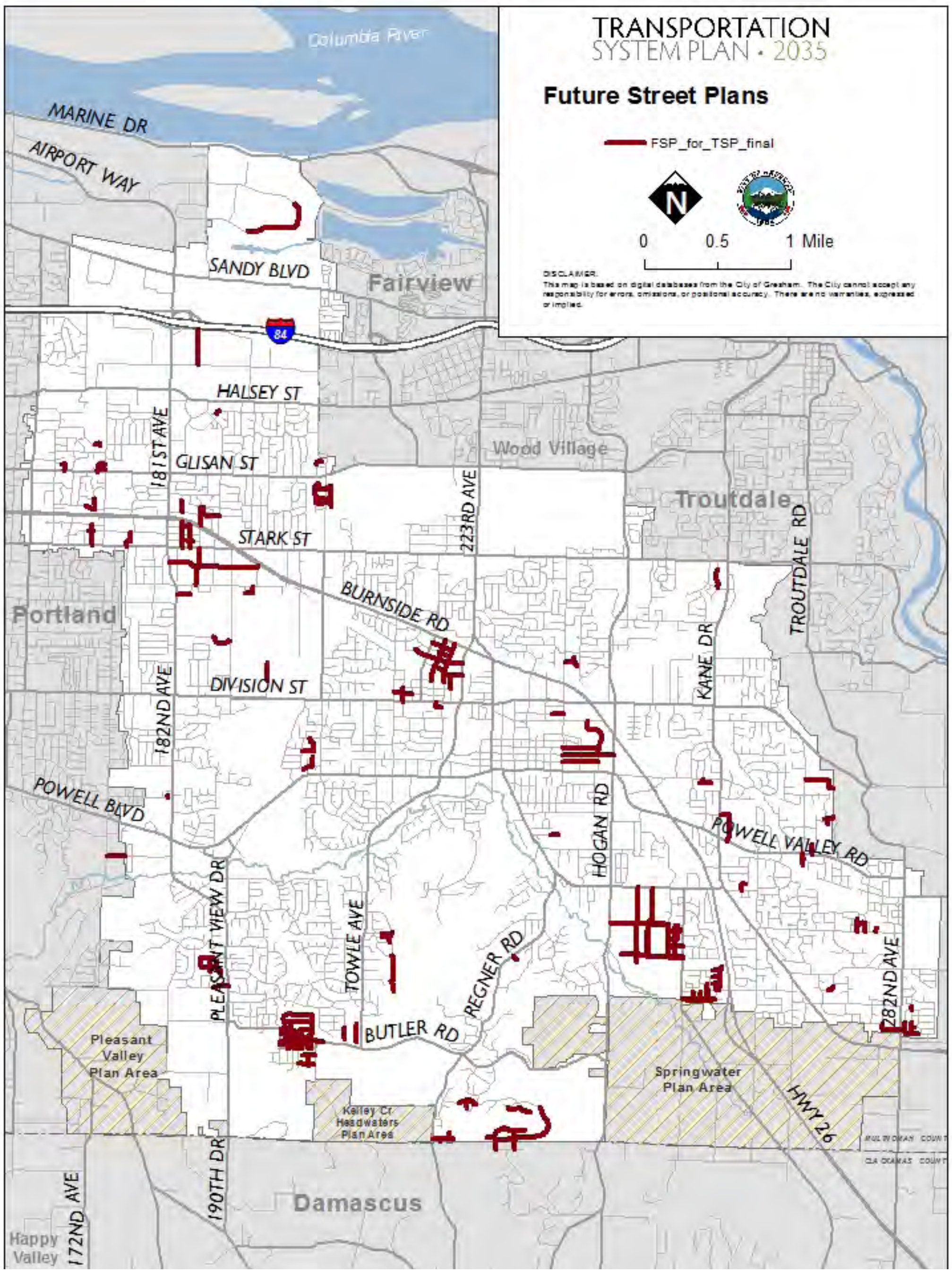
US Highway 26/Mt. Hood Highway south of Burnside Road is Gresham's only principal arterial.

Future Streets Plan

The future streets plan (FSP) implements the city's policy to ensure a well-connected street network. It provides a guide for transportation connectivity and circulation to a developing site and its immediate area. The conceptual alignments on Map 22 show how streets, primarily local streets, may connect in the future and how access may be provided to other properties in the immediate area. They are conceptual in that they do not establish a precise alignment. A precise alignment is established through the Site Development Review process with the Urban Design and Planning Department. Any proposed changes to future streets shown in Map 22 will be in accordance with the Community Development Code and the future streets plan modification process outlined in Section 9.0712.

The future streets plan and functional classification system plan serve as the conceptual map of new streets per Title 1, Street Design Sec 3.08.110D. The City will undergo a community outreach process to identify additional future street plans as an action item from this TSP.

Map 22: Future Street Plans



2. Pedestrian System Plan

The pedestrian system is largely incorporated into the functional classification system plan which calls for wide sidewalks, planting strips, on-street parking in centers and a flexible use of medians. It creates an accessible environment compliant with the Americans with Disabilities Act (ADA). All street improvements require the construction of applicable bicycle system components. The following programs enhance the functional classification system by addressing specific pedestrian circulation needs.

View of pedestrian-friendly development on E. Burnside Street west of SE 187th Avenue in Rockwood.

Pedestrian Districts

Downtown, Civic Neighborhood and Rockwood have been identified as pedestrian districts within Gresham. All have land use plans supporting pedestrian-friendly development. The plans include minimum or zero setback, higher densities, building orientation toward the street and transit corridor designations, among other pedestrian amenities.

The existing street standards in Downtown and Civic Neighborhood also support these areas as pedestrian districts. Downtown streets call for 8 to 12 foot sidewalks with street trees, pedestrian-scale lighting, underground utilities, on-street parking and narrow travel lanes.

The Civic Neighborhood street standards widen the sidewalks to 15 feet with planter strips and buffer zones. Moreover, the Civic Neighborhood street standards include a shared street classification. A shared street is shared by all travel modes but designed for pedestrians as the predominant mode. Autos are allowed but must travel at a walking pace to operate safely. The street is intended for local access and will assure a continuous and connected street grid pattern.

Missing Links

Missing links is an ongoing effort to infill missing segments of sidewalk. Many areas exist in Gresham with a curb in place but sidewalk was never constructed. Additionally, development-related improvements may not link to the existing sidewalk network, leaving small gaps in the system. Missing links constructs these types of small sidewalk projects. Major destination routes are prioritized for sidewalk infill. These routes include: parks, community service uses, major retail centers, Rockwood, Downtown and Civic Neighborhood.

Safe Routes to School

The Safe Routes to School program is much like missing links but it focuses on pedestrian needs in school zones. School Walking Routes goes beyond sidewalk construction to improve the safety of crosswalks and increase the convenience of walking to school by adding short, off-street paths between schools and surrounding neighborhoods. Elementary and middle schools are top priorities.

Missing sidewalk along NE Cleveland Avenue north of Burnside Road.

Pedestrian-to-MAX

The Pedestrian-to-MAX program improves pedestrian access to transit. The program is primarily focused around light rail stations and transit centers but improvements to well-used bus stops are also included. The program includes a wide range of possible improvements such as wide sidewalks, street trees and lighting, crosswalks, public art and urban plazas. The priority station areas are Downtown, Rockwood and Cleveland Station.

Curb Ramps

The ADA requires an appropriate street accommodation for all users. Curb ramp retrofits and new installations are required of new street construction and major street reconstruction. However, relying on street projects to implement the City's curb ramp program is inadequate. The curb ramp program works independently from street repair to install and upgrade curb ramps citywide. Priority areas for ramp construction are the identified pedestrian districts of Rockwood, Downtown and Civic Neighborhood. School zones will also take priority.

An ADA-compliant curb ramp on SE Rene Avenue.

Multi-Use Paths

Off-street paths are designed to establish safe and convenient routes separate from auto traffic for walking and other non-motorized users. The Springwater Trail and Gresham Fairview Trail provide a solid framework for pedestrian access. The following three additional paths will complete the network:

- **MAX Path:** The MAX Path parallels the light rail tracks from Ruby Junction Station to Hogan Road. The path links Gresham's Downtown, Civic Neighborhood, and Rockwood. It also connects with the Gresham-Fairview Trail. The path will be under construction in 2014 and built primarily within TriMet light rail right-of-way.
- **Sandy River to Springwater Multimodal Corridor:** Gresham's off-street access to Portland and within Gresham is improving. However, greater access to the east is needed. The Sandy River to Springwater Multimodal Corridor is a proposed north/south multi-use path along 282nd Avenue. It will enhance bicycle access for the neighborhoods in southeast Gresham. The path will connect with the Springwater Trail for full access to the multi-use path network.
- **East Buttes Loop Trail:** The East Buttes Loop Trail will cross east/west through Gresham Butte and Pleasant Valley and have connectivity with the Springwater Corridor Trail.

Map 23: Pedestrian System Plan

Street Connectivity

A very important element of the pedestrian system is adequate local street connectivity. A well-connected local street system provides convenient connections between neighborhoods, schools, parks, shopping and transit. The City has adopted neighborhood circulation and street connectivity standards for new residential and mixed-use development. These requirements have resulted in the development of several future street plans that guide the construction of new local street connections with land use development and redevelopment.

3. Bicycle System Plan

Gresham aims to provide a bicycle system that continues to attract new cyclists and realize the policy of integrating bicycling into daily life. Bicycles are legally classified as vehicles and are allowed on most roadways except urban freeways. Just like auto drivers, bicyclists need well-designed facilities to operate safely. The city's functional street classification system aims to provide these safe, well-designed, connected, and accessible facilities. Bike lanes are required on streets classified as major, standard and minor arterial streets as well as major and standard collector streets. Minor collector streets are shared bicycle facilities. All street improvements require the construction of applicable bicycle system components.

The bicycle system plan has two primary elements: on-street bicycle lanes and off-street multi-use paths. It develops a connected bicycling network that establishes direct and convenient access to all significant destinations within the city and provides complete multimodal accessibility for all types of cyclists. Map 23 shows the planned bicycle network.

Other programs and amenities that support cycling in Gresham include: bike rack installation, directional signage, bike helmet distribution, bicycle safety education programs and bike maps.

The new Springwater Spur Trailhead at Main City Park, completed in 2013, is part of the City's Bicycle System Plan to provide a system that continues to attract new cyclists to Gresham.

A cyclist uses the bicycle lanes on SW Towle Avenue.

Following are the City's projects and programs that support bicycling in Gresham.

On-Street Bicycle Lanes

All streets should be accessible by bicycle and the functional street classification assures this by requiring striped bicycle lanes on major, standard and minor arterial streets as well as on major and standard collector streets. Minor collector and local streets are shared bicycle facilities, where travel lanes are wide enough and traffic speeds are slow enough to allow safe travel for both autos and bicycles. Any substandard street will be upgraded to include the required bicycle facility.

The streets of highest priority for new bicycle lanes include: Sandy Boulevard, Wallula Avenue, Cleveland Avenue between Burnside Road and Stark Street, Regner Road, Palmquist Road, and Orient between Salquist Road and the planned Springwater arterial. These streets are prioritized because they complete significant links in the bicycle network and provide access to major destinations in and around Gresham. Future streets and redevelopment of existing streets will require bicycle lanes per the Functional Classification Plan.

Multi-Use Paths

Off-street paths are designed to establish safe and convenient routes separate from auto traffic for cycling, walking and other non-motorized users. They are essential to completing the bicycle system since not all users are comfortable using on-street facilities. They also often serve as an "expressway" for bicycle commuters because there are typically fewer stops required along paths compared with the street system.

Gresham's three existing off-street, multi-use paths are the Springwater Corridor Trail, Gresham-Fairview Trail and I-84 Path. Per findings from Gresham's bi-annual counts discussed in the Existing Conditions chapter, they are well-used facilities that provide a solid framework for bicycle access.

The following three additional paths are proposed to complete the network.

- **MAX Path:** The MAX Path parallels the light rail tracks from Ruby Junction Station to Hogan Road. The path links Gresham's Downtown, Civic Neighborhood and Rockwood. It also connects with the Gresham-Fairview Trail. The path will be under construction in 2014 and built primarily within TriMet light rail right-of-way.
- **Sandy River to Springwater Multimodal Corridor:** Gresham's off-street access to Portland and within Gresham is improving. However, greater access to the east is needed. The Sandy River to Springwater Multimodal Corridor is a proposed north/south multi-use corridor aligned along 282nd Avenue in Gresham and north along Troutdale Road to the Sandy River. The new path will link to the Springwater Corridor Trail through Springwater for full access to the multi-use path network. It will enhance bicycle access for the neighborhoods in southeast Gresham.
- **East Buttes Loop Trail:** The East Buttes Loop Trail will cross east/west through Gresham Butte and Pleasant Valley and have connectivity with the Springwater Corridor Trail.

A planned multi-use, paved path will parallel the MAX light rail tracks (seen here between the Civic and Ruby Junction stations) from Ruby Junction/E. 197th in Rockwood east to Hogan Road.

Street Connectivity

A very important element of the bicycle system is adequate local street connectivity. A well-connected local street system provides convenient connections between neighborhoods, schools, parks, shopping, and transit. The City has adopted aggressive neighborhood circulation and street connectivity standards for new residential and mixed-use development. These requirements have resulted in the development of several future street plans that guide the construction of new local street connections with land use development and redevelopment.

Bike Signage

Since the adoption of the City's 2020 TSP, bike signage has improved substantially. A total of 113 wayfinding signs were installed by the end of June, 2010. The 78 signs were installed within the City along major bike routes and multi-use trails showing multiple destinations. Directional arrows, mileage and time markers are included on the signs. There were 35 of these wayfinding signs that showed access to trails from major streets and an additional 32 rider signs that pointed out food, transit or trails.

Future bicycle signage projects include:

- Striping roadways with sharrows consistent, particularly on minor collectors that are also indicated as bicycle routes on the bicycle guide.
- Reviewing and implementing bicycle signage consistent with the Intertwine signage.

A wayfinding sign at SE 174th/Jenne Road directs Springwater Trail Corridor users to destinations in Gresham.

The Bicycle Transportation Alliance is a non-profit membership organization working to promote bicycling and improve bicycling conditions in Oregon. The BTA creates healthy, sustainable communities by making bicycling safe, convenient and accessible.

Education and Encouragement

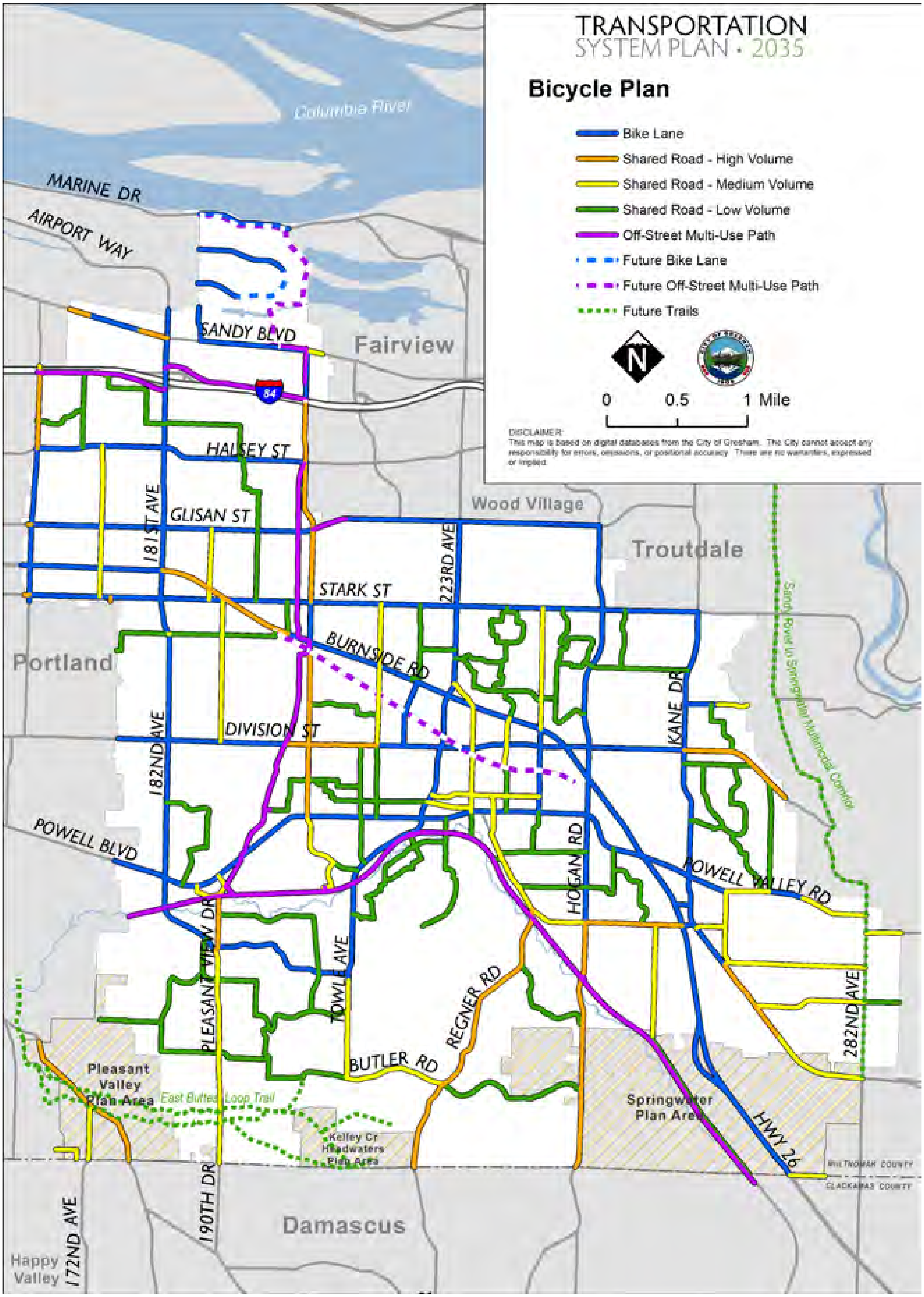
Education is an important element in increasing bicycling while also improving safety. It is often thought that improving the facilities for bikes is all that is needed to improve safety of cyclists. However, bikeways cannot do it alone. Bicycle education is also needed. Gresham has begun and will continue to prioritize the "Bicycle Safety Education Program" and "Bike Helmets Everywhere" programs that promote bicycle safety.

The "Bicycle Safety Education Program," run by the **Bicycle Transportation Alliance** (**BTA**), introduces bicycle maintenance and safety to 6th graders in Gresham's schools. BTA goes to a school and for two weeks teaches the students, both in the class and in the field, proper bicycle etiquette and rules for bicycling both on- and off-street.

Through the "Bike Helmets Everywhere" program, helmets are distributed free of charge to Gresham children 16 and younger. Low-income children are the focus but all are welcome to helmets.

City Transportation staff fit a youth for a bicycle helmet at the Transportation Safety Fair.

Map 24: Bicycle Plan



Freight traveling south on SE Kane Drive.

The East Metro Connections Plan identifies transportation and other investments that advance economic and community development. It was an east Multnomah County planning effort led by Metro from 2010 through 2012.

4. Truck and Rail Freight System

Freight mobility is essential to the movement of goods and services. National and international freight movement contributes significantly to the city's regional and local economies. The "2040 Commodity Flow" analysis completed by Metro for the region, predicts freight volumes to more than double by 2040.

The significant growth in freight projected by the 2040 Commodity Flow Analysis indicates the need to ensure adequate land for expansion of intermodal facilities, manufacturing, wholesale and distribution activities, and to maintain and enhance the freight transportation network. Map 25 is the freight network plan.

Truck Freight

Trucks are a critical part of moving goods within the Portland metropolitan region. To provide adequate truck freight access and capacity, the TSP includes the following elements that aim to ensure adequate mobility and access for freight movement to, through, and from Gresham:

- Findings and projects from the **East Metro Connections Plan** that support retention of adequate roadway capacity for freight movement, including:
- **Eastman/223rd connections:** Projects address future traffic growth with targeted north-south roadway capacity investments along 223rd/Eastman, including at Stark/223rd and Eastman and Powell. Projects to better coordinate the signal timing at intersections along Eastman/223rd will provide needed capacity improvements. ***Catalyst projects:*** *Intersection improvements on Eastman/223rd & Stark.*
- **242nd connections to Clackamas County:** Projects address future growth with additional roadway capacity along this corridor, particularly south of Powell, along with opportunities for access and safety enhancements to the existing conditions. This includes intersection improvements at Glisan and Stark, including signal coordination. ***Catalyst projects:*** *Widening of Hogan/242nd south of Powell Boulevard, Palmquist improvements, intersection improvements Stark.*
- **Southeast gateway:** Projects address future capacity needs, safety (this is one of the highest crash areas). ***Catalyst projects:*** *Improvements to Hogan and Powell, Burnside intersections, safety improvements.*
- **Gresham Vista Business Park:** The Port of Portland's November 2011 purchase of one of the area's largest shovel-ready employment sites is an immediate opportunity to bring jobs and revenue to East Metro communities. Projects increase mobility along the north/south and east/west arterials and improve access to industrial employment land. ***Catalyst projects:*** *Intersection improvements on Stark and Glisan.*
- **Catalyst for Springwater District:** Projects help develop the necessary public infrastructure for private investment and jobs in this regionally significant employment area. Projects include a new interchange on US 26 and an extension of Rugg Road to connect US 26 and Hogan, as well as collector street improvements to provide needed access for future jobs and employment. ***Catalyst projects:*** *New interchange on US 26 and arterial connections.*

- Projects within Gresham city limits that have been identified by the **Columbia Corridor Association and the Columbia Cascade River District** committee as top priority projects to improve freight access to Portland International Airport and intermodal facilities in the west Columbia River Corridor. Sandy Boulevard improvements are prioritized in the Gresham area.

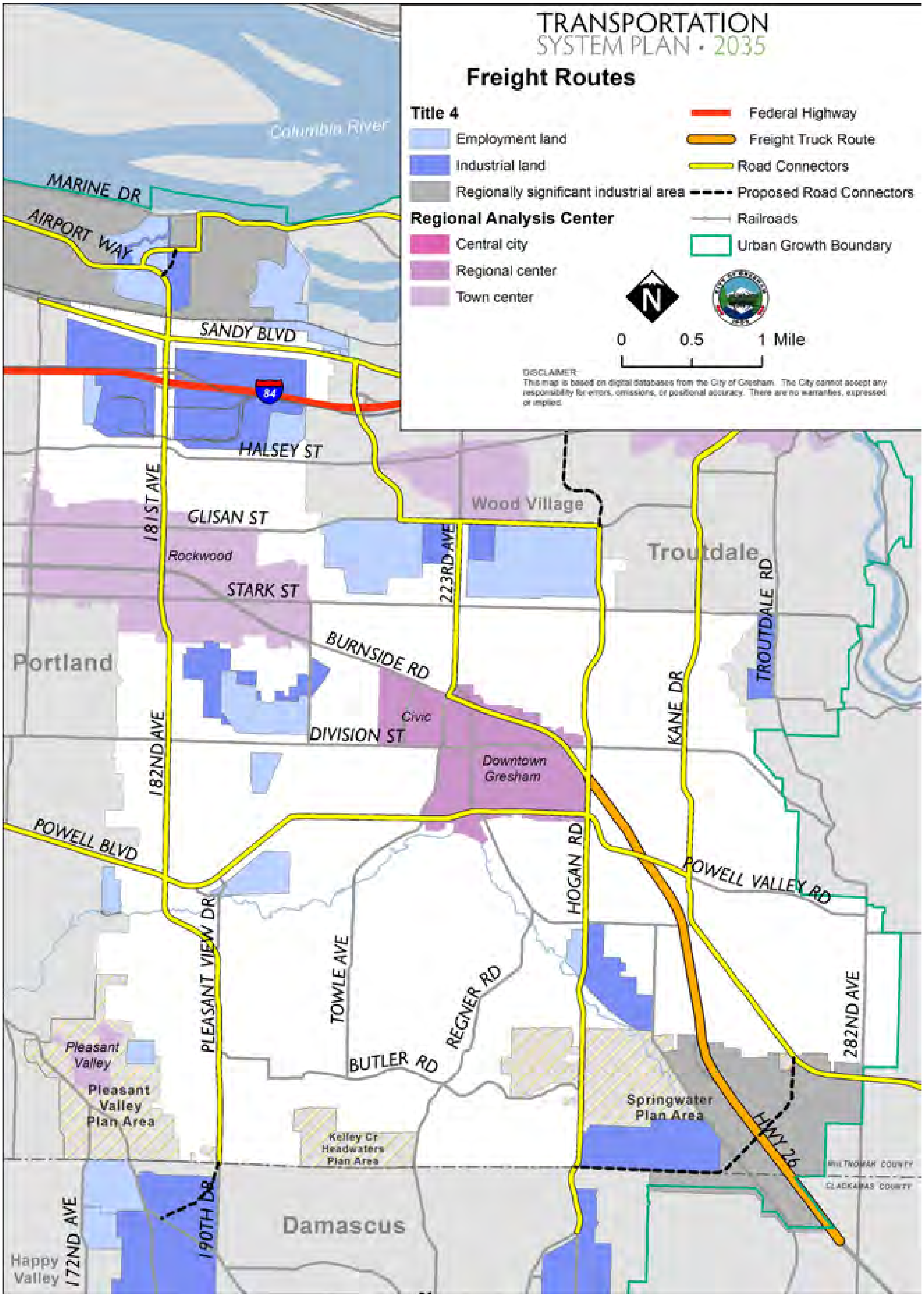
The Columbia Corridor Association is a non-profit organization and Columbia Cascade River District is comprised of East Metro area partners. Both are working to enhance economic prosperity in the Columbia Corridor.

- An action measure and projects in the project list to support improving substandard rail crossings that limit freight mobility on north/south arterial and collector streets
  - **Action Measure:** Identify and correct safety problems on the freight network including roadway geometry and traffic control deficiencies, at-grade rail crossings, truck-infiltration into neighborhoods, congestion on grades and the movement of hazardous materials.
- Projects that support improving intersections along arterial corridors to remove traffic bottlenecks. The projects are included in Chapter 7.

Rail Freight System

The Union Pacific heavy rail line serves the Rockwood-Banfield Corporate Park industrial areas. This line crosses the north side of the city and has two parallel branches, the mainline north of and parallel to Sandy Boulevard (1.8 miles) and the branch line parallel to I-84 (2 miles) that provides direct rail service to Rockwood-Banfield Corporate Park industrial areas and several large manufacturing and distribution uses. The area enjoys tri-weekly rail service. The Gresham industrial areas served by the Union Pacific allows the City to more effectively encourage the location of businesses needing direct and efficient rail service with the assurance that rail service will continue to be provided for those businesses.

Map 25: Freight System Plan



TriMet buses service riders at the Gresham Central Transit Center on NE Eighth and Kelly avenues.

5. Public Transit System Plan

TriMet, the region's largest transit service provider, and Sandy Area Metro (SAM) are the two transit providers that serve Gresham. The transit network consists of a hierarchy of service designated to provide the highest possible service to Downtown, Civic Neighborhood and Rockwood, employment areas and along major regional arterials. Neighborhood access and circulation routes provide more flexible transit service to connect outlying low-density neighborhoods to the regional centers and other transit lines. Map 26 is the public transit plan.

Gresham supports the following findings from the East Metro Connections Plan:

- Addition of Bus Rapid Transit (BRT) in the Powell/Division corridor, extending from Portland Central City to Mt. Hood Community College via Gresham Transit Center. The Powell Corridor HCT is designated as a "Near Term Regional Priority Corridor" in the Metro High Capacity Transit System Plan and in the High Capacity Transit System Expansion Policy; the extension to Mt. Hood Community College is not part of the identified corridor but has been included in this study. The BRT would run on Powell Boulevard west of I-205, and on Division Street east of I-205. Frequency of line 4-Division local service would be reduced to hourly service in the plan area where the route is duplicated by BRT.
- Shortening of line 20, moving the terminus to Mt. Hood Community College instead of Gresham Transit Center. The removed routing is duplicated by the extension of the proposed BRT from Gresham Transit Center to Mt.. Hood Community College.
- Improved frequency of line 12 to provide frequent service on Sandy Boulevard / Halsey Street / 223rd Avenue between Parkrose and Gresham Transit Center.
- Routing change of 12-Sandy from Halsey Street to Arata Road between NE 223rd Ave and NE 238th Drive to provide accessibility to more households.
- Improved frequency of lines 80 and 81 from hourly service to twice-hourly service.
- Routing change of portions of line 80 off of Kane Drive and onto 242nd Avenue between Powell Boulevard and Stark Street. This provides new service to 242nd Avenue.
- Routing change of portions of line 84 off of US 26 and onto Hogan Road and Palmquist Road, resulting in new service in those currently unserved areas.
- Addition of new hourly service between Gresham Transit Center and Damascus, traveling on Roberts Road and Hogan Road in the Plan Area.

High Capacity Transit

In 2010 the Metro region adopted a High Capacity Transit (HCT) Plan that identifies priority high capacity transit corridors within the region. Within Gresham three HCT facilities were identified. Exact alignment and mode for each of these lines will be identified through a public process when funding is available.

- An east-west connection in the vicinity of Powell Boulevard and/or Division Street from west city limits to Downtown Gresham. That line was ranked as a "Near Term Regional Priority" corridor. This facility was further defined through the EMCP as described above in the section above.
- The extension of light rail from Gresham to Troutdale as a "Developing Regional Priority" corridor. This connection will provide a needed link for Mount Hood Community College with Gresham's centers and other growth areas.
- The extension of light rail between Troutdale and Damascus along Hogan Drive and/or Kane Road as a "Regional Vision" corridor. A portion of corridor was identified as traveling along Roberts Avenue in Gresham between Powell Boulevard and Hogan Drive. Gresham has evaluated this alignment and due to limited right-of-way and surrounding residential land uses, recommends that this portion of the corridor be readjusted to travel along Hogan Drive which is a major arterial planned for heavy vehicular and transit movement along primarily commercial land uses. This light rail alignment is more compatible along Hogan Drive than Roberts Avenue. This adjustment is planned to be finalized during the 2014 Regional Transportation Plan Update.

Map 26: Transit Plan

Passengers wait for the MAX Blue Line at the Gresham Central Transit Center.

Bicycle commuters on Main Avenue in historic downtown. A key component of the TSP is the establishment of targets to increase the number of trips made by biking, not driving as a single occupant in a vehicle.

Major Transit Stop

Major transit stops are intended to provide a high degree of transit passenger comfort and access. They are located at stops on primary and secondary transit routes. Improvements will be focused at these locations to ensure high levels of passenger amenities are provided. At a minimum, major transit stops will provide schedule information, lighting, benches, shelters, and trash receptacles. Other features may include real time transit information, special lighting or shelter design, public art, or bicycle parking.

Each major transit stop is located on a designated transit street. As such, developments adjacent to these locations are required to meet transit-orientation standards as described in the Gresham Community Development Code. In addition, per Gresham Development Code, developments are required to provide transit facilities at adjacent transit stops, including landing pads, benches, shelters or lighting.

Fareless Square

In order to increase mobility and reduce total auto trips, Gresham will work with TriMet to develop a fareless transit area in the Gresham Regional Center by the year 2035. Implementation of a fareless area should enhance local land use and transportation management plans that encourage transit use. TriMet's implementing criteria for special fare zones requires areas meet specific criteria such as having a transportation and parking management plan, fees for parking, and an analysis of the financial impacts and evaluation of the costs and benefits to TriMet and the region.

Gresham will pursue a study of implementation measures such as parking and partnership opportunities to fund and operate a fareless square in the Gresham Regional Center with the community and TriMet.

6. Travel Demand Management

A key component of the TSP is the establishment of targets to increase the number of trips made by walking, biking, taking transit, not driving as a single occupant in a vehicle ("non-SOV"), or other non-automobile modes. This is called "modal share". Within the Metro region, targets for increased modal share have been established and agreed-upon. Table 25 shows the non-single occupant vehicle (SOV) modal targets established by the Regional Transportation Plan.

Table 25: 2040 Non-SOV Modal Targets

2040 Design Type	Non-drive alone modal target
Regional centers Town centers Main streets Station communities Corridors Passenger intermodal facilities	45-55%
Industrial areas Freight intermodal facilities Employment areas Inner neighborhoods Outer neighborhoods	40-45%

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

The TSP establishes many projects, programs, and strategies designed to increase the use of transit, walking, bicycling, work schedule changes, and telecommuting, particularly during the most congested times of the day. Increasing options to driving alone allows people to eliminate some trips or switch to another mode of travel, and helps maximize the efficiency of the transportation system. The strategies included in the TSP to manage and reduce travel demand over time include:

- Promoting effective employer incentive programs that reduce the number of people driving alone and dependence on the automobile. The City will continue to utilize TriMet's regional rideshare matching and promotional assistance, and guaranteed ride home programs, to increase vehicle occupancy and reduce automobile use during peak travel periods.
- Prioritizing pedestrian and bicycle amenities as well as improved connections to transit to increase non-auto trips.
- Supporting transportation management associations (TMAs) in the Gresham Regional Center, Rockwood Town Center, and industrial and employment areas.
- Improving end-of-trip facilities that support alternative transportation modes. For example, the Transit System Plan identifies transit facility improvements at major transit stops and along primary transit routes as a high priority.
- Promoting private and public sector programs and services that encourage employees to use non-SOV modes or changes to commuting patterns. The City will continue to encourage all large employers to join the City in participating in the state's Employee Commute Options (ECO) program by compiling travel information in a survey every two years.

City staff holds bike maintenance workshops for residents to encourage more biking and reduce travel demand.

In addition, there are many provisions included in the Gresham Community Development Code that help reduce overall travel demand and improve non-SOV mode share:

- The City provides tax incentives for transit-oriented developments within the Rockwood Town Center and Gresham Regional Center through the Transit Oriented Development Tax Exemption program (TOTE). To qualify for the tax exemption, the development must show public benefit through pedestrian, bicycle or transit facilities.
- The City also provides reductions of transportation system development charges (SDCs) – also referred to as "traffic impact fees (TIFs)" – for developments near light rail and designated transit streets and corridors. The reductions for other developments are allowed based on a specific transportation demand reduction strategy submitted by the developer.

7. Transportation Systems Management and Operations/ Intelligent Transportation Systems

The City of Gresham uses various strategies to manage the existing and forecasted supply of traffic through means other than expanding roadways. These strategies are referred to as "Transportation System Management Operations" (TSMO) or Intelligent Transportation Systems (ITS). The purpose of these strategies is to enhance travel time efficiency and reliability, safety, and use of existing roadway capacity. Strategies include multimodal traffic management, traffic incident management, and traveler and real-time information. Projects referenced in other modal plans and in the Transportation Demand Management section support and work in concert with TSM.

Signals at the NE Burnside Road/Civic Drive.

Signal Optimization

Future Projects

In 2013 Gresham and Multnomah County, in coordination with the City of Portland and the Oregon Department of Transportation, developed the "East Metro Connections ITS" Project. This project was a result of the extensive East Metro Connections Plan Study conducted by Metro in 2009-11. The project is intended to implement several TSM strategies to accommodate growth in northbound and southbound traffic along corridors through East Multnomah County. Specifically, it expands and the signal communications in Rockwood, Fairview, and Wood Village; upgrades signals with modern controllers and Ethernet communications; updates signal coordination timing; expands the City of Gresham's Scats Traffic Adaptive (SCATS) system; and installs the City's first arterial changeable message sign on northbound 181st Avenue approaching the I-84 freeway. It also complements the City of Portland I-84 Active Corridor Management project by upgrading signals and communications on two of the managed arterial corridors, Glisan Street and Halsey Street, between the City of Portland boundary and the NE 238th Avenue interchange with I-84.

The East Metro Connections ITS Project has the following components:

1. The City's signals communications network will be expanded to bring the following eight intersections under central control with upgraded controllers and Ethernet communications:

1. Halsey & 162nd	4. Glisan & 162nd	7. Glisan & 202nd
2. Halsey & 192nd	5. Glisan & 172nd	8. Stark & 162nd
3. Halsey & 201st	6. Glisan & 185th	

2. In addition to the 8 intersections above, 12 intersections will receive Ethernet communications and controller upgrades:

1. Glisan & Fairview Pkwy	5. Burnside & 172nd	9. Stark & 181st
2. Glisan & 223rd	6. Burnside & 181st	10. Stark & 223rd
3. Glisan & 242nd	7. Burnside & 197th	11. Stark & Hogan
4. Burnside & 162nd	8. Stark & 174th	12. Hogan & 23rd/Red Sunset

3. Two intersections at the south end of the 181st/182nd corridor will be brought into the City of Gresham's Scats Traffic Adaptive signal system:

1. Powell & 182nd
2. Highland & SW 11th

4. Six intersections at the south end of the 257th/Kane Dr. corridor will be brought into the City's Scats Traffic Adaptive (SCATS) signal system:

1. Division & Kane
2. Kane & SE 1st
3. Kane & Powell Valley
4. Kane & 11th
5. Kane & Palmquist
6. US-26 & Palmquist

The intersection of E. Powell Boulevard at N. Main Avenue features flashing yellow arrow left-turn phasing.

5. Five intersections on the existing Burnside SCATS corridor will get controller upgrades to add flashing yellow arrow left-turn phasing, as well as receive controller and Ethernet communications upgrades:

1. Burnside & Kelly	3. Burnside & Oregon Trail Center	5. Burnside & SE 3rd
2. Burnside & Cleveland	4. Burnside & SE 1st	

The controller and communications upgrades included in the East Metro Connections ITS project were not envisioned as part of the Master Plan, but they do help to facilitate the installation of CCTV cameras and arterial changeable message signs.

The East Metro Connections ITS project also includes elements that will be constructed within Multnomah County's jurisdiction, including expansion of communications in Fairview and Wood Village. The project is planned for implementation in the first half of 2014.

The remaining elements in the Master Plan, such as the expansion of the traffic signal interconnect system onto Sandy Boulevard and down Orient Drive, will be constructed as part of later projects.

Transit Signal Priority

Future Projects

The Powell corridor, which serves TriMet route 9, was identified as a TSP corridor by the 2001 Gresham/East Multnomah County Traffic Signal System and Communications Master Plan Update.

Real-Time Traveler Information and Incident Management

Future Projects

The East Metro Connections ITS project will install a new arterial changeable message sign (CMS) for northbound 181st Ave. south of I-84. ODOT will be installing similar arterial signs approaching I-84 interchanges in Fairview, Wood Village, and Troutdale, as well as installing a new freeway signs on westbound I-84 near NE 201st Avenue. All of these signs, which will be operated 24 hours a day by ODOT's Traffic Management and Operations Center in downtown Portland, will warn drivers of congestion on the freeway and suggest alternate routes.

The arterial and freeway CMS will also be used, together with special traffic signal timing plans, to operate the I-84 Active Corridor Management system. Similar to systems Portland and ODOT operate on Barbur Boulevard in SW Portland, the Active Corridor Management system will provide a relatively high-capacity parallel travel route when the freeway is blocked or severely reduced in capacity.

The Traffic Signal System and Communications Master Plan includes the planned construction of arterial CMS at the following locations:

- On Hogan Drive south of Glisan Street.
- On NE 181st Avenue south of Halsey (southbound).
- On US-26 south of Palmquist Road (both directions, freeway-sized CMS).

A long-term goal is to provide drivers on the I-84 freeway and highway US-26 with travel time information on the four major north-south routes through East Multnomah County. Using sensors that pick up unique identifiers from passing vehicles (such as Bluetooth sniffers), the system would calculate real-time travel times and then display them on the eastbound freeway CMS and northbound US-26 CMS signs. This service would work to spread traffic congestion evenly across the four major routes, allowing for the fullest possible use of the existing arterial infrastructure in East County.

Access Management Plan

The City's access management policy is to require new development to consolidate, relocate, and share driveways. Future road widening projects may incorporate raised, planted median barriers as space allows, but the primary purpose of these barriers will be for water quality or aesthetic purposes and not access management.

8. Parking Management

Parking management is in itself a transportation demand management and supply strategy. Parking management strategies are used to optimize the utility of existing parking supplies to avoid excess parking. These strategies can improve the capacity of parking inventories by increasing turnover rates and capitalizing on complementary needs. Other strategies are aimed at reducing the overall demand for parking by introducing parking meters or fee-based parking. The other strategies deal with new expansion to the parking supply.

Parking on NE Second Street in historic downtown Gresham.

The Regional Transportation Plan establishes an outcomes-based, performance-driven framework for implementing the RTP's goals and objectives.

The City has adopted minimum and maximum parking ratios into its Development Code for new development in compliance with Title 2 of the **Regional Transportation Functional Plan.** In addition, the Code requires a minimum amount of carpool and vanpool parking spaces for industrial and office developments, allows and encourages the use of shared parking facilities, allows reduced parking ratios and requires minimum bicycle parking spaces.

The City has also adopted specific parking management plans for the Gresham Regional Center and Rockwood Town Center.

A public parking lot on NW Miller Avenue and NW Fifth Street in downtown Gresham.

Gresham Regional and Town Centers

Parking strategies for the Gresham Regional Center are aimed at increasing turnover of the on-street parking spaces, improving utilization of the existing inventory and creating a source of revenues to support future parking-related activities. Several strategy elements were considered to alleviate existing parking pressures and to accommodate forecast demands in a manner that supports economic vitality in the area:

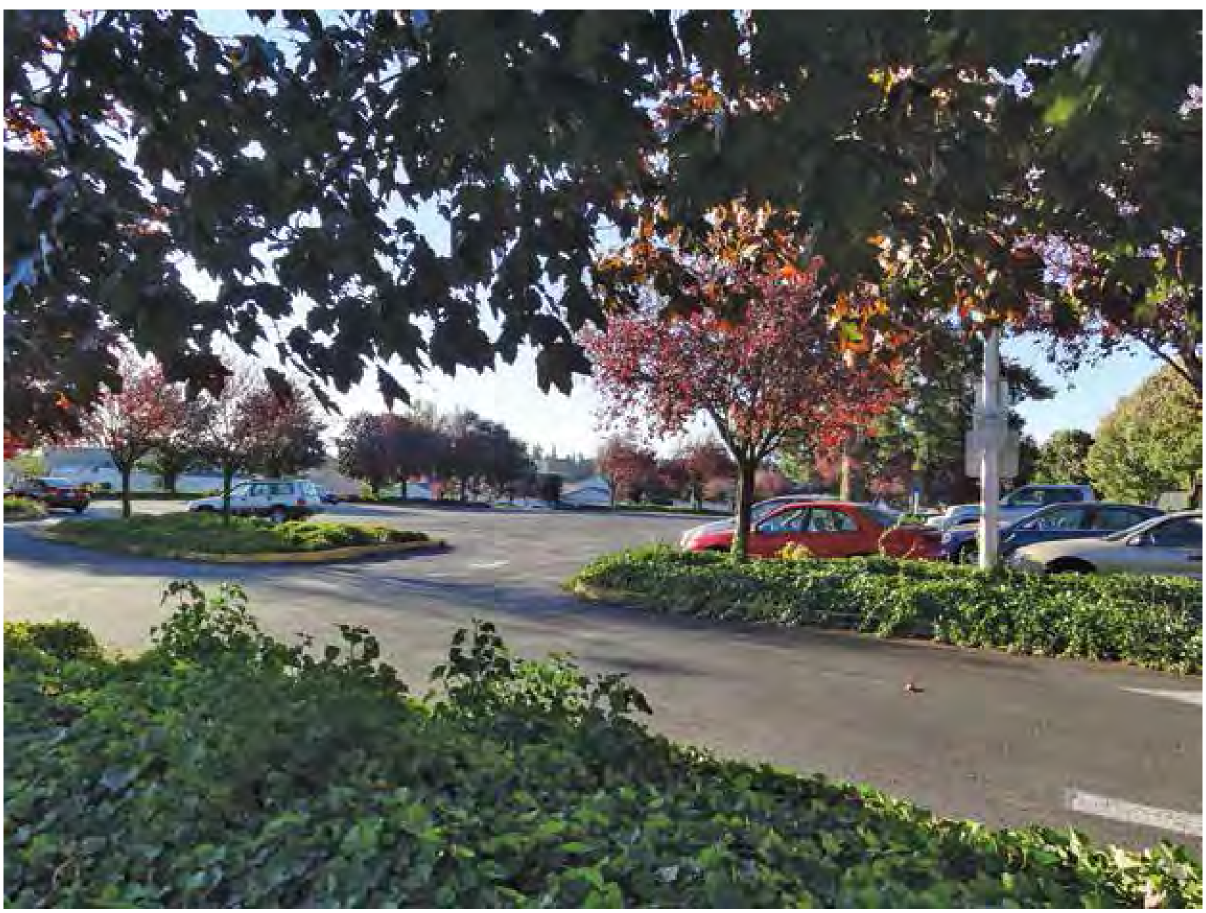
- Develop a unified wayfinding system to public parking areas. When on-street parking occupancy reaches 85% in the peak period, additional parking management strategies must be implemented.
- Limit on-street parking in the cores of Downtown and Civic Neighborhood to two hours to increase turnover.
- Identify shared parking opportunities among various economic uses to optimize utilization of existing parking supply and the utility of land in the area. Such opportunities in the downtown area would be to pursue shared use agreement between downtown businesses and neighborhood churches.
- Establish fee parking to ensure compliance with time limits. This will also help to establish a dedicated revenue source that will augment the supply of parking and provide transportation demand management activities to encourage use of alternative travel modes. Parking rates should be established to distinguish short-term from long-term parkers.

- Purchase or lease vacant properties to phase in new public parking supplies as needed. These sites will serve to determine the customer priority for parking by area and test the feasibility of future centralized municipal parking structures. When new municipal parking facilities are provided, they should be designed to serve multiple uses, with an emphasis on short-term parking supporting desired economic activities. The objective is to optimize the utilization of parking inventories and reduce the need for additional parking spaces. Facilities need to be appropriately sited and managed to balance multiple access demand.
- Seek improvements to transit service and other travel mode options to reduce overall demand for parking.

Strategies specific to the Rockwood Town Center are to:

- Develop a unified wayfinding system to public parking areas.
- Impose time limits for on-street parking to ensure an adequate supply of short-term parking spaces for customers and visitors.
- Consider additional opportunities for on-street parking where roadway widths and traffic conditions permit.
- Provide on-street parking on new streets to meet public parking demands as future development occurs.
- Work with TriMet to improve security at the Rockwood Park and Ride lot at 18324 East Burnside Street and to pursue an agreement to allow short-term parking in the park and ride lot. Increasing the frequency of parkers coming and going will in itself help security. The park and ride lot has the potential for redevelopment as a parking structure or mixed-use community development.

Until the level of redevelopment in the Rockwood core increases, additional parking is not needed.



The Rockwood Park and Ride lot at 18324 E. Burnside St.

Chapter 6:

Implementation

Overview

This chapter provides the transportation system plan's strategies, projects and funding forecast to implement the TSP's guiding tenets and system plans. It balances key arterial corridor improvements to facilitate through traffic with strategic investments in bicycle, pedestrian, and transit facilities to improve community accessibility.

List of Transportation Projects and Strategies

The TSP's projects and strategies include a list of both capital and non-capital improvement projects. Capital improvement projects are new construction, expansion of existing facilities, renovation or replacement projects. They are both street corridor projects and intersection projects. Non-capital improvement projects are technology solutions, planning and programmatic in nature. They offer cost effective ways to enhance the transportation system's capacity and efficiency without a major road construction project.

Right: Summer 2013 improvements on SE Powell Valley Road included a reconditioned street surface, revised roadway striping layout to add an additional west-bound travel lane and a new sidewalk connection between Gordon Russell Middle School and Burnside Road that completes a continuous walking connection from Burnside to Kane.

Capital Improvement

Street Corridor Projects.

Examples include adding bike lanes to roadways, new multi-use trails, adding vehicle travel lanes for vehicles and freight and new sidewalks

Intersection Projects.

Examples include adding new traffic signals, updating signal timing, or widening of the roadway at an intersection in order to allow more vehicles through each phase of a signal.

Non-Capital Improvements

Technology Solutions.

Intelligent Transportation Systems and Transportations Systems Management and Operations. Examples include signal timing, corridor access management parking management and bicycle safety.

Planning.

Examples include corridor analysis of issues and opportunities and identification of solutions, or strategies to implement change.

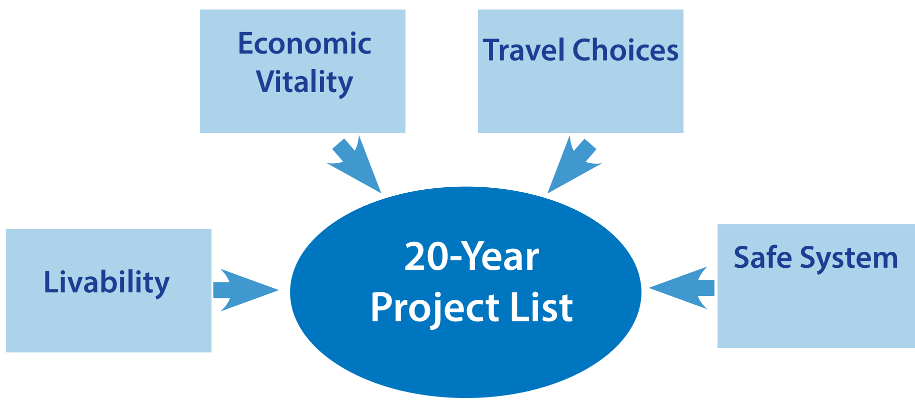
Programs.

Examples include Safe Routes to School and non-auto Commute Challenges.

This TSP includes a list of all identified transportation projects and solutions needed to support the City's Community Development Plan to its full potential. Those projects are identified as either long-term ("50-year") or short-term ("20-year") depending on how critical they are to providing immediate needs for additional safety or capacity.

Projects on the "50-year" list represent all of the transportation projects needed to accommodate and serve the amount of growth in new housing and employment that would complete the City, Pleasant Valley, Springwater and Kelley Creek Headwaters to full build-out according to the Comprehensive Development Plan. This would be done within an approximate 50 year timeframe.

A sub-set of the 50-year project list is the "20-year" project list. All TSPs are required by law to identify which projects are assumed needed in order to support forecasted population growth and development within a 20-year timeframe. The 20-year projects are based on where congestion relief will be most critically needed, which facilities would best support a safe system, economic vitality and livability, and which facilities would best provide the most travel choices for bicycling, walking, driving and taking transit.



The 20-year transportation street corridor project list is presented in Table 27 and Map 27. The additional transportation street corridor projects that comprise the 50-year project list are presented in Table 27 and Map 27. Intersection projects for both the 20-year and 50-year horizons are shown on Map 28. From the 20-year project list, the City creates the transportation capital improvement program (CIP), which is a five-year plan for transportation projects that is reviewed and adopted annually. Through the CIP process these projects are evaluated annually in order to keep current with the city's needs.

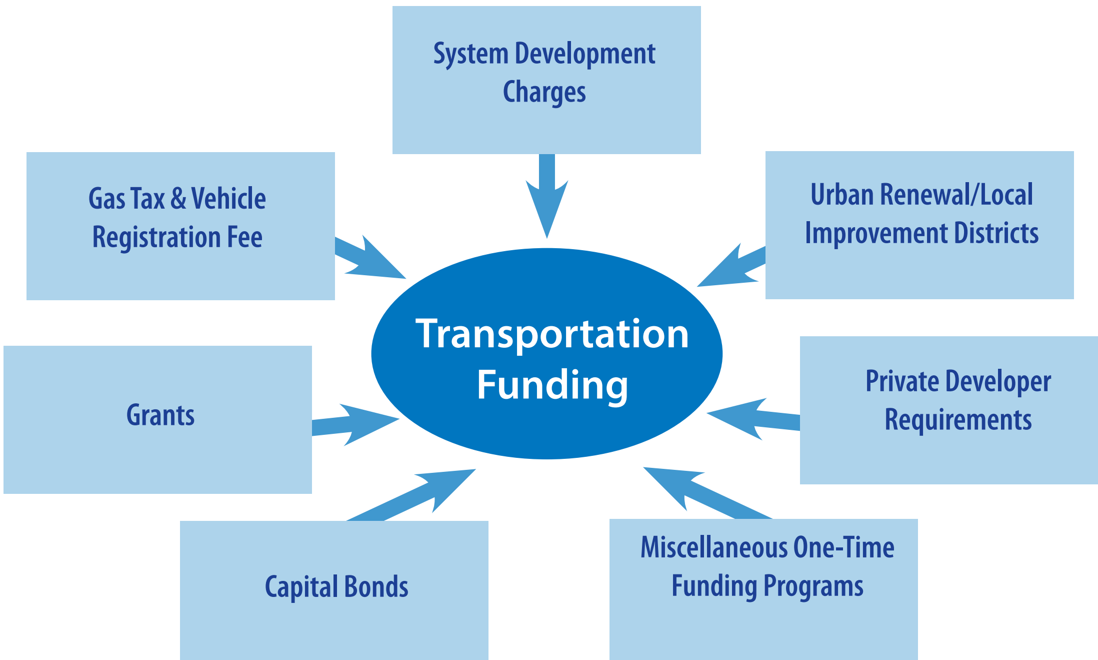
Subsequent design studies, environmental impact studies, capital improvement programs, unforeseen needs, unanticipated conditions, and changes in revenues, costs, or funding sources may necessarily result in changes to a listed project's description, functional classification, location, timing, cost, source of funds, or provider. Modifications to listed project details may be made without amendment to the TSP when these are minor administrative changes or technical and environmental changes resulting from final engineering or environmental evaluation. Examples of administrative changes are modifications of estimated timing, cost, and source of funds. For listed projects whose source is a draft plan or program, needed modifications to project details will be made when a final plan or program is adopted.

Paying for the Plan: Funding Forecast

The TSP's System Plans call for significant investment in the transportation system over the next 20 years. This investment will improve transportation choices, enhance neighborhood livability, and strengthen Gresham's economic competitiveness. Per the State of Oregon's Transportation Planning Rule, all TSP's must forecast how transportation projects may be funded over the next 20 years.

Funding Mechanisms

Gresham's funding forecast strategy includes several mechanisms to pay for the projects identified on the 20-year transportation project list.



System Development Charge (SDC)

SDCs are a one-time charge collected by the City when a development permit is issued. By law, SDCs are limited to use for improvements necessary to accommodate new development. The City's SDC list, and associated project costs, was updated concurrently with the TSP's project list. Those projects on the SDC list are indicated in Table 13. The SDC is development driven and forecasted to generate approximately $55 million over twenty years to pay for growth-related transportation improvements.

Grants

Federal, State, regional, and local grants provide an important source of funding for transportation improvements. Since many grants target specific types of strategies or improvements, they are often used to implement special programs and projects. Most grants also come with a local match requirement that can range from 10% to 40%. This funding strategy assumes the City will secure around $1.9 million per year on average in grant awards. This is consistent with the City's historic grant success.

Private Developer Requirements

New development has an obligation to mitigate its anticipated traffic impacts. Mitigation is typically determined by a traffic impact study (TIS) prepared by the developer and reviewed by the City. The City must approve the TIS prior to development entitlement. A standard development requirement is the dedication and improvement of abutting streets to their designated functional classification and design. The City may require development to make specific improvements to address safety, circulation, or capacity issues on an abutting street, such as adding sidewalks, lane striping, turn lanes, corner reconstruction, median barriers, or traffic signals. When substantial traffic impacts are anticipated beyond the abutting streets, the City may require off-site improvements. When development affects a planned public street improvement, the City may work out cost-sharing agreements for some development-related improvements. To the extent that any requirement is included in the City's SDC Program, the cost to the development is offset by a SDC credit. The funding strategy forecasts $26 million in private developer requirements.

Capital Bond

Bonds are commonly used to finance large public facility improvements, including transportation projects. General Obligation (GO) Bonds are repaid from increased property tax rate. The authority to issue general obligation bonds, and raise property taxes to retire the debt must be granted by voters. This funding strategy assumes $5 million in GO bonds over the next 20 years.

The Rockwood/E 188th Avenue MAX light rail station received major upgrades in 2011.

Urban Renewal and Local Improvement Districts (LIDs)

Urban renewal and LIDs are mechanisms for funding local projects. Under urban renewal, improvements are funded by increased property tax revenues that are generated by increased property valuation over time. The tax rate within the urban renewal district is not increased. The 2020 TSP's funding strategy assumed two urban renewal districts in Gresham during its plan horizon, namely, Rockwood and Downtown. The Rockwood Urban Renewal District was established by city-wide vote in November 2003. It successfully completed several transportation capital improvement projects, including:

- significant upgrades to the traffic signal at 181st Avenue
- realignment of 187th/188th Avenues
- improvements on 197th Street from Burnside to Stark
- upgrade of Burnside Road to boulevard standards from 185th to 190th Avenues
- major upgrades and reconfiguration of the Rockwood/E 188th Avenue MAX light rail station
- upgrade of SE Stark Street to boulevard standards from 190th to 199th Avenue
- access and circulation improvements to Wilkes Road, a primary road serving industrial and employment land.

This TSP funding forecast assumes funds for one urban renewal district through year 2035 as the Downtown Urban Renewal District identified in the 2020 TSP has not been implemented.

Local Improvement Districts (LIDs) may be formed to fund specific improvements within a defined geographic district. The cost for improvements is financed by the local jurisdiction and repaid through special assessments on properties within that district.

This funding forecast assumes $2 million in revenue over the next 20 years from urban renewal districts and LIDs.

By state law, 1 percent of the City's gas tax revenue must be used to fund improvements to bicycle and pedestrian facilities.

Gas Tax and Vehicle Registration Fee

State gas tax and vehicle registration fees pay primarily for maintenance and operation of the transportation system. However, some fees from this mechanism will contribute towards the capital improvement project list and is, therefore, included in the funding forecast as a funding mechanism. For example, by state law, 1% of the City's gas tax revenue must be used to fund improvements to bicycle and pedestrian facilities. This funding forecast assumes the gas tax and vehicle registration fees will contribute $2 million towards the 20-year transportation list.

Miscellaneous One-Time Funding Programs

Miscellaneous one-time funding includes infusions of federal, state, regional, or other transportation dollars intended to stimulate the local economy, enhance safety and livability, or reduce negative impacts of the transportation system on the natural environment. These infusions are not regularly established funding programs and are therefore unpredictable in terms of timing and amount. This TSP funding forecast predicts $10 million in revenue from this source over the next 20 years.

Cost Estimates

Per the State of Oregon's Transportation Planning Rule (TPR), the TSP funding forecast is required to address projects listed on the 20-year project list only. That forecast is tied to the Metro regional growth model that predicts regional population growth by Transportation Analysis Zone (TAZ) as explained in further detail in Chapter 5. For this TSP funding forecast, the cumulative total cost for transportation projects on the 20-year project list is proportionate to the metro model's forecasted growth over the next 20 years as follows:

- within current City of Gresham limits, 100% of land will be developed
- within the Pleasant Valley Plan Area, 9.1% of full build-out of that area will happen
- within the Springwater Plan Area, 12.6% of full build-out of that area will happen.

Applying this growth rate scenario methodology, the total transportation project costs over the next 20 years are estimated to be $138,000,000. Table 26 shows the revenue each funding mechanism must generate in order to fully implement the 20-year project list. Grants, system development charges and private development charges will fund the bulk of the system build-out through 2035. These are historically the mechanisms that have funded transportation projects and will likely continue to be through the next 20 years.

Table 26: Funding Forecast

Funding Tools/Mechanisms	Forecasted Revenue to Implement 20 Year Projects
Grants	$38,000,000
System Development Charges	$55,000,000
Private Development Charges	$26,000,000
Urban Renewal / Local Improvement Districts	$2,000,000
Capital Bonds	$5,000,000
Gas Tax / Vehicle Registration Fees	$2,000,000
Miscellaneous	$10,000,000
Total	**$138,000,000**

Maintenance and Operation

Maintenance and operation of the City's transportation system is vital to its safety, efficiency and longevity. Maintenance and operations includes road repair, traffic signal optimization and maintenance, sidewalk and bikeway enhancement and striping the roadways as well as engineering, planning and administration. The forecasted cost of maintaining and operating the transportation system over the next 20 years is $481,000,000.

Funding of maintenance and operations occurs primarily through state gas tax and vehicle registration fees. Gresham forecasts $258,700,000 in gas tax and vehicle registration fees through 2035. This leaves a gap between the expense of paying for maintenance and operations and forecasted revenue, and may necessitate a discussion about additional local or state funding sources.

City Transportation Operations perform pavement maintenance. State gas tax and vehicle registration fees pay primarily for maintenance and operation of the transportation system.

20-Year and 50-Year Project Lists

The remainder of this chapter provides the Transportation System Plan's 20-Year and 50-Year project lists. The lists include the project location, a description and its cost estimate. The corresponding maps show project locations.

Map 27: 20 -and 50 -Year Street Corridor Projects

Table 27: 20-Year and 50-Year Street Corridor Project List

Project Number	On Street	From	To	Project Description	Phase	Cost Estimate
1	Riverside Parkway	Riverside Parkway	Portal Way	Construct to minor arterial design, looping Riverside Parkway with Portal Way consistent with special street designation.	20 year	$5,000,000
2	Sandy Boulevard	Eastern city limits	181st Avenue	Construct to major arterial cross section	20 year	$4,500,000
3	169th Avenue	Wilkes Road	Halsey Street	Construct to standard collector cross section	50 year	$515,706
4	San Rafael Street	181st Avenue	201st Avenue	Construct to minor arterial cross section	50 year	$9,990,952
5	Wilkes Road	181st Avenue	192nd Avenue	Construct to minor arterial cross section.	50 year	$6,781,698
6	192nd Avenue	Wilkes Road	Halsey Street	Construct to minor arterial cross section	20 year	$3,833,031
7	201st/202nd Avenue	Glisan Street	San Rafael Street	Construct to standard collector cross section	50 year	$6,100,075
8	201st Avenue	San Rafael Street	Sandy Boulevard	Construct to minor arterial cross section	50 year	$8,335,400
9	Halsey Street	181st Avenue	201st Avenue	Construct to standard arterial cross section	20 year	$8,118,088
10	162nd Avenue	Halsey Street	Glisan Street	Construct to standard arterial cross section	20 year	$4,467,107
11	Glisan Street	202nd Avenue	Fairview Parkway	Construct to standard arterial cross section. The northern half of this street section is within Multnomah County jurisdiction. Project cost estimate is for full street build-out.	20 year	$6,798,560
12	190th Avenue	Division Street	Yamhill Street	Construct to standard collector cross section	50 year	$910,000
13	192nd Avenue	Glisan Street	Stark Street	Construct to minor collector cross section	20 year	$4,432,624
14	181st Avenue	Glisan Street	Yamhill Street	Construct to standard arterial cross section with boulevard design where applicable	20 year	$11,440,061
15	Burnside Street	162nd Avenue	197th Avenue	Complete to standard arterial standard and improve remaining segments to boulevard standards where designated and applicable	50 year	$7,950,000
16	Main Street	Western City limits	SE 182nd Avenue	Construct to standard collector cross section	20 year	$2,350,226
17	Yamhill Street	181st Avenue	197th Avenue	Construct to minor collector cross section	50 year	$2,600,000
18	202nd Avenue (Birdsdale)	Glisan Street	Powell Boulevard	Construct to minor arterial cross section	50 year	$18,202,734
19	Wallula Avenue	Division Street	Stark Street	Construct to standard collector cross section	50 year	$8,347,988
20	Stark Street	202nd Avenue	205th Place	Construct sidewalk on both sides of the roadway	20 year	$43,797
21	Stark Street	215th Avenue	223rd Avenue	Construct sidewalk on both sides of the roadway	20 year	$31,902
22	223rd Avenue	Glisan Street	Stark Street	Pedestrian improvements	20 year	$102,229
23	Division Street	Kelly Avenue	Burnside Road	Construct to standard arterial cross section and to boulevard cross section, where applicable	20 year	$1,990,179
24	5th Street	Main Avenue	Cleveland Avenue	Construct to minor collector cross section consistent with the Green Shared Street designation per the Downtown Plan	20 year	$850,460

Project Number	On Street	From	To	Project Description	Phase	Cost Estimate
25	NW Norman Avenue	Burnside Road	Division Street	Construct to major collector cross section consistent with Civic Neighborhood Plan design	20 year	$2,500,000
26	Cleveland Avenue	Division Street	Powell Boulevard	Construct to standard collector cross section	20 year	$3,980,000
27	16th Street	Eastman Parkway	NW Civic Drive	Construct to major collector cross section with Civic Neighborhood Plan design	20 year	$2,500,000
28	Main Avenue	Division Street	5th Street	Ped to MAX project, improve pedestrian access to light rail transit	20 year	$2,500,000
29	Cleveland Avenue	Stark Street	Division Street	Construct to minor arterial cross section	20 year	$13,838,103
30	Beech Avenue	4th Avenue	5th Avenue	Complete street	20 year	$353,400
31	Burnside Road	Wallula Avenue	Hogan Road	Construct to standard arterial cross section with boulevard design where applicable	20 year	$5,850,000
32	Hogan Road Corridor	Stark Street	Rugg Road	Construct to major arterial cross section	Corridor with project phases	$69,302,529
32a	Hogan Road - Phase 1	Stark Street	Division Street	Construct sidewalks and planter strips	50 year	$6,505,877
32b	Hogan Road - Phase 2	Division Street	Powell Boulevard	Widen to major arterial cross section, construct sidewalks and planter strips	20 year	$11,595,863
32c	Hogan Road - Phase 3	Powell Boulevard	Palmquist Road	Construct to major arterial cross section	20 year	$17,191,272
32d	Hogan Road - Phase 4	Palmquist Road	Rugg Road	Construct to major arterial cross section	20 year	$34,009,517
33	Division Street	Kane Drive	UGB	Construct to minor arterial cross section	50 year	$3,945,711
34	Burnside Road	Hogan Road	Powell Boulevard	Safety improvements and reconstruction	20 year	$8,807,400
35	Powell Valley Road	Burnside Road	Kane Drive	Construct to standard arterial cross section	50 year	$5,294,917
36	1st Street	3rd Street	Kane Drive	Construct to standard collector cross section	20 year	$1,160,000
37	Barnes Road	Powell Valley Road	Hillyard Road	Construct to standard collector cross section	50 year	$7,135,229
38	Williams Road	Division Street	Powell Valley Road	Construct to standard collector cross section	20 year	$7,202,147
39	Powell Valley Road	Kane Drive	282nd Avenue	Construct to minor arterial cross section	20 year	$14,645,408
40	Walters Drive	Springwater Corridor Trail	7th Street	Construct to standard collector cross section	50 year	$2,519,478
41	7th Street	Eastman Avenue	Walters Drive	Construct to standard collector cross section	50 year	$1,553,194
42	Heiney Road	14th Drive	Binford Lake Parkway	Construct to standard collector cross section	50 year	$3,583,249
43	Towle Avenue	Binford Lake Parkway	Butler Road	Construct to minor arterial cross section	50 year	$11,897,840
44	Roberts Drive	Maple Loop	Regner Road	Construct to minor collector cross section consistent with special street designation	50 year	$419,913

Project Number	On Street	From	To	Project Description	Phase	Cost Estimate
45	Regner Road	Gabbert Road	Butler Road	Construct to minor arterial cross section.	20 year	$13,511,800
46	282nd Avenue	Powell Valley Road	Southern City Limits	Construct to minor arterial cross section	20 year	$3,118,700
47	Salquist Road	Barnes Road	282nd Avenue	Construct to standard collector cross section	50 year	$5,528,671
48	Chase Road	Orient Drive	282nd Avenue	Construct to standard collector cross section	50 year	$2,494,006
49	Orient Drive	Palmquist Road	Springwater Major Arterial	Construct to standard arterial cross section	50 year	$8,700,000
50	Hillyard Road	Palmblad Road	Anderson Road	Construct to standard collector cross section	50 year	$9,628,553
51	252nd Avenue/ Palmblad Road	Hillyard Road	Rugg Road	Construct to minor arterial cross section	50 year	$6,549,250
52	Springwater Planned Road	Hogan Road	Fleming Avenue	Construct to standard collector cross section	20 year	$2,622,000
53	Fleming Avenue	19th Street extension	252nd Avenue	Construct to standard collector cross section	50 year	$4,416,000
54	19th Street	Hogan Road	100 feet west of Palmblad Road	Construct to minor arterial cross section	20 year	$4,108,000
55	Palmquist Road	Hogan Road	HWY 26	Construct to minor arterial cross section	20 year	$2,725,000
56	Palmblad Road	Palmquist Road	Hillyard Road	Construct to standard collector cross section	50 year	$7,828,750
57	40 Mile Loop Extension: Orient to Troutdale Rd.	Gresham City Limits at Troutdale Road	Orient Drive	Construct Multi-Use Trail	20 year	$11,000,000
58	Cheldelin Road	1,500 feet west of 190th Avenue (2013 western Gresham City limits)	190th Avenue	Construct to minor arterial cross section	20 year	$1,021,200
59	Giese Road	Gresham City Limits	190th Drive	Construct to minor arterial cross section and boulevard design where adjacent to town center.	20 year	$4,556,100
60	Knapp Street/41st Street	182nd Avenue	190th Drive	Construct to Standard or major collector cross section	20 year	$5,956,820
61	Pleasant Valley planned road	Pleasant Valley planned road #124	Cheldelin Road	Construct to standard collector cross section	20 year	$2,946,000
62	Pleasant Valley planned road	Springwater boundary	Chrystal Springs	Construct to standard collector cross section	50 year	$704,000
63	170th Avenue	Chrystal Springs Boulevard	Baxter Road	Construct to minor collector cross section	50 year	$1,356,000
64	Pleasant Valley planned road	Baxter Road	Pleasant Valley boundary	Construct to standard collector cross section	50 year	$713,000
65	Chrystal Springs Boulevard	172nd Avenue	Pleasant Valley planned road #66	Construct to standard collector cross section	50 year	$346,000
66	Pleasant Valley planned road	Chrystal Springs	Cheldelin Road	Construct to standard collector cross section	50 year	$1,285,000
67	Pleasant Valley planned road	172nd Avenue	182nd Avenue	Construct to standard collector cross section	50 year	$3,422,000
68	Pleasant Valley planned road	182nd Avenue	City Limits	Construct to standard collector cross section	20 year	$1,747,000

Project Number	On Street	From	To	Project Description	Phase	Cost Estimate
69	41st Street	190th Drive	Binford Avenue	Construct to minor collector cross section	20 year	$1,830,000
70	41st Street	Eleven Mile Avenue	Rodlun Road	Construct to minor collector cross section	20 year	$816,000
71	Crystal Springs	Pleasant Valley planned road #118	172nd Avenue	Construct to minor collector cross section	50 year	$456,000
72	Foster Road	Pleasant Valley planned road #140	Cheldelin Road	Construct to minor collector cross section	50 year	$694,000
73	Pleasant View Drive	Powell Boulevard	Highland Drive	Construct to minor arterial cross section	20 year	$4,000,000
74	Butler Road	Binford Way	Rodlin Road	Realign and widen between Binford Way and Rodlin Road.	20 year	$5,525,700
75	182nd Avenue	Giese Road	Richey Road	Construct to major collector cross section between Giese Road and Knapp Road and to standard collector cross section between Knapp Road and Richey Road	20 year	$6,659,098
76	Giese Road	Richey Road	Cheldelin Road	Construct to standard collector cross section except where adjacent to schools, then construct to major collector cross section.	50 year	$4,794,000
77	Giese Road	Pleasant Valley Boundary	Gresham City Limits	Construct to minor arterial cross section	50 year	$6,074,080
78	Cheldelin Road	Pleasant Valley western boundary	1,500 feet west of 190th Avenue (2013 western Gresham city limits)	Construct to minor arterial cross section.	50 year	$6,110,415
79	Pleasant Valley planned road	Giese Road	Gresham city limits	Construct to standard collector cross section	20 year	$3,317,000
80	Pleasant Valley planned road	Giese Road	Pleasant Valley planned road #79	Construct to minor collector cross section	20 year	$932,000
81	172nd Avenue	Jenne Road	Cheldelin Road	Construct to standard arterial cross section	50 year	$35,385,434
82	Pleasant Valley planned road	Giese Road	172nd Avenue	Construct to standard collector cross section	50 year	$1,819,000
83	Knapp Street	172nd Avenue	182nd Avenue	Construct to major collector cross section with boulevard design where applicable	50 year	$4,517,450
84	Pleasant Valley planned road	182nd Avenue	Knapp Street	Construct to standard collector cross section	20 year	$1,354,500
85	SE 190th Drive (Pleasant View Drive and Highland Drive)	11th Street	Cheldelin Road	Construct to minor arterial cross section	20 year	$17,008,240
86	Pleasant Valley planned road	Pleasant Valley boundary	Pleasant Valley planned road #82	Construct to standard collector cross section	50 year	$756,000
87	Welch Road	Anderson Road	282nd Avenue	Construct to standard collector design and intersection improvements	50 year	$9,507,235
88	Orient Drive	Springwater major arterial	282nd Ave	Construct to minor arterial cross section	50 year	$9,000,000
89	Springwater Planned Road	Springwater Planned Road #86	Rugg Road Extension	Construct to standard collector cross section	50 year	$1,667,000
90	Anderson Road	Orient Drive	Springwater collector	Construct to standard collector cross section	50 year	$2,553,000

Project Number	On Street	From	To	Project Description	Phase	Cost Estimate
91	Anderson Road	Springwater Collector	Rugg Road Extension	Construct to standard collector cross section	50 year	$5,634,000
92	Anderson Road	Rugg Road Extension	282nd Avenue	Construct to standard collector cross section	50 year	$6,266,000
93	Rugg Road	242nd Avenue	Orient Drive	Construct to major arterial cross section per the SW IAMP alignment. Half of street from Hogan Rd east 4,100 ft is within Clackamas Co. jurisdiction. Cost est for entire project length full build-out	20 year	$48,804,000
94	Springwater Planned Road	Hogan Road	Planned SW road ~4,000 feet east of Hogan Road	Construct to standard collector cross section	50 year	$5,520,000
95	Springwater Planned Road	Hogan Road 2,900 feet north of Rugg Road	McNutt Road	Construct to minor arterial cross section	50 year	$6,852,000
96	Springwater Planned Road	Hogan Road 1,300 feet north of Rugg Road	McNutt Road	Construct to minor arterial cross section with boulevard design.	20 year	$1,892,000
97	McNutt Road	Intersection of planned roads #95 and 96	Planned Rugg Road extension	Construct to major arterial cross section per SW IAMP alignment and boulevard design where designated.	20 year	$17,058,000
98	Springwater Planned Road	Hogan Road ~5,200 feet north of Rugg Road	Hogan Road ~2,300 feet north of Rugg Road	Construct to standard collector cross section	20 year	$9,912,000
99	Carl Street	Rugg Road extension	282nd Avenue	Construct to standard collector cross section	50 year	$3,450,000
100	Springwater Planned Road	Orient Drive	Stone Road	Construct to standard collector cross section	50 year	$12,924,000
101	Springwater Planned Road	Approximately 2,100 feet west of 252nd Avenue	252nd Avenue	Construct to standard collector cross section	50 year	$2,070,000
102	Springwater Planned Road	252nd Avenue	Rugg Road Extension	Construct to standard collector cross section	50 year	$11,337,000
103	Telford Road	252nd Avenue/ Palmblad Road	Southern Springwater boundary	Construct to minor arterial cross section	50 year	$29,419,888
104	East Buttes Loop Trail	190th Avenue	Springwater Trail	Construct new shared use trail (12' wide pervious asphalt)	50 year	$5,515,000
105	East Buttes Loop Trail	Springwater Trail	Rodlun Road	Construct new shared use trail (12' wide pervious asphalt)	50 year	$830,000
106	East Buttes Loop Trail	Rodlun Road	190th Avenue	Construct new shared use trail (12' wide pervious asphalt)	50 year	$2,800,000
107	Gresham/ Fairview Trail	Halsey	Marine Drive	Construct new multi-use trail	20 year	$4,608,799
108	Multi-Use Path	Ruby Junction Station	Hogan Drive	Construct new multi-use path from Ruby Junction Station to Hogan Drive	20 year	$3,800,000
109	East Buttes Powerline Trail	Springwater/ Gresham Fairview Trail	Clackamas Greenway	Build trail linking Gresham and the Clackamas River	50 year	$1,900,000
110	181st Street Planning Study	Sandy Boulevard	Powell Boulevard	Corridor Planning Study for 181st Avenue	20 year	$100,000

Project Number	On Street	From	To	Project Description	Phase	Cost Estimate
111	Transit Corridor Planning Study	Western city limits	Kane Drive	Corridor Planning Study for transit between Stark Street and Powell Boulevard	20 year	$100,000
112	190th Drive/ Highland Drive/ Pleasant View Drive	Powell Boulevard	Cheldelin Road	190th Drive/Highland Drive/Pleasant View Drive Corridor Study	20 year	$100,000
113	SE 172nd Extension and Foster Road Study	SE 172nd	Foster Road	Corridor Planning Study for SE 172nd extension and Foster Road	20 year	$100,000
114	40 Mile Loop Extension: Orient to Troutdale Rd.	Gresham City Limits at Troutdale Road	Orient Drive	Corridor Planning Study for Multi-Use Trail	20 year	$100,000
115	Hogan Road	Glisan Street	Rugg Road	Corridor Planning Study for Hogan	20 year	$100,000
116	282nd Avenue	Powell Valley Road	Orient Drive	282nd Corridor Access Study per Springwater Plan Area TSP	20 year	$100,000
117	Butler Road	Rodlin Road	Regner Road	Construct to minor arterial cross section. Consider special cross section design.	50 year	$7,926,000
118	Ped to MAX	Gresham Central TC	Cleveland Avenue Station	Planning study and mobility improvements to light rail and bus transit	20 year	$1,000,000
119	Regner Road	Roberts Avenue	Gabbert Road	Construct to minor arterial cross section.	50 year	$10,397,500
120	Regner Road	Butler Road	County Line	Construct to minor arterial cross section.	50 year	$5,198,700

Map 28: 20-Year and 50-Year Intersection Projects

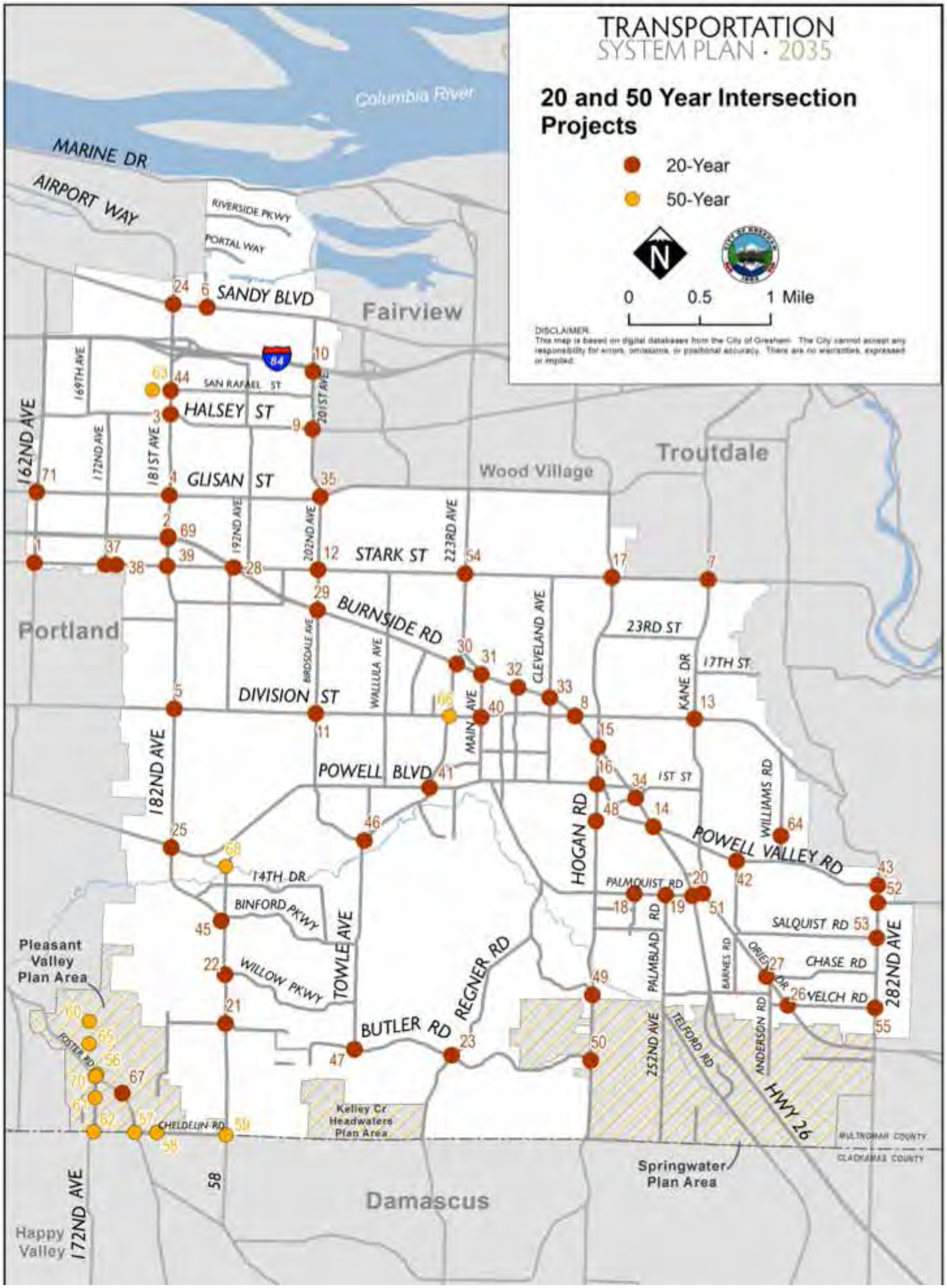


Table 28: 20-Year and 50-Year Intersection Projects

Project Number	Street	At	Description	Phase	Cost Estimate
1	Stark Street	162nd Avenue	Widen to add eastbound right-turn pocket. Restripe to increase storage for northbound and southbound left-turn pockets. Modify signal to add protected-permitted left-turn phasing on all approaches.	20 year	$684,160
2	Burnside Street	181st Avenue	Install access control in NE 181st Ave. to block left turns to and from NE Couch St. Restripe southbound left-turn pocket to increase storage.	20 year	$11,411
3	Halsey Street	181st Avenue	Widen to add second northbound left-turn pocket. Widen to add second southbound left-turn pocket and a southbound right-turn pocket.	20 year	$1,518,226
4	Glisan Street	181st Avenue	Widen to add southbound and westbound right-turn pockets. Modify signal to add protected-permitted left-turn phasing.	20 year	$875,876
5	Division Street	182nd Avenue	Widen to add dual left-turn pockets for eastbound and westbound approaches and to extend northbound and southbound right-turn pockets. Modify signal to add protected-permitted left-turn phasing and to add right-turn overlap phasing.	20 year	$814,726
6	Sandy Boulevard 185th Avenue Signal	185th Avenue	Widen to add eastbound left-turn pocket. Install signal.	20 year	$1,129,090
7	Stark Street	Kane Drive	Widen to add eastbound right-turn pocket. Modify signal to add protected-permitted left-turn and overlap right-turn phasing.	20 year	$305,075
8	Burnside Road	Division Street	Restripe to increase northwest-bound and southwest-bound left-turn pockets. Modify signal to add right turn overlap.	20 year	$38,080
9	Halsey Street	201st Avenue	Modify signal to add protected-permitted left-turn phasing on all approaches, to install vehicle detection, and to install pedestrian push buttons for all crossings.	20 year	$127,680
10	201st Avenue RR bridge	I-84	Construct new railroad bridge to accommodate motor vehicle travel lanes and the Gresham-Fairview Trail.	20 year	$2,359,125
11	Division Street	Birdsdale Avenue	Widen to add southbound right-turn pocket.	20 year	$448,372
12	Stark Street	202nd Avenue	Restripe to increase southbound left-turn pocket. Modify signal to add protected-permitted left-turn phasing.	20 year	$45,102
13	Division Street	Kane Drive	Add SB right turn lane and second EB left turn lane	20 year	$552,125
14	Burnside Road	Powell Boulevard	Restripe to prohibit eastbound and westbound left turns. Modify signal to add westbound right-turn overlap.	20 year	$22,982
15	Burnside Road	Hogan Drive	Add second southbound left-turn pocket and second southbound through lane. Add eastbound right-turn pocket. Modify signal to remove split phasing for northbound and southbound and introduce protected-only left-turn phasing for those approaches.	20 year	$1,456,765
16	Powell Boulevard	Hogan Road	Widen Hogan Rd. to 5-lane section through the intersection. Restripe to extend eastbound left-turn pocket.	20 year	$2,187,397
17	Stark Street	Hogan Drive	Widen to add dual left-turn pockets on all approaches. Widen to add northbound right-turn pocket. Connect southbound Hogan Dr. to SE Cherry Park Rd to provide a right-turn bypass of intersection.	20 year	$1,923,850
18	Palmquist Road	Fleming Avenue	Intersection widening.	20 year	$788,312
19	Palmquist Road Intersection	Palmblad Road	Widen Palmquist Rd. to full 3-lane section through intersection. Widen to add northbound left-turn pocket.	20 year	$707,507
20	Palmquist Road Intersection	US Highway 26	Widen to add second eastbound through lane and to extend eastbound left-turn pocket. Modify signal to remove split eastbound and westbound phasing and to introduce protected-only left-turn phasing. Improvements per the Springwater Interchange Area Manga*	20 year	$799,564

Project Number	Street	At	Description	Phase	Cost Estimate
21	SE 190th Drive Intersection	Butler Road	Install signal	20 year	$205,884
22	SE 190th Drive Intersection	Willow Parkway	Intersection Improvements	20 year	$205,884
23	Regner Rd - D.	Butler Road	Install single-lane roundabout	20 year	$698,601
24	Sandy Boulevard 181st Avenue	181st Avenue	Widen Sandy Blvd. east and west of intersection to add second eastbound and westbound lane, replacing existing right-turn lanes. Widen to add dual left-turn pocket on westbound approach. Modify signal to add protected-permitted left-turn phasing.	20 year	$479,901
25	Powell Boulevard	182nd Avenue	Modify signal to add right-turn overlap phasing	20 year	$15,960
26	Orient Drive	Welch Road	Widen intersection to create a center turn lane on Orient Drive	20 year	$150,000
27	Orient Drive	Chase Road	Widen intersection to create a center turn lane on Orient Drive	20 year	$150,000
28	Burnside Street	Stark Street	Widen to extend northwest-bound left-turn pocket	20 year	$113,962
29	Burnside Street	202nd Avenue	Modify signal to add protected-permitted left-turn phasing	20 year	$31,920
30	Burnside Road	Eastman Parkway	Modify signal to add protected-permitted left-turn phasing	20 year	$19,152
31	Burnside Road	Main Avenue	Restripe to extend northbound left-turn pocket. Modify signal to add protected-permitted left-turn phasing.	20 year	$22,822
32	Burnside Road	Kelly Avenue	Modify signal to add protected-permitted left-turn phasing	20 year	$19,152
33	Burnside Road	Cleveland Avenue	Add southbound right-turn pocket. Restripe to extend northbound and southbound left-turn pockets. Modify signal to add protected-permitted left-turn phasing.	20 year	$591,070
34	Burnside Road	3rd St	Intersection Improvements	20 year	$100,000
35	Glisan Street	202nd Avenue	Widen to add northbound and southbound left-turn pockets. Widen to add eastbound and southbound right-turn pockets. Modify signal to add protected-permitted left-turn phasing.	20 year	$1,105,062
37	Stark Street	172nd Avenue	Install signal. Restripe to add southbound left-turn pocket.	20 year	$323,381
38	Stark Street	174th Avenue	Modify signal to add protected-permitted left-turn phasing	20 year	$7,980
39	Stark Street	181st Avenue	Restripe to increase northbound and southbound left-turn pockets. Modify signal to add protected-permitted left-turn phasing	20 year	$56,179
40	Division Street	Main Avenue	Restripe to extend northbound and southbound left-turn pockets. Modify signal to add protected-permitted left-turn phasing	20 year	$33,196
41	Powell Boulevard	Eastman Parkway	Widen to add southbound right-turn pocket. Remove planted median to extend southbound left-turn pocket. Modify signal to add protected-permitted left-turn phasing	20 year	$541,905
42	Powell Valley Road	Barnes Road	Widen to create a center turn lane on both Powell Valley Rd. approaches	20 year	$143,408
43	Powell Valley Road	282nd Avenue	Install signal or single-lane roundabout	20 year	$401,817
44	San Rafael	181st Avenue	Widen to add southbound right-turn pocket	20 year	$638,423
45	Pleasant View Drive	Highland Drive	Install signal	20 year	$516,000
46	Towle Road	Birdsdale Drive	Remove planted median north of intersection for 50 feet to create paved refuge for two-stage left turns from Birdsdale Dr.	20 year	$10,953
47	Towle Road	Butler Road	Install single-lane roundabout	20 year	$969,027
48	Hogan Road	SE 5th Street	Widen Hogan Rd. to 5-lane section through intersection. Replace signal.	20 year	$2,119,240
49	Hogan Road	Cleveland Drive	Widen Hogan Rd. to 5-lane section through intersection. Restripe to add eastbound right-turn pocket	20 year	$2,836,634
50	Hogan Road	Butler Road	Widen Hogan Rd. to 5-lane section through intersection. Construct new westbound approach with 100-foot left-turn pocket and through lane. Restripe to add eastbound left-turn pocket.	20 year	$2,342,720

Project Number	Street	At	Description	Phase	Cost Estimate
51	Kane Drive	Palmquist Road	Modify signal to add eastbound right-turn overlap phasing	20 year	$15,960
52	282nd Avenue	Lusted Road	Install signal or single-lane roundabout	20 year	$401,817
53	282nd Avenue	Salquist Road	Widen to add left turn lane	20 year	$89,568
54	Stark Street	223rd Avenue	Widen to add duel left-turn pockets on all approaches. Widen to add eastbound right-turn pocket. Widen to extend right-turn pockets on northbound, southbound, and westbound approaches. Modify signal to add right-turn overlap phasing.	20 year	$3,340,180
55	282nd Avenue	Welch Road	Widen to add left turn lane	20 year	$52,421
56	Foster Road	172nd Avenue	Bridge	50 year	$180,000
57	Cheldelin Road	182nd Avenue	Cheldelin and 182nd	50 year	$180,000
58	Cheldelin Road	Foster Road	Cheldelin and Foster	50 year	$180,000
59	Cheldelin Road	190th Avenue	190th and Cheldelin	50 year	$205,884
60	Giese Road	172nd Avenue	172nd and Giese	50 year	$180,600
61	Foster Road	172nd Avenue	Install roundabout or traffic signal	50 year	$342,000
62	Cheldelin Road	172nd Avenue	172nd and Cheldelin	50 year	$180,000
63	Banfield Industrial Park Truck Turn-around		Construct truck turn around	50 year	$139,971
64	5th Street	Williams Road	Add Crosswalks.	20 year	$5,000
65	172nd Avenue	Knapp Road	Signalize intersection.	50 year	$180,000
66	Eastman Parkway	Division Street	Improve functioning of intersection and reduce congestion. Add second northbound and south bound left turn lanes.	50 year	$912,928
67	Foster Road	Richey Road	Install roundabout or traffic signal	20 year	$180,000
68	Springwater Trail	Pleasant View/190th Avenue	Provide access to the Springwater Trail	50 year	$190,000
69	Rockwood TC 181st lightrail station and pedestrian enhancements		Enhancements at the Rockwood Town Center/181st Avenue lightrail station, including pedestrian enhancements	20 year	$8,919,615
70	SE 172nd	Crystal Springs Boulevard	Signalize intersection	50 year	$180,000
71	Glisan Street	162nd Avenue	Restripe to change northbound right-turn lane to a through lane and to extend that lane through the intersection. Modify signal to add protected-permitted left-turn phasing on all approaches.	20 year	$37,506

Table 29: Technology Solutions – Transportation Systems Management Operations/Intelligent Transportation Systems

Technology Solutions	Project Description	Cost Estimate
Halsey Street: Arterial Corridor Management System	Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	$500,000
Stark Street: Arterial Corridor Management System	Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	$1,800,000
Glisan Street: Arterial Corridor Management System	Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	$1,200,000
Division Street: Arterial Corridor Management - Signal equipment	Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide realtime and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	$1,500,000
Powell Boulevard – Arterial Corridor Management	Reliability and Traveler Information: Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings.	$1,500,000
NE 181st/182nd Avenues: Arterial Corridor Management	Improve arterial corridor operations by upgrading traffic signal equipment and timings.	$700,000
Burnside: Arterial Corridor Management with Adaptive Signal Timing + Transit Priority	Improve arterial corridor operations by upgrading traffic signal equipment and timings.	$1,500,000
US 26 Roadside Travel Time Information	Improve arterial corridor operations by expanding traveler information.	$1,000,000

Table 30: Outreach and Education Transportation Projects

Outreach And Education	Project Description	Cost Estimate
Transportation Management Associations: Gresham Regional Center	Support public private partnerships in regional or town centers that assist employees and/or residents increase use of travel options.	$675,000
Transportation Management Associations: Rockwood Town Center	Support public private partnerships in regional or town centers that assist employees and/or residents increase use of travel options.	$675,000
Parking Management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	$100,000
Bike Sharing	Provide funding to implement bikes for loan or rent.	$200,000
Car Sharing Options	Support 3 or more car sharing vehicles in developing centers.	$1,800,000
Safe walking routes, missing links	Construct missing links and safe routes to school.	$4,000,000

Conclusion

Gresham's multimodal streets and multi-use paths are dynamic places and vital to the community's livability and economic vitality. Through policies, action measures, modal system plans, a project list and funding forecast, this 2035 Transportation System Plan serves as the blueprint to implementing the community's vision of safe, pleasant and convenient access and travel within, to and through Gresham.

Glossary

A

Access Management – Measures regulating access to streets, roads and highways from public roads and private driveways. Measures may include, but are not limited to, restrictions on the siting of interchanges, restrictions on the type and amount of access to roadways, and use of physical controls, such as signals and channelization including raised medians, to reduce impacts of approach road traffic on the main facility.

Accessway – A walkway that provides pedestrian and bicycle passage either between streets or from a street to a building or other destination such as a school, park or transit stop. Accessways generally include a walkway and additional land on either side of the walkway, often in the form of an easement or right-of-way, to provide clearance and separation between the walkway and adjacent uses. Accessways through parking lots are generally physically separated from adjacent vehicle parking or parallel vehicle traffic by curbs or similar devices and include landscaping, trees and lighting. Where accessways cross driveways, they are generally raised, paved or marked in a manner that provides convenient access for pedestrians.

Affected Local Government – A city, county or metropolitan service district that is directly impacted by a proposed transportation facility or improvement.

Alternative Modes – Travel modes such as rail, transit, bicycles and walking that provide transportation alternatives to the use of single-occupant automobiles.

Arterials – Roads that principally provide service to through traffic between cities, towns and major destinations.

At or Near a Major Transit Stop –"At" means a parcel or ownership, which is adjacent to or includes a major transit stop generally including portions of such parcels or ownerships that are within 200 feet of a transit stop. "Near" generally means a parcel or ownership that is within 300 feet of a major transit stop. The term "generally" is intended to allow local governments, through their plans and ordinances, to adopt more specific definitions of these terms considering local needs and circumstances consistent with the overall objective and requirement to provide convenient pedestrian access to transit.

Average Annual Daily Traffic (ADT) – The estimated vehicle travel for an average day over a given roadway segment or through an intersection.

B

Bicycle/Pedestrian Accessway – A walkway that provides pedestrian and bicycle passage either between streets, from a street to a building, or other destination such as a school, park or transit stop.

Boulevards – Multi-modal streets designed with special amenities that promote pedestrian, bicycle and public transportation travel in the region's most intensely developed activity centers (central city, regional centers, station communities, town centers).

C

C-Tran – Transit agency for Clark County, Wash.

Capital Improvement Program (CIP) – City document that programs funds for non-operational public works capital infrastructure improvements and investments.

Citizen Advisory Committee (CAC) – A group of citizen volunteers appointed to represent citizen interests for a specific issue, project or process.

Collectors – Roads that provide access to property and collect and distribute traffic between local streets and arterials.

Committed Transportation Facilities – Those proposed transportation facilities and improvements that are consistent with the Transportation System Plan and have approved funding for construction in a public facilities plan or the Six-Year Highway or Transportation Improvement Program.

Congestion Mitigation/Air Quality (CMAQ) – A program within the federal Intermodal Surface Transportation Efficiency Act (ISTEA) and Transportation Equity Act for the 21st Century (TEA-21) to address congestion and transportation-related air pollution.

D

Demand Management – Actions designed to change travel behavior in order to improve performance of transportation facilities and to reduce need for additional road capacity. Methods may include, but are not limited to, the use of alternative modes, ride-sharing and vanpool programs, and trip-reduction ordinances.

E

East Multnomah County Transportation Committee (EMCTC) – A five-member committee of elected officials representing Fairview, Gresham, Troutdale, Wood Village and Multnomah County. The EMCTC provides a forum for discussion and consensus building on transportation issues, plans and projects.

F

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.

G

Growth Concept – A concept for the long-term growth management of the Portland region; states the preferred form of 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.

H

High-Occupancy Vehicle (HOV) – A vehicle carrying more than just the driver.

I

Inner Neighborhoods – Areas in Portland and older suburbs that are primarily residential, close to employment and shopping areas, and have slightly smaller lot sizes and higher population densities than in outer neighborhoods.

Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 – Federal highway/transit funding reauthorization that provided regions and states with additional funding and more flexibility in making transportation decisions. The Act requires, for example, the metropolitan area planning process to consider such issues as land use, intermodal connectivity, methods to enhance transit service and needs identified through management systems.

J

Joint Policy Advisory Committee on Transportation (JPACT) – A 17-member committee of local-area elected officials, Metro councilors and other transportation officials who coordinate transportation decisions for the region.

L

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 (LRT) – See Metropolitan Area Express.

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.

Local Street Standards – Include, but are not limited to, standards for right-of-way, pavement width, travel lanes, parking lanes, curb turning radius and accessways.

M

Main Streets – Neighborhood shopping areas along a main street or at an intersection, sometimes having unique character that draws people from outside the area.

Major – In general, those facilities or developments that, considering the size of the urban or rural area and the range of size, capacity or service level of similar facilities or developments in the area, are either larger than average, serve more than neighborhood needs or have significant land use or traffic impacts on more than the immediate neighborhood:

(a) "Major" as it modifies transit corridors, stops, transfer stations and new transportation facilities means those facilities that are most important to the functioning of the system or which provide a high level, volume or frequency of service;

(b) "Major" as it modifies industrial, institutional and retail development means such developments that are larger than average, serve more than neighborhood needs or have traffic impacts on more than the immediate neighborhood;

(c) Application of the term "Major" will vary from area to area depending upon the scale of transportation improvements, transit facilities and developments that occur in the area. A facility considered to be major in a smaller or less densely developed area may, because of the relative significance and impact of the facility or development, not be considered a major facility in a larger or more densely developed area with larger or more intense development or facilities.

Major Transit Stop – Means:

(a) Existing and planned light rail stations and transit transfer stations, High Capacity Transit stations and Regional Transportation Plan major bus stops, and bike-transit facilities except for temporary facilities;

(b) Other planned stops designated as major transit stops in a transportation system plan and existing stops which:

(A) Have or are planned for an above average frequency of scheduled, fixed-route service when compared to region wide service. In urban areas of 1,000,000 or more population, major transit stops are generally located along routes that have or are planned for 20-minute service during the peak hour; and

(B) Are located in a transit oriented development or within 1/4 mile of an area planned and zoned for:

(i) Medium or high density residential development; or

(ii) Intensive commercial or institutional uses within 1/4 mile of subsection (i); or

(iii) Uses likely to generate a relatively high level of transit ridership.

Metro – The regional government and designated Metropolitan Planning Organization (MPO) of the Portland metropolitan area. It is governed by a seven-member Metro Council elected by and representing districts within Metro's jurisdictional boundaries. Metro manages the Washington Park Zoo, solid waste landfills, the Oregon Convention Center and the Portland Center for the Performing Arts. Metro also is responsible for establishing and maintaining the Urban Growth Boundary (UGB), and for regional transportation planning activities such as the preparation of the Regional Transportation Plan (RTP), and the planning regional transportation projects such as light rail.

Metro Council – composed of seven members elected from districts throughout the metropolitan region - all of Multnomah County and generally the urban portions of Clackamas and Washington counties. The council approves Metro policies, including transportation plans, projects and programs recommended by the Joint Policy Advisory Committee on Transportation (JPACT).

Metro Policy Advisory Committee (MPAC) – Established by the Metro Charter and composed of local Metro area elected officials. MPAC is responsible for recommending to the Metro Council adoption of or amendment to any element of the Charter-mandated Regional Framework Plan.

Metropolitan area – The local governments that are responsible for adopting local or regional transportation system plans within a metropolitan planning organization (MPO) boundary. This includes cities, counties, and, in the Portland Metropolitan area, Metro.

Metropolitan Area Express (MAX) – A regional light rail mass transit facility serving the Portland central city, the Hillsboro, Beaverton and Gresham Regional Centers, and several Town Centers.

Metropolitan Planning Organization (MPO) – An individual agency designated by the state governor in each federally recognized urbanized area to coordinate transportation planning for that region. Metro is the agency for Clackamas, Washington and Multnomah Counties; for Clark County, Wash., the agency is the Southwest Washington Regional Transportation Council (SWRTC).

Metropolitan Transportation Improvement Program (MTIP) – A multi-year, intermodal program of transportation projects that is consistent with the Regional Transportation Plan.

Multi-Modal – Involving several modes of transportation (bus, rail, bicycle, car, etc.).

N

National Highway System (NHS) – The National Highway System consists of interconnected urban and rural principal arterials and highways that serves major population centers, international border crossings, ports, airports, public transportation facilities, other intermodal transportation facilities and other major travel destinations; meets national defense requirements; and serves interstate and interregional travel. All routes on the Interstate System are a part of the National Highway System.

Neighborhood Centers – Retail and service development that surrounds major MAX stations and other major intersections, extending out for one-quarter to one-half mile.

O

ODOT – The Oregon Department of Transportation. ODOT is actively involved in developing Oregon's system of highways and bridges, public transportation services, rail passenger and freight systems, and bicycle and pedestrian paths. ODOT manages driver licensing and vehicle registration programs, motor carrier operations, and transportation safety programs.

Oregon's Statewide Planning Goals – 19 goals in 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 sets priorities and state policy in Oregon for the next 40 years. The plan, developed by the Oregon Department of Transportation (ODOT) through the statewide transportation planning process, responds to federal requirements and Oregon's Transportation Planning Rule (TPR).

Outer Neighborhoods – Areas in outlying suburbs that are primarily residential, farther from employment and shopping areas, and have slightly larger lot sizes and lower population densities than inner neighborhoods.

P

Parking Spaces – On and off street spaces designated for automobile parking in areas planned for industrial, commercial, institutional or public uses. The following are not considered parking spaces for the purposes of OAR 660-012-0045(5)(c): park and ride lots, handicapped parking and parking spaces for carpools and vanpools.

Peak Period or Peak Hour – A period of the day with the highest level of travel, normally between 6-9 a.m. and 4-6 p.m. on weekdays.

Pedestrian Connection – A continuous, unobstructed, reasonably direct route between two points that is intended and suitable for pedestrian use. Pedestrian connections include, but are not limited to, sidewalks, walkways, accessways, stairways and pedestrian bridges. On developed parcels, pedestrian connections are generally hard surfaced. In parks and natural areas, pedestrian connections may be soft-surfaced pathways. On undeveloped parcels and parcels intended for redevelopment, pedestrian connections may also include rights of way or easements for future pedestrian improvements.

Pedestrian District – A comprehensive plan designation for implementing land use regulations, such as an overlay zone, that establish requirements to provide a safe and convenient pedestrian environment in an area planned for a mix of uses likely to support a relatively high level of pedestrian activity. Such areas include but are not limited to:

(a) Lands planned for a mix of commercial or institutional uses near lands planned for medium to high density housing; or

(b) Areas with a concentration of employment and retail activity; and

(c) Which have or could develop a network of streets and accessways that provide convenient pedestrian circulations.

Pedestrian Plaza – A small, semi-enclosed area usually adjoining a sidewalk or a transit stop that provides a place for pedestrians to sit, stand or rest. They are usually paved with concrete, pavers, bricks or similar material and include seating, pedestrian scale lighting and similar pedestrian improvements. Low walls or planters and landscaping are usually provided to create a semi-enclosed space and to buffer and separate the plaza from adjoining parking lots and vehicle maneuvering areas. Plazas are generally located at a transit stop, building entrance or an intersection, and connect directly to adjacent sidewalks, walkways, transit stops and building entrances; or at an intersection and connect directly to adjacent sidewalks, walkways, transit stops and buildings. A plaza including 150-250 square feet would be considered "small."

Pedestrian Scale – Site and building design elements that are dimensionally less than those intended to accommodate automobile traffic, flow and buffering. Examples include ornamental lighting of limited height; bricks, pavers or other modules of paving with small dimensions; a variety of planting and landscaping materials; arcades or awnings that reduce the height of walls; and signage and signpost details that can only be perceived from a short distance.

Planning Period – The 20-year period beginning with the date of adoption of a TSP to meet the requirements of this rule.

Preliminary Design – An engineering design that specifies in detail the location and alignment of a planned transportation facility or improvement.

R **Reasonably Direct** – Either a route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users.

Refinement Plan – An amendment to the transportation system plan that resolves, at a systems level, determinations on function, mode or general location, which were deferred during transportation system planning because detailed information needed to make those determinations could not reasonably be obtained during that process.

Regional Centers – Areas of mixed residential and commercial use that serve hundreds of thousands of people and are easily accessible by different types of transit.

Regional Framework Plan – The Regional Framework Plan is required under the Metro Charter and 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 Regional Framework Plan shall also contain model terminology, standards and procedures for local land use decision-making that may be adopted by local governments.

Regional Transportation Plan (RTP) – The official intermodal transportation plan that is developed and adopted through the Metro 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.

Right-of-Way (ROW) – The publicly-owned land on which public facilities and infrastructure is placed.

Roads – Streets, roads and highways.

S **Single-Occupant Vehicle (SOV)** – A vehicle carrying only the driver.

Southwest Washington Regional Transportation Council (SWRTC) – The designated Metropolitan Planning Organization (MPO) for the Clark County, Wash., portion of the Portland/Vancouver metropolitan region.

State Implementation Plan (SIP) – A plan for ensuring that all parts of Oregon remain in compliance with Federal air quality standards.

State Transportation Improvement Program (STIP) – A staged, multi-year, statewide, intermodal program of transportation projects that is consistent with the statewide transportation plan and planning process and metropolitan plans, TIPs and processes.

T **Technical Advisory Committee (TAC)** – A group of technical staff from government agencies participating in a project or process. The TAC is responsible for producing the base technical information that will ultimately be used by local decision-makers to complete the project purpose.

Town Centers – Areas of mixed residential and commercial use that serve tens of thousands of people.

Transit-Oriented Development (TOD) – 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. The key features of transit-oriented development include:

(a) A mixed-use center at the transit stop, oriented principally to transit riders and pedestrian and bicycle travel from the surrounding area;

(b) High density of residential development proximate to the transit stop sufficient to support transit operation and neighborhood commercial uses within the TOD;

(c) A network of roads, bicycle and pedestrian paths to support high levels of pedestrian access within the TOD and high levels of transit use.

Transportation Analysis Zone (TAZ) – A geographic sub-area used to assess travel demands using a travel demand forecasting model. Often defined by the transportation network, travelsheds, US Census blocks, etc.

Transportation Corridors – Residential and retail development concentrated along major arterials and bus lines.

Transportation Demand Management (TDM) – Actions such as ridesharing and vanpool programs, use of alternative modes and trip reduction ordinances designed to change travel behavior in order to improve performance of transportation facilities and to reduce the need for additional road capacity.

Transportation Disadvantaged People – Individuals who have difficulty in obtaining transportation because of their age, income, physical or mental disability.

Transportation Equity Act for the 21st Century (TEA-21) – The most recent federal highway/transit funding reauthorization. TEA-21 builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which was the last major authorizing legislation for surface transportation. The Act combines the continuation and improvement of current programs with new initiatives to meet transportation challenges.

Transportation Enhancement Activities (TEAs) – An exclusive list of 10 specific activities eligible for funding under federal transportation legislation. Included are bicycle and pedestrian facilities, rehabilitation of historic transportation facilities and control of outdoor advertising.

Transportation Facilities – Any physical facility that moves or assists in the movement of people or goods including facilities identified in OAR 660-012-0020 but excluding electricity, sewage and water systems.

Transportation Management Association (TMA) – A group of employers working together to implement strategies and programs to reduce reliance on single-occupant automobiles.

Transportation Needs – Estimates of the movement of people and goods consistent with an acknowledged comprehensive plan and the requirements of this rule. Needs are typically based on projections of future travel demand.

Transportation Needs, Local – Needs for movement of people and goods within communities and portions of counties and the need to provide access to local destinations.

Transportation Needs, Regional – Needs for movement of people and goods between and through communities and accessibility to regional destinations within a metropolitan area, county or associated group of counties.

Transportation Needs, State – Needs for movement of people and goods between and through regions of the state and between the state and other states.

Transportation Planning Rule (TPR) – The implementing rule of statewide land use planning goal No. 12 dealing with transportation, as adopted by the Stale Land Conservation and Development Commission (LCDC). Among its many provisions, the TPR includes requirements to preserve rural lands, reduce vehicle miles traveled (VMT) per capita by 20% in the next 30 years, and to improve alternative transportation systems.

Transportation Project Development – Implementing the Transportation System Plan (TSP) by determining the precise location, alignment, and preliminary design of improvements included in the TSP based on site-specific engineering and environmental studies.

Transportation Policy Alternatives Committee (TPAC) – A 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 appointed by the Metro Council.

Transportation Service – A service for moving people and goods, for example, intercity bus service and passenger rail service.

Transportation System Management Measures – Techniques for increasing the efficiency, safety, capacity or level of service of a transportation facility without increasing its size. Examples include, but are not limited to, traffic signal improvements, traffic control devices including installing medians and parking removal, channelization, access management, ramp metering, and restriping of high occupancy vehicle (HOV) lanes.

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-County Metropolitan Transportation District (TriMet) – TriMet provides bus, light rail and commuter rail service in the Portland metro area.

U

Urban Area – Lands within an urban growth boundary, two or more contiguous urban growth boundaries, and urban unincorporated communities as defined by OAR 660-022-0010(9). For the purposes of this division, the area need only meet the definition contained in the Unincorporated Communities Rule although the area may not have been designated as an unincorporated community in accordance with OAR 660-022-0020.

Urban Fringe –

(a) Areas outside the urban growth boundary that are within 5 miles of the urban growth boundary of an MPO area; and

(b) Areas outside the urban growth boundary within 2 miles of the urban growth boundary of an urban area containing a population greater than 25,000.

Urban Growth Boundary (UGB) – The politically defined boundary around a metropolitan area outside of which no urban improvements may occur (sewer, water, etc.) It is intended that the UGB be defined to accommodate all projected population and employment growth within a 20-year planning period. A formal process has been established for periodically reviewing and updating the UGB so that it accurately reflects projected population and employment growth.

V

Vehicle Hours Traveled (VHT) – A transportation measure relating traffic volumes to speed and length on a roadway segment or system of roadways within a defined area.

Vehicle Miles of Travel (VMT) – Automobile vehicle miles of travel. Automobiles, for purposes of this definition, include automobiles, light trucks and other similar vehicles used for movement of people. The definition does not include buses, heavy trucks and trips that involve commercial movement of goods. VMT includes trips with an origin and a destination within the MPO boundary and excludes pass through trips (i.e., trips with a beginning and end point outside of the MPO) and external trips (i.e., trips with a beginning or end point outside of the MPO boundary). VMT is estimated prospectively through the use of metropolitan area transportation models.

Volume to Capacity (V/C) – A measure of how the transportation system is operating relative to the use (demand) and the system's capacity.

W

Walkway – A hard surfaced area intended and suitable for use by pedestrians, including sidewalks and surfaced portions of accessways.

APPENDIX 1

Springwater Transportation System Plan

Springwater Community Plan

Springwater Transportation System Plan

September 20, 2005
City of Gresham
Community & Economic Development Department
– New Communities and Annexation
Department of Environmental Services

Transportation System Plan

INTRODUCTION

The purpose of the Springwater Transportation System Plan (TSP) is to address the transportation needs for new urban community development within the Springwater Plan District. This TSP will be amended to Volume 4 – Transportation System Plan in the Gresham Community Development Plan. Consequently, it is important that this plan works within the framework established by other related state, regional, and local plans. The TSP includes the following sections:

- Planning Framework
- Policies and Action Measures
- System Inventory and Assessment
- Transportation System Alternatives Analysis
- Recommended Transportation System Plan
    - Motor Vehicle Plan
    - Transit Plan
    - Bicycle and Pedestrian Plan
    - Freight Master Plan
    - Other Travel Modes
- Implementation Plan
    - Functional Class changes
    - Street cross-sections
    - Amendments to Street Project List
    - Local Street Connectivity Map
    - Funding needs

Plans for new urban areas must follow the requirements and guidelines of Title 11 of Metro's Urban Growth Management Functional Plan. Title 11 requires the following concerning transportation:

> *A conceptual transportation plan consistent with the applicable provisions of the Regional Transportation Plan, Title 6.4 of the Regional Transportation Plan [replaced Title 6 of the Urban Growth Management Functional Plan], and that is also consistent with the protection of natural resources either identified in acknowledged comprehensive plan inventories or as required by Title 3 of the Urban Growth Management Functional Plan. The plan shall, consistent with OAR Chapter 660 Division 11, include preliminary cost estimates and funding strategies, with likely financing approaches.*
>
> The TSP shall also include *an urban growth diagram…showing…general locations of arterial, collector, and essential streets.*

A conceptual facilities and services plan for transportation was developed as part of the *Concept Plan* effort. This effort identified the needed transportation facilities for the new urban district, and developed rough cost estimates and likely funding strategies. The plan also included a map depicting the general location of arterial, collector, and connecting streets and identified functional classifications for streets, a connectivity plan, and a transit plan. A bicycle and trail plan was developed in conjunction with Parks planners, and is presented in the Parks and Open Space component of the Springwater Public Facilities Plan.

PLANNING FRAMEWORK

Background

The Metro Council brought Springwater into the Urban Growth Boundary (UGB) in December 2002. When land is brought into the UGB, Title 11 of the Metro *Urban Growth Management Functional Plan* requires that the added territory be brought into a city's comprehensive plan prior to urbanization with the intent to promote the integration of the new land into existing communities.

Title 11 requires a series of comprehensive plan amendments including maps that address provisions for annexation; housing, commercial, and industrial development; transportation; natural resource protection and enhancement; public facilities and services including parks and open spaces; and schools. The intent of the current planning effort is to prepare Springwater for urbanization and annexation to the City of Gresham.

Planning Context for Transportation

The transportation plan for the Springwater Community Plan was developed in compliance with transportation plans adopted by the State of Oregon, Metro, Multnomah County and the City of Gresham. Specifically, the 2004 Metro Regional Transportation Plan (RTP) established guidelines for spacing between streets, stream crossings, pathways and minimum mobility standards for regional transportation. These guidelines were used as a primary resource to develop the policy framework for the mobility standards and street spacing set forth in the Springwater TSP. For most regions the RTP also provided information about existing and planned transit services, but the RTP did not address transit services in the Springwater region.

In addition to compliance with the RTP, any street connections to US 26 (Mt. Hood Highway) needed to follow the regulations and standards within the 1999 Oregon Department of Transportation (ODOT) Oregon Highway Plan (OHP). The OHP provided performance criteria for any roadways, intersections or grade-separated connections to US 26, and it established the appropriate separation from highway intersection to the nearest local street intersections. Furthermore, review of the Gresham and Multnomah County Transportation System Plans revealed the current street functional class designations for existing streets and highways, any planned pathways or trails, and any planned transportation improvements within or close to the Springwater area that should be included in the basic framework of the new planning area.

Finally, the Plan was guided by citizen input provided through public meetings and open houses held during the planning process, and by the goals and policies developed jointly by the project team and the Springwater Community Working Group (CWG). These goals and policies were adopted by the CWG early in the planning process. The transportation goal is given below. Policies and action measures associated with the transportation element of the Springwater plan are described in the following section.

> ***The Springwater Community will encompass a well-planned transportation system that supports the Springwater Community Plan, while promoting transit, walking and bicycling.*** *Good design can also avoid the effects of heavy traffic on neighborhood safety and the natural environment. A well-connected transportation system using trails, bicycle routes, sidewalks and a variety of street types reinforces a sense of community and provides adequate routes for travel. The site should provide good connections to and from the employment areas and the surrounding community, as well as regional freight and transportation centers.*

Other goals that guided the Springwater planning process included the following:

Create a Community. *The Springwater Community shall be an economically and environmentally sustainable community.* The primary focus of the plan will be on providing a high number of industrial and industrial related jobs that enhance the economic viability of Gresham, the greater East County region and its citizens. Industrial and employment lands will be complemented with a village center and housing support and will be carefully integrated with the upper Johnson Creek system. Sustainable "green" building and development practices will enhance the community's unique character, while supporting the protection and restoration of the area's natural resources.

Sustainability. *The Springwater Community shall foster sustainability through encouraging businesses, industries and homes that are built with and practice good environmental stewardship.* This shall be accomplished through "green" practices that provide for energy-efficiency, water conservation, reduced pollution, and avoid environmentally harmful materials and processes. The Springwater Community shall strive to be a model for successful sustainable industrial development. Development shall also preserve, restore and enhance natural resources by meeting or exceeding local and regional standards. Land uses, transportation systems and natural resources shall be carefully integrated and balanced.

Economic Development. *The Springwater Community shall provide industrial land that will generate a variety of family wage job opportunities.* Job creation will focus on correcting the imbalance between the number of households and the number of jobs in the East Metro region and increasing the City's economic strength. The plan will actively encourage businesses with an interest in sustainability and protecting the community's rich natural resources. Springwater will include a village center that can serve residents, employees and businesses.

Livability. *The Springwater Community shall have a high quality of life*. This will be accomplished through compact and sustainable development; a range of housing choices; walkable neighborhoods; access to natural resource areas and open spaces for employees in the community; preservation of natural resources; and a variety of transportation choices. The community will encompass a village center, or series of village centers that provide needed services for employees and residents in an attractive and human-scale environment. A range of housing choices will be provided within close proximity to services and/or employment areas. Overall, the community will be a unique environment that creates a sense of place both for residences and businesses, and acts as economic attractor.

Natural Resources. *The plan will preserve, protect and enhance natural resources.* It will define, protect, restore and enhance significant natural resources, including stream corridors, wetlands, and forested areas. Resource areas will provide the basis for identifying development constraints as well as serving as open space amenities for the Springwater Community. Resource protection and enhancement will be a shared responsibility of property owners, developers and governments.

Rural Route Impacts. *The plan will support and maintain transportation system primarily served by urban or regional facilities that seeks to minimize potential impacts on rural roads east of 282^nd^ Avenue.* As directed by a joint resolution with Multnomah County, the city's new plan for the Springwater Community will identify appropriate land use and transportation elements that seek to keep the new travel demands generated within Springwater from intruding onto county maintained rural highways and roads east of 282^nd^ Avenue. Specifically, this principle applies primarily to commute traffic and other types of trips that do not have origins or destinations within the rural areas. The plan will strive to serve regional trips via regional routes, including US Highway 26.

POLICIES AND ACTION MEASURES

The goal for the Springwater transportation system was developed through a collaborative process involving the project team members, community working group, and other project stakeholders. The overall goal of providing "….**a well-planned transportation system that supports the Springwater community while promoting transit, walking, and bicycling**" was described in the previous section. Along with this goal, several policy statements and action measures were developed.

Policies

1. Identify improvements to Highway 26 that enhance access and mobility to and through the Springwater Community plan area to support industrial and employment development. Design elements are to be compatible and supportive of the Springwater Community Plan.

2. Incorporate the North/South Transportation Study recommendations to identify better connections between Springwater and I-84 and I-205.

3. Incorporate Green Street designs as described in Metro's handbook entitled *Green Streets: Innovative Solutions for Stormwater and Stream Crossings* and as designed in the Pleasant Valley Plan District area.

4. Develop transportation corridors and associated right-of-way widths for Green Street swales.

5. Create streets for people as well as cars.

6. Encourage alternative modes of transportation within the Springwater community.

7. Provide good connectivity and access to practical destinations.

8. Provide safe and convenient access to and from employment areas, including freight access.

9. Incorporate adequate public safety access.

10. Provide public transit options, such as bus, van, streetcar and/or light rail within the Springwater community and for east/west and north/south connections to the greater region.

11. Consider traffic impacts on surrounding rural areas and existing City of Gresham neighborhoods.

12. Provide pedestrian and bicycle connections within the Springwater community and to the greater region.

13. Plan roads to accommodate the movement of goods and services (truck traffic).

14. Consider environmental barriers and constraints.

15. Address existing transportation safety issues.

16. Identify and promote the quality and level of telecommunication services needed to serve the industrial and other uses in the Springwater Community.

17. Create a transportation system that enhances mobility, reliability, and convenient connections to regional destinations.

Action Measures

1. Continue to work with other regional stakeholders to identify and implement improved North/South connections which would provide access from Springwater to I-84 and I-205.

2. Implement recommended changes to the City's Transportation System Plan, and plan for funding requirements associated with transportation improvements.

3. Coordinate Springwater development with recommendations from the US 26 Access Study, and provide an implementation strategy that maximizes industrial development opportunities in Springwater.

4. Adopt a future street plan and street connectivity standards that meet regional and local connectivity requirements.

5. Work with TriMet to develop a plan for Springwater that provides connection to local regional centers, with service through the industrial areas and Village Center.

6. Complete a future CIP Joint Study with Multnomah County to evaluate Access Management Control along 282nd to lessen the impacts on this facility and retain its rural character.

7. Identify all arterial and collector projects that are not currently in the RTP and submit a project list for inclusion in a RTP amendment.

SYSTEM INVENTORY AND ASSESSMENT

Transportation Facility Identification and Classification

The study area for the Springwater transportation system extends beyond the boundary of the plan area by approximately one-half mile to include key arterial and collector streets within the current City of Gresham. This allows for consideration of changes to local street performance, and a more appropriate design of the interface between the new urban area and the existing city neighborhoods. The Reference Documents for the Springwater Community Plan include a detailed inventory of the Springwater transportation system.

The existing roadway network within the study area has mostly rural characteristics. The arterials are generally fast moving with most intersections either having no traffic control or two-way stop sign control. Based on current development patterns, the majority of trips from the study area will travel to the north and to the west. Highway 26 is the only major facility that traverses the study area. This highway connects Gresham with both Portland (to the west) and Sandy (to the southeast). The nearest major freeway facility in the area is Interstate 84, which travels east-west about 5 miles north of the study area.

The City's street functional classifications coordinate with classifications adopted by Multnomah County, Metro, and ODOT. Table 1 lists the functional classification definitions for the City. The Gresham Transportation System Plan contains additional detail regarding the functional street classifications. Based on this classification system, a number of facilities within or near the study area qualify as either arterials or principal arterials.

Table 1 – Street Functional Parameter Classification Definitions

Street Classification	*Volume*	*Design Speed*	*Travel Lanes*
Principal Arterial	35,000 to 60,000	45 to 55	4 to 6
Arterial	15,000 to 40,000	35 to 45	4
Boulevard	15,000 to 40,000	25 to 35	4
Collector	10,000 to 20,000	25 to 35	2
Community Street	3,500 to 10,000	25 to 35	2

Source: City of Gresham Transportation System Plan, 2002

Within the study area, Highway 26 carries high volumes of traffic at high speeds with two travel lanes in either direction. ODOT classifies the roadway as a Principal Arterial and Expressway with minimal side street access. To the north of the study area, Highway 26 slows as it enters the urban portion of Gresham, where it changes to a principal arterial facility through Gresham and into Portland with more frequent direct land access. At the north end of the study area, Highway 26 changes names and continues westward as Powell Boulevard. This facility (Powell Boulevard) has been transferred to the city. Metro classifies Highway 26 as a Rural Arterial south of Gresham City limits and as a Major Arterial within the City limits.

Table 2 presents ODOT historical traffic volume data on Highway 26 southeast of Powell Valley Road. This table shows a steady increase in traffic volumes along Highway 26 in the past ten years. Overall, a twenty percent increase exists in traffic volumes between 1993 and 2003, or about two percent per year on average.

Table 2 – Historical Traffic Volumes on Hwy 26, Southeast of Powell Valley Road

Year	Average Daily Traffic	Percent of ADT			Percent Annual Growth
		Max Day	Max Hour	30th Hour	
1993	32,408	124%	10.5%	9.7%	N/A
1994	33,641	122%	10.6%	9.7%	3.8
1995	34,413	123%	10.2%	9.6%	2.3
1996	35,755	121%	10.1%	9.5%	3.8
1997	36,258	124%	10.3%	9.6%	1.4
1998	36,275	124%	10.2%	9.5%	0.5
1999	36,677	125%	10.1%	9.5%	1.1
2000	37,168	124%	9.9%	9.4%	1.3
2001	37,504	125%	10.1%	9.3%	1.0
2002	38,790	125%	9.8%	9.2%	3.4

In addition to average daily traffic by year, ODOT has also provided average weekday traffic by month. Table 3 presents this information and illustrates that the summer months of June, July and August experience the highest average weekday traffic volumes. During the winter, only the month of December has slightly higher than average traffic volumes. The Springwater Transportation study uses traffic counts taken in November 2003, which is very close to the average month for the year.

Table 3 –Traffic Volumes (2002) by Month on Hwy 26, Southeast of Powell Valley Road

Month	Average Weekday Traffic	Percent of ADT
January	36,043	93
February	38,260	99
March	37,949	98
April	38,533	99
May	39,463	102
June	41,265	106
July	41,398	107
August	41,625	107
September	40,388	104
October	39,344	101
November	38,314	99
December	39,786	103

While Highway 26 is the only state facility within the study area, there are other important facilities that run either through or near the study area. The roles that each of these facilities play in providing access to and from the study area is described below.

Burnside Road runs generally from the northwest to the southeast within the City of Gresham. To the west of Gresham, Burnside Road continues all the way to Portland. At Powell Boulevard near the north end of the study area, Burnside Road changes names to Highway 26. Gresham classifies Burnside as a Principal Arterial and Metro classifies it as a Major Arterial. Daily volumes range from 27,000 west of Hogan Road to 38,000 within the study area (2000 data). Burnside Road is designated as a National Highway System (NHS) freight route between US 26 and I-84.

Hogan Drive/242^nd^ Avenue is a two to five lane roadway through the study area. To the north, Hogan Drive provides access to I-84 through Wood Village. Within the study area, it is classified as a Rural Arterial by Multnomah County. It is classified by Gresham as an Arterial in the study area and by Metro as a Minor Arterial (south of Palmquist Road). North of Palmquist Road Metro classifies it as a Principal Arterial and south of the study area it is classified as a Rural Arterial. Daily traffic volumes range from 28,000 north of Division Street to 12,000 south of Powell Boulevard (2000 data).

Orient Drive generally runs parallel to Highway 26 through the study area. It is classified by Multnomah County as a Major Arterial west of Elsa Street and as a Rural Arterial to the east. Gresham classifies it as an Arterial just north of the study area and Metro classifies it as a Rural Arterial in the study area. Daily volumes near US 26 observed at 11,000 vehicles in 2000. It also can service over-sized freight vehicles that cannot travel on US 26.

257th Drive/Kane Road runs north-south. The south end of the roadway begins near the study area and continues north through Troutdale to Interstate 84. Gresham classifies it as an Arterial and Metro classifies it as a Major Arterial. There is also a disconnected section of Kane Road in the study area classified as a Rural Collector by Multnomah County (described below).

282nd Avenue runs north-south in the study area as a Rural Collector. This roadway connects to the north to Troutdale. It is classified as a Community Street by Gresham and is not classified by Metro.

Palmblad Road/252nd runs north-south through the study area as a Rural Collector. It is classified as a Community Street by Gresham and is not classified by Metro.

Palmquist Road runs east-west along the very north edge of the study area, but is not classified by Multnomah County west of US 26. East of US 26, the newly constructed segment up to Orient Drive is designated by the county as a major arterial. It provides access between Powell Boulevard to the northwest and US 26 to the east. It is classified by Gresham as a Collector west of US 26 and as a Community Street east of US 26. Metro classifies it as a Collector of Regional Significance (between Regner Road and US 26).

Butler Road runs east-west in the west end of the study area as a Neighborhood Collector. The roadway provides access between Hogan Drive and 190th Avenue to the west into Pleasant Valley. It is classified by Gresham as a Collector and by Metro as a Collector of Regional Significance.

McNutt Road is a Rural Collector connecting 252nd Avenue with Kane Road. It is not classified by Gresham or Metro.

Kane Road is a Rural Collector that starts at McNutt Road and ends at the county line. It is not classified by Gresham or Metro.

Telford Road is a Rural Collector that runs from northwest to southeast through the study area. It is not classified by either Gresham or Metro, but will likely serve as a key route in the development of the Springwater area.

262nd Avenue is disconnected in the study area. The north portion (north of Highway 26) is a Rural Collector and becomes a Collector in Gresham (Barnes Road) and the south portion is a Rural Local. Within the study area, neither portion is classified by either Gresham or Metro.

267th Avenue is also disconnected in the study area, however, both portions are Rural Collectors. The north portion (north of Highway 26) becomes a Collector in Gresham, but neither portion is classified by either Gresham or Metro within the study area.

In understanding the classification and assessment of traffic facilities in the study area, it is important to note that the State of Oregon has different performance standards for the arterial networks than the City of Gresham. The State bases their standards on the volume-to-capacity ratio for the facility, while the City bases their standard on an intersection analysis, with LOS D being identified as the minimum preferred condition. For example, the intersection of Powell Boulevard/Burnside is approaching the city's minimum Level of Service (LOS) standard. The maximum volume-to-capacity ratio on Highway 26 for the study area ranges from 0.90 to 0.99.

Traffic Safety

Information on the crash history at intersections near the study area was provided by the City of Gresham. When taken as a whole, the total crashes at the study intersections increased from 171 in 2000 to 222 in 2002, while the number of injuries remained at approximately 125. Although there were no fatalities in either 2000 or 2002, the year 2001 saw two fatalities.

The collision rate analysis within the study area identified one intersection as a potential safety concern. The Orient Drive/257th Avenue/Palmquist Road intersection historically had higher than average crash rates. The recently completed street improvements for these intersections should reduce the propensity for crashes in the future. The only other location with a notable crash rate was at 242nd Avenue and Rugg

Road with 0.5 crashes per million entering vehicles. The crashes at this unsignalized, three-leg intersection are presumed to occur as vehicles make a left from a slow moving Rugg Road onto the fast moving 242nd Avenue.

Intersection Analysis

The intersection performance was evaluated at study area intersections that had known operational issues, or were expected to be key gateways for the community. The analysis followed the 2000 Highway Capacity Manual (HCM) methods for determining the Level of Service thresholds, and the volume-to-capacity ratios for each location. The LOS thresholds as defined in the 2000 HCM are listed in Table 4.

Table 4 – 2000 Highway Capacity Manual Thresholds

Level of Service	Control Delay per Vehicle (seconds)	
	Unsignalized	Signalized
A	<10	<10
B	>10 and <15	>10 and <20
C	>15 and <25	>20 and <35
D	>25 and <35	>35 and <55
E	>35 and <50	>55 and <80
F	>50	>80

Currently, all of the signalized intersections in the study area operate at an acceptable level of service (LOS D or better). This threshold is consistent with the City of Gresham and Multnomah County’s minimum accepted conditions during peak hours. The afternoon/evening peak hour condition at the Burnside Road intersection at Powell Boulevard is approaching the minimum acceptable threshold. Further growth within the study area or the general East Multnomah County region is likely to exceed the planned capacity at this location in the near future.

Three locations controlled by two-way stop signs operate at poor levels of service (LOS E or LOS F) for the minor street approaches. These locations are: Highway 26 at Stone Road, Highway 26 at 267th Avenue, and Orient Drive at 14th Street.

Freight Routes

In the vicinity of the study area, 242nd Avenue (to just south of Palmquist Road) and Orient Drive are classified by Metro as Road Connectors and Highway 26 is classified as a Main Roadway Route. There is also a proposed Road Connector linking 242nd Avenue to Highway 26 just north of the existing Gresham City limits. ODOT classifies only Highway 26 as a Statewide Highway in the study area. The current NHS freight route includes Highway 26, Burnside Road, and 181st Avenue to I-84. A secondary freight route is shown on 242nd Avenue between Burnside Road and Glisan Street, then heading west to 207th Avenue and then north to I-84.

ODOT has an automatic traffic recorder (ATR) station on Highway 26 just south of Powell Valley Road. Trucks account for 4.5 percent of the total average daily vehicle volume at that location, where trucks are defined as any vehicle greater than two axles or four wheels.

Bicycle and Pedestrian Network

Within the study area, there is one regional multi-use path (Springwater Trail) and one major roadway with a dedicated bicycle lane (on Highway 26) for both directions of travel. The Springwater Trail is paved and open to both bicyclists and pedestrians. Within the study area, the trail generally parallels Telford Road and provides a north-south connection between the county line and the City of Gresham. The dedicated bicycle lane runs through the study area along Highway 26 from the City of Sandy to the City of Gresham.

The combination of the multi-use bicycle and pedestrian path and dedicated bicycle lanes provides north-south access to and from the study area. However, the study area is lacking sufficient east-west connections. Two roads, Rugg Road and Stone Road, travel the length of the study area in the east-west direction. While Stone Road provides acceptable conditions for an experienced bicyclist, Rugg road is narrow with no striping, and therefore, it does not provide adequate safety for most bicyclists. Very few, if any of the roadways within the study area provide continuous sidewalks.

Transit Network

In the study area, there are few existing transit facilities. The Gresham Central transit center (located north of the study area) serves as the main transit center for the study area, at present. Only one TriMet route (Route 84) operates within the Springwater study area. It only briefly enters the northeast corner of the study area near the intersection of SE 282nd Avenue and Orient Drive. Route 84 operates between the Gresham Transit Center and the communities of Boring and Kelso.

The Gresham Central transit station has several additional fixed-route bus services and a light rail station. The bus routes that are most relevant to the study area include:

- Route 9, approximately 15-minute peak-hour headways between the Gresham Transit Center and Portland City Center
- Route 80, approximately 40-minute peak-hour headways between the Gresham Transit Center and Troutdale
- Route 81, approximately 40-minute peak-hour headways between the Gresham Transit Center and Troutdale
- Route 82, approximately 60-minute peak-hour headways between the Gresham Transit Center and the Rockwood Transit Center.

In addition, Sandy Area Metro (SAM) runs a bus with a 30-minute peak-hour headway and a 60-minute off-peak headway along Highway 26 between Sandy and the Gresham Transit Center. However, this service does not currently stop in the Springwater study area.

TRANSPORTATION SYSTEM ALTERNATIVES ANALYSIS

Transportation networks were developed for the three land use alternatives developed during the concept planning process[1]. The peak hour trips generated with full development of the Springwater area were estimated to range from 9,200 for Alternative A up to 10,800 vehicle trips for Alternative C. These estimates assumed nominal transit services for this area, and could be further reduced with improved transit services or travel demand management programs.

---

[1] The Concept Planning process and the three Concept Plan scenarios are described in more detail in the Springwater Community Plan Report Summary (Springwater Community Plan Volume I)

The general features of the initial circulation networks for the three scenarios included:

- Alternative A: A central grade-separated interchange on US 26, with two parallel highway overcrossings roughly collinear with Orient Drive-Butler Road and Rugg Road-Stone Road. The local street patterns maintained the north-south grid layout commonly observed in built neighborhoods to the north.
- Alternative B: Two at-grade connections on US 26, with one grade-separated overcrossing near Stone Road. The local street grid rotated 45 degrees to mirror the orientation of US 26.
- Alternative C: A northern grade-separated interchange on US 26, roughly collinear with Orient Drive, with a new connection along Telford Road to Hogan Drive. Two parallel highway overcrossings to US 26 were located further southeast.

These networks formed the basis for the model networks with the year 2025 travel forecasts. The nature of traffic controls for the at-grade intersection and ramp terminals was not specifically evaluated for each of the scenarios.

Future Traffic Forecasts

Metro’s regional 2025 travel demand forecast model (recently used for the RTP update) was determined to be the most appropriate model for this project. The Financially Constrained model scenario was adjusted to reflect the mid-level land use alternative for Springwater (Alternative B), and then Metro modeling staff re-ran the trip distribution model to update new travel patterns in the Springwater area. In addition, the model was refined to provide a greater level of street network detail in the Springwater area for a future base condition as well as the three conceptual street networks (with their associated land use patterns). The land use assumptions applied in the travel demand forecasts for Springwater are summarized for households (HH), retail employment (RET) and other employment (OTH), as shown in Table 5.

Table 5: Springwater Land Use Assumptions for Travel Forecasts

Transportation Analysis Zone	Households	Retail Employment	Other Employment
542	81	0	9
662	19	0	0
663	19	0	144
690	0	0	1,870
691	0	0	608
1300	70	0	0
1301	175	0	0
1302	334	0	0
1303	386	128	1,669
1304	510	109	415
1305	144	0	681
1306	0	0	2,544
1307	0	0	324
1308	0	0	1,431
1309	0	0	376
1310	0	0	751
1311	0	0	233
1312	0	89	1,602
1313	0	0	1,385
1314	0	0	1,121
1315	5	0	374
1316	61	0	8
1317	272	69	897
1318	41	0	0
Totals	2,115	395	16,443

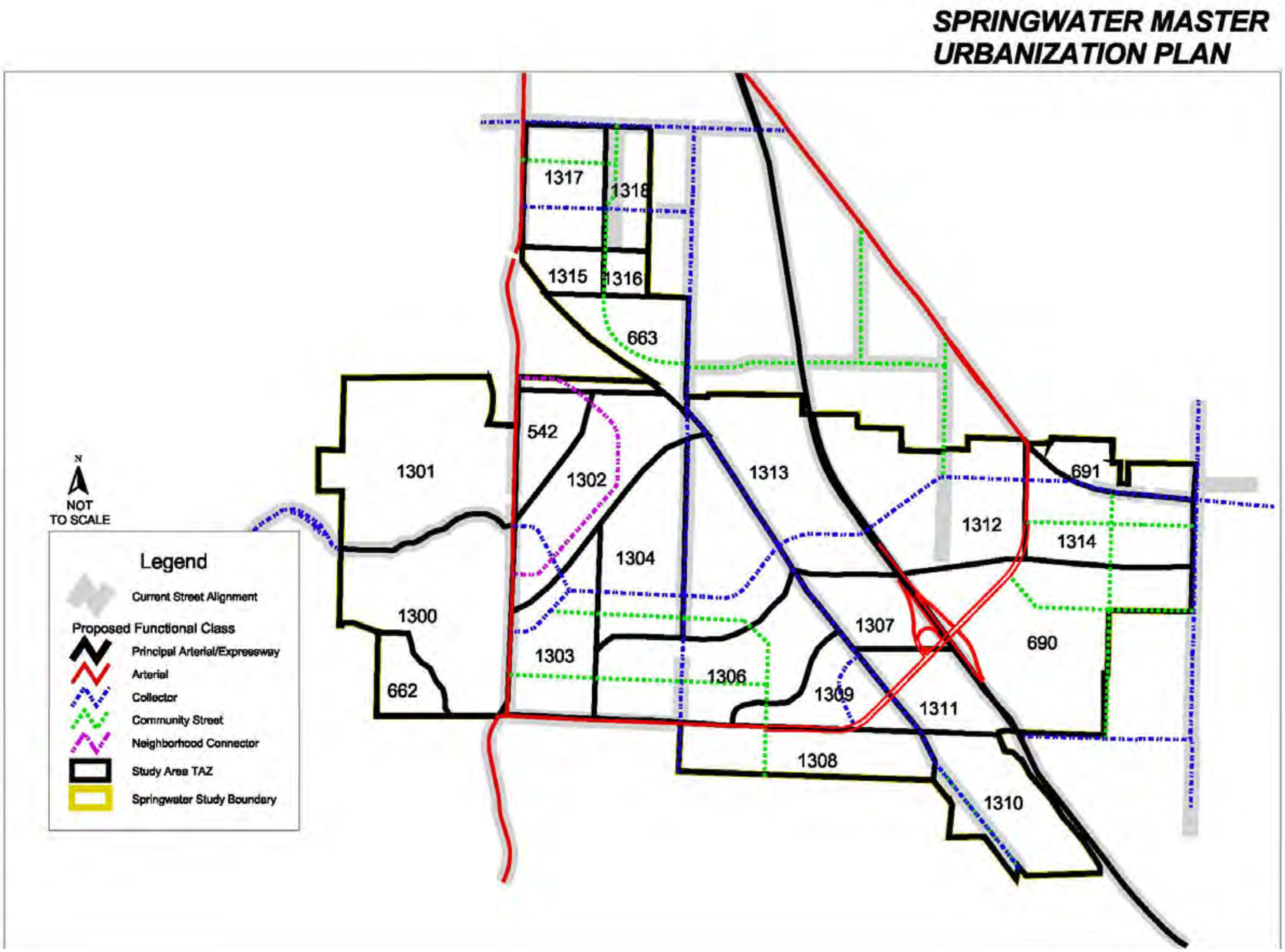


Figure 1. Springwater Transportation Analysis Zones (TAZ)

The 2025 travel forecasts showed significantly different travel patterns than is currently typical for this area of Gresham, primarily because of future employment centers in Springwater and in Damascus to the south in Clackamas County. The model analysis found a significant proportion (about two-thirds) of Springwater traffic traveling to and from areas south of the county line (including southeast and southwest) versus about one-third to and from the north. Model volumes were "post-processed" to develop intersection turn movement volumes for each of the alternatives.

Alternative Comparison

The three land use and circulation alternatives were compared based on expected vehicle trip generation, system capacity analysis, preliminary cost estimates for street improvements and general observations.

A further refinement was made in the estimation of trip generation to account for the effects of truck traffic within Springwater. Truck trips were determined using data obtained from studies conducted by Caltrans in the 1980's. Truck trips were calculated as a percentage of total trips by ITE land use category. Truck activity ranged from a low of 1 percent for office uses up to 13 percent for warehousing and distribution centers. Table 6 summarizes the number of truck trips estimated for each scenario. While truck trips vary by up to 65 percent between scenarios, this represents a difference of less than 200 evening peak hour trips.

Table 6: Relative Peak Hour Vehicle Trip Comparison Between Scenarios

Scenario	Base Trips	Truck Trips	Length Adjusted Trips
A	9,254	466	9,496
B	9,950	399	10,180
C	10,723	279	10,954

Length adjusted trips are intended to account for the fact that trip length varies by land use type. For example, work related trips are typically longer than school and shopping trips. Trip length factors derived from the *National Personal Transportation Survey* were applied to estimated trip generation by land use category. Residential trips formed the baseline trip length, with work, shopping and other trips assigned factors relative to those trips. Length adjusted trips do not vary significantly, in relative proportion, to base trips. Therefore, this adjustment does little to clarify the differences between scenarios.

Intersection level of service was calculated at study intersections using Highway Capacity Manual methodology[2]. In addition, the general system performance of the major arterials and highways were reviewed for each road segment within the study area. The cumulative effects of planned growth through East Multnomah and Clackamas County (including Springwater, Damascus, Boring, and Pleasant Valley) are reflected in the system impacts described below. Key highlights of the level of service analysis and system review include the following:

- The off-site intersections along Hogan Drive and Burnside Road between Division and Palmquist fail for all three alternatives. Major system improvements are needed in this area (corridor and/or intersection level) regardless of the alternative selected for Springwater.
- Several intersections fail along Hogan Drive between Division Street and the Springwater study area in each alternative. The intersection of Butler/Hogan is better (LOS E) in Alternative A than in the other alternatives.

[2] *Highway Capacity Manual*, 2000, Operations Method.

- Several intersections fail along US 26 (outside of the Springwater area) regardless of the alternative.
- Alternative B does not include an interchange with US 26 in the Springwater study area, but does include two at-grade intersections. Preliminary analysis indicates that these intersections would theoretically work acceptably, either as at-grade signalized intersections or as roundabouts, but only with three through travel lanes on US 26. Three-lane roundabouts are very rare (some can be found on the east coast and in Europe) and are not practical or feasible for this location. Additional turns lanes would also be required at both intersections, even with additional travel lanes on US 26.
- Hogan (as three lanes) operates over capacity within the study area for each of the alternatives. A five-lane section will be needed on Hogan Drive within the study area, possibly extending as far south as ORE 212. This type of improvement is already in the long-range plans adopted by the Gresham and Multnomah County. Further south, Clackamas County has programmed improvements three lanes for Hogan Drive, but, as part of the Damascus Community Plan development, is re-evaluating those needs, and they are expected to show need for a five-lane street section.
- US 26 operates the best under Alternative A within the study area. Under Alternative A US 26 does not exceed capacity for any link to the study area. Under Alternatives B and C, US 26 does exceed capacity on some links.
- All north-south routes, with the exception of 257th Avenue are approaching or exceeding their capacity between I-84 and Powell Boulevard for most or all of their southbound links.
- East-west routes generally operate within planned capacity throughout the Gresham/East County area.

Preliminary, planning level cost estimates were developed for each alternative for arterial and collector roadways within the study area. All arterials and collectors were assumed to be three-lanes wide with a 74 foot right-of-way, with the exception of Hogan Drive, which was assumed to be five-lanes wide with a 100 foot right-of-way. Subsequent to the alternatives analysis, the appropriate street cross-sections were determined to best service the plan area, and this included several arterial sections with more than three lanes. These right of way widths and associated roadway costs include Green Street swales where appropriate. Roadways within and along the periphery of the Springwater Study Area were included in the cost estimates. Table 7 summarizes the costs for each alternative.

Table 7: Preliminary Arterial/Collector Roadway Costs by Alternative (in Millions)

Functional Classification	Alternative A	Alternative B	Alternative C
Arterial	$46.3	$43.8	$40.6
Collector	$49.4	$50.0	$48.0
Interchange/Overcrossing/Roundabout	$20.0	$4.5	$20.0
Total	$115.7	$98.3	$108.6

Alternative B appeared to be the least expensive, but the cost differences were within the margin of error for typical planning-level costs. Alternative B is less expensive, primarily because no interchanges are included in that alternative and the costs of widening US 26 to three lanes are not included in these cost estimates. Also, additional considerations will need to be addressed including the need and/or desire to limit access to US 26 since Alternative B requires at-grade access.

Based on the previous analysis of the alternatives, it was determined that none of the alternatives was clearly superior in terms of the relative impacts to the regional transportation system, or the extents and functionality of the on-site circulation system. Therefore, it was recommended that a hybrid circulation system be developed to support the preferred land use plan that incorporates the best parts of the circulation alternatives. Some general observations that were considered in formulating the preferred alternative circulation system include:

- Alternative A provides only one east-west arterial, while Alternatives B and C each provide two. Typically arterials are spaced at approximately one-mile intervals. The core portion of the Springwater study area is about one-mile in the north-south direction and about 2 ½ miles in the east-west direction. Either one or two east-west arterials could function adequately, given the density and location of development within Springwater.
- Alternative C locates the interchange with US 26 toward to the north end of Springwater, providing highway access closer to the urban area where demand is anticipated. Alternative A provides US 26 interchange access centrally located to Springwater, but does not functionally serve urban development further north.
- Alternative B does not include interchange access with US 26, thereby slowing traffic (e.g., roundabouts) or stopping traffic (e.g., traffic signals) on US 26 as it heads south out of the study area.
- Regardless of the alternative, additional capacity is needed for north-south travel through Gresham and East County, either in the form of widening existing facilities (i.e., US 26) or by providing additional capacity through access control and/or new routes.
- Since so much traffic is traveling to and from the south, additional inter-regional capacity is needed between Springwater and areas south (i.e. Damascus-Boring).

RECOMMENDED TRANSPORTATION SYSTEM PLAN

Motor Vehicle Plan

The motor vehicle plan for Springwater connects employment and residential neighborhoods to the regional arterial and highway facilities to provide safe and convenient access for future residents and workers. The existing arterial facilities such as Palmquist Road, Orient Drive, and 242nd Avenue form the framework for travel around and through this area. A new arterial is recommended to provide east-west circulation within the community, and to provide access to US 26.

The new arterial route begins along existing Orient Drive, then bends south to form a new four-way intersection within Springwater. This functional change will help to reduce travel speeds on Orient Drive to be more compatible with existing residential uses. A new arterial would continue south then southwesterly across US 26 to connect to Rugg Road and 242nd Avenue. This new arterial route is expected to be the primary link for employment circulation within Springwater, and it is also expected to serve regional traffic for connections to and from US 26. The other new arterial crosses US 26 to the north, and connects to Telford Road and the middle of the Village Center area west of 252nd Avenue.

The new residential neighborhoods east of 242nd Avenue include the Village Center area opposite to Butler Road. This area will be served by a series of collector streets and one neighborhood connector, as shown in Figure 1. The looping neighborhood connector alignment reduces the number of stream crossings, and still provides convenient connections from the residential neighborhoods to 242nd Avenue and the Village Center. The proposed functional classifications are consistent with the adopted Gresham Transportation System Plan. The exception is the designated Neighborhood Connector route, which has the same design profile as a Community Street, but allows for future traffic calming measures to be deployed, as the need arises.

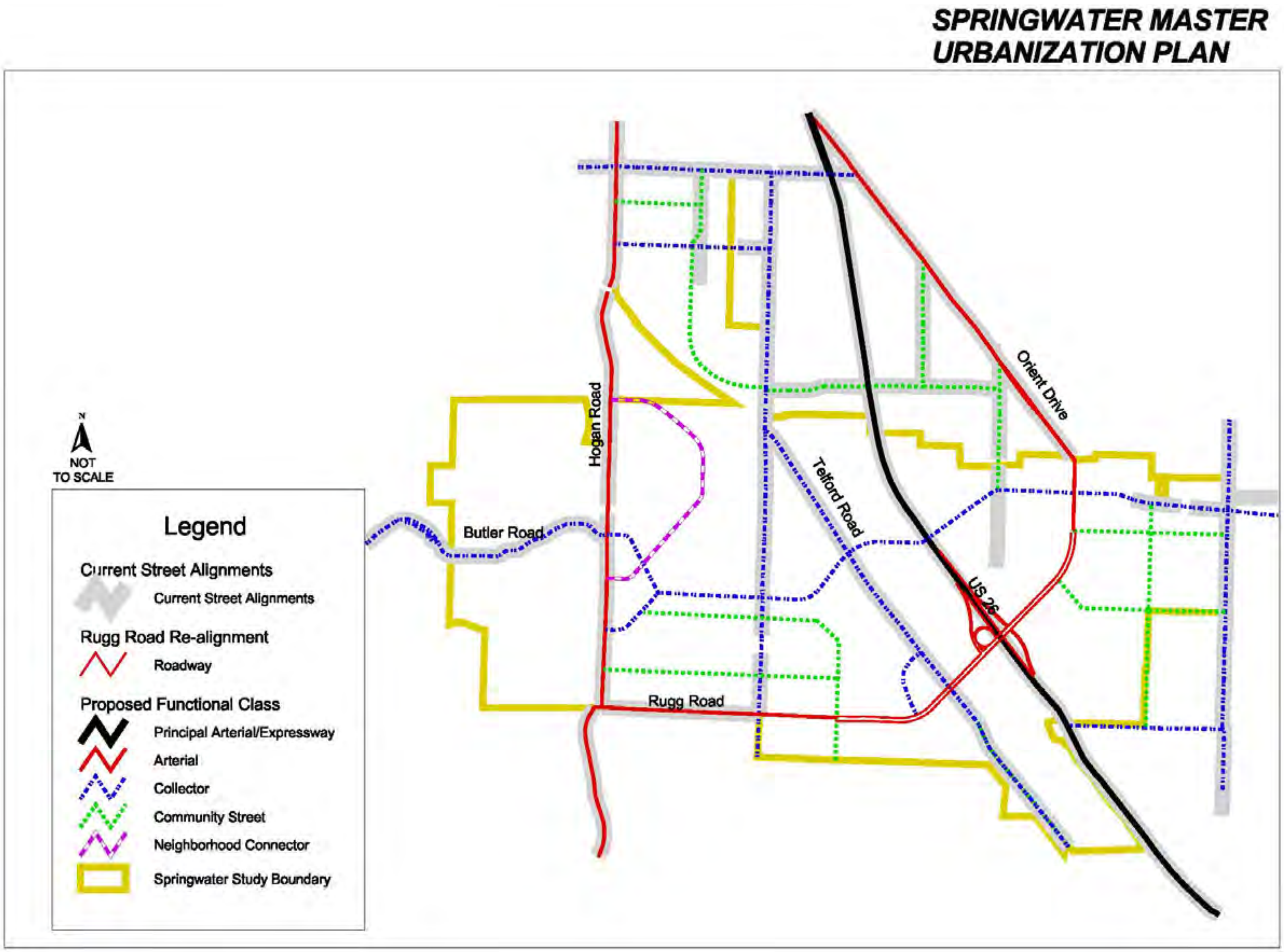


Figure 2 – Proposed Functional Classifications

Transit Plan

Current transit plans do not extend to the Springwater community, and any new service will require an amendment to the existing TriMet and Metro transit plans for this area. In order to provide convenient access to most of the employment and residential areas internal and external to the Springwater expansion area, three transit routes have been identified. Each of these routes will offer a different level of service to transit riders based on the City of Gresham's transit typology.

Primary routes serve as regional trunk lines and provide high quality transit service between community and employment centers and the rest of the region. A priority within this corridor is to ensure adequate and convenient pedestrian and bicycle access to stops and transit preferential treatments such as signal preemption, bus shelters and curb extensions. This route should provide 10-15 minute service between transit vehicles during peak traffic hours and no less than 30 minutes between transit vehicles during non-peak times. The primary route proposed with the Springwater plan travels north/south via Hogan Road/242nd Avenue and will connect the Springwater study area with the MAX light rail line, Mt. Hood Community College and other transit opportunities in Gresham to the north, and the Damascus-Boring area to the south. Depending on ridership levels and transit funding in the region, this corridor is a likely candidate for future high capacity transit services.

Higher capacity transit services could increase the attractiveness of using public transit for Springwater residents and employees. This type of service would be provided by combinations of larger vehicles, less time between vehicles, and higher travel speeds that could make the transit trip more competitive with the conventional automobile trip. The higher capacity transit services could include bus rapid transit, a separated bus way, or street car facilities. Each of these types of services would have specific needs for expanded stations and platforms compared to fixed-route bus service. They also have higher priority for right-of-way at arterial intersections to reduce travel delays and maintain schedule reliability.

Secondary routes connect higher-density neighborhoods to light rail, primary transit routes, and centers. These routes are typically shorter in length than primary routes and are designed to serve mainly Gresham and the rest of east Multnomah County. Peak hour traffic service should be 10-15 minutes between transit vehicles and off-peak service should be between 30-60 minutes between transit vehicles. The proposed Springwater secondary route will provide a loop pattern around the study area, traveling on Kane Road, Orient Drive, Rugg Road and terminating in the Village Center.

The third layer of service, neighborhood circulation, provides local service connections between lower-density neighborhoods, employment centers and higher-frequency transit routes. These routes may be serviced by shuttle buses or vans and may include paratransit. Paratransit service enhances access to the regular fixed bus routes by serving residences and businesses within 3/4 – mile from the existing designated route. Peak hour traffic service should be 15-30 minutes between transit vehicles and off-peak 30-60 minutes between transit vehicles. The neighborhood circulation route proposed for Springwater will bisect the study area by traveling along Butler Road to Pleasant Valley and other points west of the study area including Foster Road. Extending this service across US 26 into the rural eastern section of the study area will provide more coverage within Springwater with a minimum service investment. Existing fixed route bus service in this area is provided by Route 84, which also provides services in the rural lands east of 282nd Avenue. TriMet may modify the services provided by this existing route as new routes are provided within the Springwater area. Any route modifications will be subject to further study be TriMet.

Proposed transit routes are shown in Figure 3. In addition to the proposed routes described above, Sandy Transit currently offers and express bus service along US 26 with 30-60 minute frequency during the weekday. This service does not currently have any local stops, but could possibly be amended to allow for local stops and circulation in Springwater in the future.

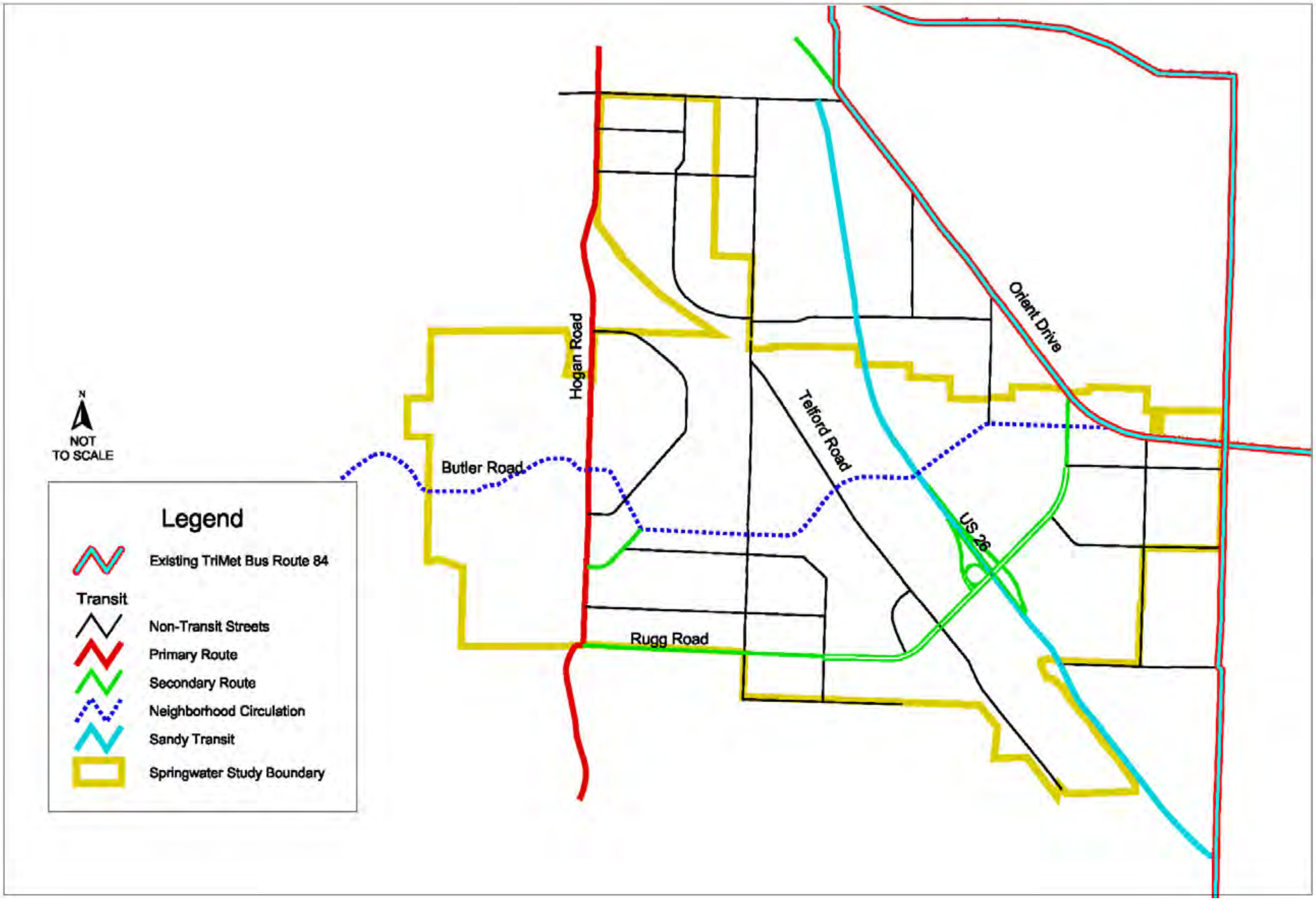


Figure 3 – Proposed Transit Routes

Bicycle and Pedestrian Plan

The design for non-motor vehicle travel shares all the Springwater roadways, and uses specific off-street facilities for exclusive connections to the many greenways, open spaces and a regional trail system. The proposed Bicycle and Pedestrian Plan, illustrated in Figure 4, shows the arterial and collector system within Springwater, and one alternative for the trail system. The final trail alignment east of US 26 has not been selected. Two trail options – one adjacent to streets and one adjacent to streams – are show in more detail in the Public Facilities Plan and will undergo further evaluation by the City. The costs for off-street trails adjacent to streets have been included within the Parks Master Plan for Springwater, and they are not specifically identified within this TSP. If the recommended trail alignment includes trails along multiple stream corridors east of US 26, the cost of the trail improvements may change from the costs identified in the Public Facilities Plan.

Figures 5a and 5b show typical cross sections for different street types in Springwater. All of the community streets, collector streets and arterials within the plan have provisions for either on-street bicycle lane facilities, or parallel off-street trails that provide bicycle riders a convenient route to various destinations. As in Pleasant Valley, all streets also have provisions for Green Street swales, with the exception of the streets that are anticipated for use in commercial office areas with high turnover of on-street parking. Figure 5b shows swale medians on regional facilities, however swales could also be located adjacent to sidewalks depending on the specific needs of the adjacent properties. Additional details regarding the bicycle and pedestrian trail system are provided in the Public Facility Plan and Master Plan for Parks, Trails, and Open Space. Similarly, all of the streets within Springwater include sidewalks, either curb tight (for local streets) or separated from the roadway by planter strips The design of street spacing within the residential areas corresponds with the regional spacing requirements in the RTP under Title 6.

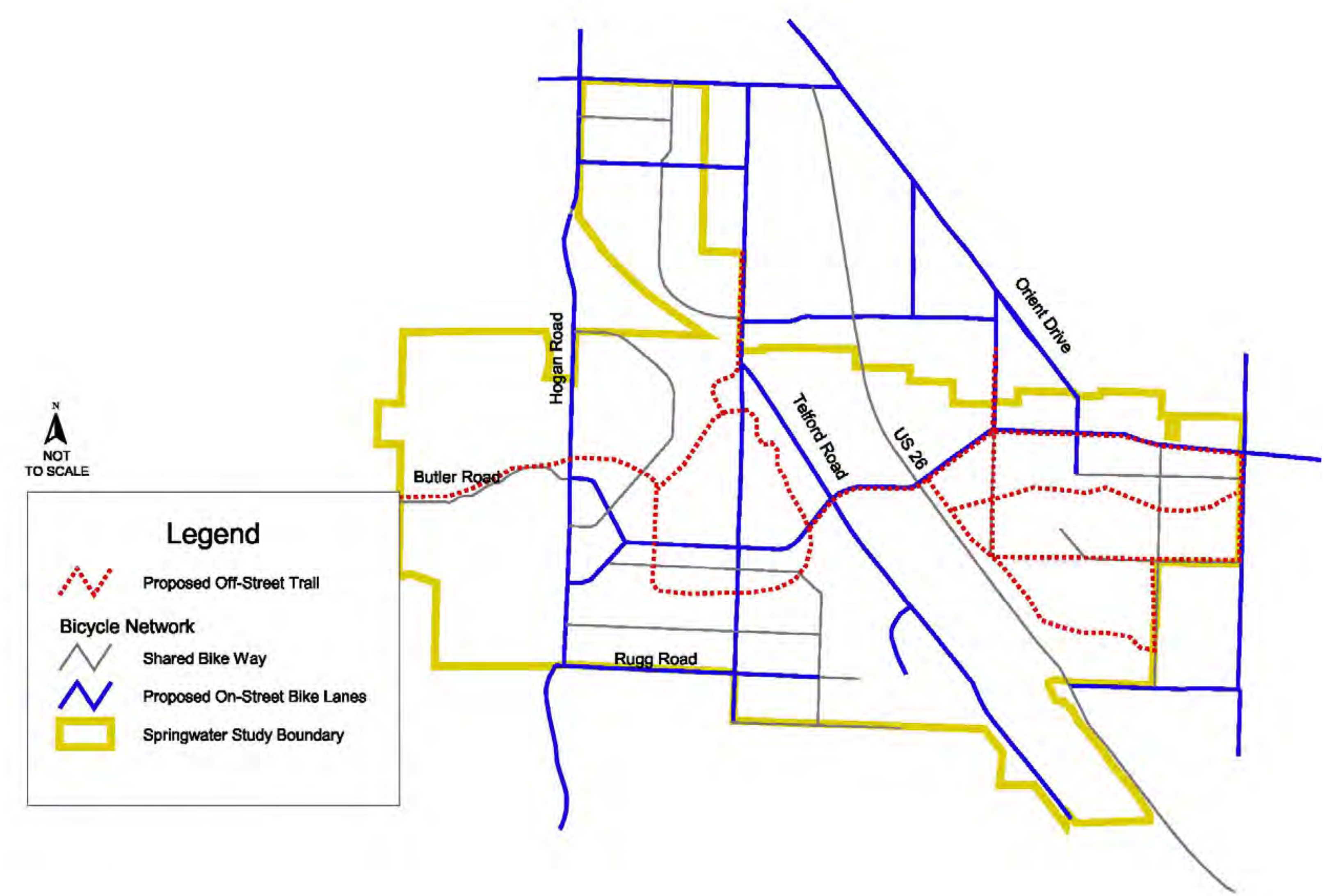
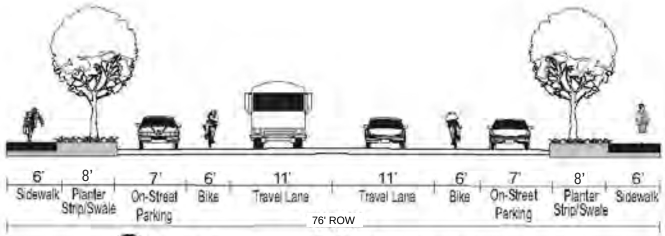
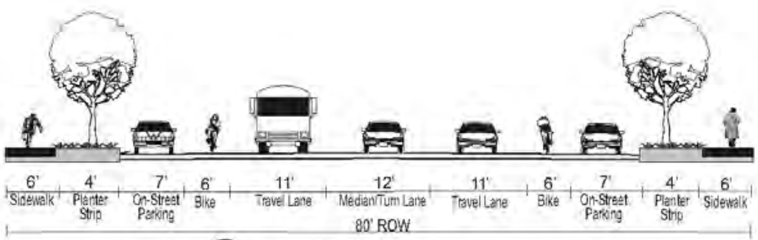


Figure 4 – Proposed Bicycle and Pedestrian Plan



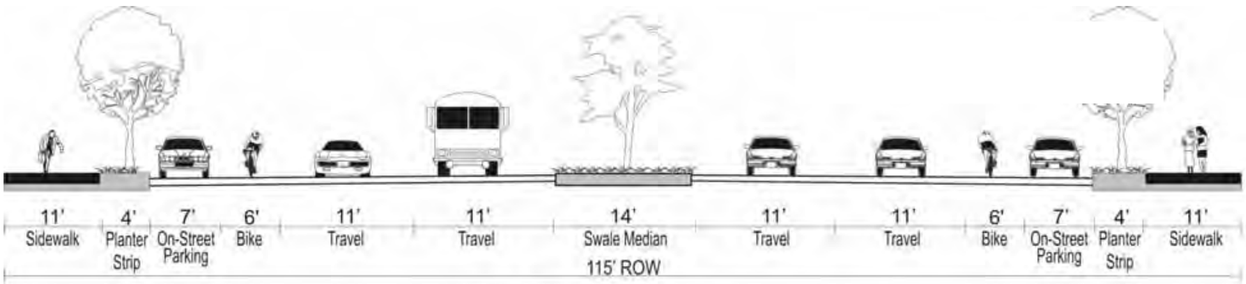
1 Community Street/ Neighborhood Connector



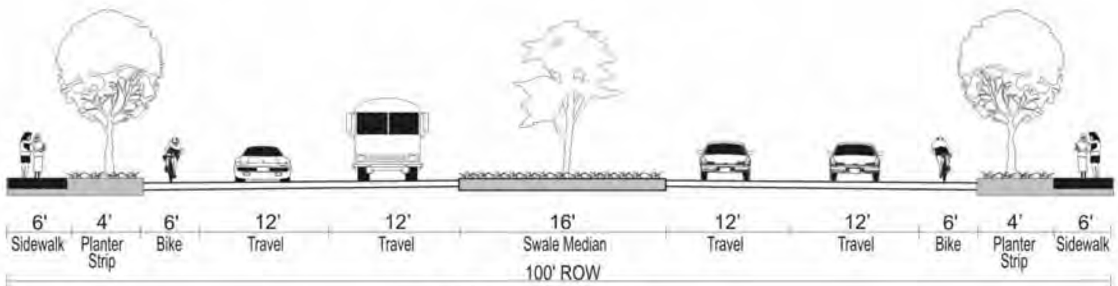
2 Collector

	R/W	Bike	Sidewalk	On-Street Parking	Swale Included	Travel Lanes	Median
1	70'	✓	✓	✓	✓	2	
2	80'	✓	✓	✓		2	✓

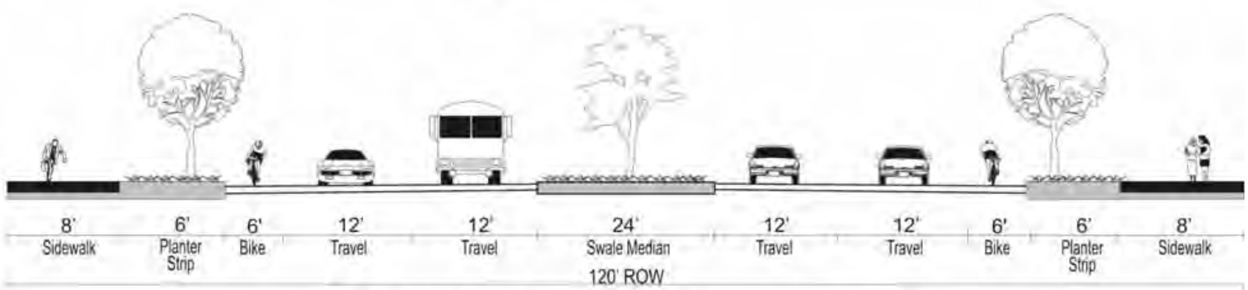
Figure 5a. Springwater Street Cross Sections



❸ Boulevard



❹ Arterial



❺ Principal Arterial/Expressway *

	R/W	Bike	Sidewalk	On-Street Parking	Swale Included	Travel Lanes	Median
❸	115'	✓	✓	✓	✓	4	✓
❹	100'	✓	✓		✓	4	✓
❺	120'	✓	✓		✓	4	✓

*** Expressway cross section will be based on the Oregon Department of Transportation's Highway Design Manual.**

Figure 5b. Springwater Street Cross Sections

Freight Master Plan

To accommodate planned vehicle movement through Springwater, the Gresham's TSP and the Regional Transportation Plan should be amended to delete the planned connection between Hogan Drive and US 26 that was originally envisioned as part of the Mt. Hood Parkway project. In addition, the planned designation of this route as a freight route should be amended to terminate at Powell Boulevard. This segment represented the most southern portion of the planned 242nd Avenue freight route from US 26 and I-84 in conjunction with the County's 242nd Avenue extension project to I-84 to provide an alternative freight route between US 26 and I-84. That project has been suspended, and the roadway connection within this study area is not included in the Springwater Concept Plan. The remaining segments of the 242nd freight route, from Burnside Road to Glisan Street, will continue to provide service to the I-84 interchange at 207th Avenue. On-going studies in Clackamas County may recommend amending the freight route designation for 242nd Avenue south of the city limits to Highway 212.

In addition to the regional freight route services, the street system within Springwater has been developed to provide convenient freight vehicle movements to local destinations. Local freight travel is best facilitated by adhering to appropriate functional class street cross-sections, appropriate curb radii at intersections and driveways, public street and access spacing standards, efficient traffic control plans, and by maintaining adequate service levels during peak travel hours of the day. The primary freight routes for local service will be provided to and from US 26 at the planned interchange near 252nd Avenue, then distributed to local destinations via arterials and collector streets. These elements have been incorporated into the Springwater Community plan.

Other Travel Modes

Airport
There is no airport or airfield within the study area. The closest airport activity is the Troutdale Airport, which provides general aviation services, but no commercial airline carrier services.

Rail
There is no freight or passenger rail facilities within the planning area. The Springwater Trail is located on a former freight line right-of-way, but there is no active freight services within this corridor.

Pipeline
There is one high-pressure gas line within the study area along Hogan Drive – 242nd Avenue corridor. Appropriate setbacks from the gas line and construction activity around it should be maintained. Refer to the Gresham TSP for details on the high-pressure gas line, and the planned water service line from the Bull Run reservoir.

IMPLEMENTATION PLAN

The Springwater area has several key implementation issues associated with incorporating the Springwater Plan into the City of Gresham plans and ordinances, staging infrastructure improvements to US 26, and linking to existing County and State roadway facilities. To resolve these issues, as part of the adoption phase of the Springwater Community Plan efforts, the City's transportation system plan will need to be amended to include:

- Recommended changes to the street functional class map
- Recommended street cross-sections for the Springwater area
- Recommended amendments to the transportation plans for each travel mode (motor vehicle, transit, bicycle, pedestrian)

- Funding program needs for the City of Gresham and the addition of transportation improvements to the project list..

These elements are described in more detail later in this TSP.

New or modified street connections to County facilities (e.g., 242nd Avenue, 282nd Avenue) will require compliance with appropriate spacing and design standards. One specific consideration for streets on the Urban Growth Boundary edge, especially 282nd Avenue, is that urban improvements will be built on the Springwater site only. The rural edge of these street facilities will be left intact on the side fronting the rural protect lands.

US26 Improvements

This section summarizes findings from the Springwater US 26 Concept Design and Access Study prepared under a separate planning document (included in the Reference Documents). The study focused on alternative access concepts to US 26 to support Springwater as it develops over the next twenty years. The development assumptions and travel forecasting process was coordinated with the Master Plan development process so that the same assumptions and methods were applied for both studies. The 2025 travel forecasts were made using the same Metro model that was applied for Springwater. More detail was provided to describe the various network alternatives used in this study, but, overall, the same base model was applied. A wide range of alternative highway connections were investigated for Springwater, including at-grade intersections controlled by traffic signals, and several variations of grade separated interchanges. The alternatives were developed with consideration of applicable mobility, safety and design standards that are adopted by ODOT and the City of Gresham. One of the critical elements of this concept design process considered the minimum spacing between adjacent traffic signals or interchanges and the proximity to major environmental constraints , so that the proposed alternatives were consistent with standards, and generally considered feasible to construct. The concept design alternatives were evaluated using 2025 traffic conditions to assess how successful they performed relative to the applicable automobile and freight mobility standards. A comparative matrix evaluation showed the relative merits and impacts for each alternative, in terms of compliance with standards, performance and potential impacts to the environment.

The recommended plan alternative for Springwater was a new US 26 interchange at the southern arterial, which connects to Rugg Road on the west and Orient Drive on the east. Prior to the construction of the interchange, the necessary environmental reviews, facilities design and approval and project funding need to be completed. The initial concept design will be further refined to address any identified impacts or issues identified through these further studies. Interim steps for access and circulation to and from US 26 in the Springwater area were identified in the following phases. Where appropriate, potential thresholds for development triggers in Springwater have been identified, however, a specific evaluation will be required at the time of development application to confirm the need and timing of interim improvements.

POTENTIAL US 26 CORRIDOR CONSTRUCTION PHASING

The potential construction phasing of improvements to the US 26 corridor and Springwater roadway network must support the transportation demand as the Springwater community develops. In general the US 26 corridor will be developed from north to south and will tentatively utilize Proposed Collector A as a temporary connection to US 26 until the transportation demand supports building the Proposed Arterial B interchange as the permanent connection to US 26. Figure 5-6 illustrates the following potential construction phasing for the recommended US 26 corridor concept that is described in more detail in this section:

- Phase 1A: Stop Control at Proposed Collector A

- Phase 1B: Traffic Signal at Proposed Collector A
- Phase 2A: Build Proposed Arterial B Interchange
- Phase 2B: Build Proposed Collector A Overcrossing

The phasing of access improvements to US 26 will need to be addressed at a higher level of detail in the NEPA process and preliminary engineering. This additional analysis may lead to changes in the phasing shown in this report.

Phase 1A: Stop Control at Proposed Collector A
Phase 1A includes the following potential construction elements:

- Construct Proposed Collector A, including a bridge over Johnson Creek, as an at-grade intersection with US 26 just south of the wide median on US 26. This also includes an at grade intersection with Telford Road and the Springwater Trail.
- Install stop signs on the Proposed Collector A approaches to the US 26/Proposed Collector A intersection. Use the lane configuration illustrated in Figure 5-6, which includes one dedicated left and right turn lane and two through lanes on both US 26 approaches as well as one dedicated left turn lane and one shared through/right lane on both Proposed Collector A approaches. An additional dedicated left turn lane and through lane should be added to both Proposed Collector A approaches for the installation of a traffic signal (see Phase 1B) since this geometry will maximize the life span of the intersection.
- Install underground electrical conduit to accommodate the installation of a traffic signal at the US 26/Proposed Collector A intersection (see Phase 1B).
- Close the US 26/267th Avenue intersection upon the completion of the US 26/Proposed Collector A intersection.
- Keep the US 26/Hillyard Road and US 26/Stone Road intersections open.

Phase 1B: Traffic Signal at Proposed Collector A
Phase 1B includes the following potential construction elements:

- Construct a traffic signal at the US 26/Proposed Collector A intersection. Maintain the lane geometry constructed during Phase 1A and open the additional dedicated left turn lane and through lane on both Proposed Collector A approaches.
- Construct visual indicators on US 26 to cue motorists to the presence of a traffic signal. Specific design elements will be determined by ODOT during the design of the traffic signal and may include vertical elements such as raised curbs and roadway illumination that provide a more urban feel.
- Keep the US 26/Hillyard Road and US 26/Stone Road intersections open.

Phase 2A: Build Proposed Arterial B Interchange
Phase 2A includes the following potential construction elements:

- Construct Proposed Arterial B and the interchange at US 26. This also includes grade-separation at Telford Road and the Springwater Trail and a bridge at Johnson Creek. Install traffic signals at the ramp terminals if they are warranted within three years of the interchange completion. Install stop signs at the ramp terminals if traffic signals are not warranted.
- Keep the US 26/Stone Road intersection open during construction of the interchange for as long as feasible.
- Keep the US 26/Hillyard Road intersection open during this phase.
- Maintain the traffic signal at the US 26/Proposed Collector A intersection.

Phase 2B: Build Proposed Collector A Overpass

Phase 2B includes the following potential construction elements:

- Close the US 26/Proposed Collector A, US 26/Hillyard Road, and US 26/Stone Road intersections at the completion of Phase 2A. These intersections will no longer meet access spacing standards once the interchange is operational.
- Remove the traffic signal at US 26/Proposed Collector A.
- Realign southbound US 26 at the north end of Springwater to reduce the median separation between southbound and northbound US 26 to 16 feet, which is the current ODOT standard for US 26. By saving this realignment until the last phase it provides more flexibility for detours, lane closures, or construction staging during the earlier phases.
- Construct the Proposed Collector A overcrossing at US 26.

It will be important for development to recognize the shift in access over time within Springwater. During the early years, primary access will be to and from the northern Collector; however, eventually, this connection to US 26 will be close (Phase 3), and these circulation replaced by the new interchange located at the southern Arterial.

Amendment to Street Functional Class Map and Plan Designations

The city street designations in the Gresham Transportation System Plan were applied to the Springwater Master Plan area. The street design type designations and cross-section elements were taken from the Pleasant Valley Plan area, since it is the most recent new development that incorporates Green Street components into new street designs. The proposed Street Functional Class Plan for the Springwater Master Plan area was illustrated in Figure 1.

The key arterial connections for Springwater include US 26, 242nd Avenue, Orient Drive, Kane Road and Rugg Road. The existing alignment of Orient Drive changes to create a new four-way intersection just east of 267th Avenue. This change is intended to separate urban travel to and from the US 26 connections versus rural travel between destinations in rural East County areas. Other aspects of the proposed functional class plan include:

- Orient Drive changes designations from arterial to collector at the new four-way junction.
- Two crossings to US 26 are shown; one is a collector facility and the other is an arterial facility. The north collector changes to a collector after crossing Telford Road, and then continues westerly through the proposed Village Center to its terminus at 242nd Avenue. The southerly crossing to US 26 connects Rugg Road to new Orient Drive junction.
- A neighborhood connector route is shown as a loop road east of 242nd Avenue north of Butler Road through the residential neighborhood.
- Hillyard Road is upgraded to a Community Street between 262nd Avenue and Anderson Road (267th Avenue). This change is recommended because SE 262nd Street is not extended as a full street into the Springwater Master Plan area, because it is too close to the northerly US 26 crossing for a standard intersection. Therefore, the designation of 262nd Street south of Hillyard Road would be changed to local street within the city limits.

Street Cross-sections

Figures 5a and 5b illustrated the street cross-sections for these facilities The illustration shows the right-of-way requirements, and the composition of street elements included within each profile. The cross-sections essentially are the same as shown in the city Transportation System Plan with two amendments. The section have been modified to explicitly allow drainage swales in addition to conventional storm water drainage. Also, a new designation has been added for Neighborhood Connector, which is the same size as a standard Community Street, but it allows for traffic calming measures, as appropriate. All of the streets are expected to provide on-street bicycle facilities and adjoining sidewalks, however, others may also include on-street parking, center medians, or green street swale areas. Outside of the Village Center area, where on-street parking activity is high, it is appropriate and possible to have swales alongside the street curbs. For cases where off-street trails are indicated on the Local Street Connectivity Plan (see Figure 7), the need for on-street bicycle facilities is optional.

Amendment to Street Project List

The Gresham TSP identifies long-range improvement projects that are expected to be built and operational within the plan year period to serve planned growth. New or modified streets within the Springwater area are identified for additions to this list. The street projects are labeled by segment number on Figure 6, and summarized in Table 8 below. The functional class identifies the type of street cross-section that is to be constructed for each of the roadways. The street cross-sections are adapted from the Pleasant Valley plan area, since they incorporate Green Street elements that help to reduce the stormwater runoff.

The total estimated cost for all arterial, collector, and community street improvements is $165.5 million. A portion of this total cost would be built as development occurs through exactions of property and frontage road improvement requirements. The community streets needs represent approximately $50 million of the above total. New or upgraded bridges represent approximately $29 million of the total. All of these projects would be funded and constructed by either the City of Gresham or local development as growth occurs.

Table 8: Springwater Street Projects

New Roads									
Num	***Street***	***From***	***To***	***Functional Class***	***Lanes***	***Length***	***Cost***	***Bridge***	***Bridge Cost***
1	Rugg Road Ext.	Orient Drive	US 26	Arterial	4	3,100'	$9,116,000	1	$3,040,000
2	Rugg Road Ext.	US 26	252nd Avenue	Arterial	4	4,500'	$20,385,000	3	$10,080,000
3	Rugg Road	252nd Avenue	242nd Avenue	Arterial	4	2,700'	$6,183,000		$0
4	4	242nd Avenue	252nd Avenue	Collector	2	2,600'	$4,108,000		$0
5	252nd Avenue	Palmquist Road	10	Collector	2	7,200'	$11,376,000		$0
6	252nd Avenue	10	Rugg Road	Collector	2	1,900'	$3,002,000		$0
7	7	242nd Avenue	9	Collector	2	1,400'	$4,532,000	1	$2,320,000
8	8	242nd Avenue	9	Collector	2	1,100'	$1,892,000		$0
9	9	7	252nd Avenue	Collector	2	1,800'	$3,096,000		$0
10	10	252nd Avenue	Telford Road	Collector	2	1,600'	$4,848,000	1	$2,320,000
11	11	Telford Road	Orient Drive	Collector	4	4,300'	$6,794,000		$0
12	12	Palmquist Road	4	Community Street	2	1,300'	$1,794,000		$0
13	13	4	252nd Avenue	Community Street	2	3,200'	$4,416,000		$0
14	14	242nd Avenue	242nd Avenue	Neighborhood Connector	2	4,400'	$7,992,000	1	$1,920,000
15	267th Avenue	Springwater boundary	16	Community Street	2	1,700'	$2,346,000		$0
16	16	15	Rugg Road	Community Street	2	1,300'	$3,714,000	1	$1,920,000
17	17	Rugg Road	282nd Avenue	Community Street	2	2,500'	$3,450,000		$0
18	18	Orient Drive	17	Community Street	2	1,200'	$3,576,000	1	$1,920,000
19	19	20	Stone Road	Community Street	2	2,600'	$5,508,000	1	$1,920,000
20	20	Rugg Road	9	Community Street	2	1,900'	$2,622,000		$0
21	21	8	252nd Avenue	Community Street	2	1,500'	$2,070,000		$0
22	22	252nd Avenue	26	Community Street	2	2,000'	$4,680,000	1	$1,920,000
23	23	26	Rugg Road	Community Street	2	650'	$2,817,000	1	$1,920,000
25	25	20	252nd Avenue	Community Street	2	1,400'	$1,932,000		$0
26	26	252nd Avenue	20	Community Street	2	2,600'	$3,588,000		$0
				Community Street Subtotal (May be built by development)		28,250'	**$50,505,000**		
				Other Road Subtotal			**$75,332,000**		
New Roads Total						60,450'	**$125,837,000**	**12**	**$29,280,000**
Existing Roads									
27	242nd Avenue	Palmquist Road	Rugg Road	Arterial	4	9,300'	$18,228,000		
28	Telford Road	Springwater boundary	252nd Avenue	Collector	2	8,800'	$13,904,000		
29	Palmquist Road	242nd Avenue	252nd Avenue	Collector	2	2,600'	$4,108,000		
30	282nd Avenue	Springwater boundary	20	Collector	2	2,200'	$3,476,000		
31	US Hwy. 26	267th Avenue	--	Interchange			$24,500,000		
Existing Roads Total						22,900'	**$64,216,000**		
TOTAL						83,350'	**$190,053,000**		
							All bridges assumed 200' long @ $200 per s.f.		

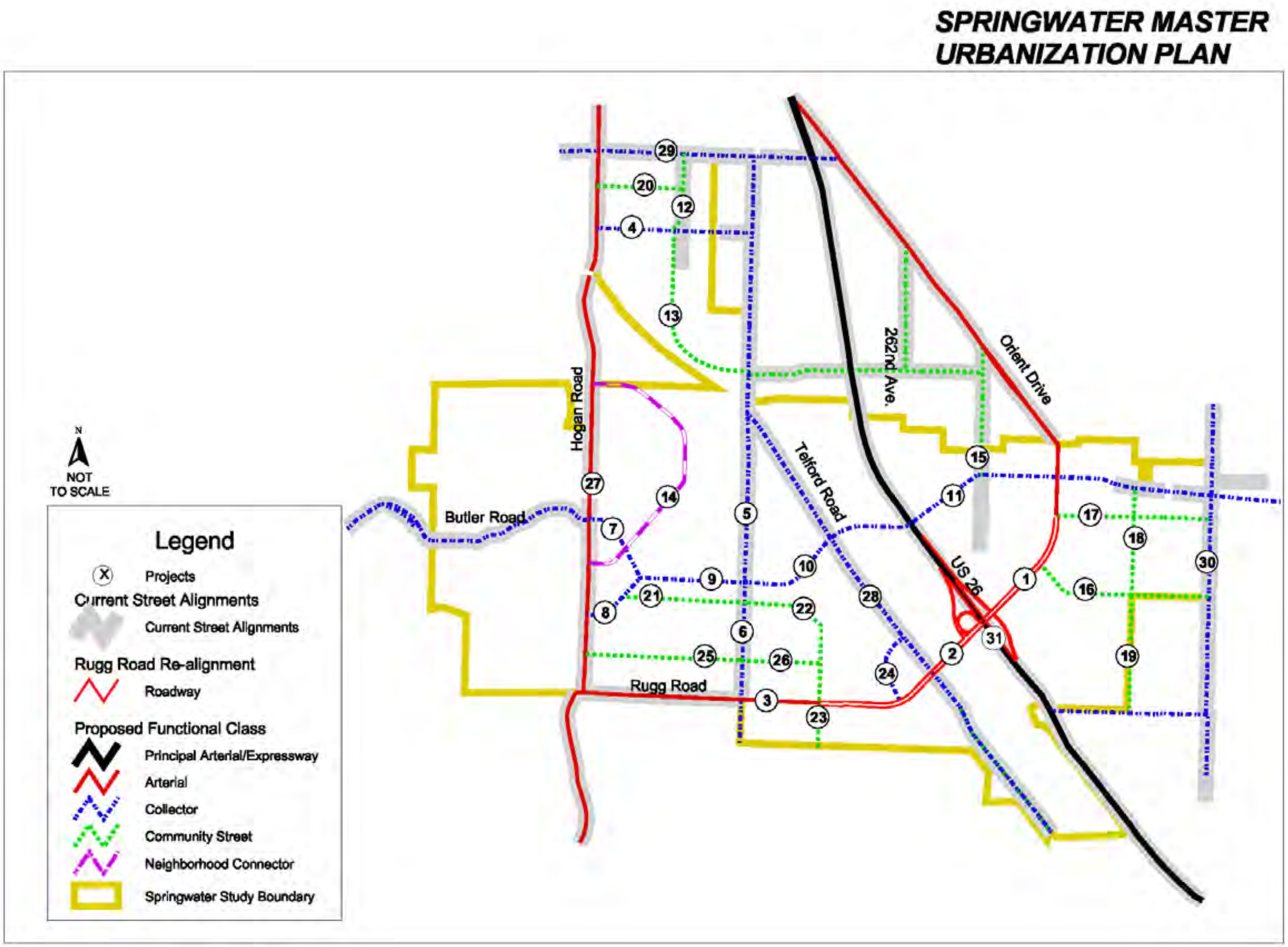


Figure 6. Proposed Functional Classes and Road Projects

For all phases, estimated construction cost for the ultimate US 26 connection improvements totals $24.5 million. Once the preferred US 26 improvement project has been adopted, the specific nature and expected construction costs should be incorporated into the, Gresham TSP, and the Metro RTP as appropriate.

Several existing streets bordering Springwater require improvements in the long-term to support planned growth. These include the projects numbered 27 through 30 shown in Table 8 Of these, Telford Road is the only street that traverses the planning area; the other streets border the site. The total estimated cost for improvements on these facilities is $38 million. Most of these projects will be constructed in a 6-20 year timeframe; however some would be required to support likely initial development in the northern part of the study area adjacent to US 26 and Telford Road. These are shown as occurring in a 1-5 year timeframe. All of the recommended improvements for Springwater are eligible for funding using system development charges (SDCs), however the City should investigate opportunities to obtain federal, state, or private funding to augment local funding of transportation improvements.

Outstanding Issues

The improvements identified above do not address the off-site system improvements required to service long-term travel demands, particularly in the north-south arterial corridors. The North/South Transportation Study (also known as the East Metro Area Telecommunications and Transportation Assessment) is evaluating the need for enhanced services or new facilities, and subsequent regional studies are to address recommended capacity improvements through Gresham (including additional needs associated with Springwater and Damascus development). Preliminary findings from that study show the need for substantially more north-south carrying capacity, which could include upgrade existing arterials to higher quality of service, and implementing a high capacity transit solution between Damascus and Interstate 84. The implications for Springwater potentially include a much higher level of traffic for the connector between 242nd Avenue and US 26 (Projects 2 and 3), and potentially a wider right-of-way requirement on 242nd Avenue (or other parallel north-south route) for a high capacity transit service. Based on this study, the City's Transportation System Plan update and Metro's Regional Transportation Plan update provide forums to continue to address off-site improvements beyond the Springwater Plan.

Local Street Connectivity Map

Overall, local street planning for Springwater incorporates the on-site circulation requirements to support the intended land use development schemes, and is designed to provide key connections for low volume circulation between neighborhoods for automobiles, bicycles and pedestrians alike. A better connected street and trail system helps to reduce out-of-direction travel for all modes of transportation, and it also complies with requirements as described in Title 6 of the Regional Transportation Plan.

The local street network in Gresham bordering the Springwater area is developed along the northern face, on either side of US 26, and portions of the western face along 242nd Avenue, north of Butler Road. The southern and eastern faces of the Springwater planning area border the Urban Growth Boundary and local street extensions are not expected with the current designations. Development of local streets within Springwater will be consistent with standards adopted by the City of Gresham for spacing, sight distance and other design elements. The specific alignments of local streets within Springwater have not been defined explicitly to allow for greater flexibility in land use development.

By providing connectivity between neighborhoods, out-of-direction travel and vehicle miles traveled (VMT) can be reduced, accessibility between various modes can be enhanced and traffic levels can be balanced out between various streets. Additionally, public safety response time is reduced. In south

Gresham, some of these local connections can contribute with other street improvements to mitigate capacity deficiencies by better dispersing local traffic, rather than relying solely on the arterials street system. Several roadway connections are recommended between the residential neighborhood areas to reduce out of direction travel for vehicles, pedestrians and bicyclists.

Figure 7 shows the proposed Local Street and Trail Connectivity Plan for Springwater. The primary purpose of this map is to illustrate how the new Springwater roads and trails will connect to neighborhoods bordering it. In most cases, the connector alignments are not specific and are aimed at reducing potential neighborhood traffic impacts by better balancing traffic flows on neighborhood routes. The double-headed arrows shown in the figures represent potential connections and the general direction for the placement of the connection. In each case, the specific alignments and design will be better determined upon development review. The criteria used for providing connections are as follows:

- Every 300 feet, a grid for pedestrians and bicycles (shown as dotted lines)
- Every 530 feet, a grid for automobiles (shown as solid lines)

Most of the street or multi-use (trail) extensions are shown along the northern edge of Springwater into existing residential neighborhoods. Most of these connections are shown restricted to pedestrian and bicycle travel only (trail), which allows more direct connections to the trails and proposed community parks within Springwater. The full street connections are limited since the land use in this part of Springwater is designated as industrial use, and mixing travel between the two should be discouraged.

To protect neighborhoods from the potential traffic impacts of extending stub end streets, connector roadways should incorporate neighborhood traffic management into their design and construction. All stub streets should have signs indicating the potential for future connectivity. Additionally, new development that constructs new streets, or street extensions, must provide a proposed street map that:

- Provides full street connections with spacing of no more than 530 feet between connections except where prevented by barriers.
- Provides bicycle and pedestrian access ways in lieu of streets with spacing of no more than 330 feet except where prevented by barriers.
- Limits use of cul-de-sacs and other closed-end street systems to situations where barriers prevent full street connections.
- Includes no close-end street longer than 200 feet or having more than 25 dwelling units.
- Includes street cross-sections demonstrating dimensions of right-of-way (ROW) improvements, with streets designed for posted or expected speed limits.

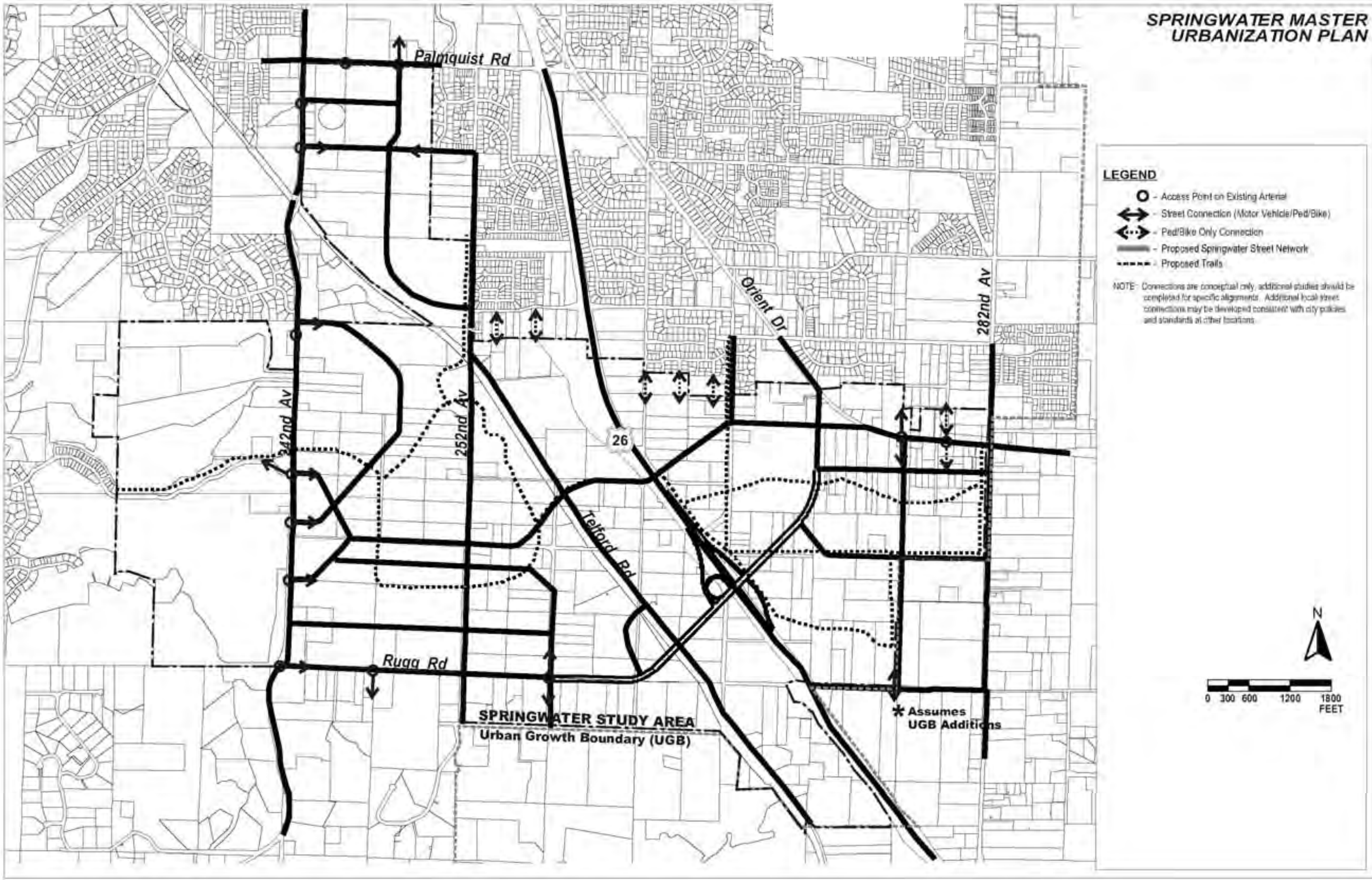


Figure 7. Local Street and Trail Connectivity Map

The other element of the Local Street Connectivity map is the locations on existing arterials that are expected to have new or modified intersections with Springwater streets. This is most significant along 242nd Avenue where seven locations are identified as new or modified intersections for connections to Springwater. The number of connections and distance between adjoining intersections is regulated by access spacing standards, and adopted by the responsible agency, either the City of Gresham or Multnomah County.

PREFERRED PLAN COST ESTIMATE AND FUNDING OPTIONS

The primary funding sources for the development of the transportation system in Springwater will include regional, state, and federal grants for large regionally-significant improvements and existing deficiencies; development exactions for frontage improvements and local street improvements; and transportation improvement fees (TIFs) for development-related system improvements.

The Springwater Plan District will include special Green Street designs for local, collector, and arterial streets. The Pleasant Valley Stormwater Master Plan[3] suggests a possible design for local street drainage, but additional effort may be required to prepare a model Green Street standard. This could be connected with an early development proposal or as a separate staff-level effort. Given the importance of Green Streets to the overall plan for Springwater, the preparation and adoption of model Green Street designs is identified as an early-action item in the list of projects for implementing the TSP.

The tables below outline costs associated with the street improvements in Tables 10, as well as additional studies required to implement the Springwater TSP.

[3] CH2M Hill, July 2004.

Table 9: Springwater TSP Projects

Project	Street	Cost	Timing (Years)	Responsible Jurisdiction	Funding Source
		Projects Within Springwater			
1	Rugg Road Ext.	$9,116,000	6-20	Gresham	SDC/Local
2	Rugg Road Ext.	$20,385,000	6-20	Gresham	SDC/Local
3	Rugg Road	$6,183,000	6-20	Gresham	SDC/Local
4	4	$4,108,000	6-20	Gresham	SDC/Local
5	252nd Avenue	$11,376,000	6-20	Gresham	SDC/Local
6	252nd Avenue	$3,002,000	6-20	Gresham	SDC/Local
7	7	$4,532,000	1-5	Gresham	SDC/Local
8	8	$1,892,000	6-20	Gresham	SDC/Local
9	9	$3,096,000	1-5	Gresham	SDC/Local
10	10	$4,848,000	1-5	Gresham	SDC/Local
11	11	$6,794,000	1-5	Gresham	SDC/Local
12	12	$1,794,000	6-20	Gresham	SDC/Local
13	13	$4,416,000	6-20	Gresham	SDC/Local
14	14	$7,992,000	1-5	Gresham	SDC/Local
15	267th Avenue	$2,346,000	1-5	Gresham	SDC/Local
16	16	$3,714,000	1-5	Gresham	SDC/Local
17	17	$3,450,000	6-20	Gresham	SDC/Local
18	18	$3,576,000	6-20	Gresham	SDC/Local
19	19	$5,508,000	6-20	Gresham	SDC/Local
20	20	$2,622,000	6-20	Gresham	SDC/Local
21	21	$2,070,000	6-20	Gresham	SDC/Local
22	22	$4,680,000	6-20	Gresham	SDC/Local
23	23	$2,817,000	6-20	Gresham	SDC/Local
24	24	$1,824,000	6-20	Gresham	SDC/Local
25	25	$1,932,000	6-20	Gresham	SDC/Local
26	26	$3,588,000	6-20	Gresham	SDC/Local
Subtotal		$125,837,000			
		Projects Bordering or Near Springwater			
27	242nd Avenue	$18,228,000	6-20	Gresham	SDC/Local
28	Telford Road	$13,904,000	6-20	Gresham	SDC/Local
29	Palmquist Road	$4,108,000	6-20	Gresham	SDC/Local
30	282nd Avenue	$3,476,000	6-20	Gresham	SDC/Local
31	US 26 Interchange	$24,500,000	6-20	State	State/Fed./Local
Subtotal		$64,216,000			

Table 9 (Continued): Springwater TSP Projects

Project	Street	Cost	Timing (Years)	Responsible Jurisdiction	Funding Source
		Additional Projects			
32	Refine Green Street Design Standards	$50,000	1-5	Gresham	Local
33	TIF Update Study	$100,000	1-5	Gresham	SDC
34	282nd Access Study	$100,000	1-5	Gresham/Multnomah County	SDC/Local
Subtotal		$250,000			
Total Transportation Projects		*$190,303,000*			

Grant Funding

Grant funding could be used to offset the cost of transportation improvements. Over the past 10 years, the City of Gresham has averaged approximately $1 million per year in transportation capital grants from various sources. A specific estimate has not been made as to how much grant funding will be available to offset the cost of transportation improvements.

Developer Exactions

Developer exactions are applied to transportation improvements (usually frontage improvements) that developers are required to construct in order to develop their land. These most often apply to internal local streets.

TSP IMPLEMENTATION ACTIONS

The following actions are required to implement the Springwater TSP:

1. Continue to participate with other regional service providers to advance concepts from the North/South Transportation Plan to fully develop alternatives, develop a recommended plan, and identify and execute implementation measures to improve access between Springwater and major transportation routes such as I-205 and I-84.
2. Refine the Green Street concepts from this TSP and the Stormwater Master Plan as required to fully implement Green Street development in Springwater.
3. Implement a Transportation Impact Fee to adequately fund growth-related improvements in Springwater.
4. Continue to work with the Oregon Department of Transportation to develop plans for improved access to US 26 through Springwater.
5. Consider including conduit with future roadway improvements in Springwater to serve telecommunication needs in the area.

US 26: Access to the Springwater Community Interchange Area Management Plan

Prepared for

Oregon Department of Transportation
Region 1
123 NW Flanders
Portland, OR 97209

Prepared by

Parametrix
700 NE Multnomah, Suite 1000
Portland, OR 97232-4110
T. 503.233.2400 T. 360.694.5020 F. 503.233.4825
www.parametrix.com

January 2011

ACKNOWLEDGEMENTS

<u>Oregon Department of Transportation</u>

Michael Ray, Region 1 Senior Planner

John Wolf, Region 1 Senior Roadway Engineer

<u>City of Gresham</u>

Katherine Kelly, Transportation Planning Manager

Janet Young, Economic Development Services Manager

Jeff Shelley, Transportation Engineering

Kathy Majidi, Watershed Division

Jean Harrison, Graphic Information

Kate Dreyfus, Transportation Planning

<u>Multnomah County</u>

Jane McFarland, Principal Land Use and Transportation Planner

<u>Clackamas County</u>

Larry Conrad, Senior Transportation Planner

<u>City of Damascus</u>

Steve Gaschler, Public Works Director

<u>Parametrix</u>

Jason Franklin, Project Manager

Quinn Fahey, Planner

<u>Kittelson & Associates, Inc.</u>

Wade Scarbrough, Traffic and Transportation Engineer

This page intentionally left blank.

TABLE OF CONTENTS

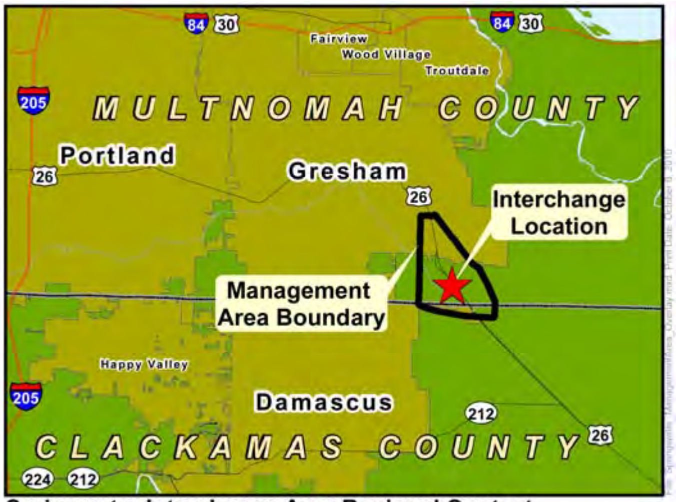
TABLE OF CONTENTS (CONTINUED)

LIST OF EXHIBITS

APPENDICES

SECTION 1. INTRODUCTION

The Springwater Community Plan Area (Springwater area) contains over 1,000 acres of land that the City of Gresham plans to develop into an industrial employment center, eventually attracting thousands of jobs. In order to serve this new employment center, the City and the Oregon Department of Transportation (ODOT) embarked on a process to design an interchange to provide better access to the Springwater Area. Three interchange alternatives were developed, along with three interim improvement options that would allow for some development if full funding is not initially available for the ultimate interchange. After extensive public involvement and evaluation, Alternative C-2 was selected as the preferred alternative. The alternative is an urban diamond interchange configuration that will provide safer and more efficient traffic movements to the Springwater area. Interim improvements would be phased with an overcrossing over US 26 extending to Telford Road, with connections between the overcrossing and US 26. In addition, Alternative C-2 includes an elevated crossing of the Springwater Corridor Trail, a regionally significant multi-use trail.



Springwater Interchange Area Regional Context

PROJECT BACKGROUND

In December 2002, Metro brought the approximately 1,200-acre Springwater area into the Metro area Urban Growth Boundary (UGB). The area is currently under Multnomah County jurisdiction and is planned to eventually be annexed into and urbanized by the City of Gresham. The intent of the Springwater expansion was to bring high-value, family-wage jobs to the City of Gresham by developing industrial/high-tech campuses and attracting businesses that would bring an infusion of thousands of new jobs. The City also planned for a village center with mixed retail and housing, and quality, low-density residential development in the Springwater area.

As required by state planning laws, the City of Gresham developed the *Springwater Community Plan* between 2003 and 2005 in partnership with residents and property owners, area stakeholders, and other jurisdictions. The *Springwater Transportation System Plan (TSP)* is a component of the *Springwater Community Plan*, which was adopted by the Gresham City Council in 2005. In the *Springwater TSP*, the City of Gresham recommended a new interchange with US 26 and proposed enhancements to the local street network to provide safe and efficient access to the planned Springwater area while preserving the expressway function of US 26. Included in the *Springwater Community Plan* is an annexation strategy that guides urbanization and the provision of infrastructure, including the Springwater interchange.

This Interchange Area Management Plan (IAMP) identifies the type and location of the preferred interchange alternative, including:

1) A collector street that connects roughly SE 252nd Avenue to a new arterial road connecting to SE Orient Drive;

2) A new arterial road that connects along SE Rugg Road in the vicinity of SE 252nd Avenue and over US 26 via an interchange to SE Orient Drive; and

3) An interchange facility at US 26 and approximately SE 267th Avenue.

Additionally, the IAMP describes access management requirements and outlines guidelines for implementation.

IAMP PURPOSE AND INTENT

The purpose of the Springwater IAMP is to address existing and future safety needs, improve access to the existing transportation system, and provide for a future transportation network that will efficiently accommodate the planned development in the Springwater area, while preserving the function of US 26.

Oregon Administrative Rule (OAR) 734-051-0155 requires that an IAMP be prepared for any new interchange and recommends an IAMP for significant modifications to existing interchanges. The purpose of an IAMP is to ensure safe and efficient operations between connecting roadways, to protect the function of the interchange, and to minimize the need for future major interchange improvements. Because new interchanges are very costly, state and local governments and citizens have an interest in ensuring that they function as intended and for as long a period as possible, while still supporting planned land use.

OAR 734-051-0155(7) requires an IAMP to comply with the following criteria, unless the plan documents explain why compliance with a criterion is not applicable:

a. Be developed no later than the time an interchange is designed or is being redesigned.

b. Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment, and adopt policies, provisions, and development standards to capture those opportunities.

c. Include short, medium, and long-range actions to improve operations and safety within the designated management area.

d. Consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches.

e. Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years.

f. Consider existing and proposed uses of all the property within the designated management area consistent with its comprehensive plan designation and zoning.

g. Be consistent with any applicable access management plan (AMP), corridor plan, or other facility plan adopted by the Oregon Transportation Commission (OTC).

h. Include polices, provisions, and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Interchange Area Management Plan.

In addition to the IAMP, other work products related to the Springwater interchange include environmental technical memoranda, an AMP, design work, and an analysis of local circulation patterns. Additionally, this project will result in updates to the Gresham TSP.

NEED FOR THE SPRINGWATER INTERCHANGE

Traffic volumes on US 26 are projected to nearly double by 2035 due to development in the Springwater area as well as other growth and development in the region. This additional demand will further compromise the already poor conditions at the SE 267th Avenue and SE Stone Road at-grade intersections with US 26. The Springwater area requires improved access to US 26 and improvements to the surrounding transportation network to support planned urban land uses.

IAMP GOALS AND CRITERIA

The Project Management Team (PMT), consisting of representatives from ODOT, City of Gresham, City of Damascus, Multnomah County, and consulting firms Parametrix and Kittelson & Associates, Inc. first met in 2007 to draft the project's purpose and intent. Using the project's purpose and intent statement as guidance, the PMT then developed goals, criteria, and measures to score project alternatives.

Over the course of about two years, the PMT added, deleted, and refined the goals, criteria, and measures to ensure that the evaluation process accurately and fairly compared the alternatives against one another. The PMT sought input on the goals from numerous stakeholders, including residents, realtors, the East Metro Economic Alliance, Johnson Creek Watershed Council (JCWC), Audubon Society of Portland, Portland Parks and Recreation,[1] and Metro.

After meeting with these groups, the PMT made substantive changes to the environmental (Goal 3) and development/livability (Goal 4) goals. Based on input from the JCWC and Audubon Society, the PMT revised and added environmental measures to assess impacts to streams, wetlands, riparian resources, water quality, and habitat within the project area. A technical memorandum describing the environmental analysis and impacts is located in **Appendix A**. Additionally, based on input from residents, the PMT altered a measure to address potential impacts to existing neighborhoods.

The project goals and their corresponding criteria are listed below. For a complete matrix, including the scoring measures, please see **Appendix B.**

GOAL 1: Improves access and capacity for all modes of transportation in the Springwater area.

- Improves connectivity to the existing and planned bicycle, pedestrian, trail, and street networks
- Improves transportation safety
- Crossroads meet state spacing standards
- Provides adequate capacity

GOAL 2: Maintains mobility for statewide movements along US 26.

- Interchange meets state spacing standards
- Provides adequate capacity

GOAL 3: Minimizes impacts to the natural environment and provides opportunities for enhancement.

- Adheres to the restoration goals of the *Springwater Community Plan*, while avoiding or reducing impacts to wetlands, streams, and the natural environment

GOAL 4: Increases the viability of development within the Springwater area while supporting community livability.

- Supports transportation and land use objectives articulated in adopted plans
- Maintains developable parcels

GOAL 5: Ensures financial feasibility of the interchange and local circulation options.

- Supports lower cost projects while providing a safe and efficient facility.

---

[1] The meeting with Portland Parks and Recreation was held to discuss implications of the project for the Springwater Trail; Portland Parks and Recreation owns the stretch of trail that runs through the management area.

SPRINGWATER MANAGEMENT AREA

The IAMP management area is the area where access and circulation may influence the safety and operation of the interchange. Within the management area, local circulation and access are evaluated for impacts.

The management area for the Springwater IAMP is bounded to the north by SE Palmquist Road, to the east generally by SE Orient Drive and SE 282nd Avenue, to the south generally by SE Stone Road and SE Rugg Road, and to the west by SE 252nd Avenue and SE Palmblad Road **(Exhibit 1).** The management area includes 1,311 acres.

The planned location for the interchange is southeast of the existing US 26/SE 267th Avenue intersection and northwest of the existing US 26/SE Stone Road intersection. As part of the planned interchange, a new east-west arterial is also proposed for the Springwater area, connecting the areas on the east and west sides of US 26.

The management area spans four jurisdictions. A small segment of the northern portion of the management area is within Gresham city limits; a majority of the management area is outside of city limits in Multnomah County; a small area in the southwest portion is within the City of Damascus; and a small area in the southeast is within Clackamas County. The portion in Multnomah County is planned for incorporation into the City of Gresham to implement the urbanization of the plan area.


Exhibit 1
Study Area
Management Area
Springwater Area
Jurisdiction Boundary
0 625 1,250 2,500
Feet
CITY OF GRESHAM
MULTNOMAH COUNTY
MULTNOMAH COUNTY
CLACKAMAS COUNTY
CLACKAMAS COUNTY
MULTNOMAH COUNTY
CITY OF GRESHAM
CITY OF DAMASCUS

SECTION 2. IAMP DECISIONS

The PMT first met in 2007 to draft the project's purpose and intent, and later, the project's goals, criteria, and measures. With the project's foundation established, the PMT held a design workshop to discuss several options for interchange locations and designs along US 26. This effort resulted in seven different alternatives.

Once the seven alternatives were developed, the PMT screened the alternatives to determine which options best satisfied the project's purpose and intent. Three alternatives then advanced to the evaluation phase: Alternative A, Alternative B, and Alternative C-2,[2] with Alternative C-2 emerging as the preferred alternative. For more information on the alternatives screening and analysis process, please see **Appendix C**.

Alternative C-2 is an urban diamond configuration **(Exhibit 2).** The Springwater Trail would be elevated above the proposed arterial once the arterial is constructed with five lanes. If funding is not available to build the complete interchange, Alternative C-2 would be phased with an overcrossing over US 26 extending to SE Telford Road, with connections between the overcrossing and US 26 **(Exhibit 3)**.

INTERCHANGE FUNCTION

The objective of the Springwater IAMP is to address existing and future safety needs, improve access to the existing transportation system, and provide for a future transportation network that efficiently accommodates the planned development in the Springwater area, while preserving the function of US 26. US 26 is a divided, multi-lane expressway from the southern city limits of Gresham to the city limits of Sandy. The highway is classified in the Oregon Highway Plan (OHP) as a highway of statewide importance and is part of the national highway system in addition to being an identified freight route. Its function is to provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by interstate highways. A secondary function is to provide connections for intra-urban and intra-regional trips.

The Springwater interchange will be located in proximity to the SE 267th Avenue intersection. Its transportation function is to provide statewide and regional access to new industrial land uses in Springwater. The interchange is a service interchange, providing connections from US 26 to local arterials.

With respect to land use and development, the function of the Springwater interchange is to serve planned land uses in the Interchange Management Area. It is not the function of the interchange to facilitate further urbanization of resource lands or land that is not otherwise identified for future development in existing comprehensive plans, as listed above. The Springwater interchange is not intended to serve increased retail or highway-oriented traveler services other than those uses provided for by existing Springwater Community Plan zoning.

EXISTING LAND USE

When evaluating land uses, the management area can be broken into two parts: the developed, urban portion within the City of Gresham, and the rural portion within Multnomah and Clackamas Counties and the City of Damascus. The urban portion within Gresham is primarily zoned as Residential, with some Commercial. Land uses in the City include housing and two shopping districts located along Orient Drive. The Multnomah and Clackamas County portion is mainly zoned as Multiple Use Agriculture and Exclusive Farm Use. Land uses in this area include small lot agriculture and rural residential uses. The

[2] Alternative C-2 is named so because it was the second version of Alternative C.

City of Damascus zoning is primarily Rural Residential Farm, with some Timber. Please see **Exhibit 4** for a map of current zoning in the management area and **Appendix D** for a description of all zones within the management area. The zones represented in **Exhibit 4** were simplified for the purposes of the map (i.e., Low Density Residential-7 is referred to as Residential in the map), but are explained in detail in **Appendix D**.

Johnson Creek and its associated riparian area and tributaries are in the south central portion of the management area. The regional Springwater Trail also runs through the management area adjacent to SE Telford Road, near US 26.

PLANNED LAND USE

The City of Gresham prepared the *Springwater Community Plan* in 2005 to address development and transportation needs in the Springwater area. The focus of the plan is to develop industrial/high-tech campuses and to attract businesses that will bring an infusion of new jobs to the Springwater area. To augment the mixed-use theme of the area, a village center with mixed retail and housing, and quality, low-density residential development are also planned for areas too steep for industrial use. Sustainable development and preservation of the natural environment will also be emphasized, giving the area a unique character. Future land use zones in the management area include Environmentally Sensitive/Restoration Areas, Townhouse Residential, Neighborhood Commercial, and Research/ Technology Industrial. Please see **Exhibit 5** for a map of planned land uses in the management area. These planned land uses will be realized when the Springwater area is incorporated into the City of Gresham.

This page intentionally left blank.

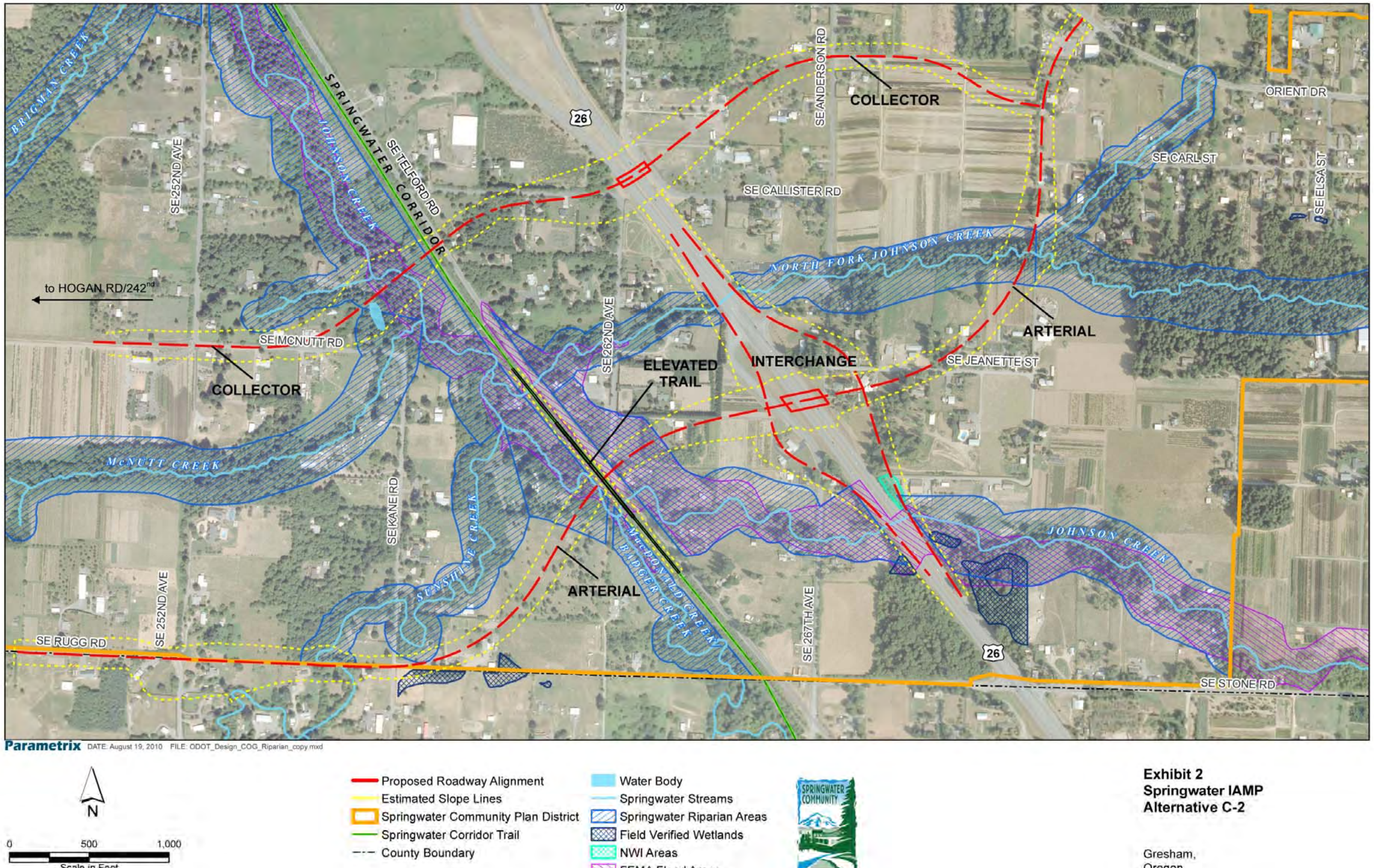


Exhibit 2
Springwater IAMP
Alternative C-2

Gresham,
Oregon

This page intentionally left blank.

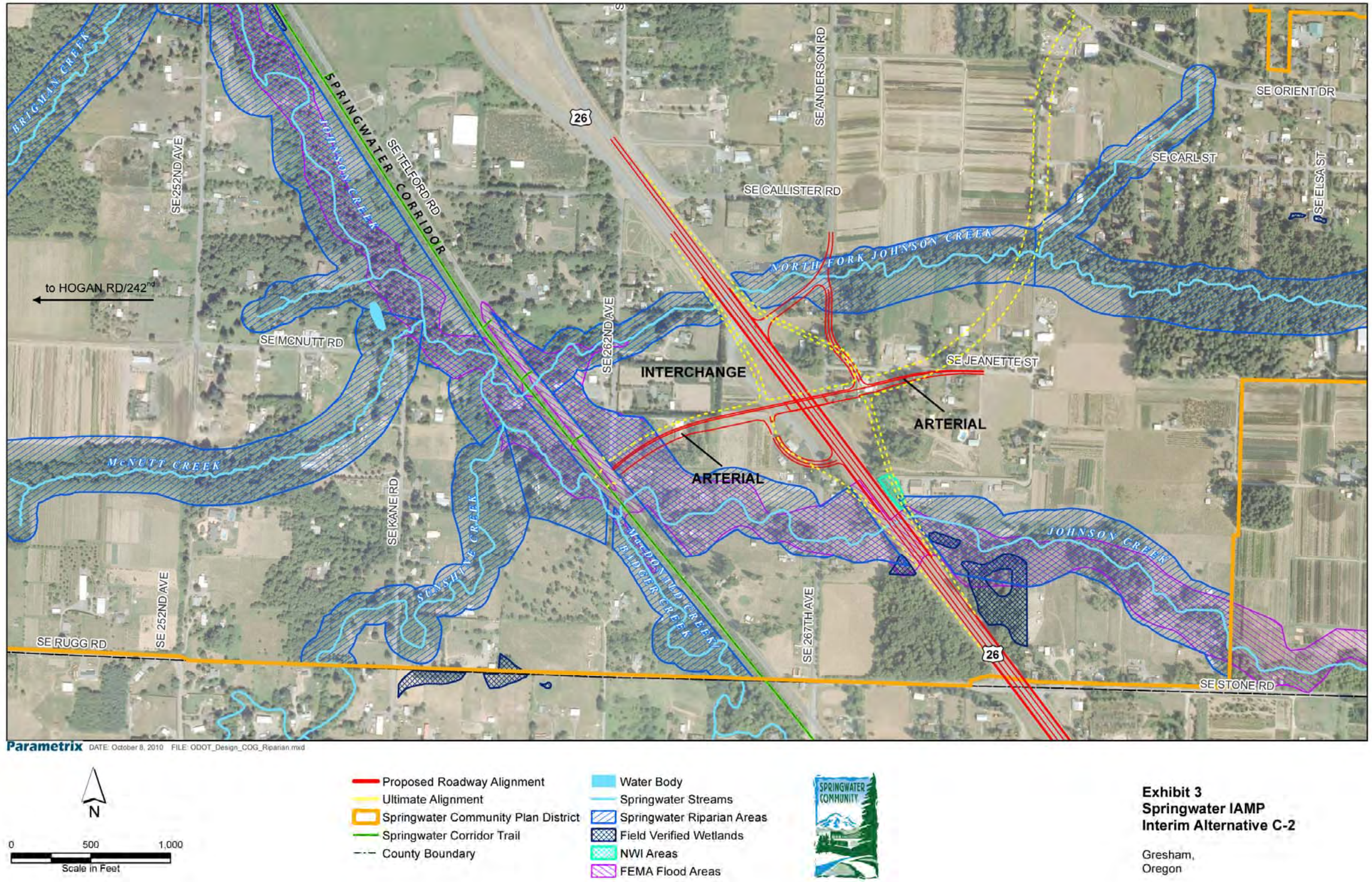


Exhibit 3
Springwater IAMP
Interim Alternative C-2

Gresham,
Oregon

This page intentionally left blank.

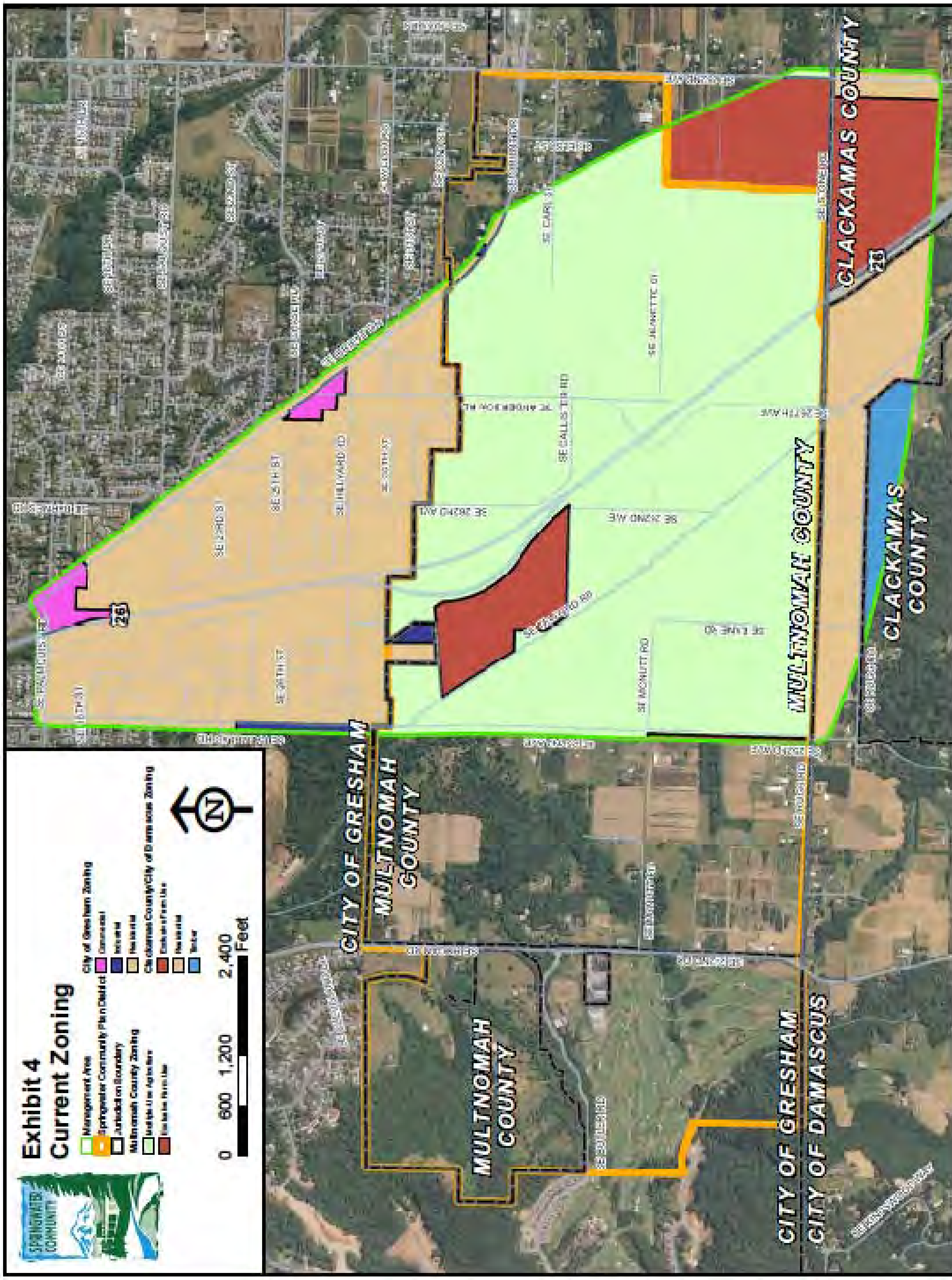


Exhibit 4
Current Zoning
0 600 1,200 2,400
Feet
CITY OF GRESHAM
MULTNOMAH COUNTY
CLACKAMAS COUNTY
MULTNOMAH COUNTY
CLACKAMAS COUNTY
MULTNOMAH COUNTY
CITY OF GRESHAM
CITY OF DAMASCUS

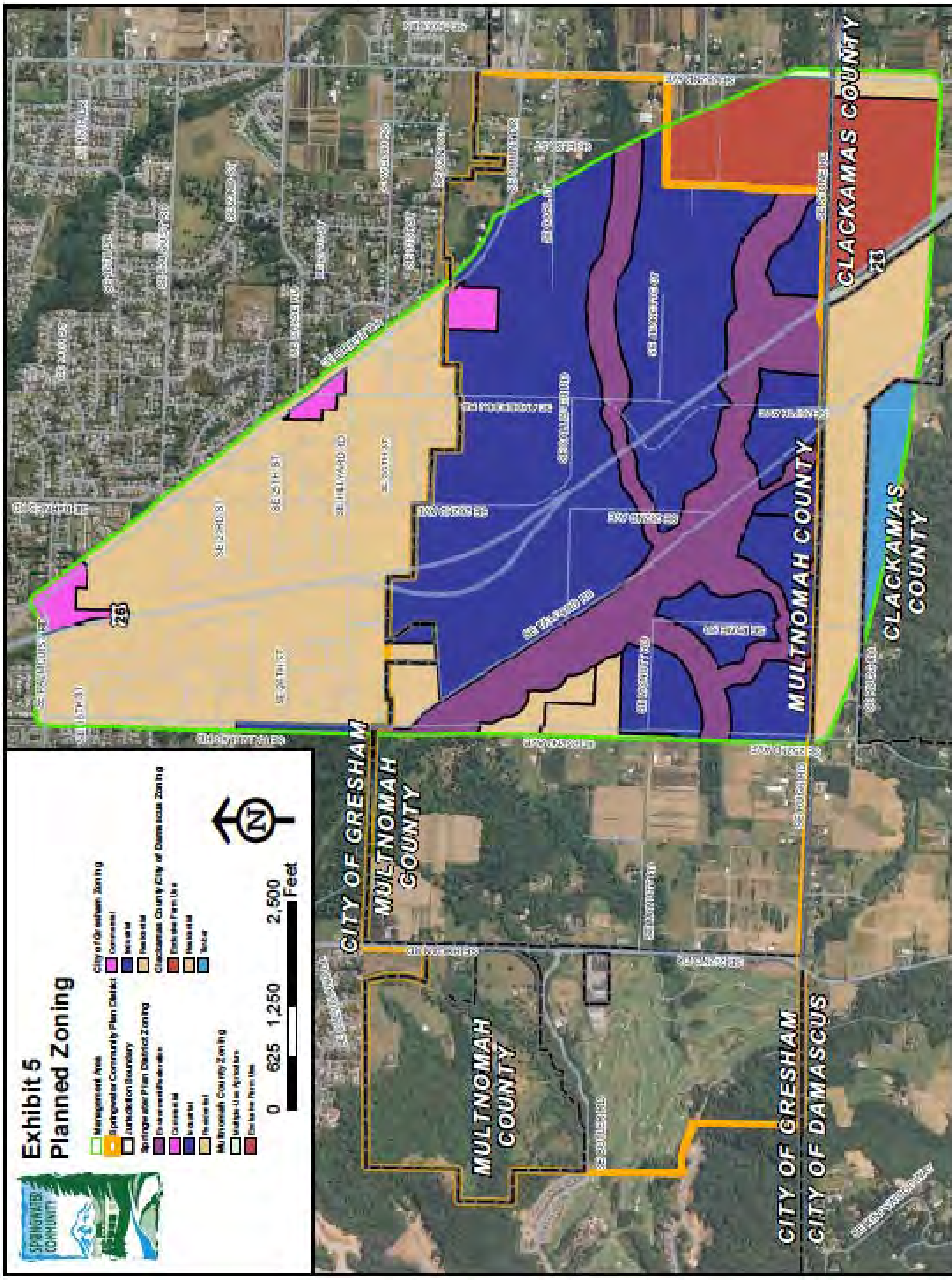


Exhibit 5
Planned Zoning
0
625
1,250
2,500
Feet
CITY OF GRESHAM
MULTNOMAH COUNTY
MULTNOMAH COUNTY
MULTNOMAH COUNTY
CLACKAMAS COUNTY
CLACKAMAS COUNTY
CITY OF GRESHAM
CITY OF DAMASCUS
26

EXISTING TRAFFIC PERFORMANCE

Traffic data were collected during May 2007 on US 26, approximately 300 feet south of SE 267th Avenue. The data included turning movement counts at the study intersections, as well as a 7-day tube count.

Highways serving tourist and recreational destinations are often prone to seasonal fluctuations in traffic volumes. In the case of US 26, skiing and other recreational activities in the Mount Hood area create peaks in the traffic volumes during the winter and summer months. Using the methodology outlined by ODOT's Transportation Planning Analysis Unit, a seasonal adjustment factor of 1.05 was calculated for the mid-May traffic count data. The adjustment factor was applied to the collected tube count data and turning movement count data on US 26 to represent the 30th highest hour yearly volume, or the design hour volume. **Exhibit 6** summarizes the peak season weekday and weekend average daily traffic (ADT) with the seasonal adjustment.

Exhibit 6.
Measured Peak Season Average Daily Traffic (Seasonally Adjusted)

Roadway	Direction	Weekday ADT (veh/day)	Weekend ADT (veh/day)
US 26	Westbound (Northbound)	13,900	11,900
	Eastbound (Southbound)	13,200	10,800

The following key transportation findings are based on the Springwater IAMP Existing Transportation Conditions Technical Memorandum **(Appendix E)**. The analysis resulted in the following findings:

- Current pedestrian and bicycle facilities along US 26 are consistent with the rural expressway character of the highway. Many of the arterials and collector roadways in the Springwater area do not currently have continuous pedestrian or bicycle facilities. As these existing rural areas transition to urbanized areas, pedestrian and bicycle facilities will be required for the surrounding arterial and collector streets.
- All study intersections are currently operating acceptably during the weekday a.m. and p.m. peak periods, with the exception of the US 26/SE 267th Avenue intersection. The existing deficiency at this intersection occurs at the minor street approach, which has a volume-to-capacity (V/C) ratio of 1.42 (exceeding ODOT's standard of 0.95).
- Based on a review of intersection geometry and operational performance, freight mobility on US 26 within the management area is sufficient.
- The traffic safety analysis indicates that there may be a trend or pattern of rear-end crashes at the US 26/OR 212 interchange (in particular, the eastbound US 26 ramp terminal), while the remaining study intersections did not exhibit any apparent crash patterns. None of the intersections or highway segments in the management area were identified on ODOT's Five Percent Report, based on the 2006 Safety Priority Index System (SPIS).
- There are two locations along US 26 that do not meet access spacing standards defined in the 1999 OHP and the OAR 734-051 Division 51 rules. These locations are the US 26/SE 11th Street intersection to the US 26/SE Palmquist Road intersection, and the US 26/SE Haley Road intersection to the US 26/OR 212 interchange. All other accesses to US 26 meet the applicable spacing standards.

Crash Data

Crash data for the segment of US 26 that extends from SE 11th Street to the OR 212 interchange were analyzed for potential safety issues. **Exhibit 7** summarizes the severity and type of crashes over a five-year analysis period.

Exhibit 7.
US 26 Crash History by Type and Severity (2002–2006)[a]

Segment	Number of Crashes	Collision Type				Severity		
		Turning	Rear-End	Angle	Other	PDO[b]	Injury	Fatality
US 26 from SE 11th St to OR 212	98	28	35	19	31	45	52	1

[a] This information is from 2002–2006.

[b] PDO = Property Damage Only.

Comparing the data in **Exhibit 7** to the intersection crash data reveals that 34 of the total crashes on the study segment of US 26 from 2002 to 2006 did not occur at the intersections. Approximately half of those crashes between intersections were with fixed objects. A more detailed review of the data found there were no predominant locations or causes of the crashes.

Exhibit 8 shows the crash rate for the same segment noted above and compares this crash rate to the statewide average.

Exhibit 8.
US 26 Crash Rate (2002–2006)

Segment	Number of Crashes	Crashes Per Year	MVM[a]/Year	Crashes/MVM	Statewide Average Crashes/MVM
US 26 from SE 11th Street to OR 212	98	19.6	50.99	0.38	0.80

[a] MVM = million vehicle miles.

For comparison purposes, the statewide average in year 2005 for expressways in urban areas and for Non-Interstate Freeways in rural areas was 0.80 crashes/MVM.[3] As shown in **Exhibit 8**, the crash rate for the US 26 segment within the management area is less than the statewide average for similar facilities.

FUTURE (2030) NO-BUILD TRAFFIC PERFORMANCE

An analysis of future traffic volumes at the Springwater interchange and intersections within the management area was performed for projected 2030 conditions **(Exhibit 9)**. One objective of this analysis was to determine how many lanes would be required at the interchange to meet future traffic demand levels. Additionally, the analysis would provide insight into local circulation improvements that are needed so that intersections in the management area provide adequate capacity for future demand.

[3] 2005 State Highway Crash Tables, Oregon Department of Transportation.

Based on the future traffic analysis and the *Springwater TSP*, ODOT designed the arterial road, which crosses over US 26, as a five-lane facility. This configuration includes two eastbound lanes, two westbound lanes, and one turning lane.

Exhibit 9.
Intersection Analysis Results, 2030 No-Build Design Hour Traffic Condition

Intersection	Intersection Control	V/C Ratio[a]	LOS[b]
US 26 / SE 11th St	Unsignalized	>1.0	F
US 26 / SE Palmquist Rd	Signalized	>1.0	F
US 26 / SE Hillyard Rd	Unsignalized	0.29	E
US 26 / SE 267th Ave	Unsignalized	>1.0	F
US 26 / SE Stone Rd	Unsignalized	>1.0	F
US 26 / SE Haley Rd	Unsignalized	>1.0	F
US 26 Westbound Ramps / OR 212	Unsignalized	>1.0	F
US 26 Eastbound Ramps / OR 212	Unsignalized	>1.0	F
SE 257th Dr / SE 11th St	Signalized	0.85	B
SE Orient Dr / SE Palmquist Rd	Signalized	>1.0	D
SE Orient Dr / SE 267th Ave	Unsignalized	>1.0	F
SE Orient Dr / SE 282nd Ave	Signalized	>1.0	F
SE Orient Dr / SE Haley Rd	Unsignalized	0.21	C
SE 267th / SE Hillyard Rd	Unsignalized	0.04	B
SE 252nd Ave / SE Hillyard Rd	Unsignalized	0.15	A
SE 267th / SE Stone Rd	Unsignalized	0.70	D
SE Telford Rd / SE Stone Rd	Unsignalized	>1.0	F
SE Hogan Rd / SE Rugg Rd	Unsignalized	0.18	D
SE 282nd Ave / SE Haley Rd	Unsignalized	>1.0	F

[a] V/C = Volume-to-Capacity.
[b] LOS = Level of Service.

PLANNED TRANSPORTATION NETWORK

The future transportation network assumed in the regional model was based on the recommended network from the *Springwater TSP*. Key transportation improvements within the Springwater area are as follows:

- A new five-lane arterial would be constructed from the SE Hogan Road/SE Rugg Road intersection on the west to SE Orient Drive on the east.
- A new interchange on US 26 would be provided at the new arterial road.
- A new three-lane collector road would extend from the SE Hogan Road/SE Butler Road intersection on the west to the new arterial on the east. The collector would cross US 26 via a new overpass structure.
- SE Hogan Road would be improved to a five-lane arterial.
- SE Orient Drive would be improved to a five-lane arterial from SE Palmquist Road to SE 282nd Avenue.

- Provisions for either on-street bicycle lane facilities or parallel off-street trails would be made for all community streets, collector streets, and arterials within the Springwater area.

ALTERNATIVE C-2 INTERCHANGE

Recommended Lane Configurations and Traffic Control for Alternative C-2

The project team conducted operational analyses under the projected 2035[4] traffic volumes to identify recommended lane configurations and traffic control measures at the study intersections for the preferred Alternative C-2 **(Appendix F)**. Traffic signal warrant analyses were conducted at the key intersections to determine whether the intersections would meet signal warrants under the future traffic conditions and how they would affect the operation of the proposed interchange.

Based on the analysis results, a number of additional capacity improvements are recommended at several study intersections. These network improvements, which would be beyond those included in the *Springwater TSP*, are as follows:

- On SE Orient Drive, the dominant travel pattern is for traffic to stay on SE Orient Drive, rather than turning onto the proposed arterial. Therefore, the existing alignment of SE Orient Drive should be preserved to maintain the continuity for through traffic. The proposed arterial street should connect to SE Orient Drive at a 90-degree "T" intersection. This intersection configuration would be a change from the adopted TSP.
- The projected travel demand volume on SE Hogan Road results in the need for three southbound through lanes within the management area. However, capacity constraints north of the management area along SE 242nd Avenue would likely limit these traffic flows and may prevent the projected demand from being fully realized. Further study of the SE Hogan Road (SE 242nd Avenue) corridor is needed and should be coordinated with the ongoing planning efforts for the City of Damascus.
- Significant capacity improvements (including a total of four southbound through lanes, three northbound through lanes, and multiple new turn lanes) will be needed at the US 26/SE Palmquist Road intersection to address the future traffic demand. Similar to SE Hogan Road, the actual traffic growth at this intersection will likely be limited by upstream capacity constraints. However, the City of Gresham and ODOT should anticipate the need for future improvements and consider further evaluation of this intersection area.

Analysis Results for Alternative C-2

The analysis of future traffic conditions under preferred Alternative C-2 is shown in **Exhibit 10**. The study intersections will all operate acceptably (according to the applicable mobility standards from the *Oregon Highway Plan* and City of Gresham) under the recommended lane configurations, with the exception of three unsignalized intersections. The US 26/SE 11th Street intersection, the US 26/SE Hillyard Road intersection, and the SE Orient Drive/SE 267thAvenue intersection are expected to operate at Level of Service (LOS) "F" by 2035. Additional turn restrictions may be appropriate at these intersections to address delays at the minor street approaches. These intersections are all far enough away

[4] At project initiation, traffic data for 2030 were available and were used to analyze future no-build traffic performance. During the course of project development, Metro updated the regional traffic model for a future year of 2035. Therefore, the traffic analysis for the alternatives evaluation was conducted using 2035 data. Based on a review of the 2030 and 2035 data, there is no significant difference between the 2030 and 2035 no-build analysis results.

from the proposed interchange that they will not influence the design or performance of the interchange alternative.

The analysis shows the proposed arterial street (with a five-lane basic cross section) and the proposed collector (with a three-lane basic cross section) are expected to function acceptably through the 2035 design year, with additional capacity to last beyond 2035.

Exhibit 10.
Intersection Analysis Results, Projected 2035 Design Hour Traffic Condition

Intersection	Intersection Control	V/C Ratio	LOS
US 26 / SE 11th St	Unsignalized	1.38	F
US 26 / SE Palmquist Rd	Signalized	0.88	D
US 26 / SE Hillyard Rd	Unsignalized	0.44	F
US 26 Westbound Ramps / *Proposed Arterial*	Signalized	0.78	C
US 26 Eastbound Ramps / *Proposed Arterial*	Signalized	0.68	D
SE 257th Dr / SE 11th St	Signalized	0.74	B
SE Orient Dr / SE Palmquist Rd	Signalized	0.85	C
SE Orient Dr / SE 267th Ave	Unsignalized	0.94	F
SE Orient Dr / Proposed Arterial	Signalized	0.74	B
SE Orient Dr / SE 282nd Ave	Signalized	0.82	C
SE 267th / SE Hillyard Rd	Unsignalized	0.04	A
SE 267th / Proposed Collector	Unsignalized	0.11	B
Proposed Collector / Proposed Arterial	Signalized	0.43	A
SE Telford Rd / Proposed Collector	Signalized	0.66	B
SE Telford Rd / Proposed Arterial	Signalized	0.79	C
SE 252nd Ave / SE Hillyard Rd	Unsignalized	0.13	C
SE 252nd Ave / Proposed Collector	Signalized	0.66	B
SE 252nd Ave / Proposed Arterial	Signalized	0.58	A
SE Hogan Rd / SE Butler Rd	Signalized	0.90	D
SE Hogan Rd / SE Rugg Rd	Signalized	0.81	B

Alternative C-2 Interim Improvement Findings

The project team conducted a traffic analysis of the interim improvements for Alternative C-2. Comparing the existing traffic volumes and the 2035 build-out projections, the team developed estimates of interim year traffic conditions to evaluate the expected performance of the interim improvements. The analysis resulted in the following findings:

- The interim improvements for Alternative C-2 could operate acceptably through the year 2020, assuming approximately a 50 percent build-out of the Springwater area.
- By 2025, the right-in/right-out access points on US 26 at SE 267th Avenue would be over capacity. Constructing right-turn acceleration lanes on US 26 could potentially extend the intersection capacity beyond 2025.
- By 2025, the intersection of the new arterial and SE Telford Road would be over its capacity.

- The interim arterial bridge over US 26 for the interim improvements should be constructed with a three-lane cross section (with the capacity to add two lanes in the future).
- Closing the existing SE Stone Road/US 26 intersection would likely result in increased traffic on SE Hillyard Road. To avoid negative impacts to SE Hillyard Road and other residential streets, the new arterial should be connected to SE Orient Drive, or other alternative connections to SE 282nd Avenue prior to closing the SE Stone Road/US 26 intersection.

LOCAL STREET NETWORK

Based on the *Springwater Community Plan*, ODOT developed local street network recommendations or options that would enable the local system within the management area to meet project demand in 2035. Those options include the following:

- The existing alignment of SE Orient Drive should be preserved to maintain the continuity for through traffic.
- The arterial should connect to SE Orient Drive at a 90-degree “T” intersection.
- The intersection at SE Orient Drive should be designed to discourage eastbound traffic from Springwater to reduce impacts to rural areas to the east.
- SE Hogan Road should have three southbound through lanes and two northbound lanes within the management area, although capacity constraints north of the management area along SE 242nd Avenue would likely limit these traffic flows and may prevent the projected demand from being fully realized.

LOCAL CIRCULATION PLAN AND LOCAL ACCESS

Local Circulation Plan

Exhibit 14 illustrates the proposed Local Circulation Plan for the management area. As shown in **Exhibit 14**, the plan maintains the existing local street network where possible, and creates a number of new local street connections to the new and existing arterial and collector facilities. To achieve ODOT’s access management standards, all local streets within the immediate vicinity of the ramp terminal intersections would be realigned to intersect with SE Telford Road or the collector road. Additional realignments and modifications to existing local streets are needed to provide appropriate spacing of intersections, allow for proper intersection geometry, and maintain access to existing parcels. In particular, SE Stone Road and SE Haley Road[5] will be closed at their intersections with US 26 upon construction of the interchange.

To prepare the Local Access and Circulation Plan, the PMT evaluated future access locations and public street connections for properties and streets within the management area. The intent of the Local Access and Circulation Plan is to guide the design of site-access driveways and internal circulation routes for properties located within the management area that are likely to be developed at some point in the future. For those properties that may not be redeveloped by the time the new interchange is constructed, the plan will also be useful for evaluating how access to those sites should continue to be served. Given that construction of the interchange is not likely to occur for at least several years and the layout of future

[5] SE Haley Road is outside of the management area, but within the minimum spacing standards applicable to non-freeway interchanges with multi-lane crossroads.

development is unknown, the access management plan (AMP) focuses on ODOT and City of Gresham access spacing guidelines for each of the project area roads.

Access Management Plan

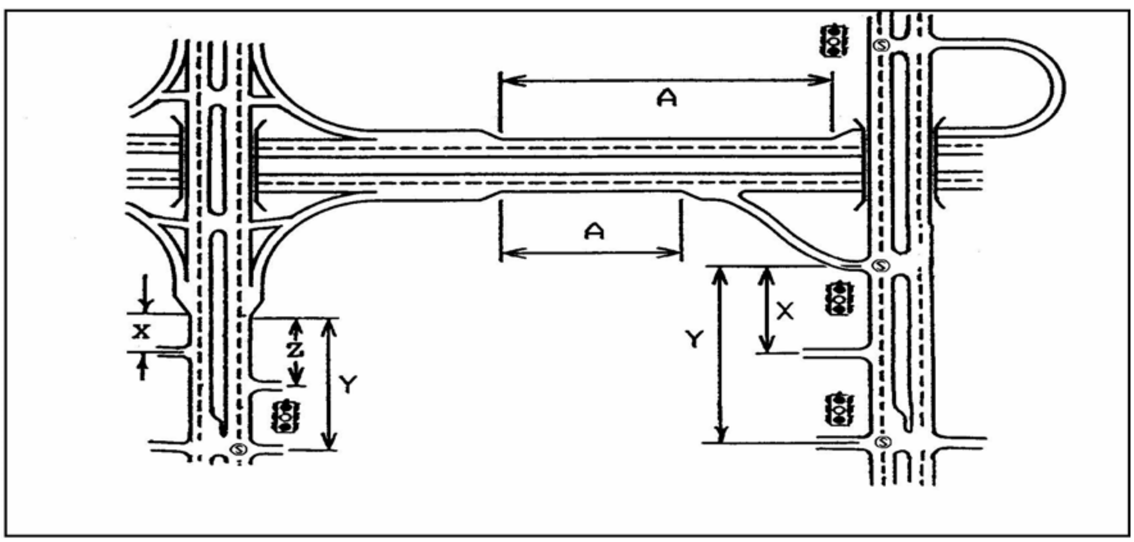
Access locations will be guided by ODOT's Division 51 Access Management standards, the guidelines set forth in Policies 2C and 3C of the 1999 OHP, and the City of Gresham's access spacing standards. Spacing standards associated with an Urban Interchange Management Area are shown in **Exhibit 11** with a graphic of spacing standards in **Exhibit 12**.

Exhibit 11. Minimum Spacing Standards Applicable to Freeway Interchanges with Multi-Lane Crossroads (OHP Table 19)

	Spacing Dimension			
Type of Area[a]	A = Distance between the start and end of tapers of adjacent interchanges	X = Distance to the first approach on the right; right in/right out only	Y= Distance to first intersections where left turns are allowed	Z = Distance between the last right in/right out approach road & start of taper for the on-ramp
Urban	1 mile	1,320 feet	1,320 feet	1,320 feet

[a] An Urban Interchange Management Area is within a UGB and is not a Fully Developed Urban Interchange Management Area (1999 Oregon Highway Plan).

Exhibit 12. Measurement of Spacing Standards



The spacing standards outlined in **Exhibit 13** represent minimum distances between driveways and/or adjacent intersections within the City of Gresham. In addition, the access management principles outlined in Gresham's Development Code (Section A5.503) and ODOT's Access Management Manual should be applied when considering and reviewing the site access and development plans of individual properties as they are developed.

Exhibit 13. City of Gresham and ODOT Minimum Access Spacing Standard

Roadway/Access Type	Commercial/ Industrial	Residential
Arterial		
Minimum distance from ramp terminal to first access point - ODOT	1,320 ft	1,320 ft
Minimum distance between subsequent access points - City of Gresham	100 ft	100 ft
Collector – City of Gresham (all below)	100 ft	45 ft
SE Telford Rd	100 ft	45 ft
SE 242nd Avenue	100 ft	100 ft
SE 252nd Avenue	100 ft	45 ft
SE 267th Avenue	100 ft	45 ft
SE Orient Drive	100 ft	100 ft
SE Stone Road	45 ft	45 ft

Deviations to ODOT Access Management Standards

For preferred Alternative C-2, three intersections on the proposed arterial do not meet the 1,320-foot access spacing requirement from the ramp terminals, as identified in ODOT's Division 51 standard. Therefore, deviations are required under the provisions of OAR 734-51-0135 as described below, and have been reviewed by the ODOT Region 1 Access Management Engineer. **Exhibit 14** below illustrates the proposed Local Circulation Plan for the management area.

Under the provisions of OAR 734-51-0135(3), the ODOT Region Access Management Engineer may approve a deviation if:

(a) Adherence to spacing standards creates safety or traffic operation problems;

(b) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway;

(c) The applicant demonstrates that existing development patterns or land holdings make joint use approaches impossible;

(d) Adherence to spacing standards will cause the approach to conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery;

(e) The highway segment functions as a service road;

(f) On a couplet with directional traffic separated by a city block or more, the request is for an approach at mid-block with no other existing approaches in the block or the proposal consolidates existing approaches at mid-block; or

(g) Based on the Region Access Management Engineer's determination that:

(A) Safety factors and spacing significantly improve as a result of the approach; and

(B) Approval does not compromise the intent of these rules as set forth in OAR 734-051-0020.

Further, under the provisions of OAR 734-51-0135(5), the Region 1 Access Management Engineer may approve a deviation for an approach located in an interchange access management area if:

(a) A condition of approval, included in the Permit to Operate, is removal of the approach when reasonable alternate access becomes available;

(b) The approach is consistent with an AMP for an interchange that includes plans to combine or remove approaches resulting in a net reduction of approaches to the highway;

(c) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway; or

(d) The applicant demonstrates that existing development patterns or land holdings make utilization of a joint approach impracticable.

These provisions are addressed below for each of the three intersections.

SE Telford Road at the Proposed Arterial

A deviation to the 1,320-foot access spacing requirement identified in OAR 734-051-0125 is required at the proposed arterial/SE Telford Road intersection, located approximately 1,100 feet southwest of the proposed US 26 eastbound ramp terminal intersection. Under the provisions of OAR 734-51-0135(3), the ODOT Region Access Management Engineer may approve a deviation for a public approach that is identified in a local comprehensive plan and provides access to a public roadway if:

The provisions of OAR 734-51-0135(3) and OAR 734-51-0135(5) are addressed as follows:

(3)(a) Adherence to spacing standards creates safety or traffic operation problems.

Response: Not applicable (NA)

(3)(b) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway.

Response: SE Telford Road is a public collector road providing access to numerous neighborhoods, developments, and local streets. The proposed AMP would reduce the need for future access points on the proposed arterial between the interchange and SE Telford Road. Furthermore, the proposed Local Circulation Plan would realign SE 262nd Avenue to intersect SE Telford Road approximately 500 feet north of the proposed arterial. In this way, the plan removes existing approaches and reduces the need for potential future approaches within the interchange area.

(3)(c) The applicant demonstrates that existing development patterns or land holdings make joint use approaches impossible.

Response: NA

(3)(d) Adherence to spacing standards will cause the approach to conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery.

Response: SE Telford Road is located immediately east and adjacent to the Springwater Corridor Trail, which is immediately east and adjacent to Johnson Creek. Shifting the alignment of SE Telford Road to the west to meet the access spacing standard would have significant impacts to the trail and Johnson Creek as well as the wetland and riparian areas surrounding them. The alternatives evaluation process considered a design alternative in which the proposed arterial crossed over SE Telford Road on a new overpass structure with a jughandle connection to the west that would meet the access spacing standard. However, this alternative was ultimately dismissed by the PMT because it provided lower overall value with respect the project’s goals, criteria, and measures.

(3)(e) The highway segment functions as a service road.

Response: NA

(3)(f) On a couplet with directional traffic separated by a city block or more, the request is for an approach at mid-block with no other existing approaches in the block or the proposal consolidates existing approaches at mid-block.

Response: NA

(3)(g) Based on the Region Access Management Engineer's determination that: (A) Safety factors and spacing significantly improve as a result of the approach; and (B) Approval does not compromise the intent of these rules as set forth in OAR 734-051-0020.

Response: The proposed design, which provides a spacing of approximately 1,100 feet from the ramp terminal intersection, is not expected to compromise the safety of the transportation system.

(5)(a) A condition of approval, included in the Permit to Operate, is removal of the approach when reasonable alternate access becomes available.

Response: NA

(5)(b) The approach is consistent with an AMP for an interchange that includes plans to combine or remove approaches resulting in a net reduction of approaches to the highway.

Response: The proposed AMP would reduce the need for future access points on the proposed arterial between the interchange and SE Telford Road. Furthermore, the proposed Local Circulation Plan would realign SE 262nd Avenue to intersect SE Telford Road approximately 500 feet north of the proposed arterial. In this way, the plan reduces approaches from the interchange management area.

(5)(c) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway.

Response: See response to *(3)(b)* above.

(5)(d) The applicant demonstrates that existing development patterns or land holdings make utilization of a joint approach impracticable.

Response: NA

Realigned SE Jeanette Street at Proposed Arterial

A deviation to the 1,320-foot access spacing requirement identified in OAR 734-051-0125 is required at the proposed arterial/realigned SE Jeanette Street intersection, located approximately 1,200 feet northeast of the proposed US 26 eastbound ramp terminal intersection. The provisions of OAR 734-51-0135(3) and OAR 734-51-0135(5) are addressed as follows:

(3)(a) Adherence to spacing standards creates safety or traffic operation problems.

Response: NA

(3)(b) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway.

Response: The proposed Local Circulation Plan would realign SE Jeanette Street on the southeast side of the proposed arterial, and it would extend and realign SE Anderson Road on the northwest side to form a single intersection with the proposed arterial. SE Jeanette Street and SE Anderson Road would have right-in/right-out access to the arterial. As such, the planned network combines local street approaches and will provide access to multiple properties on both sides of the proposed arterial.

(3)(c) The applicant demonstrates that existing development patterns or land holdings make joint use approaches impossible.

Response: NA

(3)(d) Adherence to spacing standards will cause the approach to conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery.

Response: The proposed intersection has been located as far as possible from the ramp terminal intersection without creating conflicts to the North Fork of Johnson Creek. Shifting the intersection further northeast to meet the spacing standard would result in impacts to the North Fork of Johnson Creek and surrounding riparian area.

(3)(e) The highway segment functions as a service road.

Response: NA

(3)(f) On a couplet with directional traffic separated by a city block or more, the request is for an approach at mid-block with no other existing approaches in the block or the proposal consolidates existing approaches at mid-block.

Response: NA

(3)(g) Based on the Region Access Management Engineer's determination that: (A) Safety factors and spacing significantly improve as a result of the approach; and (B) Approval does not compromise the intent of these rules as set forth in OAR 734-051-0020.

Response: The proposed design, which provides a spacing of approximately 1,200 feet from the ramp terminal intersection, is not expected to compromise the safety of the transportation system.

(5)(a) A condition of approval, included in the Permit to Operate, is removal of the approach when reasonable alternate access becomes available.

Response: NA

(5)(b) The approach is consistent with an AMP for an interchange that includes plans to combine or remove approaches resulting in a net reduction of approaches to the highway.

Response: SE Jeanette Street and the proposed local street connection (directly opposite SE Jeanette Street) on the northwest side of the proposed arterial will provide access to the parcels along the arterial. As such, the subject intersection will reduce the need for future access points on the arterial within the interchange management area.

(5)(c) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway.

Response: See response to *(3)(b)* above.

(5)(d) The applicant demonstrates that existing development patterns or land holdings make utilization of a joint approach impracticable.

Response: NA

SE Hillyard Road at US 26

The following deviation to the 1-mile access spacing requirement identified in OAR 734-051-0125 is required at the Hillyard Road/US 26 intersection, located approximately 3,200 feet north of the end of the ramp tapers for the proposed new interchange. The provisions of OAR 734-51-0135(3) and OAR 734-51-0135(5) are addressed as follows:

(3)(a) Adherence to spacing standards creates safety or traffic operation problems.

Response: NA

(3)(b) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway.

Response: SE Hillyard Road is a city street providing access to many properties, including neighborhoods on both the east and west sides of US 26.

(3)(c) The applicant demonstrates that existing development patterns or land holdings make joint use approaches impossible.

Response: NA

(3)(d) Adherence to spacing standards will cause the approach to conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery.

Response: NA

(3)(e) The highway segment functions as a service road.

Response: NA

(3)(f) On a couplet with directional traffic separated by a city block or more, the request is for an approach at mid-block with no other existing approaches in the block or the proposal consolidates existing approaches at mid-block.

Response: NA

(3)(g) Based on the Region Access Management Engineer's determination that: (A) Safety factors and spacing significantly improve as a result of the approach; and (B) Approval does not compromise the intent of these rules as set forth in OAR 734-051-0020.

Response: The intersection at SE Hillyard Road and US 26 is an existing at-grade intersection with turning movements currently restricted to right-in, right-out, and left-in movements. Disconnecting Hillyard Road from US 26 would cause significant added travel distance for drivers accessing this neighborhood. It would also result in 50–100 additional turn movements at the Palmquist/US 26 intersection, which is projected to operate well over capacity in the future. The previous safety analysis found there have been only two crashes at the Hillyard/US 26 intersection over the five-year period between 2002 and 2006. With the construction of the new interchange, the safety at the Hillyard intersection is not expected to be compromised. Therefore, preserving the existing Hillyard/US 26 intersection is expected to provide a higher level of safety and efficiency for the overall transportation system.

(5)(a) A condition of approval, included in the Permit to Operate, is removal of the approach when reasonable alternate access becomes available.

Response: NA

(5)(b) The approach is consistent with an AMP for an interchange that includes plans to combine or remove approaches resulting in a net reduction of approaches to the highway.

Response: The IAMP includes removing the existing at-grade intersection at SE Stone Road and US 26 while replacing the existing at-grade intersection at SE 267th Avenue and US 26 with an interchange. As such, the overall number of access points on US 26 will be reduced.

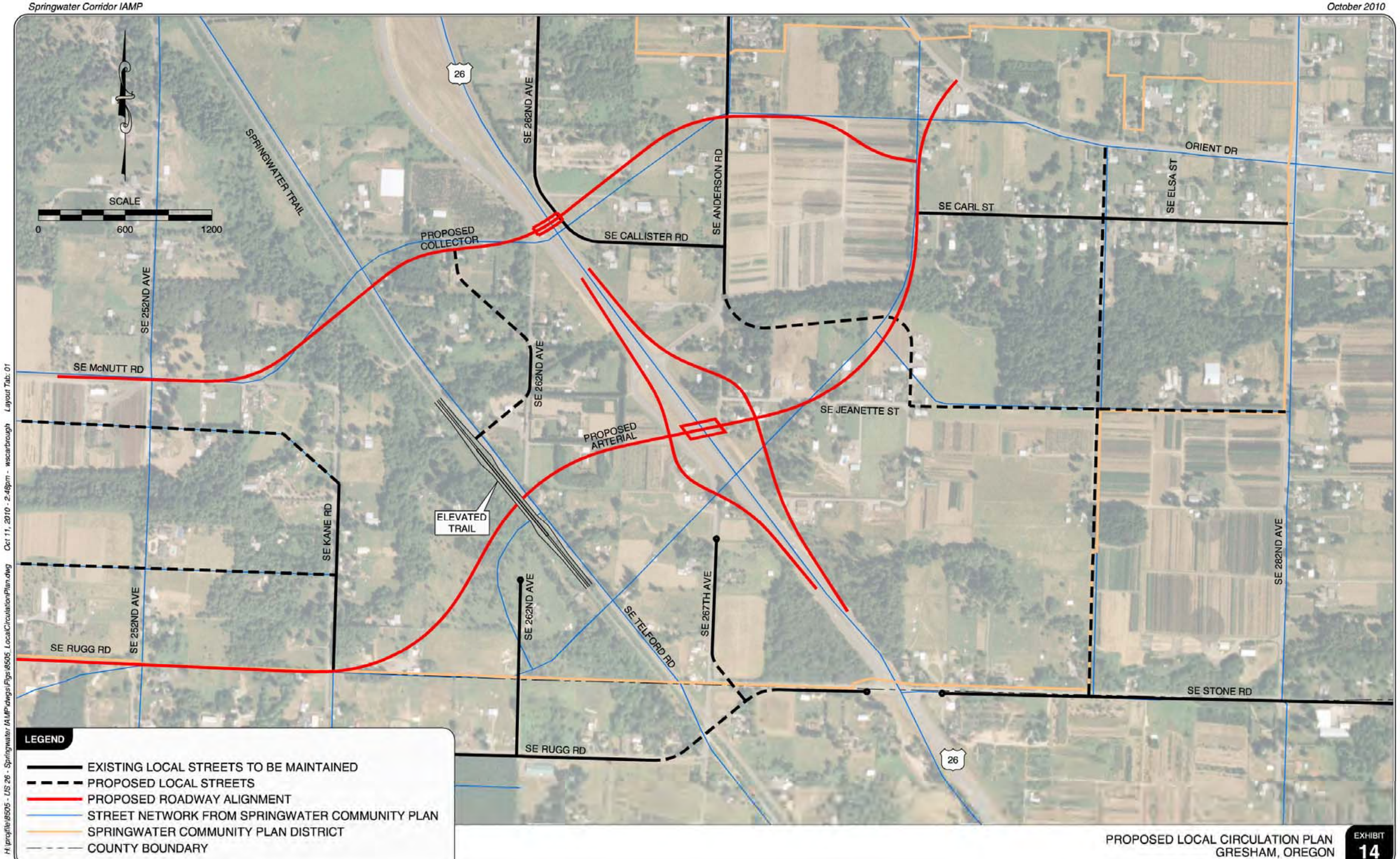
(5)(c) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway.

Response: See response to *(3)(b)* above.

(5)(d) The applicant demonstrates that existing development patterns or land holdings make utilization of a joint approach impracticable.

Response: NA

This page intentionally left blank.



PROPOSED LOCAL CIRCULATION PLAN
GRESHAM, OREGON

EXHIBIT 14

H:\projfile\8505 - US 26 - Springwater IAMP\dwgs\Figs\8505_LocalCirculationPlan.dwg Oct 11, 2010 - 2:48pm - wscarbrough Layout Tab: 01

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

This page intentionally left blank.

SECTION 3. IMPLEMENTATION AND ADOPTION

ODOT and the City of Gresham will be jointly responsible for adopting and implementing the Springwater IAMP. A set of implementing policies adopted as part of the Springwater Community Plan guide how ODOT and the City work together to implement the Springwater IAMP. The City of Damascus will not be impacted by interchange improvements within its jurisdiction, and therefore no adoption or implementation polices will be required from that City. Although the SE Haley Road intersection will be closed within Clackamas County's jurisdiction, no adoption or implementation policies will be required.

The sections below describe the implementing actions for which each jurisdiction is responsible. ODOT and the City of Gresham will implement the AMP element of this document through the access control measures listed below.

IAMP ADOPTION

Just as ODOT and the City of Gresham jointly prepared the Springwater IAMP, both will be responsible for adopting the IAMP. The City of Gresham will be the first to adopt the Springwater IAMP by amending the *Springwater TSP* to reflect the IAMP. Following the City's adoption of the Springwater IAMP, as an appendix to the Springwater TSP, the OTC will adopt the IAMP as a facility plan.

ODOT/State of Oregon Implementing Actions

ODOT's responsibilities for implementing the Springwater IAMP include:

- Adopting the Springwater IAMP as a facility plan and amending the OHP.
- Work with the City to design and construct the Springwater interchange. This includes the portion of the proposed arterial (including the overcrossing) within 1,320 feet east and west of US 26 and the interchange ramps.
- Work with the City to seek and provide funding for the interchange.
- Purchasing access control from private properties.
- Relocating or closing access points.
- Regulating the use of access points through establishment of deed restrictions.
- Developing traffic control devices.

City Implementing Actions

The City of Gresham will be responsible for the following implementing actions:

- Amending the *Springwater TSP* to include identified local street improvements and the location and design of the recommended alternative.
- Amending the *Springwater TSP* to include identified access management policies.
- Annexing the Springwater area in the vicinity of the interchange, prior to development of the interchange and its related transportation elements. All parcels affected by the interchange and interim transportation elements will be annexed into the City prior to construction.
- Seeking and providing funding for the interchange and identified local street improvements.
- Should funding only allow for the construction of the interim C-2 alignment, the City shall develop an ordinance to limit development in the management area to avoid exceeding .85 v/c at the interchange ramp terminals Concurrency Ordinance), until such a time as funding is provided to implement the full C-2 interchange design.

- Developing supporting local roadway connections.

Multnomah County Implementing Actions

Currently, unincorporated areas within the Springwater management area are subject to land use and transportation policies in Multnomah County's *West of Sandy River Transportation and Land Use Plan*. The Multnomah County Zoning Code regulates land use and development in the unincorporated area.

Multnomah County Board of Commissioners accepted, by resolution, the *Springwater Community Plan* as the concept plan for urbanizing the Springwater area, required by Metro. Urbanization, including the transportation facilities identified in the *Springwater TSP*, will only occur in areas that are incorporated into the City of Gresham. Multnomah County does not have land use or transportation jurisdiction within the City of Gresham; therefore, no County implementing actions are required for the IAMP. Multnomah County continues to support Gresham's implementation of the *Springwater Community Plan*. The Multnomah County Board of Commissioners can act on a resolution to accept the City of Gresham's amendments to the *Springwater Community Plan* that incorporates the IAMP.

ODOT Implementing Policies

The following policies guide how ODOT will continue to coordinate on future issues affecting the investment in the Springwater interchange.

- ODOT will continue to coordinate with local governments and state agencies, through the plan amendment and development review process, to keep land use protections in place. ODOT will also monitor and comment on any future actions that would amend the UGB.
- If future circumstances in the IAMP management area result in the need for changes to the IAMP, ODOT shall prepare amendments to the IAMP management actions and an accompanying funding plan to implement those actions.

City Implementing Policies

The following policies guide how the City of Gresham will continue to coordinate on future issues affecting the investment in the Springwater interchange. Examples of possible future issues include zoning changes in the Springwater area, changes to the local circulation network, or amendments to adopted plans.

- If future circumstances in the IAMP management area result in the need for changes to the IAMP, the City shall prepare amendments to the *Springwater TSP* and an accompanying funding plan to implement those actions.
- The City of Gresham recognizes the importance of US 26 in the movement of people and goods to and from the region and is committed to protecting the function of the highway and the interchange as defined in the IAMP.
- The City of Gresham will coordinate with ODOT in evaluating land use actions that could affect the function of the interchange.
- The City of Gresham will coordinate with ODOT prior to amending its comprehensive plan (including the TSP), land development ordinances or UGB, or proposing transportation improvements that could affect the function of the interchange. The City of Gresham will ensure that any such amendments are consistent with the function of the interchange as defined in the IAMP.

SECTION 4. CONSISTENCY WITH GOALS AND CRITERIA

Based on the screening and evaluation processes, the recommended alternative, C-2, meets the intent of the project purpose and intent and is also consistent with the project goals and criteria. Unlike other alternatives screened, the recommended alternative is consistent with the *Springwater TSP* because the interchange is in the same general location as the interchange area shown in adopted plans. Additionally, Alternative C-2 includes a collector road connecting SE Orient Drive to SE Hogan Road over US 26 just north of the interchange.

Following the screening process, the alternatives that successfully passed through the screening process went through an evaluation process (see Appendix B). The purpose of the evaluation process was to ensure that the alternatives met the intent of the project goals and criteria. Additionally, the evaluation process determined if the alternatives were financially feasible in comparison to other alternatives. As stated above, Alternative C-2 is the recommended alternative due to its comparatively low impact on the natural environment, low cost, and moderate residential displacements.

SECTION 5. MONITORING AND UPDATES

This section discusses the need to update the IAMP, and identifies those changes that may trigger an update over time. There are four such instances:

1. If an adjacent interchange is added or significantly modified, an update to this IAMP may be required.
2. When the City of Gresham's TSP is updated, the IAMP should be reviewed and updated if necessary.
3. If a change to the current City of Gresham Comprehensive Plan Map or Zoning Map land use designation is initiated, the applicant will be required to demonstrate that the proposed amendment is consistent with the planned improvements in the Springwater IAMP. Proposed Comprehensive Plan and Zoning Map land use designation changes can be initiated by any party with jurisdiction in the area, such as Multnomah County, City of Gresham, Clackamas County, or City of Damascus. A property owner or developer could also initiate a land use change. If the proposed change would result in the need for additional capacity at the interchange, the initiating party shall propose amendments to the IAMP and shall prepare a funding plan for ODOT and local jurisdiction review. Proposed IAMP amendments shall be coordinated with ODOT and local jurisdiction staff, and the revised IAMP and funding plan shall be submitted to the local jurisdiction and the OTC for approval and adoption.
4. AMP Modifications. Recommended actions in the AMP are based on property configurations, development application approvals, and ownership existing at the time of the Springwater IAMP's adoption. Lot consolidation and other land use actions may necessitate an amendment to the AMP. Modifications to the AMP may occur through agreement by the City of Gresham and ODOT and require an amendment to the Springwater IAMP. Such modifications will be allowed only if the proposed modifications meet, or move in the direction of meeting, the adopted access management spacing requirements in the Springwater IAMP.

ODOT will monitor and comment on any future amendments to the jurisdictional boundaries if those amendments could result in levels of travel that would exceed mobility standards adopted for the Springwater interchange.

APPENDIX 2

Pleasant Valley Transportation System Plan

Chapter 7. Transportation System Plan

Introduction

The purpose of the Pleasant Valley Transportation System Plan (TSP) is to establish a framework for addressing the transportation needs for this new urban community as urbanization occurs with the implementation of the Pleasant Valley Plan District. It is important that this TSP works within the framework provided by other related state, regional and local plans.

The Pleasant Valley TSP is not intended to be a "stand-alone" TSP but rather will be used by the Cities of Gresham and Portland to amend their respective Transportation System Plans specific to Pleasant Valley. For the City of Gresham it will amend Volume 4 – Transportation System Plan, Gresham Community Development Plan

Transportation System Plan

- Section 1 -- Planning Framework
- Section 2 -- Policies and Strategies
- Section 3 -- System Inventory and Assessment
- Section 4 -- Forecast and Alternatives
- Section 5 -- System Plans
- Section 6 -- Implementation – Projects and Funding

Plans for new urban areas must follow the requirements and guidelines of Title 11 of Metro's Urban Growth Management Functional Plan. Title 11 requires the following concerning transportation:

> *A conceptual transportation plan consistent with the applicable provisions of the Regional Transportation Plan, Tile 6.4 of Regional Transportation Plan [replaced Title 6 of the Urban Growth Management Functional Plan], and that is also consistent with the protection of natural resources either identified in acknowledged comprehensive plan inventories or as required by Title 3 of the Urban Growth Management Functional Plan. The plan shall, consisting with OAR Chapter 660 Division 11, including preliminary cost estimates and funding strategies, including likely financing approaches.*
>
> *An urban growth diagram … showing … general locations of arterial, collector, and essential streets.*

A conceptual facilities and services plan for transportation was developed as part of the *Concept Plan* project. Needed transportation facilities for the planned new urban uses were identified, rough cost estimates and likely funding strategies were developed, and a map depicting the general location arterial, collector and connecting local streets was included.

As a follow up to the concept planning, the *Implementation Plan* further defines the transportation system for the area by including the following elements:

- Functional Classification for Streets
- Street Design Types
- Connectivity Plan
- Bike and Trail Plan
- Illustrative Street Plan
- Transit Plan

The *Implementation Plan* project also identified transportation elements for a Public Facility Plan, consistent with Oregon Administrative Rules, specifically OAR 660-011-00. These elements are similar to those required for a Transportation System Plan, consistent with Oregon Administrative Rules, specifically OAR 660-012-00. Key requirements of the Transportation System Planning Rule include:

- A determination of transportation needs
- A road system of arterials and collectors and standards for the layout of local streets and other important non-collector street connections
- A public transportation plan
- A bicycle and pedestrian plan
- A transportation financing program including a list of planned transportation facilities and major improvement; a general estimate of the timing for facilities and improvements; a determination of rough cost estimates; and policies to guide selection of facility and improvement projects.

A key component to the successful implementation of the Transportation System Plan is the coordination of the multiple government agencies involved in Pleasant Valley, most notably the cities of Gresham and Portland. A March 2004 Gresham and Portland IGA provides a map showing future governance and urban services boundary for the two jurisdictions and generally provides the urban services will be provided by Gresham in areas that Gresham annexes (Area A) and by Portland in areas Portland annexes (Area B). Transportation services currently involved agreements with Multnomah County, which currently controls public roads in Pleasant Valley. The future status of roads in Pleasant Valley is part of an on-going discussion between Gresham and Portland. For planning purposes, the TSP assumes all major roads in Area A will belong to Gresham and conform to City of Gresham street design standards.

For the remainder of Pleasant Valley, which is in Clackamas County (Area C), a final decision on who will provide transportation services to most of this area has not yet been determined. The Cities of Portland and Gresham can serve this area, but do not have agreements in place with the county for doing so.

For planning purposes and to demonstrate that the area can urbanize in a manner that complies with Goal 11, the TSP assumes the cities of Portland and Gresham will serve the balance of Area C. The cities have plans in place that demonstrate its capacity to serve Area C. It can be noted that Clackamas County is a potential transportation service provider in Area C

The proposed Pleasant Valley TSP combines the results of the *Concept Plan* transportation inventory, needs analysis and the goals and policies development that resulted in conceptual transportation plan with the results of the *Implementation Plan* that details street classifications, street designs, connectivity and bike/pedestrian plans along and a public facility plan.

Section 1 -- Planning Framework

Background

Pleasant Valley is an area that was added to the region's urban growth boundary in December 1998 to accommodate forecasted population growth in the region. Pleasant Valley is planned as a new, urban community. It is 1,532 acres located south and east of the current city limits for Gresham and Portland. The City of Gresham, in partnership with the City of Portland, has been working with its regional partners and the community since 1998 to create a plan for the future urbanization of this rural area. This extensive planning process has created a vision and a plan for the transition of a rural community of 800 residents into an urban community of approximately 12,000 residents and 5,000 jobs.

Over the last four years the Pleasant Valley Plan District (Plan District) has been drafted. Crafted during the Pleasant Valley Concept Plan (Concept Plan) project and the follow-up Pleasant Valley Implementation Plan (Implementation Plan) project, it was created with the help of public input from open houses and community forums, numerous advisory committees, and staff from both the cities of Gresham and Portland and other agencies. The *Concept Plan* project created maps and text that provide a blueprint for future development of the area located south of Gresham and east of Portland. The *Implementation Plan* project provided a "bridge" document between the *Concept Plan* and these *Comprehensive Plan Amendments*.

On May 14, 2002, the Pleasant Valley Concept Plan Steering Committee endorsed a Concept Plan and set of Implementation Strategies for the valley. The central theme of the plan is to create an urban community through the integration of land use, transportation and natural resource elements. The Concept Plan has been refined into the Plan District. The Plan District consists of a map of proposed comprehensive plan designations, with associated code text, and other maps, diagrams and background findings.

The Plan District will fulfill the goal of the Concept Plan to create a quality living environment, with a sense of place that is unique to Pleasant Valley. To achieve this goal, the Plan District will implement compact mixed-use neighborhoods, a town center, neighborhood edges and centers, a variety of housing options, transportation alternatives, pedestrian friendly urban design and the integration of the natural environment into the design of the community. Critical to the sense of place in Pleasant Valley are the valley's natural resources and extensive network of streams and wetlands. The Plan District will allow the valley to develop in such a way that minimizes impact on these natural features, while allowing these features to enhance the built environment.

The *Pleasant Valley Concept and Implementation Plans* projects addressed the entire 1,532-acre study area to achieve the overall goal of "creating a complete community." The cities of Gresham and Portland have agreed to adopt similar policies and development code to achieve this goal. In addition, the cities reached an agreement on future governance that entails Gresham annexing about 1,004 acres and Portland about 268 acres in Multnomah County. No service or governance agreement exists in Clackamas County. However, the cities did agree upon a boundary if such an agreement was reached that provided for Gresham and Portland governance. If that happened about 197 acres are Gresham annexation areas and about 38 acres are Portland annexation areas. The remaining 25 acres is a separate area in Clackamas County that has an existing mobile home park and that has been partially annexed by the City of Happy Valley.

The Pleasant Valley Plan District provides the basis for a land use plan that is consistent with the goals of the Concept Plan. The central theme of creating an urban community through the integration of land use, transportation and natural resource protection is reflected by the following key elements of the Plan District:

- A mixed-use town center as the focus of retail, civic and related uses.
- A variety of housing organized in eight neighborhoods. The variety includes low, medium and high-density housing with standards that guide how variety is planned within neighborhoods.
- Planned housing that is 50 percent attached, 50 percent detached and has an overall density of 10 dwelling units per net residential acre. The estimated housing capacity is approximately 5,000 dwellings.
- Two 5-acre mixed-use neighborhood centers.
- Employment opportunities provided in the town center, mixed-use employment district and general employment districts and as home-based jobs. Employment capacity is estimated at approximately 5,000 jobs.
- A framework for protection, restoration and enhancement of the area's streams, floodplains, wetlands, riparian areas and major tree groves through the designation of areas as "environmentally sensitive and restoration areas" (ESRAs).
- Designation of a "neighborhood transition design area" adjacent to the ESRA so that neighborhood development is compatible with adjacent green corridors.
- A new elementary school and middle school located adjacent to 162nd Avenue.
- Nine neighborhood parks dispersed throughout and a 29-acre community park centrally located between the utility easements north of Kelley Creek.
- A "green" stormwater management system intended to capture and filter stormwater close to the source through extensive tree planting throughout the valley, "green" street designs, swale conveyance and filtration of run-off, and strategically placed stormwater management facilities.
- A network of trails including east-west regional trails paralleling Kelley Creek and north-south regional trails following the BPA power line easement.
- A reorganization of the valley's arterial and collector street system to create a connected network that will serve urban levels of land use and all modes of travel.
- Re-designation of Foster Road from arterial to local street status between Jenne Road and Pleasant Valley Elementary School. The intent is to preserve the two-lane tree-lined character of Foster Road and to support restoration efforts where Mitchell Creek and other tributaries flow into Kelley Creek.
- A network of transit streets that serve three mixed-use centers and seven nodes of attached housing.
- The location of major roads away from important historic resources and "park blocks" that connect the town center to the historic central section of Foster Road.

Planning Context for Transportation

Regional Context

Adopted in 1995, the 2040 Growth Concept establishes the region's policy for regional growth and development. Pleasant Valley is almost equal distance between the two largest regional centers in this part of the region: the Gresham and the Clackamas regional centers. The same is true for the two closest town centers: Lents and Damascus. Each of the region's centers is unique, and Pleasant Valley's town center will have its own individual scale and character.

Pleasant Valley enjoys a unique geographical location within a series of lava domes and wooded buttes in the southeast portion of the Portland metropolitan region. The area also contains a significant number of environmentally sensitive streams and wetlands, including Kelley and Mitchell creeks. While these natural features provide scenic vistas and recreational opportunities, they also provide challenges from a transportation perspective.

Pleasant Valley is connected to its surrounding landscape. Powell Butte, Butler Ridge and the western ridgeline provide a dramatic framing of the valley. Kelley Creek and its tributaries are key water features that connect the surrounding watershed to Johnson Creek and have influenced historical land use patterns. Kelley Creek also serves as a regional migration route for large and small animals traveling between the buttes. These features underlie a strong sense of place that residents of the valley expressed during the Concept Plan process and in previous interviews.

The Concept Plan study area extends to the regional urban growth boundary located about 2,000 feet south of the Multnomah-Clackamas County line. However, Pleasant Valley's landscape, social and historical connections extend south to the Damascus area.

Pleasant Valley Concept Plan

The Concept Plan was developed by a 23-member Steering Committee representing residents and property owners; Portland, Gresham and Happy Valley planning commissions; Multnomah and Clackamas counties; citizen advisory committees, business and neighborhood associations; Centennial School District, watershed councils, and environmental/livability organizations. The committee met 15 times between November 2000 and May 2002.

The major steps in the process were:

- Inventory of base conditions and projections of land use, transportation, natural resource and infrastructure needs.
- Establishment of project goals.
- Development of four alternative concept plans.
- Evaluation of alternatives and preparation of a hybrid Concept Plan.
- Refinement of the Concept Plan and preparation of implementation strategies.
- Endorsement of the final Concept Plan and implementation strategies.

The following is a summary of the key parts of the project approach:

Integration of Land Use, Transportation and Natural Resources. The integration of these themes is the central unifying concept for the plan. It was implemented on all levels: staffing, inventory, joint work team meetings, communications with the public and evaluation of alternatives on various issues.

Consensus Decision Making. The Steering Committee adopted "operating principles" that included a model for making decisions by consensus. The definition of consensus: "You either support the proposed action or can live with it." The committee took votes on some issues where there was not full consensus – minority viewpoints were recorded.

Project Partners. The process was a partnership of the cities of Gresham, Happy Valley and Portland, Metro, and Clackamas and Multnomah counties. Staff from these partnering governments worked together on the project's six work teams.

Working With the Community at Each Milestone. Five community forums were held to involve the public at each stage of the process and allow the public to participate in preparation of recommendations before final action by the Steering Committee. The forums, held on Saturday mornings, included open house display of working maps, presentation and large group discussion, small group discussion and exit questionnaires.

Subwatershed Planning. Pleasant Valley is at the headwaters of the Johnson Creek watershed. The tributaries to Johnson and Kelley creeks that flow through Pleasant Valley comprise eight individual "sub" watersheds that were used in the planning process. The subwatersheds were the basis for extensive information gathering and subsequent modeling of runoff under both "green" practices and traditional piped stormwater management.

Transportation Modeling and Regional Coordination. The land use alternatives and the hybrid Concept Plan were analyzed in Metro's regional transportation model. Key assumptions included the transportation facility improvements that are adopted in the Regional Transportation Plan and urbanization of the Damascus area as evaluated by Clackamas County in the Damascus Concept Planning Study. The modeling was the basis for street alignments and classifications, transit routing, signal locations and recommendations for further study.

Green Streets. The Concept Plan includes "green" street designs as developed by Metro that are intended to reduce environmental impacts on streams from street runoff and contribute to community livability through creation of walkable tree-lined streets.

Compliance with Metro Title 11. Concept plans must follow the requirements and guidelines of Title 11 of Metro's Urban Growth Management Functional Plan. The project work plan was organized around the topical elements of Title 11. The Steering Committee endorsed using Title 11 in the evaluation of the plan alternatives.

Coordination with State and Federal Agencies. The project began with an outreach effort to 20 state and federal agencies, including 12 interviews. As with the citizen effort, each agency was invited to participate at each major milestone. Supplemental contacts were made with agencies to involve them in meetings with the project work teams.

The Concept Plan process provided extensive opportunities for citizens to participate. These opportunities included input during many of the Steering Committee meetings, participation in five community forums and the design charrette and submittal of written comments.

Citizen input covered many topics and many levels of detail. Many citizens were concerned that the transportation system would not be adequate to carry the estimated levels of traffic in the future. This concern was coupled with support for specific elements of the plan's proposed transportation system.

A number of goals endorsed by the Steering Committee on May 2, 2001, reflect the vision and values underlying the Pleasant Valley Plan District. They were endorsed at the end of the project inventory phase, just prior to the design charrette. They were subsequently used in evaluating the four plan alternatives.

The transportation goal was:

> ***H. Provide transportation choices.*** Pleasant Valley will be a community where it is safe, convenient and inviting to walk and ride a bike. The plan will set the stage for future community-level transit service that connects to regional transit service, including street designs, land use types and densities that support transit. Recommendations will be developed to correct transportation safety issues, to address through traffic and to provide adequate capacity for future growth. The plan will coordinate with surrounding jurisdictions to create effective regional connections and a balanced regional transportation system. A well-connected street system will be planned, using a variety of street types that reinforce a sense of community and provide

adequate routes for travel. Streets will accommodate walking and biking, with special pedestrian features on major transit streets.

Other goals were to:

A. Create a community. The plan will create a "place" that has a unique sense of identity and cohesiveness. The sense of community will be fostered, in part, by providing a wide range of transportation choices and living, working, shopping, recreational, civic, educational, worship, open space and other opportunities. Community refers to the broader Concept Plan area, recognizing that it has (and will have) unique areas within it. Community also refers to Pleasant Valley's relationship to the region – relationships with Portland, Gresham and Happy Valley, Multnomah and Clackamas counties, and the unique regional landscape that frames Pleasant Valley.

B. Create a town center as the heart of the community. A mixed-use town center will be the focus of retail, civic and related uses, and services that serve the daily needs of the local community. The town center will be served by a multi-modal transportation system. Housing will be incorporated into mixed-use buildings and/or adjacent apartments and townhomes. A central green or plaza will be included as a community gathering space. Streets and buildings will be designed to emphasize a lively pedestrian-oriented character for the town center. The town center will have strong connections to adjacent neighborhoods and commercial services that are centralized and convenient to pedestrian-oriented shopping.

C. Integrate schools and civic uses into the community. The number, type and location of schools will be coordinated with the Centennial School District. Schools and civic uses will be integrated with adjacent neighborhoods and connected by a system of bicycle and pedestrian routes. The number, type and location of mixed-use centers will be considered as schools and civic uses are integrated into the plan.

D. Celebrate Pleasant Valley's cultural and natural history. The plan will retain the best of the past and incorporate the area's cultural and natural history, as appropriate, into the new community form. Important cultural and natural names, places and themes will be included.

E. Preserve, restore and enhance natural resources. The plan will identify, protect, restore and enhance significant natural resource areas, including stream corridors, forested areas and buttes. Resource areas will provide the basis for identifying buildable and nonbuildable areas, and will serve as open space amenities for the community. Resource protection will include strategies to protect endangered species, water quality and the aquifer. Resource protection and enhancement will be a shared responsibility and partnership of property owners, governments and developers.

F. Use "green" development practices. The plan will incorporate community design and infrastructure plans that produce minimal impacts on the environment, including flooding and water quality within Johnson Creek. The plan will incorporate guidelines for stormwater quality and quantity and resource management for each subwatershed, and will also enhance natural hydrologic systems as a fundamental part of managing drainage and water quality. The plan will incorporate green street designs. The plan will integrate green infrastructure with land use design and natural resource protection. The plan will incorporate energy-savings measures.

G. Locate and develop parks and open spaces throughout the community. Neighborhood parks, small green spaces and open spaces will be within a short walk of all homes. A network of bicycle and pedestrian routes, equestrian trails and multi-use paths will connect the parks and open spaces. The park and trail system will be connected to the Springwater Trail, Powell Butte and other regional trails and greenspaces.

I. Provide housing choices. A variety of housing choices will be provided, with a focus on home ownership options. Housing options will accommodate a variety of demographic and income needs, including appropriate affordable choices and housing for seniors. The plan will provide for an overall average residential density of 10 dwelling units per net residential acre (i.e., including only residential land), based on a mix of densities. Walkable neighborhoods will form the organizing structure for residential land use. Natural features will help define neighborhood form and character.

J. Provide and coordinate opportunities to work in and near Pleasant Valley. The plan will identify opportunities for home-based work and employment areas within Pleasant Valley. A range of employment opportunities will be considered, including retail and other employment. The plan also will consider the relationship of Pleasant Valley to existing employment centers in the East Metro area and potential new employment areas near Damascus.

Pleasant Valley Concept Transportation Plan

The key elements of the transportation plan (as integrated with land use and natural resources) are to:

- Create a network of arterial, collector, neighborhood connector and local streets that accommodates travel demand and provides multiple routes for travel. Key new street extensions and connections include:
  - 172nd Avenue extension north to Giese Road
  - Giese Road west to Foster Road
  - Clatsop Street west to Cheldelin Road
  - 182nd Avenue south to Cheldelin
  - Butler Road west to 190th Avenue
  - Sager Road east to Foster Road
  - Long-term arterial connection from 172nd to 190th Avenue south of the study area.
- Upgrade existing streets and design all new streets to accommodate biking and walking, with special pedestrian amenities on transit streets. Upgrade intersections with safety issues identified as part of the inventory work.
- Provide regional and community transit service on key roads in Pleasant Valley, with direct connections to Happy Valley, Clackamas regional center, Damascus, Lents, Gresham, the Columbia Corridor and downtown Portland. Transit streets include 172nd Avenue, Giese Road, 182nd Avenue, 190th Avenue, a new east-west collector south of Giese Road and Clatsop Street-Cheldelin Road.
- Provide a logical and connected street system that connects directly to community destinations while also avoiding the ESRA where possible. Plan for a local street system that complements the arterial and collector street system, and meets regional connectivity requirements.
- Use "green" street designs that are an integral part of the stormwater management system and provide walkable tree-lined streets.
- Downgrade the function of Foster and Richey roads to serve as local access streets and develop a strategy to disconnect and potentially vacate these streets in the confluence area of Kelley Creek.
- Plan for a long-term major arterial connection south of the study area from 172nd Avenue to 190th Avenue to serve long-term regional mobility needs if future urbanization occurs in Damascus. This will be evaluated more fully by Metro as part of urban area planning for the Damascus area.
- Evaluate needed capacity improvements to address long-term travel demand for key gateway routes if future urbanization occurs in Damascus. This will be evaluated as part of a Powell/Foster corridor study (beginning in summer 2002), continued Damascus area planning, and the next Regional Transportation Plan update.

Transportation and Community Systems Preservation (TCSP)

The Pleasant Valley Concept Plan was initiated under a federal highway TCSP grant. It was a pilot project – the specific goal being to link a balanced land use plan and a multi-modal transportation system with an efficient circulation system with good connection in an environmentally constrained area. Environmental considerations included creating strategies to help protect steelhead and cutthroat trout salmonoids, minimize stormwater runoff in the Johnson Creek watershed and avoid further degradation of water quality.

Acknowledging the TCSP goals, the Steering Committee adopted a series of purpose statements. Included, as a purpose, was to "determine land use and transportation patterns minimizing the impact to environmentally sensitive areas" and to "link with regional context such as the regional transportation system, the Johnson Creek watershed and the Gresham Regional Center."

Metro Powell/Foster Corridor Refinement Plan

Metro, along with the cities of Gresham and Portland, Multnomah County and Clackamas Counties; TriMet and the Oregon Department of Transportation has been conducting the Powell/Foster Corridor Transportation study. The overall goal of the project was to define and preliminarily evaluate an initial range of multi-modal alternatives that will accommodate the 2020 corridor travel demand in a way that supports the 2040 Concept Plan. This work serves as a first phase of a multi-modal corridor plan and refinement plan for the Powell/Foster transportation corridor.

The study was funded under a Transportation and Growth Management program grant and concluded in June 2003. Because the study area included portions of the Pleasant Valley Concept area, Gresham Pleasant Valley project staff participated on the Powell/Foster Technical Advisory Committee (TAC). Similarly, Metro Powell/Foster staff participated on the Pleasant Valley TAC, Stakeholder Advisory Group and public forums.

An existing conditions and needs analysis identified Jenne Road / 174th Avenue from Powell Boulevard to Foster Road as a particular trouble spot in achieving needed capacity between Pleasant Valley and points north. Jenne Road, in Pleasant Valley, has a functional classification as a minor arterial street. As there were concerns about widening Jenne Road (due to severe slopes, adjacent riparian habitat areas and existing substandard curves), three new options to Jenne Road was created and modeled:

Two-lane option. Jenne Road widened to include one lane in each direction plus turn pockets as needed from Powell Boulevard to Foster Road.

Extra southbound lane option. Jenne widened to three lanes with one lane northbound and two lanes southbound.

New road option. Construct a new two-lane road with turn pockets near 174th from Jenne to Giese and add turn pockets to Jenne as needed. This option would create a new 172nd/174th Avenue from the Springwater Trail to the proposed SE Giese Road in the Pleasant Valley project area. A preliminary engineering sketch would have the new road utilize the existing Platt Road north of McKinley Road and then go south to Giese Road creating a new stream crossing. It would be a two-lane road with turn pockets as needed. It would likely connect at Giese Road to the west of the proposed town center. With this option Jenne Road would become classified as a local street.

Preliminary findings of the modeling, as reported by Metro, include:

- Reconstructing Jenne and building a new road would range in cost from $7 to $16 million.
- The extra southbound direction lane option would only address traffic congestion in one direction.

- Constructing a new road would relieve congestion on Jenne and improve north-south connections, but it would increase traffic on Southeast 174th south of Powell.
- If a new road was built, it could be designed as a “green street” that helps to protect, enhance and restore the natural environment.
- Any of the options would require some property acquisition. The new road would impact more undeveloped property.
- Widening Jenne would affect a more sensitive environmental area, but the new roadway would require an additional stream crossing.
- All options would need to be evaluated in the context of the Pleasant Valley planning efforts (see comment below).
- Gresham, Portland and Metro should jointly further evaluate these options as part of future transportation system planning for Pleasant Valley.

It should be noted that Option 3 could significantly affect the design of the land uses and circulation in the Town Center area. The evaluation of Option 3 should be conducted with two major components that support the traffic impact perspective:

1. A review of the land use, natural resource and urban design implications of the options.
2. Opportunities to comment by Pleasant Valley stakeholders.

Section 2 – Policies and Strategies

Background

The Metro Council brought the Pleasant Valley area into the Urban Growth Boundary (UGB) in December 1998. When land is brought into the UGB, Title 11 of the Metro Urban Growth Management Functional Plan requires that the added territory be brought into a city's comprehensive plan prior to urbanization with the intent to promote the integration of the new land into existing communities.

Title 11 requires a series of comprehensive plan amendments, including maps, that address provisions for annexation; housing; commercial and industrial development; transportation; natural resource protection and restoration; public facilities and services including parks and open spaces; and schools.

In 1998, a partnership of jurisdictions sponsored a series of citizen and affected parties meetings concerning Pleasant Valley. A set of preliminary planning goals was developed as part of this process. The goals addressed a town center, housing, transportation, natural resources, neighborhoods and schools. The goal for transportation stated:

> *The area has inadequate rural road improvements and suffers from traffic congestion and unsafe road conditions and driving behaviors. Development of the area should be timed to coincide with road improvements. The transportation plan should include a system of local collectors and arterials that will provide sufficient north-south and east-west connectivity. Transit bus service should be included in any transportation plan. Other modes of transportation should also be available. Some of the roads in the area may be difficult to widen without significant environmental impacts. In some cases, a realignment or replacement should be considered. In general, roads should be planned and designed for speeds consistent with local uses rather than regional through traffic. For example, Foster Road provides for slower, safer speeds, particularly in the town center area. Biking and walking should be safely accommodated on all arterials and collectors.*

Transportation Goal, Policies, Strategies

A transportation work team conducted a number of sessions during the Pleasant Valley Concept Plan process. The transportation work team consisted of transportation planning, land use planning and traffic engineering professionals from the Cities of Gresham and Portland, Multnomah and Clackamas Counties, Metro, TriMet, the Oregon Department of Transportation and DKS Associates (a private consultant firm).

The transportation work team identified four principles for a well-planned street system to help prevent traffic congestion, while promoting walking, transit and bicycling. Good design can also avoid the effects of heavy traffic on neighborhood safety and the environments.

Principle 1 – Spread out the Traffic. When designing streets it is important to not only consider the roadway's traffic function, but also other modes of travel and character of the surrounding community that the street will serve. Well designed arterial, collector and local streets are a good starting point for spreading out traffic in communities, and avoiding overly wide streets as a community and its neighborhoods grow.

Principle 2 – Design for Livability. The design of our streets directly affects our quality of life. Street design can promote community livability by emphasizing local travel needs and creating a safe, inviting space for community activity. Street design elements such as sidewalks, crosswalks, landscaped sidewalk buffers, bikeways, on-street parking, street trees, landscaping, street lighting, bus shelters, benches and corner curb extensions provide an environment that is not only attractive, but can slow traffic and encourage walking, bicycling and use of transit. Metro's handbook *Creating Livable Streets* provides examples of better design. Additionally streets can be designed to be "green", where features like streets, landscaped swales and special paving materials can be used to limit stormwater runoff, which, in turn, helps protect stream habitat. Metro's *Green Streets* handbook is a resource for green street design and issues.

Principle 3 – Connectivity Works. On average, each household generates 10-12 automobile trips per day. A well-connected street system with reasonably direct connections encourages walking, bicycling, and transit use, and can reduce the number and length of these automobile trips. In well-connected street systems, local traffic is more dispersed, rather than focused on arterials where it combines with through-traffic to create congestion. With a well-connected system that provides multiple routes to local destinations, any single street will be less likely to be overburdened by excessive traffic. Police and fire response also benefits from a well-connected street system. Other benefits include: travel is more direct, better serves the development of main street and town centers as alternatives to commercial strip development, ideal for walking and biking because of more direct routes that are safer streets, allows streets to be narrower reducing costs, saving energy and reducing stormwater runoff, and allows for more frequent transit stops and ease of walking to transit stops.

Principle 4 – Copy What Works. There are a number of good street system examples in the Metro region. Older areas such as Laurelhurst (Portland), East Hill and Southeast Roberts (Gresham), Eastmoreland (Portland) and newer areas such as Fairview Village (Fairview), Tualatin Commons (Tualatin) and Orenco Station (Hillsboro).

GOAL

Pleasant Valley will be a community where a wide range of safe and convenient transportation choices are provided.

POLICIES

1. Pleasant Valley will be a community where it is safe, convenient, and inviting to walk, ride a bike and use transit. The network of streets shall accommodate walking and biking, with special pedestrian features on transit streets.
2. The community will be served by a balanced transportation system that serves all modes of travel and is coordinated with Gresham, Portland, Happy Valley, Clackamas County, Multnomah County, TriMet, ODOT, Metro and other transportation service providers to provide effective regional connections to the Pleasant Valley community.
3. The community will be served by community level transit service that connects to regional transit service, and include street designs, land use types, patterns and densities and pedestrian and bicycle improvements that support transit.
4. An efficient, well-connected street system will be planned, using a variety of street types that reinforce a sense of community, provide adequate routes for travel by all modes and preserve adequate right-of-way to serve future transportation needs.
5. Existing transportation safety issues will be addressed.
6. The Pleasant Valley Plan District map will serve as the basis for providing opportunities for through-travel on arterial streets and local access to community destinations on collectors, neighborhood connectors and local streets.
7. The plan district will provide a bicycle and pedestrian system that provides for safe, convenient, attractive and accessible bicycle and pedestrian routes on all streets. These routes shall connect the multi-use trail and parks and open spaces system, and to major activity centers such as schools, civic uses, neighborhood centers, employment areas and the town center.

8. The plan district will provide a multi-use trail system to serve as important off-street bicycle and pedestrian connections to schools, parks, commercial areas and neighborhoods within the Pleasant Valley community, particularly in areas near the confluence of Kelley and Mitchell creeks where streams limit street connectivity.
9. Transportation plans will use green street designs, as described in Metro's handbook titled *Green Streets: Innovative Solutions for Stormwater and Stream Crossings* and *Trees for Green Streets* as a resource in the development and design of streets.

ACTION MEASURES

1. As a near-term objective, downgrade the function of Foster and Richey roads in the confluence area of Kelley Creek to serve as local access streets. As a long-term objective, develop a strategy to disconnect and potentially vacate the vehicular function of these street segments while maintaining the opportunity for a local trail opportunity.
2. Establish street design standards that respect the characteristics of the surrounding land uses, natural features, and other community amenities. All streets shall be designed to support adjacent land uses, accommodate pedestrians and bicyclists and include green streets design elements that help minimize stormwater runoff. Design shall be based on the Pleasant Valley Street Designs adopted in the Pleasant Valley Concept Plan Implementation Strategies. In developing street designs utilize Metro publications *Creating Livable Streets, Green Streets: Innovative Solutions for Stormwater and Stream Crossings* and *Trees for Green Streets*. The plan district street design standards shall provide for:
   a. Planting and preservation of trees in the street rights-of-way.
   b. Continuous sidewalks along both sides of all arterial, collector, and local streets. Sidewalks should connect to side streets and adjacent sidewalks and buildings. Pervious sidewalk treatments should be considered.
   c. Landscaped buffer separating travel lanes from sidewalks.
   d. Direct and logical pedestrian crossings at transit stops and marked crossings at major transit stops.
   e. Short and direct public right-of-way routes to connect residential uses with nearby commercial services, schools, parks and other neighborhood facilities.
   f. Street design elements that discourage traffic infiltration and excessive speeds on local streets, such as curb extensions, on-street parking, and wider sidewalks and narrowed travel lanes.
   g. Secure bicycle storage facilities such as bicycle racks and other park and lock accommodations at major destination points including the town center, transit center, recreation areas and office, commercial and employment centers.
   h. Minimize impervious area and utilize the natural drainage system where practical.
   i. Designing bridges to serve as civic gateways or focal points in the community. Establishing guidelines to help determine most appropriate stream crossing solution for each individual crossing.
   j. Locating road and multi-use path stream crossing alignments to have the lowest level of impact on a stream or ESRA. Locational considerations shall include crossings perpendicular to the stream and along narrow stream segments. Trail crossings shall consider the needs of equestrians, where appropriate, and pedestrian and bicycle travel.

3. Adopt a local street network plan that includes functional classifications for streets, street design types, connectivity plan and standards and a bike and trail plan for the plan district. The local street network plan will:
   a. Consider opportunities to incrementally extend streets from nearby areas.
   b. Limit the use of cul-de-sac designs and other closed end street systems to situations where barriers such as existing development, topography and environmental constraints prevent full street connections.
   c. Provide bicycle and pedestrian accessways where full street connections cannot be provided.
   d. Investigate off-street bike and pedestrian connections where needed to link major community destinations, such as the town center, transit center, recreation areas and office, commercial and employment centers.
4. Realign 172nd Avenue as it passes through Kelley Creek ESRA to not follow creek and reduce impact area by keeping it as far west of confluence as practical and minimizing the bridge footprint in the creek and adjacent riparian area.
5. The plan district will allow for and encourage:
   a. Efficient use of on-street parking to help reduce off-street parking needs
   b. Shared parking agreements to reduce the size and number of parking lots
   c. Shared driveways between adjacent development projects
   d. Minimizing impervious area when developing parking lots
6. Educate business groups, employees, and residents about trip reduction strategies, and work with business groups, residents, and employees to develop and implement travel demand management programs, such as carpool matching, vanpool matching, flexible work hours, transit subsidies, parking management, bikes on transit and telecommuting to reduce peak-hour single occupant vehicles in Pleasant Valley.
7. Gresham, in coordination with Portland, will work with Metro, ODOT, Multnomah County, Clackamas County and other agencies as appropriate to:
   a. Investigate needed safety and capacity improvements to address future travel demand in the Foster Road and Powell Boulevard corridors and implement study recommendations.
   b. Evaluate the long-term need for an arterial connection between 172nd Avenue and 190th Avenue as part of urban area planning that responds to future urban growth boundary decisions.
   c. Implement needed transportation improvements to serve Pleasant Valley and correct existing safety issues.
   d. Implement regional corridor study recommendations and projects identified in the Regional Transportation Plan for key gateway routes, such as Sunnyside Road, Foster Road, Powell Boulevard, 172nd Avenue and 190th Avenue.
8. Expand the TriMet service boundary to include areas within Clackamas County to allow TriMet to serve this area. Work with TriMet to develop a transit plan for Pleasant Valley that:
   a. Establishes a transit hub within the town center zoning district that provides transfer opportunities between regional and community transit routes
   b. Implements recommended community and regional transit service.

c. Determines appropriate locations and design of bus loading areas and transit preferential treatments such as reserved bus lanes and signal pre-emption to enhance transit usage and public safety and to promote the smooth flow of traffic.

d. That, with other transit service providers, and employers and social service agencies' efforts enhances access for elderly, economically disadvantaged, and people with disabilities.

9. Work with emergency service providers to designate emergency access routes.

10. Develop and implement a public facility and capital improvement plan that identifies, prioritizes and adequately funds transportation improvement, operation and maintenance needs.

    a. Consider system development charges, traffic impact fees, local improvement district fees, parking fees, street utility fees and other fee mechanisms to help pay for transportation improvements, including transit.

    b. Apply for federal, state and regional funds through the Metropolitan Transportation Improvement Program (MTIP).

    c. Encourage creative partnerships (e.g., federal, state, regional, multiple jurisdiction, private) to fund transportation improvements.

    d. Develop a right-of-way preservation strategy for 172nd Avenue, Giese Road, 190th Avenue, and Clatsop Street extension to Cheldelin Road.

11. Work with Metro to amend the Regional Transportation Plan to reflect Pleasant Valley Plan District recommendations, including:

    a. Motor vehicle functional classification system, transit system, pedestrian system, bicycle system and street design classification system.

    b. Transportation improvements and rough cost estimates.

This page intentionally left blank.

Section 3 – System Inventory and Assessment

Background

Existing transportation conditions were evaluated by a transportation work team that consists of planning and transportation staff from Portland, Gresham, Multnomah and Clackamas counties, TriMet, Metro, the Oregon Department of Transportation and consultants as part of the Pleasant Valley Concept Plan. The initial task of the work team was to develop a baseline inventory of the existing transportation system. The team conducted an inventory of the existing road network and transportation improvements identified in local and regional plans, and identified a preliminary list of issues for consideration as part of the Pleasant Valley Concept Plan process.

Transportation Conditions

During the past 30 years this farming community has evolved into a rural residential area. The area is currently served by a transportation system that was designed primarily to serve the farm-to-market travel needs of the agricultural uses that once occupied the valley. Foster Road, 172nd Avenue, Jenne Road, 190th Avenue, 182nd Avenue and Sunnyside Road are the primary routes that connect Pleasant Valley to other parts of the region.

Traffic volumes

Most travel out of Pleasant Valley is via Foster Road, which is limited in its ability to accommodate future traffic growth. Foster Road carries as many as 25,000 vehicles per day west of Jenne Road and 9,900 vehicles per day east of Jenne Road. (See Figure 2)

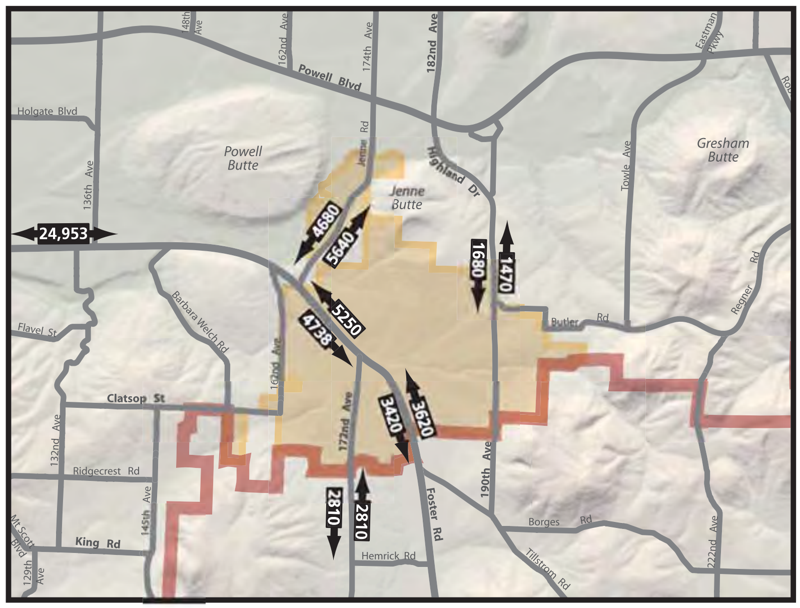


Figure 1. One-way and two-way traffic volumes on major streets in Pleasant Valley

Data sources: Data for Foster Road west of 136th Avenue is from 2000 City of Portland traffic counts. Data for Jenne Road is from 1996 Multnomah County traffic counts. Data for Foster Road between Richey Road and Cheldelin Road is from 1996 Multnomah County traffic counts. Data for Foster Road between 162nd Avenue and 172nd Avenue is from 1998 Multnomah County traffic counts. Data for 172nd Avenue from Foster Road to the Multnomah County line is from 1997 traffic counts.

Jenne Road, which carries approximately 10,300 vehicles per day north of Foster Road, experiences a significant amount of traffic due to the lack of arterial street connections between Pleasant Valley and Gresham. 172nd Avenue also provides an important north-south connection for travel between Highway 212 and Foster Road. 172nd Avenue carries approximately 6,900 vehicles per day north of Sunnyside Road and 3,500 vehicles per day south of Sunnyside Road. Figure 1 shows one-way and two-way traffic volumes on major streets in Pleasant Valley.

Safety

Safety issues exist throughout the area due to topography, awkward intersections with difficult sight distances, and high speeds and traffic volumes. More than 20 intersections were identified by participants in the first community forum as being unsafe because of one or more of these issues. In addition, many individuals indicated they often travel significantly out of direction to avoid congested locations and routes or intersections they feel are dangerous.

Transit travel

Pleasant Valley is not currently served by transit service. The nearest transit center and park-and-ride lot locations are Clackamas Town Center and Gresham regional center. The closest TriMet bus routes are the 157, which provides hourly service between Happy Valley and Clackamas Town Center, and the 82, which provides hourly service between Rockwood and Gresham.

Bicycle and pedestrian travel

Currently, bicyclists and pedestrians share roadways with motor vehicle traffic in Pleasant Valley. Bicycle and pedestrian travel is made difficult by limited connectivity in the area, narrow shoulders, high traffic volumes on major streets and difficult intersections. Few people walk in the area because of dispersed land-use patterns and a lack of pedestrian facilities. Metro's 1999 Bike There map designates Sunnyside, Foster and Jenne roads as caution areas for travel by bicycle. The Springwater Corridor Trail is the only multi-use trail serving the area. Other potential trail connections will be considered as part of the Pleasant Valley Concept Plan process.

Pleasant Valley Transportation Issues

This section identifies seven key transportation issues identified by the transportation work team and community forum participants. Each issue is followed by a general discussion of ideas the work team identified for further consideration as part of the planning process.

Issue 1: Develop a network of arterial and collector streets adequate to serve future growth in Pleasant Valley, while protecting environmentally sensitive areas and adjacent neighborhoods and rural reserves from the effects of urbanization.

> *Traffic analysis conducted as part of the update to the Regional Transportation Plan (RTP) demonstrated that future growth in Damascus and Pleasant Valley would likely have widespread effects on the regional transportation system, despite significant improvements to the primary routes serving the area. Additional analysis will be conducted as part of the Pleasant Valley Concept Plan process. It will be important to design the transportation system in a manner that supports the land use goals of the community, protects the natural features that define the area and improves community access by all modes of travel by providing a variety of travel choices. It will be equally important to locate the land uses in a manner that the transportation system can best serve it.*

Issue 2: Currently, most travel out of Pleasant Valley is via Foster Road, which is limited in its ability to accommodate future growth in traffic. The cost of any improvements in the Foster Road corridor will likely be high due to topographic and environmental constraints.

> *Foster Road is an important connection between the Damascus/Pleasant Valley area and employment areas in the I-205 corridor and Portland. Foster Road has two functional segments. The first segment, from Portland central city to I-205, experiences significant levels of congestion today. The second segment, from I-205 to Pleasant Valley, is expected to experience heavy travel demand in the future.*
>
> *Four related concerns have been identified for the eastern portion of Foster Road. First, intersections at 162nd/Foster Road and Jenne Road/Foster Road have safety problems today that need to be addressed. Next, environmental and topographic constraints limit future capacity expansion of Foster Road east of I-205. In addition, I-205 experiences significant congestion*

today and directing most traffic to I-205 from Pleasant Valley via Foster Road will likely have significant implications for I-205 in the future. Finally, RTP analysis showed that despite widening Foster Road to five lanes from I-205 to Damascus and implementation of high quality bus service and a limited arterial and collector street network, the corridor experienced significant levels of traffic congestion. Any improvements to Foster Road will need to be evaluated in the context of the environmental and community impacts.

If an additional north/south route is provided (such as Foster/190th to 182nd Avenue) and the function and capacity of Powell Boulevard east of I-205 is upgraded to serve longer trips, then Foster Road could function more like a collector in the town center area. This strategy would be consistent with the RTP. Foster Road could be relocated/realigned to orient traffic onto north/south routes (i.e., 162nd Avenue or 190th Avenue). The potential for a new north/south connection east of Foster Road could also be examined. The location and shape of the Pleasant Valley town center should be designed in the context of the function of Foster Road.

The RTP recommended evaluation of street connectivity, potential parallel route improvements, system management strategies and rapid bus service along Foster Road. RTP analysis showed rapid bus service is expected to generate good ridership levels. Any transit improvements should include improvements to the pedestrian environment along the road, bus priority treatment at signals and improved access to bus stops.

Issue 3: Safety issues exist for all modes of travel due to topography, awkward intersections and high speeds and traffic volumes. Walking and biking is also made difficult due to a lack of facilities for these modes of travel.

Safety issues exist throughout the area due to topography, awkward intersections with difficult sight distances, and high speeds and traffic volumes. More than 20 intersections were identified by participants in the first community forum as being unsafe because of one or more of these issues. In addition, many individuals indicated they often travel significantly out of direction to avoid congested locations and routes or intersections they feel are dangerous. Cut-through traffic on existing roads was also identified as a significant issue.

Issue 4: 172nd Avenue could serve as an important link between the future Sunrise Highway to the south and the Columbia Corridor via 182nd Avenue to the north. Regional transit service in this corridor could also link Pleasant Valley neighborhoods to the commercial services in the town center and the Gresham and Clackamas regional centers.

Currently, 172nd Avenue is a narrow two-lane farm-to-market road. The 2000 RTP evaluated the comparative advantages of 172nd Avenue over Foster Road (east of 172nd Avenue) as the primary connection to Highway 212. 172nd Avenue has fewer topographic constraints, and provides more direct access to planned industrial areas along Highway 212. 172nd Avenue is also more centrally located to the Pleasant Valley/Damascus area. Based on this evaluation, the 2000 RTP upgraded 172nd Avenue to be a Major Arterial. This change in classification could transform this route into the north/south spine for the area, linking Pleasant Valley to the future Sunrise Corridor Highway to the south and Gresham and the Columbia Corridor via 182nd Avenue to the north. The location and shape of the Pleasant Valley town center should be designed in the context of the function of 172nd Avenue. The RTP recommended providing parallel routes to 172nd Avenue and more direct regional bus service linking Gresham, Pleasant Valley and Clackamas along the Sunnyside Road/172nd Avenue/Towle Road/Eastman Parkway alignment.

Issue 5: The existing street system is not adequate to serve future town center growth. Connect Pleasant Valley to major streets in Gresham, Portland and Happy Valley in a manner that provides alternatives to Foster Road while protecting existing neighborhoods from traffic infiltration.

Additional connections and improvements to existing streets are needed to increase access from Pleasant Valley to other parts of the region. Currently, there is a lack of north/south arterial routes serving this area, which could create significant traffic congestion in the future without additional street connections in Pleasant Valley. An evaluation of new north/south street connections would need to address the potential impact of traffic generated in the Pleasant Valley area on adjacent neighborhoods. A number of potential connections could take pressure off the Jenne Road route that is currently used. Possible connections to be examined include: 172nd Avenue extension to 190th, Foster Road to Towle Road and 172nd Avenue to 162nd Avenue around Powell Butte. 162nd Avenue is one of the few north/south routes that connect to the Columbia Corridor employment area. The area around the base of Powell Butte has significant topographic and environmental constraints. Highland Drive is currently a three-lane collector street that connects SW Gresham to Powell Boulevard and 182nd Avenue. The route traverses Jenne Butte and crosses Johnson Creek.

Pleasant Valley also lacks an adequate number of east/west arterial routes to serve this area. It will be important to identify potential east/west connections to improve access from the Pleasant Valley area to Clackamas regional center area to reduce demand for Sunnyside Road to the south. The current Happy Valley TSP identifies only one potential east-west connection to the Pleasant Valley area given environmental and topographic constraints. The committee felt the planning process should address the Scouter's mountain "island," potentially using the future street plan for Pleasant Valley to define the edges of this rural reserve. One possible connection could be an extension of Clatsop Street to Foster Road.

RTP analysis showed that expanded transit service via Sunnyside Road and 172nd Avenue was promising in combination with improvements to parallel routes and widening Sunnyside Road between the Clackamas regional center and Pleasant Valley. The RTP recommended evaluation of additional street connectivity, potential parallel route improvements and system management strategies along the eastern portions of Sunnyside Road.

As new arterial street connections are identified, it will be necessary to balance land use and transportation planning to keep neighborhood infiltration to a minimum. Implementation strategies could include measures within these adjoining neighborhoods to make them less attractive to through-traffic intrusion.

Issue 6: By providing local circulation and access from growing neighborhoods to the town center, community level transit service will be an important component of serving travel needs in Pleasant Valley.

Pleasant Valley is not currently served by transit service. Implementation of more locally oriented transit service and connecting local service to regional service will need to be addressed as part of the transportation plan for the area, including connections to Gresham transit center, Clackamas transit center and downtown Portland. Some sort of a transit hub could be established as part of the land use and transportation plan for the town center to serve that important connection.

Issue 7: The topography of Pleasant Valley and the need to protect streams will require an emphasis on providing bicycle and pedestrian connections where full street connections are not possible. These connections could be further complemented by multi-use trails that connect Pleasant Valley neighborhoods to schools, parks, commercial services, existing multi-use trails and Damascus. As a result, bicycle and pedestrian access and safety, including an extended trail system, will also need to be addressed as part of the transportation plan for this area.

Street connectivity within the town center is important, and should complement the broader goals of tying together existing and future streets so that the town center has a high level of *connectivity. Improved street connectivity can help keep local auto trips on local streets without placing an undue burden on the arterial streets like Foster Road and Sunnyside Road, and provides better access for pedestrians, bicycles and transit users. With an interconnected system that provides multiple routes to local destinations, any single street will be less likely to be overburdened by excessive traffic. Emergency response vehicles also benefit from a well-connected street system.*

Community forum discussions revealed that many people drive to access the Powell Butte and Springwater Corridor trail systems and shard a desire to have a network of sidewalks, bike facilities and multi-use trails linked to existing trails systems. Better equestrian access to trails and natural areas in Pleasant Valley was also identified as important to many people during the first community forum. In addition, a safer equestrian crossing at SE 162nd Avenue and Foster Road to improve access to Powell Butte has been identified as a need.

Green street designs help reduce impervious surface and incorporate on-site stormwater management within the right-of-way through the use of vegetative filter strips, swales, linear detention basins, infiltration trenches, permeable pavement and tree planting. Street alignments should follow natural contours and features as much as possible, which can help optimize implementation of green street designs. Metro has studied green streets over the same timeline as the Pleasant Valley Concept Plan study using Pleasant Valley as a case study. It recommends innovative approaches to stormwater management and stream crossings using green streets in its handbook – Green Streets – Innovative Solutions for Stormwater and Stream Crossing. Also published by Metro is the Trees for Green Streets – An illustrated guide handbook.

Metro's Green Streets manual states that bridges are preferred for all stream crossings but they tend to be a more expensive option than culverts. It notes that bridges tend to become more economically justifiable when required hydraulic opening exceeds 15 feet in span (active channel width) or 10 feet in diameter. It also notes that bridges are preferred for fish passage when stream channel slopes exceed 5 percent. A bridge design principle is that bridge abutments, piers and foots should be located outside the bankfull channel.

Section 4 – Forecasts and Alternatives

Summary

The year 2020 forecast travel volumes were simulated using the Metro regional travel demand model. For travel forecasting, land use assumptions are broken down into geographic areas called transportation analysis zones (TAZs). Typically, a TAZ encompasses commercial districts, community areas or neighborhoods within its boundaries. These TAZ areas form the basis for estimating travel for each person.

Population and employment information is assigned to each TAZ based on the adopted comprehensive plans, or, in the case of Pleasant Valley, on the alternative concept plan designations. The travel model translates these assumptions into person trips on the transportation system. Traffic volume projections from these simulations help identify future road needs and alternative arterial and collector street networks. Due to limitations with the regional model, it is not possible to effectively analyze walking, biking or local street traffic volumes.

The 2020 priority system of improvements adopted in the Regional Transportation Plan served as the basis for the future road and transit network assumed for this analysis, with the addition of a more detailed street network for Pleasant Valley and Damascus.

Household and Employment Assumptions for Pleasant Valley and Damascus

Pleasant Valley Household and Employment Assumptions

Household and employment assumptions for Pleasant Valley were developed using Geographic Information Systems (GIS). The capacity for households and employment was calculated and assigned to TAZs for traffic analysis. Table 1 provides a detailed summary of the household and employment assumptions by TAZ for the March Hybrid Concept Plan. Table 2 summarizes household and employment information for the March hybrid that was modeled and the final concept plan endorsed by the Pleasant Valley Steering Committee on May 14, 2002. A traffic analysis of the May 14, 2002 Pleasant Valley Concept Plan was not performed because the March hybrid plan and the final Concept Plan have the same major road system and only a very minor difference in land use assumptions. Figure 2 shows the TAZ boundaries used for analysis of this part of the region.

Table 1. Summary of March Hybrid Concept Plan Household and Employment Assumptions for Refined 1260 TAZs

Refined 1260 TAZ	Households	Retail Jobs	Non-Retail Jobs
476*	1,277	0	217
539*	463	0	46
564	421	41	65
565*	553	70	397
580*	304	0	30
581*	861	0	199
1300*	537	0	201
1305*	977	0	162
1306	420	41	65
1307	830	104	596
1308	1,382	174	993
1309	577	10	106
1310*	577	10	106

** indicates portion of Pleasant Valley study area is located in TAZ.*

Table 2. Pleasant Valley 2020 Land Use Forecasts

Land Use	2020 March Hybrid	Final Concept Plan
Households	5,092	5,048
Retail Employees	556	495
Other Employees	4,608	4,498

Source: OTAK and Metro

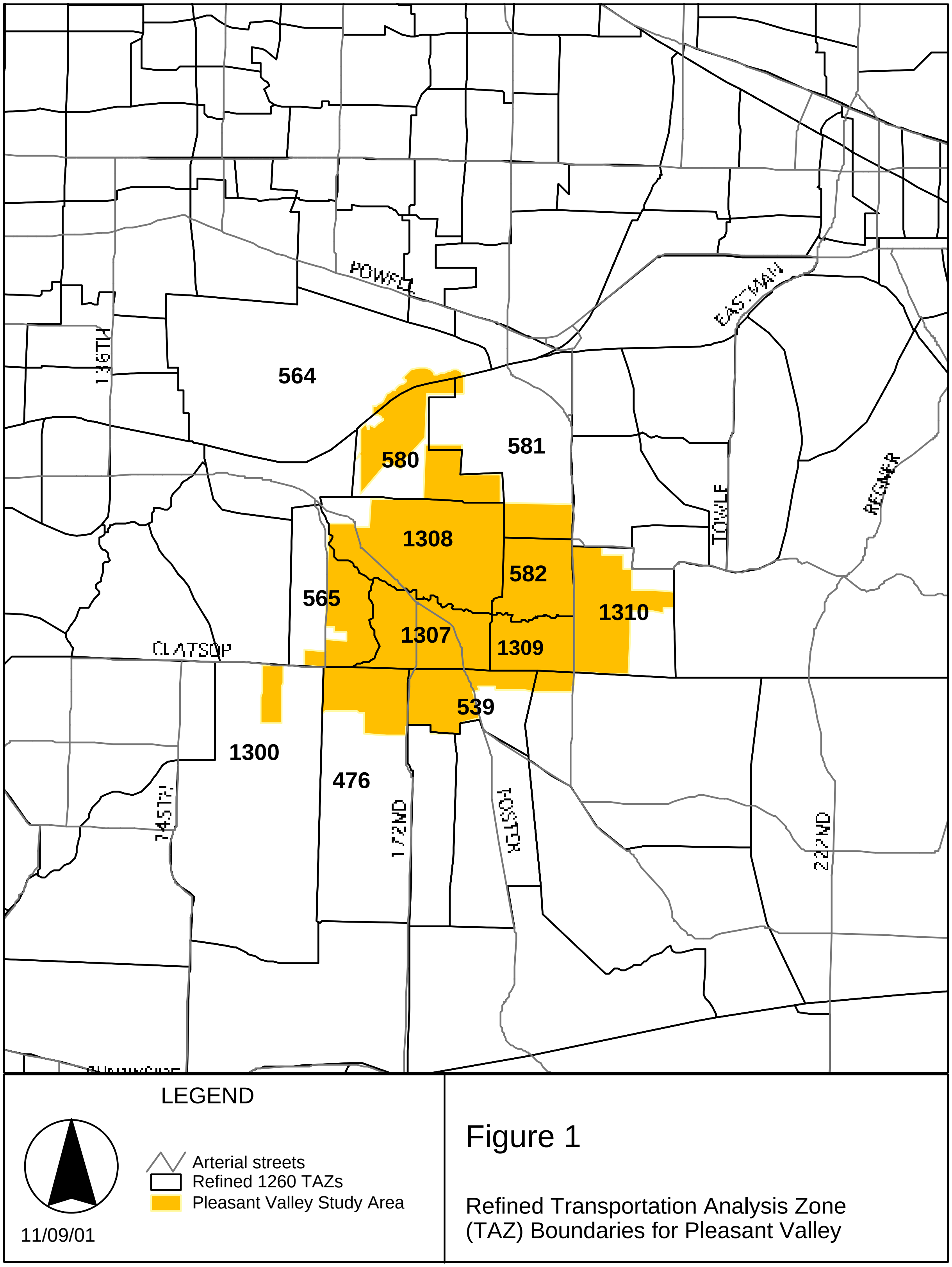


Figure 2. Refined Transportation Analysis Zone (TAZ) Boundaries for Pleasant Valley

Damascus Household and Employment Assumptions

Household and employment assumptions from Test Scenario 2 of the Damascus Concept Planning Study were used for purposes of modeling with two exceptions:

Table 3. Damascus Land Use Summary

Land Use	2000	2020
Households	1,481	11,409
Retail Employees	238	2,869
Other Employees	950	10,301

Source: Damascus Concept Planning Study with modifications explained above.

- **Additional housing is assumed to meet regional requirements.** As modeled in the Damascus Study, Test Scenario 2 provided 9 dwelling units per buildable residential acre for a total of 10,372 dwelling units within the Damascus study area. This does not meet the regional requirement for a minimum of 10 dwelling units per buildable residential acre. In order to meet the regional requirement and for purposes of Pleasant Valley modeling, the dwelling unit assumption for Test Scenario 2 was factored up 10 percent, to a total of 11,409 dwelling units. The increase in dwelling units was assumed within and adjacent to the two town centers identified in Test Scenario 2.
- **Southwest corner of the study area is assumed to be employment.** As modeled in the Damascus study, Test Scenario 2 provided 11,651 jobs. The Damascus study found that the southwest corner of the study area included the largest sites with the greatest opportunity for land assembly to create strategic employment sites. In Test Scenario 1, the southwest corner was assumed to provide nearly 3,000 jobs. In addition, the 2040 Growth Concept identifies this area as employment. Test Scenario 2 assumed neighborhoods in the southwest corner of the study area. Based on these two factors, the southwest corner of the study area will be assumed to be employment uses for purposes of Pleasant Valley modeling, adding the nearly 3,000 jobs assumed in Test Scenario 1. This change in land use assumptions increases the amount of employment within the study area to 13,170 jobs. The 574 dwelling units assumed in Test Scenario 2 will be assumed within and adjacent to the two town centers.

Transportation Assumptions for Pleasant Valley and Damascus

Pleasant Valley arterial and collector street network

In Pleasant Valley, a system of arterial and collector streets was developed for modeling purposes. Figure 3 shows the transportation network and corresponding 2-Hour PM Volumes. Table 4 summarizes arterial and collector assumptions.

Table 4. Pleasant Valley Transportation Summary

Key Roads	Number of lanes	Speeds
Major arterials	4 lanes with turn lanes	20-35 mph
Minor arterials	2 lanes with turn lanes	20-35 mph
Collectors	2 lanes with turn lanes	20-35 mph

Note: Speeds vary by land use. Speeds are assumed to be 20-25 mph in town centers and near parks and schools. Speeds are assumed to be 35 mph in other areas. Speed assumptions do not have a significant impact on travel behavior in the model, but are intended to simulate driver behavior given free-flow traffic conditions (as opposed to posted speed).

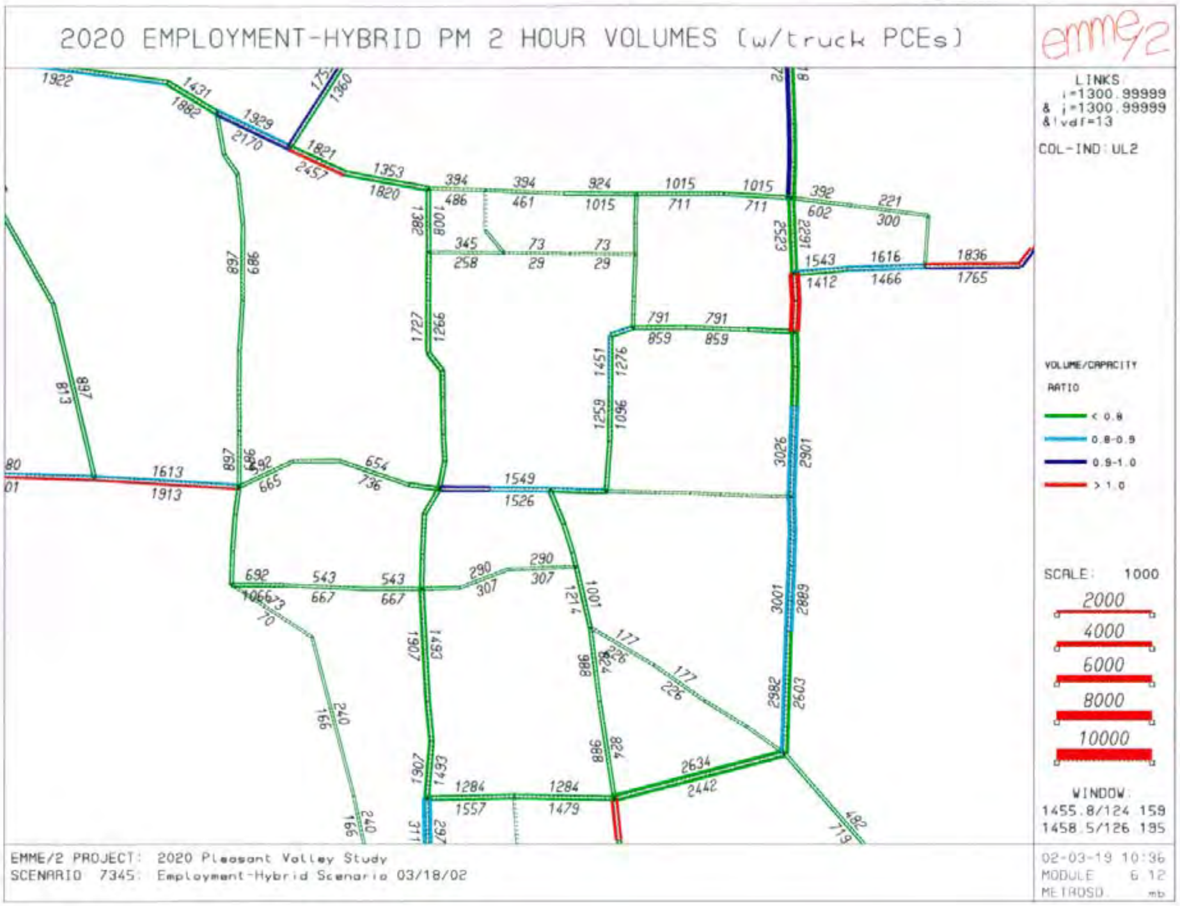


Figure 3. March Hybrid Pleasant Valley 2-hour PM Volumes

Damascus arterial and collector street network

In Damascus, the street network assumptions also include several east-west and north-south collector streets that were modeled as part of the Damascus study. Though these are conceptual in nature, they are roughly equal in spacing and capacity to streets being tested in the Pleasant Valley study. Figure 3 shows the transportation network assumed for the Damascus area and the corresponding 2-hour PM volumes. Table 5 summarizes assumptions for key roads in Damascus. The assumptions for Foster Road and

Table 5. Damascus Transportation Summary

Key Roads	Number of lanes	Speeds
Foster Road	2 lanes with turn lanes	20-35 mph
172nd Avenue	4 lanes with turn lanes	20-35 mph
Sunnyside Road	4 lanes with turn lanes west of 172nd Ave. 2 lanes with turn lanes east of 172nd Ave.	20-40 mph
Sunrise Corridor	4 lane freeway with interchanges at Hwy. 224, 172nd Ave., 242nd Ave. and US 26	55 mph
Highway 212	4 lanes with turn lanes	35-40 mph

172nd Avenue are the same across both study areas. The assumptions for the Sunrise Corridor and Highway 212 are consistent with the Regional Transportation Plan.

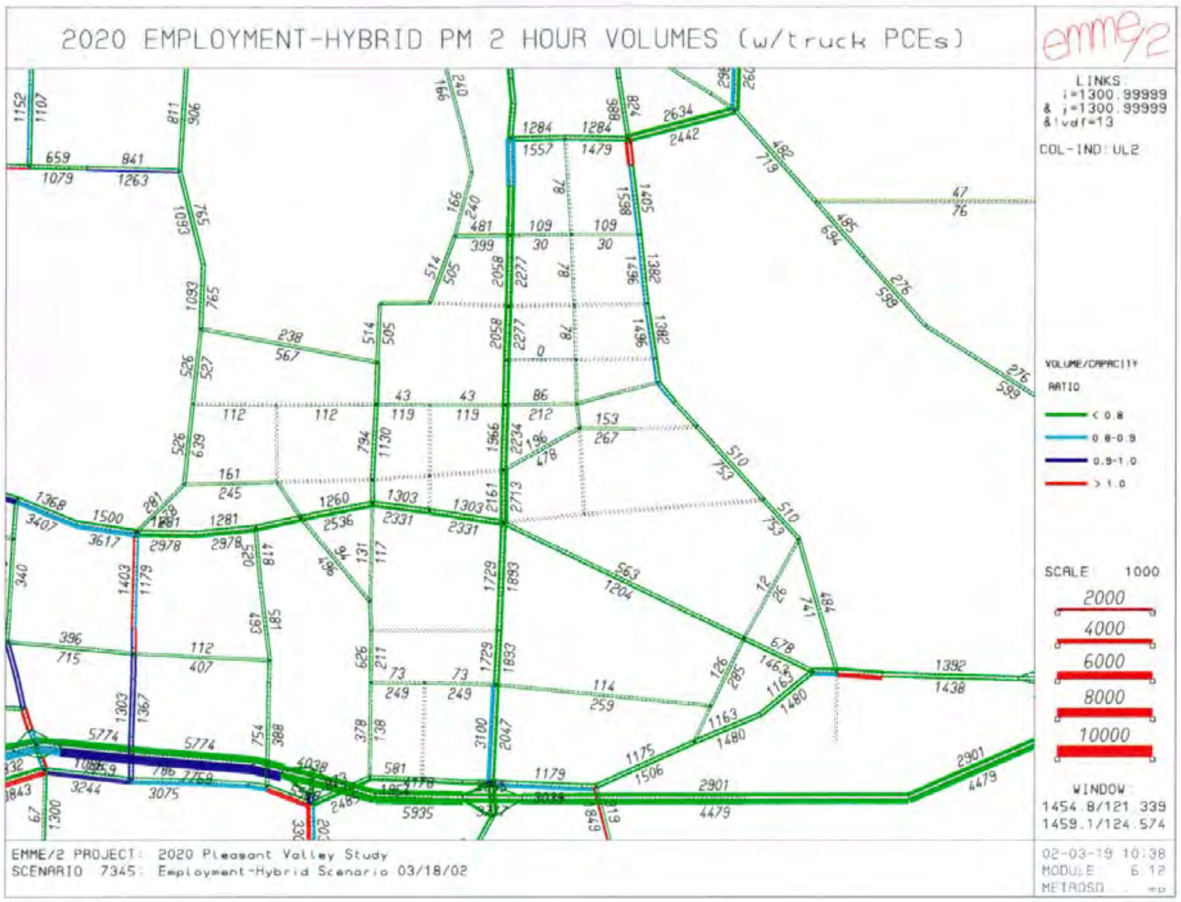


Figure 4. March Hybrid Damascus 2-hour PM Volumes

Pleasant Valley local street network

Additional neighborhood connector and local streets were assumed for each alternative, but were not modeled for traffic impacts due to limitations with the regional travel demand model. Neighborhood connectors serve as important connections for local access within Pleasant Valley as the primary network for local trips. Local streets are intended to provide access between people's homes and the neighborhood connectors. The local street system includes local and neighborhood connector street connections every 530 feet except where prevented by existing development or environmental and topographic constraints. Bike and pedestrian accessways are provided every 330 feet where full street connections cannot be provided.

Pleasant Valley stream crossings

In general, the stream crossing locations followed Metro's *Green Streets* handbook guidelines for full street crossings every 800-1200 feet and bike/pedestrian only crossings in sensitive environmental areas or where additional connections were needed to provide access to community activity areas such as the town center, schools and parks. Local street stream crossings have also been identified for each alternative.

Pleasant Valley multi-use trail system

A multi-use trail system is also assumed for each Pleasant Valley Concept Plan alternative to complement the arterial, collector and local street network by providing additional off-street connections to community destinations such as schools, parks, commercial services and the regional trails network. The trail system was the same for each alternative.

1. A trail on either side of the main stem of Kelley Creek running east and west. At the east edge of the project area the trail head north to connect with the Gresham Butler Creek trail and south to connect with Metro's open space parcel.
2. A trail that runs north and south through the project area via the BPA/Northwest Natural Gas line easement. This trail connects with the Springwater Corridor trail and bisects the Kelley Creek Trail.
3. A north and south trail at the west end of the project area. The trail connects with the Springwater Corridor trail at about the 162nd Avenue grid line and runs partially along the Kelley Creek trail and then runs along Mitchell Creek.

Transit Service

Regional and community transit service is provided on key roads in Pleasant Valley, with direct connections to Happy Valley, Clackamas regional center, Damascus, Lents, Gresham, the Columbia Corridor and Portland for each alternative. In general, the transit service modeled in the 2000 RTP Priority System served as the starting point for developing these assumptions. The coverage and frequency of transit service was the same for each concept alternative. Routing of service varies within the Pleasant Valley study area for each alternative, reflecting the different street systems. A transit center location has not been identified to serve Pleasant Valley, however, transfer opportunities are provided within the Pleasant Valley town center for modeling purposes.

Table 6 summarizes the transit service that will be modeled in each alternative. A more detailed description of the service and passenger amenities follows Table 6.

Table 6. Pleasant Valley Transit Summary

Service Type	Route	To/From	Peak Service	Off-Peak Service
Rapid Bus	Powell Boulevard/Foster Road	Downtown Portland to Damascus	Every 10 minutes	Every 15 minutes
	Foster Road	Lents to Damascus	Every 10 minutes	Every 15 minutes
Frequent Bus	Sunnyside Road	Clackamas regional center to Damascus	Every 7 minutes	Every 15 minutes
	172nd Avenue/190th Avenue	Damascus to Gresham	Every 10 minutes	Every 15 minutes
Regional Bus	Town center/190th Avenue/ 181st Avenue/Airport Way	Pleasant Valley town center to Columbia Corridor	Every 15 minutes	Every 15 minutes

	82nd Avenue/Sunnyside Road/97th/Stevens/ Mather Road/122nd/ 145th/Clatsop/172nd/ Foster Road	Clackamas regional center to Lents	Every 10 minutes	Every 15 minutes
Community Bus	Foster Road/ Butler Road/Towle Road	Damascus to Gresham	Every 15 minutes	Every 30 minutes
	Pleasant Valley loop	Within study area	Every 15 minutes	Every 30 minutes

Rapid bus

Typically, this service runs at least every 15 minutes. Passenger amenities are concentrated at transit centers. Rapid bus passenger amenities include schedule information, ticket machines, special lighting, benches, covered bus shelters and bicycle parking. Rapid bus stops are located approximately every 1/2-mile.

Frequent bus

Typically, 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. Frequent bus service provides slightly slower, but more frequent, service than rapid bus service.

Regional bus

Typically, this service operates at maximum frequencies of 15 minutes. Transit preferential treatments and passenger amenities such as covered bus shelters, special lighting, signal preemption and curb extensions are appropriate at high ridership locations.

Community bus

Community bus lines provide localized access from Pleasant Valley neighborhoods to Happy Valley, Damascus, Gresham, and regional transit service and community destinations, such as parks, schools and the town center. Community bus will connect to regional bus service within Pleasant Valley and Gresham via Butler Road/Towle Road in each alternative. Community bus service runs as often as every 30 minutes on weekdays. Weekend service is provided as demand warrants. This service could be implemented through a partnership between TriMet and local jurisdictions.

Alternatives

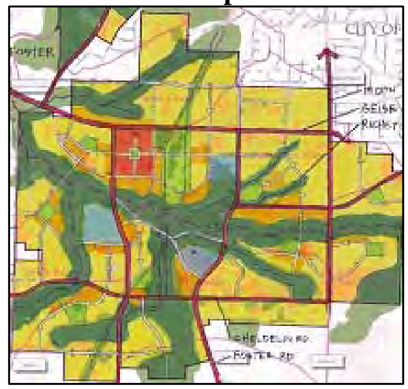
Four concept plan alternatives were created during a five-day design charrette (May 15 – 19, 2001). Some key features and advantages of this design charrette were to:

- Provide a forum for ideas on how to fulfill the project goals and make a great community.
- Provide immediate feedback to the designers, and the ability to test illustrated ideas in real time.
- Build consensus by giving mutual authorship to the plan by all those who participate.
- Promote participation (and working together) by a wide variety of people potentially affected by the plan.

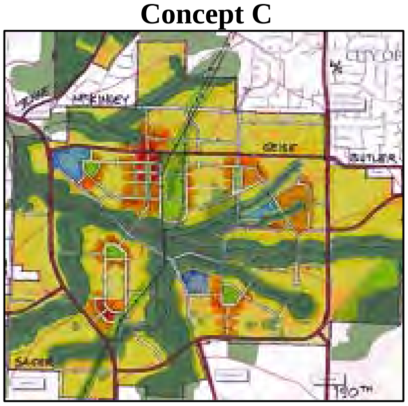
The four concept plan alternatives chiefly varied in the major road system alignment and resulting companion land use patterns. See Figure 5.

Concept A

Concept B



Concept C



Concept D

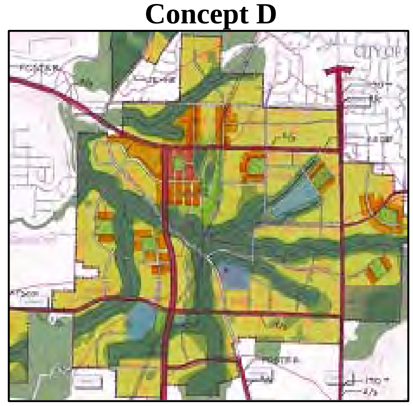


Figure 5. Four Design Charrette Alternatives

The Transportation Work Team analyzed the four concept plan alternatives using the regional travel demand model and other data to determine how well each of the concepts meet the Transportation Goal and other transportation-related goals. The Steering Committee endorsed evaluation measures to assist in the evaluation. Transportation related measures were:

- The plan is consistent with regional level-of-service standards as indicated by an evaluation of key gateway locations.
- The plan is consistent with regional connectivity standards (530 feet for streets/330 feet for accessways) and street design guidelines.
- The plan includes an adequate hierarchy of streets that serve different functions (e.g., arterials, neighborhood connectors and local streets) as indicated by a street system that provides opportunities for through-travel on arterial streets and local access to community destinations on neighborhood connectors and local streets.
- The plan includes community and regional transit service that is supported by street design, a mix of land uses and transit-supportive densities.

- The plan provides for bicycle and pedestrian routes on all streets. These routes are connected to a multi-use trail and parks and open spaces system and to major activity centers such as schools, civic uses and the town center.
- The number of homes within 1/4-mile without crossing an arterial street (for elementary schools) and 1/4-mile crossing no more than one arterial street (for middle schools).
- The number of housing units within 1/4-mile of future regional transit service.

The evaluation process led to the creation of a "hybrid" concept plan. The hybrid concept plan included elements of the different alternatives that were deemed to best meet goals. It also included new ideas and elements that were identified as meeting the goals better than any of the alternatives.

In summary, the transportation analysis found that the arterial and collector street system was sized appropriately within the study area for all concepts for the 20-year plan period, with Concept D costing the least and performing the best in terms of level-of-service. The arterial and collector street systems in Concepts B and D best address Goal H in terms of providing the most direct and frequent connections to community destinations in the study area and the strongest north/south oriented arterial and collector network of streets for circulation by all modes of travel within the study area. Concepts A and C best address long-term regional mobility needs with a strong north/south arterial connection from 172nd Avenue to 190th Avenue to connect Clackamas County and Damascus with Gresham. Bicycle and pedestrian travel is further enhanced in Concepts B and D by a strong east/west multi-use trail system that provides additional off-street connections to community destinations where full street connections cannot be provided. Concepts B and D also provide the best access to the town center by all modes of travel as a result of the well-connected arterial and collector network that abuts directly to the town center. All concepts were well served by transit service and provided good connections to the town center. Concept B was best served by transit service, with 85 percent of the Pleasant Valley households located within 1/4-mile of transit streets. However, in some cases in each concept, there are higher density land uses not served by transit, particularly in the southeastern corner of the study area.

The transportation analysis found the demand for gateway routes remained the same in all four concepts, regardless of the configuration of the internal Pleasant Valley arterial and collector street system. As a result, the arterial and collector street system for the preferred alternative could be in a variety of configurations as long as the arterial and collector street system provides direct connections to the gateway routes, particularly between 172nd Avenue and 190th Avenue and to commercial areas within Pleasant Valley. The analysis also identified the need for transportation improvements on "gateway" routes that connect the study area to surrounding communities, such as 172nd Avenue, 190th Avenue, Powell Boulevard, Sunnyside Road and Foster Road west of the study area. One critical refinement recommended by the work team is the addition of a more direct major arterial connection from 172nd Avenue to 190th Avenue south of the study area if Damascus urbanizes in the future.

The evaluation process also resulted in changes to other goal elements. A significant change affecting the transportation process was adding a significant amount of employment land to the concept resulting in a more balanced job to housing ratio. What follows is the results of the modeling done for, first, the four alternatives and second, for the March hybrid concept plan.

DKS Associates assisted the Pleasant Valley project staff in conducting the transportation system analysis for the Pleasant Valley Planning Area. Metro staff took the lead in preparing travel forecast with a refined version of the latest regional travel demand model. The refinements were purposed to better represent the intensity and location of possible development within the valley, and to more clearly understand the travel dynamics associated with long-term growth in both Pleasant Valley and the Damascus area in Clackamas County. Our role in this study has included the following technical areas:

- General circulation planning and development of transportation alternatives
- System performance and alternatives evaluation

- Transit Evaluation
- Recommended System Plan Elements
- Preliminary Cost Estimates

Concept Plan Alternatives

DKS participated in the open houses and public workshops to help formulate the Pleasant Valley concept plan alternatives. The four concepts that have succeeded through to the evaluation stage were comprised of a similar mix of land use types with different arrangements of their locations with respect to the natural and transportation system network of the valley. Each concept plan had basically the same quantity of the following elements although there was minor variation as noted below (source: Pleasant Valley Concept News, October 2001):

- The total number of residential units ranged from 5,300 to 5,500.
- The employment within and around the designated town center ranged from 470 to 700.
- The park acreage ranged from 49 to 84 acres.
- The total population at build-out ranged from 13,300 to 13,800.

Overall, the total travel demand associated with these concept plans was very similar as a result of the similarity in land use intensities. The essential difference between them was found in how they were arrayed around the valley. In other words, the key findings of our evaluation tested the relative merits of each concept plan based on how the selected street patterns and the relative location of housing, town center, park and school uses related to each other. The street system components were identified and mapped by Metro staff. The tabulations of roadway facilities for each concept plan area is summarized in Table 7.

Table 7: Pleasant Valley - Roadway Cross-Section Length Comparison

Classification	Alt A (ft)	Alt B (ft)	Alt C (ft)	Alt D (ft)
Major Arterial - 92'	10,501	4,918	11,984	5,992
Major Arterial - 111'	939	1,448	0	1,867
Minor Arterial - 62'	5,984	5,987	6,358	5,380
Minor Arterial - 70'	25,930	38,305	26,131	27,591
Minor Arterial - 80'	2,303	992	472	832
Collector - 60'	17,348	26,641	22,479	19,358
Collector - 70'	5,591	2,345	3,371	1,067
Collector - 74'	3,722	2,987	8,688	1,660
Neighborhood Connector - 64'	0	0	0	0
Total	**72,318**	**83,623**	**79,483**	**63,747**

Each concept plan also assumed the full build-out of the Damascus Concept Plan area to the south in Clackamas County. The recent planning work done by the county in June 2001 for this area was used as the basis for assumed land development. The alternative referred to as the Neighborhoods scenarios was selected for use in this study. That plan included 10,500 jobs and households covering 2,700 acres of land between the Sunrise Corridor and the Pleasant Valley plan area (source: Damascus Concept Planning Study: Executive Summary, June 30, 2001). The overall size of the development is more than twice as large as the Pleasant Valley area, and its associated travel demands will significantly shape and impact streets within the Pleasant Valley study because its size and proximity.

Furthermore, the assumptions at the regional gateways leading away from the valley were constant across each of the concept plans. The major roadways were all assumed to have the same connectivity and capacity for each case. Major roadways included Foster Road (west and south of the valley), 190th Avenue leading to Highland Avenue and Powell Boulevard, Butler Road to leading to Towle Avenue, 172nd Avenue to the south, and Clatsop Street to the west. The number of travel lanes assumed for each case was consistent with the current transportation plans for the respective city or county at the initial stage of analysis.

Alternative Performance Evaluation

Four plan alternatives were evaluated using the 2020 regional travel demand model based on the land use plans associated with each concept. The growth assumed in the travel forecasts included the expected 2020 development within the region, plus full build-out of Pleasant Valley and Damascus. This is significant since it is very likely that both Pleasant Valley and Damascus will continue to be urbanized beyond a 20-year horizon. Assuming full build-out by 2020 will tend to overstate the travel demand at the gateways, but it will help to ensure that adequate facilities are planned either within 20 years or shortly thereafter.

A performance analysis was made of the travel forecasts to consider:

- Overall system performance
- Changes to major roadways assumptions to better match travel demand
- Gateway intersection performance
- Transit service coverage
- Outstanding Plan Issues

Overall System Performance

System performance was evaluated during the afternoon peak 2-hour period based on forecasts provided by Metro. The forecasted travel demand was compared to the roadway capacity along major street corridors, and those that were found to exceed planned capacity were highlighted. In many cases, the assumed capacity applies to roadways that are not yet built. A case where forecasted travel exceeds the planned capacity helps to direct attention to refinements in either circulation or land use planning or both. For those cases where the roadway already is built to its ultimate width then new facilities will be required, or improvements will be needed beyond those already planned. Many cases noted in Table 8 have volumes within 10 to 20 percent above planned capacity. This is relatively minor exceedance in a 20-year horizon, especially given the built-out assumptions noted previously for Pleasant Valley and Damascus. A few links are expected to grossly exceed planned capacity, and those are noted accordingly. As summarized in Table 8 below, the overall system impacts of Plan D is better than other plans. The most impacting case is Plan B. Specific observations from the system performance analysis are summarized in the next section.

Table 8: Study Area Road Links Exceeding 2-Hour Peak Capacity based on 2020 Forecasts

Description	Plan A	Plan B	Plan C	Plan D
Powell Boulevard (162nd to Jenne)				
Jenne Road (Powell to Foster)				
Highland Road (Powell to 190th)				
190th Avenue (Giese to Richey)				
190th Avenue (Highland to Butler)				
Butler Road (Binford to Towle)				
Foster Road (122nd to Barbara Welch)				
Foster Road (Barbara Welch to Jenne)				
Foster Road (Jenne to 172nd)				
Clatsop Road (145th to Barbara Welch)				
Clatsop Road (Barbara Welch to 162nd)				

= *Moderate Impact: Roadway forecasted volume exceed planned capacity by less than 20 percent.*

= *Major Impact: Roadway forecasted volume exceed planned capacity by more than 20 percent.*

Overall, the system impacts outside of the Pleasant Valley plan area were very similar between alternative plans. A variation of Alternative A was tested to determine the Pleasant Valley area impacts of not constructing the second unit of the Sunrise Highway within the 2020 horizon. It was found that the major street volumes and roadway performance within the valley would not be significantly different than for Alternative A. Other more specific performance findings are highlighted in the next section.

Specific Performance Observations

The unique terrain and environmental constraints of the Pleasant Valley area tend to focus the highest motor vehicle travel onto a few major corridors. Several of these corridors are expected to operate near planned capacity with full build-out of Pleasant Valley and Damascus Valley (may occur beyond the 2020 horizon assumed in this analysis). Specific observations for further plan considerations are noted below.

Foster Road Corridor — Travel demand in the Foster Road corridor is severely constrained east of NE 122nd Avenue. The most critical segment appears to be between NE 122nd Avenue and Barbara Welch where forecasted peak period volumes were nearly two times the planned capacity. Expanding road capacity east of NE 122nd Avenue to 172nd Avenue was found to increase travel forecasts by 10 to 30 percent in the corridor. Marginal reductions to traffic volumes on parallel east-west facilities (Clatsop Road, Powell Blvd.) were noted. The proposed “break” in Foster Road in Concepts B, C and D caused no significant “overload” of traffic on parallel routes. Foster Road south of Pleasant Valley performs well with three lanes until its terminus at Highway 212.

North-south travel into Gresham — Peak direction travel demand via 162nd Avenue, Powell Boulevard, and Jenne Road generally exceeds planned capacity during the busiest two-hour period. Parallel routes via Highland Road, and 190th Avenue are at or near capacity in most alternatives, except Plan D. Together, these findings show a very high north-south demand at the northern gateways into Gresham.

However, routes further east than 190th Avenue are not as attractive for north-south travel. The Butler Road to Towle Road route is moderately used in most plans and well within planned capacity.

Clatsop Road — The segment between 162nd and 145th Avenue are at or near capacity for most plans. Access limitations and "T" shaped intersections should provide sufficient operational capacity without expanding the number of travel lanes.

Gateway Performance Testing

The peak hour intersection levels of service were evaluated for consistency with regional performance measures described in the RTP. The gateway locations for this study were selected to provide an overall assessment of the intersection operating characteristics.

The results of the LOS analysis summarized in Table 9 show that most of the gateway locations will operate within the performance standards described in the RTP with LOS E or better during the peak 2-hours. The notable exceptions are at Foster Road/122nd Avenue where additional east-west capacity is required to achieve acceptable performance.

Table 9: Forecasted 2020 Peak Hour Intersection Level of Service

Intersection	Plan A			Plan A without Sunrise Unit 2			Plan B			Plan C			Plan D		
Signalized	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
Foster/122nd	78.1	E	1.15	75.1	E	1.14	77.5	E	1.15	80.0	F	1.16	78.3	E	1.15
Foster/172nd	58.3	E	0.98	59.6	E	0.99	50.0	D	0.94	42.9	D	0.90	27.0	C	0.70
Foster/Jenne	51.2	D	0.97	54.5	D	0.99	39.9	D	0.82	33.2	C	0.70	40.4	D	0.82
Powell/Jenne	27.2	C	0.81	38.2	D	0.90	36.1	D	0.87	38.8	D	0.88	37.8	D	0.88
Powel/182nd	42.8	D	0.88	46.5	D	0.91	47.2	D	0.93	56.6	E	1.00	47.7	D	0.95
Powell/Eastman	51.6	D	0.88	65.1	E	0.97	54.1	D	0.88	54.2	D	0.91	49.4	D	0.85
Powell/Hogan	45.2	D	0.79	44.2	D	0.77	45.8	D	0.79	45.5	D	0.80	46.7	D	0.80
172nd/Clatsop	52.1	D	0.94	52.7	D	0.95	70.2	E	1.04	27.5	C	0.68	46.5	D	0.88
172nd/Sunnyside	53.4	D	0.93	100.9	F	1.16	53.2	D	0.92	56.6	E	0.96	51.5	D	0.91
172nd/Hwy 212	49.5	D	0.94	106.5	F	1.36	49.9	D	0.95	54.4	D	1.07	49.2	D	0.94
Foster/Hwy 212	16.2	B	0.70	43.2	D	1.06	15.5	B	0.70	14.0	B	0.68	15.3	B	0.70
Unsignalized	Major/Minor LOS			Major/Minor LOS			Major/Minor LOS			Major/Minor LOS			Major/Minor LOS		
King/147th	A/E			A/F			A/E			A/E			A/E		

Notes:

Signalized Intersection LOS: Delay=Average stopped delay per vehicle, LOS=Intersection level of service, V/C=Volume-to-Capacity ratio
Unsignalized Intersection LOS: A/A = Major street turn LOS/minor street turn LOS

**The forecast volumes used for this analysis are raw model volumes (2-hr PM Peak) factored by 0.52 to peak hour volumes. Assumed geometries are based on the modeled roadway lanes and capacities (with some refinement from Gresham TIF data).*

Intersection Performance

Intersection service levels were evaluated for the afternoon peak period at the same locations considered in the alternatives analysis. Table 10 below compares the performance of the March Hybrid Plan with the other four alternatives and the previous Hybrid Plan that did not include 60 acres of employment uses. Overall, there are minor differences between each of the gateway locations. The results are essentially the same as for Plan D and the January 24th Hybrid Plan. It is notable that the travel demands for the March Hybrid Plan included 60-acres of employment uses that were not included in the other four cases. The impacts of added a higher intensity land use do not appear to significantly change intersection performance at any of the gateway locations.

Table 10: March 6 Hybrid Plan Intersection Performance Relative to Alternative Plans

Intersection	Plan A	Plan B	Plan C	Plan D	Hybrid Plan (Jan. 24)	Hybrid Plan (March 6)		
Signalized	LOS	LOS	LOS	LOS	LOS	Delay	LOS	V/C
Foster/122nd	E	E	F	E	F	84.6	F	1.18
Foster/172nd	E	D	D	C	C	30.1	C	0.81
Foster/Jenne	D	D	C	D	D	41.6	D	0.88
Powell/Jenne	C	D	D	D	D	42.9	D	0.91
Powell/182nd	D	D	E	D	D	51.3	D	0.96
Powell/Eastman	D	D	D	D	D	53.7	D	0.91
Powell/Hogan	D	D	D	D	D	46.6	D	0.80
172nd/Clatsop	D	E	C	D	D	43.3	D	0.78
172nd/Sunnyside	D	D	E	D	D	50.0	D	0.93
172nd/Highway 212	D	D	D	D	D	50.2	D	0.95
Foster/Hwy 212	B	B	B	B	B	19.6	B	0.70
STOP Sign Control	*LOS*	*LOS*	*LOS*	*LOS*	*LOS*	*Major/Minor LOS*		
King/147th	A/E	A/E	A/E	A/E	A/E	A/E		

Notes:

LOS (signals): Delay=Average stopped delay per vehicle, LOS=Intersection level of service, V/C=Volume-to-Capacity ratio
LOS (stop signs): A/A = Major street turn LOS/minor street turn LOS

**The forecast volumes used for this analysis are raw model volumes (2-hr PM Peak) factored by 0.52 to peak hour volumes. Assumed geometries are based on the modeled roadway lanes and capacities (with some refinement from Gresham TIF data).*

The Foster Road corridor remains at capacity near 122nd Avenue, but operates adequately at Jenne Road and 172nd Avenue according to the demand forecasts. As noted previously, the bottleneck just east of 122nd Avenue (transition from 4-lane to 2-lane road cross-section) will create very significant queues and delays that will extend the peak period in this segment of the corridor. The bottleneck will also constrain the eastbound volumes on Foster Road in the p.m. period, which allows the intersections further east to operate satisfactorily with planned capacity. The Foster Road and Powell Boulevard corridors will be further studied by Metro and the City of Portland for appropriate system improvements to serve planned development.

Forecasted turning volumes at Foster Road and 172nd Avenue showed that the peak hour demand was high on the west and south legs, and relative low on the east leg. The 2020 forecast showed 1,650 vehicles in the peak hour using this intersection. Of those, about 300 vehicles (20%) use the east leg in either travel direction. This finding points to the possible need to re-orient the intersection such that the major “through” movements from west to south (and south to west) become the major street, and the east leg of Giese Road become a minor approach. Our operational showed that it could work during peak hours adequately with either configuration, but reducing right-turning movements at this intersection could be a significant improvement for pedestrian safety.

Transit System Coverage

Transit coverage Level of Service (LOS) was analyzed based on the *2000 Highway Capacity Manual* (HCM) methodology. The method compares the transit service area and frequency to land use. The transit service area is analyzed as a buffer zone from transit routes and/or stops. The distances used for defining the buffer are based on the estimated walking trip length that is determined reasonable for the general public. Walking distances of 0.25 miles were used to define the transit buffer around bus routes. Transit service frequency analysis was based on the proposed transit route headways for the PM peak and off peak periods.

Transit buffers were defined for proposed transit system for each of the four concept plans. Land use associated with Transportation Analysis Zones (TAZs) was used to determine which TAZs meet the 2000 HCM minimum density criteria for being transit supportive. The criteria were defined as densities of at least 3 households/acre or 4 employees per acre.

The results of the transit coverage analysis indicate all concept plans have adequate transit coverage with the exception of the area along 190th Avenue in the southeast corner of the valley. No transit service was expected along that portion of 190th Avenue in the travel forecasts, and the walking distance to the nearest route was found to be too great to adequately serve transit needs. The plans that assumed higher density housing along this area would not be adequately served. It is recommended that these types of uses be relocated to other corridors to better encourage transit ridership.

The transit route frequencies (headways) assumed for these scenarios range from 10 to 15 minutes in the PM peak and 15 to 30 minutes in the off peak period. Based on the 2000 HCM methodology, 10 to 15 minute headways correspond to a transit LOS of B to C during the PM peak period. Headways of 15 to 30 minutes correspond to a transit LOS of C to D during the off peak period. The LOS for the transit buffers, using the assumed transit route headways, should adequately serve the study area during both the PM peak and off peak periods.

Preliminary Cost Estimates

Table 11: General Cost Assumptions

Construction Category	Cost Per Square Foot
ROW	$10
Pavement Construction	$10
Bridge Work	$125
Contingency Factor	1.25
Bridge Length (feet)	200

Cost estimates were developed for the major components of the transportation facilities to compare the relative investment between the four concept plans. The preliminary cost estimates were made for new and improved roadways classified as arterial or collector facilities. Lower functional classes roadways are more likely to be shaped and funded through development plans, and no estimate was made for these streets. Typically, the local and collector streets are fully constructed by the development as a condition of approval. The higher tiered streets are constructed through joint public funding programs at the city, county or regional level.

The streets and bridges costs were estimated by applying general assumptions based on recent construction projects of a similar nature. The assumptions used for this study are listed in Table 11 for the right-of-way, pavement, and bridge construction. The other elements of the street design including street lighting, drainage, traffic signal controls, etc. are not included in this estimate.

The tally of functional class by concept plan was previously listed in Table 1. A similar tally was made of the number of bridge crossings required for each concept plan as shown in Table 12. This shows that 22 to 29 bridges will be required to implement these street systems. The breadth of the bridges varies according to the type of street as shown in the table. For the purposes of this study, all bridges were assumed to be 200 feet in length.

Table 12: Number of Stream Crossings by Functional Classification in Pleasant Valley

Class	Street Right-of-Way	Bridge Width	Plan A	Plan B	Plan C	Plan D
Major Arterial	92	68	1	1	1	1
Major Arterial	111	68				
Minor Arterial	62	46	2	1	2	1
Minor Arterial	70	46	8	9	4	5
Minor Arterial	80	46				
Collector	60	44	5	8	8	6
Collector	70	44	2			
Collector	74	44		2	2	
Neighborhood Conn.	64	34	3	2	3	10
Local	56	32	7	6	2	2
Trail	10	10				
Total			**28**	**29**	**22**	**25**

The results of the preliminary cost estimate are listed in Table 13 in $1,000s of dollars (2001). The cost elements are divided into right-of-way and roadway/bridge costs. It was noted that the least right-of-way cost was for Plan A while the most right-of-way was required for Plan B. The overall least cost for the major street improvements was in Plan D with $97.5 million.

Table 13: Major Roadway Preliminary Costs ($1,000)

Cost Element	Plan A	Plan B	Plan C	Plan D
ROW Costs	$26,781	$37,323	$42,197	$23,121
Number of Bridges/Crossing	28	29	22	25
Construction Costs	$64,970	$69,380	$62,543	$54,932
Total Costs	$114,689	$133,379	$130,924	$97,566

Section 5 – System Plans

Preferred Plan

The Steering Committee selected a hybrid of the four alternatives presented above for the transportation system to serve the valley. The March Hybrid Plan was primarily based on the configuration reflected in Plan D. Adjustments to this network were made to reduce environmental impacts at stream crossings, and to provide more direct travel between neighborhoods and proposal school locations. Changes to the land use plan included additional neighborhood commercial centers, and a significant addition of 60-acres of employment uses in place of proposed residential uses in the prior alternatives analysis. The travel forecasts for the March 6 Hybrid Transportation Plan and revised land use plans were evaluated by Metro staff using the travel demand tools that were applied in the alternatives analysis. The following section presents the transportation performance, recommended functional class and transit map elements, and the final preliminary cost estimates for the March 6 hybrid transportation system.

On May 14, 2002 the Steering Committee endorsed a preferred Concept Plan. See Figure 1 for the preferred network of arterial, collector and neighborhood connector streets. In summary, the key elements of the street plan (as integrated with land use and natural resources) are to:

- Create a network of arterial, collector, neighborhood connector and local streets that accommodates travel demand and provides multiple routes for travel. Key new street extensions and connections include:

  a) 172nd Avenue extension north to Giese Road

  b) Giese Road west to Foster Road

  c) Clatsop Street west to Cheldelin Road

  d) 182nd Avenue south to Cheldelin

  e) Butler Road west to 190th Avenue

  f) Sager Road east to Foster Road

- Long-term arterial connection from 172nd to 190th Avenue south of the study area.

- Upgrade existing streets and design all new streets to accommodate biking and walking, with special pedestrian amenities on transit streets. Upgrade intersections with safety issues identified as part of the inventory work.

- Provide regional and community transit service on key roads in Pleasant Valley, with direct connections to Happy Valley, Clackamas regional center, Damascus, Lents, Gresham, the Columbia Corridor and downtown Portland. Transit streets include 172nd Avenue, Giese Road, 182nd Avenue, 190th Avenue, a new east-west collector south of Giese Road and Clatsop Street-Cheldelin Road.

- Provide a logical and connected street system that connects directly to community destinations while also avoiding the ESRA where possible. Plan for a local street system that complements the arterial and collector street system, and meets regional connectivity requirements.

- Use “green” street designs that are an integral part of the stormwater management system and provide walkable tree-lined streets.

- Downgrade the function of Foster and Richey roads to serve as local access streets and develop a strategy to disconnect and potentially vacate these streets in the confluence area of Kelley Creek.

- Plan for a long-term major arterial connection south of the study area from 172nd Avenue to 190th Avenue to serve long-term regional mobility needs if future urbanization occurs in Damascus. This will be evaluated more fully by Metro as part of urban area planning for the Damascus area.
- Evaluate needed capacity improvements to address long-term travel demand for key gateway routes if future urbanization occurs in Damascus. This will be evaluated as part of a Powell/Foster corridor study (beginning in summer 2002), continued Damascus area planning, and the next Regional Transportation Plan update.

2020 Volume Forecasts

The raw model volumes were adjusted to correct cases where intersection controls and street design types would yield different results. For example, the route including Richey Road and the north-south collector street (182nd Avenue) were "assigned" a volume that did not account for traffic signals and higher design speeds on 190th Avenue. A manual adjustment was made to better reflect these factors. Another links worth noting is 162nd Avenue that has a forecast of about 8,000 vehicles daily. Initially, this seemed high for a collector considering that relatively little land development is connected to it; however, it was noted that the elementary and middle school sites rely primarily on 162nd Avenue, and that these sites alone generate 3,000 to 5,000 daily vehicles. Therefore, the 162nd Avenue forecast of 8,000 vehicles seems reasonable.

The resulting volumes of the Pleasant Valley area (***Table 14***) illustrate a range of daily traffic volumes on the arterials (Foster Road, Giese Road, 190th Avenue, 172nd Avenue) from 9,000 to 39,000 vehicles daily. The highest volumes in the valley were noted on 190th Avenue between Giese Road and Cheldelin Road. Collector facilities (162nd Avenue, Butler Road, Sager Road) show daily volumes from 3,000 to 15,000 vehicles in both directions. Volumes on Cheldelin Road between 190th Avenue and 172nd Avenue could be substantially higher if the proposed connector immediately south of the plan area is not constructed. In that case, the Cheldelin Road segment could be considered a major arterial. Traffic volumes on neighborhood connector routes are expected to be below 5,000 vehicles daily.

Table 14: 2020 Pleasant Valley Travel Demands by Major Corridor (2-Hour PM Peak)

Major	PV Demand	Percent of Total External Traffic	Total Demand	PV Percent of Total Demand
Eastern Corridor				
Powell Blvd. E/o 190th	390	4%	4250	9%
Binford Lake Pkwy E/o 190th	290	3%	1900	15%
Butler Road E/o 190th	840	9%	3600	23%
Southern Corridor				
172nd S/o Sager Road	1410	15%	3400	41%
Foster Road S/o Sager Road	840	9%	1810	46%
Northern Corridor				
Jenne Road N/o Foster	640	7%	3120	20%
190th Ave S/o Highland Drive	1650	18%	6090	27%
Western Corridor				
Powell Blvd. W/o Jenne Road	940	10%	5930	16%
Foster Road W/o 162nd Ave.	1300	14%	3310	39%
Clatsop Road W/o 162nd Ave.	900	10%	3530	25%
Total	9,230		36,940	25%

Select Zone Analysis

Gateway activity associated with Pleasant Valley was reviewed using a select-zone analysis for all of the plan area TAZs. This process shows the proportion of PV traffic using each of the major roadways within the study area. The results are useful to illustrate the major travel orientation for trips that start or end within Pleasant Valley, and also for showing what proportion of the total 2020 travel demand can be directly associated with Pleasant Valley traffic. The results summarized in Table 14 show that the Pleasant Valley component of the future traffic stream along the major arterials feeding the valley vary from 10 to 45 percent. The most significant corridors are to and from the west and south with roughly 30% in either cardinal direction. The table also shows the proportion of Pleasant Valley traffic relative to the total 2020 travel demand for the same corridors. Overall, approximately 25% of the 2020 trips through the gateway arterials are attributed to Pleasant Valley. The corridors with the highest share of trips originating or terminating in Pleasant Valley are the western and southern corridors, with percent shares ranging from 15 to 46%.

Sager Road Issues

Sager Road between 172nd Avenue and Foster Road is forecasted to carry about 3,000 to 5,000 vehicles daily. Clatsop Road parallel to the north will serve 13,000 to 15,000 vehicles. One possible modification to the March 6 Hybrid network would be a discontinuous Sager Road to reduce the number of stream crossings and wetland area impacts. If this approach is taken, the volume on Clatsop Road would rise about 10 percent in this segment, and the junction of Clatsop Road and 172nd Avenue would have a similar increase. We expect that Clatsop Road can adequately serve this volume, but the Clatsop Road intersection at 172nd Avenue may require additional turn lanes on its approaches to serve the added vehicle volume during peak hours. Other side effects include out-of-direction travel for the neighborhood, and wider street approaches that may detract from the safety and convenience of pedestrian crossings. In conclusion, Sager Road is needed in the future street network to serve as an important parallel route to Clatsop Street.

2020 Link Performance

The ratio of roadway planned capacity and 2020 p.m. peak demand volumes is illustrated in Figure 6 for the Pleasant Valley Area. The street network is shown schematically, and is color-coded to indicate the volume-to-capacity (V/C) ratio for each of the modeled links. Generally, most of the roadway links operate a less than 80% of capacity, and these are indicated with the color green. Higher v/c ratios up to 1.00 are indicated on:

- 190th Avenue north of Giese Road
- Butler Road
- 190th Avenue near Cheldelin
- Clatsop west of 162nd Avenue
- Jenne Road southbound
- Foster Road eastbound up to Jenne Road

A few links are expected to exceed 1.00 v/c ratio, which means that the link volume will exceed the prototypical link capacity. These include:

- Highland Road southbound
- Butler Road near High School site
- Foster Road east of Jenne Road
- 190th Avenue south of new Butler Road connection

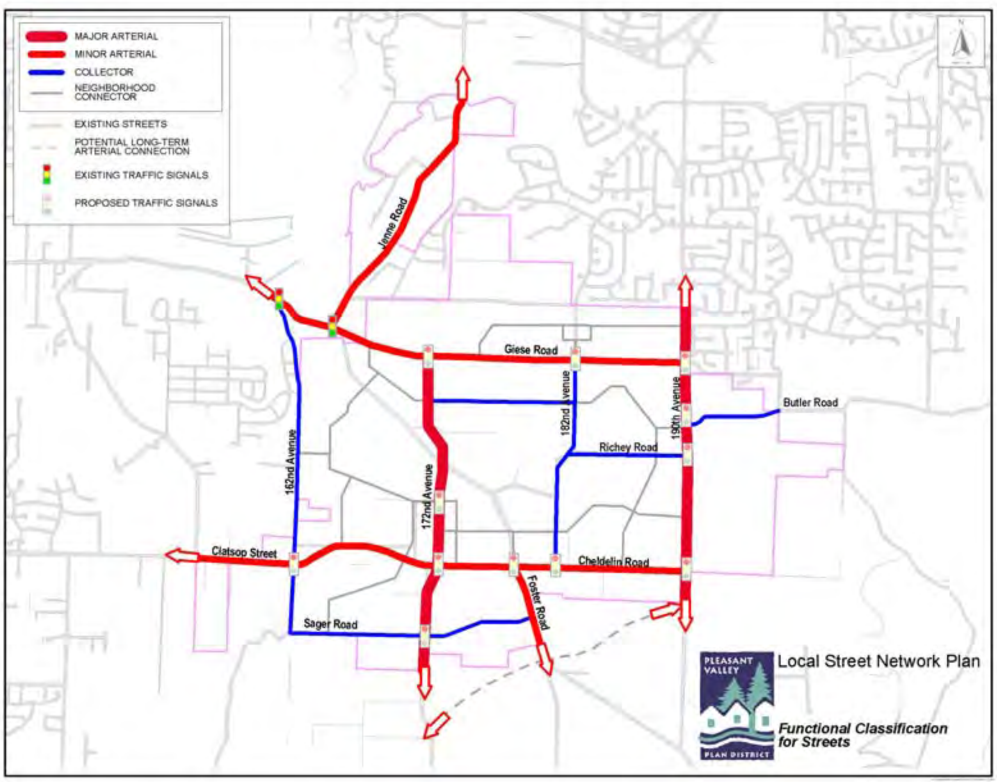
Typically, the maximum daily volume on a three-lane facility is 15,000, and 30,000 vehicles daily for a five-lane facility. Higher volume can be served than this with implementation of higher standards for access control, prohibition of on-street parking and more intersection capacity. The cases noted above will require consideration of additional turn lanes at major intersections and higher levels of access controls mid-block (medians) to sustain higher than average link capacities.

Street System

Functional Classification

The functional classification designations complement existing designations for the connecting routes outside the study area including Foster Road in City of Portland, 190th Avenue – Highland Road in the City of Gresham, and Foster Road in Clackamas County. The new segment of Butler Road was identified as a collector road to be consistent with existing City of Gresham plans. Of all the facilities considered in this plan, Butler Road is one that would be a candidate for a re-designation to another classification. Given the future daily volumes approach 15,000 vehicles, and the relatively limited access because of terrain, it is suggested that the City of Gresham consider re-designating Butler Road to be a minor arterial. The length of Butler Road between 190th Avenue and its easterly terminus at Regner Road is roughly 1.5 miles. The combination of Butler Road and Regner Road provides one of the few east-west routes between US 26 and 190th Avenue in this sector of the city, and generally conforms to the broader definition of an arterial facility.

Figure 6. Network of Arterial, Collector and Neighborhood Connector



Streets

Arterial streets

Purpose

Arterial streets serve longer, through trips and interconnect communities within the region. They also serve shorter, more localized travel within a community, linking major commercial, residential, industrial and institutional areas.

Characteristics

Arterial streets usually carry between 10,000 and 30,000 vehicles per day. These streets are divided into major and minor classifications, and usually have two to four travel lanes (one or two in each direction). Major arterials function to serve longer, through trips and serve more of a regional traffic function. Minor arterials function to serve shorter, more localized travel within a community. As a result, major arterials usually carry more traffic

Arterial streets are typically designed within 70 to 111 foot right-of-way and with a design speed of between 25 and 35 mph, depending on adjacent land uses. Arterial streets located in the plan district will mix a significant amount of motor vehicle traffic with public transportation, bicycle and pedestrian travel. These streets have many street connections and some driveways, although combined driveways are preferable. These facilities may include on-street parking when possible, particularly in the town center. The center median serves as a pedestrian refuge and allows for left-turn movements at intersections. Swale medians with left turn refuges

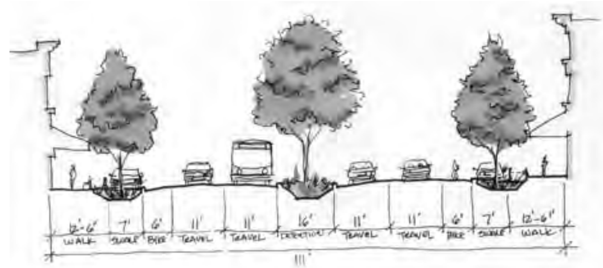
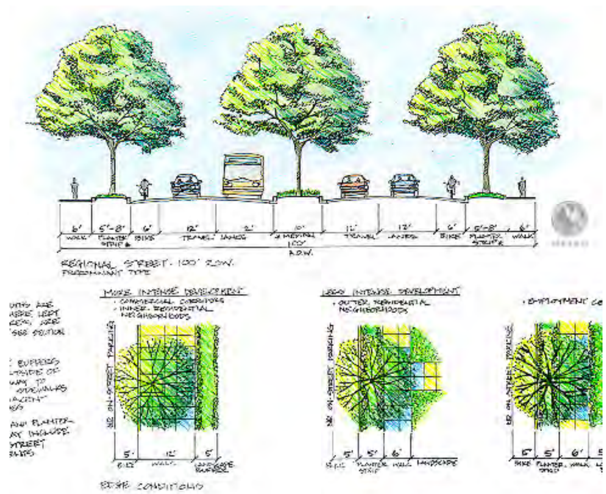


Figure 7. Regional boulevard (major arterial in town center)



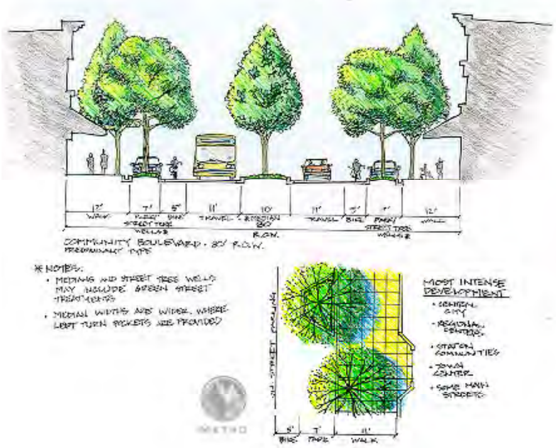


Figure 9. Community boulevard (minor arterial within town center)

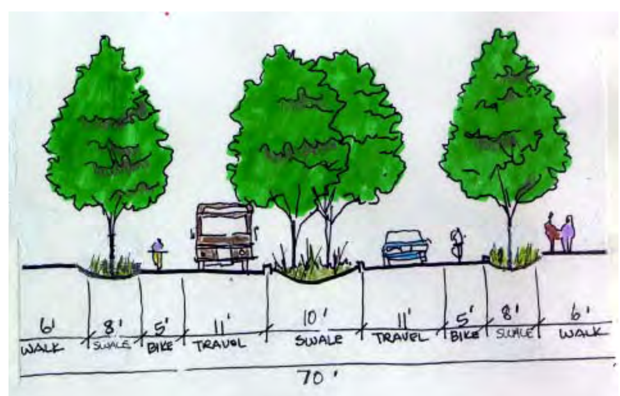


Figure 10. Community street (minor arterial with median outside town center)

shall be provided on arterial streets in the plan district, including Giese Road, 172nd Avenue, Clatsop Street and 190th Avenue.

Arterial streets in the plan district are designed to be transit-oriented, with high-quality service and substantial transit amenities at stops and station areas. Pedestrian improvements are substantial on streets in the town center, including broad sidewalks, pedestrian buffering, special street lighting and crossings at all intersections with special crossing amenities at major intersections. These streets have bike lanes. 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.

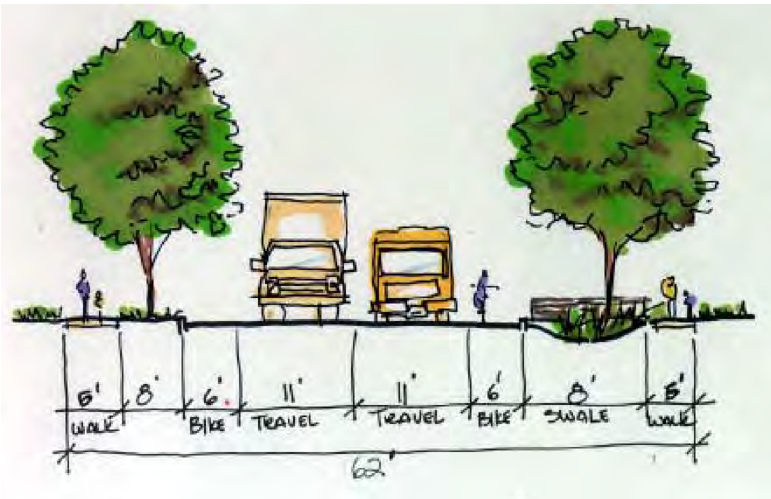


Figure 11. Community street (minor arterial without median outside town center)

Collector Street

Purpose

Collectors serve neighborhood traffic and provide local alternatives to arterials. They provide both circulation and access within residential and commercial areas, helping to disperse traffic that might otherwise use the arterial system for local travel.

Characteristics

Collectors usually carry between 1,000 and 10,000 vehicles per day. Collector streets are usually have two travel lanes (one in each direction) and are spaced at half-mile intervals, or midway between arterial streets. Access control on collectors is lower than arterials, and direct driveway connections from residential, commercial, and employment uses are allowed.

Collector streets are typically designed within 60 to 70 foot right-of-way and with a design speed of between 25 and 35 mph, depending on adjacent land uses. Collector 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. Collector streets have few driveways that are shared when possible.

Collector streets are transit-oriented in design when they are also transit streets, with transit amenities at stops and station areas. Although less substantial than in arterial streets in the town center, pedestrian improvements are important on collector streets, including sidewalks that are buffered from motor vehicle travel, crossings at all intersections and special crossing features at major intersections. Collector streets have striped or shared bikeways depending on traffic volumes and other safety considerations. These facilities also serve as secondary freight routes and may include loading facilities within the street design

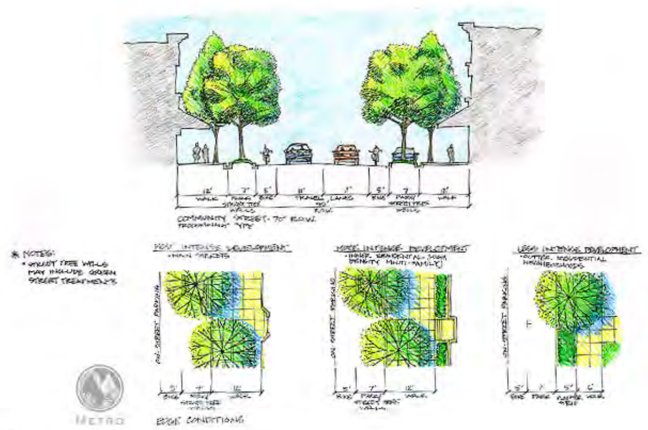


Figure 12. Community boulevard (Collector within town center)

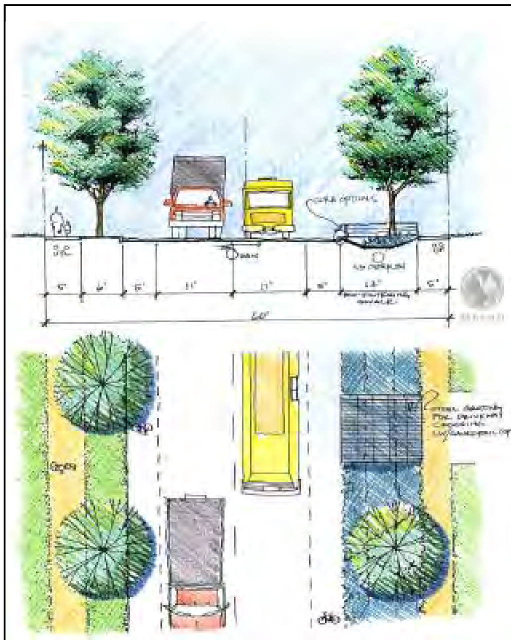


Figure 13. Community street (collector in all other land use types)

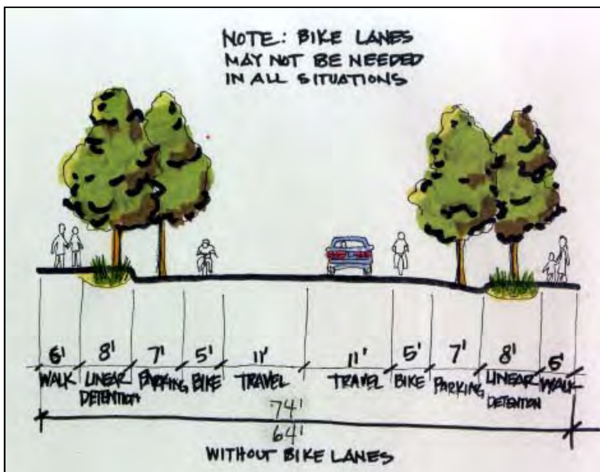


Figure 14. Community street (collector adjacent to schools, parks and attached housing)

in the town center and neighborhood centers, where appropriate. Loading facilities should occur on side streets, where feasible.

Neighborhood connectors

Purpose

Neighborhood connector streets serve residential neighborhoods and provide connectivity to the collector and arterial street system. They are intended to serve travel between neighborhoods and provide options to the arterial and collector streets for travel within the community.

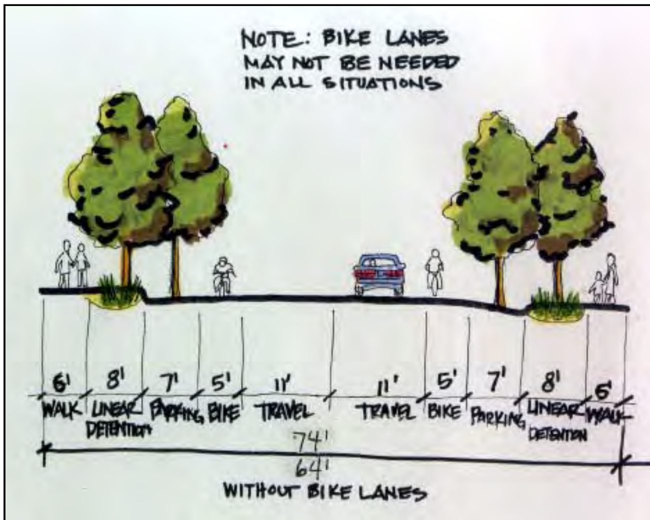


Figure 15. Neighborhood connector

Characteristics

Neighborhood connectors serve more traffic than local streets, but still less than 5,000 vehicles per day. Neighborhood connectors usually have two travel lanes (one in each direction) and include on-street parking, a landscaped buffer between the travel lanes and sidewalks, curb extensions, sidewalks and bike lanes depending on traffic volumes. Neighborhood connector streets are typically designed within 60 to 70 foot right-of-way and with a design speed of between 10 and 25 mph, depending on adjacent land uses. Street design elements include sidewalks, bike lanes depending on traffic volumes, on-street parking and a landscaped buffer between travel lanes and sidewalks.

Local streets

Purpose

These streets provide direct access to adjacent land. Local streets provide access between people's homes and the neighborhood connectors.

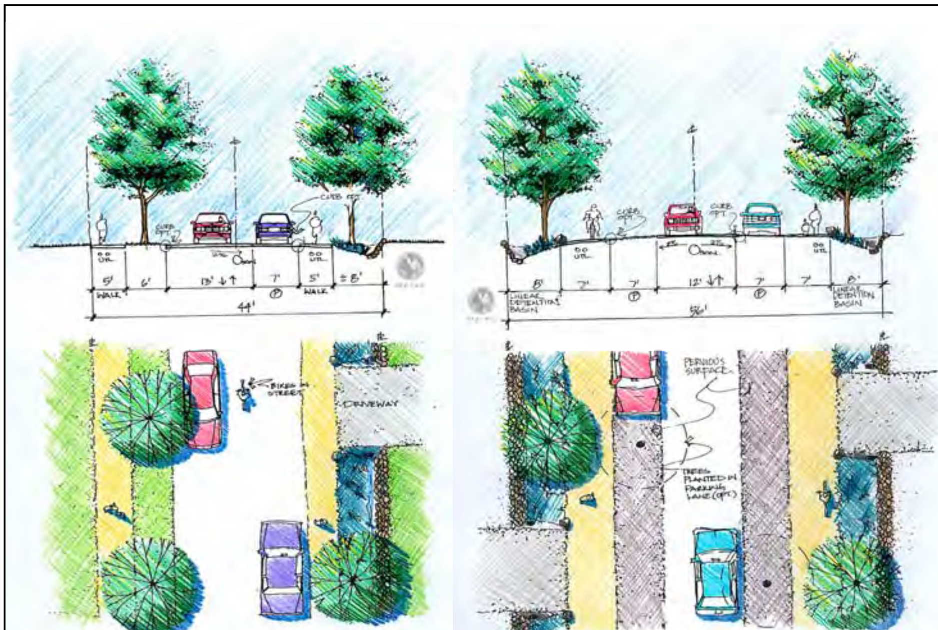


Figure 16. Local street examples

Characteristics

Local streets are multi-modal and are designed to serve most short automobile, bicycle and pedestrian trips. Local streets usually carry fewer than 1,000 vehicles per day. Local street designs include many connections with other streets, every 530 feet except where prevented by existing development or environmental and topographic constraints. Bike and pedestrian accessways are provided every 330 feet where full street connections cannot be provided. Local streets are typically designed within 20 to 50 foot rights-of-way and with a design speed of between 10 and 20 mph.

On average, each household generates between 10-12 automobile trips per day. A well-connected street system with reasonably direct connections encourages walking, bicycling, and transit use, and can reduce the number and length of these automobile trips. In well-connected street systems, local traffic is more dispersed, rather than focused on arterials where it combines with through-traffic to create congestion. With a well-connected system that provides multiple routes to local destinations, any single street will be less likely to be overburdened by excessive traffic. Police and fire response also benefits from a well-connected street system.

Street Design

All streets will be designed to support adjacent land uses and accommodate bicycles and pedestrians, with special pedestrian amenities on transit streets. All streets include "green streets" design elements that help minimize stormwater run-off, including pervious curbs and the use of buffer treatments that include street trees, swales, infiltration trenches and linear detention basins. Refer to Metro's *Green Streets: Innovative Solutions for Stormwater and Street Crossings* handbook for more information on these street design elements.

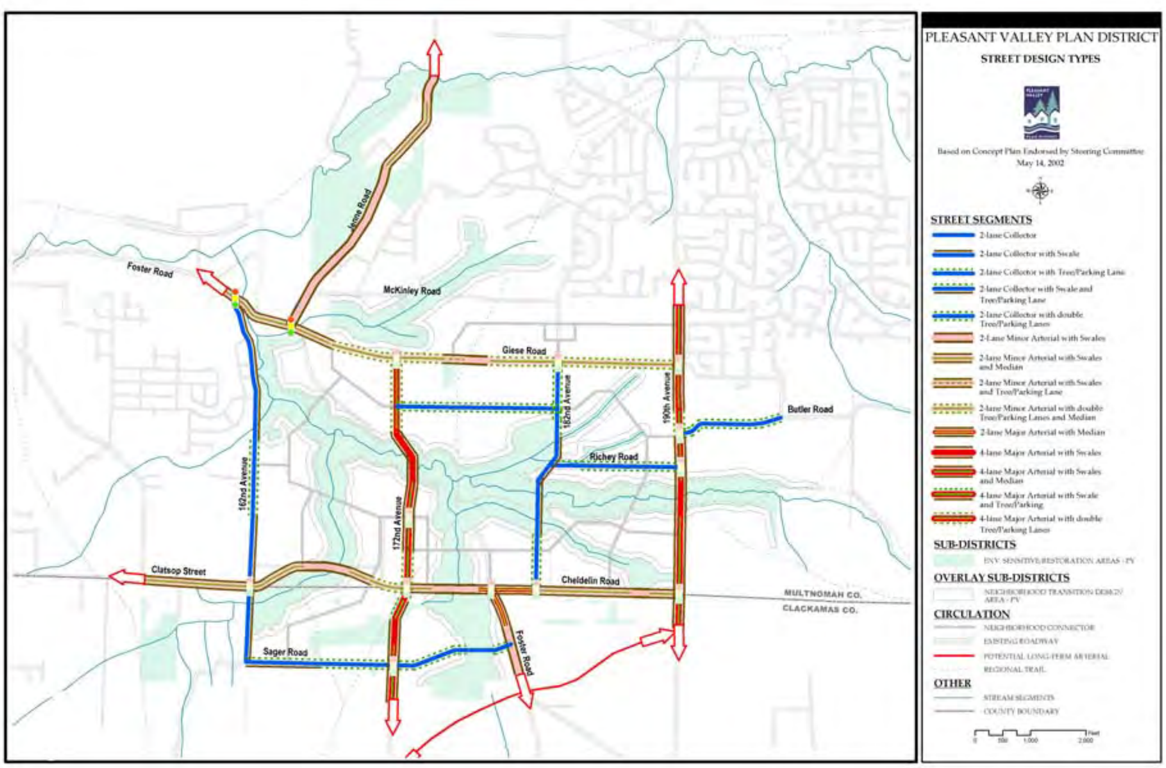


Figure 17

Table 15 summarizes the preferred street cross section for streets in Pleasant Valley by functional classification and adjacent land use. Many variables will be taken into account when the cross sections are implemented locally. Local implementation of these street designs should provide opportunities to mix and match various street design elements and to vary from preferred dimensions in areas where natural constraints exist. For example, the cross sections include the option of a landscaped buffer and center median that can be adjusted at intersections to allow for turn lanes without needing to dedicate more right-of-way than has been identified.

Though street design features are not part of the Metro transportation model, there are assumptions made in the modeling process that reflect these street design assumptions, including the degree to which walking, bicycling and access to transit are affected by street design.

The Street Design Type Map is a plan that illustrates the location of specific street cross-sections in Pleasant Valley. This work was begun in the Concept Plan, which included text describing where the various cross-sections should be located within the community. The Street Design Type Map takes this work one step further and recommends refinements (i.e., further detailing) of the location of the street designs in concert with adjacent land uses, natural resources, and urban design opportunities. See Figure 17.

The Street Design Type Map is essentially a site-specific application of the Concept Plan recommendations for street types. As noted above, it includes refinements and detailing, which are summarized as follows:

1. On major arterials, on-street parking is included adjacent to the neighborhood centers. This would apply to about 500 feet of frontage along 190th and 172nd Avenues.
2. On minor arterials outside the town center, on-street parking is included on selected streets adjacent to high and medium density residential, mixed-use, and employment areas.
3. On neighborhood collectors, on-street parking is included adjacent to all residential, mixed-use, civic and employment areas, but not adjacent to the Environmentally Sensitive and Restoration Areas (ESRAs).
4. Within the ESRAs, center swales are not included in the street cross-section. Swales are retained at the edge of the street.

Refinements (1)-(3) above introduce on-street parking in selected areas to promote pedestrian character and walkable streets. This is consistent with the overall vision and many of the implementation strategies for Pleasant Valley. It is also appropriate given the small nature of the sub-areas within the community.

The section of Geise Road between 190th and 182nd provides a good example of the benefits of refining the street types in selected areas. This section is about three blocks long and will form the edge between two adjacent neighborhoods. On-street parking will help create a street character for Giese that connects these neighborhoods, rather than separates them. This same situation is true for most of the sub-areas in the valley: between most major intersections, and between major streets and ESRAs, there is a recurrent three-to-five block dimension. Collector or arterial streets should be planned with as much pedestrian character as is practical to form good “edge” conditions for these areas. On-street parking is one tool to support pedestrian character and a good neighborhood edge.

Refinement (4) is intended to reduce the width of streets within the ESRAs, and therefore the grading impacts and cost. The cross-section is still a green street.

Table 15: Pleasant Valley Street Design Parameters

Motor Vehicle Functional Classification	Street Design Classification	Preferred Street Design Elements							
		R/W	Speed	Travel Lanes (11’)	Swale Median	Bike Lane	On Street Parking	Swale	Side walk
Major arterial within TC	Regional boulevard	111’	20-25 mph	4	16’	6’	7’	No	12.5’
Major arterial outside TC	Regional street	100’	35 mph	4	16’	6’	No	8’	6’
Minor arterial within TC	Community boulevard	80’	20-25 mph	2	10’-14’	6’	7’	No	10’
Minor arterial with median outside TC	Community street	70’	35 mph	2	10’-14’	6’	No	8’	6’
Minor arterial w/o median outside TC	Community street	62’	35 mph	2	No	6’	No	8’	6’
Collector within TC	Community boulevard	70’	20-25 mph	2	No	5’	7’	No	12’
Collector adjacent to schools, parks and MF housing	Community street	74’	20-25 mph	2	No	5’	7’	8’	6’
Collector other areas	Community street	60’	20-25 mph	2	No	5’	No	8’	6’

Notes:

1. *All streets will be designed to support adjacent land uses and accommodate bicycles and pedestrians with special pedestrian amenities on transit streets.*
2. *All streets include “green streets” design elements that help minimize stormwater runoff, including pervious curbs.*
3. *Swales may include infiltration trenches and/or linear detention basins as possible treatments.*
4. *Bike lane and sidewalk dimensions may be reduced when natural constraints exist. The need for and width of bike lanes will be determined based on traffic volumes and other safety considerations.*
5. *On-street parking lanes will include tree planters. Tree well curb extensions should be designed to accommodate street sweepers.*
6. *Twelve-foot outside travel lane may be considered on Regional Streets that are planned to accommodate local freight movement or buses.*
7. *Local implementation of these street designs should provide opportunities to mix and match various street design elements and to vary from preferred dimensions listed above in areas where natural constraints exist.*
8. *Cross sections include the option of a landscaped buffer and center median that can be adjusted at intersections to allow for turn lanes without needing to dedicate more right-of-way than has been identified.*

Street Connectivity

Connectivity standards are required by Metro for newly urbanizing areas. Draft objectives for local streets were prepared to form a basis for more detailed connectivity standards. They are based upon guiding statements from the Pleasant Valley Concept Plan Summary and Recommendations, Pleasant Valley Concept Plan Technical Appendix (Transportation Chapter), Southwest and Far Southeast Master Street Plan (City of Portland), Final Report and Recommendations, and Pleasant Valley Implementation Project Statement of Work.

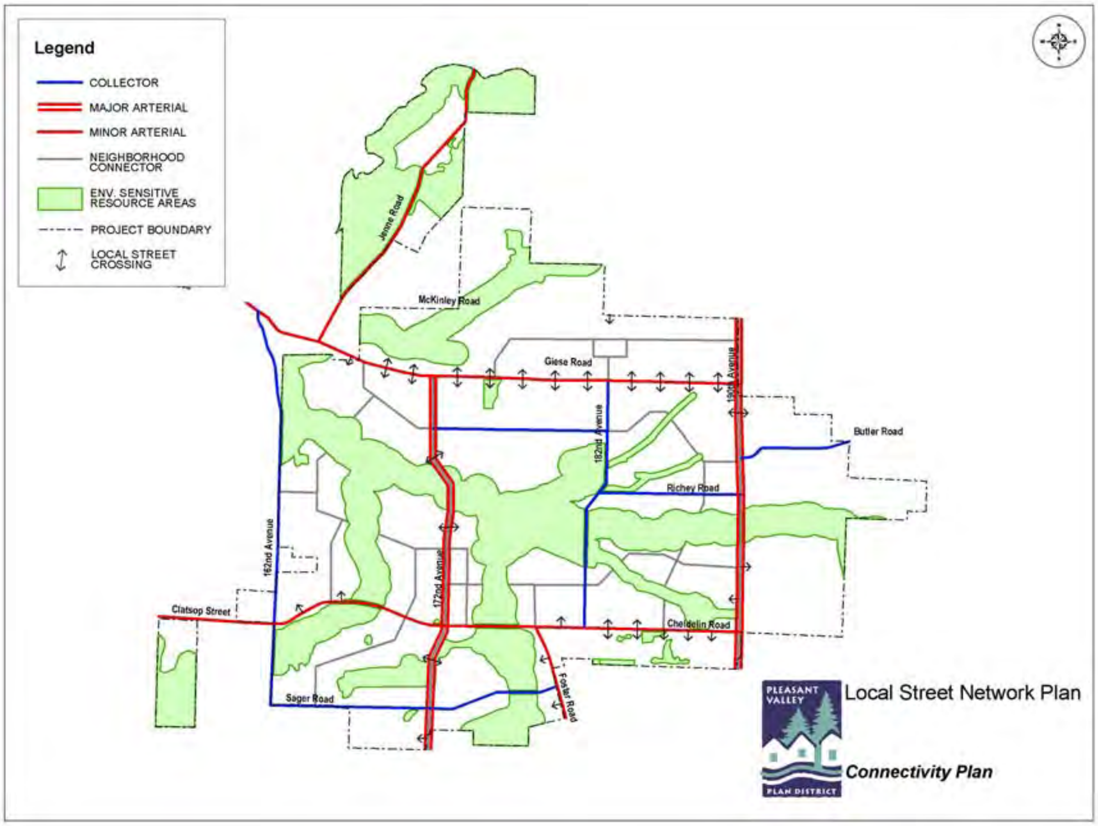


Figure 18

Local street connectivity is important to the overall success of Pleasant Valley, including the integration of land use, transportation, and natural resources. Adequate local street connections contribute to the creating a community where it is safe, convenient, and inviting to walk, ride a bike, and use transit. It also improves the functional capacity and efficiency of the transportation system by providing direct, local access between neighborhoods and local destinations, reducing the number of short, local trips on the arterial and collector streets. Finally, local streets provide routes for emergency vehicle access to local neighborhoods.

From a local street perspective, Pleasant Valley is essentially a "greenfield" setting. That is, the existing network of streets is rural and an entirely new network of connections will be needed to implement the Concept Plan's vision for a new, urban community. Additionally, the creation of the transportation network will occur over a long time – perhaps 20-40 years. Therefore, the local street plan must strike a balance between the certainty that is needed for creating a good network and the flexibility that is needed for long term implementation and adaptability to local conditions.

The strategy for Pleasant Valley's street connectivity implementation is to focus on two fundamental elements of the local network:

1. The general location and number of local streets that intersect with the arterial network, implemented through a Connectivity Plan.
2. Code standards that will be applied when actual local streets are proposed through the development review process.

The Connectivity Map illustrates a recommended layout of intersections of local streets with arterials. Each intersection is shown with a crossing "arrow" symbol. This map is intended as graphic tool to supplement the tables of regulatory intersection spacing standards that are in the Transportation System Plans. The number of local streets that cross the arterials is intended to be the required number of cross streets, subject to evaluation of site-specific feasibility. The locations of the local crossings are general, that is, there is flexibility for their final location, subject to city approval.

To supplement the connectivity map, three standards are recommended for use during the review of proposed local streets in Pleasant Valley:

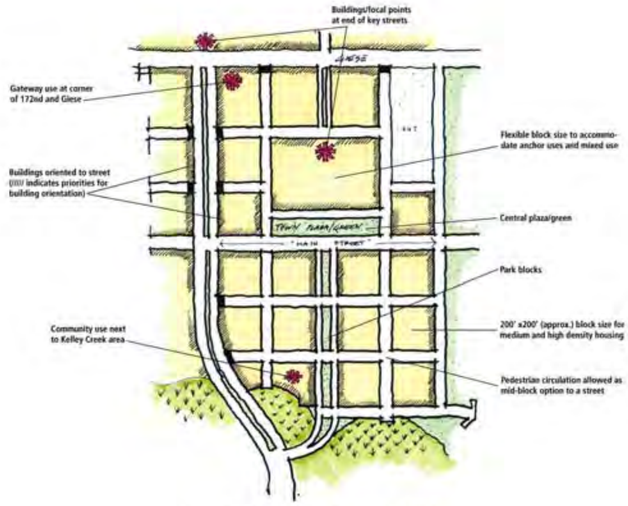
1. Streets will be designed to form a system of complete blocks and a connected circulation network.
2. Block length will be limited to the maximums designated in Table 16.
3. Changes and exceptions to the above standards will be permitted when one or more of the following situations apply:
    a. Without the change, there could be no public street access from the parcel(s) to the existing street;
    b. The change is necessary to support circulation and access for bicycles and/or pedestrians;
    c. The change is necessary due to topographic constraints, preservation/restoration/enhancement of natural resources, existing structures and similar physical constraints.

Regarding block lengths, the Pleasant Valley Concept Plan Transportation Implementation Strategies Report states: "Local street designs include many connections with other streets, every 530 feet except where prevented by existing development, or environmental or topographic constraints. Bike and pedestrian access ways are provided every 330 feet where full street connections cannot be provided."

The 530-foot spacing referenced above complies with Metro requirements and provides good overall guidance. However, a shorter maximum block length will result in a more walkable community. The following block lengths are recommended:

Table 16. Local Street Connectivity Standard

Plan Designation	Maximum Block Length
Residential Subdistricts (outside Town Center)	400 feet
Town Center	see diagram (Figure 19)
Neighborhood Center	400 feet
Mixed Use Employment	400 feet
Employment (Geise road)	400 feet
Employment (172nd Ave)	600 feet
All other areas	None



Pleasant Valley's Town Center – General Design Guidelines

Figure 19.

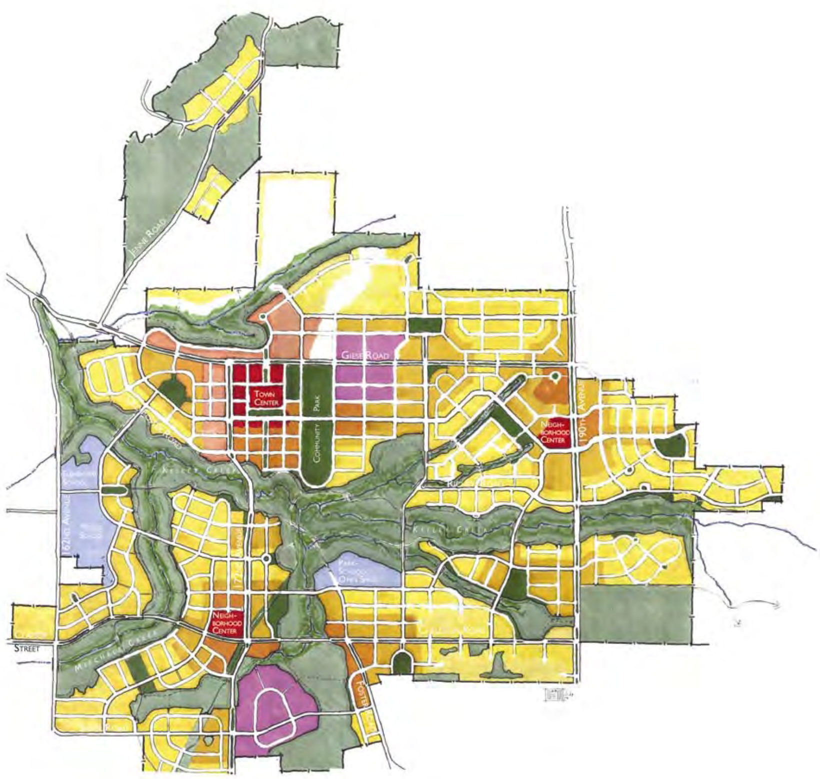


Figure 20. Illustrative Street Plan

Illustrative Street Plan

The Illustrative Street Plan, see Figure 20, was prepared as a tool to help guide the development of the other local street network maps listed above. It is purely illustrative – no attempt has been made to try to identify, reconcile and illustrate all the specific site conditions that will influence actual development and redevelopment in Pleasant Valley. The Illustrative Street Plan shows how the implementation of the connectivity standards works with the overall concept for the Pleasant Valley community, and the relationships between land use, transportation and natural resources that result from these connections. The cities may wish to adopt the illustrative plan as a guiding, but non-binding, resource to use in land use reviews and future planning.

Future Traffic Signals

A preliminary evaluation of traffic signal location was made based on the forecasted travel volumes. The list of intersections that could be controlled by traffic signals at build-out of the Pleasant Valley area include the following:

Foster /162nd (existing)

Foster / Jenne (existing)

Foster / 172nd (future)

Giese / N-S collector (future)

Giese / 190th (future)

Clatsop / 172nd (future)

Clatsop / 162nd (future)

Cheldelin /Foster (future)

Cheldelin / N-S collector (future)

Cheldelin / 190th (future)

New Butler / 190th (future)

Old Butler / 190th (future)

Richey / 190th (future)

Neighborhood route leading to schools / 172nd (future)

Sager Road / 172nd (future)

These locations are noted on Figure 5 to indicate where existing and potential traffic signals may be located. Additional signals may be required depending on the specific land development proposals, and compliance with city or county access spacing standards.

Transit System

Regional transit service

Purpose

Regional transit service is provided on key roads in Pleasant Valley, with direct connections to Happy Valley, Clackamas regional center, Damascus, Lents, Gresham, the Columbia Corridor and Portland. Transit service shall lead development and be included on the front-end of community planning efforts to encourage transit-supportive development. For Pleasant Valley, three types of regional transit service are provided: rapid bus, frequent bus and regional bus. See Figure 21 below.

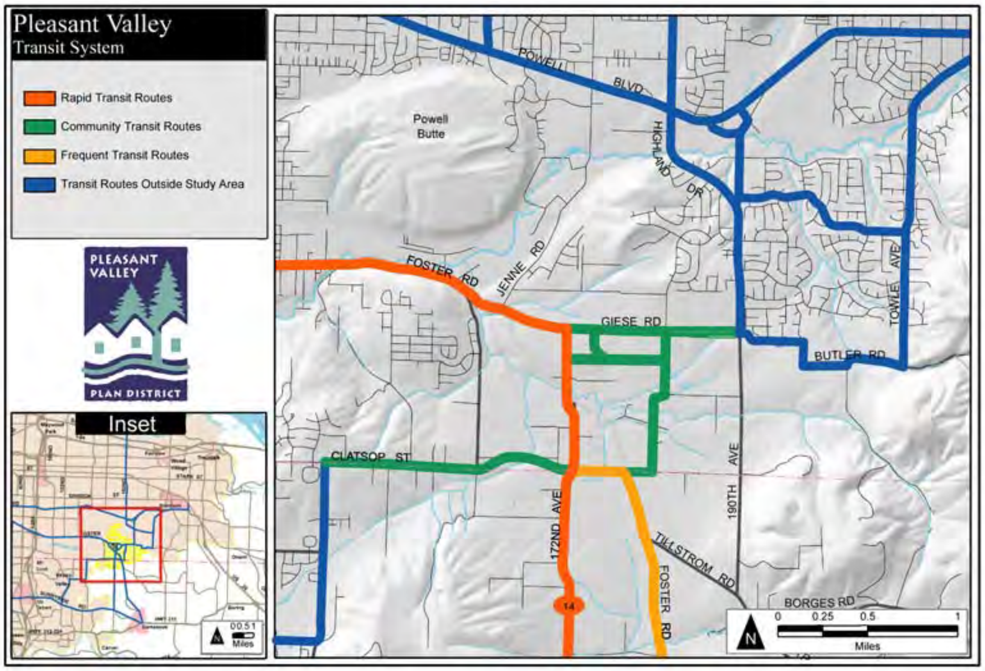


Figure 21.

Characteristics

Typically, rapid service runs at least every 15 minutes. Passenger amenities are concentrated at transit centers. Rapid bus passenger amenities include schedule information, ticket machines, special lighting, benches, covered bus shelters and bicycle parking. Rapid bus stops are located approximately every 1/2-mile. Rapid bus has been identified along Powell Boulevard/Foster Road from downtown Portland to Damascus via Pleasant Valley town center.

Typically, frequent bus 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. Frequent bus service provides slightly slower, but more frequent, service than rapid bus service. Frequent bus service has been identified along 172nd Avenue/190th Avenue between Clackamas and Gresham regional centers via Damascus and Pleasant Valley.

Regional bus service generally operates at maximum frequencies of 15 minutes. Transit preferential treatments and passenger amenities such as covered bus shelters, special lighting, signal preemption and curb extensions are appropriate at high ridership locations. Regional bus service has been identified to connect Pleasant Valley to the Columbia Corridor, Clackamas regional center, Happy Valley and Lents.

Community bus service

Purpose

Community bus lines provide localized access from Pleasant Valley neighborhoods to Happy Valley, Damascus, Gresham, regional transit service and community destinations, such as parks, schools and the town center. Community bus service will connect to regional bus service within Pleasant Valley and Gresham via Butler Road/Towle Road.

Characteristics

Community bus service runs as often as every 30 minutes on weekdays. Weekend service is provided as demand warrants. This service could be implemented through a partnership between TriMet and local jurisdictions.

Transit streets

Purpose

Transit streets are arterial, collector and, in some cases, neighborhood connector streets designated to serve community and regional transit routes. These streets connect major transit stops and include street designs, land use types, patterns and densities and pedestrian and bicycle improvements that support transit.

Characteristics

A transit street shall be designed to promote pedestrian travel with such features as wide sidewalks with buffering from adjacent motor vehicle traffic, frequent street crossings (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. The plan district shall provide pedestrian facilities leading to bus stop waiting areas and make the waiting areas safe, comfortable, and attractive with passenger amenities such as covered bus shelters, special lighting, and curb extensions. Consideration shall be given to the special access needs for elderly, economically disadvantaged, and people with disabilities.

Major Transit stops

Purpose

Major transit stops provide transfer opportunities between regional and community transit routes and provide a high degree of transit passenger comfort and access.

Characteristics

In Pleasant Valley, major transit stops are designated where bus lines intersect at Clatsop Street/172nd Avenue, Giese Road/172nd Avenue and 190th/Butler Road. 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. Retail, office and institutional buildings on sites at major transit stops shall be located within 20 feet of the major transit stop or provide a pedestrian plaza at the major transit stop and provide reasonably direct pedestrian connections between the transit stop and building entrances on site. A transit street in the town center district shall serve as a transit hub that provides transfer opportunities between regional and community transit routes and be designed to include the features of a major transit stop. Consideration shall be given to the special access needs for elderly, economically disadvantaged, and people with disabilities.

Pedestrian districts

Purpose

Pedestrian districts are areas with street and site design standards that provide special pedestrian amenities (e.g., landscaping, curb extensions, pedestrian street lighting, benches and shelters, building entrances oriented to the street, on-site pedestrian circulation system) in the town center, neighborhood centers, employment districts and along transit streets. All streets within pedestrian districts are important pedestrian connections.

Characteristics

A pedestrian district shall be 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. Pedestrian districts shall 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. Consideration shall be given to the special access needs for elderly, economically disadvantaged, and people with disabilities.

Table 17. Recommended regional transit service

Transit route	To/From	Short-term Implementation (0-10 years)	Long-term Implementation (10-20 years)
Powell Boulevard/ Foster Road	Downtown Portland to Pleasant Valley	Regional bus (15 minute peak/15 minute off-peak)	Extend Rapid Bus to Damascus
Foster Road	Lents to Damascus	No service	Rapid bus (10 minute peak/15 minute off-peak)
Sunnyside Road	Clackamas regional center to Damascus	Regional bus (15 minute peak/30 minute off-peak)	Frequent bus (7 minute peak/15 minute off-peak)
172nd Avenue/190th Avenue	Damascus to Gresham	Regional Bus (15 minute peak/15 minute off-peak)	Frequent bus (10 minute peak/15 minute off-peak)
Town center/190th Avenue/ 181st Avenue/Airport Way	Pleasant Valley town center to Columbia Corridor	Regional Bus (15 minute peak/30 minute off-peak)	Regional Bus (15 minute peak/15 minute off-peak)
82nd Avenue/Sunnyside Road/97th/Stevens/ Mather Road/122nd/ 145th/Clatsop/172nd/ Foster Road	Clackamas regional center to Happy Valley to Pleasant Valley to Lents	Regional Bus (15 minute peak/30 minute off-peak)	Regional Bus (10 minute peak/15 minute off-peak)
Foster Road/ Butler Road/Towle Road	Damascus to Gresham	No service	Community bus (15 minute peak/30 minute off-peak)

Pleasant Valley loop	Within study area	Community bus (15 minute peak/30 minute off-peak)	Community bus (15 minute peak/30 minute off-peak)

Bike and Trail Plan

The purpose of trails is to interconnect parks and open spaces to maximize access to programs and facilities; to promote physical fitness and health for a variety of users; to encourage social interaction and community pride; to provide opportunities for rest and relaxation within a natural setting through trail-related recreation; to reduce auto-dependency and enhance connections to transit facilities; to link open space amenities with homes, workplaces and other community facilities; and to provide “outdoor classroom” opportunities for environmental education. About 6.6 miles of regional trails are proposed. Regional trails may multi-use paths (10-12 feet wide with 2 feet shoulders) or hiking trails (4-6 feet wide with 2 foot shoulders).

These trails connect to the Springwater Corridor, Powell Butte and other regional trails and green spaces. They also connect to major destinations – such as the Community Park, town center, employment districts and elementary/middle school complex. They include: the East Buttes Powerline Corridor Trail follows the BPA powerline easement and provides an important north/south connection from the Springwater Corridor Trail and the proposed Gresham/Fairview Trail to the Clackamas River Greenway near Damascus; and the East Buttes Loop Trail goes through the heart of Pleasant Valley and parallels Kelley Creek on its north and south sides. The East Buttes Loop Trail connects historic and natural landmarks with the town center and neighborhoods.

The Bike and Trail Plan, see Figure 22, includes the regional trails, along with additional local walking/hiking trails. The local walking/hiking trails are intended as supplemental routes that connect the regional trails with local destinations and streets in Pleasant Valley. There should be flexibility to build these trails as separated paths, or as widened sidewalks adjacent to streets, depending on the local conditions and development proposals.

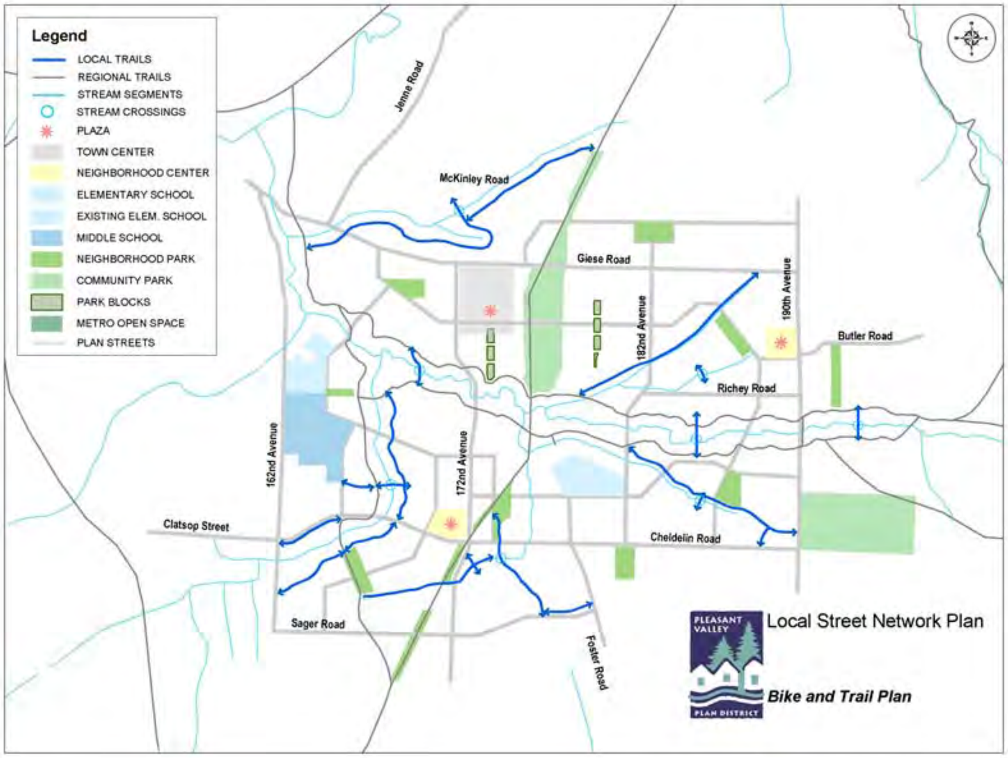

Legend
LOCAL TRAILS
REGIONAL TRAILS
STREAM SEGMENTS
STREAM CROSSINGS
PLAZA
TOWN CENTER
NEIGHBORHOOD CENTER
ELEMENTARY SCHOOL
EXISTING ELEM. SCHOOL
MIDDLE SCHOOL
NEIGHBORHOOD PARK
COMMUNITY PARK
PARK BLOCKS
METRO OPEN SPACE
PLAN STREETS
Jenne Road
McKinley Road
Giese Road
182nd Avenue
190th Avenue
Butler Road
Richey Road
162nd Avenue
172nd Avenue
Clatsop Street
Cheldelin Road
Sager Road
Foster Road
PLEASANT VALLEY
PLAN DISTRICT
Local Street Network Plan
Bike and Trail Plan

Figure 22

Section 6 – Implementation

Preferred Plan Cost Estimate

The estimated cost to provide the planned transportation system in Pleasant Valley is approximately $90 million for the collector and arterial street system and associated stream crossings. The primary funding sources for the development of the transportation system in Pleasant Valley will include regional, state, and federal grants for large regionally significant improvements and existing deficiencies; development exactions for frontage improvements and local street improvements; and transportation improvement fees (TIFs) for development-related system improvements.

The Pleasant Valley Plan District will include special green street designs for local, collector and arterial streets. The process for establishing these designs will occur incrementally. Gresham does not have a set of green street designs that can be applied directly to Pleasant Valley. The approach will be to prepare a model green street standard, possibly connected with an early development proposal or as separate staff-level effort, and adopt this standard as part of the plan district. Given the importance of green streets to the overall plan for Pleasant Valley, the preparation and adoption of model green street designs is identified as an early-action item in the list of projects for implementing the TSP.

Projects and Funding Plan

Project	Project	Description	Cost[1]	Timing	Responsible Jurisdiction	Funding Source
	New Roads					
R1	**Foster North**	New extension - 1,395 LF	$1,767,000	6 to 20	Portland/Gresham	SDC/STP/Private
R2	**Giese Ext.**	New extension - 2,018 LF	$2,940,000	6 to 20	Portland/Gresham	SDC/STP/Private
R3	**Butler Ext.**	New extension - 2,835 LF	$3,990,000	6 to 20	Portland/Gresham	SDC/STP/Private
R4	**Clatsop Ext.**	New extension - 2,938 LF	$3,720,000	6 to 20	Portland/Gresham	SDC/STP/Private
R5	**Foster South**	New extension - 2,581 LF	$1,953,000	6 to 20	Portland/Gresham	SDC/STP/Private
	Existing Roads					
1	Segment 1	Boundary to Butler - improvement to existing - 122,137.5 LF	$4,104,750	6 to 20	Portland/Gresham	SDC/Local
2	Segment 2	Butler to Richey - improvement to existing - 787.5 LF	$1,632,750	6 to 20	Portland/Gresham	SDC/Local
3	Segment 3	Richey to Cheldelin - improvement to existing - 1,912.5 LF	$3,825,000	6 to 20	Portland/Gresham	SDC/Local
4	Segment 4	Cheldelin to So Boundary - improvement to existing - 600	$1,200,000	6 to 20	Portland/Gresham	SDC/Local
	On Butler					

Project	Project	Description	Cost[1]	Timing	Responsible Jurisdiction	Funding Source
5	Segment 5	190th to Ea. Boundary - improvement to existing - 1,800 LF	$2,328,000	6 to 20	Portland/Gresham	SDC/Local
	On Richey					
6	Segment 6	182nd to 190th - improvement to existing - 2,325 LF	$2,958,000	6 to 20	Portland/Gresham	SDC/Local
	On 182nd					
7	Segment 7	Giese to Richey - improvement to existing - 2,025 LF	$2,682,000	6 to 20	Portland/Gresham	SDC/Local
8	Segment 8	Richey to Cheldelin - improvement to existing - 2,362.5 LF	$2,992,500	6 to 20	Portland/Gresham	SDC/Local
	On 172nd					
9	Segment 9	Giese to Butler Ext. - improvement to existing - 900 LF	$1,998,000	6 to 20	Portland/Gresham	SDC/Local
10	Segment 10	Butler Ext to unknown - improvement to existing - 1,537.5 LF	$3,075,000	6 to 20	Portland/Gresham	SDC/Local
11	Segment 11	unknown to Cheldelin - improvement to existing - 1,275 LF	$2,657,250	6 to 20	Portland/Gresham	SDC/Local
15	Segment 15	Cheldelin to Boundary - improvement to existing - 1,800 LF	$3,600,000	6 to 20	Portland/Gresham	SDC/Local
	On Cheldelin					
12	Segment 12	172nd to 182nd - improvement to existing - 2,325 LF	$3,255,000	6 to 20	Portland/Gresham	SDC/Local
13	Segment 13	182nd to 190th - improvement to existing - 2,550 LF	$3,570,000	6 to 20	Portland/Gresham	SDC/Local
	On Clatsop					
14	Segment 14	162nd to Boundary - improvement to existing - 1,912.5 LF	$2,371,500	6 to 20	Portland/Gresham	SDC/Local
	On 162nd					
16	Segment 16	Foster to unknown - improvement to existing - 3,000 LF	$3,978,000	6 to 20	Portland/Gresham	SDC/Local
17	Segment 17	unknown to Clatsop - improvement to existing - 2,175 LF	$2,988,000	6 to 20	Portland/Gresham	SDC/Local
18	Segment 18	Clatsop to Boundary - improvement to existing - 1,350 LF	$1,620,000	6 to 20	Portland/Gresham	SDC/Local

Project	Project	Description	Cost[1]	Timing	Responsible Jurisdiction	Funding Source
	On Sager Road					
19	Segment 19	162nd to 172nd - improvement to existing - 2,662.5 LF	$3,331,500	6 to 20	Portland/Gresham	SDC/Local
20	Segment 20	172nd to Foster - improvement to existing - 2,137.5 LF	$2,680,500	6 to 20	Portland/Gresham	SDC/Local
	On Giese					
21	Segment 21	172nd to 182nd - improvement to existing - 2,925 LF	$4,305,000	6 to 20	Portland/Gresham	SDC/Local
22	Segment 22	182nd to 190th - improvement to existing - 2,175' LF	$3,045,000	6 to 20	Portland/Gresham	SDC/Local
	On Jenne Rd					
23	Segment 23	All - improvement to existing - 4,500 LF	$5,580,000	6 to 20	Portland/Gresham	SDC/Local
	Traffic Signals					
S1	Signal	190th and Giese	$250,000	6 to 20	Portland/Gresham	SDC/Local
S2	Signal	190th and Butler	$250,000	6 to 20	Portland/Gresham	SDC/Local
S3	Signal	190th and Richey	$250,000	6 to 20	Portland/Gresham	SDC/Local
S4	Signal	190th and Cheldelin	$250,000	6 to 20	Portland/Gresham	SDC/Local
S5	Signal	182nd and Giese	$250,000	6 to 20	Portland/Gresham	SDC/Local
S6	Signal	172nd and Giese	$250,000	6 to 20	Portland/Gresham	SDC/Local
S7	Signal	Jenne and Giese	$250,000	6 to 20	Portland/Gresham	SDC/Local
S8	Signal	172nd (south of Foster)	$250,000	6 to 20	Portland/Gresham	SDC/Local
S9	Signal	172nd and Cheldelin	$250,000	6 to 20	Portland/Gresham	SDC/Local
S10	Signal	172nd and Sager	$250,000	6 to 20	Portland/Gresham	SDC/Local
S11	Signal	Cheldelin and 182nd	$250,000	6 to 20	Portland/Gresham	SDC/Local
S12	Signal	Cheldelin and Foster	$250,000	6 to 20	Portland/Gresham	SDC/Local
S13	Signal	Foster and 162nd	$250,000	6 to 20	Portland/Gresham	SDC/Local
S14	Signal	Clatsop and 162nd	$250,000	6 to 20	Portland/Gresham	SDC/Local

Project	Project	Description	Cost[1]	Timing	Responsible Jurisdiction	Funding Source
	Bridges					
B1	Bridge 1	Foster North	$1,150,000	6 to 20	Portland/Gresham	SDC/STP
B2	Bridge 2	Giese Extension	$1,150,000	6 to 20	Portland/Gresham	SDC/STP
B3	Bridge 3	Clatsop Ext.	$1,150,000	6 to 20	Portland/Gresham	SDC/STP
B4	Bridge 4	Butler Ext to unknown local	$1,700,000	6 to 20	Portland/Gresham	SDC/STP
	Planning Projects					
	Green Street Design Standards		$50,000	1 to 5	Portland/Gresham	Local
	Foster/Richey/Giese Refinement Plan		$100,000	1 to 5	Portland/Gresham/ Metro	SDC/Local/ STP
	TIF Update Study		$100,000	1 to 5	Gresham	SDC
	Total New Road Projects		*$14,370,000*			
	Total Improvements to Existing Roads		*$69,777,750*			
	Total Signals		*$3,000,000*			
	Total Bridges		*$5,150,000*			
	Total Planning Projects		*$250,000*			
	Total Transportation Projects		$92,547,750			

[1] For roads cost includes ROW construction and pavement construction

** Some portions of roads or entire road projects fall outside the proposed Annexation Subarea extent.

Grants

A number of grant sources can be used to help fund transportation improvements. Most grants also come with a local match requirement that can range from 10% to 40%. Over the past 10 years, the City of Gresham has averaged approximately $1 million per year in transportation capital grants from various sources. A specific estimate has not been made as to how much grant funding will be available to offset the cost of transportation improvements.

Developer Exactions

Developer exactions are applied to transportation improvements (usually frontage improvements) that developers are required to construct in order to develop their land. These most often apply to internal local streets in the case of a subdivision, and other frontage improvements.

Transportation Impact Fee Assessment

Transportation Impact Fees are used to fund growth-related transportation system improvements. To determine the share of this cost between the TIF and development exactions, the following assumptions were made:

- TIF applies to any right-of-way (R/W) or roadway costs beyond the first 60 feet of R/W and/or pavement on both collectors and arterials while development exactions apply to costs up to the first 60 feet.
- Brand new arterials (Giese, 172nd to 190th; 172nd, Foster to Giese; and Cheldelin, 172nd to 190th) will be entirely funded by the TIF.
- All bridges will be funded by the TIF.
- All street segments adjacent to "undevelopable" land (i.e., slopes, environmental, etc.) will be funded by the TIF

Total Arterial and Collector Improvement Costs and Allocations

Transportation Component	Development Cost	TIF Cost	Total Cost
Roadways	$44,840,575	$41,055,015	$85,895,590
Traffic Signals	$0	$2,450,000	$2,450,000
Existing Deficiencies	$0	-$250,000	-$250,000
Total	$44,840,575	$43,255,015	$88,095,590

Institute of Transportation Engineers trip generation rates were applied to the general land use categories and development forecasts for the Pleasant Valley plan area. The area is estimated to generate a total of 13,520 peak hour trips per day at build out.

TIF Rate = Total TIF Cost/Estimated Trip Generation

Based on the analysis for street construction costs and estimated trip generation, the preliminary TIF rate would be approximately ***$3,200 per peak hour trip***. This compares to the current Gresham TIF rate of $1,607 ($1,977 effective July 1, 2004).

TSP Implementation Actions

The following actions are identified as desirable to implement public facility transportation provisions:

1. The City of Gresham, the City of Portland and Multnomah and Clackamas County and others as appropriate will work cooperatively to identify necessary public facility improvements in Pleasant Valley. Gresham will take lead responsibility for updating the Pleasant Valley Public Facility Plan. In this capacity, Gresham will convene an annual meeting of public works and transportation staff member from the four jurisdictions and urban service providers as defined in ORS 195 to share information about planned capital improvements and discuss policy issues affecting the provision of public facilities.

2. The four jurisdictions and other urban service providers will work cooperatively on necessary urban service agreements and intergovernmental agreements to ensure clarity regarding transfer of ownership of transportation facilities.

3. Gresham and Clackamas County will work toward developing an intergovernmental agreement, if necessary, to ensure the provision of necessary municipal infrastructure in county roads for that part of Clackamas County that is within the Pleasant Valley plan area. If agreement between Gresham and the County does not anticipate annexation of this area to Gresham, it will comply with provisions of ORS 195 for urban service providers.