

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.

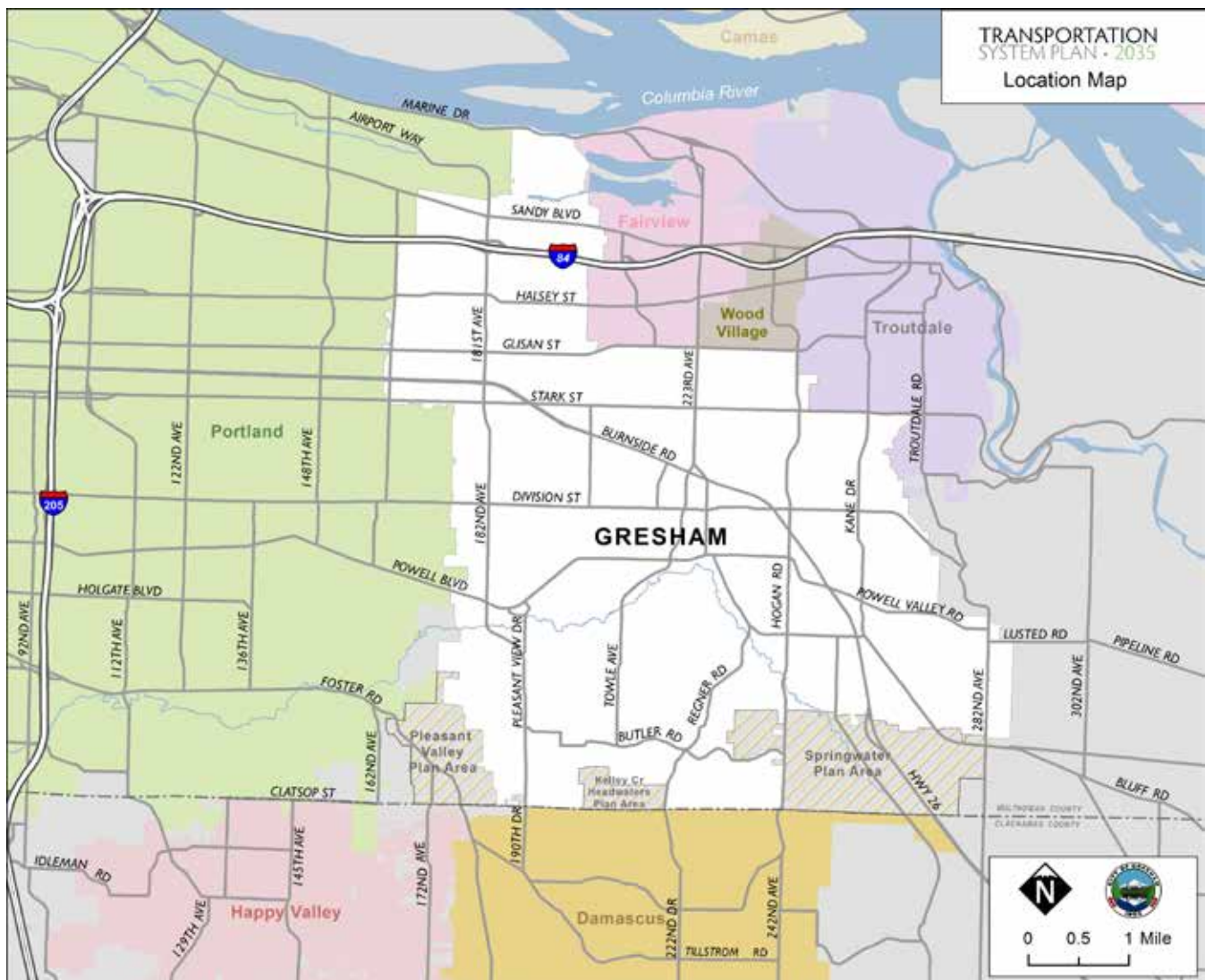
1. STUDY AREA

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 in 2014

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.

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.

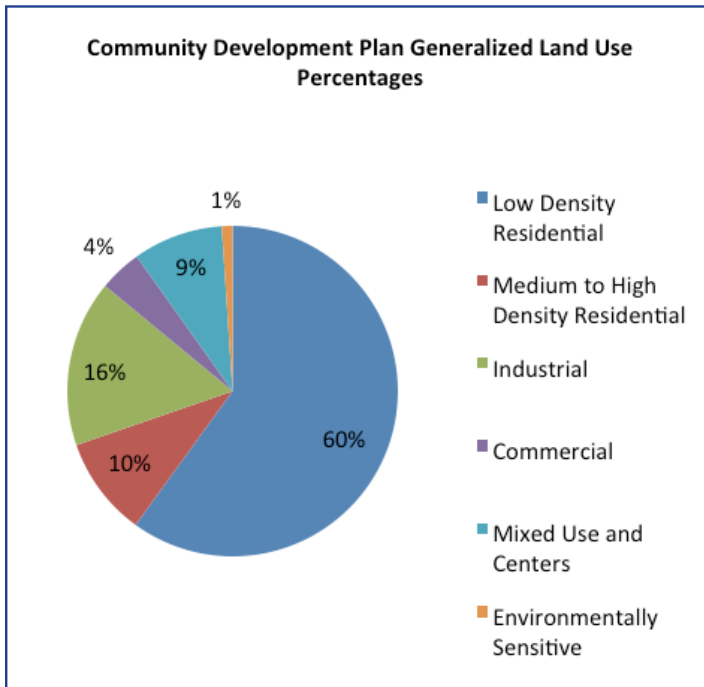
The study area protects environmentally sensitive lands through land use districts (zoning) in Pleasant Valley and Springwater and overlay districts (i.e. Habitat Conservation Area and Floodplain) within the City boundary. The environmentally sensitive land district designations located within Pleasant 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.



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.

Graphic 1: Land Use Percentages



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 redesigned to



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

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 benefit 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 created as part of that process and adopted into this document in 2014. A revision of some streets in Pleasant Valley were considered and adopted into this document in 2020.

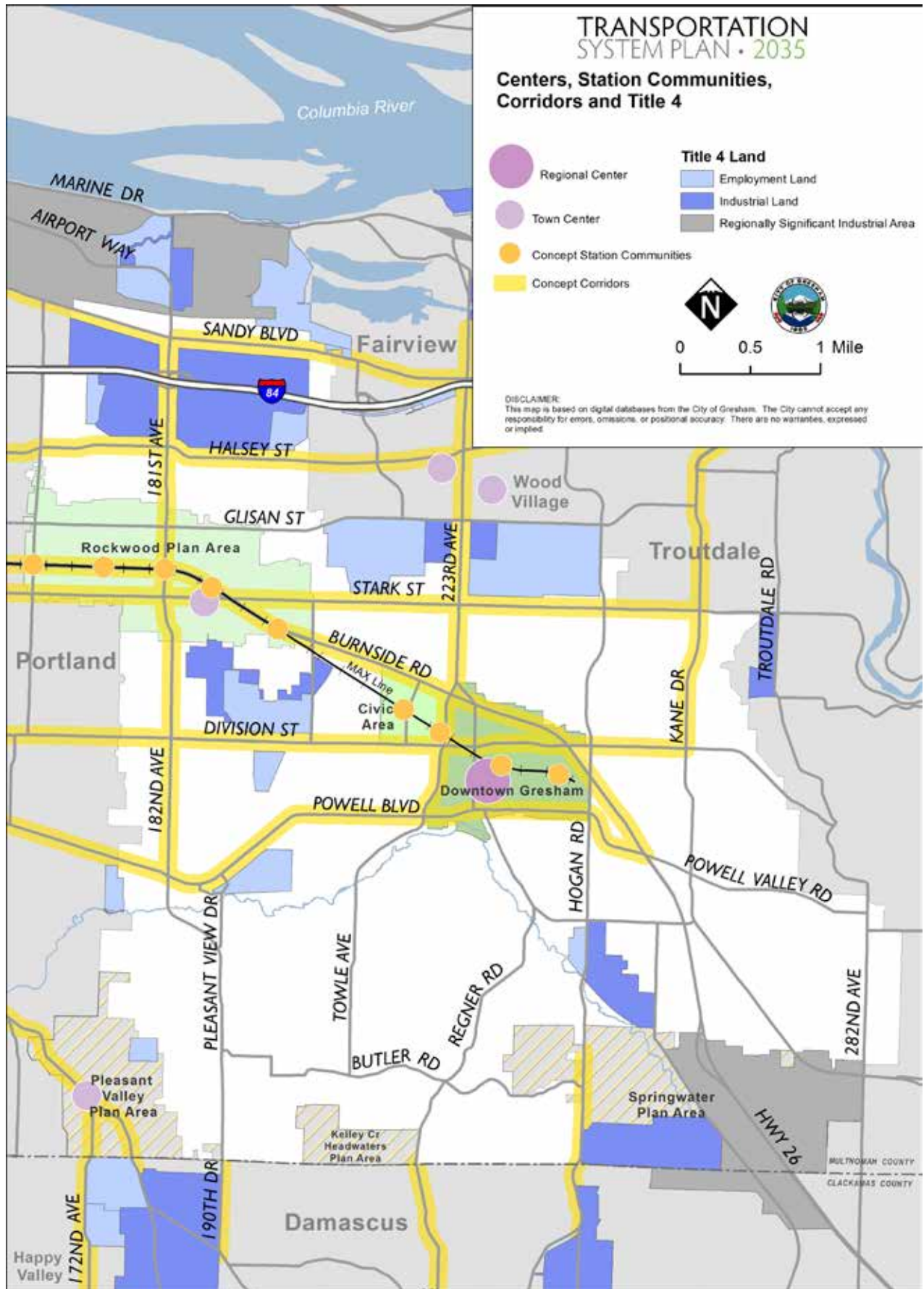
Springwater Plan Area

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 included 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. These plans were adopted into this document in 2014.

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.

Map4:Centers,StationCommunities,CorridorsandTitle4



3. ENVIRONMENTAL CONDITIONS

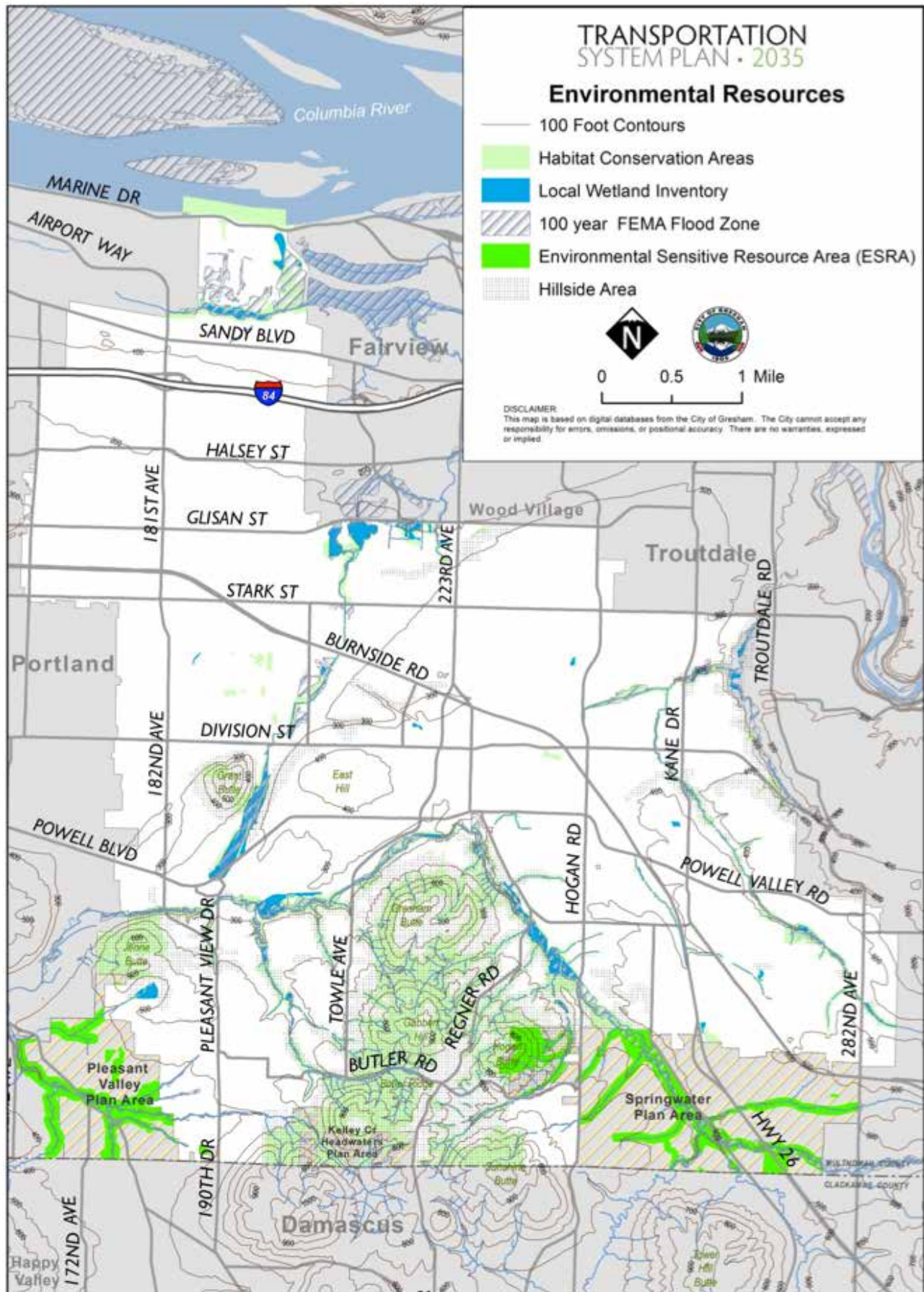
The Gresham landscape north of Powell Boulevard consists of nearly level to gently rolling terrain. The City's boundary extends north to the Columbia River. The Columbia Slough parallels Sandy Boulevard to the north. Fairview Creek and Kelly Creek are the prominent water bodies flowing in a northerly 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 2014



4. DEMOGRAPHICS AND SOCIOECONOMIC CONDITIONS

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 four decades, growing from 33,005 residents in 1980 to 109,379 in 2019—a 230% increase. Gresham's population by race is shown in Table 1.

Table 1: Population by Race, American Community Survey 2019

City of Gresham Race	Percent of Total Population
White/Caucasian	63%
Black/African American	4.8%
American Indian/Alaskan Native	1.3%
Asian	4.6%
Native Hawaiian/Pacific Islander	0.8%
Two or more races	6.1%
Hispanic or Latino all races	21.3%

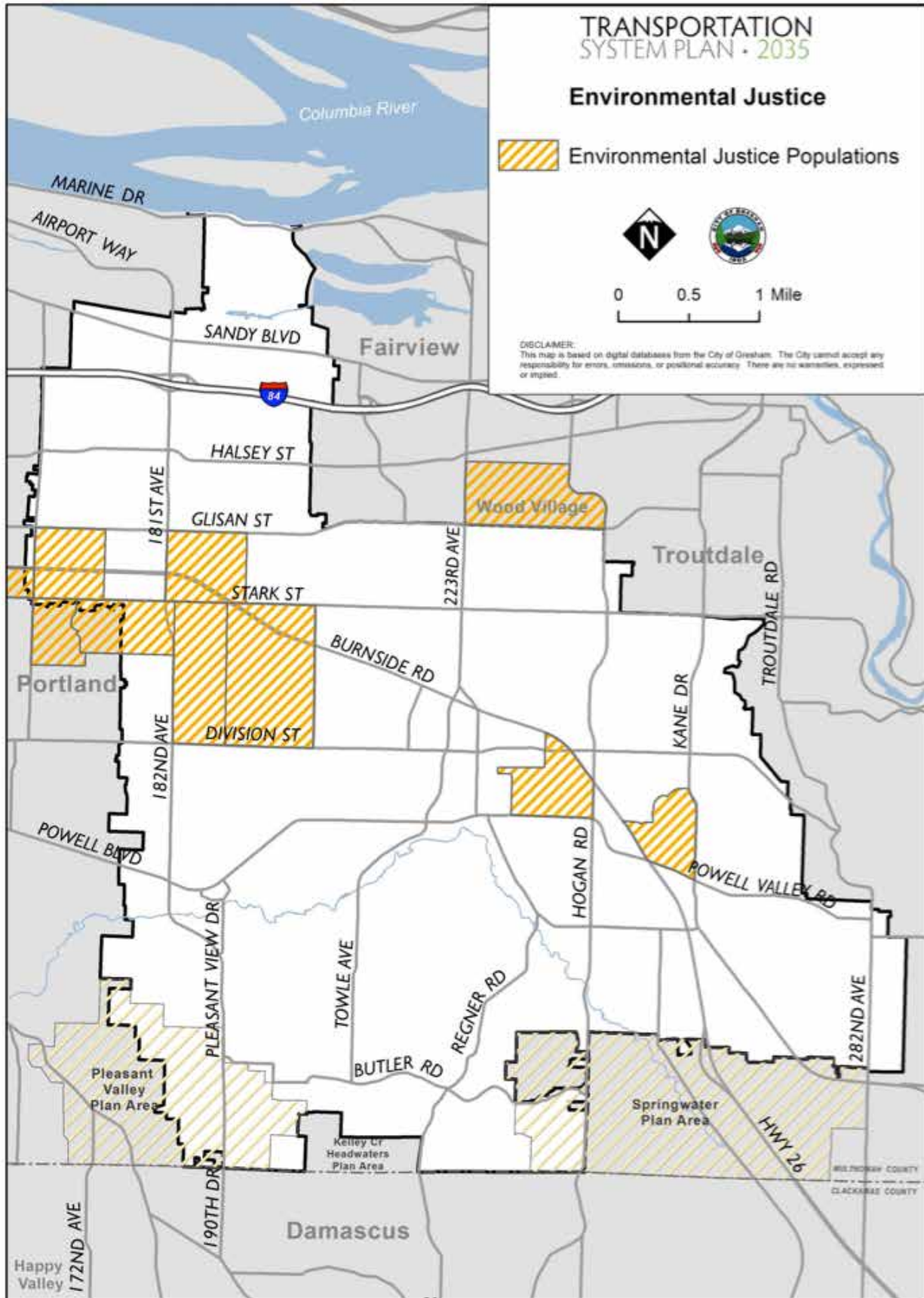
Environmental Justice

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

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 (Map #5). 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.

Map5:EnvironmentalJusticePopulations2013



Equity

Equity is the distribution of resources to ensure that all people receive what they need to thrive. Instead of distributing resources equally, where everyone gets the same amount, equitable distribution determines who has the greatest disparities and gives people enough resources to bring them to the same level as everyone else.

Good transportation is vital for access to activities and essential services that are needed for daily life, such as jobs, recreation, and food. In automobile-dependent communities, such as Gresham, those who do not have the ability to drive or do not have access to vehicles are at an economic and social disadvantage. People of color, those with low incomes, and younger and older residents often do not have access to vehicles and face the greatest transportation disparities.

A lack of transportation options, such as challenges getting to health care appointments, the grocery store or outdoor recreation, can lead to poor health outcomes. Already chronic diseases such as diabetes disproportionately impact communities of color. For example, in Multnomah County the African American/Black community has a diabetes rate double that of Whites (13.6% vs. 6.2%). Walking and biking provide transportation options and are an effective way of increasing physical activity and preventing or managing chronic disease.

Equity and the Active Transportation Plan

The Active Transportation Plan was Gresham's first plan to include equity in its creation and was developed specifically with an equity focus to address health concerns that lead to chronic illness. Equity was a focus during engagement and in the prioritization of walking and biking projects.

Equity in transportation was assessed with the following questions:

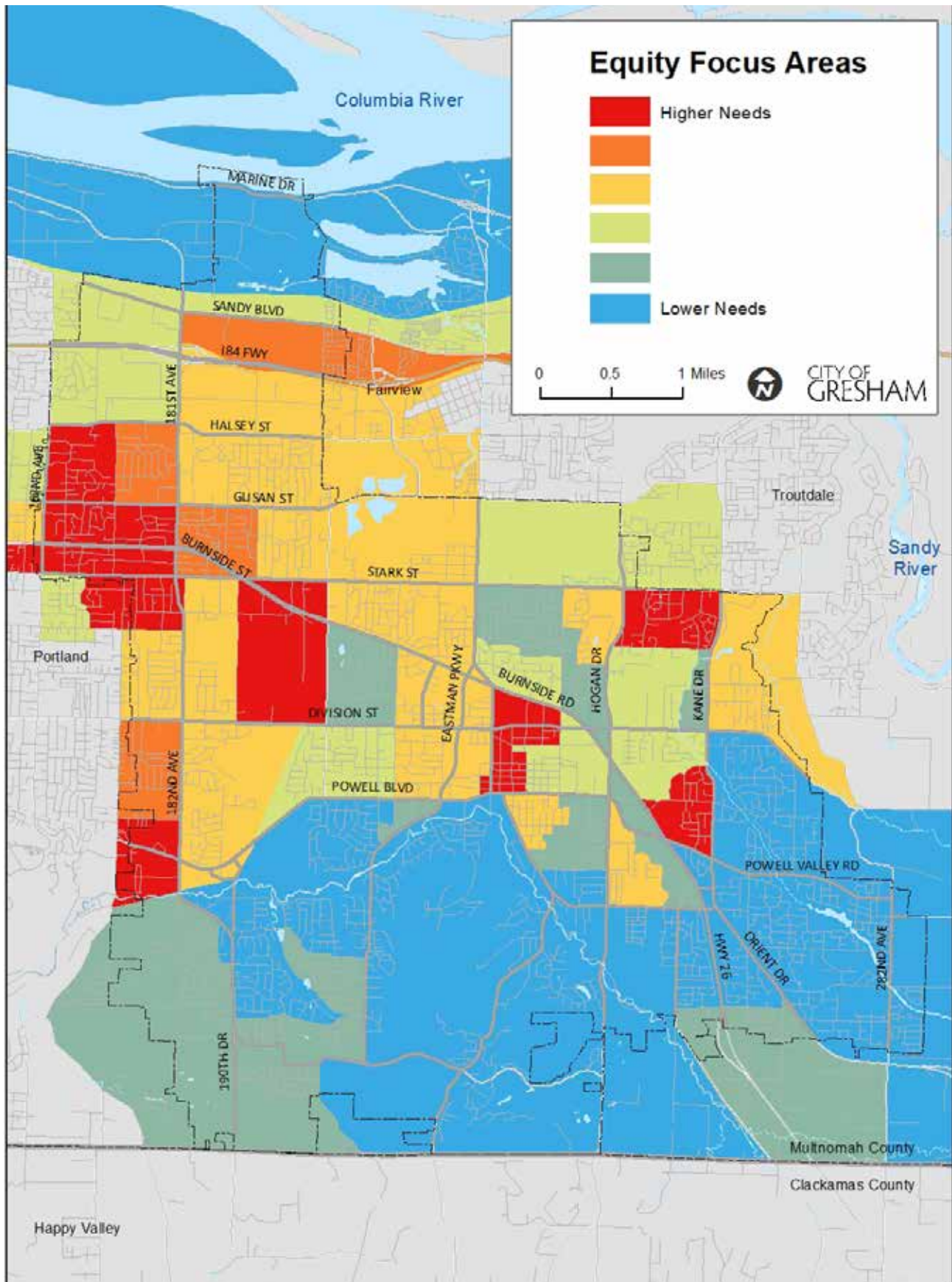
- What is the proximity of minority, low income, youth and elderly population to local destinations such as schools, parks, healthcare providers, and healthy food?
- What is the proximity of minority, low income, youth and elderly populations to walking and biking infrastructure, which allows commute options, recreation options and access to daily needs without a vehicle?

Equity Focus Areas Map

An equity map was created to show populations most likely to experience disparities in transportation. Map 6 shows a combination of three factors that are equally weighted: Non-White populations, Median Household Income, and the Youth (Under 18) & Seniors (Over 65) population. Areas in red on the map have the highest numbers of people with low incomes, people of color, and youth and seniors. Further analysis from the Active Transportation Plan shows a greater proportion of missing sidewalks in the areas in red.

Focusing active transportation investments in locations of the most need will have the most impact on expanding travel options for people who do not have access to an automobile or who are at greatest risk of chronic disease.

Map 6: Equity Focus Areas



5. COMMUTE SHEDS

Commutesheds describe where Gresham's workers live and where they are employed. In 2018 Gresham had 47,102 workers. Graphic 2 shows the inflow of workers to Gresham and the outflow of workers to other parts of the region. Graphic 4 and the associated Table 2 shows where Gresham workers commute for their jobs. Of the total workers, 43.6% commute to Portland for their job, 15.8% work in Gresham and the remaining travel throughout the Metroregion and other locations for their work. Graphic 3 shows the direction of commutes across the region. The majority of job locations for Gresham residents are to the west and southwest. Gresham can provide transportation options in these directions to reduce drive alone trips to work.

Graphic 2: Inflow and Outflow of Workers, 2018



Graphic 3 Distance and Direction of Commute, 2018

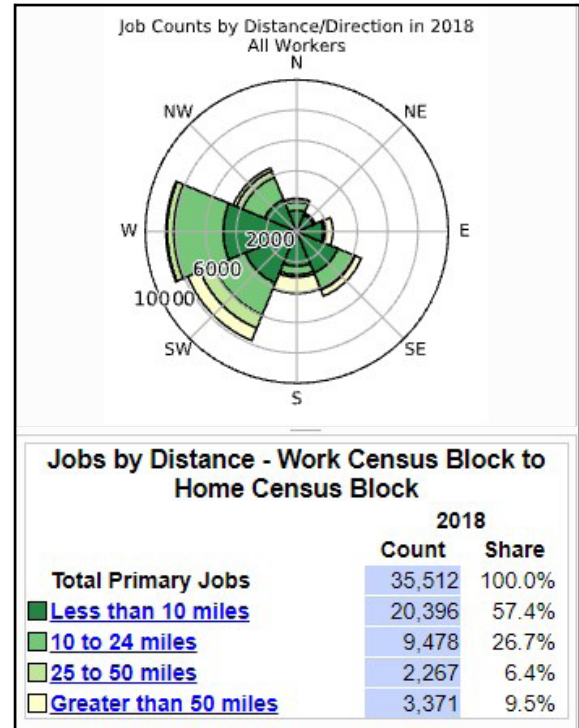


Table 2: Where Gresham Workers are Employed

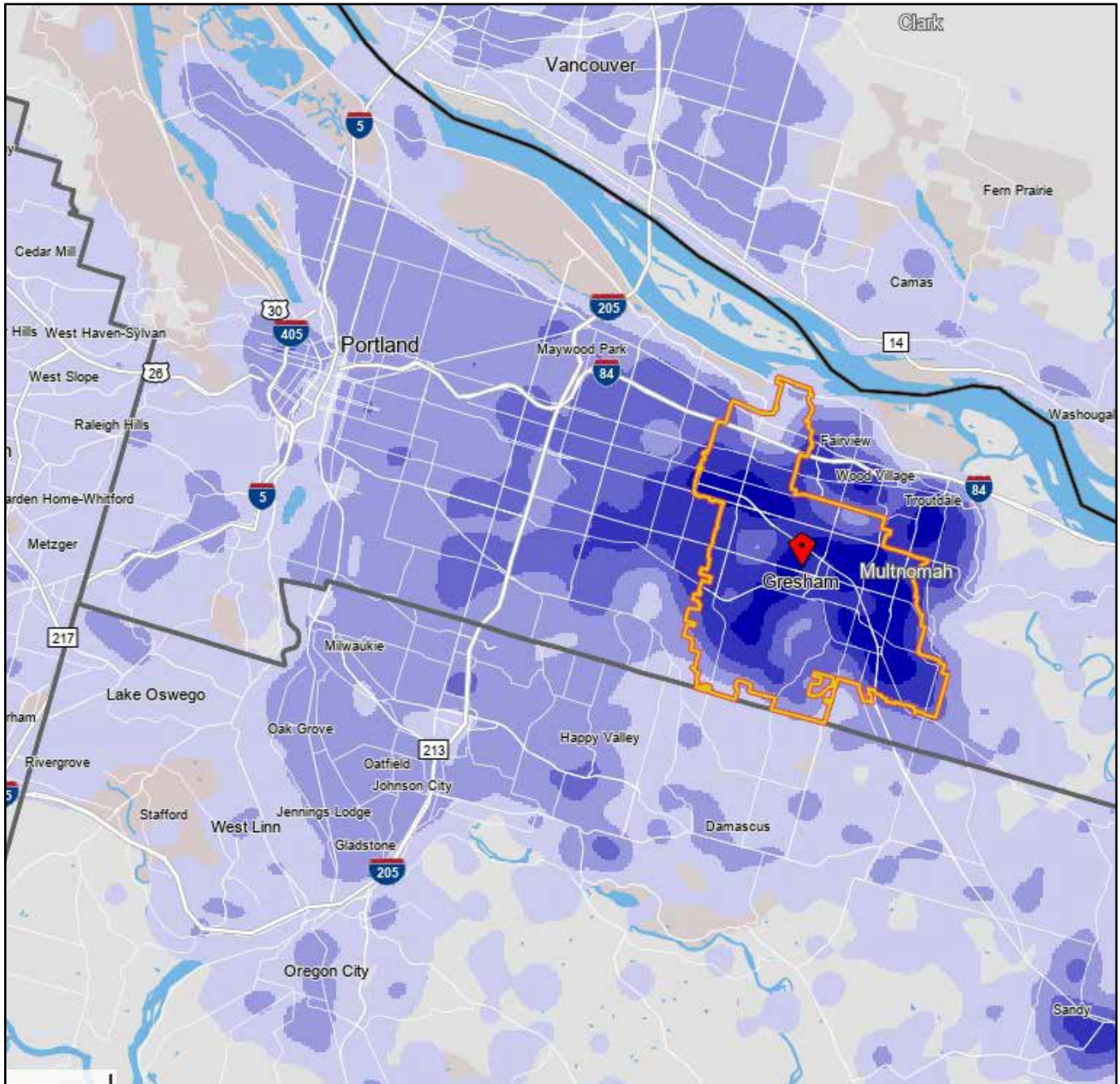
Location	Jobs Count	Percentage
Portland, OR	20,687	43.6%
Gresham, OR	7,493	15.8%
Troutdale, OR	1,346	2.8%
Beaverton, OR	1,121	2.4%
Hillsboro, OR	863	1.8%
Tigard, OR	843	1.8%
Salem, OR	759	1.6%
Vancouver, WA	746	1.6%
Milwaukie, OR	693	1.5%
Oregon City, OR	500	1.1%
All Other Locations	12,351	26.1%
Total Primary Jobs	47,402	100%

Table 3: Where People Who Are Employed in Gresham Live

Location	Jobs Count	Percentage
Portland, OR	8,359	23.5%
Gresham, OR	7,493	21.1%
Vancouver, WA	1,401	3.9%
Troutdale, OR	1,176	3.3%
Happy Valley, OR	654	1.8%
Sandy, OR	644	1.8%
Fairview, OR	613	1.7%
Hillsboro, OR	464	1.3%
Salem, OR	401	1.1%
Beaverton, OR	393	1.1%
All Other Locations	12,504	40.4%
Total Primary Jobs	35,512	100%

Gresham employs 35,512 workers. As shown in Table 3 the majority (40.4%) of workers live and commute from locations other than those listed. This represents a wide variety of home destinations that are spread out across the region. Portland and Gresham provide 23.5% and 21.1% workers respectively. The remaining 16% of Gresham's workers live and commute from surrounding cities as shown in Table 3.

Graphic 4: Where Gresham Residents Commute To, 2018



6. STREET NETWORK

Overview of Existing Street Network

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

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

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.

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.

Traffic Signal System

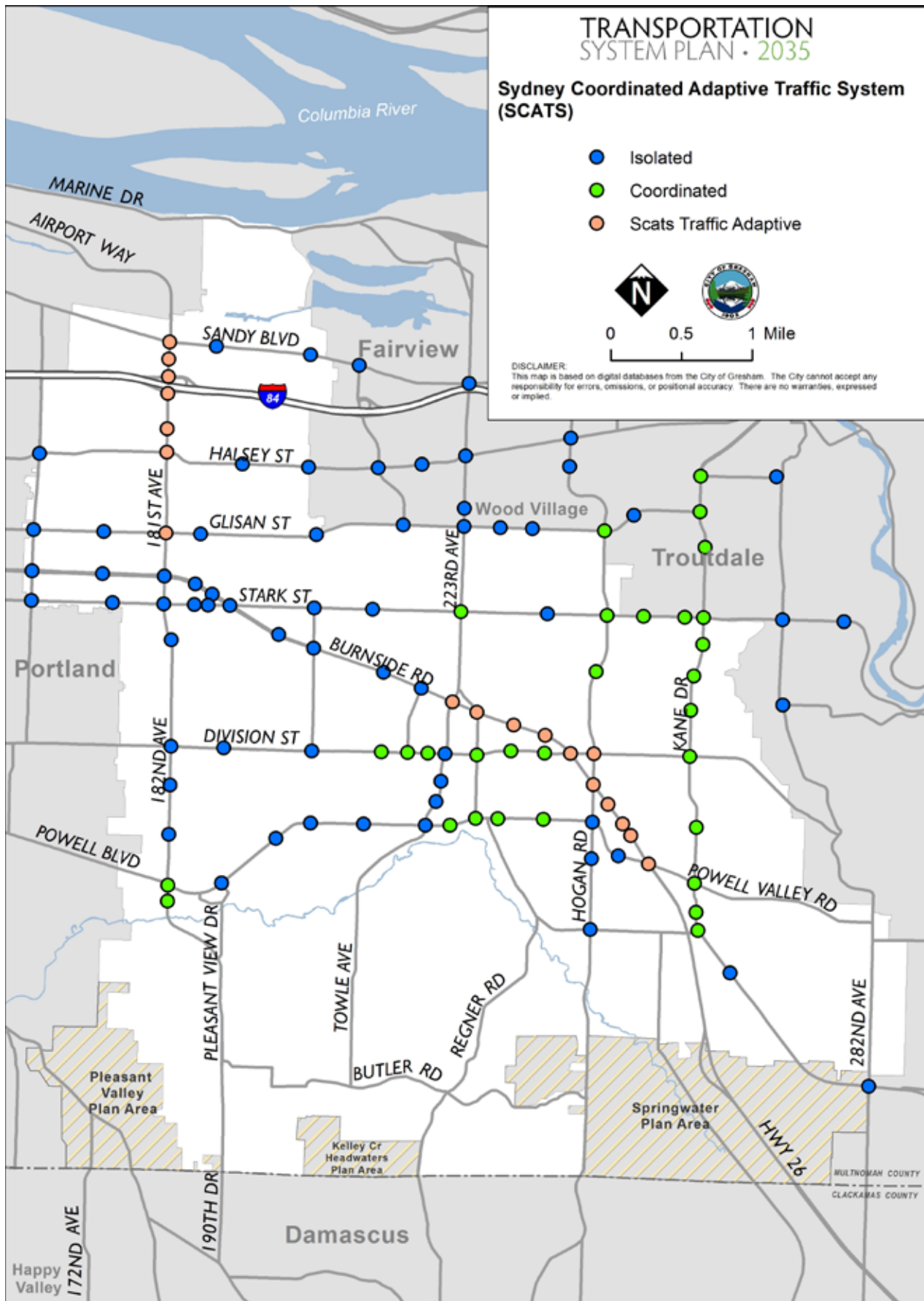
Gresham maintains all traffic signals within its city limits. The majority of these 62 signals run fully actuated, with phase timing solely determined by traffic demand at the individual intersection. Twenty-three signals on 5 corridors operate as coordinated systems, with fixed cycle times to allow 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 5).



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 7 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 6: Sydney Coordinated Adaptive Traffic System (SCATS)



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.

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



New streetlights on NE Hood Avenue in historic downtown Gresham.

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.

Street Lighting

The City has 7,500 street lights and contracts with Portland General Electric (PGE) for energy and maintenance. The City is working on a major street light 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 streets 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.

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. 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
	185 th 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 190 th Avenue and Johnson Creek	51C21	Functionally Obsolete
	Towle Avenue and Johnson Creek	16383	Not Deficient
	SW 7 th 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 242 nd 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

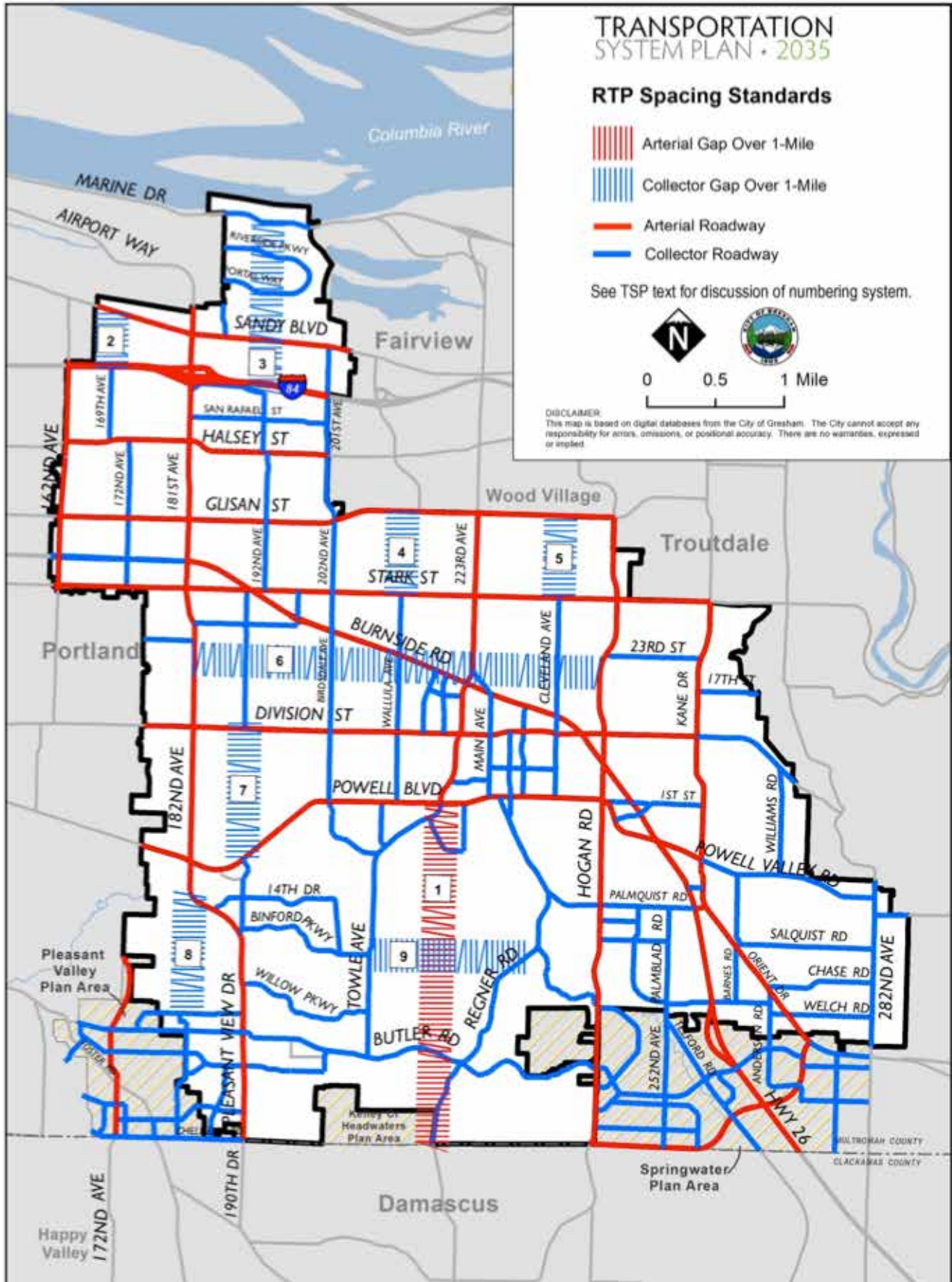
Street Connectivity

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 (RFTP) 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 #, there is one area where the arterial spacing standard is not met and 8 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 #):

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.
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 of 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 streets 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 7: RTP Spacing Standards

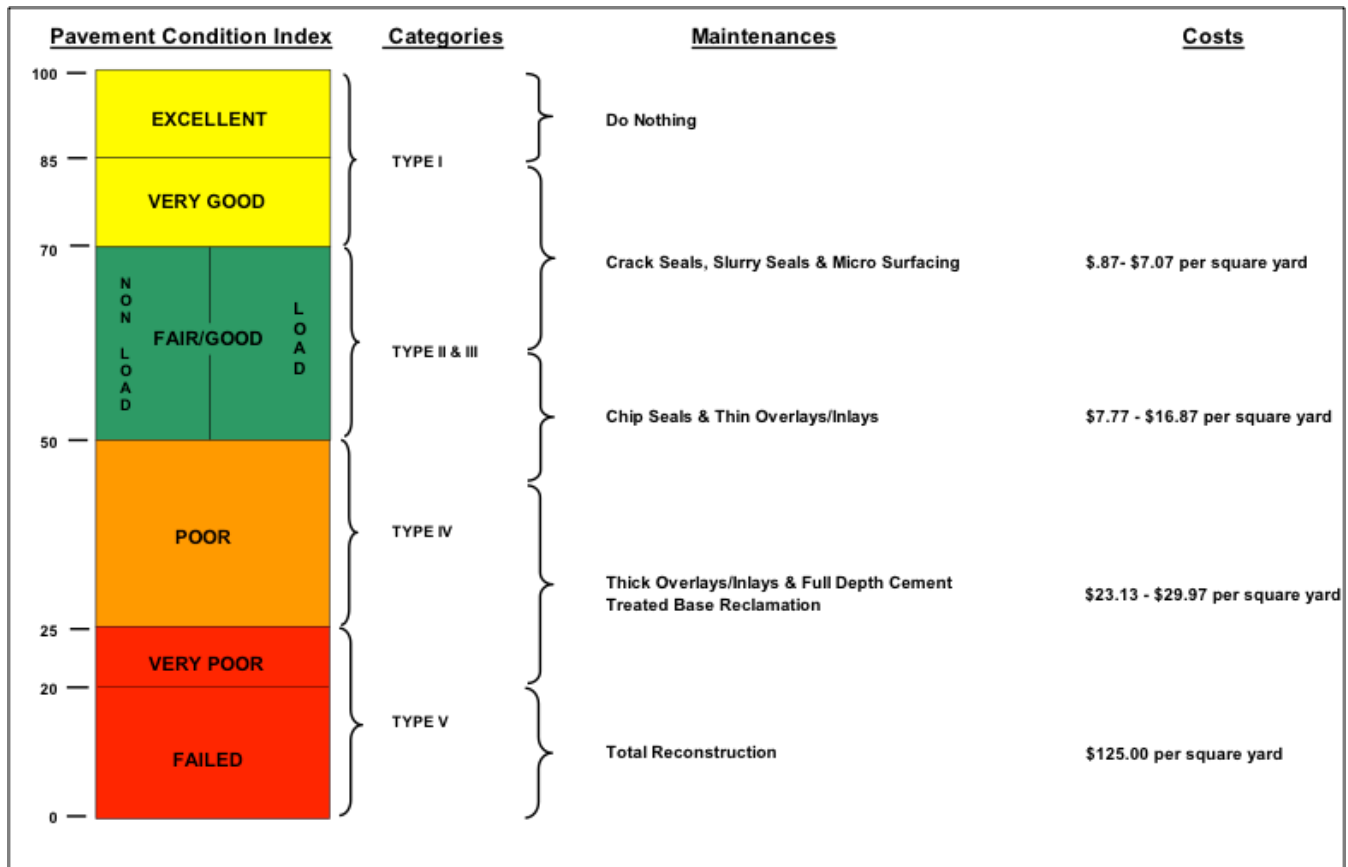


Assessment of Existing Street Conditions

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.

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.

Map 8: Pavement Condition Index (PCI)

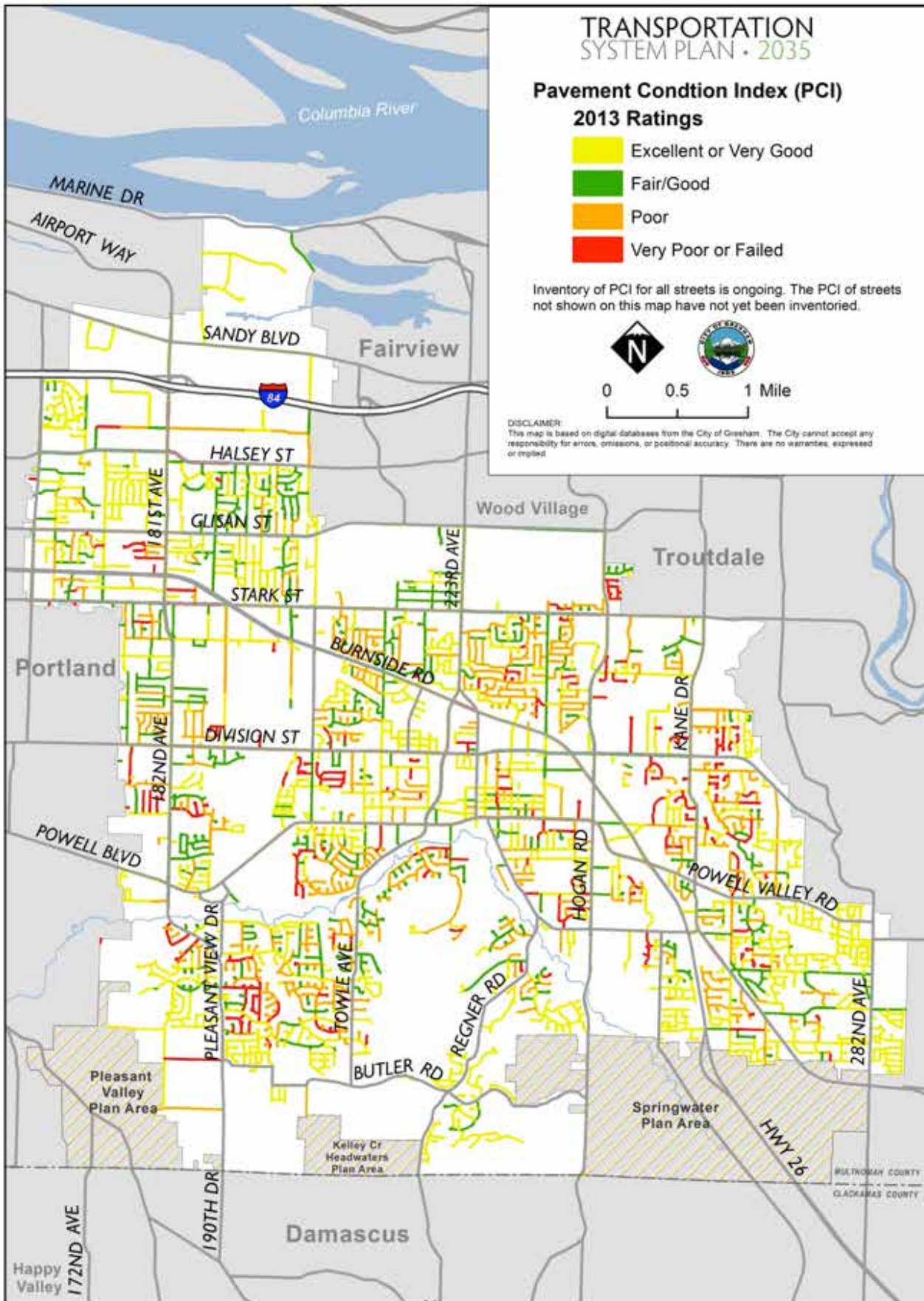


Table 6: Average PCI per PCI Functional Classification

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

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%



City Transportation Operations crews repair a street's pavement.

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.

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.

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.

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. Map 9 is the current inventory of Gresham’s sidewalks, paths.

Sidewalks and multi-use paths

Gresham’s pedestrian facilities are made up of both sidewalks and a 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. Gresham has approximately 392 miles of existing sidewalk on one or both sides of streets. The City’s minimum preferred sidewalk width is 6 feet, exclusive of curb and obstructions. This width allows two pedestrians (including wheelchair users) to walk side by side, or pass each other comfortably.

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.

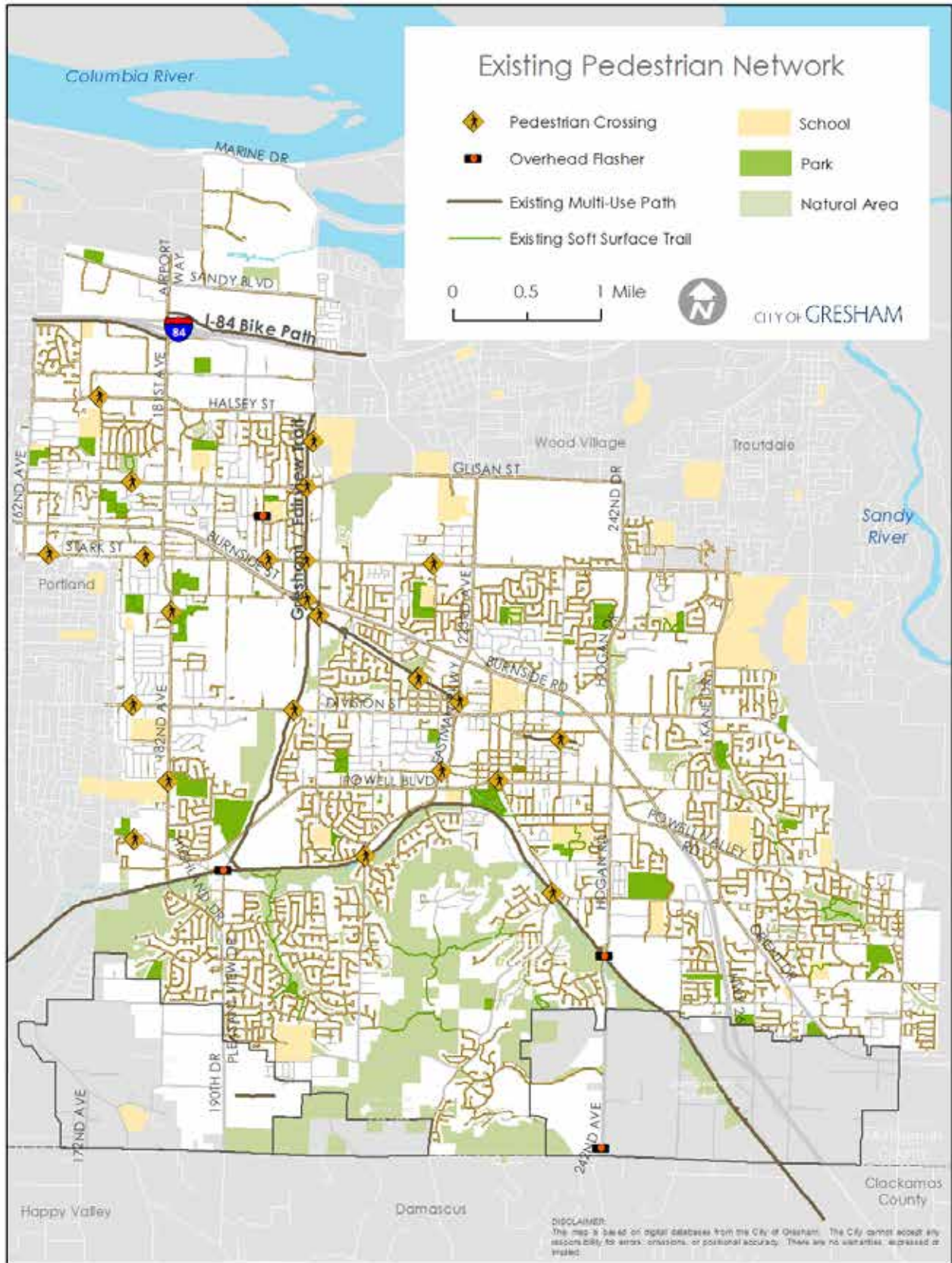
Multi-use paths are a vital piece of the pedestrian network. Gresham’s primary paved multi-use paths are the Springwater Corridor Trail, Gresham-Fairview Trail, Wy’East Way and the I-84 Path. The combined mileage of these paths is 18.8 miles. Future planned facilities include the Sandy River to Springwater Multimodal

Corridor, the Kelley Creek Trail and the East Buttes Loop Trail. 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.



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

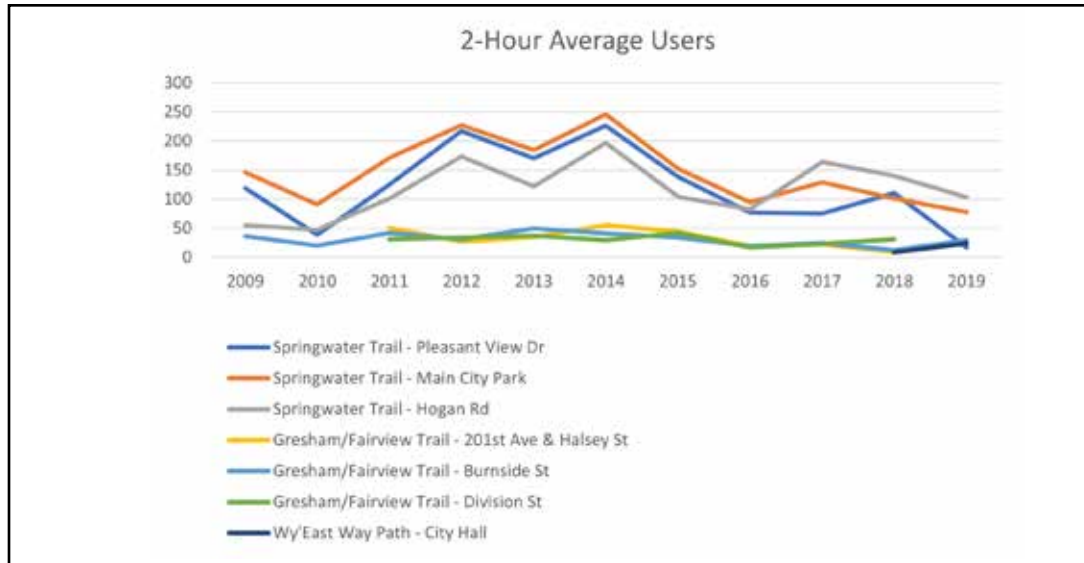
Map 9: Existing Sidewalks, Paths and Crossings 2021



Pedestrian Volumes

Since 2009 Gresham has performed annual pedestrian counts on the regional trail system. 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. Counts are conducted by volunteers each September at multiple locations on the multi-use paths and include pedestrians and bicyclists. The trail counts for 2009 through 2019 are shown in Table 8 below.

Table 8: Multi-Use Path User Counts



Street and Rail Crossings

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 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 mid-block crossings with pedestrian actuated Rectangular Rapid Flashing



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

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



Walking on the Gresham-Fairview Trail.

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

Beacons. These crossings allow pedestrians to safely cross the street when signalized intersections are widely spaced. 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 Wy'East Way path. Gresham coordinates crossing design with TriMet and ODOT to ensure that all safe crossing regulatory standards are met.

Lighting 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.

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.

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.

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.



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

Transit Connections

Every transit rider is also a pedestrian

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.

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 streets 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. Gresham's development code requires these connections to retain pedestrian access where a through street is not feasible.

Pedestrian Crashes

For the Active Transportation Plan pedestrian crash data was updated to the latest year available and analyzed for spatial patterns. The analysis shows that the vast majority of pedestrian crashes occur on the arterial street network, as shown in Map 11.

Pedestrian Comfort - Streets

In order to encourage more walking trips, sidewalks and crossings must be safe, connect to common destinations and be perceived as comfortable by users. During the Active Transportation Plan a Pedestrian Level of Comfort analysis was conducted on streets to determine where a good environment for pedestrians exists and where investment is needed. The analysis used four factors of the street's design that influence pedestrian perception of safety:

- Posted speed limit
- Number of travel lanes
- Presence of on-street parking or bicycle lanes
- Presence of sidewalks

The analysis shows that arterial streets have the least comfortable environment for pedestrians, Map 11. With high speeds, high volumes, and often curb-tight sidewalks with little separation from vehicles, arterial streets offer the best investment for improving the pedestrian experience in Gresham.

Pedestrian Comfort - Crossings

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. Providing adequate crossing opportunities is a high priority for the City because of the many arterial streets that traverse Gresham. Most arterial streets are a minimum of five lanes wide, some with rights-of-way more than 90 feet.

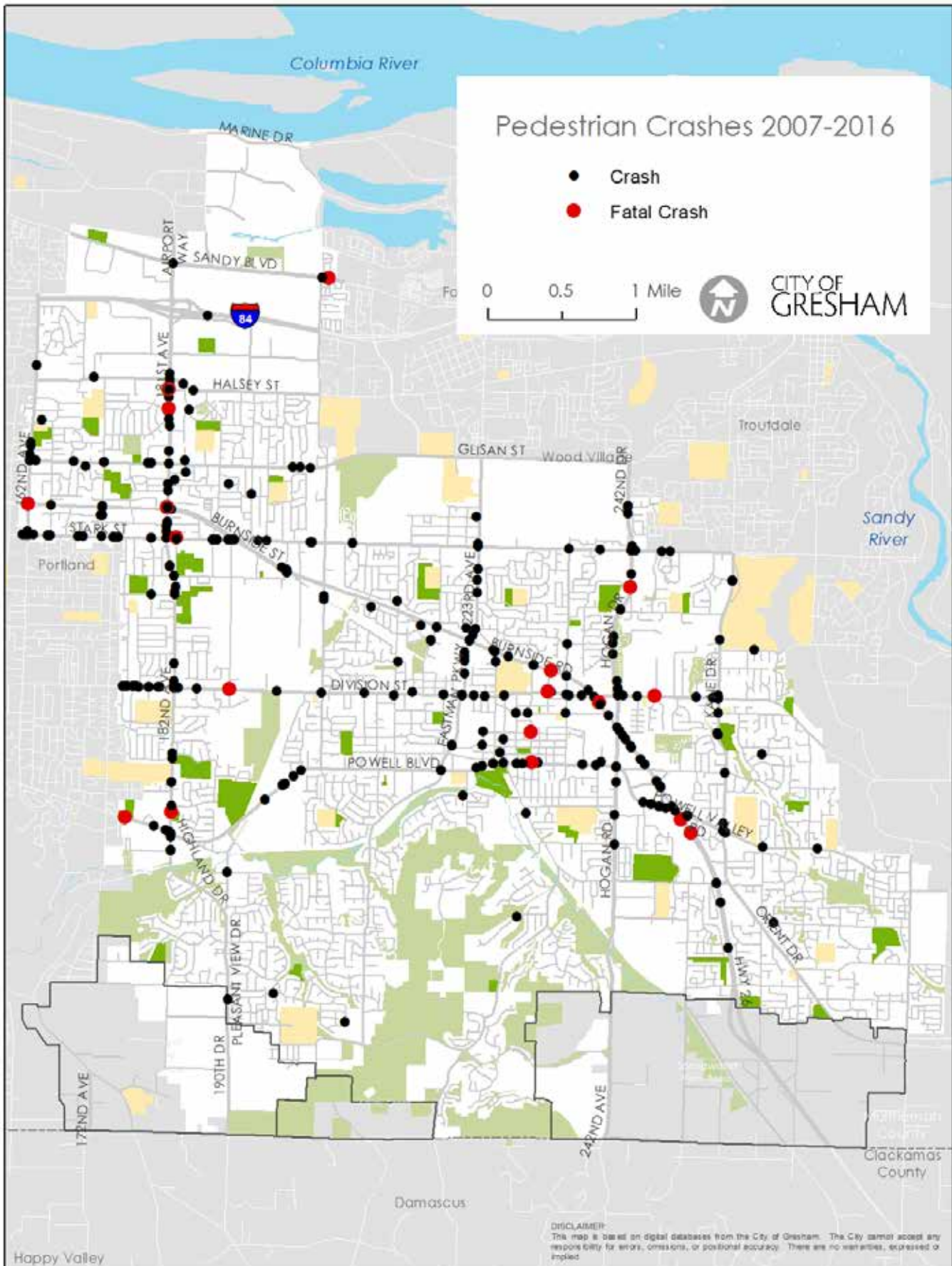
The Active Transportation Plan analyzed the comfort of crossings on arterial and collector streets. Signalized and un-signalized intersections were examined along roadways with a functional classification of collector or 'arterial'. Each intersection leg was scored based on four factors of the crossing's design:

- Posted speed limit
- Number of lanes
- Marked crosswalk
- Stop controlled or uncontrolled crossing

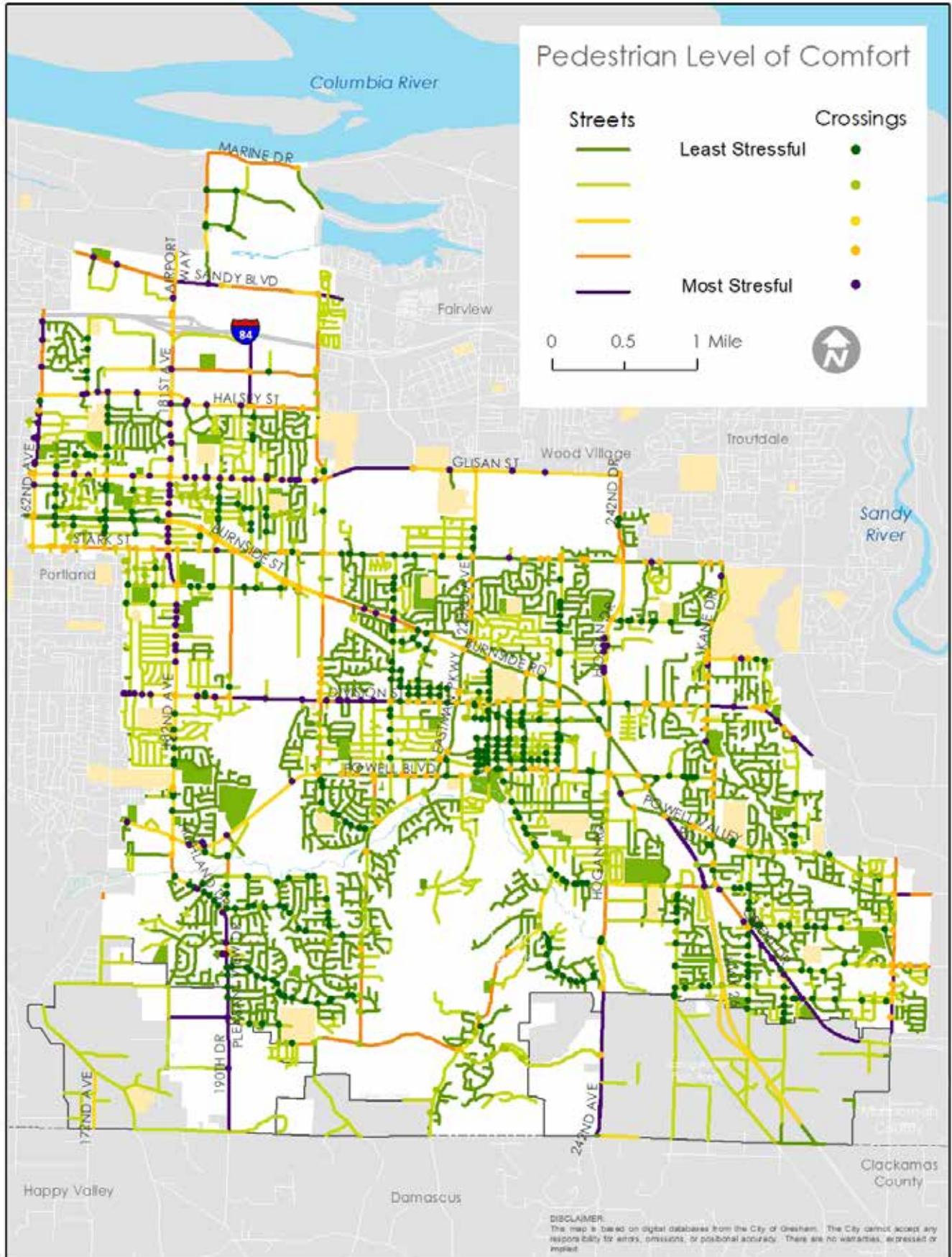
Similar to the segment-based Pedestrian Level of Comfort analysis, the most stressful intersections are located on busy arterial roadways, as seen on Map 11.

Several design measures can be implemented to improve pedestrian safety at crosswalks. The primary objectives are to shorten the crossing distance for pedestrians to reduce their exposure to traffic and make pedestrians more visible to traffic. Raised medians benefit pedestrians by allowing them to cross only one direction of traffic at a time. Curb extensions are another design feature that reduce the crossing distance and improve the visibility of pedestrians by motorists. Mid-block pedestrian-activated signals with flashing lights can be located at strategic locations such as a transit stop or in core commercial areas.

Map 10: Pedestrian Crashes



Map 11: Pedestrian Level of Comfort



Safe Routes to School

Safe Routes to School (SRTS) programs use a blend of engineering and education to make routes safer for children to walk and bicycle to school. The program also encourages more children to use these safer routes. The City has conducted a variety of SRTS programming over the past decade including encouragement events, creating action plans for schools and installing safer crossings and traffic calming measures. While the City does not have dedicated funding for a full-time SRTS program, it does provide staff time from its operational budget to support SRTS activities. SRTS partners include Metro, Multnomah County and staff from the three school districts in Gresham: Centennial, Gresham-Barlow, and Reynolds.

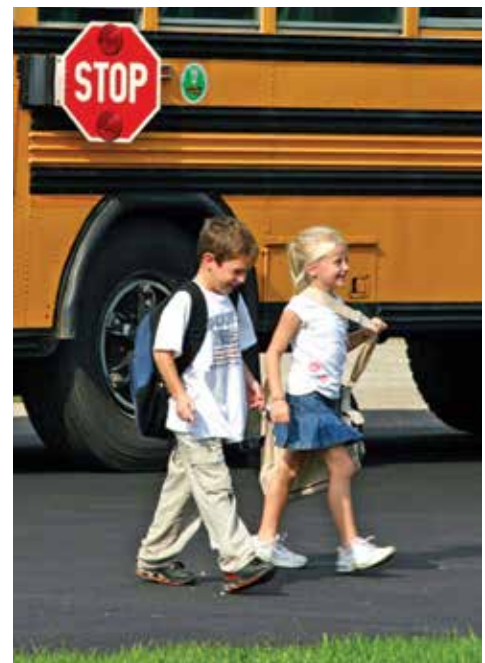
Walk and Bike to School Events

The City partners with local schools to provide support for making walking, biking and rolling to school a fun and safe experience. Past events have included organizing events at schools for International Walk and Bike to School Day and National Bike to School Day, plus in-school skills trainings through The Street Trust's Jump Start program. The City has developed and led walk and bike routes in coordination with school administration, police, and elected officials as well as providing raffle items (bike helmets, scooters, bike safety lights, etc.).

Action Plans

In 2009, the City of Gresham received a Transportation Growth Management (TGM) grant from the Oregon Department of Transportation (ODOT) to organize meetings with parents and school administration to develop School Action Plans for six schools. The Action Plans identified key routes to schools and necessary infrastructure improvements such as missing sidewalks and bikeways, and prioritized those needs. In addition, the following recommendations from the six existing School Action Plans are likely relevant to other schools in the district:

- Construct missing link sidewalks in common routes to school.
- Install more covered bicycle parking and bicycle racks.
- Install gates that are bicycle-friendly (i.e. wide enough for students with bicycles to pass).
- Install lighting to enhance safety and security where it is currently insufficient.
- Continue to enforce code provisions that require the pruning of trees and mowing of vegetation to make signage visible.
- Reduce 'stranger danger' concerns along identified routes to schools.



Safe Routes to School pedestrian planning can encourage more walking to school.

8. BICYCLE SYSTEM



Bicycle System Overview

Bicycling is a healthy, economical and non-polluting transportation option. Gresham has a range of bicycle infrastructure, including on-street bike lanes, off-street multi-use paths, and shared roadways called Gresham Greenways. Safe, comfortable facilities are needed to promote bicycling to people of all skill levels as a transportation option.

Existing Bicycle System & Bicycle Map

The Active Transportation Plan updated the Gresham Bicycle Guide, which represents the existing Bicycle System. As shown on Map 12 below, bike routes are comprised of on-street bike lanes, shared use streets called Gresham Greenways 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.

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.



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

Bicycle Parking Facilities

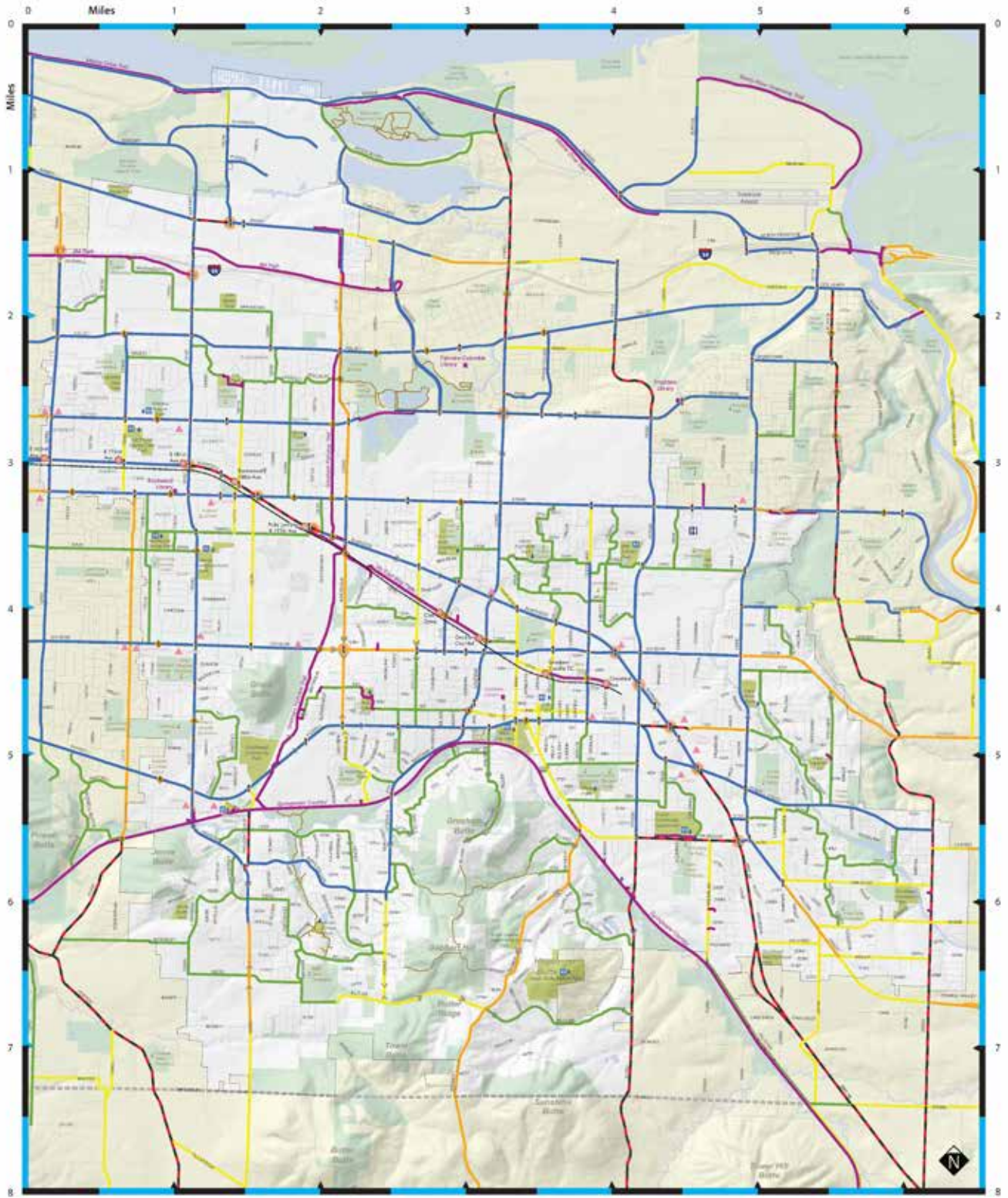
Gresham's Development Code includes requirements for bicycle parking based upon land use types. The purpose is to encourage the use of bicycles by providing safe and convenient parking places. Design requirements "ensure that bicycle parking is visible from the street, is convenient to cyclists in its 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.

Bicycle Volumes

Gresham has conducted annual counts on the Springwater Trail and Gresham-Fairview Trail multi-use paths since 2009. Bicyclists are incorporated into the hourly users presented in Table 8 above. More data about bicyclist routes and facility use off the multi-use paths could help better identify where bicycle investment is needed.

Map 12: Gresham Bicycle Map



Legend

- | | | | | | |
|-----------------------------|----------------------|---|---------------------|-------------------|---------------|
| Off-Street Multi-Use Path | Difficult Connection | Elevation Change
Slight to steep slope | Pedestrian Crossing | Drinking Fountain | Parks |
| Bike Lane or Wide Shoulder | Trail | Difficult Intersection | Restrooms | Stores | Green Space |
| Shared Road – Low Volume | MAX | Traffic Signal | Hospitals | Schools | Surface Water |
| Shared Road – Medium Volume | Gresham City Limits | | MAX Stop | Libraries | Airports |
| Shared Road – High Volume | | | | | |

Bicycles and Transit

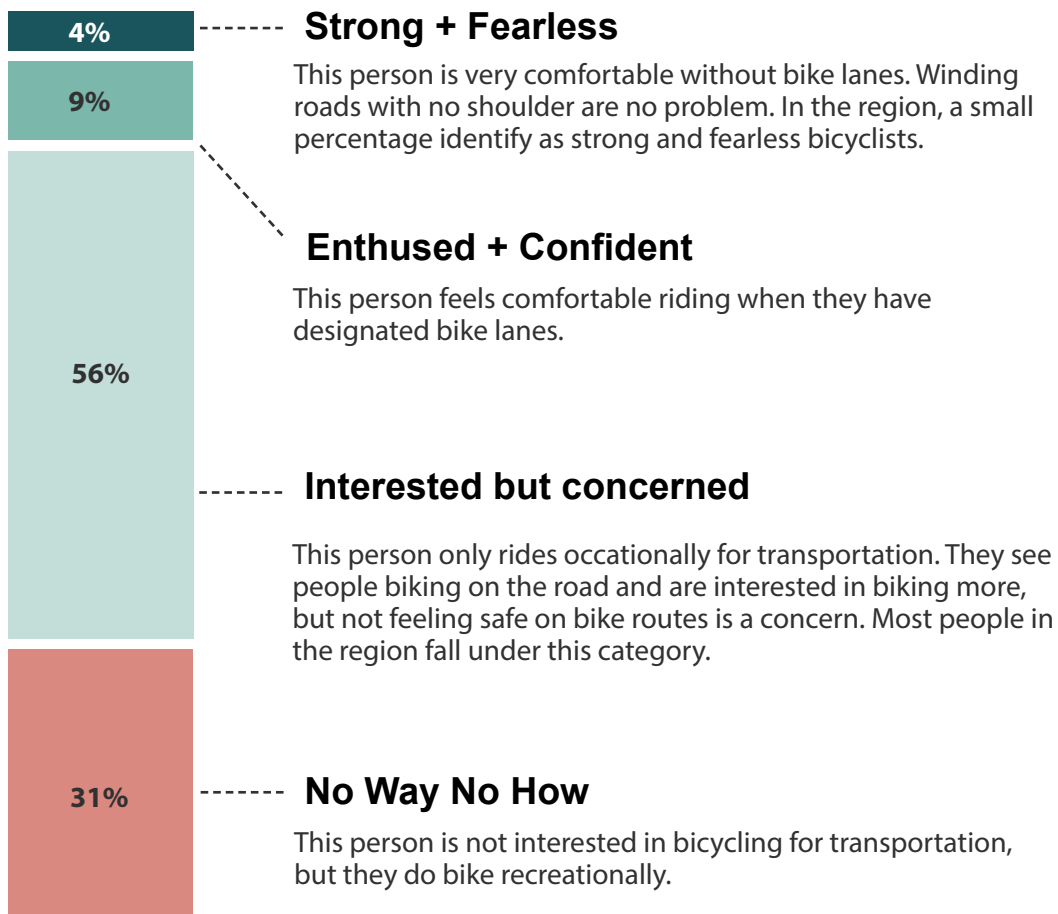
TriMet allows bicycles on MAX trains and on the front of all buses. Linking bicycles with public transit (both bus and light rail) helps overcome barriers such as lengthy trips, riding at night, poor weather, or severe terrain. How the Bicycle System links to important transit nodes and transit streets is a main consideration during system planning. Bicycle lanes, multi-use paths and Gresham Greenways all cross major transit streets or travel along transit streets and MAX corridors.

The overlap of bicycle routes and bus routes allows for easy access between these modes, but also can create a less comfortable environment for bicyclists, as buses are loud and often pull into bicycle lanes to service bus stops. Bicycle and bus conflicts should be assessed based on bus frequency, with better separation for bicyclists on the most frequent routes. One design solution is 'island stops', where the bus stop is on a curb island next to the travel lane and the bicycle lane is between the 'island stop' and the curb. The bus service then stops in the travel lane, which removes the bicyclist and bus conflict.

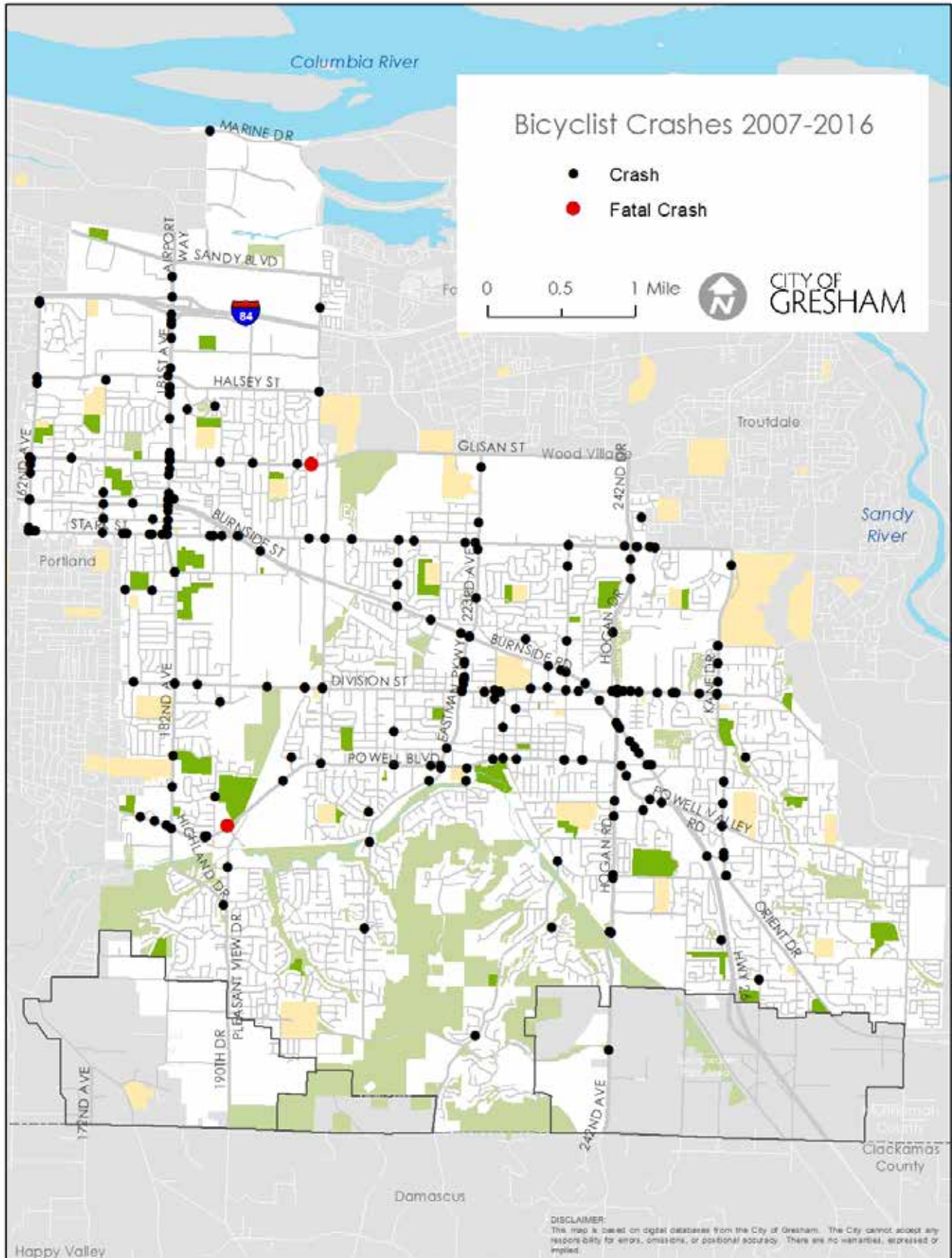
Types of Riders

A common typology breaks cyclists into four categories depending on the type of street they feel confident using when bicycling for everyday transportation. These categories are: Strong and Fearless, Enthused and Confident, Interested but Concerned, and No Way No How.

People in the Strong and Fearless category are willing to ride on any street, no matter the traffic speed or volume. The Enthused and Confident are very comfortable cycling on high traffic streets when there are bike lanes present. The Interested but Concerned are not comfortable on high traffic streets with only bike lanes. The No Way No How group is not interested in cycling on the street, but do cycle for recreation on off-street paths.



Map 13: Bicycle Crashes



Bicycle Crashes

For the Active Transportation Plan bicycle crash data was updated to the latest year available and analyzed for spatial patterns. The analysis shows that the vast majority of bicycle crashes occur on the arterial street network, as shown in Map 13.

Bicycle Level of Comfort

The Active Transportation Plan did a level of comfort analysis for bicyclists based on four factors of the street's design:

- Posted speed limit
- Number of travel lanes
- Presence of bicycle lanes
- Width of buffer between parked vehicles

Road segments are classified into one of four levels of traffic stress based on the type of bicyclist that would feel comfortable using the street. Bicycle Level 1 network represents roadways that bicyclists of all ages and abilities would feel comfortable riding on, while Level 2 represents slightly less comfortable roads, where most adults would be comfortable bicycling. Many streets in Gresham are categorized as Levels 1 and 2, the most comfortable environment for bicyclists. These roadways tend to be residential neighborhood streets, with low motor vehicle speeds and volumes. Bicycle facilities that are completely separated from motor vehicle traffic, such as multi-use paths and trails, are also categorized as Level 1.

Arterial streets, which are multi-lane with high vehicle speeds, are categorized as Level 3 and 4, the least comfortable for bicyclists. Levels 3 and 4 roadways are only comfortable for experienced or strong and fearless bicyclists.

The Level of Comfort analysis (Map 14) shows that many parts of Gresham have low-stress streets for bicycling, but these streets do not connect well. Areas of low-stress streets, mostly residential neighborhoods, are cut off from other low-stress streets by arterials. This break in low-stress connectivity keeps most people from accessing key destinations by bicycle.

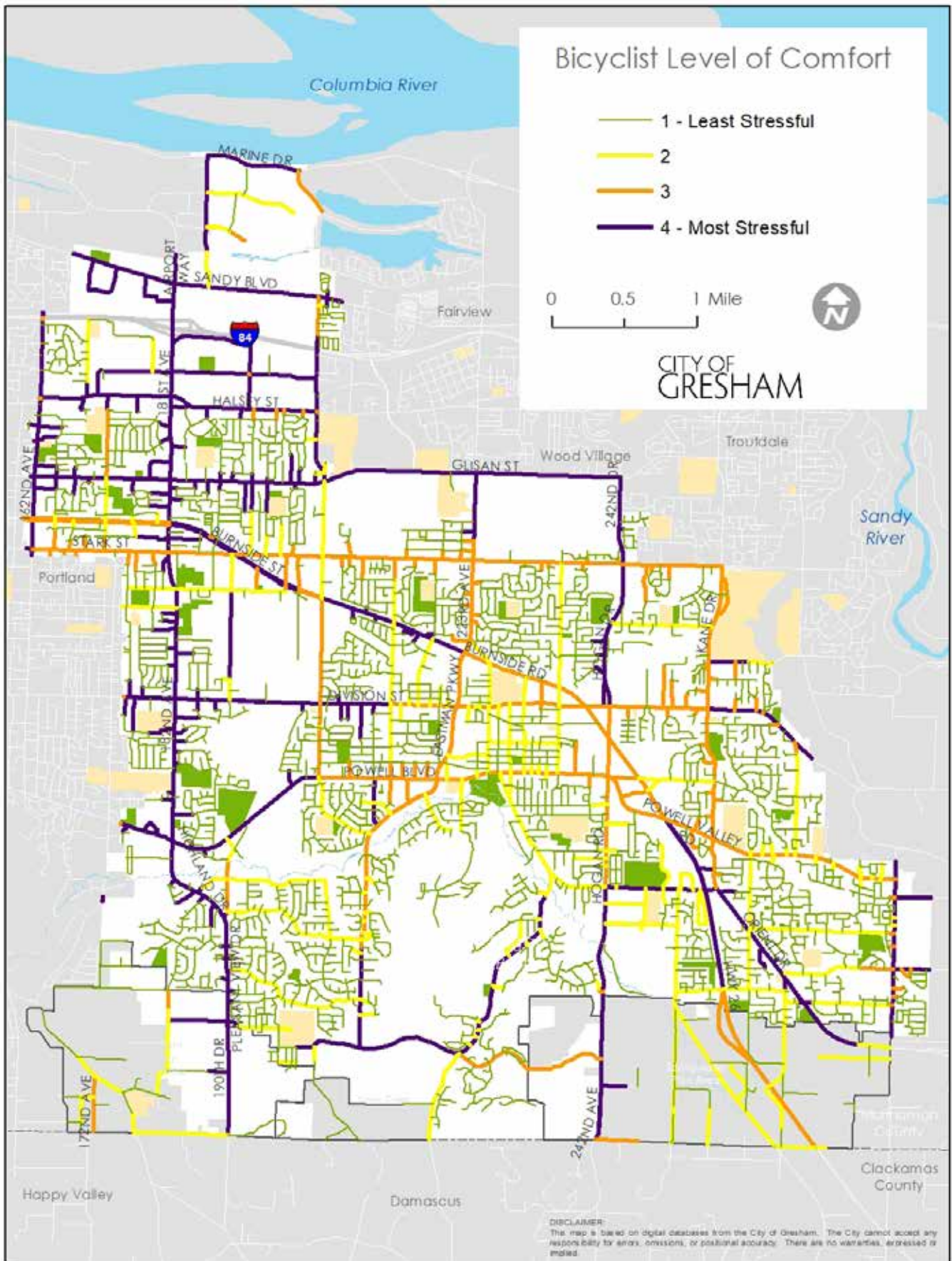
Multi-Use Paths

Gresham's network of multi-use paths are the backbone of the bicycle network, providing a safe place separate from vehicles for bicyclists of all ages. The multi-use paths also help connect Gresham to regional destinations and are part of Metro's Regional Trail Network. Where these paths cross busy streets they must have the highest level of crossing treatment to help pedestrians and bicyclists feel safe and comfortable.



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

Map 15: Bicycle Level of Comfort





A sharrow indicates a roadway that is shared by vehicles and bicyclists.



Bicycling along the Springwater Corridor Trail in Gresham.

Bicycle Lanes

Bicycle lanes on arterial and collector roadways are usually the most direct routes for bicyclists due to Gresham’s circuitous local street network. While bicycle lanes provides space for bicycles in the roadway, they do not provide much separation from vehicles and provide no protection. Thus they are not a comfortable option for most riders. To make bicycle lanes more comfortable they need to be buffered with a wide space from vehicles or protected with upright bollards, curb stops or elevated to the height of the sidewalk, like a cycle track.

Gresham Greenways

The Active Transportation Plan identified a network of low-stress, low volume streets that can be accessible to riders of all ages and abilities, now called Gresham Greenways. While Gresham has a few shared streets, more than just a line on a map and a sharrow marking in the street is needed to make these streets comfortable to riders of all skill levels. The Active Transportation Plan provides recommended enhancements for the top ten routes. This includes traffic calming, enhanced crossings and where necessary separated bicycle facilities.

Education

Education is an important element in increasing bicycling and improving safety. Improving the quality of Gresham’s bicycle facilities alone cannot change the comfort level of different bicyclists. Education of youth and adult cyclists and motorists helps to increase safe behaviors and sets a culture of safety around bicyclists. In collaboration with the Street Trust and other advocacy groups Gresham has historically offered education and training programs on bike safety annually since 2006. The City currently works with Multnomah County to provide education about bike safety within schools as part of the Safe Routes to School program.

9. MOTOR VEHICLE

Overview of Existing Motor Vehicle Conditions

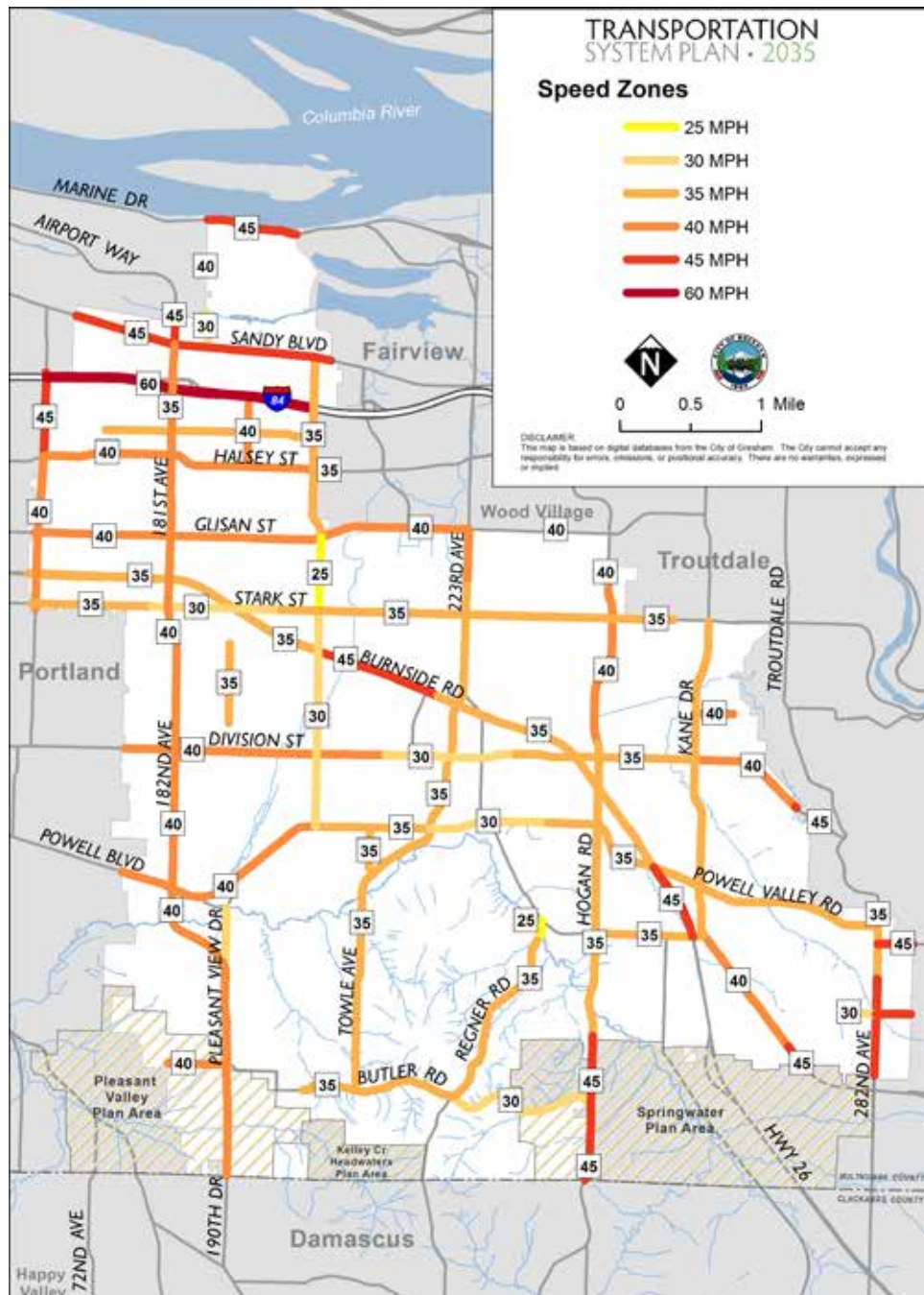
The automobile is the dominant means of travel in the Gresham area and will continue to be through 2035. This section provides an inventory and assessment of the motor vehicle travel mode.

Inventory of Existing Motor Vehicle Conditions

Speed Zones

Speed zones on Gresham's arterial and collector streets are shown in Map 14. 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 14: 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 15 displays the daily count data. An annualization factor is applied to the ADT to estimate the Annual Average Daily Traffic (AADT) at each location. The AADT represents an entire year's traffic volumes averaged out per day.



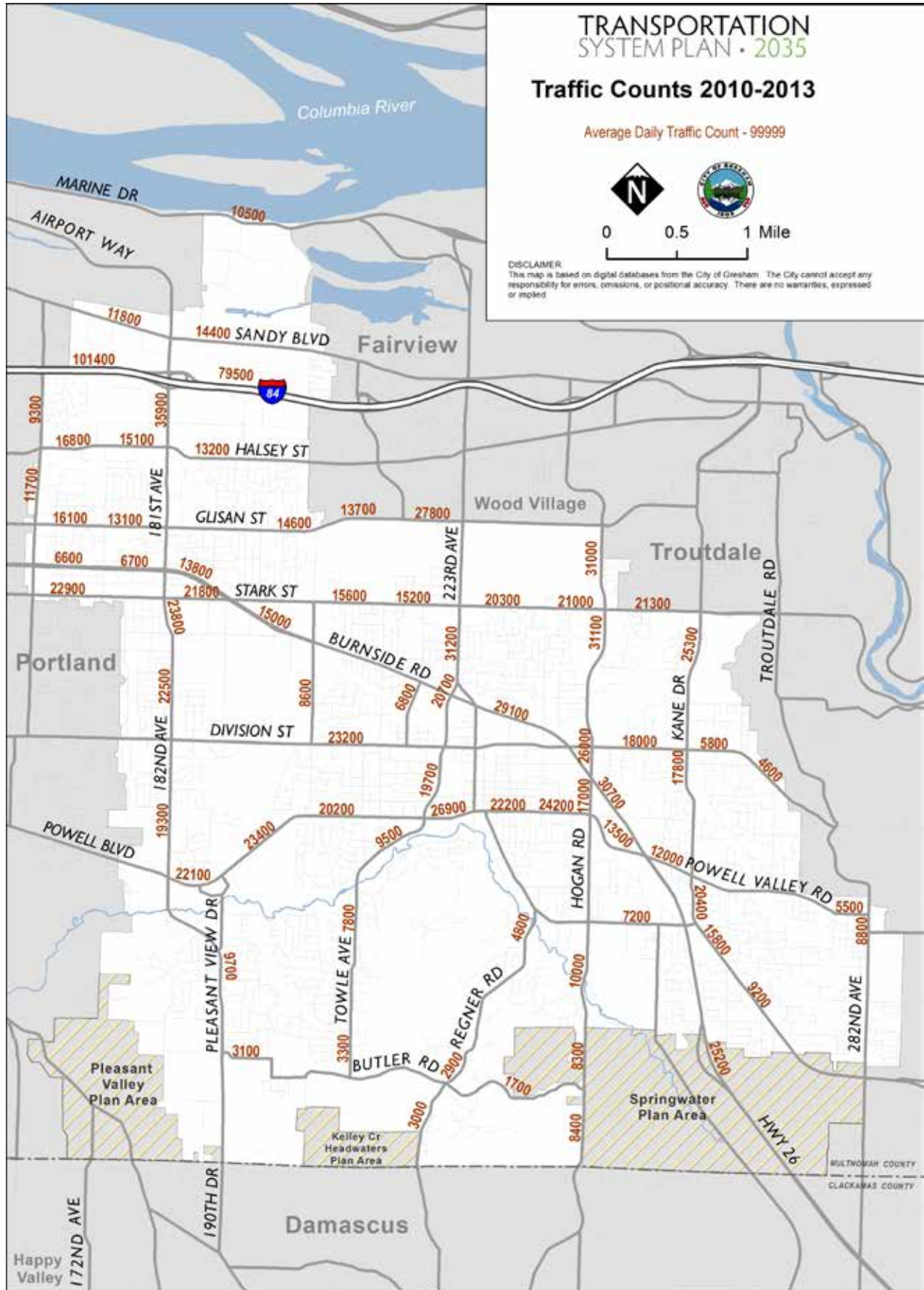
Motor vehicle volume on Division Street east of Birdsedale Avenue.

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 (Gl 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 15: Motor Vehicle Volumes



Motor Vehicle Crashes

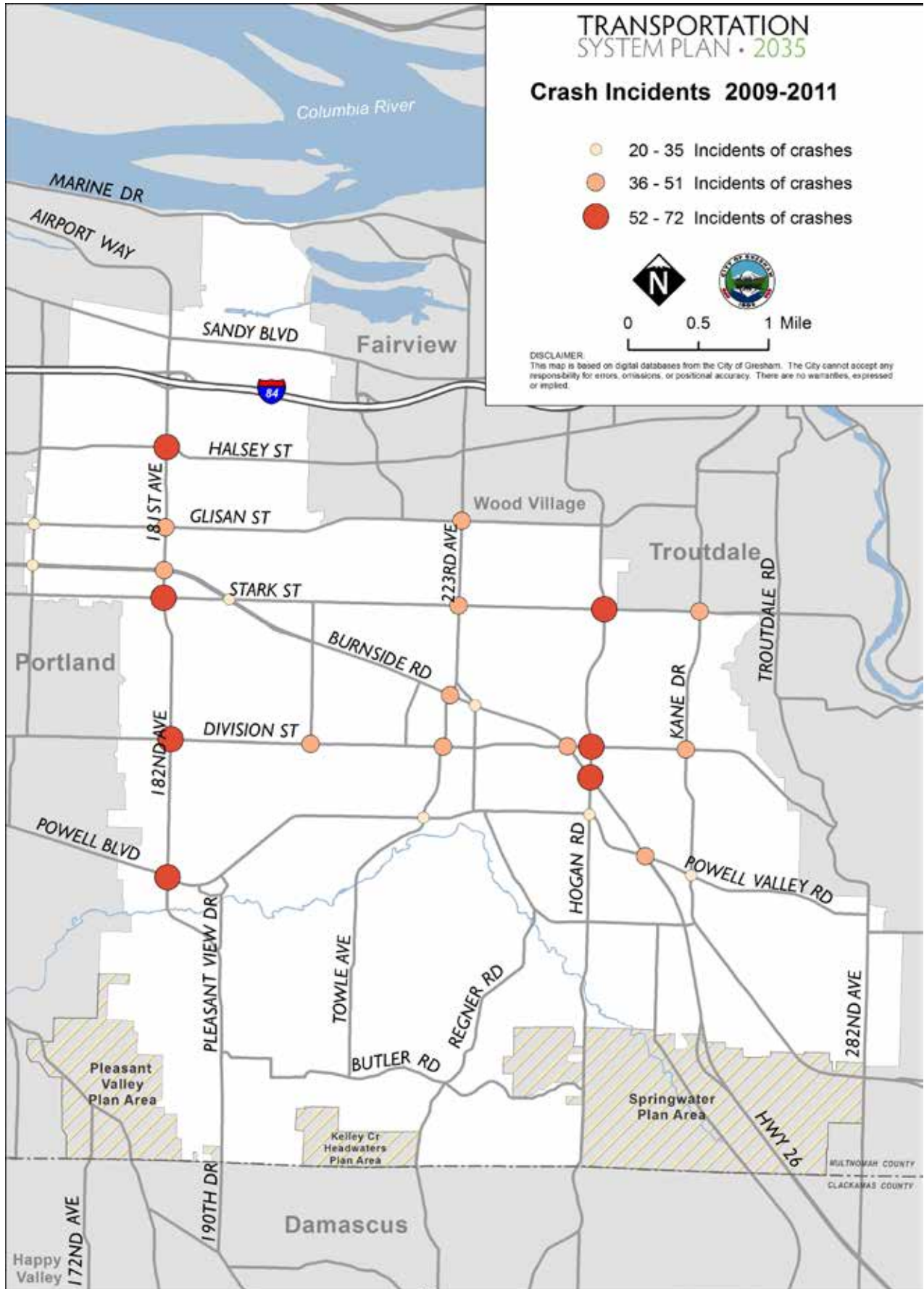
From 2009 through 2011, 1,169 motor vehicle related crashes were reported in Gresham (Map 16). Weather conditions were cold for 74 incidents, clear for 798, foggy for 2, rainy for 225, sleeting for one, snowy for 14 and unknown for 55. The majority, 61%, of the crashes were a result of bicyclist or motorist 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 16: 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 Birdsedale 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

Intersection	Signalized?	2013 V/C
NE Hogan Dr & NE Burnside Rd	Y	0.87
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 Birdsdales 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

Intersection	Signalized?	2013 V/C
NE Kelly Ave & NE Division St	Y	0.53
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 Birdsdales Dr/NW Birdsdales 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 Birdsdales Dr	N	0.38
SW Towle Rd & SW Binford Lake Pkwy	N	0.27
SW Towle Rd & SW Willow Pkwy	N	0.13

Intersection	Signalized?	2013 V/C
SW Butler Rd & SW Towle Rd	N	0.28
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 Palmsblad 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

Intersection	Signalized?	2013 V/C
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 an 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.

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 high 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 less volume, 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

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 redesigned:

- 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".

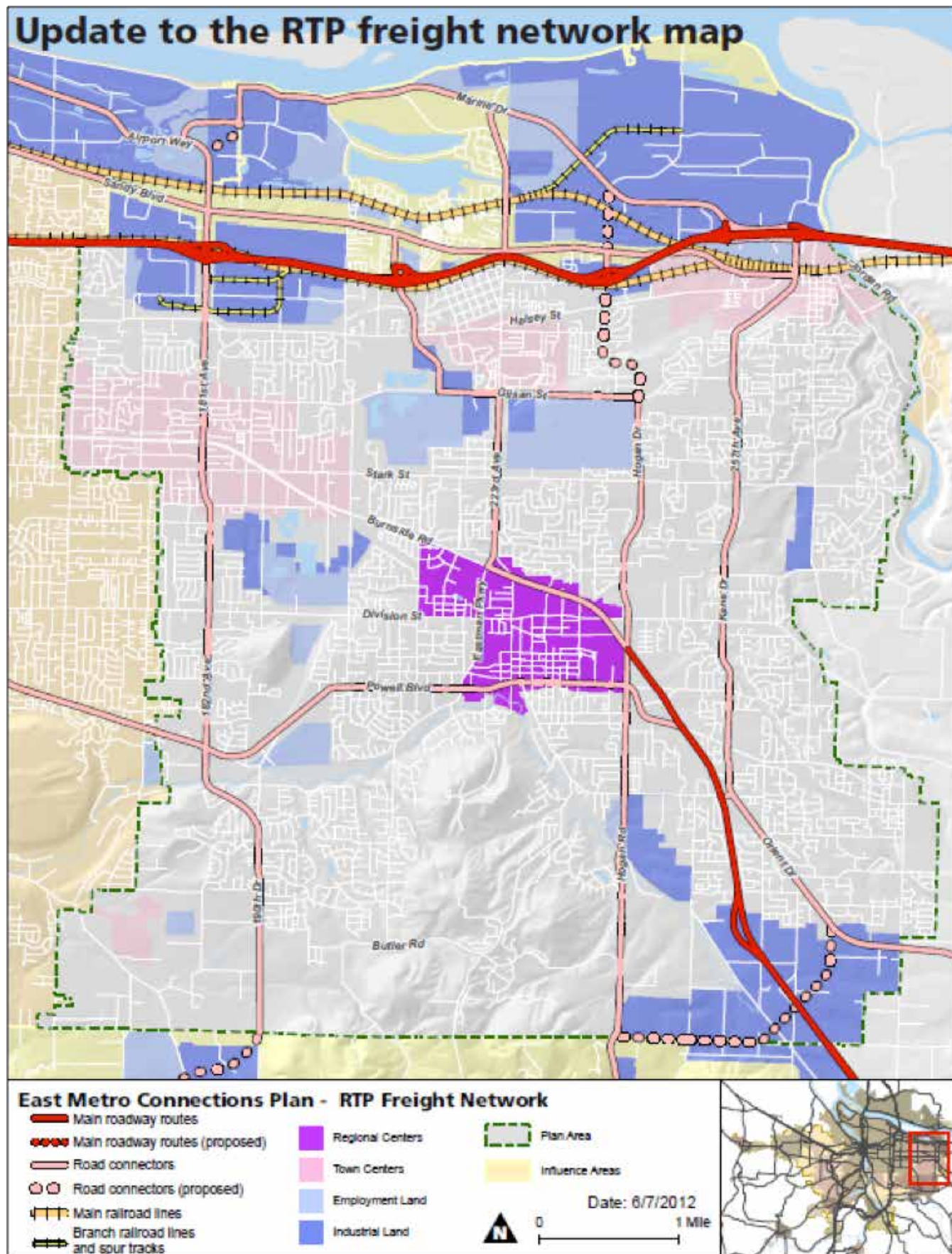
The updated freight network (Map 15) brings the use and function of the roads more in line with their intended uses and resolves conflicts with land uses adjacent to these roads. For example, the portion of Burnside that was previously identified as part of the freight network is within a town center and surrounded by residential and retail areas.



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

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

Map 17: 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.¹ It includes a subsystem of roadways:

- 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.



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

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	
181 st Avenue between Yamhill Street and Sandy Boulevard	NHS Mainline	Other Urban Principal Arterial
Halsey Street west of 181 st Avenue	NHS Mainline	Other Urban Principal Arterial
182 nd Avenue between Powell Boulevard and Yamhill Street	NHS Mainline	Other Urban Principal Arterial
223 rd 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 181 st 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

1 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 South shore 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
181 st and Burnside	2442	17	10	27	24.1%	1.1%
223 rd and Stark	2663	14	8	22	19.6%	0.5%
242 nd and Stark	2130	24	11	35	31.3%	1.6%
257 th and Stark	2116	14	14	28	25.0%	1.3%
Total	9351	69	43	112	100%	1.2%

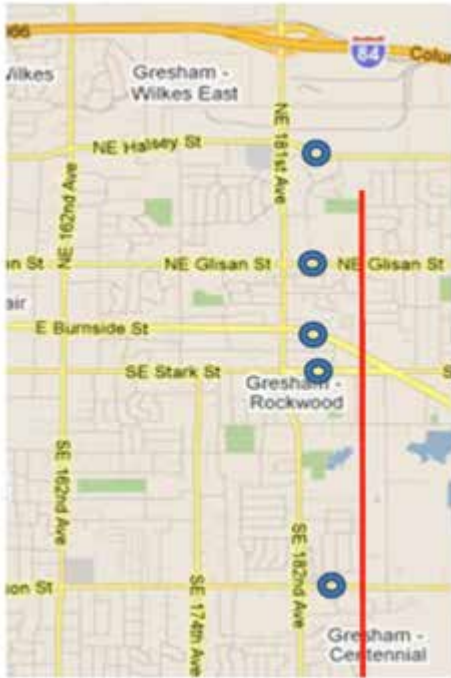
Graphic 5: North/South Screenline



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
181 st and Halsey	1141	18	2	20	13.3%	1.8%
181 st and Glisan	1210	25	1	26	17.3%	2.4%
181 st and Burnside	924	8	23	31	20.6%	3.4%
181 st and Stark	1715	19	1	20	13.3%	1.2%
182 nd and Division	2236	16	0	16	1.06%	0.7%
182 nd 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 area 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



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

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.

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 streets 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 18: 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 16).



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 shelter 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 minutes 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

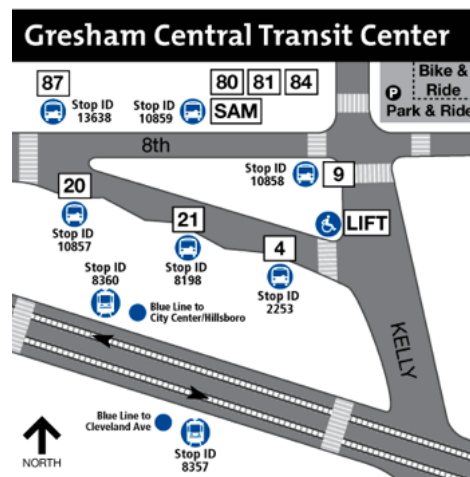
2002 Census. Based upon this data, the light rail ridership has increased by 18% since 2002.

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 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 2 (Division) 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 (Powell Valley/Orient Dr) provides weekday rush-hour service along Powell Valley Road and Orient Drive. It does not provide weekend service.



TriMet Bus line 20 travels on Stark Street in Rockwood.

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 curbs
- bus stop pre-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/frequent-service.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 crosswalks, scheduled display and curbramps. 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."

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						

Park and Ride

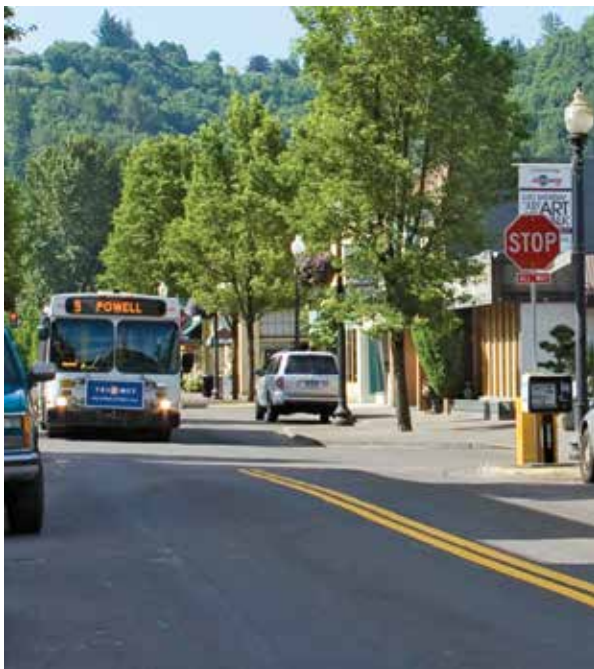
There are four park and ride lots in Gresham, all located along the MAX light rail line. The four lots are:

- 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.
- 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

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.

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 signals 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 scheduler 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



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

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.

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 permits 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. 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 rail alignment and communities where stations would be located will be determined. Gresham will coordinate with ODOT on this project as needed.



Gresham is not served by passenger rail.

16. AIR TRANSPORTATION

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



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

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 radiocommunications 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

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.

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.



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



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.

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

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 use 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 grow 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 planting 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.