2011 Transportation Master Plan

CITY OF SHORELINE

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The City wishes to thank all of the members of the Shoreline community and City staff who took the time to review and comment on drafts of the Transportation Master Plan. For additional information, please contact Alicia McIntire, Senior Transportation Planner, at (206) 801-2483 or amcintire@shorelinewa.gov.

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Introduction

Introduction

You Can Get There From Here

The TMP describes a vision for Shoreline's transportation future, identifies policies to help achieve that vision and contains the transportation funding program for implementation.

We live in a mobile society. Getting from here to there is critical to all aspects of our lives. Home, work, recreation, shopping – we need to move from one place to another to reach these destinations and engage in various activities. Transportation affects quality of life and economic vitality. Everyone who travels to, from or through the City of Shoreline depends upon the transportation network. It is the responsibility of the City to develop and maintain a complete transportation system that allows people to travel using a variety of modes including automobiles, transit, bicycling and walking. This transportation network must also support freight mobility, provide access for emergency vehicles and connect to the regional transportation system. In addition to the transportation network, the right-of-way contains the majority of utilities, including the City's surface water management network.

The City of Shoreline's Transportation Master Plan (TMP) is the long-range blueprint for travel and mobility, describing a vision for transportation that supports the City's adopted Comprehensive Plan. The TMP provides guidance for public and private sector decisions on local and regional transportation investments, including short-, mid-, and long-range transportation and related land-use activities. In this way, the City can assess the relative importance of projects and schedule their planning, engineering and construction as growth takes place and the need for the facilities and improvements is warranted. It also establishes a prioritization of the projects to be included in future capital improvement plans. The TMP covers all forms of personal travel – walking, bicycling, transit and automobile.

Shoreline's TMP describes a multi-modal transportation system, with an emphasis on moving people and a "Complete Streets" approach where the system accommodates all users.

The City of Shoreline incorporated in 1995. A transportation element was included in the City's 1998 Comprehensive Plan and Shoreline adopted its first TMP in 2005. In 2009, the City decided to update the TMP because the number of projects completed and projects planned for the City's transportation system were making significant changes to the transportation network. Changes include completion of the Interurban Trail, including the pedestrian bridges, construction of more than two miles of improvements on Aurora Avenue N (SR-99) and implementation of bus rapid transit service from Community Transit. Completing the improvements to Aurora Avenue N, new bus rapid transit service provided by Metro Transit and extension of Sound Transit's Link Light Rail to Shoreline are additional changes coming to the City's transportation system.

Shoreline is located in a highly urbanized area. As a suburb to Seattle and due to its location between several urban centers, the City experiences a high volume of through traffic on Interstate 5 and highways that pass through Shoreline. Changes and growth in surrounding jurisdictions, as well as on the regional transportation network, affect Shoreline. As a result, some transportation issues require multi-jurisdictional solutions and coordination.

Shoreline's Vision for Transportation

The TMP describes a vision for Shoreline's transportation future, identifies policies to help achieve that vision and contains the transportation funding program for implementation. The policies affect choices for travel by car, bus, bicycle and foot, freight and truck transportation and community livability. By identifying transportation priorities and the funding to support them, the TMP is able to recommend what projects are built and what programs are pursued. Shoreline's TMP describes a multi-modal transportation system with an emphasis on moving people and a "Complete Streets" approach where the system accommodates all users.

The TMP reflects policy direction from the City Council, public comments and technical analysis of existing and future conditions and external requirements, such as federal and state mandates. The TMP focuses on satisfying future travel demand by making efficient use of the existing infrastructure, planning for improvements to the City's transportation network and providing the facilities and services to encourage walking, bicycling and transit as priority modes. The TMP includes:

- An inventory and description of the existing transportation system
- Descriptions of the aspects of transportation that affect sustainability and quality of life
- Forecasts of future traffic growth and its impacts to the transportation network in Shoreline
- A concurrency strategy to ensure the City can accommodate transportation needs at the time growth occurs
- System plans and strategies for expansion of the City's bicycle, pedestrian and transit networks
- Identification, descriptions and priorization of projects and programs needed to upgrade existing facilities and construct new facilities

The Vision Statement in the Comprehensive Plan describes Shoreline twenty years in the future. This vision includes a city where residents can walk or bicycle travel on a network of sidewalks and trails to reach destinations throughout Shoreline.

In 2008, the City adopted the Shoreline Environmental Sustainability Strategy. The intent of the Environmental Sustainability Strategy is to establish the goals, policies and practices that the City will undertake in order to thrive as a sustainable City.

- A strategy that identifies funding resources for prioritized projects

The TMP provides policy and technical direction for development of the City's transportation system based upon growth assumptions through the year 2030. The TMP is being adopted in 2011 in conjunction with an update of the Comprehensive Plan Transportation element. The transportation projects and programs identified in the TMP will be used for the annual development of the City's Six Year Transportation Improvement Program and the Six Year Capital Improvement Plan and will be the basis for the City's grant pursuit strategy.

The TMP is a long range plan, with policies, programs and projects that will be implemented over the next 20 years. As the City's transportation needs change over time, the TMP will be updated.

Shoreline Comprehensive Plan and Development Code

The Shoreline Comprehensive Plan establishes a vision for the community and expresses the community's values. This 20-year plan provides the basis for creation of the City's development regulations and is used as a guide for decision making. Anticipated population and employment growth are described as well as how services and facilities will be developed, maintained or improved to accommodate this growth.

The Comprehensive Plan Land Use Designations Map identifies the planned areas for future growth. Because the City can accommodate its anticipated 20-year growth without changing any of the current Comprehensive Plan designations, the Land Use Designations Map looks substantially similar to the current zoning throughout the City. Single family residential densities remain low throughout the majority of the City, with redevelopment to higher densities and intensities occurring in mixed use areas where multi-family and commercial development are currently located. The Land Use Designations Map may change if specific areas are identified as appropriate for future mixed-use transit oriented development.

The Vision Statement in the Comprehensive Plan describes Shoreline twenty years in the future. This vision includes a city where residents can walk or bicycle on a network of sidewalks and trails to reach destinations throughout Shoreline. In this vision, neighborhood main streets serve as transportation hubs for bicyclists, pedestrians and transit riders. Public transportation provides a quick connection to downtown Seattle, the University of Washington, light rail and other regional destinations. Convenient

and reliable local bus service is available throughout the day and throughout the City, as are well-maintained bicycle routes that connect all of the main streets to each other and to the Aurora core area. Sidewalks connect these hubs of activity to the surrounding neighborhood, bringing a car-free lifestyle within reach for many.

The City's Development Code contains the regulations that direct development within Shoreline in order to implement the vision of the Comprehensive Plan. Specific standards are established to regulate the height and bulk of structures, as well as the use of land in a given zone. The Development Code outlines the requirements for installation of infrastructure, including sidewalks and roadway improvements. Rules established to protect environmentally sensitive areas are also an integral part of the Development Code.

Shoreline Sustainability Strategy

In 2008, the City adopted the Shoreline Environmental Sustainability Strategy. The intent is to establish an inclusive set of principles and priorities and provide strategic direction for the City to undertake in order to become an environmentally sustainable city. This means that the needs of the present can be met without compromising the ability of future generations to meet their own needs while working to regenerate and restore the environment where it has been damaged by past practices. It is the City's intent to create and implement the Environmental Sustainability Strategy so future generations of local residents will have the resources and means to live at least as well as, and preferably better than, people today. Actions included in the strategy address Shoreline's operations, future development, leadership and planning processes, including prioritization of non-motorized transportation investment and planning.

The Environmental Sustainability Strategy includes five Focus Areas that frame, analyze and organize key components of the strategy. Focus Area 3: Sustainable Development & Green Infrastructure deals with the physical and environmental aspects of sustainable development, including transportation.

The Environmental Sustainability Strategy includes recommendations that will help implement its goals. The recommendations that address transportation are listed in **Appendix A**.

The City's Comprehensive Plan and the Environmental Sustainability Strategy both contain statements about how the

community would like to see all forms of transportation provided and improved. The Framework Goals in the Comprehensive Plan provide the overall policy foundation for the plan and support the City Council's vision. When implemented, the Framework Goals are intended to preserve the best qualities of Shoreline neighborhoods today and protect the City's future. The goals and policies of the Land Use Element of the Comprehensive Plan, together with the Comprehensive Plan Land Use Designation Map, represent the basis for assumptions in all other elements of the Comprehensive Plan.

State and Regional Policy Context

The City's Comprehensive Plan must meet a number of state and regional requirements. Key requirements include compliance with the State Growth Management Act (GMA), certification of the transportation-related provisions in local comprehensive plans and King County's Countywide Planning Policies. Because the TMP supports the Comprehensive Plan, consistency with these requirements is important in this document as well.

Washington State Growth Management Act

In 1990, Washington adopted the GMA to mandate local comprehensive planning in heavily populated and high growth areas of the state. The GMA establishes broad goals, such as managing urban growth, protecting agricultural lands, reducing sprawl, and encouraging multi-modal transportation systems. The overall goals of the GMA encourage affected jurisdictions, including Shoreline, to keep pace with land development and make public road and transit improvements to help meet the expected transportation demand. The City of Shoreline complies with the GMA in part by including a Transportation Element in its Comprehensive Plan.

Puget Sound Regional Council: Vision 2040 and Transportation 2040

Vision 2040, the growth, economic and transportation strategy for the four-county central Puget Sound region includes the multi-county planning policies required under the GMA. Prepared and adopted in April 2008 by PSRC, these policies are used to review and certify the transportation-related provisions in local comprehensive plans. Transportation 2040, adopted by PSRC in May 2010, is the detailed transportation component of Vision 2040. The plan addresses the transportation impacts of the anticipated population and job growth of the region for all modes of travel, including aviation, ferries, walking and bicycling, automobiles and transit. Projects and investments that will result in the greatest benefit for the regional transportation system are prioritized along with viable and sustainable funding sources for implementation.

King County Countywide Planning Policies

As one of the jurisdictions in King County, the GMA requires that the Transportation Element of Shoreline's Comprehensive Plan be consistent with the King County Countywide Planning Policies. In general, the King County Countywide Planning Policies direct local jurisdictions to provide a balanced transportation system using all modes of transportation as efficiently as possible. They direct state, regional, county and city governments to coordinate effectively when planning transportation improvements.

Regional Coordination

The TMP addresses impacts to transportation facilities and programs that are within the City. However, Shoreline is part of a regional system and is affected by growth and the transportation decisions made in surrounding jurisdictions. Shoreline's transportation infrastructure is used not only by its residents but also workers, business patrons and students coming into the City, travelers passing through Shoreline, transit providers and freight delivery businesses. Shoreline's roadways are part of a regional system that includes interstate freeways, highways and arterials.

Shoreline's regional coordination efforts take place on several levels. From participation with regional agencies, such as PSRC, King County Metro Transit and Sound Transit, to intergovernmental coordination with neighboring cities, Shoreline strives to look at transportation with a dual role of improving transportation throughout the region as well as at a local level.

Agencies the City of Shoreline coordinates with include:

- Washington State Department of Transportation (WSDOT)
- King County Department of Transportation
- Snohomish County
- Metro Transit
- Community Transit
- Sound Transit
- Puget Sound Regional Council (PSRC)
- City of Seattle
- City of Lake Forest Park
- City of Edmonds
- City of Mountlake Terrace
- Town of Woodway

Plan Organization

The TMP is divided into the following chapters:

Chapter 1. Introduction

Chapter 2. Inventory of the Existing Transportation System

Chapter 3. Sustainability and Quality of Life

Chapter 4. Bicycle Plan

Chapter 5. Pedestrian Plan

Chapter 6. Transit Plan

Chapter 7. Master Street Plan

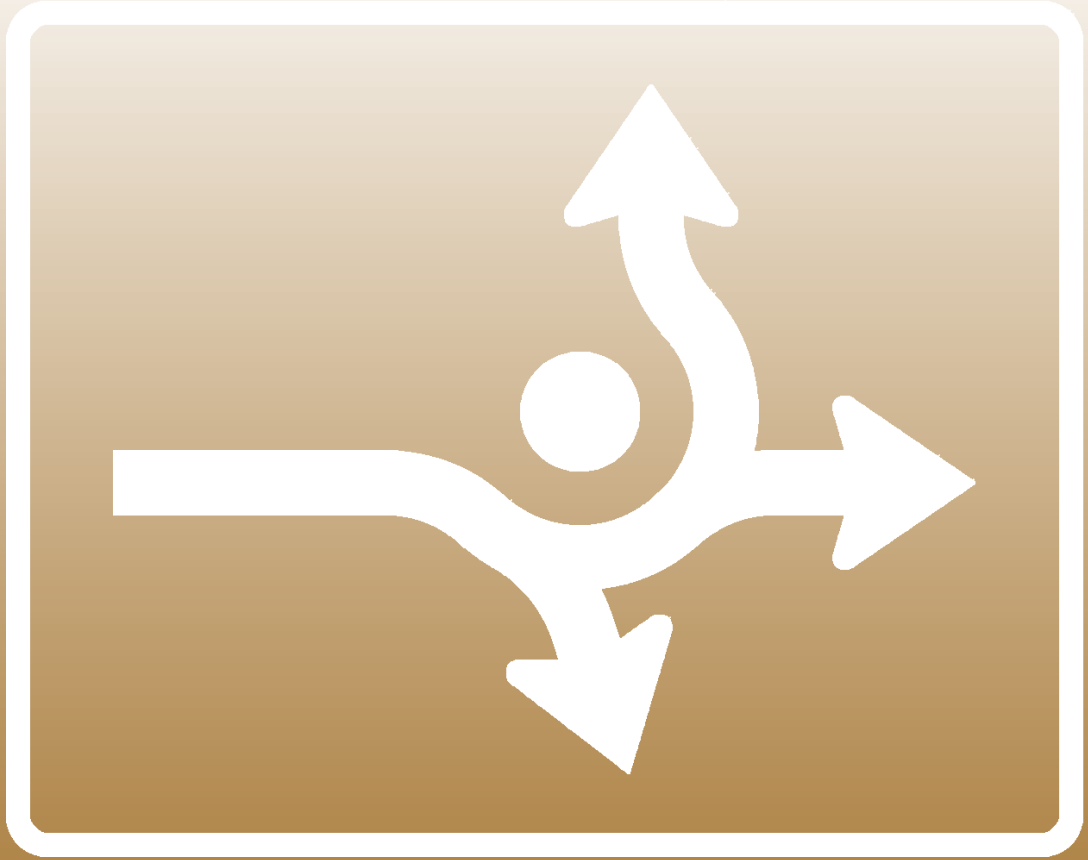
Chapter 8. Concurrency and Level of Service

Chapter 9. Recommended Transportation Improvements

Chapter 10. Funding

The TMP identifies several goals and policies that provide the framework for the City's transportation vision. The goals and policies establish the framework and objectives for the City's transportation system and guide its development and management. The TMP includes implementation strategies, which are action items or specific tasks the City can undertake in order to implement an identified goal or policy. The implementation strategies described in this plan are not necessarily the only options available to achieve a stated goal or policy.

The TMP also includes a series of project recommendations needed to complete the system plans, correct existing deficiencies and accommodate growth. Projects were identified and prioritized for each element of the plan and then combined to create prioritized lists of projects.



Existing Transportation System

Inventory of the Existing Transportation System

The Best Place to Live, Work and Play

The City of Shoreline has historically been a bedroom community to the City of Seattle. Shoreline developed as a primarily single-family residential city, with commercial uses focused on Aurora Avenue N from N 145th Street to N 205th Street. Businesses of all kinds are located along this corridor including restaurants, personal services, auto repair and sales, professional offices, retail sales, medical services and entertainment. They range from small, privately-owned businesses to large, national chain stores. Aurora Avenue N is a state highway (SR 99) and as a result, many of the businesses located on the corridor are auto oriented, and the sites are developed to accommodate automobiles. Almost 90 percent of the City's sales tax revenues are generated by businesses located on Aurora Avenue N.

Additional commercial development is located in North City (located on the east side of Shoreline), on Ballinger Way NE (in the northeast section of Shoreline) and in the extreme southeast of Shoreline at NE 145th Street and Bothell Way NE. Smaller pockets of commercial development are scattered throughout the City along NW Richmond Beach Road (at 15th Avenue NW and 8th Avenue NW), at NE 145th Street/15th Avenue NE, and in the Ridgecrest neighborhood at NE 165th Street/5th Avenue NE.

The higher density, multi-family developments in Shoreline are generally located within and adjacent to commercial areas and along arterials. Apartment and townhouse developments are located immediately east and west of commercial development on Aurora Avenue N, with some multi-family housing located on Aurora Avenue N. Similarly, high-density development is present along NW Richmond Beach Road, in North City, along Ballinger Way NE, in Ridgecrest and along N/NE 145th Street. Outside of these areas, the City is developed with single-family residences with densities of four to six units per acre.

Locations that draw people from outside of Shoreline into the City include:

- Shoreline Community College
- Washington State Department of Transportation (WSDOT)
- Fircrest Residential Rehabilitation Center
- Washington State Public Health Labs
- Crista Ministries
- Richmond Beach Saltwater Park
- Sports venues, such as the Shoreline Center and Twin Ponds Park
- YMCA
- Aurora Village Transit Center and Shoreline Park and Ride
- King County Transfer Station
- Shopping areas, such as the Aurora Village Shopping Center and Aurora Square

Roadway Network

The transportation network in Shoreline is greatly impacted by state highways. Aurora Avenue N and Interstate 5 (I-5), both of which are designated as "highways of statewide significance,"

run the entire length of Shoreline and carry well over 200,000 vehicles per day. SR 104 (Ballinger Way NE and N/NE 205th Street) borders the City to the north and passes through the northeast portion of the City. Shoreline is bordered by two other state highways, SR 523 (N/NE 145th Street) and SR 522 (Bothell Way NE). Even though these two corridors and a portion of SR 104 are not inside the corporate limits of the City, Shoreline citizens and businesses rely on them for their travels. Generally, the sidewalk systems along these streets are nonexistent or substandard and in disrepair, illumination is lacking and there is limited capacity to improve transit operations.

I-5 has three interchanges affecting Shoreline: NE 145th Street, NE 175th Street, and NE 205th Street. The location of each of these interchanges has direct and significant impact on these streets, essentially making them Shoreline's most heavily traveled east-west corridors. When I-5 is congested, parallel north/south arterials in Shoreline often receive spillover traffic. Aurora Avenue N, Meridian Avenue N, 5th Avenue NE and 15th Avenue NE are the streets that generally pick up the overflow traffic.

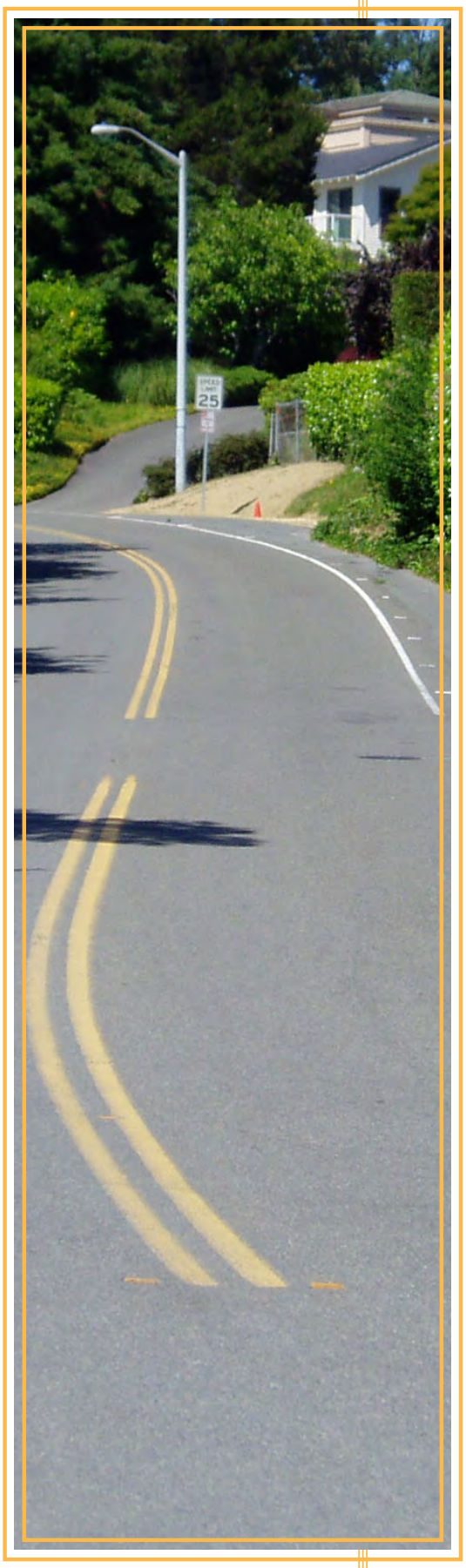
The roadway network in Shoreline is laid out primarily in a grid system. Streets run east-west and avenues run north-south. The following roadways function as the primary transportation corridors in the City:

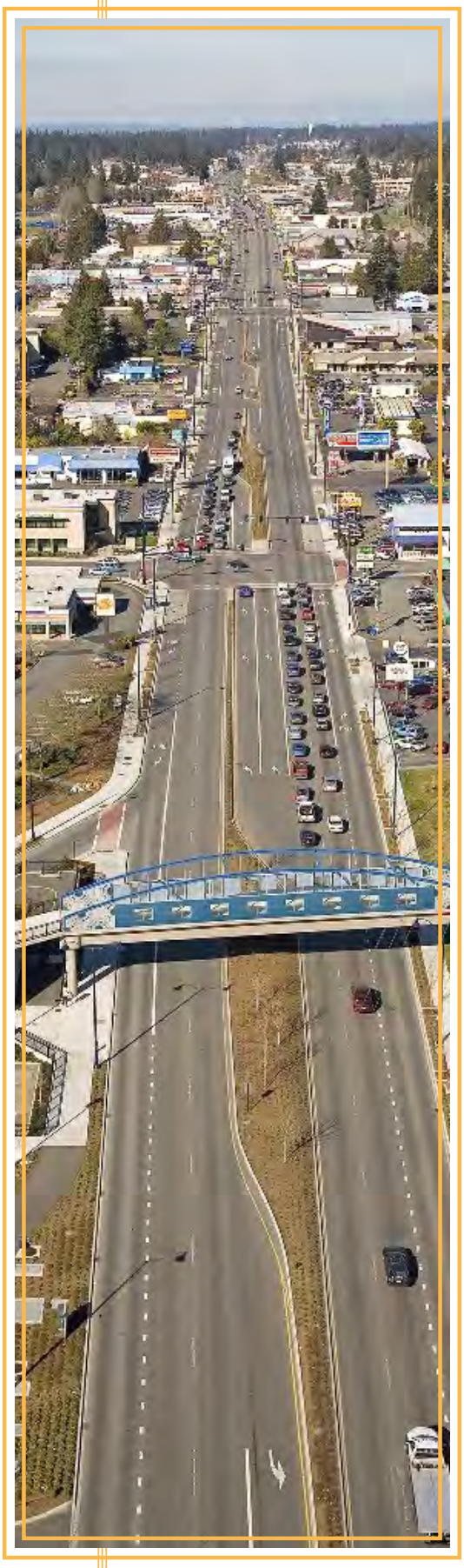
East-West

- N/NE 145th Street (SR 523)
- N/NE 155th Street
- N/NE 175th Street
- NW Richmond Beach Road
- N/NE 185th Street
- N/NE 205th Street/Ballinger Way NE (SR 104)

North-South

- 8th Avenue NW
- Greenwood Avenue N
- Dayton Avenue N
- Aurora Avenue N (SR 99)
- Meridian Avenue N
- Interstate 5
- 5th Avenue NE
- 15th Avenue NE
- 25th Avenue NE





Aurora Corridor Project

The Aurora Corridor Project is the largest capital project undertaken by the City since incorporation. When completed, this project will redevelop the entire three miles of Aurora Avenue N that run through Shoreline. The goals of the plan are to improve:

- Pedestrian and vehicle safety
- Pedestrian access and access for persons with disabilities
- Vehicular capacity
- Traffic flow
- Transit speed and reliability
- Nighttime visibility and safety
- Stormwater quality
- Utility infrastructure and capacity
- Economic investment potential
- Streetscape amenities

The completed project will also satisfy the State of Washington's access management requirements by eliminating the center two-way left-turn lane and replacing it with a raised center median that contains pockets allowing for left and U-turns.

The original design concept was developed during the Aurora Corridor Multi-Modal Pre-Design Study, a public process lasting over two years and involving over 60 public meetings, open houses and briefings at City Council meetings. The design for the roadway includes the following features:

- 7-foot sidewalks
- 4-foot amenity zone for fire hydrants, street signing, street and pedestrian lights, landscaping and pedestrian amenities such as benches and trash cans
- Stormwater facilities and water quality treatment that meets or exceeds city, county and state requirements
- Two through-lanes and a Business Access/Transit (BAT) lane in each direction
- Bus zone enhancements
- Raised medians with left- and U-turn pockets
- Continuous street lighting
- Underground utilities

For funding and design purposes, the Aurora Corridor Improvement Project was divided into sections. The first mile of the project, N 145th to N 165th Streets, was completed in 2007. The total cost for this segment of the project was approximately $27 Million, with 89% of the funding coming from

federal, state and county grants, and 11% from money set aside by the City for the project.

The City performed environmental review under the State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA) simultaneously for the second and third miles of the project (N 165th to N 205th Streets). Upon completion of the environmental review process, design and right-of-way acquisition work began for the second mile (N 165th to N 185th Streets). Construction of the second mile was substantially completed in fall 2011. In January 2011, construction began on the next seven blocks (N 185th to N 192nd Streets), with completion scheduled for early 2012. The remainder of the project is scheduled for completion in 2014.

Street Classifications

Federal and State guidelines require that streets be classified based on function. Generally, streets are classified as either arterial streets or non-arterial streets. Local jurisdictions can also use the designations to guide the nature of improvements allowed and/or desired on certain roadways, such as sidewalks or street calming devices.

The primary function of arterials is to provide a high degree of vehicular mobility through effective street design and by limiting property access. The vehicles on arterials are often through traffic. Arterials in Shoreline are further divided into three classes: Principal, Minor and Collector Arterials. Generally, the higher the classification of a street (Principal being the highest), the greater the volumes, through movements and length of trips, and the fewer the access points.

- Principal Arterials have higher levels of local land access controls, with limited driveway access and regional significance as major vehicular travel routes that connect between cities within a metropolitan area. *(Examples: Aurora Avenue, NE 175th Street and 15th Avenue NE)*
- Minor Arterials are generally designed to provide a high degree of intra-community connections and are less significant from a perspective of regional mobility. *(Examples: Meridian Avenue N, N/NE 185th Street and NW Richmond Beach Road)*
- Collector Arterials assemble traffic from the interior of an area/community and deliver it to the closest Minor or Principal Arterial. Collector Arterials provide for both mobility and access to property and are designed to fulfill both functions. *(Examples: Greenwood Avenue N, Fremont Avenue N and NW Innis Arden Way)*

All streets other than arterials are generally designated as non-arterial streets that provide local accesses. **Table 2.1, Typical Shoreline Street Characteristics**, describes the different characteristics of classified streets in Shoreline. The characteristics identified are meant as descriptors, not as standards or policies. **Figure A, Street Classifications**, identifies the classifications for all of the City's streets.

The classification of a roadway often determines eligibility for grant funding. Typically, granting agencies fund projects on arterials and will not provide funds for projects on local streets. Similarly, roadway classification influences the types of traffic improvements the City will construct on a street. For example, arterials are not typically eligible for traffic calming features and generally are not considered for improvement through the City's Neighborhood Traffic Safety Program. Shoreline does not typically stripe centerlines on non-arterial streets.

Table 2.1: Typical Shoreline Street Characteristics

	Arterial Streets			Non Arterial (Local) Streets	
	Principal Arterial	**Minor Arterial**	**Collector Arterial**	**Local Primary Street**	**Local Secondary Street**
Function	- Connect cities and urban centers with minimum delay - Connect traffic to Interstate system - Accommodate long and through trips	- Connect activity centers within the City - Connect traffic to Principal Arterials and Interstate - Accommodate some long trips	- Provide access to community services and businesses - Connect traffic from Non Arterial Streets to Minor or Principal Arterials - Accommodate medium length trips	- Connect traffic from local secondary streets to Arterials - Accommodate short trips to neighborhood destinations - Provide local accesses	- Provide local accesses
Speed Limits	30-40 mph	30-35 mph	25-30 mph	25 mph	25 mph
Daily Volume (vehicles per day)	More than 15,000	7,000 – 20,000	2,000 – 8,000	less than 3,000	less than 3,000
Number of Lanes	Three or more lanes	Two or more lanes	Two or more lanes	One or two lanes	One or two lanes
Lane Striping	Pavement markings used to delineate travel lanes.	Pavement markings used to delineate travel lanes.	Pavement markings used to delineate travel lanes.	No centerline striping	No centerline striping
Transit	Buses/transit stops allowed	Buses/transit stops allowed	Buses/transit stops allowed	Buses/transit stops not generally allowed except for short segments	Buses/transit stops not allowed
Bicycle Facilities	May contain bicycle lanes, shared lanes or signage	May contain bicycle lanes, shared lanes or signage	May contain bicycle lanes, shared lanes or signage	- Shared lanes can be provided - Signs may be included	Bike facilities not specifically provided; may include signed bike routes
Pedestrian Facilities	- Sidewalks on both sides - Amenity zones	- Sidewalks on both sides - Amenity zones	- Sidewalks on both sides - Amenity zones	Pedestrian access through the use of sidewalks, trails, or other means	Safe pedestrian access through the use of sidewalks, trails, or other means.

Existing Traffic Volumes

The pattern of daily traffic volumes reflects the street classifications. The highest volumes of traffic are observed on state highways, which are principal arterials. Aurora Avenue N has the highest overall 24-hour average daily traffic, in both directions, for any facility in Shoreline with the exception of I-5 and a small section of SR 104. The average weekday traffic volumes in 2010 ranged from 31,800 in the north to 37,900 in the vicinity of N 160th Street. SR 104 near the I-5

interchange had daily traffic volumes in excess of 52,000. In the northeast section of the City, daily traffic volumes on SR 104 are approximately 23,000. Traffic volumes along SR 523 range from 24,500 to 31,800. Other principal arterials that have significant traffic but are not state routes include: 15th Avenue NE, Meridian Avenue N, NW Richmond Beach Road, N 205th Street, N 185th Street, N/NE 175th Street, N/NE 155th Street and Westminster Way N. **Figure B, City of Shoreline Traffic Flow Map 2010**, summarizes the existing 24-hour average weekday traffic volumes for Shoreline.

Access Control Classification System

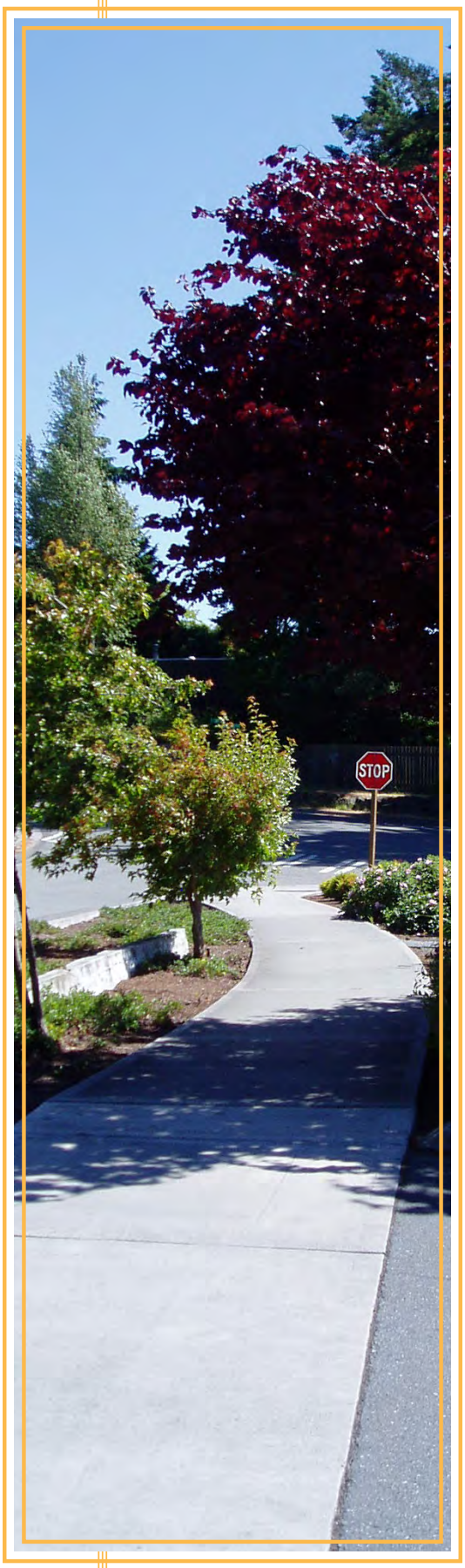
For all Washington State highways, WSDOT controls all access to their facilities in order to preserve the safety and efficiency. Under current access management standards, access is distinguished as being either a limited access highway or a managed access highway. I-5 is the only limited access highway in Shoreline. The remaining state routes in Shoreline are managed access. WSDOT has sole authority to reclassify access route designations.

Collision Analysis

The City of Shoreline collects crash data for use in analyzing and evaluating traffic operations in the City. Such data is useful in many ways, including helping the Shoreline Police Department target areas for enforcement, prioritizing City resources and applying for grants to help finance capital improvement projects that address safety problems. The ability to document the safety potential of the proposed Aurora Corridor Improvement Project allowed the City to obtain grants to help fund the project and secure City leadership support in directing resources for implementation. One measure of success is that the number of reported crashes between N 145th and N 165th Streets has dropped over 75% since the roadway changes were put into effect.

The City of Shoreline compiles data for reported accidents on all streets within City limits. Excluded from the report are crashes on private property, those on N/NE 145th Street, N/NE 205th Street, crashes that do not result in a formal police report, collisions under the threshold of $700 and other non-crash vehicle incident reports. Collision statistics are developed from Shoreline Police Department traffic collision reports and data from the WSDOT data office, which includes crashes investigated by other agencies and citizen reports. In the following analysis, the City utilized a three-year time period to evaluate intersection and roadway accidents. Because there are fewer pedestrian and bicycle accidents in the

The ability to document the safety potential of the proposed Aurora Corridor Improvement project allowed the City to obtain grants to help fund the project and secure leadership support in directing resources for implementation. One measure of success can be seen in that the number of reported crashes between N 145th Street and N 165th Street has dropped over 75% since the roadway changes were put into effect.



City, a five-year data set was used. This allows the City to more accurately evaluate trends and identify problem areas.

Collision Summary

The City of Shoreline Traffic Services recorded 545 crashes reported within the City of Shoreline for the year 2009. **Table 2.2, Total Crashes in Shoreline 2004-2009**, summarizes the number of crashes annually in the City from 2004-2009 and breaks these figures down by type of crash. The trend indicates that the total crashes and injuries are decreasing.

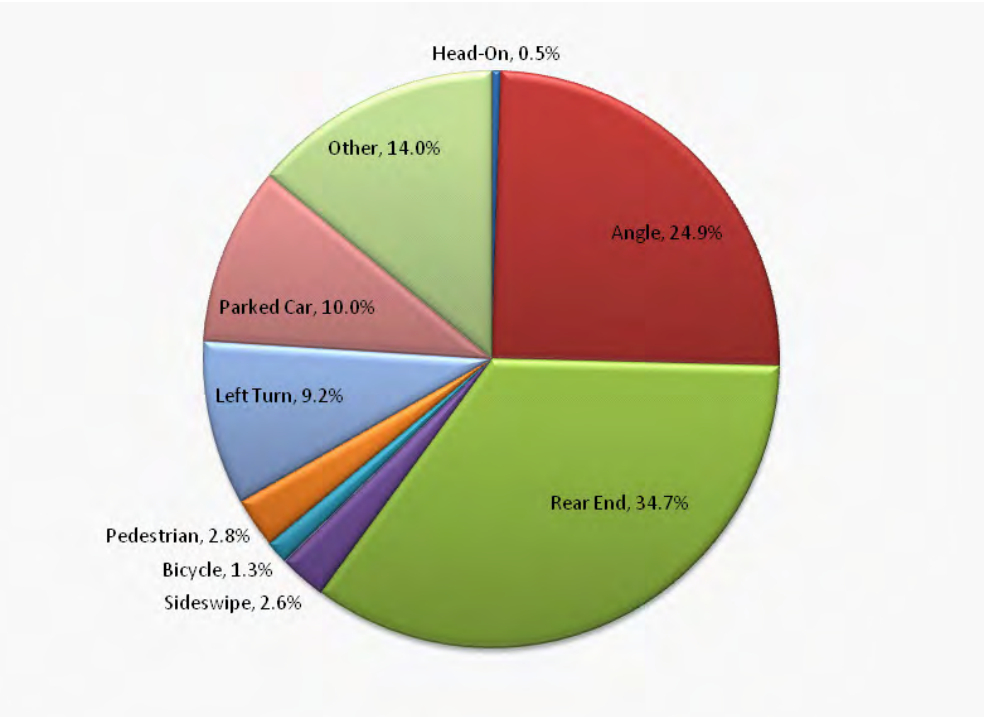
Table 2.2: Total Crashes in Shoreline 2004-2009

	Year					
	2004	2005	2006	2007	2008	2009
Total Crashes	803	726	756	633	562	545
Property Damage Only	489	484	507	386	368	334
Injury Crashes	275	213	223	217	165	173
Number of Injuries	361	278	289	297	219	212
Fatal Crashes	0	2	2	0	0	1

The City has observed significant reductions in the number of crashes, crash rates and crash severity in areas where transportation improvements have been installed. Prior to construction of the Aurora Corridor improvements from N 145th to N 165th Streets, accidents on Aurora Avenue N represented 31 percent of all crashes in the City. In 2009, accidents on Aurora Avenue N represented less than 25 percent of all crashes in the City. In conjunction with the rechannelization completed in 2006, the crash severity has declined along 15th Avenue NE.

Figure 2.3, Types of Crashes 2007-2009, shows the types of crashes in the City from 2007-2009. Rear-end and right-angle crashes make up around 60 percent of all reported collision types on City streets. Crashes involving pedestrian or bicycles make up about 4 percent of all reported collision types but are usually not reported unless there is an injury or a police report filed. The location of all vehicle crashes in the City from 2008-2010 is shown on **Figure C, Vehicle Collisions Most Current Three Years**.

Figure 2.3, Types of Crashes 2007-2009



Intersection and Roadway Segment Accident Analysis

From 2007-2009, the intersection at 3rd Avenue NW and NW Richmond Beach Road had the highest number of crashes (18) for an intersection. The next two highest accident locations at intersections were at Meridian Avenue N and N 155th Street (15) and 10th Avenue NE and NE 175th Street (14). All of these are signalized intersections. The two intersections with the highest crash rate are along Linden Avenue N at N 165th Street (1.01) and N 175th Street (0.91), both of which are intersections without signals. **Appendix B, High Accident Locations – Intersections (by crash rate)** lists the high accident locations in the City and details the number of crashes and injuries, the crash rates and the entering volumes.

Appendix C, High Accident Roadway Segments (by crash rate) summarizes accidents that occur between intersections, known as mid-block accidents. For mid-block locations, Aurora Avenue N had the majority of accidents. The highest number was observed between N 175th Street and Ronald Place N on Aurora Avenue N, where 40 accidents occurred from 2007-2009. The 10 highest number of accidents for a mid-block location occurred on Aurora Avenue N. These locations are highly commercialized with several driveways connecting to Aurora Avenue N. However, the highest mid-block accident rate in Shoreline was found along N 155th Street between Aurora Avenue N and Midvale Avenue N.

Pedestrian Accident Data

From 2005-2009, crashes involving pedestrians made up 2.7 percent of all reported collision types. Accident locations are mapped out in **Figure D, Pedestrian Collisions**. A total of 98 collisions between vehicles and pedestrians were reported at 68 different locations. Just over half of these accidents were at intersections and the remainder occurred at mid-block locations.

Five of the collisions were at the intersection of N 200th Street and the entrance to the Aurora Village Shopping Center. This was the highest accident location for pedestrians. The Aurora Corridor Improvement Project will extend to the intersection and help resolve the safety problems at this location. Aurora Avenue N had the highest number of accidents (32). Over 80 percent of the accidents occurred along arterials. Other corridors with a concentrated number of accidents included 15th Avenue NE (14), 175th Street (7), Meridian Avenue N (6), NW Richmond Beach Road (5), 155th Street (4) and 5th Avenue NE (4).

Bicycle Accident Data

From 2005-2009, crashes involving bicycles made up 1.5 percent of all reported collision types. Accident locations are mapped out in **Figure E, Bicycle Collisions**. A total of 51 collisions between vehicles and bicyclists were reported at 46 unique locations. There were two locations with two incidents and one location with three incidents involving a bicyclist, all of which were intersections. Of the reported collisions involving bicycles, 37 were at intersections and the remaining 14 occurred at mid-block locations. Almost 80 percent of the accidents occurred along arterials. Aurora Avenue N had the highest number of accidents (6). Other areas with a concentrated number of accidents included: the intersection at Midvale Avenue N and N 185th Street (3) and along 15th Avenue NE (5).

Measures to Reduce Accidents and Improve Safety

Traffic crashes have considerable impact not only on the people directly involved in the crash but also on the community as a whole. Collisions can be reduced through several factors. Shoreline emphasizes “The 3 E’s” when working to reduce crashes. They include:

- **Education:** Alerts people to ways they can help ease traffic problems, such as reducing driving speed or using travel alternatives other than automobiles. The City of Shoreline reaches out to help inform residents about traffic issues through a number of programs including the Neighborhood Traffic Action Plans and Neighborhood Traffic Safety Program, newsletters, neighborhood meetings and information on the City’s website.
- **Enforcement:** Utilizes the Shoreline Police Department Traffic Division to focus enforcement efforts on problem areas to increase community awareness and compliance.
- **Engineering:** Monitors and evaluates traffic and travel patterns within the City’s travel network. Designs, operates and manages facilities for all modes of transportation in order to provide for the safe and efficient movement of people, goods and services.

Safety on streets can be improved in a variety of ways, many of which have been implemented throughout the City. The safety improvements listed below are often dependent upon the types of streets, traffic volumes and speeds.

Access Management and Medians

Access management refers to the proactive management of vehicle access points to adjacent parcels through roadway design. Access management promotes safe and efficient use of the transportation network for all different types of roadways. Several techniques are available to control access to roadways. These techniques include:

- **Access Spacing:** Increasing the distance between traffic signals improves the flow of traffic on major arterials, reduces congestion and improves air quality for heavily traveled corridors. However, increased spacing results in limited opportunities for pedestrians to cross at a signalized location.
- **Driveway Spacing:** Fewer driveways, spaced further apart, allow for more orderly merging of traffic and present fewer conflicts to drivers.
- **Separated Turning Lanes:** Dedicated lanes for left-, right- and U-turns, as well as roundabouts, keep through-traffic flowing.
- **Roundabouts:** Roundabouts represent an opportunity to reduce conflict points in an intersection or reduce crash severity.
- **Median Treatments:** Curbing and non-traversable raised medians are some of the most effective means to regulate roadway access and reduce crashes.

The access management techniques for a given roadway must be appropriate for the facility with respect to the roadway classification, traffic volumes, adjacent land uses and traffic speeds.

Roadway Rechannelization and Center Left-Turn Lanes

One method available to improve traffic safety is to rechannelize the street, reducing a four-lane road to three lanes. While seeming counter-intuitive, such conversions are successful, both regionally and nationally, in improving pedestrian and motorist safety, revitalizing neighborhood economies and improving quality of life.

Four-lane roads generally accommodate higher overall speeds, in part by allowing faster vehicles to maneuver around slower ones. The lack of a designated turn lane causes turning vehicles to slow and wait in through-traffic lanes. This can cause sudden lane changes, leading to increased number of rear-end and sideswipe crashes and failure to see pedestrians. The higher speeds also contribute to increased severity and number of injuries. Traffic engineering studies indicate that four-lane roads carrying up to 25,000 vehicles per day are good candidates for lane reductions through rechannelization.

A three-lane roadway operates in a safer manner for several reasons:

- **Lower Speeds.** Reducing the number of lanes in one direction from two to one results in lower speeds overall. Faster drivers are forced to drive the same speed as the slower vehicles in front of them.
- **Reduction in Number of Collisions and Severity.** Vehicles looking for a gap in traffic to make left turns now have a space to wait outside of the higher-speed through-traffic lanes and are crossing only one lane of on-coming traffic.
- **Safer Crosswalks.** Changing the number of lanes from two to one reduces the "multiple threat" scenario for pedestrians, where a vehicle in one lane stops and a vehicle in the adjacent lane does not. The stopped vehicle often blocks visibility of the pedestrian as they are crossing. Pedestrian crossing distances can be reduced through the introduction of bulbouts (curb extensions) at intersections.
- **Bicycle Lanes.** When the number of lanes is reduced from four to three, the remaining area can be used to create separated bicycle lanes in each direction.

Lighting

Lighting is a highly effective tool for improving safety along roadways. Well designed and maintained lighting allows pedestrians to feel safe when walking in their neighborhoods and drivers can better see the street, as well as the surrounding sidewalks. Both the roadway and crossing areas need to be lit in order to create a safe environment for all roadway users. Additionally, a positive sense of safety and security is enhanced when people interact in their neighborhoods, helping to reduce crime when there are more "eyes" on the street. The City's priority for street lighting is to illuminate higher classified streets and the intersections on those roadways. The foot candle/illumination unit requirements for lighting is based upon the street classification.

Image: courtesy of KPG for North City Project

Sidewalks

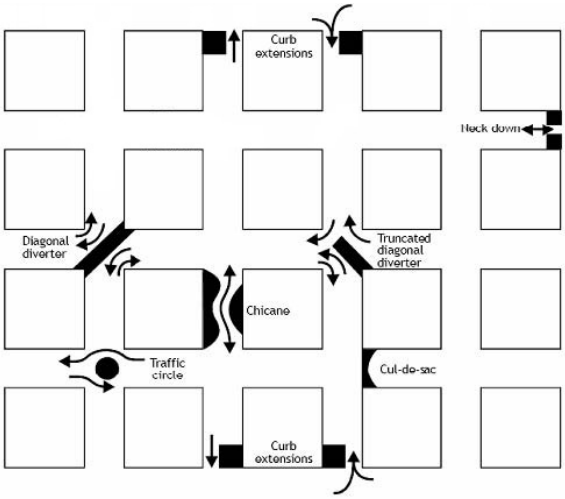
Sidewalks improve roadway safety in several ways. By providing a separate, designated location for pedestrians, there is a clear distinction between the areas for vehicles and those for pedestrians. Elements that provide additional physical separation for motorists and pedestrians can include a raised curb and sidewalk, a planted area or amenity zone between the travel lane and sidewalk, and shrubs or trees to create a buffer for pedestrians from passing traffic. When sidewalks are setback from the roadway, driveway slopes can often be contained within this setback area, allowing the walking surface to remain level for pedestrians.

Narrower streets have been shown to reduce traffic speeds. Unlike wide shoulders for pedestrians, sidewalks place a defining edge on the travel lanes and create the appearance of narrower lanes, causing drivers to reduce their speeds. The combination of slower vehicle speeds and a separated location for walking greatly enhances the safety of a roadway.

Bicycle Lanes and Signage

In the same way sidewalks function for pedestrians, bicycle lanes provide a clearly defined location for bicycle travel, separate from vehicles. Generally located adjacent to a curb or the outside lane of travel, bicycle lanes are designed to enhance safety for bicyclists that share the road with motorists. By using these lanes, bicyclists that are traveling slower than vehicles do not impact the flow of traffic and drivers often slow down in the presence of bicycles. This plan includes recommendations for several bicycle lane corridors.

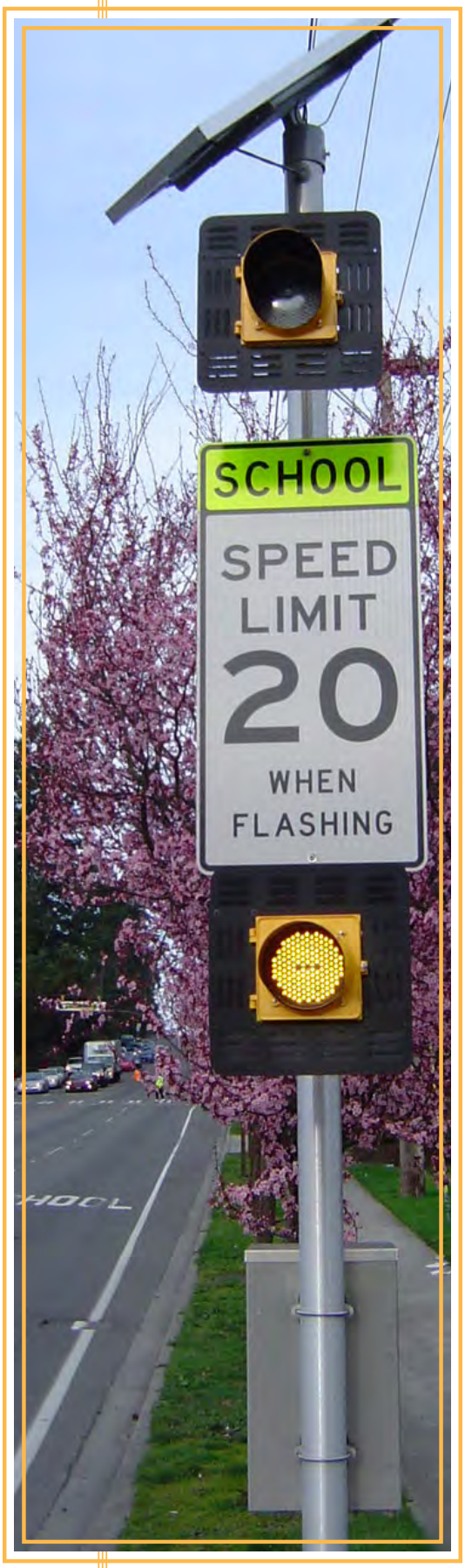
Signage is another mechanism available to alert drivers to the presence of bicyclists. Shared travel lanes are wider than standard travel lanes and are designed to require motorists and bicyclists to share the lane. These lanes are often marked with symbols, such as “sharrows”, indicating where bicyclists should ride and informing drivers that the lane must be shared with riders. Posted signs can also notify motorists that a given roadway is designated as a bicycle route, informing drivers so they can use extra caution.



Traffic Calming

Traffic calming refers to measures which aim to reduce or manage the negative effects of motor vehicle use, such as speeding and cut-through traffic, and enhance safety for all users of the street. The following list describes some of the more common types of traffic calming devices and measures. Most of these techniques are allowed only on non-arterial streets:

- Speed humps are traffic control devices that help to reduce speeds on residential streets by creating a short elevated section of street pavement that requires vehicles to slow down to cross over it. They differ from speed bumps found in parking lots in that they are wider and flatter and do not require vehicle traffic to slow down quite as much. Speed humps have been shown to reduce traffic speeds by up to 7 mph. Speed humps typically are not used on arterials or primary emergency vehicle routes.
- When placed mid-block, curb extensions can be used to create a chicane, a series of bulbouts on alternating sides of the street, which is used to calm traffic by narrowing the street and requiring motorists to reduce their speed in order to maneuver through the device. Curb extensions can also be used at intersections or mid-block to provide visual distinction and reduce pedestrian crossing distances at established crosswalk locations. Bulbouts help to provide a clear visual signal to drivers that a crossing is approaching and makes waiting pedestrians more visible. Chokers or Neckdowns tend to be longer

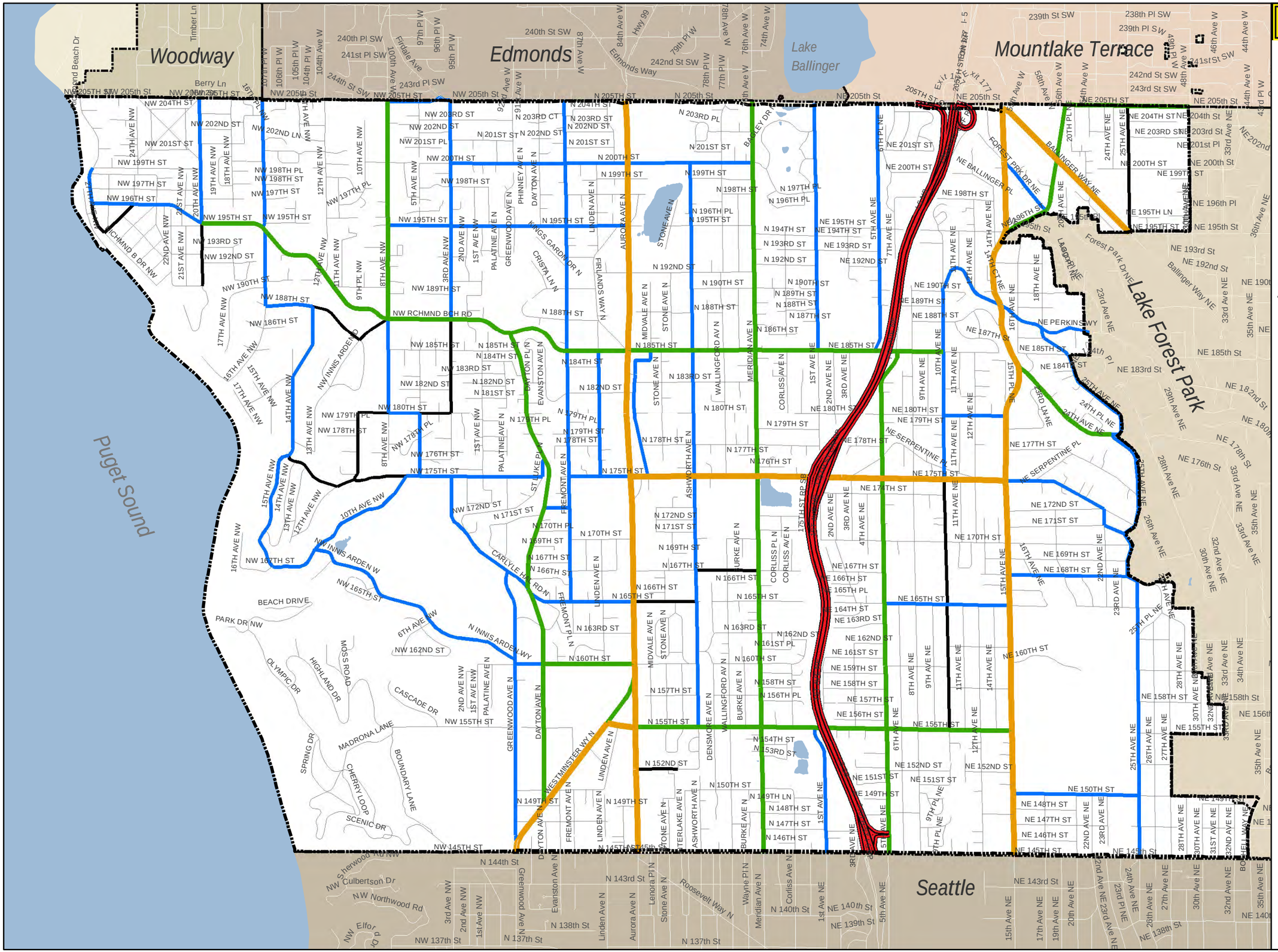


than bulb-outs and often line up with and help to define parallel street parking areas. These extensions narrow the appearance of the street and can be attractive, especially when landscaped. Incorporating swales or bioretention areas into curb extensions can help to capture or reduce stormwater runoff.

- Traffic circles are raised islands placed in intersections which cause motorists to slow down as they check for opposing traffic when approaching the intersection and maneuver around the device. Traffic circles have been shown to significantly reduce collisions at intersections. They are appropriate on non-arterial streets where traffic volume is not a concern but traffic speed is.
- Landscaping and street trees have been shown to reduce traffic speeds by creating a more enclosed and pedestrian-friendly environment. Vertical elements, such as street trees, change drivers' perception of the street, giving the street a narrower feel. This can help alert drivers to the presence of pedestrians and cause them to reduce speed. Street trees and landscaping are often used in conjunction with other traffic calming techniques.
- Diverters are physical barriers placed diagonally across an intersection that block through movements and effectively create two L-shaped streets. When diverters are landscaped, they result in an additional traffic calming measure. Because of the impact that diverters can have on adjacent streets, particular care is given when considering the use of this type of device.
- Street closures involve the installation of some form of barrier to block through access by vehicles while maintaining access for pedestrians and bicyclists. They have been shown to be quite effective in reducing traffic volumes. Some roadways may require emergency vehicle access, which can sometimes be accommodated through roadway design and removable traffic control devices. Street closures can be either full closures that block vehicular access in both directions or half closures which limit vehicular traffic to either entry or exit, but not both. Similar to diverters, street closures can have a significant impact on adjacent or nearby streets. Particular care is given when considering the use of this device.

Figure A

Street Classifications



Legend

- Interstate

Arterial Streets:

- Principal Arterial
- Minor Arterial
- Collector Arterial

Non-Arterial Streets:

- Local Primary Street *(formally "Neighbhorhood Collector")*
- Local Secondary Street *(formally "Local Street")*

0 500 1,000 2,000 3,000 Feet

1 inch = 1,919 feet

CITY OF SHORELINE

N W E S

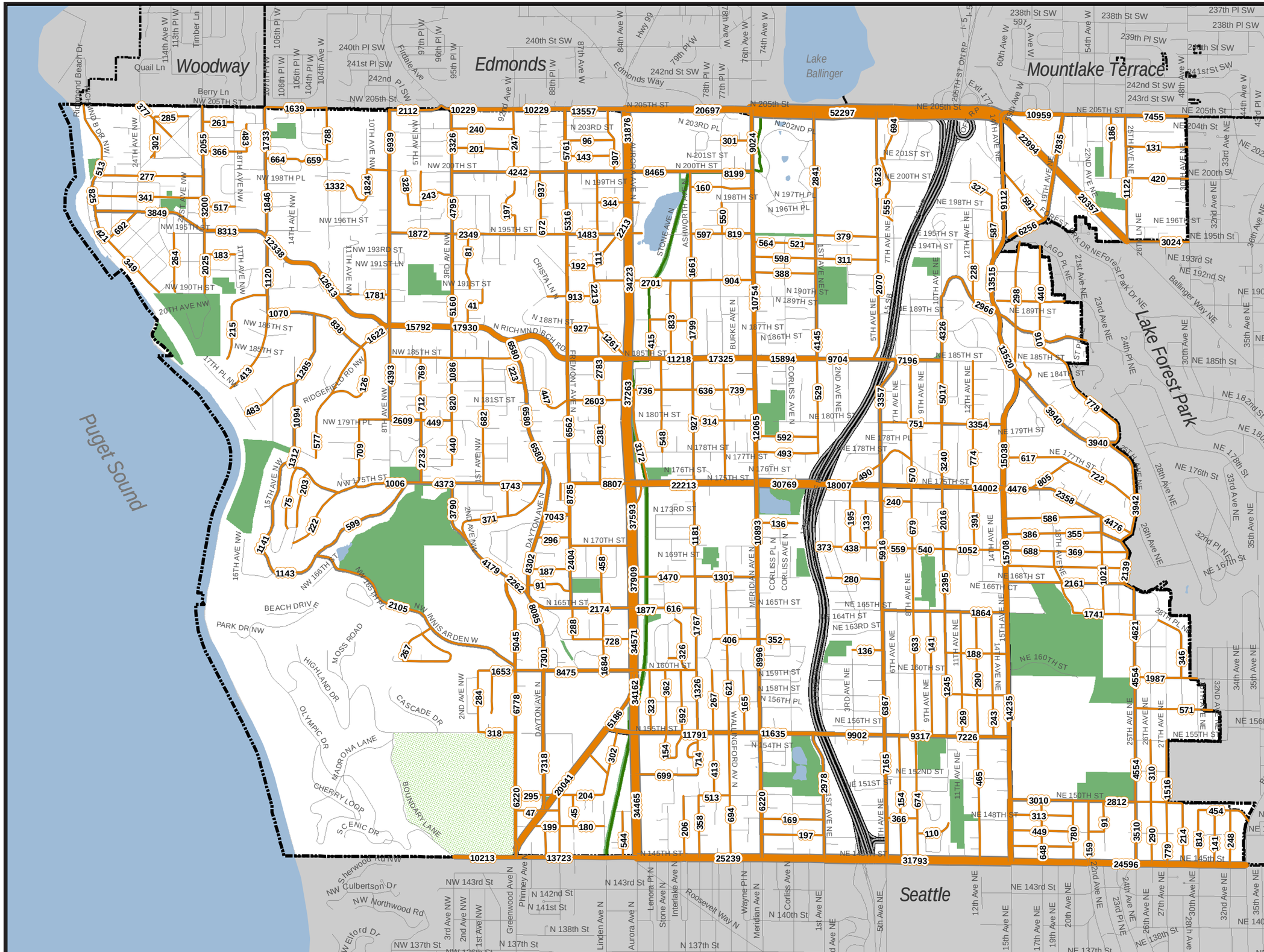


Figure B

City of Shoreline Traffic Flow Map 2010

24-Hour Average Weekday Traffic
(Combined Two-Directional Totals)

Legend

Avg Weekday Traffic Vol:

- 55,000
- 50,000
- 45,000
- 40,000
- 35,000
- 30,000
- 25,000
- 20,000
- 15,000
- 10,000
- 5,000

0 500 1,000 2,000 3,000 Feet

1 inch = 1,953 feet

CITY OF SHORELINE

N W E S

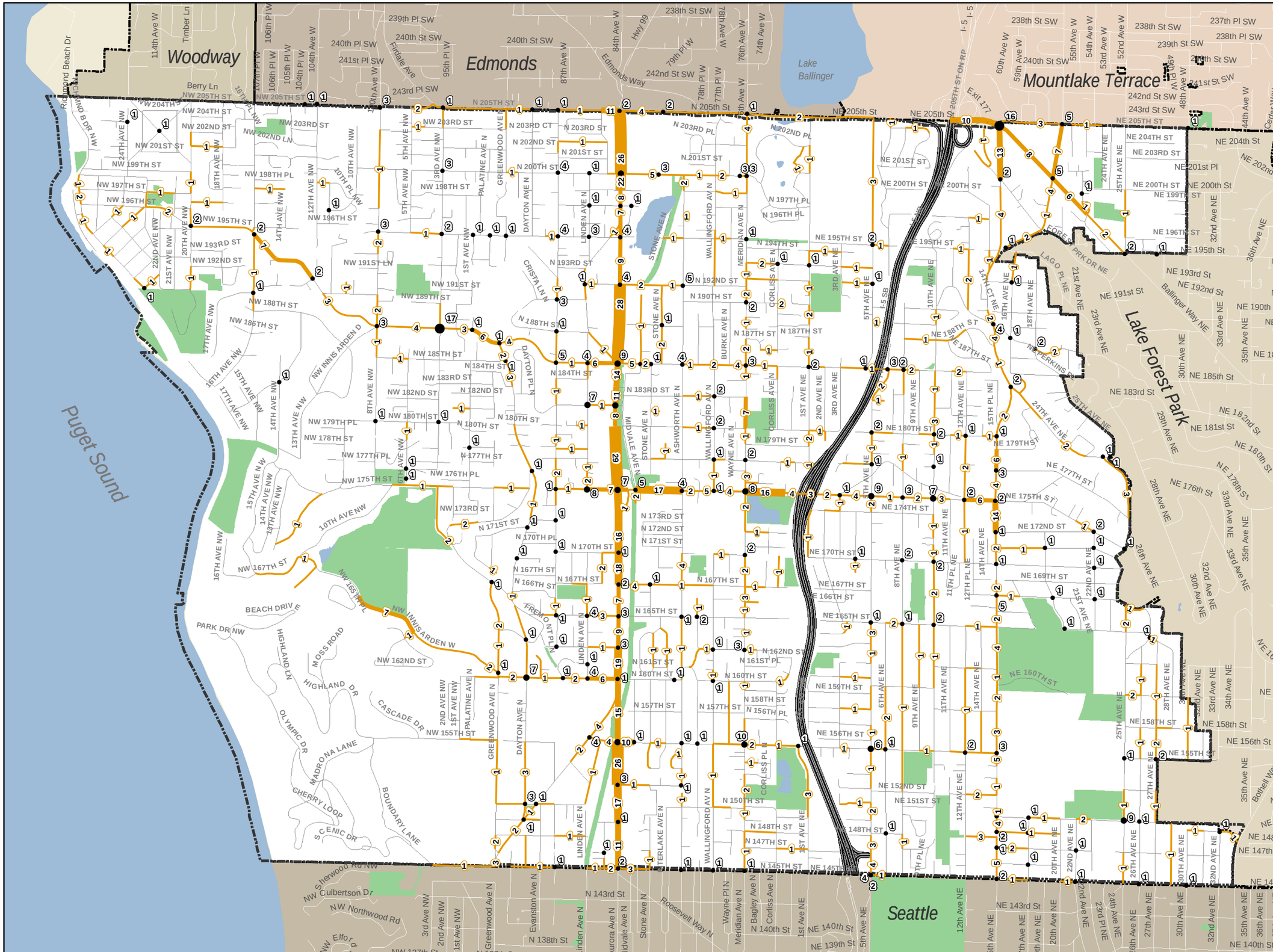


Figure C

Vehicle Collisions

Most Current Three (3) Years

(2008 - 2011)

Legend

Intersection:

1 Number of Collisions

Mid-Block:

1 Number of Collisions

0 500 1,000 2,000 3,000 Feet

1 inch = 1,917 feet

CITY OF SHORELINE

N W E S

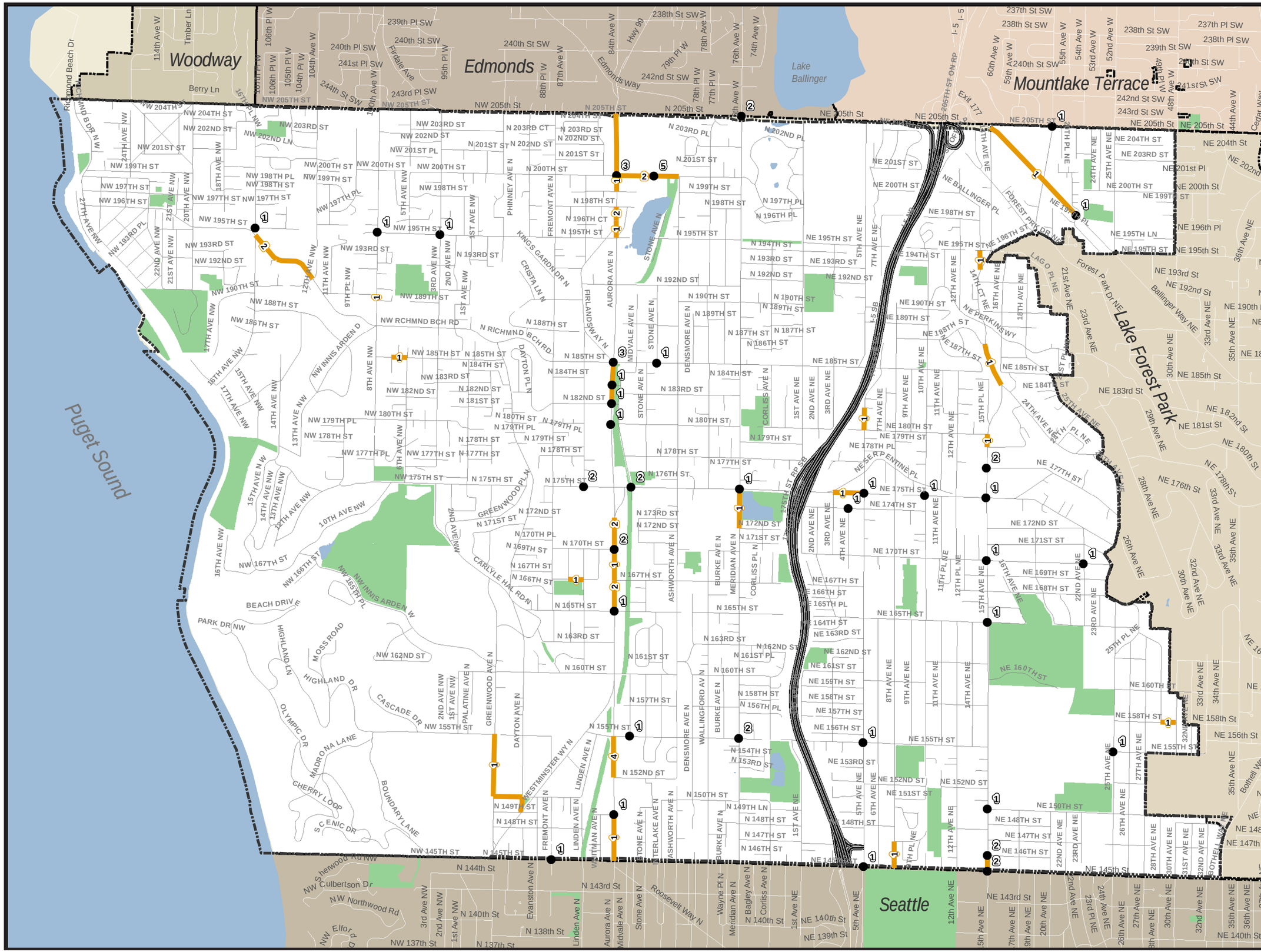


Figure D

Pedestrian Collisions

2005 - 2009

Legend

Intersection:

1 Number of Collisions

Mid-Block:

1 Number of Collisions

0 500 1,000 2,000 3,000 Feet

1 inch = 1,920 feet

CITY OF SHORELINE

N W E S

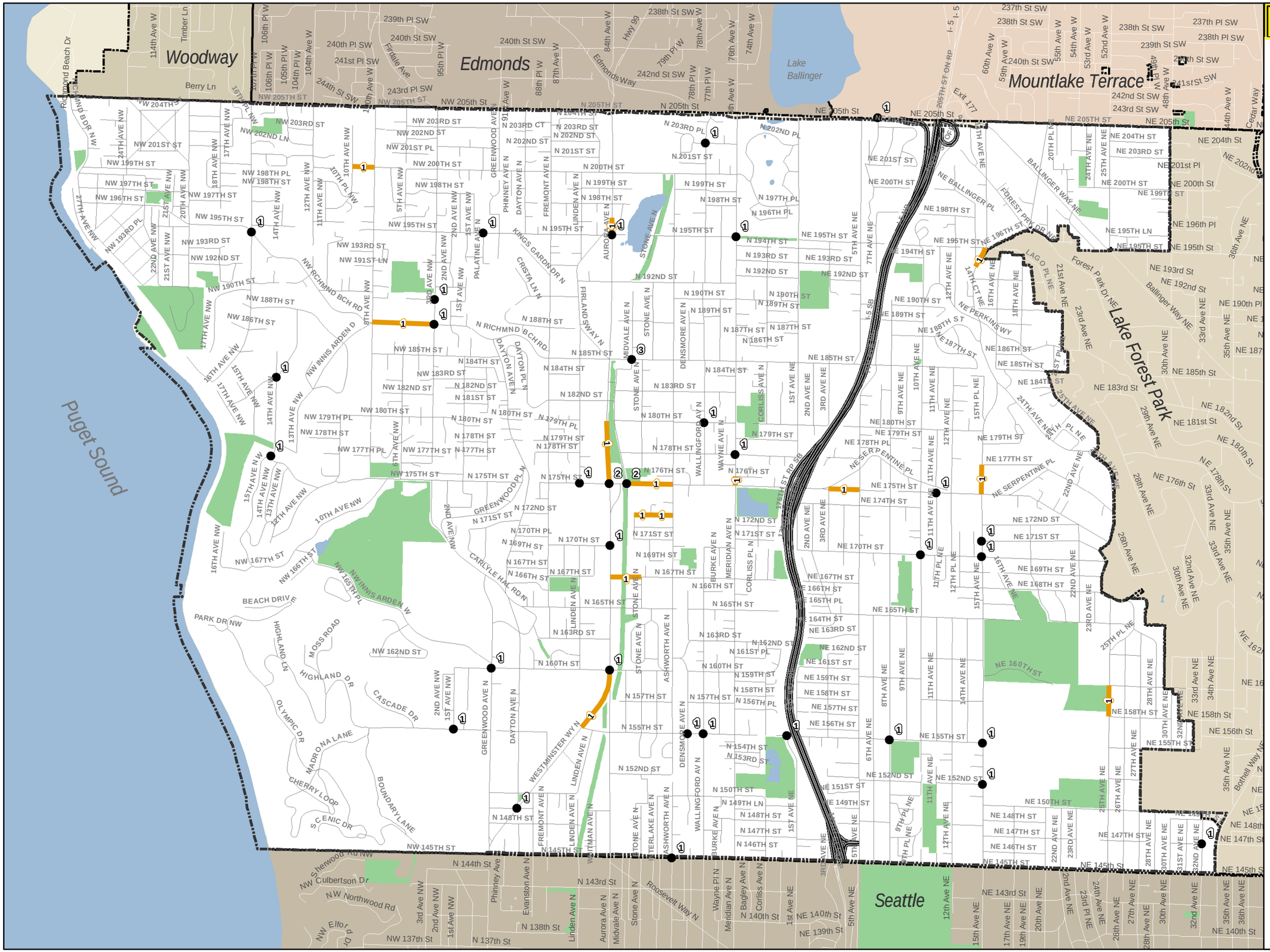


Figure E

Bicycle Collisions

2005 - 2009

Legend

Intersection:

1 Number of Collisions

Mid-Block:

1 Number of Collisions

0 500 1,000 2,000 3,000 Feet

1 inch = 1,920 feet

CITY OF SHORELINE

Sustainability & Quality of Life

Sustainability and Quality of Life

Keeping It Green

Transportation plays a large role in the quality of life of City of Shoreline residents. Lengthy commutes and time stuck in traffic mean spending hours away from family, friends and activities. Speeding cars and cut-through traffic make neighborhood streets feel less safe. Poor quality or non-existent bicycle and pedestrian facilities can be a deterrent to residents walking or bicycling for transportation, connecting to transit and traveling to schools and parks, as well as for recreational purposes.

How people choose to travel is a key element of both environmental sustainability and quality of life. Transportation is a significant contributor to climate change, as it accounts for a high percentage of all green house gas emissions in Washington State. Reducing the total number of vehicle miles traveled could provide Shoreline's biggest contribution to reducing green house gas emissions in the region.

Transportation infrastructure, the roads, parking lots, railroads, sidewalks, bike paths, and associated storm drainage and traffic control systems have direct impacts on the environment in addition to the impacts from the vehicles that travel on them. Stormwater runoff can contribute to water pollution, flooding, and water temperature elevation as it flows over this infrastructure. Hard surfaces also contribute to heat island effect and reduced wildlife habitat.

The City's largest property asset is its right-of-way, covering 2.1 square miles and including roadway surface, amenity zones, sidewalks and overhead and underground utilities (including electricity, telephone, cable, water, sewer and natural gas). Additionally, the vast majority of the City's stormwater management facilities are located in the right-of-way. The right-of-way presents many opportunities to incorporate sustainable practices, such as natural stormwater treatment, which improve the environment in various ways. Smart design of our transportation infrastructure can reduce negative environmental impacts or even provide positive contributions to environmental sustainability.

Goals and policies related to overall sustainability and quality of life include:

- **Comprehensive Plan Goal FG 13:** Encourage a variety of transportation options that provide better connectivity within Shoreline and throughout the region.
- **Goal T I:** Provide safe and friendly streets for Shoreline citizens.
- **Goal T II:** Work with transportation providers to develop a safe, efficient and effective multimodal transportation system to address overall mobility and accessibility. Maximize the people-carrying capacity of the surface transportation system.
- **Policy T1:** Make safety the first priority of citywide transportation planning and traffic management. Place a higher priority on pedestrian, bicycle and automobile safety over vehicle capacity improvements at intersections.
- **Policy T2:** Reduce the impact of the City's transportation system on the environment through the use of technology, expanded transit use and nonmotorized transportation options.

❖ **Policy T10:** Transportation projects and facilities should be sited, designed and constructed to avoid or minimize negative environmental impacts to the extent feasible.

Implementation Strategies

10.1. Minimize curb cuts (driveways) on arterial streets by combining driveways through the development review process and in implementing capital projects.

10.2. Implement the Transportation Master Plan that integrates the City's Complete Streets program. Promote adequate capacity on the roadways and intersections to provide access to homes and businesses.

10.3. Coordinate transportation infrastructure design and placement to serve multiple public functions when possible, i.e. integrate stormwater management, parks development and transportation facility design.

10.4. Implement a coordinated signal system that is efficient and flexible depending on demand or time of day and responsive to all types of users, including transit riders, bicyclists and pedestrians.

10.5. Require evaluation of the transportation impacts resulting from significant land use developments. Each development that requires a Transportation Impact Analysis should have project specific scoping that evaluates all transportation modes, including pedestrian, bicycle and transit. A more specific impact analysis that includes activities such as pedestrian activity near schools or high traffic volumes outside of standard peak period travel times is required to address the unique transportation needs of some land uses.

Discussion: Transportation impact studies generally focus on the impacts of vehicle trips, primarily during the PM peak period. Many uses, such as schools and churches, have significant traffic impacts at times other than the PM peak period and these impacts should be analyzed. Additionally, some uses have transportation demands beyond those of vehicles. For example, schools generate high pedestrian volumes. The needs of these pedestrians and bicyclists should be evaluated to determine if adequate facilities are available to accommodate them. Pedestrian safety must also be considered, as there are likely to be conflicts with vehicular traffic.

10.6. Appropriately sign and mark city roadways, identifying the allowed use(s), speeds and

restrictions for all streets.

Discussion: The various classifications of streets in the City require different types and levels of signage and markings. Arterial streets in Shoreline have centerline stripes to delineate lanes, while non-arterial streets do not. Streets that are part of the City's bicycle system should be marked with separated lanes, sharrows or free standing signage, as appropriate. The appropriate signing and marking shall be required per the Manual on Uniform Traffic Control Devices (MUTCD).

10.7. Develop a safe roadway system. Examples of methods to improve safety may depend upon existing conditions and can include:

- Sidewalks
- Bicycle facilities
- Traffic calming devices
- Two-way center left-turn lanes
- Median islands
- Turn prohibitions
- Signals, illumination, and signage
- Access management
- Other traffic engineering techniques

10.8. Utilize the Street Classification Map as a guide in balancing street function with land uses. Minimize vehicle through-traffic on local streets. Monitor traffic growth on arterial streets and non-arterial streets and take measures to keep volumes within appropriate limits for each street based upon its classification.

10.9. Encourage the use of programs and services that minimize the need to own a car, such as car sharing and increased transit use.

10.10. Encourage the use of technologies that minimize reliance on fossil fuels and reduce greenhouse gas emissions, such as electric and high fuel efficiency automobiles.

10.11. Update the development code to include requirements for project elements that help minimize environmental impacts, such as electric vehicle charging stations, car sharing programs or increased bicycle parking and storage facilities.

10.12. Coordinate with WSDOT to improve operation of and access to I-5 in order to minimize cut-through traffic on Shoreline arterials. Improvements may include ramp metering at all

interchanges in the City (NE 145th Street, NE 175th Street and NE 205th Street) or reconstruction of the I-5 interchange at NE 175th Street to improve traffic flow and efficiency.

10.13. Through the City's development code, encourage transit-oriented development along defined transit corridors.

Neighborhood Involvement

Neighborhood Traffic Safety Program

The City of Shoreline created its Neighborhood Traffic Safety Program (NTSP) to respond to residents' concerns about speeding, cut-through traffic, accidents and pedestrian safety on non-arterial (local) streets. The City developed this program with the help of citizens, school district officials, fire and police department representatives and technical experts.

The NTSP consists of a two-phase approach that incorporates a "3 E's" strategy. The first phase uses "Education" and traffic "Enforcement" to encourage behavior changes that lead to safer streets. The second phase uses "Engineering" solutions such as traffic circles, speed humps, narrowed lanes, chicanes, textured pavement, signage, closures, partial closures and traffic diverters. Through the NTSP, the City works closely with residents to evaluate the traffic conditions on their street and implement solutions best suited to the specific concerns and conditions of their street.

Since the program's inception in 2001, the City has evaluated over 100 locations through the NTSP. In response to these evaluations, more than 30 traffic circles and 20 speed humps have been installed throughout Shoreline. While physical devices may be appropriate for some streets, the solutions for many of the locations identified through this program emphasize enforcement and education through police presence, radar speed display, signage, striping and other pavement markings. **Figure F, Traffic Calming Device Locations**, shows the location of traffic-calming devices throughout the City.

Neighborhood Traffic Action Plans

In 2005, the City began working collaboratively with residents and community groups to create Neighborhood Traffic Action Plans (NTAP) for each of Shoreline's neighborhoods. These plans identify a variety of recommendations aimed at addressing priority traffic and pedestrian safety concerns as identified by residents. The purpose of these plans is to improve

The NTSP consists of a two-phase approach that incorporates a "3 E's" strategy. The first phase uses "Education" and traffic "Enforcement" to encourage behavior changes that lead to safer streets. The second phase uses "Engineering" solutions such as traffic circles, speed humps, narrowed lanes, chicanes, textured pavement, signage, closures, partial closures and traffic diverters.

In 2005, the City began working collaboratively with residents and community groups to create Neighborhood Traffic Action Plans (NTAP) for each of Shoreline's neighborhoods.

the safety, mobility and livability of the City's neighborhoods. Residents in each neighborhood worked with staff to identify key concerns, evaluate possible solutions and develop a list of prioritized recommendations and projects specific to their community. The recommendations will be used to guide short- and long-term traffic and pedestrian safety improvements as funding is identified.

Issues and concerns evaluated in the NTAPs were identified by residents using mail-in surveys, neighborhood meetings and information from Shoreline's Neighborhood Traffic Safety Program. For each neighborhood, a Traffic Advisory Committee was formed, comprised of volunteer residents. The committees worked with City staff to develop and prioritize recommendations to address concerns while fitting in with the vision residents have for their neighborhood. Reducing speeds and cut-through traffic, as well as constructing pedestrian walkways and bicycle lanes, were key priorities identified by many neighborhoods. To address these issues, the NTAPs recommend neighborhood specific improvements such as increased traffic enforcement and driver education, installation of traffic calming devices such as traffic circles and speed humps, and the construction of walkways and bicycle facilities.

The NTAPs are considered active, working plans, that will be revised periodically as new issues and concerns arise. City staff continues to look for funding opportunities to implement elements of the plans through existing programs and sources, including traffic small works projects, grants and the City's Capital Improvement Plan (CIP). A number of projects identified in some of these plans have already been completed, such as clearing vegetation, installing traffic signs and pavement markings and constructing traffic circles. Larger projects such as the installation of walkways on 10th Avenue NE, 17th Avenue NE, 25th Avenue NE and NE 192nd Street have been completed as part of the CIP. These walkways were identified as priority projects by their respective NTAPs. Many of the projects identified in the NTAPs are included in the bicycle and pedestrian system plans, presented in later chapters.

- **Goal III:** Protect the livability and safety of residential neighborhoods from the adverse impacts of the automobile.
- **Policy T3:** Enhance neighborhood safety and livability. Use engineering, enforcement and educational tools to improve traffic safety on City roadways.

❖ **Policy T4:** Communicate with and involve residents and businesses in the development and implementation of transportation projects.

Implementation Strategies

4.1. Work with neighborhood residents to reduce speeds and cut-through traffic on non-arterial streets with techniques that include education, enforcement, traffic calming and signing. Develop alternative street designs that discourage cut-through traffic while maintaining the connectivity of the transportation system.

4.2. In cooperation with the City's police department, continue to monitor traffic accidents, citizen input/complaints, traffic violations and traffic growth to identify and prioritize locations for safety improvements.

4.3. Utilize the Neighborhood Traffic Safety Program process to receive public input and make improvements based on neighborhood concerns and priorities.

4.4. Continue to monitor innovations and changes to standards in the traffic calming and neighborhood stability field and consider implementing them when proven effective and safe and as appropriate situations are available.

4.5. Communicate with citizens regarding transportation improvement projects so that they are aware of the schedule and scope of projects through methods such as:

- Telephone hotlines
- Notices
- *Currents*
- City website

Management Strategies and Programs

Transportation Demand Management (TDM)

Transportation demand management (TDM) seeks to balance the expense of additional roadway capacity projects by reducing the peak period demand for vehicle space. TDM promotes more efficient use of the existing transportation systems by influencing the time, route or mode selected for a given trip. TDM strategies increase travel choices, offering the opportunity to choose how, when and if travel will be by car or in some other way, with the aim of balancing demand with the transportation system.

TDM employs a number of techniques to influence travel mode choice, the time of day that a trip is taken, and even whether or not a trip is made. Options include:

- Modal strategies (vanpools and telecommuting)
- Incentives (bus passes and free or reduced parking rates)
- Specialized services (shuttles)
- Facility improvements (bike lockers, showers at work sites and preferential parking for ridesharing)
- Nonmotorized facilities (availability and access to sidewalks and/or bike trail systems)

With limited resources to build new capacity along with continued population and employment growth, TDM strategies can be cost-effective, complementary and efficient alternatives to additional investment in transportation facilities.

Transportation demand management (TDM) seeks to balance the expense of additional roadway capacity projects by reducing the peak period demand for vehicle space. TDM promotes more efficient use of the existing transportation systems by influencing the time, route or mode selected for a given trip.

- **Goal T IV:** Encourage alternative modes of transportation to reduce the number of automobiles on the road.
- **Policy T5:** Support and promote opportunities and programs so that residents have options to travel throughout Shoreline and the region using modes other than single occupancy vehicles.

Implementation Strategies

5.1. Support educational programs for residents that communicate transportation costs, safety and travel choices. Include specialized programs that emphasize safety to children.

5.2. Support state and federal tax policies that promote transit and ridesharing.

5.3. Develop parking system management and regulations to support alternatives to the single occupant vehicle.

5.4. Incorporate new strategies, as they are developed, into Shoreline's Transportation Demand Management programs that promote or provide alternatives to driving alone.

5.5. Support the development of employer-based programs that encourage employees to minimize single occupancy vehicle trips, such as telecommuting, organizing vanpools and providing showers and secure bicycle parking facilities for bicyclists.

Transportation Systems Management (TSM)

Transportation Systems Management (TSM) is an approach to congestion mitigation that seeks to enhance the capacity of existing systems through improved management and operation of existing transportation facilities.

Transportation Systems Management (TSM) is an approach to congestion mitigation that seeks to enhance the capacity of existing systems through improved management and operation of existing transportation facilities. TSM projects, such as adaptive traffic signal control systems and traffic cameras, can complement major capacity improvements and infrastructure by improving traffic flow and reducing vehicle delay. These techniques are designed to improve traffic flow, air quality and movement of vehicles and goods, as well as enhance system accessibility and safety.

TSM strategies can include:

- Intersection and signal improvements, including signal timing optimization
- Transit Signal Priority
- Freeway ramp metering to remove or diminish bottlenecks
- Monitoring system performance through data collection, traffic cameras, and a central traffic management center
- Special events management strategies

Transit Signal Priority, a communication system between traffic signals and buses, improves transit speed, reliability, and efficiency through measures such as modifying a "green" phase time to allow a bus to pass through the intersection or minimize the time a bus is stopped at an intersection.

In Shoreline, traffic signal optimization can create better flow on arterials and reduce dwell times for all vehicles. City Hall has the capacity for establishment of a traffic management center which will allow staff to monitor traffic conditions in the City in real time and make adjustments, if needed, in response to congestion or emergency circumstances. Ramp metering can help eliminate bottlenecks by controlling the flow of vehicles entering the freeway when it is congested.

Commute Trip Reduction

The Washington State Legislature passed the Commute Trip Reduction (CTR) Law in 1991. This law sets goals for single-occupant commute trip reduction at worksites that employ over 100 regular full-time employees. The City of Shoreline has six sites required to comply with the State's CTR Law. As the City continues to grow and new businesses locate here, additional sites may be subject to the CTR law.

Washington State
Commute Trip Reduction Board

In 2006, the Washington State Legislature passed the Commute Trip Reduction (CTR) Efficiency Act. This law requires local governments in those counties experiencing the greatest automobile-related air pollution and traffic congestion to develop and implement plans to reduce single-occupant vehicle trips. The City of Shoreline is located within the affected urban growth area and is required to have a Commute Trip Reduction Plan.

The CTR Efficiency Act uses partnerships among employers, local jurisdictions, planning organizations, transit systems and the state to encourage employees to ride the bus, vanpool, carpool, walk, bike, work from home or compress their workweek. The major goals for the CTR program are to improve transportation system efficiency, conserve energy and improve air quality.

In accordance with the CTR Efficiency Act, all employers that have 100 or more employees arriving at the worksite between the hours of 6 a.m. and 9 a.m. must develop and implement a program to reduce single occupancy vehicle trips. Each employer's program must be consistent with the jurisdiction's adopted CTR ordinance and programs and policies therein. The City of Shoreline currently has six worksites that are required to implement commute trip reduction strategies. These are:

- City of Shoreline
- CRISTA Ministries
- Washington State Public Health Lab
- Washington State Department of Transportation
- Washington State Department of Social and Health Services – Fircrest School
- Shoreline Community College

Shoreline's CTR Plan is a collection of City-adopted goals and policies, facility and service improvements and marketing strategies about how the City will help make progress for reducing

The CTR Efficiency Act uses partnerships among employers, local jurisdictions, planning organizations, transit systems and the state to encourage employees to ride the bus, vanpool, carpool, walk, bike, work from home or compress their workweek.

the number of drive-alone trips and vehicle miles traveled. It was developed through extensive involvement by employers, transit agencies, organizations and individuals from the City of Shoreline, King County and Snohomish County who helped identify strategies and methods for successful achievement of the goals. The plan helps to support the achievement of the City's vision and the goals of its comprehensive plan.

❖ **Policy T6:** Implement the City's Commute Trip Reduction Plan.

Implementation Strategies

6.1. Work with major employers, developers, schools and conference facilities to provide incentives to employees, tenants, students, and visitors to utilize alternatives other than the single-occupant vehicle.

6.2. Promote alternatives by which employers and/or developers that are not subject to the Commute Trip Reduction Act can encourage their employees and tenants to pursue alternative transportation choices.

6.3. Work with Shoreline Community College and King County Metro to reduce employee and student use of single-occupant vehicles and promote transit and carpooling.

Quality of Life

Complete Streets

Pedestrians, bicyclists, motorists and transit users must be able to safely move along and across a street. Complete Streets are designed and operated to enable safe access for all users. Through enactment of a Complete Streets policy, streets and roads are designed to work for drivers, transit users, pedestrians and bicyclists, as well as older people, children and people with disabilities. The draft federal Complete Streets Act of 2009 defines a Complete Street as "a roadway that accommodates all travelers, particularly public transit users, bicyclists, pedestrians (including individuals of all ages and individuals with mobility, sensory, neurological, or hidden disabilities), and motorists, to enable all travelers to use the roadway safely and efficiently." While each Complete Street is unique, design elements can include sidewalks, bicycle facilities, bus lanes, transit stops, medians, pedestrian signals, curb extensions and other elements.

Complete Streets have many benefits and address several community goals, including:

- **Increase Safety.** Safety is improved through features such as sidewalks, lighting, traffic calming measures and treatments for persons with disabilities. Medians can improve safety by reducing left-turning motorist crashes and providing a refuge for pedestrians crossing the street. On-street parking and amenity zones between the sidewalk and travel lane provide a buffer for pedestrians.
- **Encourage Physical Activity.** The presence of pedestrian and bicycle facilities encourage people to walk or ride a bicycle to their destinations instead of driving.
- **Decrease Contributions to Climate Change.** Through a reduction in automobile trips, vehicle and greenhouse gas emissions are reduced.

Image: courtesy of CH2MHill for the Aurora Project

According to the National Complete Streets Coalition, an ideal Complete Streets policy:

- Includes a vision for how and why the community wants to complete its streets.
- Specifies that 'all users' includes pedestrians, bicyclists and transit passengers of all ages and abilities, as well as trucks, buses and automobiles.
- Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance and operations, for the entire right-of-way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design criteria and guidelines while recognizing the need for flexibility in balancing user needs.
- Directs that Complete Streets solutions will complement the context of the community.
- Establishes performance standards with measurable outcomes.
- Includes specific next steps for implementation of the policy.

❖ **Policy T7:** In accordance with Complete Streets practices and guidelines, new or rebuilt streets shall address, as much as practical, the use of the right-of-way by all users.

Complete Streets are designed and operated to enable safe access for all users. Through enactment of a Complete Streets policy, streets and roads are designed to work for drivers, transit users, pedestrians and bicyclists, as well as older people, children and people with disabilities.

Effective pedestrian lighting is one urban element that helps people feel safe and comfortable enough to get out of their cars and walk in their neighborhoods and throughout the City.

Implementation Strategies

7.1. Implement the Pedestrian, Bicycle and Transit Plans developed in this Transportation Master Plan to support all users of the transportation network.

Street Lighting

Effective pedestrian lighting is one urban element that helps people feel safe and comfortable enough to get out of their cars and walk in their neighborhoods and throughout the City. Adequate lighting can enhance the urban environment, deter undesirable activities and increase safety; however, it also potentially increases power consumption costs, and can have visual impacts (day and night) through glare and unwanted light spill-over onto private property. Proper design of lighting can minimize these impacts.

In addition to lighting pedestrian areas, especially in places where pedestrian activity is important and encouraged, street lighting should adequately illuminate sidewalks and street crossing areas and provide uniform lighting along the full width of the public travel way. Street lighting projects should combine with other urban design elements to create a welcoming pedestrian environment.

Seattle City Light (SCL) is the provider for street lighting in Shoreline. Nearly all of the street lights are installed, maintained and operated by SCL, and Shoreline pays a monthly fee to SCL for maintenance and power. A small percentage of street lights is owned by the City of Shoreline, with King County providing maintenance service to these lights when necessary. When new street lights are needed, the City requests installation by SCL. New street light installation requests from residents are evaluated by City staff to determine if additional lighting is appropriate. The City evaluates citizen requests to ensure appropriate placement at intersections and separation between midblock street lights. If it is determined that additional lighting is appropriate, the City will work with SCL to have it installed.

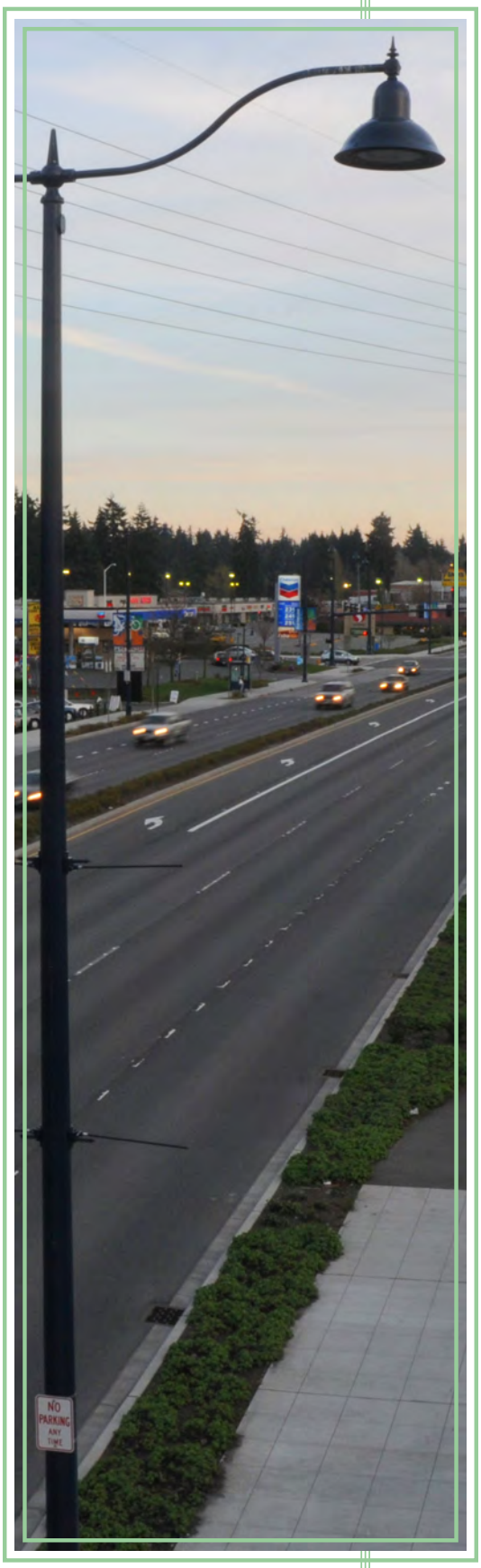
❖ **Policy T8:** Develop a comprehensive detailed street lighting and outdoor master lighting plan to guide ongoing public and private street lighting efforts.

Implementation Strategies

8.1. Work with SCL to develop and implement a master lighting plan. Due to evolving lighting technologies and lamp fixtures, the City should review this plan on a regular basis.

8.2. The City's master lighting plan should include the following considerations:

- Light level standards
- Reduction of light pollution to enhance star gazing
- Nighttime safety criteria
- Annual operational and maintenance costs
- Streetlight lighting
- Streetlight pole height standards
- Criteria for lamp fixture choice
- Lamp technology, including using LED bulbs for energy efficiency
- Color rendering and light spectrum criteria



Stormwater/Surface Water Management

Stormwater Management

Urban landscapes are covered with impervious surfaces, such as rooftops, streets, sidewalks and parking lots. All impervious surfaces contribute to stormwater runoff, with roads contributing a significant portion. Approximately 46 percent of the City is covered with impervious surfaces. The City's transportation and stormwater management networks have a strong relationship with each other. Over 90 percent of Shoreline's stormwater management facilities are located in the right-of-way, mostly in closed, piped systems. There are some facilities located in City parks, open ditches and storm water ponds. As an alternative to conventional stormwater systems, new "green" technologies have been developed and continue to evolve, which allow the right-of-way to be used for stormwater treatment methods that more closely mimic natural stormwater hydrology.

The Washington State Department of Ecology (DOE) establishes the stormwater flow control and water quality requirements for roadway projects. Integration of stormwater design into roadway design is a required priority for transportation projects.

It is estimated that 20-30 percent of the cost of a new roadway project is related to the installation of stormwater management components such as curb, gutter, pipes and inlets. The City collects a surface water fee from each residential and commercial property, for a total annual contribution of approximately $3 million to the City's Surface Water Utility fund.

Surface Water Management Plans and Regulations

City of Shoreline Surface Water Master Plan and Basin Plans

The Surface Water Master Plan is the City's Surface Water Utility five-year plan that prioritizes drainage and water quality projects and maintenance programs within the City's stormwater system. It identifies surface water management needs, with an emphasis on operations. Updated every five years, this plan is compatible with the City's Comprehensive Plan and the Shoreline Sustainability Strategy. The 2011 Surface Water Master plan emphasizes the development of basin plans for each major drainage basin in the City. Each basin plan will:

- Assess surface water management conditions
- Identify surface water projects and programs
- Map floodplains (where applicable)
- Identify potential opportunities for Low Impact Development (LID) and green technologies through maintenance programs and/or new surface water capital construction projects

National Pollutant Discharge Elimination System (NPDES) Permit and City of Shoreline Stormwater Management Manual

As a municipality, the City of Shoreline is required to meet National Pollutant Discharge Elimination System (NPDES) permit obligations to discharge stormwater to waters of the state of Washington. Under this permit, the City adopted the 2005 Department of Ecology Stormwater Management Manual, which provides approved standards and practices to help meet surface water standards in the NPDES permit.

The City's Surface Water Management code requires implementation of LID for public and private development in Shoreline. The Stormwater Management Manual and other resources provide technical guidance for implementing LID to help ensure that surface water discharged to waters of the state meet the NPDES permit requirements.

By 2014, Shoreline must justify to the Department of Ecology how LID requirements have been integrated into the City's roadway design standards. Implementation of LID is likely to be required by the City's 2012 NPDES Permit. This requirement would trigger revision of codes, ordinances and standards that apply to development. Ordinances that would require change include zoning, subdivision, parking lots, landscaping, clearing and grading, and tree removal.

Existing Stormwater Facilities in the Right-of-Way

The existing stormwater facilities and conditions that share the right-of-way with transportation infrastructure include conventional systems, emerging and green technology and low impact development facilities. While each type of system or technology helps to manage stormwater flow and water quality, they function in different ways, and certain systems may not be appropriate or entirely adequate for some conditions. Soil conditions may not support necessary infiltration rates to capture and treat stormwater with a natural system, and therefore would require a conventional system. The challenge facing the City is balancing natural stormwater management with the creation of safe pedestrian and sidewalk facilities.

Conventional Systems

Conventional stormwater systems make up approximately 90 percent of the City's stormwater management facilities. These include underground pipes and tanks that collect, treat and disperse stormwater into receiving waters, such as a stream, lake or wetland. Above ground facilities include conveyance ditches and stormwater ponds.

Low Impact Development and "Green" Stormwater Management Practices

Stormwater management and treatment practices continue to evolve and improve. LID is an innovative stormwater management approach that attempts to mimic the natural stormwater hydrology of pre-developed conditions. LID uses design techniques that infiltrate, filter, store, attenuate, evaporate and detain runoff close to its source. LID reduces the amount of stormwater runoff created by impervious surfaces through practices such as reducing impervious surfaces or implementing infiltration. LID features can be located above or below ground. Many recent innovations have focused on utilizing "green" natural processes to treat stormwater and control. Examples of green practices and technologies include:

- **Swales.** Swales are vegetated, open channels that accept runoff and convey it in broad, shallow flows. Swales reduce stormwater volume and improve water quality through infiltration. The swale vegetation reduces velocity, which can reduce downstream erosion.
- **Bioretention.** Bioretention is a process that uses the characteristics of some soil types to reduce runoff and improve water quality. Bioretention soils store surface water, allow infiltration, and remove pollutants through biological and chemical reaction. Bioretention features can be placed in a variety of locations including rain gardens, planter boxes or curb extensions.
- **Filter Media.** Another method available to clean stormwater is the use of filter media. Specially designed cartridges are integrated into the stormwater system. These cartridges remove deposits, suspended solids, minerals and bacteria from the runoff water before it is allowed to infiltrate into the soil or be discharged into a conventional system.
- **Permeable Pavement.** Rather than creating an impervious surface where stormwater flows across, permeable pavement allows stormwater to filter through

The City's transportation and stormwater management networks have a strong relationship with each other. Over 90 percent of Shoreline's stormwater management facilities are located in the right-of-way, mostly in closed, piped systems.

It is estimated that 20-30 percent of the cost of a new roadway project is related to the installation of stormwater management components such as curb, gutter, pipes and inlets.

Low Impact Development is an innovative stormwater management approach that attempts to mimic the natural stormwater hydrology of pre-developed conditions. LID uses design techniques that infiltrate, filter, store, attenuate, evaporate and detain runoff close to its source.

The improvements to Aurora Avenue N from N 165th Street to N 205th Street and those along N 175th Street in front of City Hall include a variety of green technology features including Silva Cells (root box system), Filterra Bioretention Systems, rain gardens, pervious sidewalk pavers, bioswales and ecology embankments.

it while still providing a durable walking, riding or driving surface. Permeable pavement comes in a variety of forms, such as permeable concrete, permeable asphalt, permeable interlocking concrete pavers and grid pavers. Permeable pavement systems have an aggregate base that provides structural support, runoff storage and pollutant removal through filtering. Different systems allow water to filter through open grades in the surface (as with permeable concrete) or small gaps between the individual units (as with pavers).

- **Street Trees.** Street trees serve several purposes, from reducing the urban heat island effect and stormwater runoff to improving the urban aesthetic and air quality. In many cases, street trees are given very little space to grow and the soil becomes compacted during the construction of a roadway. Adequate soil volume and a good soil mixture greatly benefit the health of street trees. Large tree boxes, structural soils, root paths, or systems that prevent soil compaction under sidewalks or other paved areas help expand root zones, providing tree roots with the space they need to grow to full size, resulting in healthier street trees.

Shoreline has integrated green technology into several recent capital improvement projects. In 2010, the City installed bioretention facilities and permeable asphalt sidewalks on the 17th Avenue NE Green Streets Demonstration Project. The improvements to Aurora Avenue N from N 165th Street to N 205th Street and those along N 175th Street in front of City Hall include a variety of green technology features such as Silva Cells (root box system – see diagram), Filterra Bioretention Systems, rain gardens, pervious sidewalk pavers, bioswales and ecology embankments.

Green Streets

Streets that implement natural stormwater management techniques are commonly referred to as “green streets.” Green streets combine natural stormwater management techniques, landscaping, walkways, pavement reductions and other improvements in innovative ways to connect parks, ecosystems and neighborhoods. Because so much of the City’s stormwater management system is within the right-of-way, this presents a great opportunity for stormwater management utilizing green infrastructure. One of the primary benefits of green streets is the use of natural processes and landscaping to provide improved water quality. Other benefits of green streets include:

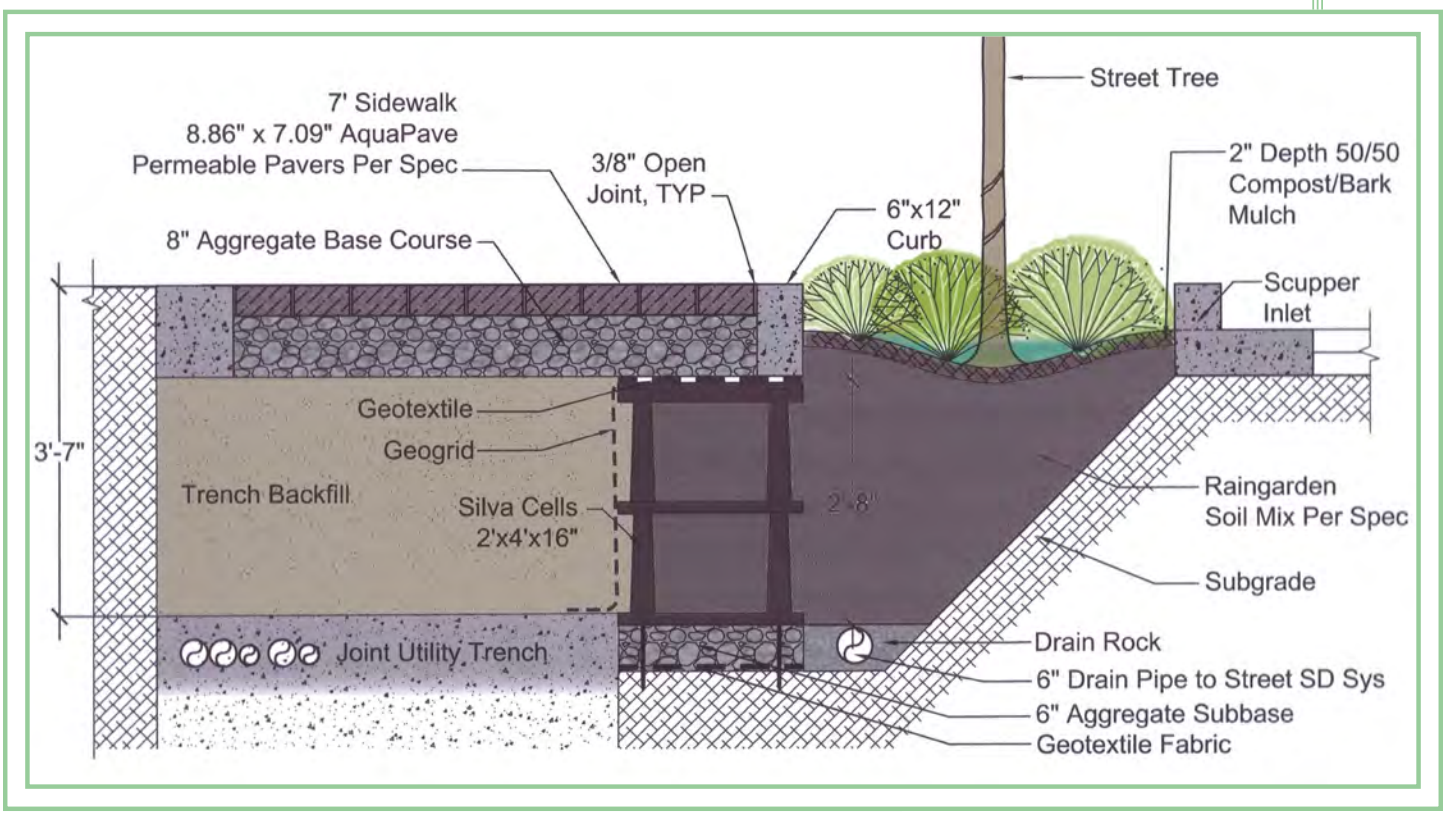


Image: courtesy of Deep Root Green Infrastructure, LLC

- An integrated system of stormwater management within the right-of-way
- Reductions in the volume and speed of stormwater entering the City's storm drainage system, which in turn reduce the volume and peak flows discharged via pipes into creeks, streams and other water bodies
- Improvements to local air quality by providing interception of airborne particulates and shade for cooling
- An improved pedestrian experience.

While the design of green streets can vary, the functional goals related to stormwater are the same, including providing source control of stormwater and limiting its transport and pollutant conveyance to the traditional stormwater collection system. Green streets may feature many stormwater LID elements, as well as reduced vehicle speeds, enhanced pedestrian amenities and bicycle facilities.

Shoreline constructed its first green street demonstration project in 2010. Located on 17th Avenue NE between NE 145th Street and NE 150th Street, the improvements within the right-of-way were funded by the City and residents will help maintain these new features. This approach focuses on engaging the surrounding neighbors through education and collaboration. The purpose of this project is to recognize the benefits of green infrastructure on the human and environmental community

Green streets combine natural stormwater management techniques, landscaping, walkways, pavement reductions and other improvements in innovative ways to connect parks, ecosystems and neighborhoods.

Shoreline constructed its first Green Street demonstration project in 2010.

and to develop and incorporate these ideas and concepts on residential streets. This demonstration project enables safe access for pedestrians and bicyclists of all ages and abilities, as well as motorists, provides natural drainage and stormwater management and enhances the natural habitat and human community through the use of LID strategies.

❖ **Policy T9:** Use Low Impact Development techniques or green street elements except when determined to be unfeasible. Explore opportunities to expand the use of natural stormwater treatment in the right-of-way through partnerships with public and private owners.

Implementation Strategies

9.1. Identify potential stormwater management techniques early in the design of transportation projects. The Surface Water Utility may contribute funding to the surface water components of transportation projects.

Discussion: The types of facilities selected for inclusion with transportation projects have a long-term financial impact on the Surface Water Utility. Transportation infrastructure needs can be best planned for by coordinating the drainage requirements of transportation projects as part of the City's 6-year Capital Improvement Plan.

9.2. As new drainage facilities are required or optionally proposed for transportation projects, green technologies will be considered for inclusion. Review and evaluation of alternatives for surface water management should include costs of installation, maintenance and life cycle costs.

9.3. Integrate features of green streets throughout the City's transportation system, including arterials and local streets. Designate green streets on select local streets to help connect schools, parks, ecosystems and neighborhoods. Utilize the standards identified in the Master Street Plan when designing roadway improvements for green streets and combine green street design with traffic calming techniques on residential streets where appropriate.

Maintenance

All transportation facilities require maintenance. The City of Shoreline maintains and repairs all of its public streets and sidewalks. The City's municipal code requires property owners to maintain the sidewalk adjacent to their property. This includes keeping it free of vegetation intrusion, ice and snow. Most property owners are probably unaware of their responsibility. The City is responsible for vegetation removal in

the right-of-way during emergencies in order to remove hazards and protect public safety.

Damage to the City's streets and sidewalks comes from many sources. Standard wear and tear through regular use, seasonal temperature changes (including freezing and thawing cycles, which create and expand cracks), improper installation or use of materials at the time of construction and vehicular accidents all impact the quality of the roadway or sidewalks. Street trees can also severely damage roadways and sidewalks; damage can be a result of poor tree selection, amenity zones that are too small for trees and lack of protection mechanisms to prevent roots from intruding into the sidewalk or roadway areas. It is generally less expensive to remove trees that are damaging sidewalks than continuously repair sidewalks damaged by tree roots.

- **Goal T V:** Maintain the transportation infrastructure so that it is safe and functional.
- **Policy T11:** Develop a regular maintenance program and schedule for all components of the transportation infrastructure. Maintenance schedules should be based on safety/imminent danger and on preservation of resources.

Implementation Strategies

11.1. Inventory and inspect the transportation infrastructure.

11.2. Maintain a pavement management system.

11.3. Upgrade the City's signal system so that it is responsive, fully interconnected, and moves people efficiently.

11.4. Ensure that pedestrian facilities are maintained properly. The table below describes who is responsible for maintenance of pedestrian facilities.

	Landscaping responsibility (behind the curb/beyond the asphalt edge)	Sidewalk clearing/ cleaning	Sidewalk repair	Trees (in right-of-way, behind the curb/beyond the asphalt edge)	Driveway Aprons
Principal Arterials	City	Adjoining property owner	City	City	Adjoining property owner
Minor and Collector Arterials, Local Primary Streets	City	Adjoining property owner	City	City	Adjoining property owner
Local Secondary Streets and Green Streets	Adjoining property owner	Adjoining property owner	City	City	Adjoining property owner

11.5. Educate residents of their responsibility to maintain pedestrian walkways and the need to keep pedestrian facilities free from obstructions.

Discussion: Walkways need to be safe and clear. Property owners are responsible for ice and snow removal and maintenance of vegetation on private property that can encroach into walkways adjacent to their property. Property owners must also be aware of the need to keep objects, such as vehicles and waste bins, out of walkways and the roadway. The City needs to provide information/guidelines to property owners to explain the City's requirements for maintaining landscaping in the right-of-way and keeping the sidewalk clear and clean. An enforcement program is needed to ensure sidewalks are kept clear of intruding vegetation. The City can include articles in its *Currents* newsletter explaining these requirements and can

coordinate with utility providers to assist with education, public outreach and notification by including informational inserts with utility statements.

11.6. Ensure the City's maintenance program keeps pedestrian and multi-purpose facilities (such as the Interurban Trail) in safe, operable conditions.

11.7. Establish priorities for tree and vegetation maintenance and removal on primary arterials, minor arterials, collector arterials and local primary streets.

11.8. Expand and/or develop a program to address sidewalk damage from tree roots and continue to plant street trees that are appropriate for the built environment.

Discussion: As trees grow and mature, they have the potential to damage sidewalks and streets. This is already occurring in many areas of the City. The City's maintenance program should allow for the removal of trees when there is no mechanism available to prevent damage. Whenever trees are removed, appropriate street trees must be planted in their place. Street tree removal should be timed to prevent removal of too many trees at one time.

Discussion: The City should explore different technologies that accommodate the placement of trees in the right-of-way. In some cases, it may be appropriate to have an amenity/landscaping area behind the sidewalk, rather than in front, to address root damage from trees.

11.9. Notify the public when tree removal in the right-of-way is planned.

11.10. Develop a mechanism for new development to maintain internal walkways, trails, fences or other public amenities constructed as a part of private development.

11.11. Ensure that trees planted in the right-of-way have root systems or root management systems appropriate for sidewalk proximity. Mechanisms to prevent sidewalk damage from roots should be installed with new trees as needed.

Freight and Mobility System

An adequate highway system is vital to the economic well-being of Shoreline. City businesses and residents rely on freight shipped via trucks. Truck sizes range from single-unit trucks, such as package delivery, moving and garbage trucks that navigate through neighborhoods, to large semi truck-trailers delivering vehicles and freight to local businesses. As development occurs and new sidewalks are built and intersections are modified to serve multiple modes of transportation, the roadways must be designed to accommodate trucking needs safely.

Trucks delivering wholesale and retail goods, business supplies and building materials throughout Shoreline contribute to and are impacted by traffic congestion. Moving larger trucks on city streets can be challenging in some locations. By recognizing truck routing and design needs when designing transportation projects, serious operating issues can be avoided in the future. The City must ensure that trucks have the ability to move to and through Shoreline while ensuring that local streets are not unnecessarily impacted by cut-through truck traffic. For example, development of a back alley road for businesses along Aurora Avenue N would provide extra access for freight deliveries while moving trucks off of the heavily used corridor. **Figure G, Truck Routes**, shows the City's identified truck routes.

- **Goal T VI:** Develop a transportation system that enhances the delivery and transport of goods and services.
- **Policy T12:** Direct service and delivery trucks and other freight transportation to appropriate streets so that they can move through Shoreline safely and efficiently while minimizing impacts to neighborhoods.

<u>Implementation Strategies</u>

12.1. Support improving freight dependent business access.

Discussion: Many Shoreline businesses are dependent on the ability to get freight delivered, loaded and unloaded as efficiently as possible. As roadway improvements are made, the changes must consider the truck routing needs.

12.2. Identify measures to minimize conflicts between trucks and other transportation modes.

Discussion: Businesses normally require space for loading and unloading activities, which is often provided by trucks. In the absence of an alley for access, these activities must take place in front of the business. In urban areas with pedestrian-friendly designs, such as curb bulb-outs at intersections to shorten pedestrian crossing distances, incorrectly designed curb bulb-outs can hinder and limit truck access.

12.3. Incorporate truck design needs for arterial and non-arterial streets in the City's development standards. Use the adopted Truck Route map to ensure these roads can accommodate larger trucks.

Discussion: The minimum design vehicle for all roadways is a small truck, type SU-30. However, depending on known truck routing and size of trailers used, the minimum design size can be larger.

12.4. Identify overlegal truck routes within the City and incorporate an overlegal vehicle design standard in the City's development standards to accommodate these loads.

12.5. Include freight needs in the criteria used for prioritizing repaving projects.

As the region grows, Shoreline anticipates increases in traffic that include trip originations, trip ends and pass-through traffic. New housing, employment and shopping opportunities will increase the need for travelers to be able to get to, into and through the City to reach their destinations.

Discussion: Roadways that are classified for transit and truck use handle heavier loading than other streets. As a result, bus and truck traffic shorten the life span of existing pavements, causing them to need repaving more frequently. These roadways should be designed with stronger pavement to handle the extra loading, which can be done as roads are overlaid.

12.6. Develop a plan for business access streets or alleys to provide freight loading zones on less-heavily traveled roadways.

12.7. Discourage truck traffic through residential neighborhoods during typical sleeping hours.

12.8. Work with developers and property owners along the Aurora Avenue North corridor and in North City to plan business access streets or alleys as a part of redevelopment.

Regional Coordination

The transportation system in the City of Shoreline is affected by a dynamic and complex governance structure. Federal, state, regional and local governmental entities make funding, policy, and project decisions that affect Shoreline. These include Washington State Department of Transportation (WSDOT), Puget Sound Regional Council (PSRC), Sound Transit, King County (including Metro Transit), Snohomish County, Community Transit, the neighboring cities of Seattle, Lake Forest Park, Edmonds and Mountlake Terrace and the town of Woodway. The City of Shoreline can play an important role in facilitating regional action to provide and fund convenient travel choices.

As the region grows, Shoreline anticipates increases in traffic that include trip originations, trip ends and pass-through traffic. New housing, employment and shopping opportunities will increase the need for travelers to be able to get to, into and through the City to reach their destinations. If businesses in Shoreline are to be successful and thrive, the City and region must provide a broad range of multimodal improvements to address congestion and mobility needs.

Shoreline will benefit from an active role in representing the City's interests and the Comprehensive Plan goals and policies in regard to transportation issues. Given the multiplicity of forums, the City should focus its efforts on agencies that can provide funding or services to the City and

those agencies whose policies affect transportation in Shoreline.

❖ **Goal T VII:** Coordinate the implementation and development of Shoreline's transportation system with its neighbors and regional partners.

❖ **Policy T13:** Implement a strategy for regional coordination that includes the following activities:

- Identify important transportation improvements in Shoreline that involve other agencies. These may include improvements that will help keep traffic on I-5 and off of Shoreline streets, such as changes to on-ramp metering and construction of a southbound collector-distributor lane from NE 205th Street to NE 145th Street.
- Remain involved in federal, state, regional and county budget and appropriations processes.
- Participate in regional and county planning processes that will affect the City's strategic interests.
- Form strategic alliances with potential partners, such as adjacent jurisdictions or like-minded agencies.
- Develop legislative agendas and meet with federal and state representatives who can help fund key projects.
- Develop a regional legislative agenda and meet with area representatives to PSRC, Sound Transit and King County Council.
- Develop partnerships with the local business community to advocate at the federal, state and regional levels for common interests.

Implementation Strategies

13.1. Develop interlocal agreements with neighboring jurisdictions for development impact mitigation, coordination of joint projects, and management of pass-through traffic. Interjurisdictional projects include:

- Active pursuit of annexation of the NW/N/NE 145th Street right-of-way. Coordinate a study including WSDOT, City of Seattle, King County and Sound Transit to determine the ultimate improvements and a funding plan.
- Consideration of annexing N/NE 205th Street to the centerline.
- Working with adjacent jurisdictions and stakeholders to jointly study the N/NE 205th Street and Bothell Way NE corridors to develop level of service standards as part of a plan and funding strategy for future improvements.

13.2. Working with neighboring jurisdictions to reduce air quality impacts and manage stormwater runoff from the transportation system.

13.3. Coordinate with and support state agencies, transit providers and neighboring jurisdictions in the development and implementation of transportation improvements of regional significance, including:

- Improvements to NW/N/NE 145th Street
- Reconstruction of the overpass at SR 104 and Aurora Avenue N (including transit capacity improvements)
- Improvements to the I-5 interchanges at NE 145th Street, NE 175th Street and NE 205th Street
- The City of Seattle's Aurora Corridor Improvement project.

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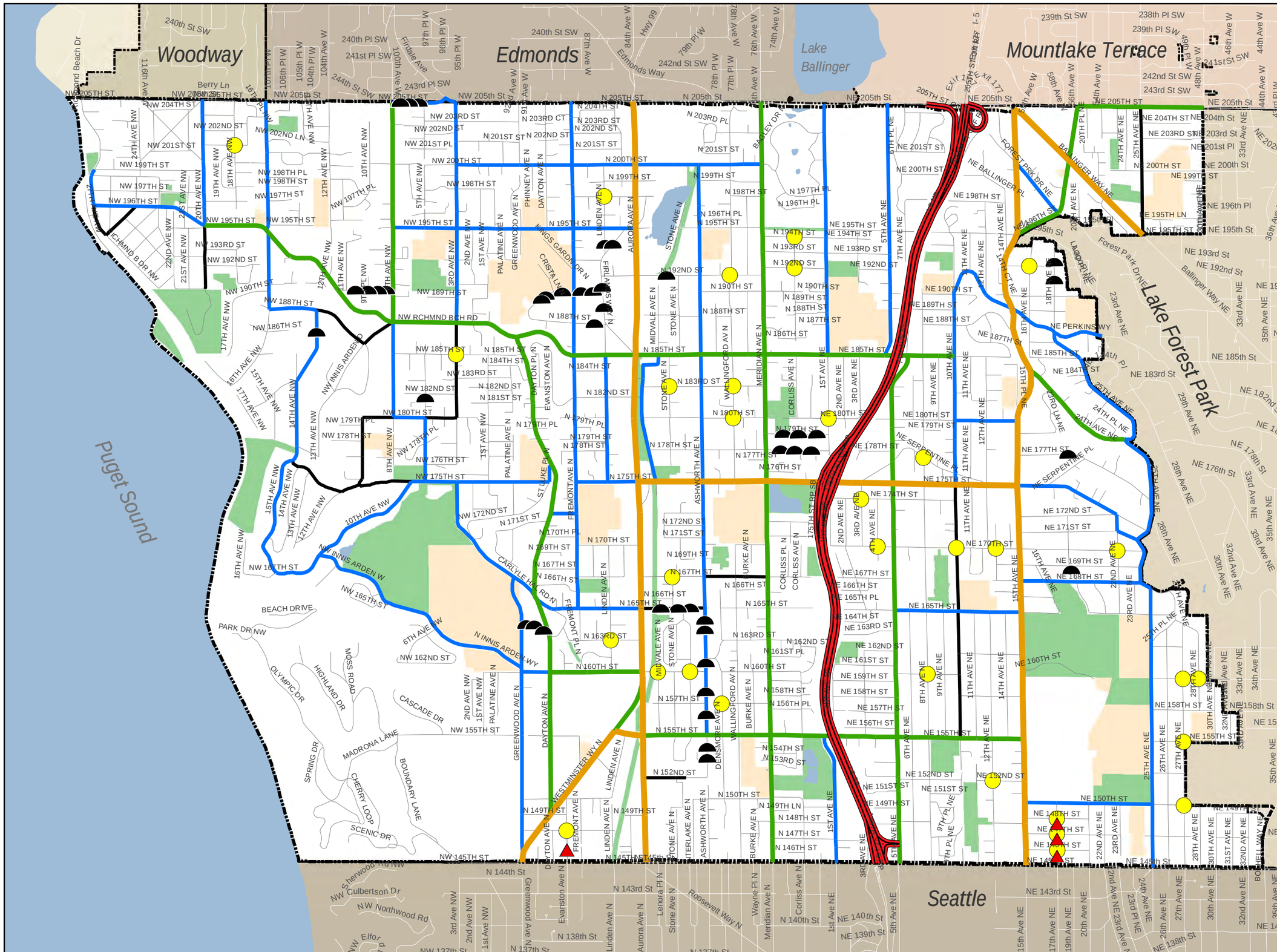


Figure F

Traffic Calming Device Locations

Legend

- Traffic Circle
- Chicane*
- Speed Hump
- School Property

Street Classifications:

- Interstate

Arterial Streets:

- Principal Arterial
- Minor Arterial
- Collector Arterial

Non-Arterial Streets:

- Local Primary Street
- Local Secondary Street

** Chicanes are a series of usually 3 Curb Bulbs*

0 500 1,000 2,000 3,000 Feet

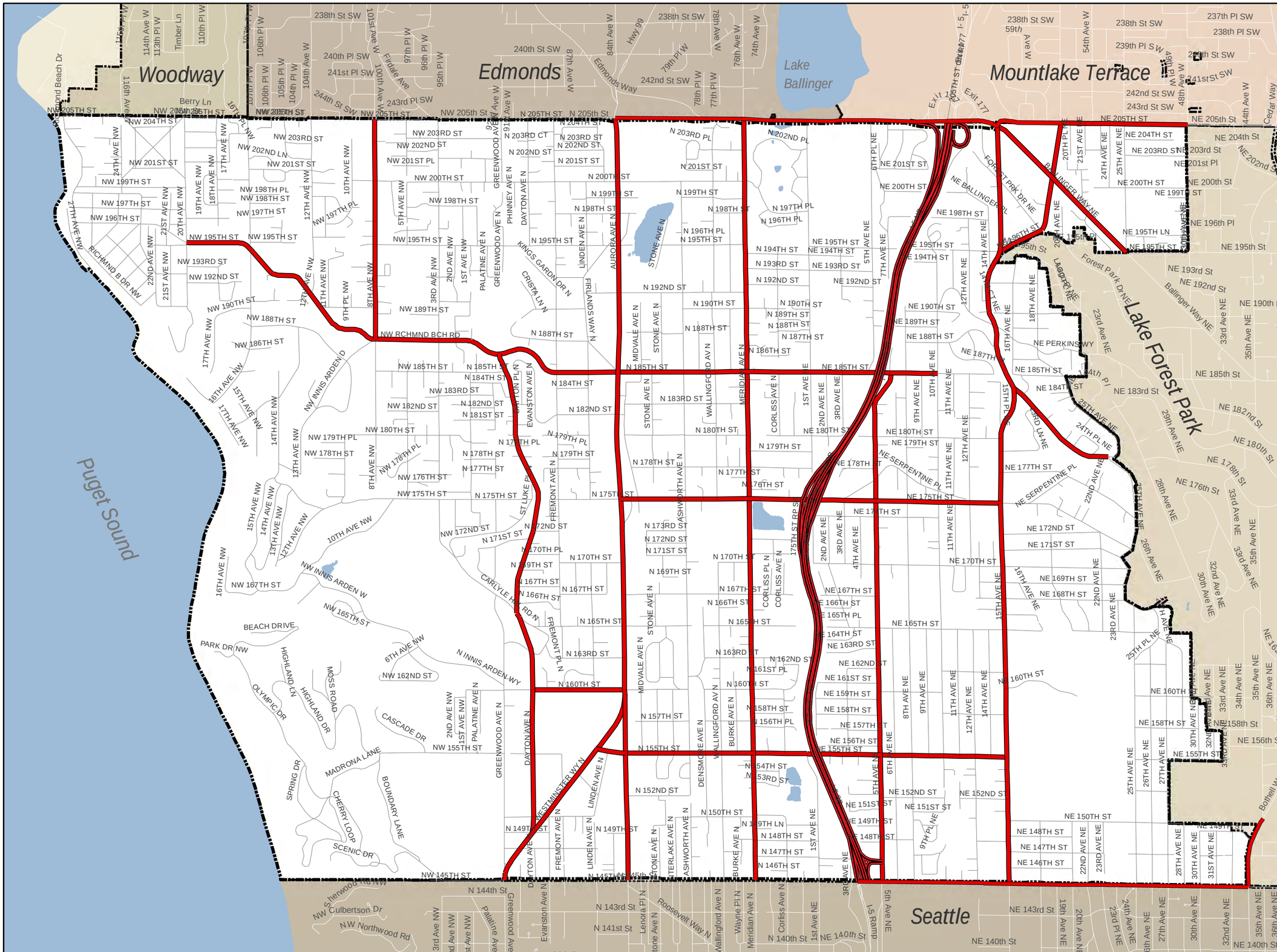
1 inch = 1,919 feet

CITY OF SHORELINE

N S E W

Figure G

Truck Routes



Bicycle Plan

In 2008, the City of Shoreline completed the Interurban Trail. Running north-south through the City, this 3.25-mile bicycle and pedestrian trail serves as the "spine" of the bicycle system plan for the City and connects commercial areas, neighborhoods, transit and parks. Shoreline's trail is part of a regional trail that connects to the Interurban Trail in the City of Edmonds to the north and bicycle facilities to the south in the City of Seattle.

Bicycle Plan

We Like to Bike

Travel by bicycle is a popular transportation option in the City of Shoreline. Residents bicycle to commute to work, school, for exercise and recreation, to run errands and to travel throughout the City and the region. The ability to bicycle safely and reach destinations is important to ensuring that bicycling is a convenient and appealing transportation option.

In 2008, the City of Shoreline completed the Interurban Trail. Running north-south through the City, this 3.25-mile bicycle and pedestrian trail serves as the "spine" of the Bicycle System Plan for the City and connects commercial areas, neighborhoods, transit and parks. Shoreline's trail is part of a regional trail that connects to the Interurban Trail in the City of Edmonds to the north and bicycle facilities to the south in the City of Seattle. The Interurban Trail system is extensive, reaching north to Everett and continuing in cities south of Seattle. In Shoreline, the Interurban Trail, along with the few existing bicycle lanes in the City and the overall grid pattern of the street system, provide the basis for development of an extensive bicycle system that connects residences, activity centers, shopping, employment and transit.

Another regional trail, the Burke-Gilman Trail, runs along Lake Washington near Shoreline. The Burke-Gilman Trail is 18.8 miles long from the City of Seattle to the City of Bothell. It runs along the Lake Washington Ship Canal and western shore of Lake Washington to the Sammamish River. In Bothell, the Burke-Gilman Trail joins with the Sammamish River Trail, which in turn connects to an extensive network of trails in east King County.

Bicycle Issues in Shoreline

The City has several challenges and issues to address when creating a bicycle system. Bicycling in Shoreline is influenced by the City's existence as a fully built-out city in an urban environment together with the natural topography of the area.

Facility Design and Integration

Developed as a suburban community, Shoreline is an auto-dependent city. Four major state highways and an interstate freeway pass through or are immediately adjacent to the City.

Arterial and non-arterial streets are primarily laid out in a grid pattern, providing convenient access to all areas of the City. Most of the commercial and employment activity in the City is concentrated around Aurora Avenue N, a highly auto-oriented state route. Sidewalks are limited throughout most of the City, and bicycle facilities, such as lanes, signage and paths, are even less prevalent. Unlike some cities, bicyclists are permitted to use sidewalks in Shoreline.

As Shoreline continues to grow, increasing numbers of automobiles will be using the City's streets. The City will need to accommodate this growth to ensure a safe, efficient flow of vehicles throughout the community. However, the demand for bicycle facilities is already present and expected to increase as residents travel to all types of destinations via bicycle in order to save money, as a way to reduce their contributions toward climate change, reduce emissions for cleaner air and multiple other reasons. The redevelopment of existing roadways, implementation of traffic calming measures and development of new transit facilities within the City must all take into consideration the need and demand for bicycle amenities, such as bicycle lanes, shared travel lanes and signage, and parking, and integrate them appropriately and in accordance with the City's Bicycle System Plan.

One option for integration of bicycle facilities into existing roadways is rechannelization. Rechannelization can be used to change the width of travel lanes, modify how many lanes are present in the roadway or provide for different uses. A four-lane undivided road can be rechannelized into three lanes – one lane in each direction and a center turn lane for both directions of traffic. When the number of lanes is reduced, the remaining roadway can often be used to create bicycle lanes. This type of rechannelization provides improved access, mobility, quality of life and livability and can help the City meet other economic and community goals. In 2003, a project to rechannelize 15th Avenue NE from four to three lanes was completed between NE 150th Street and NE 172nd Street.

System Continuity

Shoreline is bounded by several cities, each with their own bicycle systems and amenities. While bicycle facilities in different jurisdictions may have similar elements, such as bicycle lane width, the unique needs of each city guide the development of their individual bicycle systems. As a result, there is often little continuity between systems when City

boundaries are crossed. This can result in confusion for riders, especially those unfamiliar with a route. Coordination between jurisdictions regarding signage, facility type and design can help create cohesive regional bicycle systems that are easily used by all riders.

Natural Environment and Topography

While the City of Shoreline has an established grid street system that lends itself well to a city-wide bicycle system, the natural environment of the City presents challenges to the creation of a bicycle system and its users.

Shoreline is generally flat for riders traveling north or south. Most grade changes in these directions are relatively gradual. However, the City's topography changes quite significantly from west to east. Beginning on the west side at the shore of Puget Sound, riders must climb steep hills to reach the center of Shoreline. Continuing east, there are several hills and valleys of varying grades until a rider reaches the eastern City limits. While travel further east to the Burke-Gilman Trail in neighboring Lake Forest Park is almost exclusively downhill, it is a climb for riders heading to Shoreline. Environmentally sensitive areas throughout the City can also influence the location and type of bicycle facilities.

Built Environment

In addition to the natural environment, the built environment of Shoreline also impacts the development of a bicycle system. I-5 runs north-south through the City. This presence is a physical barrier to east-west travel, with limited locations where riders can cross over or under the freeway. Several locations where riders can cross the freeway are highly congested with vehicles and no bicycle facilities exist, creating an uncomfortable riding environment.

Signage

Signs play an important role in helping bicyclists navigate a city's bicycle system. Shoreline currently has very little directional signage oriented toward bicycle riders, most of which is located on the Interurban Trail. Expansion of the City's bicycle system will need to be accompanied by associated signage that identifies routes for travel and wayfinding signage to help bicyclists reach their destinations.

Shoreline's Bicycle Plan

Bicycling has the potential to serve several roles for Shoreline residents including improved transportation choices, congestion reduction, lower transportation costs, improved physical health and reduced contributions to climate change through fewer greenhouse gas emissions. The City's Bicycle Plan outlines priorities, policies and goals for bicycle transportation throughout Shoreline. The plan also describes the existing bicycle system in Shoreline and identifies goals, policies and specific projects needed to create a complete bicycle system in Shoreline as well as implement the City's vision for bicycling. Through implementation of this plan, Shoreline will have a bicycle system that serves the commuting, recreational and circulation needs of the City's residents.

Existing Facilities and Ridership

Existing Bicycle Facilities in Public Right-of-Way

Shoreline is a fully built-out community with almost all of the land in the City developed. Although it is a fairly young city having incorporated in 1995, most of the development in Shoreline occurred while the area was a part of unincorporated King County. Almost no bicycle facilities were present prior to incorporation.

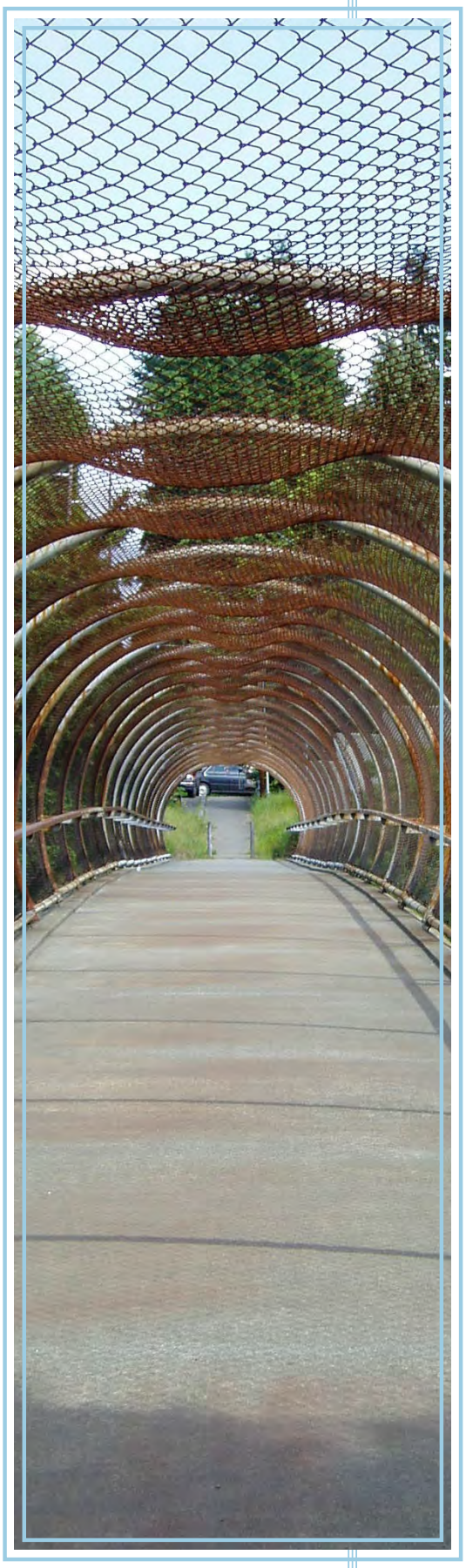
Shoreline's terrain lends itself fairly well to bicyclists traveling north-south. However, the ridges and ravines pose greater challenges for east-west bicycle travel, especially around North City, Richmond Beach, Innis Arden, Briarcrest and Shoreline Community College. Bicyclists in Shoreline must generally ride in traffic due to the lack of wide shoulders or exclusive bike lanes.

On-street bike lanes are located at the following locations:

- Fremont Avenue N between N 190th Street and N 195th Street (southbound only)
- N/NE 155th Street between Midvale Avenue N and 5th Avenue NE
- N 175th Street between Fremont Avenue N and Aurora Avenue N
- N/NE 185th Street between Midvale Avenue N and 1st Avenue NE
- 15th Avenue NE between NE 150th Street and NE 175th Street
- N 200th Street between Ashworth Avenue N and Meridian Avenue N, as part of the Interurban Trail
- Meridian Avenue N between N 200th Street and N 205th Street
- NE 205th Street between approximately 17th Avenue NE and 19th Avenue NE

I-5 serves as a transportation challenge to all transportation users. Bicyclists can cross under I-5 using bicycle facilities on NE 155th Street and over I-5 on the NE 195th Street pedestrian overpass (dismounting is suggested due to the narrow walkway). Bicyclists can also cross I-5 at NE 145th Street, NE 175th Street, NE 185th Street and NE 205th Street.

The spine of the City's bicycle system, the Interurban Trail, was completed in 2008. It is 3.25 miles long and runs from N 145th Street to N 205th Street, roughly parallel to Aurora Avenue N. The trail is located almost exclusively within the former Interurban streetcar line right-of-way, which is now the Seattle



City Light electrical power transmission corridor. This trail serves as a bicycle and pedestrian facility with a 12-foot wide asphalt path along the majority of its length. The segment between N 175th Street and N 185th Street, which passes through the Town Center, is constructed of scored concrete, giving a more urban feel to this section of the trail while discouraging excessive speeds. Two bridges on the trail provide elevated crossings over N 155th Street (at Aurora Ave N) and Aurora Avenue N (at N 157th Street). All other street crossings are at grade. The Interurban Trail connects with bicycle facilities to the south in the City of Seattle, as well as bicycle facilities to the north in the City of Edmonds. The Interurban Trail includes two distinct trailheads at its southern and northern ends (N 145th Street and N 205th Street), signaling entrance into Shoreline's section of the trail. From the trailhead at N 145th Street to its terminus in Everett, the Interurban Trail is approximately 22 miles long.

An additional off-street bicycle and pedestrian trail is located on N/NE 195th Street between Meridian Avenue N and 1st Avenue NE. Completed in 2010, this 12-foot wide asphalt trail is located in previously undeveloped right-of-way. **Figure H, Existing Bicycle Facilities**, illustrates existing bike facilities in Shoreline.

Like the Interurban Trail, the Burke-Gilman Trail is another significant regional nonmotorized facility. The Burke-Gilman Trail is more than 18 miles long, running from the City of Seattle through the City of Lake Forest Park (just east of Shoreline) to the City of Bothell. The Burke-Gilman Trail connects to another regional trail, the Sammamish River Trail, which in turn connects to other regional trails, providing a large nonmotorized network that extends throughout King County.

Ridership in Shoreline

For the first time in October 2010, Shoreline participated in the Washington State Department of Transportation Bicycle and Pedestrian Documentation Project. Begun in 2008, this project is an annual count of bicycle and pedestrian activity at designated locations throughout the state. Shoreline identified six locations for the bicycle and pedestrian count. The following counts were recorded during the morning and evening counting periods:

LOCATION	MORNING COUNTS: 7-9 a.m.			EVENING COUNTS: 4-6 p.m.		
	Bicycle	Pedestrian	Total	Bicycle	Pedestrian	Total
15th Ave NE and NE 155th St	11	37	48	24	33	57
Dayton Ave N and N 160th St	12	78	90	8	68	76
Interurban Trail and N 155th St	45	40	85	48	102	150
Interurban Trail and N 175th St	20	67	97	60	121	181
Interurban Trail and N 200th St	18	83	101	12	31	43
NW Richmond Beach Rd and 8th Ave NW	11	94	105	15	61	76

Source: Washington State Bicycle and Pedestrian Documentation Project 2010, Cascade Bicycle Club

The counts are performed at the same time each year, in late September or early October. Weather and other conditions, such as construction, are noted at each location. By using the same dates and locations, as well as noting the weather conditions, the counts can be used to track trends in bicycle ridership and pedestrian activity while taking into consideration factors such as construction, road or trail closures and weather, which may influence whether people choose to walk and bicycle.

Shoreline participates in the Cascade Bicycle Club *Bike to Work Day* event in Puget Sound. *Bike to Work Day* is an annual event designed to encourage bicycling as a commuting option and to raise awareness of bicycling in the region. Beginning in 2006, the City has sponsored a commuter station each year, performed ridership counts and distributed refreshments to riders that visit the station. Other than the first year of sponsorship when the station was located at the Interurban Trail and N 175th Street, the station has been located along the Interurban Trail at N 155th Street and is open from 6 a.m. to 9 a.m. on the designated day, usually the third Friday in May. Ridership counts have generally increased annually, with the highest count of 200 riders occurring in 2011. Weather conditions seem to influence the number of riders participating in the event.

The Interurban Trail connects with bicycle facilities to the south in the City of Seattle, as well as bicycle facilities to the north in the City of Edmonds. The Interurban Trail includes two distinct trail heads at its southern and northern ends (N 145th Street and N 205th Street), signaling entrance into Shoreline's section of the trail. From the trailhead at N 145th Street to its terminus in Everett, the Interurban Trail is approximately 22 miles long.

Good Bicycle Connections and Challenges to Connectivity

Bicycle Travel Routes

Although Shoreline has very few bicycle facilities, bicyclists travel throughout the City using the existing street system. In addition to the Interurban Trail and the existing bicycle lanes, bicyclists ride on the City's arterial and non-arterial streets in the travel lanes. These roadways allow bicyclists to travel extensively throughout the City. Bicyclists may also use sidewalks and the Business Access-Transit (BAT) lanes on Aurora Avenue N. Upon completion of the Aurora Corridor Improvement Project, the BAT lanes on Aurora Avenue N will run through Shoreline.

Within Shoreline, the primary destinations for bicyclists are schools, Shoreline Community College, parks, the Interurban Trail, libraries, post offices, bus stops, the Shoreline Center and the City's commercial areas. Bicyclists also travel outside of Shoreline to destinations such as Edmonds, Lake Forest Park, the Burke-Gilman Trail and Seattle. Not many of these destinations are served by existing bicycle facilities outside of those adjacent to the Interurban Trail.

Connections to Transit Facilities

Transit routes cover much of Shoreline, including peak only and all-day routes. All Metro Transit, Community Transit and Sound Transit buses are equipped with bicycle racks. Bicycle racks are available at the Shoreline Park & Ride and the Aurora Village Transit Center. Bicycle lockers are also available at the Shoreline Park & Ride. It is expected that the future light rail extension into Shoreline will accommodate bicycles as the existing system does.

Challenges Relating to Bicycle Facilities Implementation

In addition to the challenges presented by Shoreline's physical geography, the built environment also presents barriers to travel by bicyclists. I-5 runs north-south through the City and in some locations prohibits east-west travel by blocking streets. The freeway interchanges at NE 145th Street, NE 175th Street and NE 205th Street have high automobile traffic volumes. There are no marked bicycle facilities at these interchanges and the intersections are very busy, especially during the AM and PM peak travel periods. NE 155th Street, NE 185th Street and NE 195th Street are the best crossings of I-5 for bicyclists, as there are dedicated bicycle facilities and/or low traffic volumes at these locations. Some bicyclists are not comfortable riding in travel lanes with automobiles. As a result, the options available to these bicyclists are limited.

As development occurs in Shoreline that requires improvements to the City's right-of-way, it is important to ensure accurate curb placement so that bicycle facilities can be installed in the future. This includes the placement of new curbs, as well as the relocation of existing curbs, as outlined in the City's Master Street Plan (Chapter 7).

New bicycle facilities and expansions or improvements to existing facilities can also be limited by the natural and built environment. Limited right-of-way, presence of structures and environmentally sensitive areas can influence, restrict or prohibit construction.

One of the primary challenges to implementing an effective and useful bicycle system is

connectivity with other jurisdictions. Continuity of bicycle facilities across city and county lines allows users to transition seamlessly, making them easier and more inviting to use. Cities and counties use a variety of signage and symbols to identify bicycle facilities and they are not always consistent from one to another. Signage installed in accordance with the Manual for Uniform Traffic Control Devices (such as “Stop” and “Yield” signs) generally does not pose this problem. However, non-standard signage can be quite varied. Facilities may differ as well. For example, a bicycle route may have striped lanes in one city and the continuation of that route may be delineated by signs only and no striped lanes in the neighboring city. This can be the result of different design standards or bicycle programs, available right-of-way, budget constraints or facility installation from one jurisdiction to another. Inconsistencies like this can be confusing or discouraging to bicyclists.

As with all capital projects, funds for bicycle projects are limited and construction of these facilities often compete with other City priorities. Transportation projects in Shoreline are funded by the Real Estate Excise Tax (REET), Transportation Benefit District (TBD) and the general fund, as well as local, state and federal grants. Grant funds are project-specific and cannot be spent on projects for which they are not earmarked, regardless of City priorities.

Bicycle Improvements

Shoreline recognizes the importance of bicycling as a mode that addresses both the City's transportation and recreational needs. At the city level, bicycle routes in the network connect neighborhoods to schools, city institutions, community businesses and recreational and commuter destinations, including transit linkages. At a larger scale, these bike routes provide connections that link to the regional network.

Bicycle System Plan

The City's Bicycle System Plan identifies the location and facility type for existing and future bicycle facilities in Shoreline. **Figure I, Bicycle System Plan**, maps these facilities throughout the City and shows their connections to existing and planned facilities in neighboring cities. Shoreline recognizes the importance of bicycling as a mode that addresses both the City's transportation and recreational needs. At the city level, bicycle routes in the network connect neighborhoods to schools, city institutions, community businesses and recreational and commuter destinations, including transit linkages. At a larger scale, these bike routes provide connections that link to the regional network.

The Interurban Trail serves as the north-south spine for bicyclists, with connections to the cities of Edmonds to the north and Seattle to the south. Paralleling Aurora Avenue N, the Interurban Trail serves the commercial core of Shoreline and intersects with east-west bicycle lanes currently located on N/NE 155th Street (marked from Midvale Avenue N to 5th Avenue NE) and N/NE 185th Street (marked from Aurora Avenue N to 1st Avenue NE).

The Bicycle System Plan was developed with the assistance of the City's Bicycle and Pedestrian Advisory Committee. Routes and facility design were selected with the following criteria in mind:

- Connecting neighborhoods to destinations, such as schools, parks, public buildings, commercial areas and transit
- Connecting to existing facilities, such as the Interurban Trail, within the City and in neighboring jurisdictions
- Connecting to planned facilities in neighboring jurisdictions
- Traffic volumes on the roadway
- Existing right-of-way and capacity to support bicycles
- Future planned capital projects

With two regional bicycle facilities in the City of Shoreline and neighboring Lake Forest Park, connections between the Interurban and Burke-Gilman trails are important. Developed in partnership, the two cities identified

northern and southern routes connecting these two trails. The connections are made up of a combination of bicycle facilities, including signage, bicycle lanes and separated trails. The southern connection has two alternatives, one of which travels through Hamlin Park in Shoreline. The Bicycle System Plan identifies these routes.

The Bicycle System Plan identifies routes throughout the City for both east-west and north-south travel. Several types of facilities are identified, including bicycle lanes, sharrows, signage, bridges and separated paths. These facilities are incorporated into the plan depending upon a variety of factors at a given location. Signage may include in-pavement markings, such as sharrows or directional markings, or free standing signs. Almost all of the routes are located in the public right-of-way and adjoin or share existing vehicle travel lanes. Exceptions include the construction of new paths through the Fircrest Residential Rehabilitation Center property at NE 150th Street and 15th Avenue NE and Hamlin Park. It is likely that construction of the pedestrian bridge over Aurora Avenue N at N 192nd Street will require placement in part on private property or dedication of right-of-way in order to accommodate its location.

Implementation of this plan will occur in stages over several years. Lower-cost projects, such as sign installation, will be implemented throughout the system as an interim measure until permanent, planned improvements, such as bicycle lanes, separated paths or bridges, can be completed. Striping for bicycle lanes or installation of other pavement markings can occur in conjunction with the City's annual road resurfacing program where the planned overlays coincide with bicycle routes. Improvements to locations that are part of larger capital projects, such as N/NE 175th Street and NW Richmond Beach Road, will be installed as the capital improvements are constructed. Private development may also construct portions of the bicycle system as redevelopment occurs. A pedestrian bridge at N 192nd Street may be required as a condition of redevelopment of the Shoreline Park & Ride or other adjacent properties.

Figure J, Bicycle Projects Plan, identifies the type and location of all projects needed to fully implement the Bicycle System Plan. To determine the order in which projects are constructed, the City developed a ranking system and criteria to prioritize projects. A description of the prioritization process is included in Chapter 9.

With two regional bicycle facilities in the City of Shoreline and neighboring Lake Forest Park, connections between the Interurban and Burke-Gilman Trails are important. Developed in partnership, the two cities identified northern and southern routes connecting these two trails.

Creating a Bicycle System in Shoreline

Developing and Implementing the System

The following policies were developed to guide the development and implementation of a bicycle system in Shoreline:

- **Goal T VIII:** Develop a bicycle system that is connective, safe and encourages bicycling as a viable alternative method of transportation.

- **Policy T14:** Implement the Bicycle System Plan. Develop a program to construct and maintain bicycle facilities that are safe, connect to destinations, access transit and are easily accessible. Use short-term improvements, such as signage and markings, to identify routes when large capital improvements will not be constructed for several years.

  Implementation Strategies

  14.1. Develop a wayfinding signage and mapping system for bicyclists that directs and guides users to public facilities, parks, schools, commercial areas, adjoining cities and major transit and transportation facilities, such as the Interurban Trail. This signage should identify facility locations at entrances to the City. Coordinate with neighboring jurisdictions to create a consistent signage system to lessen confusion for riders traveling to other cities.

  14.2. Work with Lake Forest Park to develop regional bicycle linkages from the Interurban Trail to the Burke-Gilman Trail. Extend these regional facilities to Richmond Beach.

  Discussion: This regional bicycle facility should be named to improve awareness and recognition.

  14.3. Coordinate with neighboring cities to the north and south to provide connections to the Interurban Trail in Shoreline.

  14.4. Through the City's Complete Streets policies, accommodate bicycles in future roadway or intersection improvement projects with facilities or technologies that make bicycling safer, faster and more convenient for riders.

  14.5. Continue to require new commercial developments to provide bicycle facilities that encourage bicycling. Properties that redevelop adjacent to the Interurban Trail should be required to provide connections to the Interurban Trail if practical.

  Discussion: Commercial developments should include covered, secure and convenient bicycle parking facilities for employees and visitors/customers, as well as showers and lockers for employees. The City should also encourage existing businesses to install bicycle parking facilities for the public and employees, and showers and lockers for employees who commute to work by bicycle.

  14.6. Include bicycle facilities identified on the City's Bicycle System Plan as part of the City's six-year Capital Improvement Plan and Transportation Improvement Program. Develop plans for implementation of short- and long-term improvements to the bicycle system, including

integration with the City's annual overlay program.

14.7. Coordinate bicycle facility design and construction with adjacent jurisdictions where routes cross the City boundaries.

14.8. Replace storm grates with bicycle-friendly grates.

14.9. Place a high priority on sweeping streets that contain bicycle facilities or are designated as bicycle streets on the City's system plan.

14.10. Provide bicycle facilities maintenance, such as filling potholes and repairing cracks and large gaps in concrete panels.

14.11. Identify bicycle detour routes in construction areas. Educate residents about the importance of maintaining safe bicycle facilities and identifying what they can do to assist in the City's efforts (for example, do not blow leaves into bicycle lanes).

14.12. Continue efforts locally and regionally to educate drivers about bicycle laws and riding behaviors and to educate bicyclists on laws and behaviors.

- **Policy T15:** Develop standards for the creation of bicycle facilities.

<u>Implementation Strategies</u>

15.1. Develop a bicycle system that includes facilities that support and are appropriate for existing and new land uses.

15.2. Develop a system with appropriate bicycle facilities that takes into consideration topography, available right-of-way, traffic volumes and other factors.

15.3. Integrate highly visible and accessible signage, markings, lighting and amenities for bicycles.

Discussion: Bicycle facilities can include painted bicycle lanes, "hot spots" in pavement to activate traffic signals or push buttons for bicyclists. The hot spot marking system must ensure that the loops installed are sensitive to bicycles, in appropriate locations within lanes, and are maintained to remain visible to bicyclists.

- **Policy T16:** Develop a public outreach program to inform residents of the options for bicycling in the City and educate residents about bicycle safety and the health benefits of bicycling. This program should include coordination or partnering with outside agencies.

<u>Implementation Strategies</u>

16.1. Prepare maps for public distribution that include bicycle facilities, schools, parks, civic buildings and other destinations in the City. The City should develop educational

materials for residents that emphasize the importance of bicycle safety and explain the health benefits of bicycling.

Discussion: The maps should identify bicycle facilities and treatments throughout the City and inform residents of the methods available to report problems with bicycle facilities to the City. Educational materials should provide resources and information that can be easily accessed. Residents should be made aware of these maps and materials through the City's website, newsletters, wayfinding kiosks, *Bike to Work Day* and public access television channel. The City should have them available for distribution at City buildings and public and community events. The City should also work with the school district, bicycle advocacy groups, transit providers and bicycle shops to help distribute maps.

16.2. Work with the school district and public safety partners to integrate bicycle safety and maintenance as part of the educational curriculum.

16.3. Pursue grant funding from private foundations to implement outreach programs.

Discussion: Private foundations that emphasize health and safety can provide financial assistance to the City in its education efforts.

16.4. Inform the public about laws that enforce no vehicle parking in bicycle facilities for rider safety.

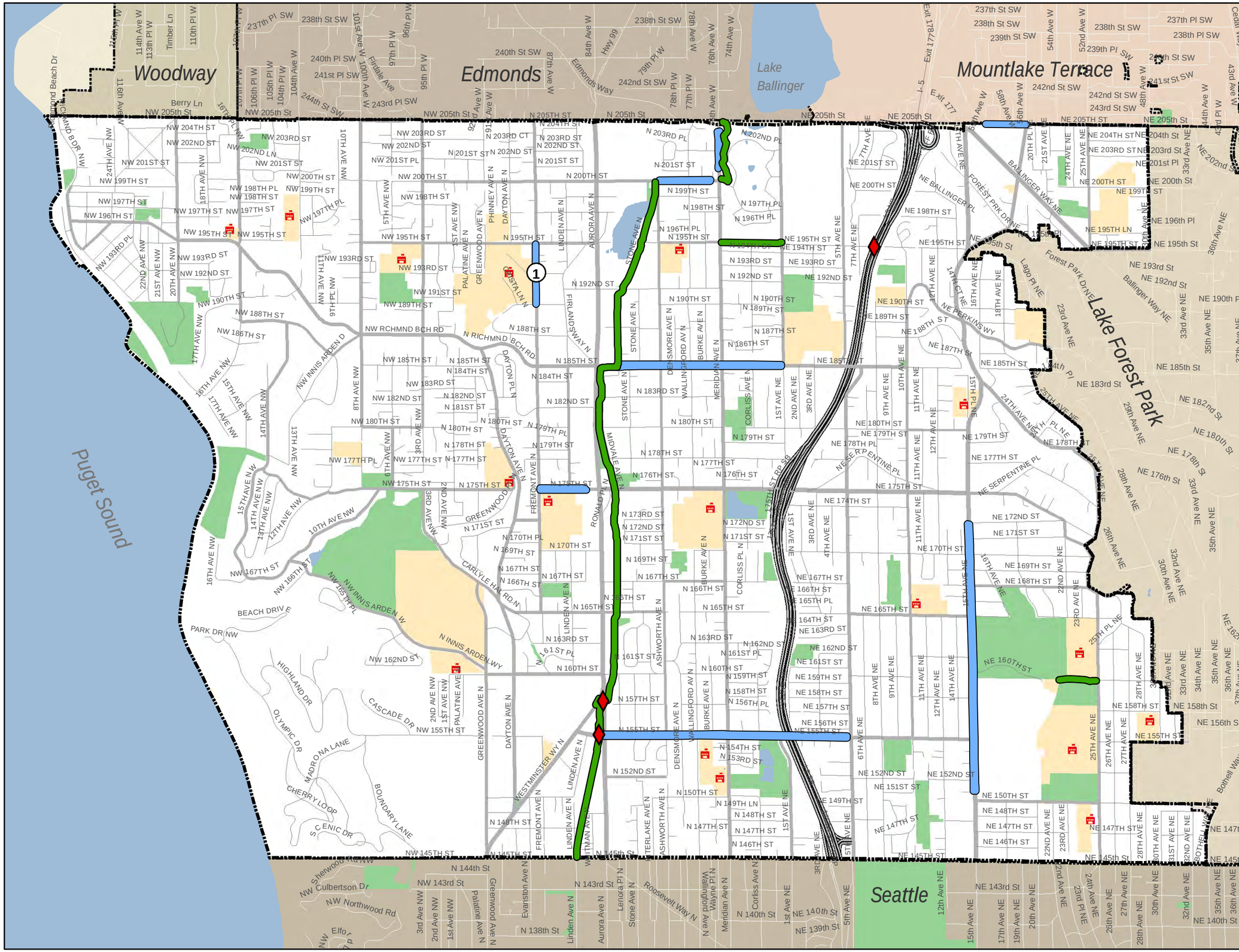


Figure H

Existing Bicycle Facilities

Legend

Bicycle/Pedestrian Bridge

Bicycle Plan Routes:

Designated Bike Lane

Separated Path

Other Map Features:

School

School Property

Park

1 = Existing bicycle lane is southbound only.

0 500 1,000 2,000 3,000 Feet

1 inch = 1,953 feet

CITY OF SHORELINE

N W E S

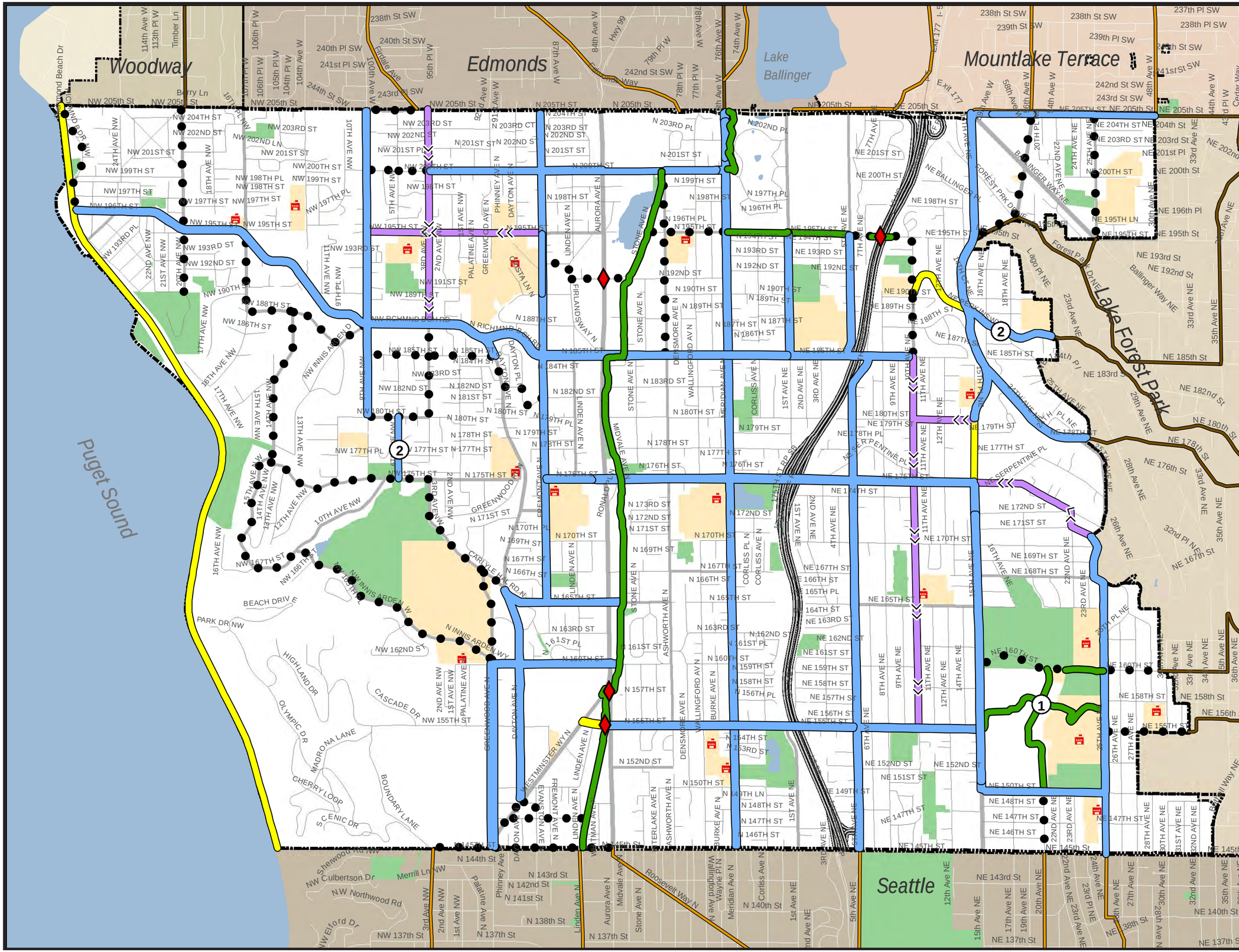


Figure I

Bicycle System Plan

Legend

Bicycle/Pedestrian Bridge

Bicycle Plan Routes:

- Designated Bike Lane
- Separated Path
- Sharrow Lane
- Signed Bicycle Route
- To Be Determined

Other Cities' Bicycle Facilities/Plan

- Existing Facilities
- Planned Facilities

Other Map Features:

- School
- School Property
- Park

1 = Exact location through Fircrest to be determined.

2 = Bicycle Lane, Uphill; Signed Route, Downhill

0 500 1,000 2,000 3,000 Feet

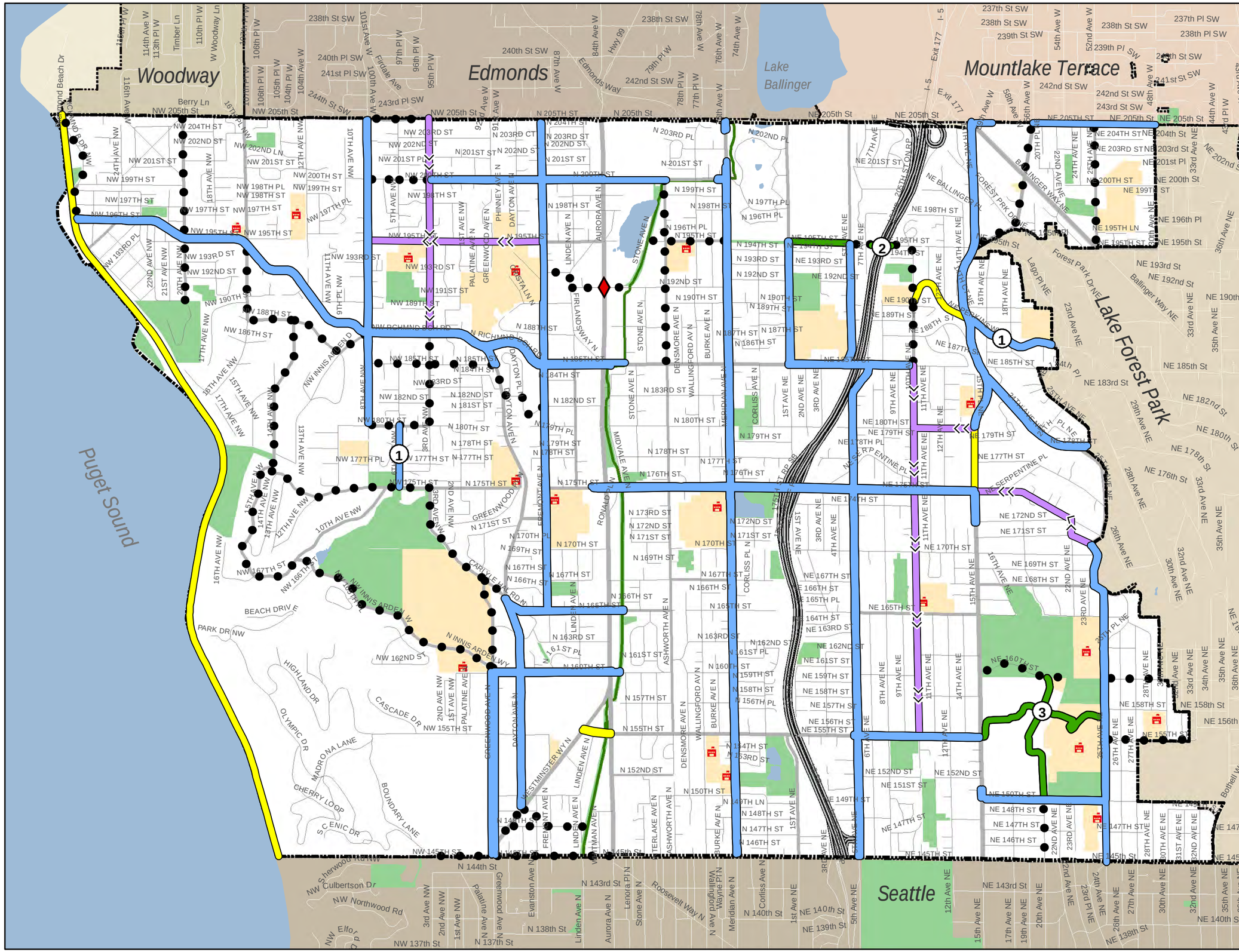
1 inch = 1,953 feet

CITY OF SHORELINE

N W E S

Figure J

Bicycle Projects Plan



Legend

- Bicycle/Pedestrian Bridge

Bicycle Plan Routes:

- Designated Bike Lane
- Separated Path
- Sharrow Lane
- Signed Bicycle Route
- To Be Determined

Other Map Features:

- School
- School Property
- Park

1 = Bicycle Lane, Uphill; Signed Route, Downhill

2 = Repair or replace existing bridge

3 = Exact location through Fircrest to be determined

The projects shown on this plan represent the proposed projects from the draft Bicycle System Plan minus the City's existing bicycle facilities.

0 500 1,000 2,000 3,000 Feet

1 inch = 1,953 feet

CITY OF SHORELINE

N W E S

Pedestrian Plan

Pedestrian Plan

Put One Foot in Front of the Other

Walking is the most basic mode of transportation. All trips begin with walking. Residents walk throughout the City of Shoreline to parks, libraries and businesses, to access transit and for exercise and recreation. Safety and connectivity are essential to supporting and encouraging walking.

Shoreline is a suburban community, with predominantly single-family residential development. Although much of Shoreline has been developed at relatively low densities, the grid pattern of the arterial and local streets lends itself well to pedestrian circulation and provides access to all areas of the City. As a city that is largely developed, the street pattern is unlikely to change and significant new roadways are not likely to be constructed. It is anticipated that Shoreline will continue to grow and improvements to existing roadways will be needed to address traffic issues resulting from increasing numbers of users of the City's street system.

Though much of Shoreline is built out, sidewalks are only located sporadically throughout the City. Most of the sidewalks in Shoreline were built prior to incorporation and are substandard in comparison with existing City standards, being too narrow and/or having little or no amenity zone separating the sidewalk from the roadway travel lane. Located predominantly on arterials, some of these sidewalks have adjacent planting strips that are too narrow for the trees planted there, which have now matured and are causing damage to sidewalks and roadways with their large root systems.

Since incorporation of the City of Shoreline in 1995, many sidewalks and walkways have been constructed throughout the City, including the Interurban Trail. Other City capital projects, including the Aurora Corridor Improvement Project and North City Project, included sidewalks as a fundamental part of their safety and circulation enhancements. The Priority Sidewalks program constructed sidewalks and walkways throughout the City from 2005 to 2011. Private development has also contributed to the City's sidewalk inventory through the construction of frontage improvements adjacent to development sites.

The community has repeatedly identified sidewalks as important. Residents want to use sidewalks and trails to go to work, catch a bus, walk to school, go shopping or participate

The community has repeatedly identified sidewalks as important. Residents want to use sidewalks and trails to go to work, catch a bus, walk to school, go shopping or participate in recreation activities. According to a 2010 survey of residents, 42 percent of respondents identified the availability of sidewalks near their residence as one of the top two aspects of transportation that should receive the most emphasis over the following two years.

in recreation activities. In addition, many residents of the City's over 100 group homes have limited mobility and need the safety and access provided by sidewalks. According to a 2010 survey of residents, only 48 percent of respondents identified themselves as very satisfied or somewhat satisfied with the availability of sidewalks on major streets. Only 30 percent of respondents identified themselves as very satisfied or somewhat satisfied with the availability of sidewalks near their residence. In this same survey, 42 percent of respondents identified the availability of sidewalks near their residence as one of the top two aspects of transportation that should receive the most emphasis over the following two years.

Pedestrian Issues in Shoreline

The design and construction of a pedestrian system in Shoreline presents unique challenges to the City. With limited funding, a fully built-out roadway system and older, existing infrastructure to maintain and repair, sidewalk location and design must be carefully planned.

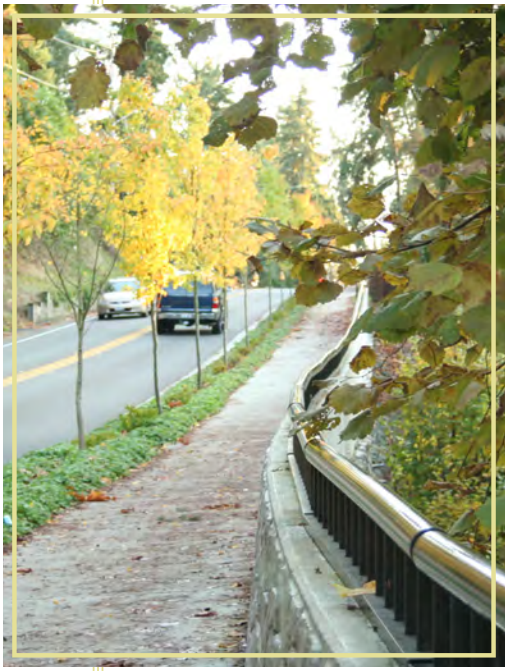
Sidewalk Design

Sidewalks in the City have been constructed for several decades, with the standards changing over time. As a result, sidewalk design varies throughout the City, including sidewalk width, construction materials, presence of amenity zone and the width and plantings of an amenity zone. The planned design for construction of future sidewalks throughout the City will vary depending upon traffic volumes, adjacent land uses, proximity to transit and connections to destinations such as commercial areas, schools and parks.

The materials used in construction of sidewalks and the vegetation planted in the amenity zone can help sidewalks serve as stormwater management and treatment facilities. Technologies such as pervious concrete can attenuate the flow of water into the ground or the City's stormwater system. The installation of appropriate soils and plants can also serve this function, as well as help to filter pollutants from stormwater.

Funding

For many jurisdictions, funding for sidewalk projects has historically been significantly less than what is available for design and construction of other transportation projects. Similarly, transportation grant funding from state and federal



agencies is predominantly focused on roadway projects. Sidewalks often are a component of funded roadway projects, such as the Aurora Corridor Improvement Project. With a fiscally constrained budget, the City must evaluate and prioritize its capital investments and fund them accordingly. Sidewalk projects generally make up a large portion of the City's six-year Transportation Improvement Program (TIP), which includes unfunded projects. Inclusion of these projects as part of the TIP makes them eligible for some sources of grant funding.

System Continuity

Sidewalks are not located in all areas of the City. They can be sporadic, ending abruptly in neighborhoods or commercial districts or extending the width of a single parcel when constructed in conjunction with redevelopment at that site. As a result, Shoreline does not have a continuous system of sidewalks that facilitate pedestrian circulation throughout all parts of the City. A system of sidewalks, trails and walkways that connects people to their homes, businesses, services and transit is necessary in order to encourage walking as an appealing form of transportation.

Maintenance

All transportation facilities, including sidewalks, require maintenance and repair. This includes minor maintenance, such as keeping walkways free of vegetation intrusion, ice and snow, as well as repairing damage resulting from root intrusion, accidental damage from vehicles and normal wear and tear. It is common for municipalities to request or require property owners adjacent to the sidewalks to maintain vegetation in the right-of-way and keep sidewalks clean and clear. Repair of facilities is generally the responsibility of the City. Oversight by the City helps ensure that repair work is performed in accordance with City standards.

Lighting

Pedestrians should feel safe walking through their community. One element that adds to safety is the presence of lighting. There is some degree of street lighting present throughout the City, mostly along arterials, with some street lights scattered along non-arterial streets and a few neighborhoods not containing any street lights. Almost all of the street lights in Shoreline are designed and directed to illuminate public right-of-way along roadways and the adjacent walkways. The City

has very little pedestrian-scale lighting. The Aurora Corridor Improvement Project has installed some pedestrian-scale lighting at bus stops on Aurora Avenue N.

Crossings

Another factor that contributes to safety is the ability to cross streets. By definition (RCW 46.04.160), there are crosswalks at every intersection whether there are markings present or not. Unless posted otherwise, it is legal for a pedestrian to cross the street at any intersection. Drivers are required to stop for pedestrians waiting at crosswalks and once a pedestrian enters a street. There are a number of factors to consider when determining the need for enhancing crosswalks with markings and other traffic control devices. These include the volume of traffic and pedestrians, presence of bus stops and adjacent land uses. Many crossings do not require identification or signage. For those locations that qualify for added traffic control, a variety of methods are available to identify and enhance pedestrian crossings including roadway markings, signs, flashing lights and traffic signals. The City must balance the location of traffic signals and controlled pedestrian crossings with the need to sustain traffic flow through and within Shoreline. Driver and pedestrian education are also important factors in helping pedestrians cross streets safely.

Shoreline's Pedestrian Plan

Walking can help fulfill a variety of the City's goals, including expanded transportation choices, reduced costs for transportation, congestion relief, improved physical health and reduced contributions to climate change through fewer greenhouse gas emissions. The Pedestrian Plan includes a description of the existing pedestrian system in Shoreline, and the goals, policies and implementation strategies support and encourage walking and help the City achieve its vision for pedestrian movement.

Walking can help fulfill a variety of the City's goals, including expanded transportation choices, reduced costs for transportation, congestion relief, improved physical health and reduced contributions to climate change through fewer greenhouse gas emissions.

Existing Facilities Inventory

Most sidewalks on City arterials were constructed in the 1960s under a bond issue known as Forward Thrust. These sidewalks are narrower than the City's current standard, as are the landscaping strips between the sidewalk and travel lane, if landscaping is present at all.

Existing Pedestrian Facilities

The City of Shoreline is a fully built-out community, with almost all of the land in the City developed. Most of the development in the City occurred while a part of unincorporated King County. Almost all of the sidewalks in the City were constructed in accordance with County standards, which were different than the current City standards.

Pedestrian facilities in the City include concrete sidewalks, asphalt trails, walkways and widened shoulders. Sidewalks are present along arterials including:

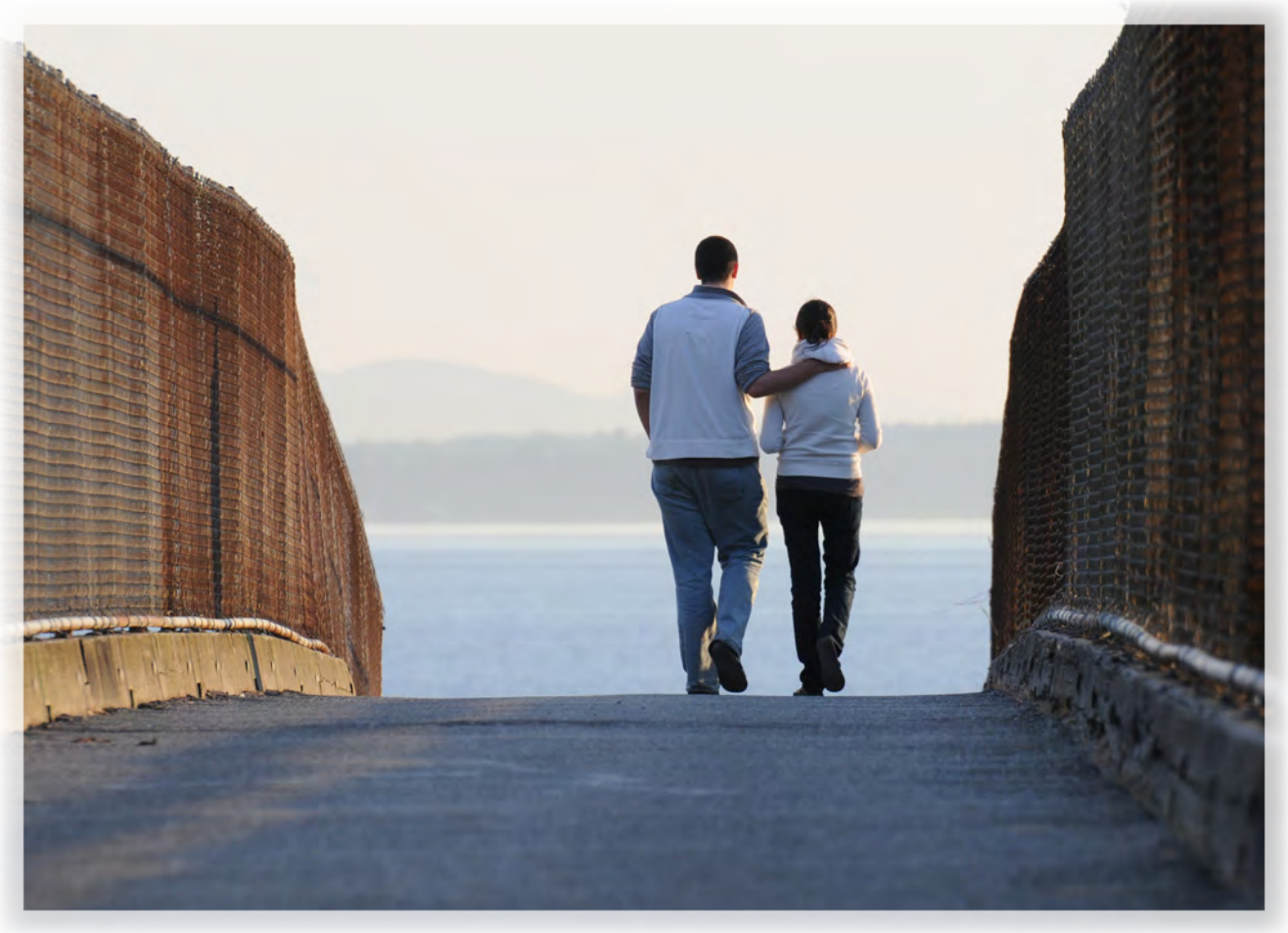
- N/NE 155th Street
- N/NE 175th Street
- N/NE 185th Street
- Meridian Avenue N
- 5th Avenue NE
- 10th Avenue NE
- 15th Avenue NE
- NW Richmond Beach Road

These sidewalks vary in width and material and are sometimes not continuous. Most sidewalks on City arterials were constructed in the 1960s under a bond issue known as Forward Thrust. These sidewalks are narrower than the City's current standard, as are the landscaping strips between the sidewalk and travel lane, if landscaping is present at all. There are a few areas in the City with asphalt paths serving as pedestrian facilities. **Figure K, Existing Pedestrian Facilities**, illustrates existing sidewalks, asphalt paths and widened shoulders (the map does not identify if sidewalks are consistent with Shoreline's current development standards for width, materials and amenity zones).

Much of the City's recent sidewalk construction has been focused around schools as part of the Priority Sidewalks program. The commercial and transit corridor along Aurora Avenue N will have continuous sidewalks constructed along both sides of the roadway as part of the Aurora Corridor Improvement Project. These sidewalks are seven feet wide, with a four-foot wide, vegetated amenity zone separating the sidewalk from the adjacent travel lane.

In addition to sidewalks, Shoreline has two off-street mixed use trails. The Interurban Trail runs roughly parallel to Aurora Avenue

N. This trail is both a bicycle and pedestrian facility, with a 12-foot wide asphalt path along the majority of its length. From N 175th Street to N 185th Street, the trail is constructed of concrete. This change in materials results in a more urban feel and reinforces the pedestrian orientation of the future Town Center, through which this segment runs. Two bridges provide elevated crossings over N 155th Street (at Aurora Avenue N) and Aurora Ave N (at N 157th Street). The second pedestrian and bicycle trail is located on NE 195th Street between Meridian Avenue N and 1st Avenue NE. Completed in 2010, this 12-foot wide asphalt trail was constructed in previously undeveloped right-of-way. A pedestrian bridge crosses I-5 at NE 195th Street.

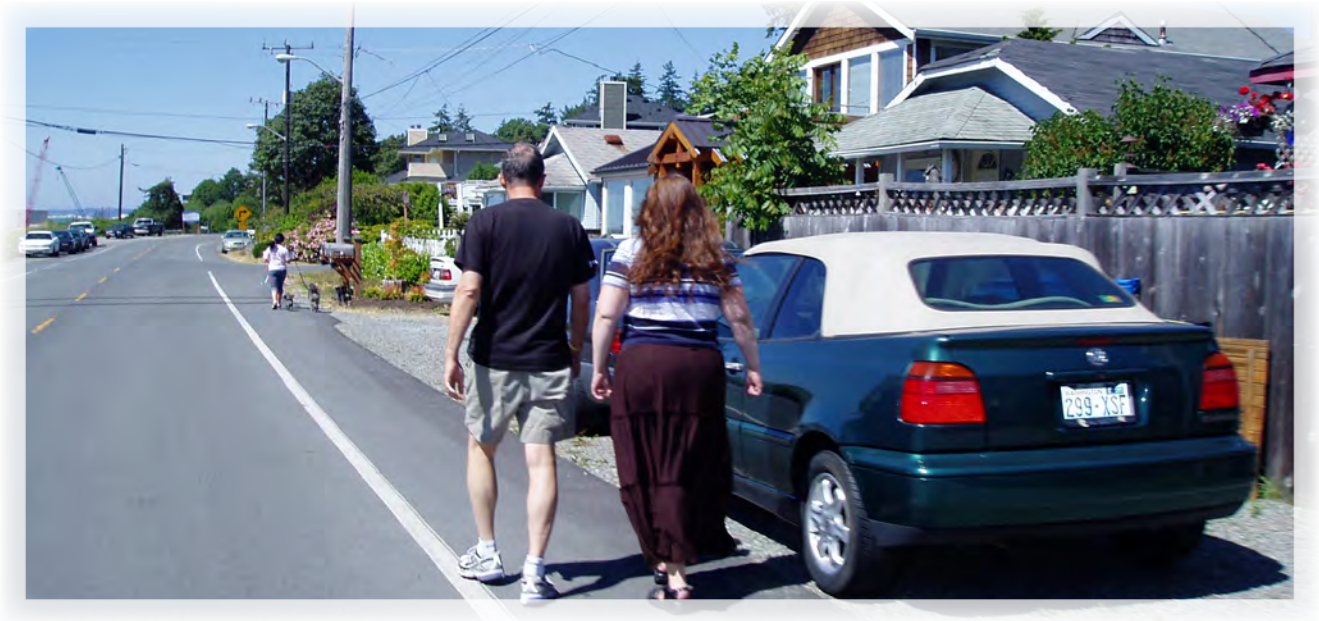


Good Pedestrian Connections and Challenges to Connectivity

Pedestrian Travel Routes

Pedestrians have a network of arterial and non-arterial streets to utilize, as well as the Interurban Trail. Many arterials and some non-arterial streets have sidewalks, especially those around schools. Because sidewalks in Shoreline are discontinuous and vary in width, pedestrians must often walk on the shoulder of the road, if one exists.

The primary destinations for pedestrians in Shoreline are schools, Shoreline Community College, parks, the Interurban Trail, libraries, post offices, bus stops, the Shoreline Center and the City's commercial areas. Many of these destinations are served by sidewalks, although not all routes to each destination have sidewalks. Upon completion of improvements to Aurora Avenue N, the entire corridor will have continuous sidewalks along its three-mile length.



Connections to Transit Facilities

Transit routes cover the majority of Shoreline and include peak-only and all-day routes. Many bus stops are served by sidewalks or wide shoulders. The travel paths to some stops are partially or fully inaccessible. One quarter of the transit stops in the City have limited accessibility, and one-tenth are fully inaccessible to persons with disabilities.

Physical Challenges

Pedestrian mobility in Shoreline can be a challenge due to the City's physical geography. North-south travel can be appealing and a viable option for many pedestrians, as the terrain is relatively flat. However, the ridges and valleys that cross the City can make travel in the east-west direction difficult for some pedestrians.

Similarly, east-west pedestrian travel can be hindered by the built environment. Many streets are blocked by I-5, which runs north-south through the City. The freeway interchanges at NE 145th

Street, NE 175th Street and NE 205th Street are heavy with automobile traffic, have limited pedestrian crossings and do not create a pedestrian-friendly environment. The crossings at NE 155th Street, NE 185th Street and NE 195th Street have lower traffic volumes than the interchanges, creating a more comfortable environment for pedestrians.

The natural and built environments can also limit expansion of or improvements to existing pedestrian facilities and construction of new ones. Limited right-of-way, presence of structures, topography and environmentally sensitive areas can influence, restrict or prohibit construction.

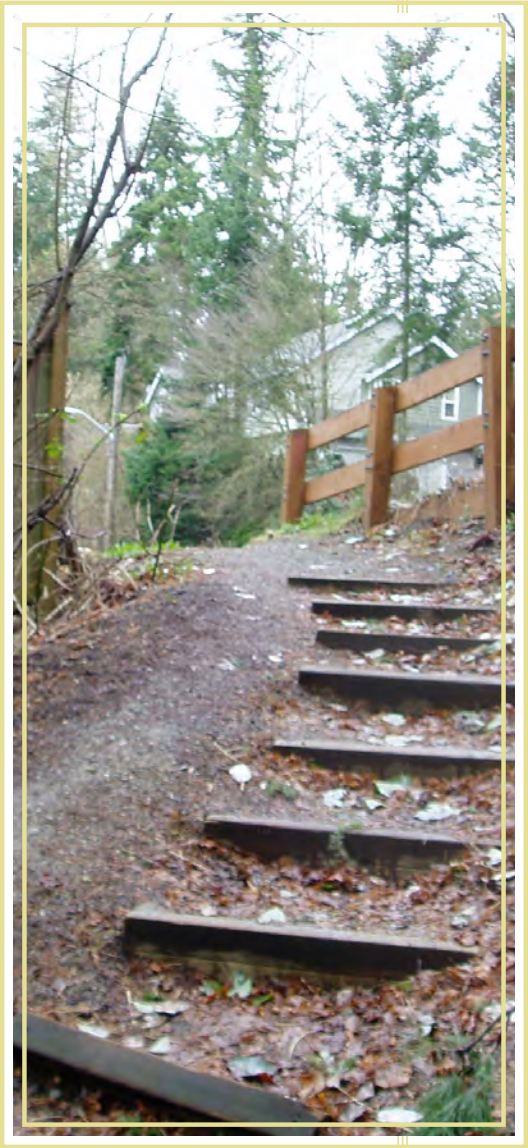
Curb Ramp, Gutter and Sidewalk Program

The City's Curb Ramp, Gutter and Sidewalk Program includes the design and construction of curb ramps and sidewalk repairs. The ramps are designed and constructed to meet the standards of the Americans with Disabilities Act (ADA). Other work performed includes repairing and replacing existing concrete gutters and sidewalks damaged by tree roots, cracking or settlement and constructing new sidewalk panel sections to fill existing gaps in the pedestrian walkway. Through this program, the City installs or replaces 14-20 curb ramps and repairs approximately 400 linear feet of sidewalk per year. The program can also fund wheelchair detection loops and audible pedestrian signals.

The Curb Ramp, Gutter and Sidewalk Program addresses locations throughout the City where improvements are needed to increase user safety of the sidewalk system. Means of improving safety include removing barriers, increasing and enhancing accessibility to the system throughout the community, eliminating damaged sections and completing missing links in the existing system.

Project Funding

Transportation projects in Shoreline are funded by the motor vehicle fuel tax, right-of-way permit fees and the general fund, as well as local, state and federal grants. Funds for pedestrian projects are limited, and construction of these facilities often compete with other City priorities. Grant funding for pedestrian projects is extremely limited, difficult to obtain, and often requires a local match.



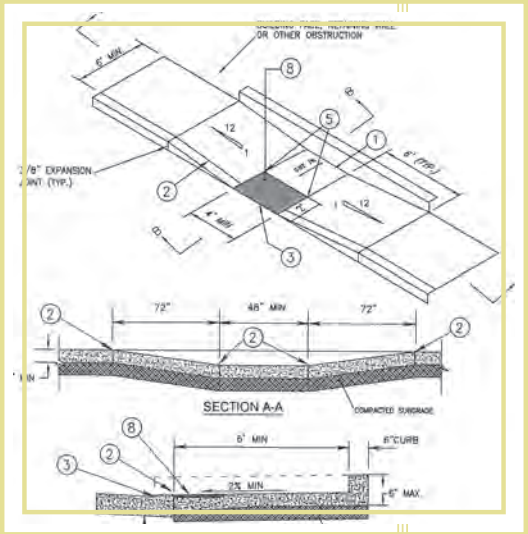


Image: WSDOT Specifications Manual

Pedestrian Improvements

The citizens of Shoreline continue to emphasize the importance of sidewalks for safety, enhanced mobility, convenience, and recreation. Shoreline has great potential to be a "walkable community" with many activities and resources within walking distance of neighborhoods. The roadway grid system in Shoreline provides multiple east-west and north-south connections, and the City offers a number of public spaces, including parks, shopping centers and community centers that can accommodate pedestrian facilities. One challenge for Shoreline is knowing where to start. The City must determine where to best spend limited resources to best serve the community.

Figure L, Pedestrian System Plan, identifies key pedestrian corridors in Shoreline that result in a complete pedestrian network throughout the City. Sidewalks are important as both transportation and recreational facilities. Therefore, the City's pedestrian network connects neighborhoods, schools, parks, commercial areas and transit facilities. Recently installed sidewalks along Aurora Avenue N and in North City, as well as the Interurban Trail, serve the City's primary commercial areas and significant transit corridors. If a street is not included on the Pedestrian System Plan, that should not be interpreted to mean that the street should not have sidewalks.

Figure M, Unimproved City Right-of-Way, identifies small sections of unused right-of-way that provide pedestrian connections between neighborhoods. These connections are not always part of the Pedestrian System Plan but are important, as they provide links throughout the City that can greatly shorten pedestrian trips. Other sections of unused right-of-way that are not identified on this map exist throughout Shoreline and may also serve to provide pedestrian connections and create public spaces such as parks or trails. Any requests for vacation of public right-of-way should be evaluated to ensure it cannot serve as a pedestrian connection.

Figure N, Pedestrian Projects Plan, identifies the type and location of all projects needed to fully implement the Pedestrian System Plan. The City developed a ranking system and criteria to prioritize design and construction of pedestrian projects. A description of the prioritization process is included in Chapter 9.

Creating a Pedestrian System in Shoreline

Developing and Implementing the System

- **Goal T IX:** Provide a pedestrian system that is safe, connects to destinations, accesses transit and is accessible by all.

- **Policy T17:** Implement the Pedestrian System Plan through a combination of public and private investments.

  Implementation Strategies

  17.1. Develop a wayfinding signage and mapping system for pedestrian facilities that directs and guides users to public facilities, parks, schools, significant transit stops and transportation facilities and commercial areas.

- **Policy T18:** When identifying transportation improvements, prioritize construction of sidewalks, walkways and trails. Pedestrian facilities should connect to destinations, access transit and be accessible by all.

  Implementation Strategies

  18.1. Develop and regularly update a prioritization and funding strategy to implement the City's Pedestrian System Plan.

  18.2. Include pedestrian facilities identified in the City's Pedestrian System Plan as part of the City's six-year Capital Improvement Plan and TIP.

  18.3. Through the City's Complete Streets policies, continue to accommodate pedestrians in future roadway or intersection improvement projects with facilities or technologies that make walking safer and more convenient for pedestrians.

  18.4. Utilize existing undeveloped right-of-way to create pedestrian paths and connections.

  18.5. Require that all projects resulting in an increase in the number of vehicular trips, such as commercial, non-residential, multi-family and residential short-plat and long-plat developments, provide for sidewalks or separated all-weather trails.

  Discussion: Through the Master Street Plan, the City has identified the cross-section and design of arterials and determined appropriate improvements for local streets. Frontage improvements should be consistent with the Master Street Plan.

  18.6. Continue to implement the City's curb ramp program to install wheelchair ramps and other ADA requirements at all curbed intersections.

  18.7. Include construction of pedestrian facilities identified in the City's Pedestrian System Plan as projects that qualify for "credits" through the City's concurrency program.

  18.8. Look for opportunities to leverage public or private investments to implement the pedestrian system. Pursue funding opportunities through grants and private foundations.

  18.9. Require and identify pedestrian detour routes in construction areas.

- **Policy T19:** Design crossings that are appropriately located and provide safety and convenience for pedestrians.

  Implementation Strategies

  19.1. Develop a policy and procedure for the location, design and approval of crosswalk markings.

Discussion: The surrounding development should be a key factor when determining location and design for crosswalks. Issues to consider include, but are not limited to, density, land use, demographics and accident history. The roadway cross-section and traffic volumes and speeds should be considered when determining the need for design features such as bulb-outs or pedestrian refuge islands.

19.2. Consider midblock crossings if safety warrants can be met.

Discussion: The installation of midblock crossings should take into account land uses on both sides of the street and frequency of use. Additionally, traffic must be considered to ensure crossings do not interfere with the flow of vehicles.

19.3. Improve pedestrian safety at freeway interchanges and highway intersections.

Discussion: Consider over and undercrossings where feasible and convenient for users and other changes that make roadway crossings at freeway entrances more accessible to pedestrians. Example locations for improvements include: I-5 crossings at NE 145th Street, NE 155th Street, NE 175th Street, NE 185th Street, NE 195th Street and Ballinger Way NE. A pedestrian crossing over Aurora Avenue N at N 192nd Street may be constructed as part of a privately funded redevelopment of the Shoreline Park & Ride as a transit oriented development. This overcrossing could consist of an enclosed skybridge, connecting transit uses with retail, office and residential facilities located on both sides of Aurora Avenue N.

19.4. Utilize technology and driver notification to enhance pedestrian safety and convenience.

Discussion: Pedestrian safety can be improved by modifying traffic signals. Options include pedestrian queue jumps (clearing pedestrians ahead of traffic), pedestrian signals with countdown timers, pedestrian-only cycles or right-turn queue jumps that clear right-turning vehicles before pedestrians begin crossing. The latter would be coupled with the elimination of free right turns. Extension of the “walk” phase in areas with populations requiring additional time to cross the street, such as children or senior citizens, provides an extra measure of safety.

Discussion: Convenience for pedestrians can be improved through technology as well. Signals that are timed to speed up pedestrian prompt response, provide an automatic “walk” when the signal turns green or visual and audio indicators that push buttons have been activated are all measures that give priority or information to pedestrians.
There are pros and cons when utilizing technology to enhance pedestrian convenience. The City must balance this desire with the need to maintain signal progression and traffic flow.

Consideration for individual circumstances and various City needs should be given when designing and implementing changes to traffic signals.

19.5. Continue to evaluate and field test installation of devices that increase safety of pedestrian crossings such as flags, in-pavement lights, pedestrian signals and raised, colored and/or textured crosswalks.

❖ **Policy T20:** Develop flexible sidewalk standards to fit a range of locations, needs and costs.

Implementation Strategies

20.1. Sidewalk standards should generally be based upon adjacent land use or zoning, rather than street classification.

20.2. Develop a program for retrofitting existing sidewalks that do not meet the City's current sidewalk standards.

Discussion: Property developers must reconstruct existing substandard sidewalks to comply with the established standards when a project triggers frontage improvements. The City should identify circumstances and criteria under which the City will retrofit sidewalks in conjunction with capital projects.

20.3. Establish criteria that identify when construction of a sidewalk on only one side of a street is appropriate.

Discussion: It is assumed that all streets will have sidewalks on both sides unless there is a wider trail/walkway system that accomplishes the goal of pedestrian movement and safety with traffic calming, such as green streets, or if findings can be established that support construction on one side only, such as topography, environment or costs. Short, dead-end streets with limited pedestrian activity would also be likely candidates for roadways with sidewalks on one side only.

20.4. Concrete or porous concrete sidewalks should be installed whenever possible. Examine options for construction of pedestrian facilities utilizing a variety of materials as alternatives to standard concrete sidewalks.

Discussion: Concrete is the most durable and easily maintained material for sidewalks. However, there are circumstances where concrete is not appropriate or needed. For example, asphalt may be an appropriate material for separated trails and walkways with minimal driveway crossings and limited potential for intrusion by tree roots. Porous concrete may be used in some circumstances, such

as in curbside applications with no amenity zone, when soil conditions support it and maintenance requirements have been considered.

20.5. Ensure that walkways have a clear, defined area for walking surfaces and a distinct area for fixed objects, such as signs, fire hydrants, bicycle racks, utility poles, above-ground utility cabinets, benches and public art. The City should work with utility providers to eliminate obstructions in walkways.

20.6. Ensure pedestrian facilities support and are appropriate for existing and new land uses, allowing for a variety of treatments. These may include sidewalks, walkways, shared bicycle and pedestrian facilities, trails or widened shoulders.

20.7. Where appropriate, provide sidewalks, walkways, and trails with lighting, seating, landscaping, street trees, public art, covered bicycle racks, railings, etc. These improvements should be compatible with safe pedestrian circulation.

20.8. Implement the pedestrian design standards identified in the Master Street Plan, including flexibility in walkway design.

Discussion: Street cross-section design should reflect the traffic and pedestrian needs of a given street. For example, streets that serve as transit corridors may include bus pull-outs at stop locations. This allows for easier boarding from the sidewalk and does not result in a bus blocking through traffic. Another possible design feature, curb bulb-outs, reduce the crossing distance for pedestrians, identify pedestrian crossings to drivers and act as traffic calming devices.

Discussion: Amenity zone width should be wide enough to provide space for healthy tree growth. The standard for amenity zone width should be flexible so that it may be widened in some locations to accomplish other City goals, such as natural stormwater treatment.

20.9. Encourage private development projects to integrate public space with sidewalks.

20.10. Develop standards for walkway design that meet Surface Water regulations by integrating sustainability or LID practices, such as porous concrete, bioswales, rain gardens or other natural stormwater drainage systems.

20.11. Coordinate sidewalk design and construction with adjacent jurisdictions where sidewalks cross the City boundaries.

- **Policy T21:** Develop a public outreach program to inform residents of the options for walking in the City and educate residents about pedestrian safety and the health benefits of walking. This program should include coordination or partnering with outside agencies.

Implementation Strategies

21.1. Prepare maps that include pedestrian facilities, schools, parks, civic buildings and other destinations in the City. The City should develop educational materials for residents that emphasize the importance of pedestrian safety and explain the health benefits of walking.

Discussion: The maps should identify pedestrian facilities and treatments throughout the City and inform residents of the methods available to report problems with pedestrian facilities to the City. Educational materials should provide resources and information that can be easily accessed. Residents should be made aware of these maps and materials through the City's website, newsletter, wayfinding kiosks and public access television channel. The City should have materials available for distribution at City buildings, public and community events and on the City website as well as coordinating with the school district and transit providers for distribution.

21.2. Work with the school district to integrate pedestrian health and safety as part of the educational curriculum.

21.3. Pursue grant funding from public and private foundations to implement education and outreach programs.

Discussion: Private foundations that emphasize health and safety can provide financial assistance to the City in its education efforts. The City can promote private maintenance of public pedestrian facilities through programs such as Adopt-a-Trail, Adopt-a-Street or Adopt-a-Raingarden.

21.4. Enforce requirements that are designed to keep vehicles from parking in pedestrian facilities.

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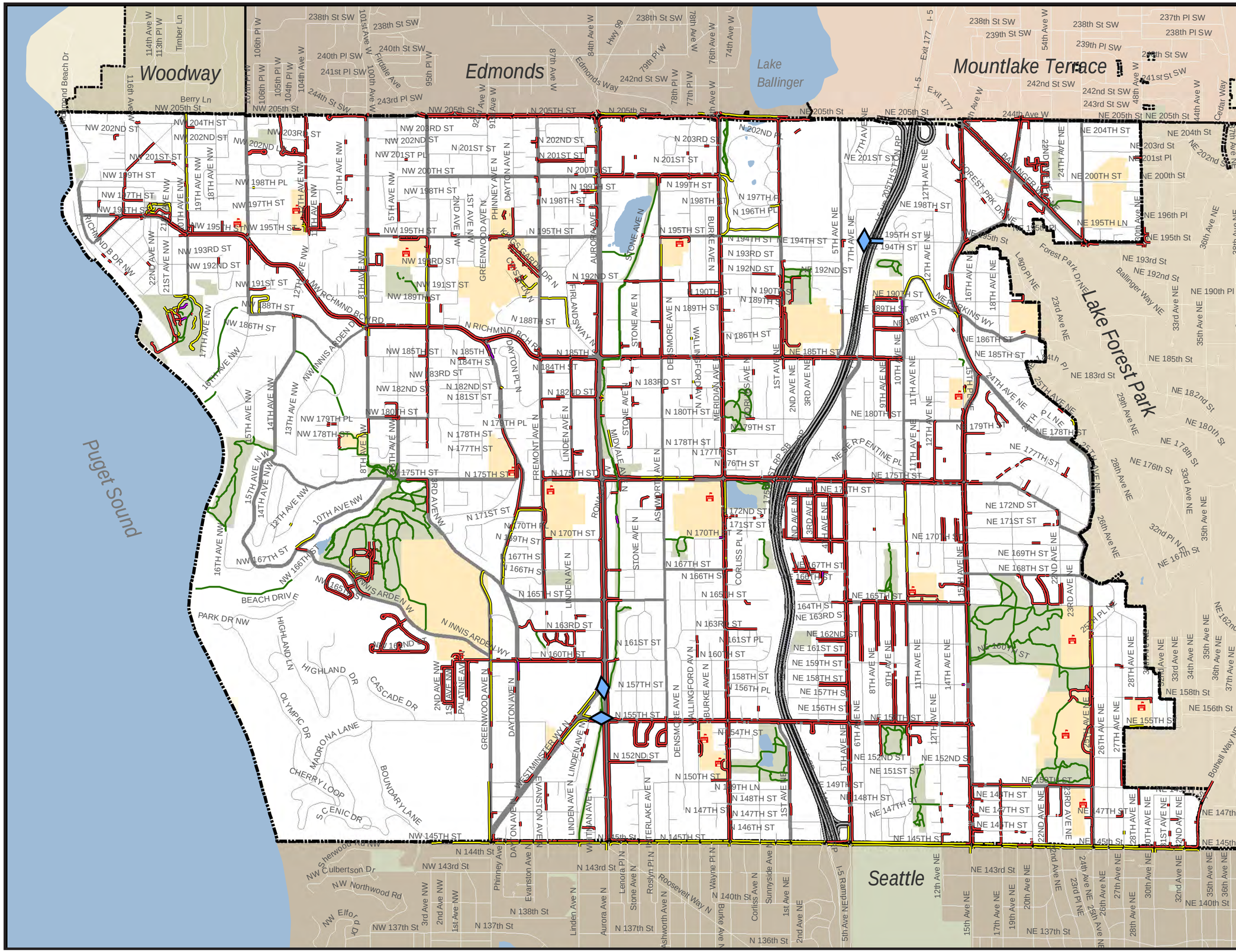


Figure K

Existing Pedestrian Facilities

Legend

Existing Pedestrian Facilities:

- Concrete Sidewalk
- Asphalt Sidewalk
- Gravel Sidewalk
- Bridge

Trail Facilities:

- Trail (Interurban, Other Trails)

Other Map Features:

- School
- School Property
- Park

0 500 1,000 2,000 3,000 Feet

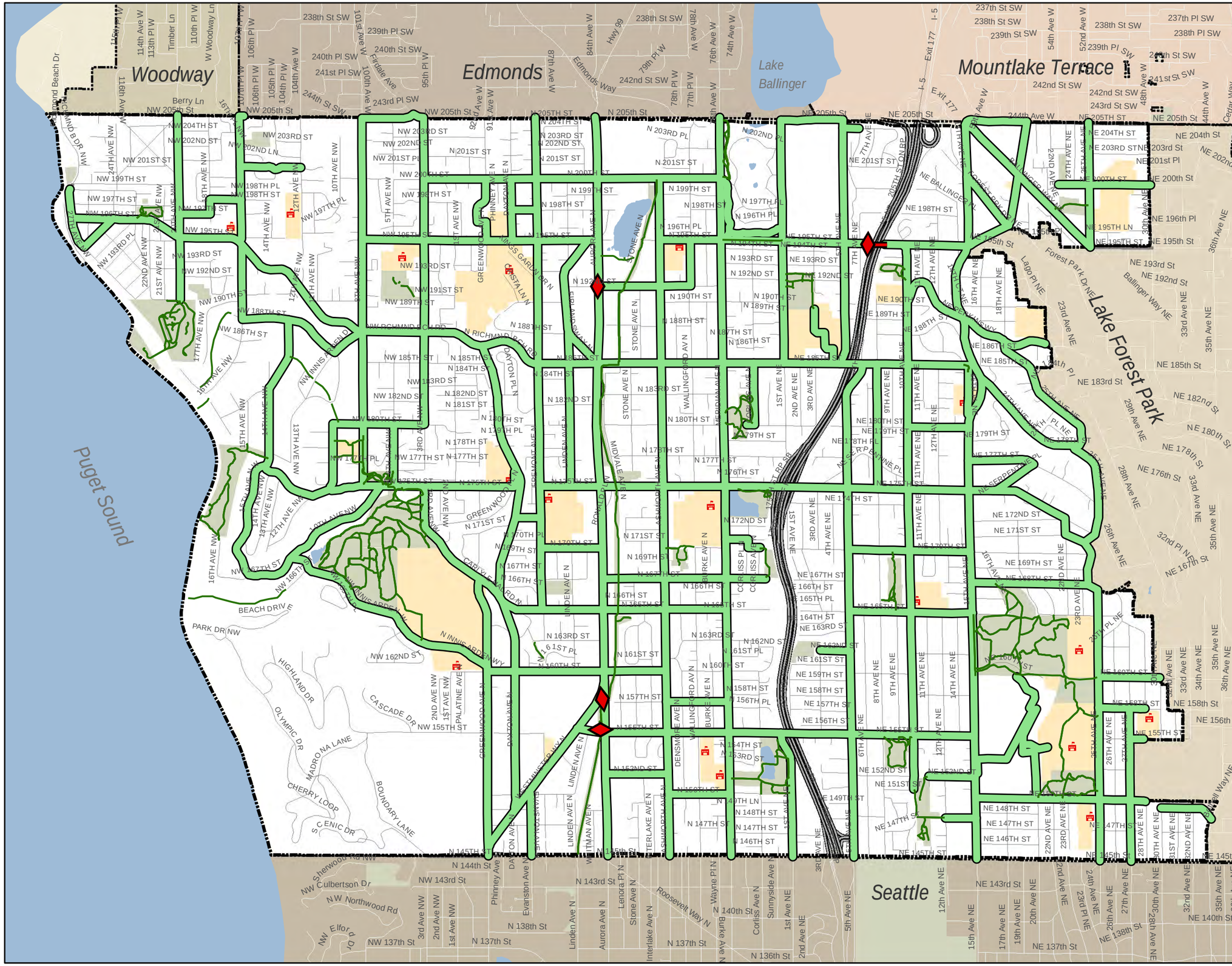
1 inch = 1,983 feet

CITY OF SHORELINE

N W E S

Figure L

Pedestrian System Plan



Legend

- Bridge
- Trail (Interurban, Other Trails)
- Pedestrian System

Other Map Features:

- School
- School Property
- Park

0 500 1,000 2,000 3,000 Feet

1 inch = 1,983 feet

CITY OF SHORELINE

N W E S

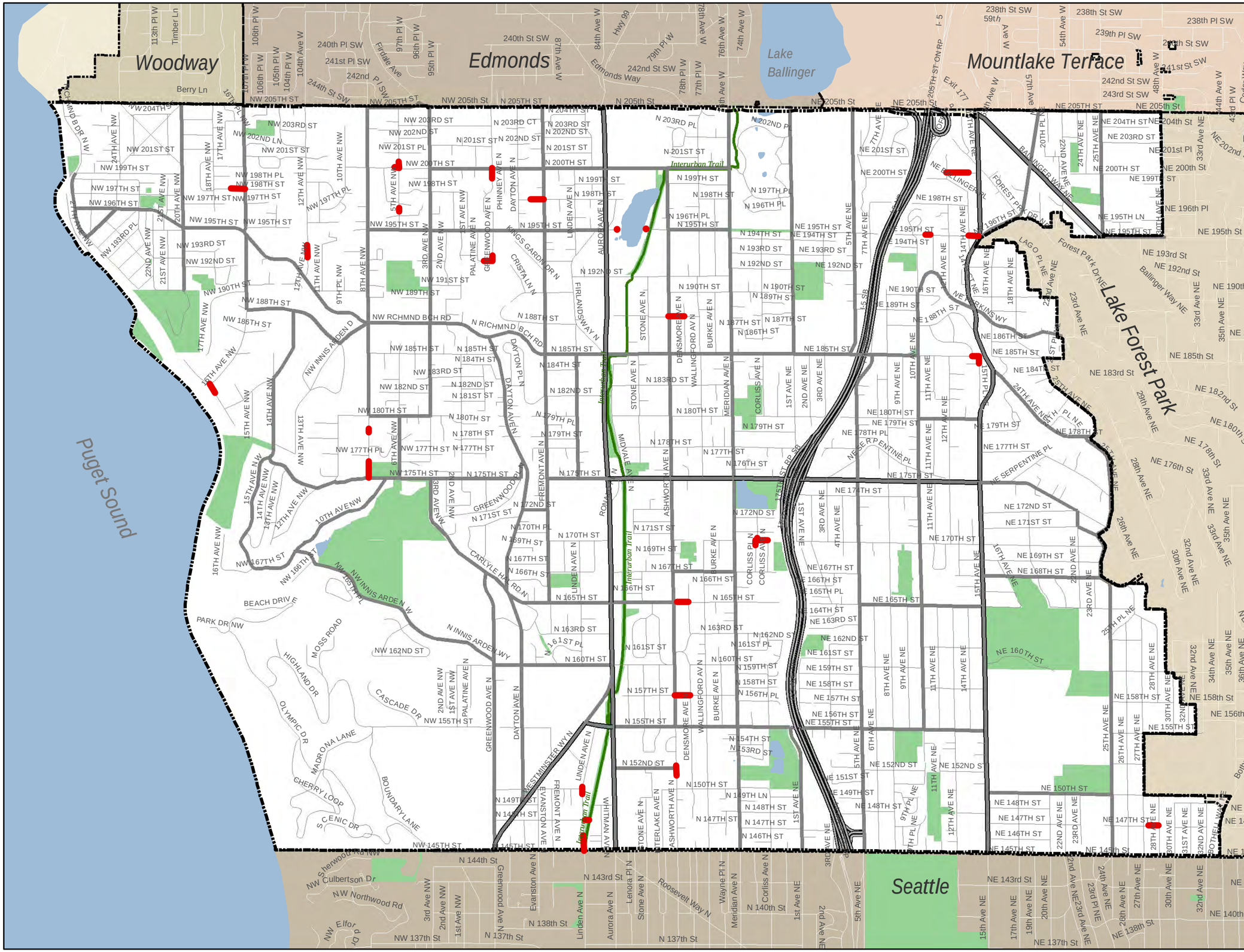


Figure M

Unimproved City Right-of-Way

Areas for Potential Pedestrian Facilities

Legend

- Unimproved City Right-of-Way
- Park or Trail

0 500 1,000 2,000 3,000 Feet

1 inch = 1,938 feet

CITY OF SHORELINE

N W E S

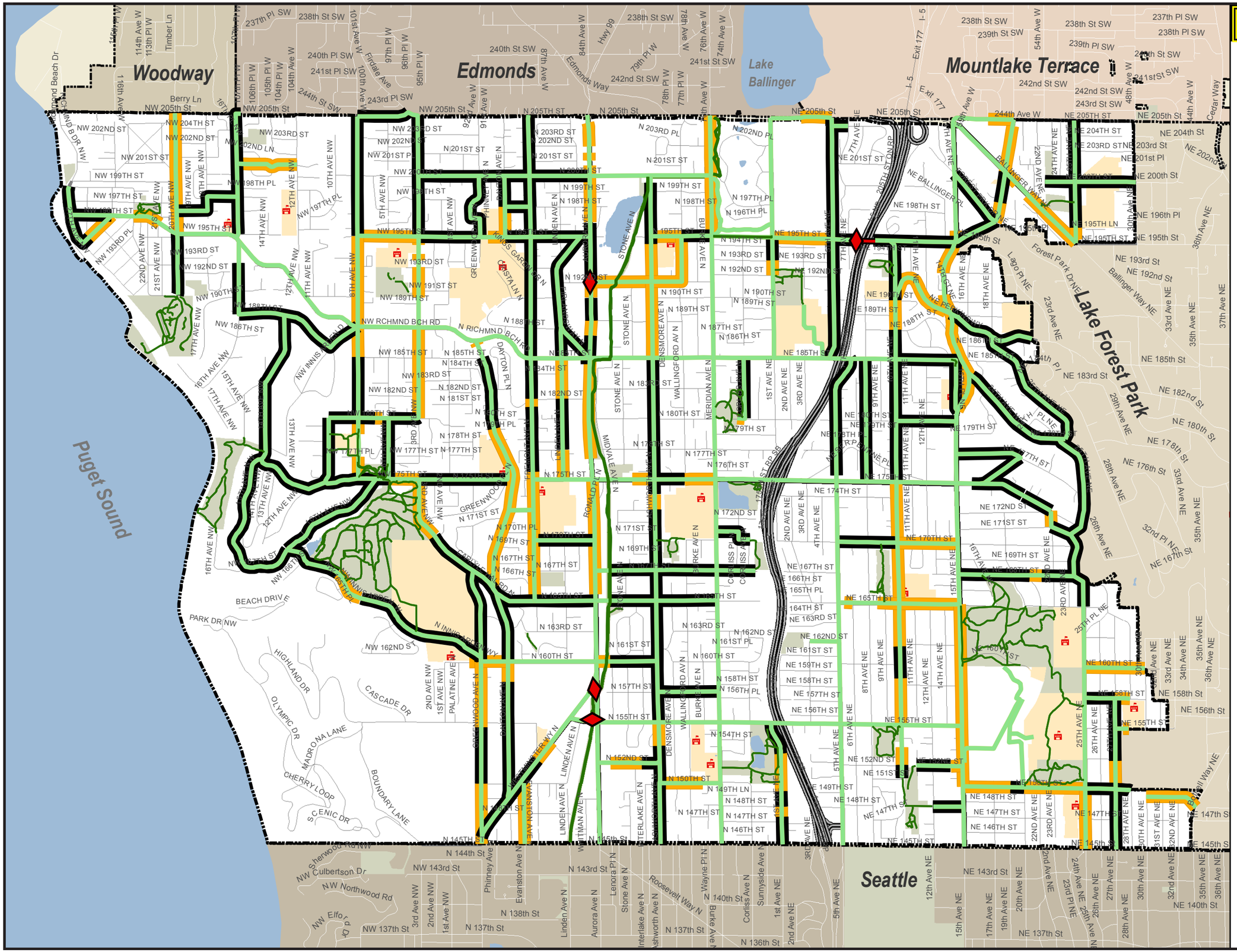


Figure N

Pedestrian Projects Plan

Legend

Bridge

Trail Facilities:

Trail (Interurban, Other Trails)

Proposed Pedestrian Facility Plan:

Proposed Pedestrian System

Sidewalk Lacking on BOTH SIDES

Sidewalk Lacking on ONE-SIDE

Other Map Features:

School

School Property

Park

0 550 1,100 2,200 3,300 Feet

1 inch = 1,983 feet

CITY OF SHORELINE

N E S W

Transit Plan

Transit Plan

While most people travel in the Puget Sound region via automobile, transit serves as an alternative to those who do not have access to a vehicle, are unable to drive or choose not to utilize a car for transportation. Because systems such as buses and light rail carry many passengers at once, the number of trips being made is reduced, and fewer vehicles are on the road. Trip reduction translates directly into a reduction in the emission of greenhouse gases. Even those who choose not to utilize transit benefit from less traffic congestion and cleaner air.

Why Is Transit Important?

Public transit plays an important role in our lives. While most people travel in the Puget Sound region via automobile, transit serves as an alternative to those who do not have access to a vehicle, are unable to drive or choose not to utilize a car for some or all of their transportation needs. Because systems such as buses and light rail carry many passengers at once, the number of trips being made is reduced, and fewer vehicles are on the road. Trip reduction translates directly into a reduction in the emission of greenhouse gases. Even those who choose not to utilize transit benefit from less traffic congestion and cleaner air.

In order for transit to be a feasible option for transportation, several aspects of service need to be present. These include:

Convenience. Transit needs to serve riders from their departure points and deliver them to their desired destinations with minimal difficulty or confusion and limited transfers. Riders must be able to walk to a transit stop or easily access a park & ride facility in order to use transit, and service must go to places that people want to go. Transit schedules must be easy to understand.

Accessibility. Transit stops and vehicles must be accessible to all riders. If transit stops are inaccessible or unsafe due to lack of sidewalks or walkways, riders will be reluctant to utilize them. Passengers must be able to board and deboard vehicles safely and comfortably. For persons with disabilities not able to utilize regular bus service, paratransit service must be comparable to fixed route bus service.

Affordability. The affordability of transportation is often a deciding factor for people selecting how they will make trips. Paying low fares on transit can be less costly than owning a vehicle, making it an appealing alternative to driving. Costs for vehicle fuel, payments, maintenance and parking can outweigh transit fares as well. The high costs for parking in downtown areas with large concentrations of workers can be an influential factor for commuters when deciding whether to use transit or drive. For those with limited means, transit is often the only option for transportation.

Frequency. The more often transit service passes by a given location, the more options there are available for riders. Frequency of service is important to riders and long waits

for transit can deter riders. For people that do not have flexible schedules, dependence on transit that arrives only once or twice an hour can be frustrating, especially if a bus or train is late, canceled or missed. When a transfer is required, infrequent service can greatly lengthen a trip if the connection cannot be timed well.

Reliability. When people need to reach a destination, they want to be certain they can leave and arrive on time. Transit service must be reliable if riders are going to use it with confidence. Vehicles need to arrive at stops as scheduled, have the means to travel their routes with minimal delays and deliver passengers to their destinations on time in a consistent manner. Enough transit vehicles must be operational on a route in order to avoid overcrowding, which can result in buses passing by waiting riders when there is no additional room. If transit is unreliable, people will be deterred from riding, especially if their schedules have little or no flexibility. The presence of high-occupancy vehicle lanes, business access and transit (BAT) lanes or exclusive bus lanes greatly improves reliability, as buses are not stuck in traffic.

Travel Time. Riders generally want their trips to be the shortest and quickest possible. Travel times for transit should be reasonable, with vehicles traveling at speeds comparable to automobiles. Frequency of stops and traffic congestion affect overall travel times.

Comfort. Transit vehicles carry many people. When vehicles are crowded, unclean and not well maintained, rider discomfort increases. This feeling of discomfort can be a deterrent to riding transit.

Safety. Riders must feel that they are safe when riding transit. They need to feel that drivers are well trained, attentive to traffic and their surroundings and will be delivering them to their destinations safely. Transit stations, stops and vehicles should be well lit and provided with security systems as needed, so that riders feel safe in their surroundings while traveling or waiting for transit.

Transit Issues in Shoreline

Service Boundaries

Transit service in the Puget Sound region has its basis in political boundaries. The transit providers serving the City of Shoreline – Metro Transit, Community Transit and Sound Transit – have service areas established by county boundaries (Metro

Transit service in the Puget Sound region has its basis in political boundaries. The transit providers serving the City of Shoreline – Metro Transit, Community Transit and Sound Transit – have service areas established by county boundaries (Metro Transit serves King County and Community Transit serves Snohomish County) or a voter-approved taxing district (Sound Transit).

Metro Transit provides the majority of transit service in Shoreline with the most number of routes, most extensive service coverage and the most service hours provided.

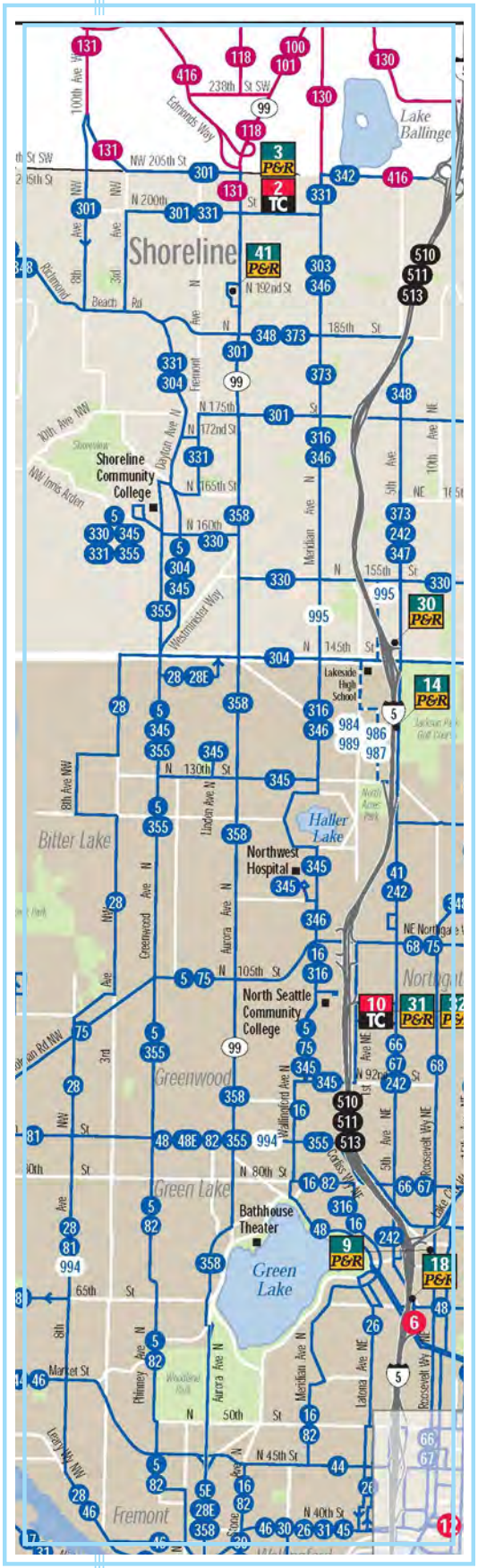


Image: King County Metro System Map

Transit serves King County and Community Transit serves Snohomish County) or a voter-approved taxing district (Sound Transit). Shoreline's location at the boundary between King and Snohomish Counties places the City in the position of being at the beginning or end of many routes provided by Metro Transit and Community Transit. The service area for Sound Transit is divided into subareas comprised of multiple cities, further compromising transit service in Shoreline.

Metro Transit provides the majority of transit service in Shoreline with the most number of routes, most extensive service coverage and the most service hours provided. These Metro Transit services in Shoreline are mostly directed toward the City of Seattle to the south, with a few routes directed east.

Service Priorities

Shoreline is located just north of the City of Seattle. Developed as a bedroom community, the City is primarily single family residential, with no major employment centers. According to the 2000 Census, over 80 percent of employed residents in the City travel outside of the City boundaries to reach work, with almost two-thirds of people commuting to the City of Seattle. Ten percent of employed residents take transit to their jobs, the vast majority of which (88 percent) are traveling to Seattle. Commuters on peak-only routes account for thirteen percent of total transit ridership in Shoreline.

In addition to peak period use of transit, residents in Shoreline use transit throughout the day. All-day routes in Shoreline travel primarily north-south, delivering residents to downtown Seattle, the Northgate Transit Center and cities in Snohomish County (Edmonds, Mountlake Terrace, Lynnwood and Everett). East-west transit service through Shoreline is provided by three routes. Route 358 (an all-day north-south route) is one of Metro Transit's busiest and has the highest ridership of all routes that serve Shoreline, representing 28 percent of all weekday ridership and 38 percent of total ridership in Shoreline. This route is scheduled for conversion to bus rapid transit in 2013.

The transit needs of Shoreline's residents are quite varied, which presents challenges if transit providers must reduce service. Ideally, transit service would continuously expand in the City as demand increases. However, because transit service is heavily funded by sources such as sales tax, which is unreliable and heavily impacted during economic downturns, service reductions are a reality.

Fares

The fare structure established by Metro Transit is configured around City boundaries. Metro Transit has a two-zone fare system. The City of Seattle is one zone and all areas outside of Seattle are in a second zone. Travel into Seattle from outside of the City limits is considered two-zone travel. Travel entirely within the City of Seattle or trips that begin and end within a zone line are considered one-zone travel. The fares for one- and two-zone travel during non-peak hours are the same and are less than peak hour fares. Fares for two-zone trips during peak hours (Monday to Friday, approximately 5 - 9 a.m. and 3 - 7 p.m.) are greater than one-zone trips. Riders in Shoreline that travel into Seattle during peak periods must pay the greater, two-zone fare, regardless of the length of travel in Shoreline. This could be as little as a few blocks of travel.

Seven public transportation agencies, including Metro Transit, Community Transit and Sound Transit, utilize a regional smart card system called ORCA. The ORCA system includes bus passes for the participating transit providers and also works as an electronic purse to hold stored value that is deducted from the balance for each trip. The ORCA card tracks payments and stores payment information when riders make a transfer. While riders can still pay with cash, they cannot use the payment to transfer between providers.

With the elimination of transfers between transit providers for riders paying cash, those riders must pay a fare twice (once to each transit provider). Shoreline residents that pay cash and use Metro Transit to access Community Transit or Sound Transit, generally a short trip, must pay a fare for each portion of the trip. Metro Transit is the only provider serving Shoreline that allows riders paying cash to transfer within its system without an additional payment.

Bus Rapid Transit (BRT) Service

SR 99 is a state highway that runs north-south throughout the Puget Sound region. The segment from downtown Seattle to the King-Snohomish county line, including the three-mile segment that runs through Shoreline, is known as Aurora Avenue N. Bus Rapid Transit (BRT) service is currently in place or scheduled to begin on Aurora Avenue N. BRT is a unique form of bus service designed to function in a manner similar to rail systems. Using a combination of low-floor buses, multiple doors for boarding and deboarding, dedicated right-of-way, high frequency service, greater distance between stops and off-board fare collection,

BRT is a unique form of bus service designed to function in a manner similar to rail systems. Using a combination of low-floor buses, multiple doors for boarding and deboarding, dedicated right-of-way, high frequency service, greater distance between stops and off-board fare collection, BRT can provide an efficient alternative to traditional bus service at a much lower cost than rail.

A single, continuous BRT system that crosses the county line and/or a transfer that occurs on Aurora Avenue N would improve the efficiency of this system, making it more appealing for riders wishing to ride between Shoreline and Snohomish County.

Voters in the Sound Transit district approved expansion of the light rail system in 2008. This expansion will include extending the light rail line north through the City of Shoreline to the City of Lynnwood, with service scheduled to begin in 2023.

Two light rail stops are planned for Shoreline as part of the northward light rail expansion known as North Link. While Sound Transit has yet to make a final determination regarding the alignment of the light rail line, the preliminary plans identify a route that travels up the east side of I-5, with stops at NE 145th Street and NE 185th Street.

BRT can provide an efficient alternative to traditional bus service at a much lower cost than rail. Community Transit provides a 17-mile long BRT service from the City of Everett to the Aurora Village Transit Center (AVTC) in Shoreline via SR 99. Metro Transit plans to run a 13-mile long BRT service from the AVTC to downtown via Aurora Avenue N beginning in 2013.

The termination of each provider's service at the AVTC forces a transfer between systems. This transfer at the AVTC is not on Aurora Avenue N, with buses needing to maneuver through congested, busy intersections, thus reducing the speed and efficiency for riders wishing to cross the county line. Sound Transit has identified a continuous BRT system from downtown Seattle to Everett on SR 99 as part of its long range plan; however, there is no schedule for implementation at this time. Neither Community Transit nor Metro Transit have expressed a desire to extend their BRT routes beyond the current boundaries (Community Transit has indicated to the City of Shoreline that if the AVTC moves to the N 192nd Street Park & Ride, it is likely that their service would also move). A single, continuous BRT system that crosses the county line and/or a transfer that occurs on Aurora Avenue N would improve the efficiency of this system, making it more appealing for riders wishing to ride between Shoreline and Snohomish County.

Rail Service

Sound Transit provides heavy and light rail service in the Puget Sound region. In August 2003, Tacoma Link light rail, the first light rail service to this area, began. This service, located south of Seattle in Pierce County, connects downtown Tacoma to the commuter rail station at the Tacoma Dome. Central Link, a 16-mile long light rail line that runs from downtown Seattle to Sea-Tac International Airport, began service in July 2009[1]. Voters in the Sound Transit district approved expansion of the light rail system in 2008. This expansion will include extending the light rail line north through the City of Shoreline to the City of Lynnwood, with service scheduled to begin in 2023.

Two light rail stops are planned for Shoreline as part of the northward light rail expansion known as North Link. While Sound Transit has yet to make a final determination regarding the alignment of the light rail line, the preliminary plans identify a route that travels up the east side of I-5, with stops at NE

[1] Central Link light rail service began in July 2009 with service from downtown Seattle to the City of Tukwila. Service was extended to Sea-Tac Airport in November 2009.

145th Street and NE 185th Street. As Sound Transit begins its project development process, a final alignment for North Link will be decided. Shoreline will participate in this decision-making process and plan accordingly for future development around the stations.

The type of stations constructed, whether they are large parking garages, dense Transit-Oriented Development (TOD), or other type of land use, will impact existing surrounding development, as well as traffic patterns on roadways serving the stations. Frequent, convenient bus service from different areas in the City to the light rail stations, as well as walkways and bicycle facilities, will be critical to minimizing traffic impacts and providing riders with options for accessing the stations.

Heavy rail service is provided in the form of commuter trains. In 2000, commuter rail service began between the City of Tacoma and downtown Seattle. Service from the City of Everett to downtown Seattle began in 2003. Although this service passes through the City of Shoreline, there are no commuter rail stops in Shoreline. The nearest commuter rail stop is in Edmonds.

Land Use Densities

Shoreline is a suburban community, developed primarily with single-family residential houses. Concentrations of commercial and multi-family development exist primarily along major roadways in the City, including Aurora Avenue N, Ballinger Way NE, 15th Avenue NE, NE 145th Street, Bothell Way NE and NW Richmond Beach Road. These are the areas most heavily served by transit. Transit is most successful in areas with land use densities that support transit and where specific destinations are located.

Shoreline does not provide any of its own transit service. The funding that is available to the transit agencies serving the City is limited and must serve many areas throughout the region. As Shoreline advocates for additional transit service, the City must be prepared to allow and promote land uses and densities that support transit in order to justify those needs and convince the transit agencies that Shoreline is the right area to invest in their transit service.

Shoreline's Transit Plan

Shoreline's Transit Plan establishes the City's transit goals, policies and priorities and identifies potential actions needed to meet those ends. This plan includes a description of the existing

The City of Shoreline would like to see transit serve a variety of functions for residents: congestion reduction, lower transportation costs, reduced greenhouse gas emissions, increased transportation choices and improved mobility for those unable to drive. To accomplish these goals, the City has developed short, medium and long range plans.

transit system in Shoreline and the different ways transit is funded. An explanation of the City's vision for transit, as expressed in other City policy documents such as the Comprehensive Plan and Sustainability Strategy, sets the foundation for what the City would like to see from its transit service providers. Good transit connections and maintenance of the transit system are described to identify the critical elements for successful and efficient transit service in Shoreline.

The City of Shoreline would like to see transit serve a variety of functions for residents: congestion reduction, lower transportation costs, reduced greenhouse gas emissions, increased transportation choices and improved mobility for those unable to drive. To accomplish these goals, the City has developed short, medium and long range plans. Each plan identifies the policies for the planning period, recommends actions to achieve these policies and establishes a timeline for completion. It is the City's intention that through implementation of these plans and continuing coordination with transit providers, Shoreline will have a transit system that serves the needs of all residents wishing to travel by bus or train for all or most of their activities.

Shoreline's Transit System

Existing Transit Service in Shoreline

Public transit is an integral part of Shoreline's commitment to address neighborhood quality of life issues. People view public transit as a way to address issues of traffic congestion, transportation options, pollution and a sense of community. Unlike urban centers in the Puget Sound region, Shoreline does not have a concentrated base of employment or major population center that serves as an origin or destination for transit. The one major transit destination point within the City is Shoreline Community College. The majority of the destinations for journey-to-work trips for Shoreline residents are located in urban centers, such as downtown Seattle and the University of Washington. However, access to community facilities and institutions are important to the residents of Shoreline. Libraries, City Hall, community centers and many parks and schools are scattered throughout the City with varying levels of transit service.

People view public transit as a way to address issues of traffic congestion, transportation options, pollution and a sense of community.

Transit Agencies

The City of Shoreline is served by three transit agencies: Metro Transit, Community Transit, and Sound Transit. Metro Transit provides transit service primarily in King County. Just to the north of Shoreline, Community Transit services most of Snohomish County with several routes terminating or passing through Shoreline at the AVTC. Both Metro Transit and Community Transit provide park & ride lots, vanpools, paratransit, Dial-A-Ride Transportation (DART), and local and commuter express bus service throughout their primary service areas and to major centers. However, due to their service jurisdictions, transit users along the Aurora Avenue corridor who cross the county line need to make a transfer between providers.

The City of Shoreline is served by three transit agencies: Metro Transit, Community Transit, and Sound Transit.

Sound Transit is the regional transit agency for the Puget Sound area and provides express bus, commuter rail and light rail service. Sound Transit provides limited, all-day express bus service in Shoreline with service to Seattle, Mountlake Terrace, Lynnwood, and Everett. Two express bus routes serve the I-5/NE 145th Street freeway station, which serves the North Jackson Park & Ride lot located within Shoreline. Sound Transit's Sounder commuter rail between Seattle and Everett operates

along the City's shoreline but does not have any stations within City limits. Light rail service in King County began in 2009 and is limited to service from downtown Seattle to Sea-Tac Airport.

Each weekday, approximately 350 Community Transit and Sound Transit buses pass through Shoreline on I-5 but do not provide service at the NE 145th Street freeway station or any other locations in Shoreline.

Service

There are 26 bus routes operating in the City of Shoreline. Five additional Metro Transit routes skirt the City's southeastern border along Lake City Way, three Metro Transit routes operate along short portions of NW/N/NE 145th Street at the City's southern boundary, and one additional Metro Transit route terminates at the park & ride facility at I-5 and NE 145th Street. Additionally, Metro Transit operates one custom route to Evergreen School at Meridian Avenue N and N 152nd Street. Of the 26 routes located in Shoreline, 12 operate during peak periods only. The remaining routes are offered throughout the day. All of the Metro Transit and Sound Transit routes with all-day service operate seven days a week. Community Transit routes with all-day service operate Monday through Saturday. Community Transit does not provide any Sunday service. Metro Transit provides the majority of the service in the City, with 29 fixed routes operating in the Shoreline area. Each weekday, approximately 350 Community Transit and Sound Transit buses pass through Shoreline on I-5 but do not provide service at the NE 145th Street freeway station or any other locations in Shoreline.

Transit services in Shoreline can be aggregated into the following categories:

Community. Community routes provide local access within the City. Currently, there are no bus routes that exclusively serve the City of Shoreline. However, as part of their overall service, several routes connect Shoreline neighborhoods. These include Metro routes 330, 331, 346, 347, 348, and 358.

Inter-community. Inter-community routes connect communities with neighboring areas such as Mountlake Terrace, Lake City, Lake Forest Park and Kenmore. These include Metro routes 330 and 331 and Community Transit route 131.

Regional. Regional routes connect Shoreline to urban centers or areas outside of the county including Northgate, downtown Seattle, University District, Bellevue, Renton, Lynnwood and Everett. Routes include Metro 5, 77, 242, 301, 303, 304, 308, 316, 342, 345, 346, 347, 348, 355, 358, and 373; Community Transit Swift, 101, 118, 130

and 416; and Sound Transit 510 and 511. Sound Transit Routes 510 and 511 do not serve Shoreline during the peak period in the peak direction.

Custom. Custom bus routes operate at specific times to specific destinations such as an employment area or school. Metro operates Route 995 to Evergreen School from Laurelhurst. The school and riders of this route pay for its operating costs.

While transit agencies are required to provide bus service that is accessible to persons with disabilities, there are circumstances where a person's disability prevents him or her from performing the tasks needed to ride regular bus service. These riders are accommodated by paratransit programs. Metro Transit provides primary paratransit service for Shoreline through King County under its ACCESS Transportation program. Through its Community Transportation Program, Metro provides services beyond the accessible regular bus service and paratransit service. This program is intended to provide service that is more flexible and responsive to the unique transportation needs of persons with disabilities. It includes discounts for taxi service, the repurposing of ACCESS and vanpool vehicles to participating agencies and reduced vanpool fares. Community Transit provides paratransit through its DART (Dial-a-Ride Transportation) program to destinations in Shoreline from Snohomish County. A regional coalition of transit agencies, including Metro Transit, Community Transit and Sound Transit, provide regional connections for riders with special needs.

Figure O, City of Shoreline All-Day Transit Service Routes, maps out the all-day transit service in Shoreline. This figure illustrates services providing connections within the City and to regional and inter-community destinations. The Aurora Village Transit Center (AVTC) and the Northgate Transit Center serve as major transfer points for many of these routes. Connections to points north are primarily provided at the freeway station or AVTC, with service provided by Community Transit or Sound Transit.

Figure P, City of Shoreline Peak Period Only Transit Service Routes, illustrates how the majority of the peak period service is directed to and from downtown Seattle. These routes are available throughout the City. Transit routes to the University District or points to the north, south or east are only available at select areas of Shoreline. Many of these connections can be made at the AVTC.

Table 6.1, Transit Service Classification, describes the type of service provided by each route, the operating periods and route destinations.

Table 6.2, Transit Service Headways by Time Period, provides an overview of service availability for each of the 26 bus routes serving Shoreline. Most lines service regional north-south corridors running at 30-minute headways, with greater frequency during the peak periods. Evening headways are either 30 or 60 minutes. Saturday service runs on 30 to 60 minute headways, while buses on Sunday generally run at 60-minute intervals. Route 358, which runs from the AVTC to downtown Seattle, provides the greatest frequency of the routes within the City, with headways as frequent as six minutes during the peak periods and headways no greater than 30 minutes in the evenings and on weekends. This route will be converted to a bus-rapid transit (BRT) route in 2013. Most routes that have an end point in Shoreline terminate at Shoreline Community College or at the AVTC. Many of the regional routes operate only during peak periods. The remaining routes offer a mix of community, inter-community and regional bus service throughout most of the day during the weekday and on weekends.

Table 6.1 Transit Service Classification

Service Type	Service Duration	Route	Provider	Major Destinations
Regional	All-Day/ Night/ Weekend	5	Metro Transit	Downtown Seattle, South Lake Union, Fremont, Woodland Park Zoo, Greenwood, Shoreline Community College
Regional	Peak	77	Metro Transit	Downtown Seattle, Maple Leaf, Jackson Park, North City
Regional	All-Day/ Night/ Saturday	Swift	Community Transit	Everett Station, SR 99, Edmonds, Lynnwood, AVTC
Regional	All-Day/ Night/ Saturday	101	Community Transit	Mariner Park & Ride, Lynnwood, AVTC
Regional	All-Day/ Night/ Saturday	118	Community Transit	Ash Way Park & Ride, Alderwood Mall, Lynnwood Park & Ride, Edmonds Community College, AVTC
Regional	All-Day/ Night/ Saturday	130	Community Transit	Lynnwood Transit Center, Mountlake Terrace Transit Center, AVTC
Regional	Peak	242	Metro Transit	North City, Northgate Transit Center, I-5/NE 65th Street Park & Ride, Montlake, Microsoft, Overlake, Overlake Park & Ride
Regional	Peak	301	Metro Transit	Metro Bus Tunnel, Downtown Seattle, I-5 Freeway Stations, Shoreline Park & Ride, Richmond Highlands, Firdale Village, AVTC
Regional	Peak	303	Metro Transit	First Hill, Downtown Seattle, Northgate Transit Center, Jackson Park, Richmond Highlands, AVTC, Shoreline Park & Ride
Regional	Peak	304	Metro Transit	Downtown Seattle, NE 145th Street/I-5 Freeway Station, Richmond Beach
Regional	Peak	308	Metro Transit	Downtown Seattle, Jackson Park, Lake City, Lake Forest Park, Horizon View
Regional	Peak	316	Metro Transit	Downtown Seattle, East Greenlake, North Seattle Community College, Meridian Park
Regional	Peak	342	Metro Transit	Shoreline Park & Ride, AVTC, Lake Forest Park, Kenmore, Bothell Park & Ride, NE 160th Street/I-405 Freeway Station, Houghton Freeway Station, Bellevue Transit Center, South Bellevue Park & Ride, Coal Creek Parkway Freeway Station, Newport Hills, Kennydale Freeway Station, Renton Boeing, Renton Transit Center
Community/ Regional	All-Day/ Night/ Weekend	345	Metro Transit	Northgate Transit Center, North Seattle Community College, Northwest Hospital, Four Freedoms, Shoreline Community College
Community/ Regional	All-Day/ Night/ Weekend	346	Metro Transit	Northgate Transit Center, Northwest Hospital, Haller Lake, Richmond Highlands, AVTC

Service Type	Service Duration	Route	Provider	Major Destinations
Community/ Regional	All-Day/ Night/ Weekend	347	Metro Transit	Northgate Transit Center, Jackson Park, Shoreline Library, Ballinger Terrace, Mountlake Terrace Transit Center
Community/ Regional	All-Day/ Night/ Weekend	348	Metro Transit	Northgate Transit Center, Jackson Park, Shoreline Community Center & Library, North City, Richmond Beach
Regional	Peak	355	Metro Transit	Downtown Seattle, University District, Greenwood, Shoreline Community College
Regional	All-Day/ Night/ Weekend	358	Metro Transit	Downtown Seattle, West Green Lake, Aurora Avenue N, Shoreline Park & Ride, AVTC
Regional	Peak	373	Metro Transit	UW Campus, University District, Maple Leaf, Jackson Park, Richmond Highlands, Shoreline Park & Ride, AVTC
Regional	Peak	416	Community Transit	Edmonds, AVTC, Downtown Seattle
Regional	All-Day/ Night/ Weekend	510	Sound Transit	Downtown Everett, Everett Station, Eastmont Park & Ride, I-5 Freeway Stations, Downtown Seattle
Regional	All-Day/ Night/ Weekend	511	Sound Transit	Ash Way Park & Ride, Lynnwood Park & Ride, Mountlake Terrace Transit Center, I-5 Freeway Stations, Downtown Seattle
Inter-Community	All-Day/ Night/ Saturday	131	Community Transit	Edmonds Community College Transit Center, Edmonds Library, Edmonds Rail Station, Edmonds Ferry, Edmonds Senior Center, AVTC
Community/ Inter-Community	Peak	330	Metro Transit	Lake City, Fircrest, Shoreline Community College
Community/ Inter-Community	All-Day/ Night/ Weekend	331	Metro Transit	Shoreline Community College, Richmond Highlands, AVTC, Ballinger Terrace, Lake Forest Park, Kenmore Park & Ride
Custom	Peak	995	Metro Transit	Laurelhurst, University Prep, Lakeside School, Evergreen School

Table 6.2. Transit Service Headways by Time Period

Route	Provider	Peak		Midday	Evening	Saturday	Sunday
		Peak direction	Off Peak direction				
77	Metro Transit	15-30	-	-	-	-	-
242	Metro Transit	30	-	-	-	-	-
303	Metro Transit	15-20	-	-	-	-	-
304	Metro Transit	20-30	-	-	-	-	-
308	Metro Transit	30-40	-	-	-	-	-
316	Metro Transit	15-25	-	-	-	-	-
342	Metro Transit	30-45	-	-	-	-	-
355	Metro Transit	15	-	-	-	-	-
373	Metro Transit	15-45	-	-	-	-	-
301	Metro Transit	15-30	30	-	-	-	-
330	Metro Transit	30	30	-	-	-	-
Swift	Community Transit	10	10	10	20	20	-
416	Community Transit	20-30	-	-	-	-	-
510	Sound Transit	-	30	30	30-60	30-60	30-60
511	Sound Transit	-	30	15-30	15-60	30-60	30-60
118	Community Transit	30 (No specific peak flow direction)	30	60	30-60	-	
5	Metro Transit	20-30	30	30	30	30	30
101	Community Transit	30 (No specific peak flow direction)	30	30	30	-	
130	Community Transit	30 (No specific peak flow)	30	60	30-60	-	
131	Community Transit	30 (No specific peak flow)	30	30	30-60	-	
331	Metro Transit	30	30	30	60	30-60	60
345	Metro Transit	30	30	30	60	30-60	60
346	Metro Transit	30	30	30	60	30-60	60
347	Metro Transit	30	30	30	30-60	30-60	60
348	Metro Transit	30	30	30	30-60	30-60	60
358	Metro Transit	6-15	15	15	30	15-30	20-30

Peak: 5:00 a.m. – 9:00 a.m. and 3:00 p.m. – 7:00 p.m.

Off Peak: 9:00 a.m. – 3:00 p.m.

Night: 7:00 p.m. – 5:00 a.m.; Most night service in Shoreline ends before or around midnight.

Table 6.3, Transit Service and Ridership, provides an overview of trip destinations and ridership to and from the City of Shoreline. Seven out of 10 weekday bus trips that serve Shoreline have a regional destination (70.7%). One third (38%) of all weekday bus trips are destined to and from downtown Seattle. Metro Transit routes 5 and 358 provide the only all-day, everyday service to downtown Seattle. Sound Transit routes 510 and 511 provide all-day daily bus service to downtown Seattle, but do not serve Shoreline in the peak direction during the peak period (no service is provided during the AM peak heading southbound or during the PM peak heading northbound). Eight of the 12 routes serving downtown Seattle are peak-only routes.

The majority of bus riders traveling to and from Shoreline are on routes serving downtown Seattle.

Approximately one-third of transit trips (29.6%) are regional destinations to points north: Edmonds, Mountlake Terrace, Lynnwood and Everett. The third largest percentage of overall transit trips (29.3%) makes connections to community and inter-community destinations. Locations include Lake City, Lake Forest Park, Kenmore, Northgate, Edmonds and Mountlake Terrace. Over half of these regional transit trips are provided by Community Transit BRT service, Swift, which serves SR 99 from Shoreline to Everett. Outside of the custom bus services, connections to the University District and regional points east of Lake Washington comprise the smallest percentage of overall trips (3.1%).

The majority of bus riders traveling to and from Shoreline are on routes serving downtown Seattle. Weekday ridership on the 12 routes to and from downtown Seattle represents almost half of the total weekday ridership in Shoreline (49%). Almost 70 percent of that ridership occurs during the AM and PM peak periods on nine Metro routes. Community and inter-community routes represent the second highest weekday ridership in Shoreline, with 35 percent of the weekday rides. The one route serving the University of Washington, almost exclusively during the peak periods, represents approximately 2.6 percent of Shoreline's weekday ridership, and the four regional Community Transit routes heading north serve 12.4 percent of the total weekday ridership. The lowest weekday ridership in the City is on the two regional eastbound, peak-only routes (<1%).

Total ridership in Shoreline follows similar patterns. Just over half of the total riders travel to and from downtown Seattle, and 37 percent of trips are on community and inter-community routes. Regional trips on Community Transit account for 10 percent of all ridership. The remaining 2 percent of total ridership occurs on peak-only trips to the University of Washington and regional, eastbound destinations.

Figure Q, 2010 Weekday Transit Trips and Ridership, shows the distribution of transit ridership and trips.

Table 6.3. Transit Service and Ridership

Service Type	Destination/Direction from Shoreline	Route	Provider	Number of weekday trips	Average Daily Shoreline Ridership (Boardings and Deboardings)			
					Peak	Off Peak	Night	Weekend (Saturday and Sunday combined)
Regional	Downtown Seattle (South)	5	Metro Transit	81	231	168	58	480
		77	Metro Transit	17	127	-	-	-
		301	Metro Transit	40	1,539	-	-	-
		303	Metro Transit	17	405	-	-	-
		304	Metro Transit	10	393	-	-	-
		308	Metro Transit	8	125	-	-	-
		316	Metro Transit	15	24	-	-	-
		355	Metro Transit	18	22	-	-	-
		358	Metro Transit	156	2,361	1,521	544	5,815
		416	Community Transit	12	12	N/A	N/A	N/A
		510	Sound Transit	50	83 daily weekday boardings & deboardings			N/A
		511	Sound Transit	81	98 daily weekday boardings & deboardings			N/A
	University District (South)	373	Metro Transit	19	352	58	-	-
	Northgate, Lake Forest Park, Kenmore, Redmond, Bellevue, Renton (South, East)	242	Metro Transit	13	43	-	-	-
		342	Metro Transit	9	72	-	-	-
	Everett, Lynnwood, Edmonds, Mountlake Terrace (North)	Swift	Community Transit	200	1,260 weekday boardings & deboardings/ 660 Saturday boardings & deboardings			
		101	Community Transit	77	277 weekday boardings & deboardings/ 112 Saturday boardings & deboardings			
		118	Community Transit	59	148 weekday boardings & deboardings			
		130	Community Transit	57	268 weekday boardings & deboardings			
Community/Inter-Community	Lake City, Lake Forest Park, Kenmore (East)	330	Metro Transit	23	356	58	-	-
		331	Metro Transit	63	779	783	100	1,108
	Northgate (South)	345	Metro Transit	58	157	170	22	252
		346	Metro Transit	63	407	341	71	763
		347	Metro Transit	63	431	361	87	961
		348	Metro Transit	62	583	516	126	1,352
	Edmonds (North)	131	Community Transit	57	211 weekday boardings and deboardings			

NOTES: Routes 330 and 373 operate a few runs in Shoreline outside the peak service times, but is primarily a peak-only service. Community Transit does not track ridership during time of day or week. Sound Transit counts only weekday boardings and deboardings.

Peak: 5:00 a.m. – 9:00 a.m. and 3:00 p.m. – 7:00 p.m.

Off Peak: 9:00 a.m. – 3:00 p.m.

Night: 7:00 p.m. – 5:00 a.m.; most night service in Shoreline ends before or around midnight.

Ridership in Shoreline has grown significantly over the last decade. In 2003, Metro Transit significantly restructured transit service in Shoreline, modifying several routes.

Table 6.4, Ridership Changes in Shoreline on Metro Transit Routes, shows how ridership has changed since 1998, including the changes resulting from the service restructure. Overall ridership has increased 28 percent since 1998 and has increased 33 percent since the service restructure in 2003. From 2007-2010, ridership grew by 6 percent.

Table 6.4, Ridership Changes in Shoreline on Metro Transit Routes

Route	Ridership Change		
	1998-2010	2003-2010	2007-2010
5	19%	16%	7%
77	-10%	4%	-26%
242	-10%	-6%	-31%
301	42%	34%	13%
303	194%	176%	32%
304	6%	27%	15%
308	-25%	5%	-9%
316	0%	61%	16%
330	65%	106%	14%
331	-16%	207%	6%
342	-	12%	-17%
345	36%	10%	24%
346	35%	40%	31%
347	19%	6%	18%
348	213%	90%	13%
355	-30%	19%	6%
358	33%	37%	1%
373	30%	39%	10%
Annual Change	28%	33%	6%

Access to Regional High Capacity Transit (HCT)

All three transit agencies that serve Shoreline provide or are planning for some form of HCT. The type of HCT varies among the agencies and even the comparable types of HCT have different design and operational elements.

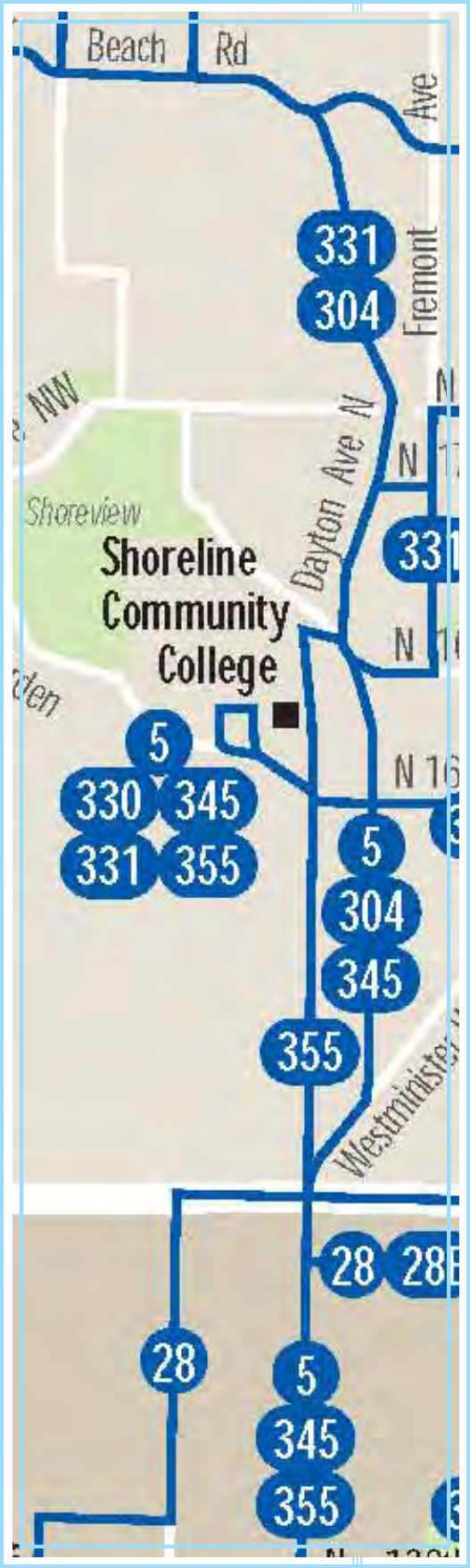


Image: King County Metro System Map

Community Transit began operation of BRT along SR 99 in autumn 2009. This service, known as Swift, runs approximately 17 miles, from Everett to the AVTC.

Metro Transit is currently operating or planning for the implementation of BRT on six corridors in King County. The fifth corridor to receive BRT service will be the Aurora Avenue North Corridor, with implementation scheduled for 2013. Metro's BRT system is known as RapidRide and service on Aurora Avenue N is known as the E Line.

Community Transit

Community Transit began operation of BRT along SR 99 in autumn 2009. This service, known as Swift, runs approximately 17 miles, from Everett to the AVTC. Stops are one to two miles apart along the corridor, with underlying "shadow service" continuing to provide service at more than 50 local stops along the corridor. The system is designed to be fast and frequent, making it a convenient option for riders. Community Transit BRT service provides 10-minute headways on weekdays 5 a.m. - 7 p.m. and 20-minute headways on weekdays after 7 p.m. and on Saturdays.

Unique stations are a strong component of Community Transit BRT service. These stations have off-board ticket vending machines (which allow riders to pay before entering the coach), real-time monitors that display next bus arrival times, raised curbs to improve access to the buses and information kiosks for transit riders. The lower floor coaches have three doors, with on-board bicycle storage and drop ramps for wheelchair access. The station design, bus design and off-board payment allow for quicker boarding and deboarding, thereby reducing dwell time and overall trip time. Buses are deployed by transit dispatchers based upon the location of other buses in order to ensure 10-minute headways at stops. As a result, there is no need for schedules and buses can travel efficiently along the corridor without needing to worry about specific timepoints for each stop. A Community Transit BRT station is located at the AVTC. While this station looks different than the existing Metro and Community Transit bays at the AVTC, it does not have all of the features of the standard Community Transit BRT station, such as a raised platform, due to limited space.

Approximately seven miles of the Swift route have transit only lanes, with additional improvements planned for the future. The route contains 10 miles of transit signal priority (TSP) intersections, which can extend a green light a few seconds to keep late-running buses on schedule. Community Transit is planning for expansions to their BRT system, with several possible routes in the future.

Metro Transit

Metro Transit is currently operating or planning for the implementation of BRT on six corridors in King County. Service began on the first Metro Transit BRT line in south King County in October 2010. The fifth corridor to receive BRT service will be the Aurora Avenue N Corridor, with implementation scheduled for

2013. Metro's BRT system is known as RapidRide and service on Aurora Avenue N is known as the E Line.

The E Line will run approximately 12 miles from downtown Seattle to the AVTC. The northern three miles of this route, all located within the City of Shoreline, will include BAT lanes in both directions by the beginning of this service. BAT lanes are lanes designated for transit and vehicles entering and exiting the roadway, providing buses with a dedicated travel lane. In the City of Seattle, BAT lanes are only provided in the northbound direction for approximately 1.5 miles. There are parking restrictions intermittently along Aurora Avenue N during the peak travel times in the morning and evening periods, providing an additional lane for traffic; however, these parking restrictions do not result in bus-only lanes.

Metro anticipates a unified look for all six BRT corridors, with all shelters and buses being the same for the routes. The Metro Transit version of BRT will include unique buses with multiple doors for faster boarding and deboarding of riders, and stations with enhanced passenger facilities, such as route maps and real time information about next bus arrival times. Unlike Community Transit, Metro Transit may not have off-board payment machines, which will result in slower boardings, as fare payments will be allowed through the front door of the bus only. BRT service on the E Line will replace the existing route 358. Service will include 10-minute headways during the AM and PM peak periods and 15-minute headways during the off-peak periods.

BRT service on the E Line will replace the existing route 358. Service will include 10-minute headways during the AM and PM peak periods and 15-minute headways during the off-peak periods.

Sound Transit

Sound Transit provides two versions of HCT – commuter rail and light rail. Commuter rail service travels from Everett to downtown Seattle, with four southbound morning trips and four northbound evening trips. The service passes through Shoreline but has no stops in the City. The nearest commuter rail stop is in Edmonds. Light rail service began in 2009, running from downtown Seattle to Sea-Tac Airport. Construction is underway to extend the light rail line north to the University of Washington. This extension is scheduled to open in 2016.

In 2008, voters approved a funding package that included expansion of the light rail system north, south and east of the existing line. Sound Transit will continue the line north through Seattle and then along I-5 to Lynnwood, with two stops planned in Shoreline at NE 145th Street and NE 185th Street. Service to Northgate and Lynnwood is scheduled to begin in 2021 and 2023, respectively.

In 2008, voters approved a funding package that included expansion of the light rail system north, south and east of the existing line. Sound Transit will continue the line north through Seattle and then along I-5 to Lynnwood, with two stops planned in Shoreline at NE 145th Street and NE 185th Street.

Facilities

Bus stops are located along most Principal, Minor and Collector Arterials in Shoreline, next to park & ride lots and at Shoreline Community College and the AVTC. The AVTC is served by Metro Transit and Community Transit, allowing riders to transfer within and between providers. The transit center accommodates a park & ride lot and 12 bus bays that allow for local, inter-community and regional bus connections. Community Transit provides connections to Snohomish County transit hubs, including the Edmonds-Kingston ferry, the Sounder Edmonds Station and Everett Station. The freeway station at NE 145th Street/I-5 provides connections between the North Jackson Park & Ride, Metro Transit express buses, and Sound Transit express bus service. However, this station was constructed adjacent to the outside lanes of travel, prior to the decision to locate high-occupancy vehicle (HOV) lanes on the inside of the roadway. As a result, the freeway station at NE 145th Street does not receive service from Sound Transit during peak times in the peak direction. Four Metro Transit lines and two Sound Transit routes serve the freeway station. Passenger amenities, such as shelters, benches and route-specific schedule information, are provided at major passenger activity areas, including the AVTC, Shoreline Park & Ride, Shoreline Community College, and the NE 145th Street freeway station.

Of the 322 Shoreline bus stops, 57 have shelters. Metro Transit places shelters at suburban stops where there are 25 or more daily boardings (this threshold is increased to 50 or more daily boardings in the City of Seattle). Benches and schedule information are located at many other stops in Shoreline. Most shelter locations are oriented toward AM peak bus route operations. Approximately two-thirds of the City's stops are fully wheelchair accessible, with the capacity to deploy wheelchair lifts and provide adequate maneuvering room in compliance with ADA requirements. Another one-quarter of the stops have limited access, with room for the bus to deploy the ramp. However, these stops have restricted maneuvering room or access to the site. The remaining stops in the City are not wheelchair accessible and the bus cannot deploy the wheelchair lift.

The most heavily utilized stops in the City of Shoreline are located at the AVTC, at Shoreline Community College and along Aurora Avenue N. The stops with the largest number of boardings and deboardings occur at the AVTC. Outside of this transit center, Shoreline Community College has the next highest number of boardings and deboardings, followed by the Shoreline Park & Ride at N 192nd Street.

Metro Transit has eight designated park & ride lots located throughout the City; three parking lots are permanent facilities and five are leased from local churches. The Shoreline Park & Ride located at N 192nd Street and Aurora Avenue N has the largest capacity with 326 parking spaces. The smallest park & ride lot is located at Shoreline United Methodist Church with 20 spaces. King County's Park-and-Ride Lot Utilization Report for the Second Quarter of 2011 indicated that all of the permanent park & ride lots have a utilization rate ranging from 76 percent to 100 percent. The leased lot at Aurora Church of the Nazarene had the highest utilization rate with 114 percent (a percentage over 100 means that drivers are utilizing space on the lot not designated for park & ride). The remaining four lots have excess capacity, with utilization ranging from 13 to 89 percent. **Table 6.5, Shoreline Park & Ride Facilities**, lists each facility, its capacity and current utilization.

Table 6.5. Shoreline Park & Ride Facilities

Name	Ownership	Location	Capacity	Utilization	Routes Serving P&R
North Jackson Park Park & Ride	Public	14711 5th Avenue NE	68	95%	242, 243, 301, 303, 304, 308, 347, 373, 510, 511
Shoreline Park & Ride	Public	18821 Aurora Avenue N	326	76%	301, 303, 342, 358, 373
Aurora Village Transit Center	Public	1524 N 200th Street	202	100%	301, 303, 331, 342, 346, 358, 373, Swift, 101, 118, 130, 131
Bethel Lutheran Church	Private (Leased)	17418 8th Avenue NE	40	61%	347, 348
Korean Zion Presbyterian Church	Private (Leased)	17920 Meridian Avenue N	25	89%	303, 346, 373
Prince of Peace Lutheran Church	Private (Leased)	14514 20th Avenue NE	40	13%	73, 308
Shoreline United Methodist Church	Private (Leased)	14511 25th Avenue NE	20	45%	308, 330
Aurora Church of the Nazarene	Private (Leased)	1900 N 175th Street	116	114%	301, 303, 316, 346, 373

Source: King County Metro Transit Park-and-Ride Utilization Report, Second Quarter 2011

Transit priority treatments are provided at several locations along the I-5 and Aurora Avenue N corridors. HOV lanes and queue by-pass lanes for transit and carpools have been constructed at the interchanges at I-5 and NE 145th Street, NE 175th Street, and NE 205th Street. HOV lanes are present on I-5 through Shoreline, ending at Northgate/North 105th Street. Here the HOV lanes transition into reversible express lanes, which provide additional traffic lanes for vehicles traveling in the peak direction during peak travel periods. There are no HOV facilities on I-5 south of Northgate/N 105th Street until they reemerge in downtown Seattle.

BAT lanes have been constructed and transit signal priority (TSP) has been installed on Aurora Avenue N from N 145th Street to N 185th Street. Shoreline plans to continue these improvements along Aurora Avenue N from N 185th Street to N 205th Street as part of the Aurora Corridor Improvement Project, scheduled for completion in 2013. Ramp metering is in place at the interchanges on I-5 with NE 175th Street and NE 205th Street/Ballinger Way NE (SR 104).

Planning for Transit Needs

Shoreline's Transit Market

The City of Shoreline expects to grow in the next 20 years. In accordance with the GMA, Shoreline must demonstrate through zoning potential that it has the capacity to accommodate 5,000 new jobs and 5,000 new households. This growth will bring with it additional transit demand.

In addition to growth, Shoreline's changing demographics will influence the demand for transit. The City's population continues to age, with the population of residents over the age of 65 increasing. Senior citizens represent approximately 10 percent of Metro Transit's regular riders and are often more transit dependent than other riders. Youth are often transit dependent as well, as they are not able to drive. However, the population of children in Shoreline is currently declining.

Shoreline's Residential and Employment Densities

Residential zoning densities in the City of Shoreline range from low-density single-family (four dwelling units per acre) to high-density multi-family (48 units per acre). Higher residential densities (up to 150 dwelling/acre under some circumstances) are permitted in mixed use, commercial and industrial zones.

Shoreline has several concentrated areas of higher density housing and employment. Most of these areas and corridors in the City are currently served by transit, including Aurora Avenue N, Ballinger Way NE, 15th Avenue NE, NW Richmond Beach Road, NE 145th Street and 5th Avenue NE.

Much of Shoreline is developed along a grid street system, with arterials generally running north-south and east-west through the City. The lowest density neighborhoods in Shoreline, Innis Arden and the Highlands, are located in the far west of the City and are served primarily by curvilinear streets with steep topographic changes.

Shoreline's Plans, Codes and Strategies

The Shoreline Comprehensive Plan, Development Code and Environmental Sustainability Strategy establish the vision for the community, the regulations that direct development within Shoreline and the goals, policies and practices that will be undertaken in order to thrive as a sustainable City. The development of the City based upon the combination of the policies and regulations contained in these documents will determine how transit will serve Shoreline.

Other Agency Transportation and Transit Plans

Because the City of Shoreline does not provide its own public transit services, it is important to consider the future plans of transit providers when developing a vision for transit in Shoreline. The long-range plan for the Puget Sound region will also influence future plans for transit by all agencies serving the City.

Transportation 2040 Metropolitan Transportation Plan

In 2010, Puget Sound Regional Council (PSRC) adopted Transportation 2040. This document lays out the long-range transportation plan for the Puget Sound region. The plan addresses the transportation impacts of the anticipated population and job growth of the region and includes an aggressive strategy for the expansion of transit service in the region to accommodate such growth. An increase to local transit service by more than 100 percent during the peak periods and over 80 percent in the off-peak periods with high frequency service is envisioned. Extensions of light rail beyond the ST2 program (second phase of Sound Transit projects) described below are also a part of this plan.

Sound Transit Sound Move and ST2

Sound Transit was established by the state legislature and is the regional provider for mass transit that connects major centers of housing and jobs in the urbanized areas of Snohomish, King and Pierce counties. In 1996, voters approved a sales tax increase and motor vehicle licensing fees in the three counties to fund a regional mass transit system known as Sound Move and implemented by Sound Transit. Sound Move included investments in light rail, buses and commuter rail. The plan also included new transit centers, park & ride lots and HOV access projects. By 2009, significant portions of Sound Move had been implemented, including a large network of express buses, commuter rail from both Tacoma and Everett to downtown Seattle, light rail from downtown Tacoma to the Tacoma Dome and the opening of the light rail line from downtown Seattle to Sea-Tac Airport. Extension of this light rail line to the Capitol Hill neighborhood of Seattle and the University of Washington was also included as part of Sound Move and is scheduled for completion in 2016.

In 2008, voters approved another sales tax increase in order to fund expansions to Sound Move. The plan, known as ST2, identifies capital and service investments to be delivered between 2009 and 2023. In addition to increased bus and commuter rail service, light rail will be extended north, east and south of the current line. When Sound Move and ST2 are complete, the light rail system will include 55 miles of track and at least 32 stations. Light rail to the north will be extended through Shoreline, running from the University of Washington to Lynnwood. As part of the conceptual alignment, two stations are planned in Shoreline on I-5, one at NE 145th Street and one at NE 185th Street. This service is scheduled to open by 2023. Future extensions of light rail to the north are planned beyond 2023 and would continue to Everett.

King County Metro Transit Strategic Plan for Public Transportation 2011-2021

Adopted in July 2011, the King County Metro Transit Strategic Plan describes a vision for the future of the County's public transportation system and sets objectives, goals, and strategies for attaining that vision. It focuses on the results Metro intends to achieve regarding performance, financial sustainability, transparency and accountability to the public and service. Service guidelines accompany the Strategic Plan, outlining the specific measures and methods that will be used for plan implementation.

The Strategic Plan focuses the development of Metro's transit system around an All-Day and Peak network, with service restructures based upon performance measurements such as productivity, passenger loads and schedule reliability. The service guidelines establish the service levels needed to support growth, ensure social equity and provide geographic value. The All-Day and

Peak network envisioned in the plan is developed to ensure transit supports household and employment density, connects regional and local activity centers and provides service throughout the county.

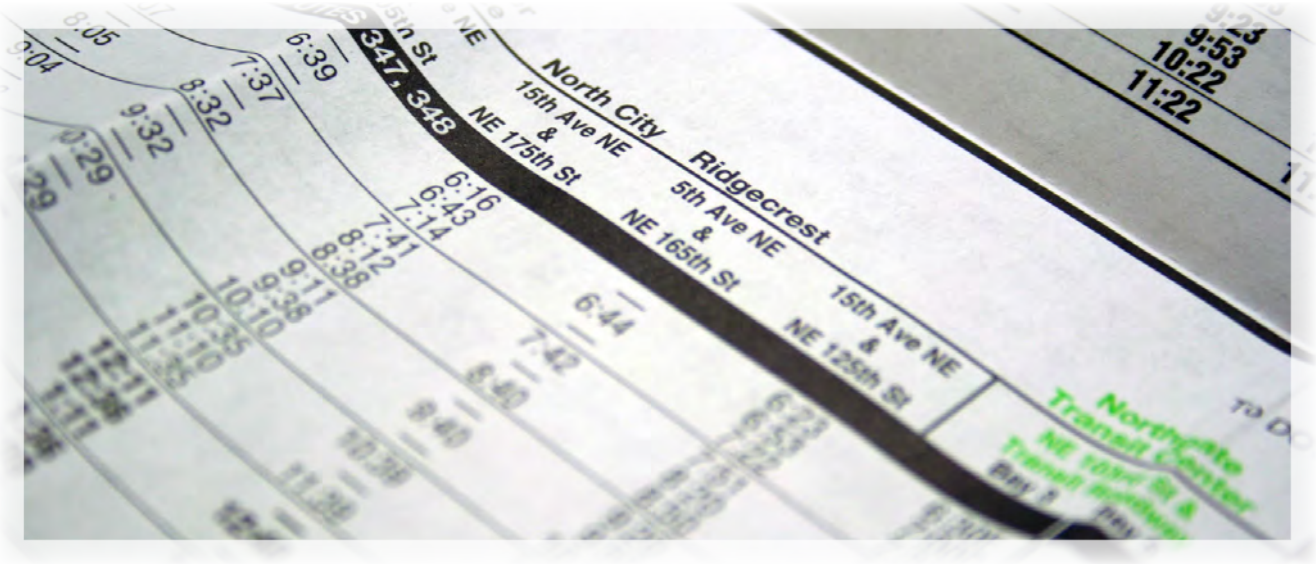
Community Transit Six-Year Transit Development Plan and Long Range Plan

The Community Transit Six Year Transit Development Plan establishes the framework for their system's growth and change. Adopted in 2008, the plan evaluates emerging needs and includes policy review and confirmation of long-term priorities. The plan places significant emphasis on the concept of transit integration, which requires a community-wide vision for land use, transportation, funding and growth management.

The statement "Think Transit First" is a goal that emphasizes coordinated planning efforts in order to make transit an easy option for all. The plan establishes a goal of increasing ridership with Community Transit 50 percent above the 2005 levels by 2012, for a total of 13 million annual boardings. Initiatives to accomplish this goal include introduction of BRT service ("Swift") on SR 99 from Everett to the AVTC in Shoreline, implementation of new service hours, purchase of new buses and construction of new facilities. Action statements throughout the plan emphasize Community Transit's aim to improve transit within Snohomish County.

The Community Transit Long Range Plan further defines the path to Think Transit First and provides direction for future Transit Development Plans. Although originally intended as an extension of the Transit Development Plan, the recent economic downturn has resulted in significant cuts to Community Transit service, and the Long Range Plan must provide guidance for rebuilding service before system expansions are implemented. Community Transit will use the Long Range Transit Plan to guide future service, once the 2012 System Change is implemented. The agency has been resized with a new base.

The Long Range Transit Plan establishes a multi-modal corridor vision that integrates land use, infrastructure and transit service, with the intent of providing the most cost-effective transit service possible. This intent is achieved through investment in efficient transit services consolidated along productive corridors with time-saving infrastructure and transit-oriented land use.



Good Transit Connections

Identifying Transit Corridors and Hubs in Shoreline

The City of Shoreline is located in the extreme northwest of King County and is adjacent to the southern border of Snohomish County. Additionally, Lake Washington lies to the east of the City, creating a significant barrier to east-west travel beyond Shoreline. As a result of this unique location, all but four of the 26 routes that serve Shoreline begin or end in the City. Only one of the direct routes that serve cities to the east of Shoreline does not travel around the north end of Lake Washington.

The vast majority of routes that serve Shoreline travel either south toward downtown Seattle, the University of Washington or the Northgate Transit Center, or north into Edmonds, Lynnwood and Snohomish County. The primary north-south transit corridors in Shoreline are Dayton Avenue N, Aurora Avenue N, Meridian Avenue N, Interstate 5 and 15th Avenue NE. East-west service is focused primarily on NW Richmond Beach Road and N/NE 185th Street.

Transit Connections Within Shoreline

Shoreline has three major transit hubs – the Aurora Village Transit Center (AVTC), the Shoreline Park & Ride and Shoreline Community College. Of the 26 routes that serve the City, 13 serve the AVTC, five serve the Shoreline Park & Ride and five serve Shoreline Community College. Some of these routes serve more than one hub. Most of the routes in the City that do not serve one of the Shoreline hubs intersect with a route that does, allowing riders to access a hub by transferring to another route. The AVTC is the primary location for Shoreline residents to access all Community Transit routes that serve the City. The NE 145th Street Freeway Station is served by seven routes. Five of these routes are provided by Metro and operate only during peak times. Almost all of the park & ride lots in the City are served by at least one peak-only route and one all-day route.

Most of the transit service in Shoreline is oriented in a north-south direction. Transit service running east-west across the City is very limited. The only cross-town, all-day service runs from the Richmond Beach neighborhood to North City via NW Richmond Beach Road and N/NE 185th Street, with continuing service to Northgate. Weekday, peak-only service runs from Shoreline Community College to Lake City, primarily along N/NE 155th Street. These routes both intersect several other routes, facilitating transfers throughout the City. However, because many of the local routes serving Shoreline operate with 30-minute headways, transfers are not always convenient.

Transit Connections Outside Shoreline

Routes serving Shoreline intersect routes provided by all three transit agencies outside of the City limits, thus providing service in all directions. These intersections allow riders to access transit services throughout King, Snohomish and Pierce counties, including bus, light rail, commuter rail and ferry service. Depending upon the headways of connecting routes, wait times can be long, which is frustrating to riders and discouraging to those who have transportation alternatives.

The two primary transit hubs outside of Shoreline accessed by routes that serve the City are

downtown Seattle and the Northgate Transit Center. There are 13 Metro routes and two Sound Transit routes serving Shoreline that also serve downtown Seattle. Approximately 120 Metro routes and 12 Sound Transit routes, as well as Link light rail and Sounder commuter rail can be accessed from downtown Seattle, taking riders in all directions, to almost all of these providers' service areas. Community Transit has 20 commuter routes, none of which serve Shoreline, that also terminate in downtown Seattle.

Riders wishing to travel in Snohomish County can access many Community Transit routes at the Everett Station, the Lynnwood Transit Center, the Mountlake Terrace Transit Center and in Edmonds. Sounder commuter rail and Washington State ferry service is accessible via several of these routes. Buses to all of these locations have routes that pass through the AVTC.

To achieve its transit goals, Shoreline will need to coordinate with the transit agencies to ensure that plans, policies and strategies adopted by the City complement transit service and represent the logical priorities for investment. This will ensure that service and capital investments are coordinated to the maximum extent possible and improvements to streets, bus stops and frequencies go hand in hand.

Establishing City Transit Service Priorities

To achieve its transit goals, Shoreline will need to coordinate with the transit agencies to ensure that plans, policies and strategies adopted by the City complement transit service and represent the logical priorities for investment. This will ensure that service and capital investments are coordinated to the maximum extent possible and improvements to streets, bus stops and frequencies go hand in hand.

Improvements to the transit network in Shoreline depend upon the availability of transit service and capital resources from all three providers, street right-of-way management and land use policies that are supportive of transit, and capital investments that improve transit speed and reliability. Because limited funding and varying capital priorities prohibit the desired transit supportive investments from being installed all at once, the City's short, medium and long-range transit plans described in this chapter lay out how these improvements can be implemented in stages to achieve the ultimate vision for transit in Shoreline.

One of the primary factors to establishing and maintaining successful transit within Shoreline will be coordination among transit providers. Jurisdictional boundaries and established funding policies drive many aspects of service and planning efforts for the transit providers. The City's location as a terminus for Metro Transit and Community Transit systems, the pass-through nature of transit on I-5 and future investments in BRT and light rail have great potential for significant improvements

to the City's transit network. They also have equal potential to result in inefficiencies and duplication in service that can be avoided through coordinated short and long range planning efforts by transit agencies and the municipalities they serve.

BRT Service on Aurora Avenue N

Aurora Avenue N and SR 99 north of Shoreline serve as the route for existing and planned bus rapid transit (BRT) service for Community Transit and Metro Transit. Community Transit's BRT service, Swift, began in autumn 2009, providing service from Everett to the AVTC via SR 99. Swift service provides headways of 10 minutes the majority of the day, and stops are spaced one to two miles apart. Community Transit provides underlying shadow service along this corridor to serve the more closely spaced local stops.

Metro Transit is scheduled to begin BRT service on Aurora Avenue N in 2013. This service, known as RapidRide, will replace the existing Route 358, which travels from the AVTC to downtown Seattle. Currently, Route 358 has stops at approximately quarter-mile intervals, which are generally located at signalized intersections or safe roadway crossings. Metro has indicated a desire to reduce this stop spacing to between one-third and one half-mile intervals in conjunction with the implementation of RapidRide. Unlike Swift, RapidRide will not include underlying shadow service, and stops not served by RapidRide or other local service will be eliminated. RapidRide will provide service with 10-minute headways during weekdays and 15 to 20 minutes during late evening periods and on weekends.

Aurora Avenue N and SR 99 north of Shoreline serve as the route for existing and planned BRT service for Community Transit and Metro Transit. Community Transit's BRT service, Swift, began in autumn 2009, providing service from Everett to the AVTC via SR 99. Metro Transit is scheduled to begin BRT service on Aurora Avenue N in 2013. This service is known as RapidRide.

Establishing and Improving Key Passenger Facilities

Aurora Village Transit Center (AVTC)

The AVTC is four acres (173,687 square feet) in size, with 202 parking spaces and 12 bus bays. Currently, the AVTC is operating at its full transit capacity. Second quarter 2011 statistics show that parking usage was 100 percent. Eight Metro Transit routes and five Community Transit routes serve the AVTC.

The AVTC is located on N 200th Street, just east of Aurora Avenue N. Access to the AVTC is via N 200th Street, with a signalized intersection at the entrance to the transit center at

N 200th Street and Aurora Avenue N. Buses accessing Aurora Avenue N at N 200th Street often experience delays at this intersection due to the high traffic volumes and difficulty making left turns southbound onto Aurora Avenue N. The intersection currently functions at Level of Service (LOS) C (see Chapter 8 for a description of LOS standards) during the AM peak period and LOS D during the PM peak period. Even with the improvements to this signal associated with the Aurora Corridor Improvement Project, this signal is predicted to function at LOS E during the AM peak period and LOS D during the PM peak period in 2013. In 2030, this signal is predicted to function at LOS D during the AM peak period and LOS E during the PM peak period.

Shoreline Park & Ride

The Shoreline Park & Ride is 5.88 acres (256,188 square feet) and contains 384 parking spaces. The property is owned by the Washington State Department of Transportation (WSDOT), with Metro Transit operating the park & ride. Second quarter 2011 statistics show that its parking usage was 76 percent. Five Metro routes serve the Shoreline Park & Ride.

The Shoreline Park & Ride is located at the intersection of N 192nd Street and Aurora Avenue N. Access to the Shoreline Park & Ride is via N 192nd Street and a driveway entrance at approximately N 189th Street on Aurora Avenue N. A passenger boarding area for several routes is located on Aurora Avenue N, along with two boarding areas located within the park & ride. The intersection at N 192nd Street is signalized and the traffic volumes on N 192nd Street are significantly lower than N 200th Street, allowing for easier access for buses making left turns out of the park & ride than out of the AVTC. The intersection currently functions at LOS A during the AM and PM peak periods. This signal is predicted to function at LOS B during the AM and PM peak periods in 2013 and 2030. Metro Transit has identified this site for redevelopment as a future transit-oriented development (TOD).

Improvements to Aurora Avenue N

Aurora Avenue N is the busiest transit corridor in the City of Shoreline with over 7,000 daily passenger boardings and deboardings on Metro Transit buses. Shoreline has completed improvements to Aurora Avenue N from N 145th Street to N 185th Street, with similar improvements underway or planned for the last mile from N 185th Street to N 205th Street. These changes will improve transit speed and reliability and rider

comfort along the length of the corridor. Improvements to Aurora Avenue N include installation of new crosswalks and wide sidewalks separated from travel lanes by a vegetated amenity zone, creating a safe walking environment for pedestrians. Additionally, BAT lanes in each direction along the length of the corridor and the installation of TSP will result in transit service that is faster and more reliable. Unique bus shelters with a distinct "crown" on the roof are a part of this project. Construction of the final mile is scheduled for completion by 2013. When complete, this project will tie into 13 miles of BAT lanes in Snohomish County and provide needed infrastructure for a successful BRT system for both Community Transit and Metro Transit.

Upon implementation of the BRT system on Aurora Avenue N, the unique bus shelters will be replaced with new RapidRide stations that clearly delineate the BRT stops.

Aurora Avenue N is the busiest transit corridor in the City of Shoreline with over 7,000 daily passenger boardings and deboardings on Metro Transit buses.

Consolidation of the AVTC and the Shoreline Park & Ride

Metro Transit anticipates future redevelopment of the Shoreline Park & Ride at N 192nd Street and Aurora Avenue N as a TOD site with a mix of park & ride, commercial/retail space and multi-family residential units. The redevelopment should ensure that the Shoreline Park & Ride is developed to its maximum potential, in a manner that best meets the transit needs of the City's residents.

Metro Transit anticipates future redevelopment of the Shoreline Park & Ride at N 192nd Street and Aurora Avenue N as a TOD site with a mix of park & ride, commercial/retail space and multi-family residential units.

One option for redevelopment of the Shoreline Park & Ride would be to relocate all or part of the function of the AVTC to the park & ride as part of a TOD project. In order for this relocation to provide reliable, efficient connections between transit providers, Community Transit would need to extend some or all of their routes to the Shoreline Park & Ride, which is located approximately four-tenths of a mile south of the AVTC. Additionally, Metro Transit service to the AVTC would either be modified or would terminate at the Shoreline Park & Ride.

Options to minimize impacts to routes would require continuation of some type of service at the location of or in close proximity to the AVTC. This could be achieved by significantly reducing the size of the transit center facility to eliminate the parking lot and the majority of the bus bays, while retaining some bus stop and layover space. This would allow existing routes to continue to provide pass-through service or terminate service at the AVTC and still provide service to north Shoreline neighborhoods. Transfers between Community Transit and Metro Transit would occur predominantly at the Shoreline

Park & Ride, with some minimal stops for Community Transit occurring in-line on Aurora Avenue N utilizing the BAT lanes. Stops located on Aurora Avenue N may provide some Metro Transit routes with the option to remain on Aurora Avenue N and bypass the AVTC.

In order for the transit center to function at the Shoreline Park & Ride, it will need to accommodate the combined needs of the existing Shoreline Park & Ride as well as the AVTC. This will require a comparable number of transit bays, parking spaces and layover space.

Currently, there are over 1,000 dwelling units within a quarter mile of the Shoreline Park & Ride. The Industrial zoning classification of the Shoreline Park & Ride allows for up to 150 dwelling units per acre on this 1.67-acre site. Current trends in redevelopment activity identify that additional housing on Aurora Avenue N in this neighborhood is feasible.

Shoreline Community College

Shoreline Community College is a major transit destination in Shoreline, served by three all-day Metro Transit routes and two peak-only Metro Transit routes. The primary location for boardings and deboardings is at the main campus gate, just off of NW Innis Arden Way. The community college also serves as a layover space for buses. A busy and complicated intersection configuration at N 160th Street, NW Innis Arden Way and Greenwood Avenue N often results in delays for buses entering or leaving the campus. Creation of a master plan for Shoreline Community College should address improved transit service facilities.

Light rail stations at NE 145th Street and NE 185th Street

The conceptual alignment for Sound Transit Link light rail provides service to Shoreline at NE 145th Street and NE 185th Street along I-5. In this alignment, the elevated tracks are located on the east side of I-5 within the existing right-of-way. Preliminary plans developed by Sound Transit identify parking structures with the capacity to accommodate 500 cars at each station.

Traffic along NE 145th Street from the east is anticipated to increase in conjunction with the tolling of the SR 520 and I-90 bridges across Lake Washington, as drivers avoid the bridges by

traveling around the north end of the lake. With the construction of the light rail station at NE 145th Street and the increased traffic, transit service will need to operate as efficiently as possible in this location in order to encourage people to utilize transit instead of vehicles.

Fares

Metro Transit, Community Transit and Sound Transit all have tiered fare systems. Metro Transit and Sound Transit base their fare systems on how many zones or the distance a passenger travels. Metro Transit has two zones – the City of Seattle is one zone and all areas outside of Seattle are a second zone. Any trip that crosses the Seattle city limits requires a two-zone fare. One- and two-zone fares are the same during non-peak hours. During peak fare hours (Monday through Friday, approximately 6 - 9 a.m. and 3 - 6 p.m.), adult fares are increased for one-zone and two-zone trips. All other fares, such as youth, seniors and disabled, are the same at all times, regardless of how many zones are traveled.

Sound Transit has a zone system for its Express Bus service. The Express Bus service area is divided into three zones and the fare increases with the number of zones traveled. All fares increase – adult, youth, seniors and disabled – when multiple zones are traveled. Similarly, fares increase for all riders of Sounder commuter rail and Link light rail based upon the distance traveled.

Community Transit's fare system is based upon the type of trip. The three types of trips include local, commuter south/Everett and commuter north/east. Adult, youth and senior and disabled fares all increase in accordance with the type of trip.

In January 2010, seven public transportation agencies, including the three agencies serving Shoreline, began full implementation of a regional smart card system called ORCA. Meaning One Regional Card for All, the ORCA system replaced bus passes for the participating transit providers. It also allows riders to select an electronic purse to hold stored value that is deducted from the balance for each trip. The ORCA card tracks payments as a rider enters the bus and deducts the amount according to the required fare. If a transfer is made, either within or between providers, credit for the first trip is stored in the memory of the card and any difference in the fare is deducted. All fares on Community Transit Swift service are the same and riders "tap" their card at a reader before entering

Metro Transit and Sound Transit base their fare systems on how many zones or the distance a passenger travels. Community Transit's fare system is based upon the type of trip.

the bus. For riders on Sounder commuter rail and Link light rail, riders "tap" their card at a reader prior to boarding the train and upon exiting as well. The proper fare is debited from the card electronically. Fare enforcement is performed for all trips with pre-payment at card readers.

Cash payments are still permitted; however, riders that pay with cash cannot use that fare toward the balance of a transfer between transit providers. Only Metro Transit issues a transfer slip for cash payments that are valid on other Metro Transit buses. When riders on Community Transit and Sound Transit pay with cash, payment of a full fare for each portion of the trip is required when riders transfer within the individual providers' system.

Shoreline sits between the Metro Transit zone boundary and the King/Snohomish County line. Shoreline riders wishing to travel south of the zone boundary during the peak periods must pay the two-zone fare, even if the trip is relatively short. Additionally, riders paying cash that wish to take transit into Snohomish County and need to transfer between Metro Transit and Community Transit must pay a full fare twice.

Improving Cross-County Transit Service

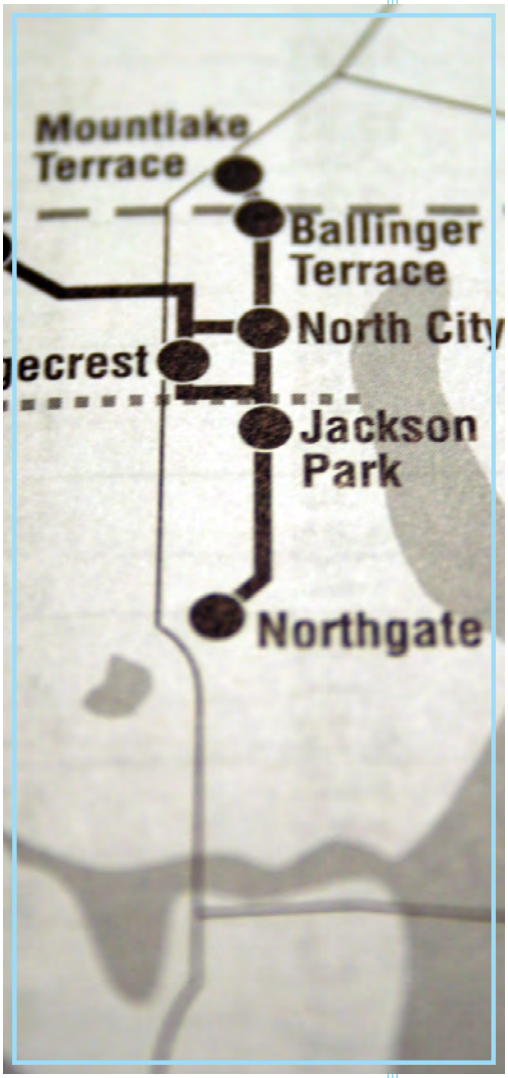
As a city that borders Snohomish County, Shoreline sits at the terminus point for several Community Transit and Metro Transit routes. Residents wishing to travel from Shoreline to neighboring jurisdictions in Snohomish County must transfer between systems at the AVTC. This results in delays in service, as the AVTC is located off Aurora Avenue N and riders must wait for transfers between systems. These delays act as a deterrent to residents wishing to use transit to travel to the neighboring cities of Edmonds, Mountlake Terrace or Lynnwood to the north. Minimization or elimination of these delays could encourage residents to use transit for trips to Snohomish County.

One of the significant obstacles to improving cross-county bus service by Metro Transit and Community Transit is the location of the AVTC. Both transit providers experience delays resulting from the need to enter and exit the transit center via N 200th Street, leaving the Aurora Avenue N corridor. The ability to remain on Aurora Avenue N would improve service for transit riders by eliminating delay and allowing for easier transfers. Furthermore, Community Transit may be encouraged to provide service farther into Shoreline if a transit center was more easily accessible and resulted in improved efficiency. The

consolidation of the Shoreline Park & Ride and the AVTC could accomplish these goals.

On February 25, 2008, the Shoreline City Council adopted Resolution 273 which promotes a single, integrated continuous BRT system along the SR 99 corridor. The City's Comprehensive Plan also includes a policy encouraging cross-county bus service. Both Metro Transit and Community Transit are aware of Shoreline's desire to see BRT service on SR 99 from Everett to downtown Seattle and have stated their positions that it is not practical or desirable for either of them to provide this service.

In 2009, Community Transit opened a new transit center in Mountlake Terrace. Two years later, Sound Transit opened direct access ramps from I-5, allowing buses traveling on the freeway to quickly and easily access the transit center directly from the HOV lanes. The transit center has parking for bicycles and 880 vehicles. One Metro Transit route (347), one Community Transit route (130) and one Sound Transit route (511) that serve Shoreline also serve the Mountlake Terrace transit center. Located immediately adjacent to I-5 and less than one mile north of Shoreline, the transit center is likely to attract transit riders in the northeast sections of the City. Should Sound Transit locate a light rail station at the Mountlake Terrace transit center in conjunction with the northward extension, Shoreline residents may choose to access light rail at this station also.



Maintaining the Network

Measures of Transit Service and Quality

Transit Service and quality can be measured in a variety of ways. These measures need to account for both the availability and the quality of transit service, including frequency of the service, span of service (operating hours in a day), accessibility and service coverage. When looking at the quality of service, issues of reliability, safety, passenger loading and travel speed are of concern. The combination of these measures in varying levels can be used to gauge performance of transit service in Shoreline and help the City determine its goals for improvements to the systems that serve its residents. Various routes, depending upon the type of service they provide, may be able to offer different levels of service and should be evaluated accordingly. For example, span of service for peak-only routes will be measured differently than span of service for all-day routes.

Service Headways (Frequency)

Headway refers to amount of time between services (i.e. a headway of 30 minutes means that a bus will arrive every 30 minutes). Frequency should be measured for individual routes, rather than any given stop, as a stop can be served by multiple routes with varying destinations. Generally, transit schedules can be better understood when they have headways that correspond to numbers easily divided into 60.

Span of Service

Span of service refers to the number of hours in the day that a service runs. This is also known as hours of service and is relatively easy to measure. Peak-only routes will have different measures for their span of service than all-day routes.

Accessibility and Service Coverage

Use of transit is influenced by the ability of riders to access transit service and the amount of the City served by transit. As a general rule, a comfortable walking distance for pedestrians to access a bus stop or light rail stop is a quarter-mile and a half-mile, respectively. Achieving this spacing is greatly dependent upon the availability of public right-of-way, pedestrian crossings, safety and topography. **Figure R, City of Shoreline Proximity to Bus Stop, Peak Only Service** and **Figure S, City of Shoreline Proximity to Bus Stop, All Day Service**, identify service coverage in the City, showing the walking distance a quarter-mile and a half-mile away from transit stops. Most of Shoreline's residents are within a half-mile of a transit stop. Areas that are noticeably outside of both peak and all-day transit service are Briarcrest, the eastern edges of the North City and Echo Lake neighborhoods, Innis Arden, the Highlands, and parts of Richmond Beach.

Connections to transit stops are somewhat restricted due to limited pedestrian and bicycle facilities in Shoreline. Sidewalks and widened shoulders, as well as bicycle lanes, are located sporadically throughout the City. Bicyclists can catch a bus at any transit stop. All Metro Transit

buses are equipped with bicycle racks and can carry up to three bicycles at any time. Most Community Transit buses have racks that can carry two bicycles, and Swift buses have racks for three bicycles located inside the bus. Sound Transit buses can carry two or three bicycles, and four bicycles are allowed per car for commuter and light rail. For those who are not within close proximity of a bus stop, all of the eight park & ride lots are within a five-mile distance from any point in Shoreline, with most people being able to travel less than two miles to access a park & ride lot.

The majority of the bus stops in Shoreline are ADA accessible. However, there are several that are not accessible due to limited right-of-way and/or topography. Bus stops that are partially or fully ADA accessible are signed to indicate their accessibility. In some instances, the travel path to the bus stop may have limited accessibility. For example, N/NE 145th Street has several stops that are difficult to access due to narrow, uneven or non-existent sidewalks and utility poles located within walkways, making them difficult or impossible to navigate.

Metro Transit provides and maintains all bus stops in Shoreline. Shelters are provided at locations where there are 25 or more daily boardings. Criteria for locating new shelters include daily ridership, adjacent land uses, anticipated growth and special requests.

Travel Speed and Reliability

Travel speed gauges how quickly a vehicle travels. Speed can be influenced by dwell times boarding or deboarding passengers, time collecting fares, posted speed limits, traffic congestion and transportation technology such as traffic signal timing. Travel speed can be measured in miles per hour or as a proportion of the posted speed limit.

Transit users need to be certain that service will perform in accordance with the established schedules so that they are able to reach their destinations on time or make needed transfers. Service reliability measures the gaps or variation of service from the scheduled times. It can be measured by vehicle delay, which evaluates how far behind or ahead of schedule service is running. It can also be measured by passenger delay, as a full vehicle running behind schedule will delay more passengers than one with very few passengers.

Transit speed and reliability increase with less traffic, synchronized signals or transit signal priority (TSP) and dedicated right-of-way such as BAT lanes or rail lines. TSP utilizes technology to allow buses to communicate with traffic signals. As a bus approaches an intersection, it sends a message, often via radio system, to indicate its arrival. The traffic signal recognizes this message and either extends a green light or returns to a green light more quickly for the bus.

Safety

Community Transit contracts with the Snohomish County Sheriff's Office for safety and security services. A combination of private security companies and the King County Sheriff's Office provide security for Metro Transit and Sound Transit at facilities and on vehicles. Private security provides fare enforcement on Sound Transit Link light rail trains. Transit police are charged with protection of bus operators and riders and providing security at park & ride lots and commuter and light rail train stations. Partnerships with local law enforcement in cities served by transit assist to provide additional public security. Buses are equipped with two-way radios and alarm systems, and many

buses have security cameras.

Security policies vary among transit providers. The examples below show the various policies of Metro Transit, Community Transit and Sound Transit regarding installation of security cameras on vehicles:

- Metro Transit has determined that, in order to have an 80 percent chance of catching a security or risk related incident on camera, security cameras need to be installed on 800 of their 1,300 buses. Approximately 390 security camera systems have been installed to date. Using grant funding, Metro Transit plans to install approximately 100 additional security camera systems by June 2012.
- Community Transit has security cameras on all of their buses in an attempt to capture all safety and security incidents on video. Each bus has four to six cameras, depending upon the size of the bus.
- Sound Transit contracts with Metro Transit and Community Transit for bus operations and maintenance, so the security policies of each provider are implemented on Sound Transit buses within their service areas. For light rail, the installation of security cameras is part of the vehicle design specifications. Cameras are available on the front and rear exterior of the trains. Each passenger cab includes a security camera that covers that entire cab.

Passenger Loading

Passenger loading measures the capacity of a vehicle against the number of passengers on the bus. The level of crowding on a bus can affect a passenger's comfort level during a trip and can also impact dwell times as passengers exit and enter the vehicle. Overcrowded vehicles may also result in waiting passengers being passed by when there is no room available for them. This affects reliability in addition to passenger comfort. Routes that have consistently overcrowded vehicles may need to increase service frequency or vehicle size in order to alleviate this problem.

Transit Funding

Transit service in the City of Shoreline is funded by a variety of sources for each provider. By law, the individual transit providers have defined taxing authorities for revenue. Transit providers also have the opportunity to seek funding from outside agencies, such as the federal government or partnerships with local municipalities. Other funds are recovered through fares and pass sales, partnerships with other transit agencies or bonds.

Federal Funds for Transit

As part of the federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), PSRC is responsible for selecting projects to receive funds from three federal funding programs:

- Surface Transportation Program (STP)
- Congestion Mitigation and Air Quality (CMAQ)
- Federal Transit Administration (FTA)

Funding from each of these programs is subject to established eligibility requirements. STP funds can be used for a variety of transportation projects and programs and are considered the most flexible of the funds PSRC distributes. Projects and programs eligible for CMAQ funds must improve air quality, either by reducing travel demand on or improving the efficiency of existing transportation facilities. Cities, counties, public transportation providers, WSDOT, the Port of Seattle and the Puget Sound Clean Air Agency may submit projects and programs for review and selection by PSRC through a competitive regional process held every two years.

Transit-related projects serving the region's three federal urbanized areas, Seattle-Tacoma-Everett, Bremerton and Marysville, are the only projects that qualify for FTA funds. Some FTA funding is available only to public transportation operators. Most of this funding is distributed among the urbanized areas in accordance with an established formula. A portion of the funding for the Seattle-Tacoma-Everett urbanized area is distributed through a competitive process. As a result, transit providers are guaranteed to receive a biannual allocation of funds from the federal government. Other agencies may be eligible for FTA funding when projects have a benefit for transit.

City of Shoreline

The City of Shoreline does not fund transit service directly with any of its providers. Residents of Shoreline are within the taxing districts for Metro Transit and Sound Transit and fund projects and operations for these two providers via sales tax and vehicle license tab fees.

The operation of transit service is improved through capital projects in Shoreline. Traffic modeling for the three miles of Aurora Avenue N in Shoreline has shown that transit travel time savings will be improved by up to 32 percent with the completion of the BAT lanes and TSP. Other capital projects the City could pursue that can improve transit include installation of sidewalks, crosswalks, lighting and queue jump lanes or pullouts for buses. These projects are not considered a direct contribution to transit service providers. Through land use planning

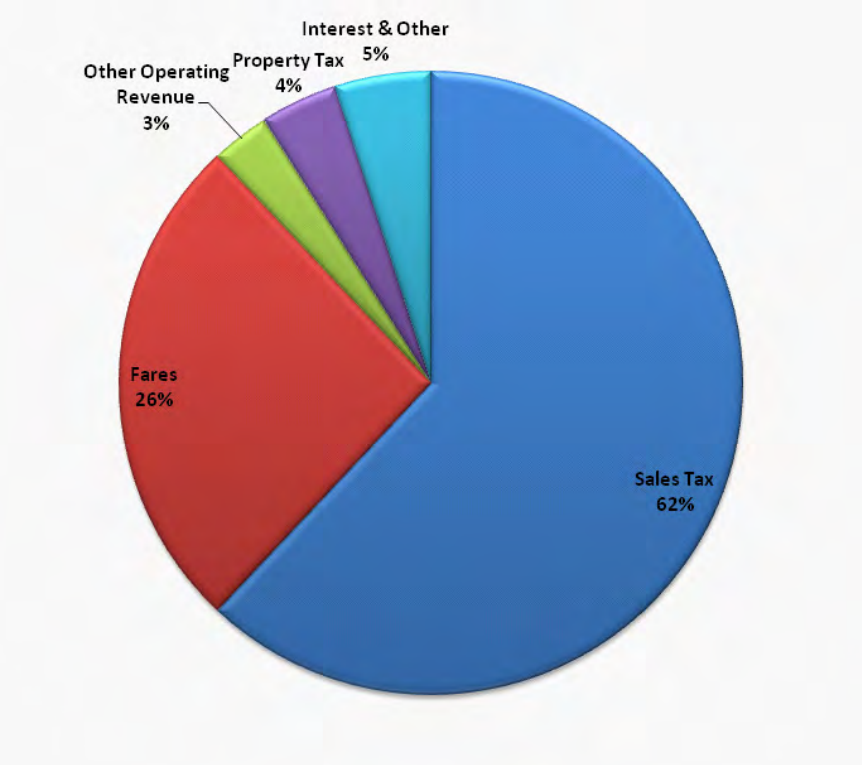
and development regulations that require or encourage housing and employment densities that support transit, the City can contribute to the efficient operation of transit and justify additional transit service in Shoreline.

Metro Transit

The primary source of funding for Metro Transit is sales tax. King County residents pay nine-tenths of one percent (0.9%) sales and use tax. The sales and use tax was eight-tenths of one percent (0.8%) until 2006, when voters approved the Transit Now ballot measure authorizing an additional one-tenth of one percent (0.1%). Fares and pass sales are the second largest source of funding. State and federal grants, financial partnerships and interest are additional funding sources for the operating and capital budgets. **Figure 6.1, Metro Transit Operating Revenues**, shows the different funding sources for the Metro Transit operating budget.

Metro has entered into an agreement to provide all operational and maintenance services for Sound Transit within King County. This includes bus and train services. Sound Transit provides funds to Metro Transit to cover the costs associated with these services.

Figure 6.1. Metro Transit Operating Revenues*



*Excludes cost and revenue for Sound Transit

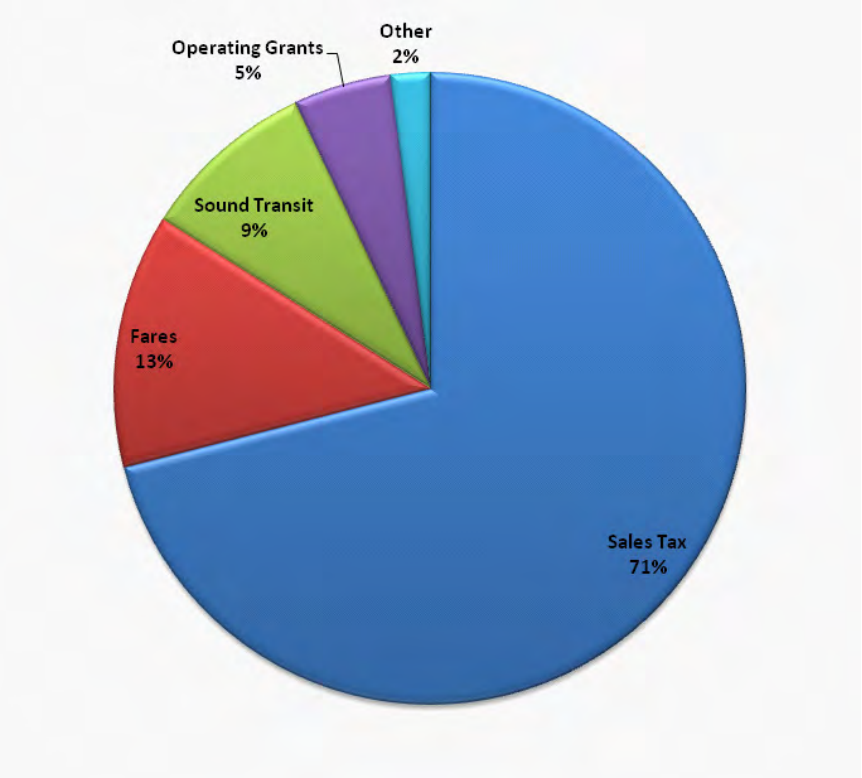
Community Transit

Community Transit revenues come from several sources. Sales tax provides approximately three quarters of Community Transit operating revenues through a voter-approved nine-tenths of one percent (0.9%) sales and use tax on retail purchases within their service area. Thirteen percent of the operating revenues come from passenger fares and pass sales. Federal and state grants and

general obligation bonds also account for a portion of the Community Transit operating budget. Community Transit operating revenues are displayed in **Figure 6.2, Community Transit Operating Revenues**.

Like Metro Transit, Community Transit provides operational and maintenance services for Sound Transit in Snohomish County. Therefore, a portion of the funding for Community Transit is provided by Sound Transit to cover the costs of these services.

Figure 6.2. Community Transit Operating Revenues



Sound Transit

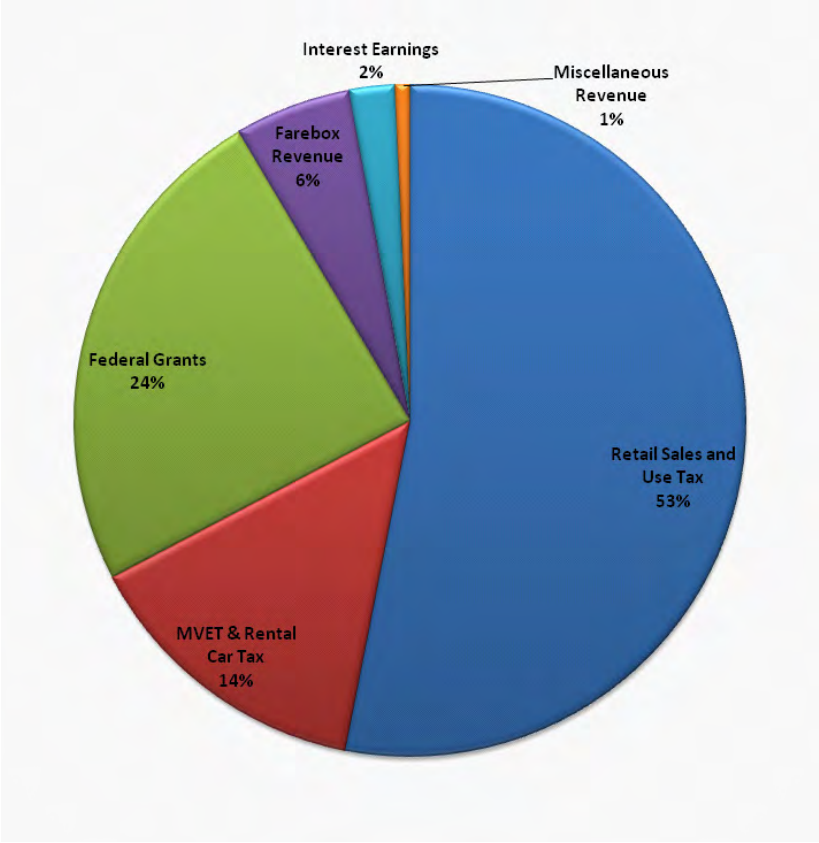
Sound Transit was approved by voters in 1996 to provide regional bus and train services in the urban areas of King, Pierce and Snohomish counties. The Sound Transit district covers portions of these three counties.

The first stage of capital improvements and operations begun by Sound Transit were outlined in the 1996 Sound Move Plan. This plan was funded with four-tenths of one percent (0.4%) sales tax and three-tenths of one percent (0.3%) motor vehicle excise tax. The motor vehicle excise tax will be collected through 2028.

In 2008, a sales tax increase of five-tenths of one percent (0.5%) was authorized by voters to fund the improvements and operations described in the next phase of Sound Transit improvements and service, known as ST2.

Additional funding for Sound Transit comes from federal grants, farebox revenues, borrowed funds (bonds) and interest revenues. **Figure 6.3, Sound Transit Revenue Sources**, shows the various revenue sources for Sound Transit.

Figure 6.3. Sound Transit Revenue Sources



Sound Transit has an adopted subarea equity policy, which requires funding to be spent in the subarea in which it was generated or in a manner that benefits that subarea. There are three subareas in King County and one subarea each in Pierce and Snohomish Counties.

Shoreline Transit Plans

The citywide Citizen Survey conducted by Shoreline in 2010 indicates that a majority (61 percent) of Shoreline citizens are either very satisfied or somewhat satisfied with the availability of public transportation in the City. In response to a question of what aspect of transportation should receive the most emphasis over the next two years, the availability of public transportation was ranked fourth with 36 percent of the respondents who selected it as their first or second choice. According to the 2000 census data, 10.2 percent of Shoreline residents used transit as their primary mode to work. By 2030, it is estimated that 5,000 new housing units will be constructed and 5,000 jobs will be created in Shoreline. Accommodating this anticipated growth while minimizing the impact of additional traffic is a high priority for Shoreline.

Because Shoreline does not operate its own transit service and is reliant upon other agencies for service, a high level of coordination is required in order to ensure that the City's transit goals are met. This can include direct coordination with transit providers in the development of routes and facilities, as well as long-range planning and creation of policies that will result in service that meets the needs of Shoreline residents. Additionally, the City must plan for capital and operational investments that will benefit transit through speed and reliability, passenger comfort and frequency. These types of investments can be made by the City as part of its capital improvement plan or by private developers as mitigation for traffic impacts to the City's roadway facilities. Finally, Shoreline must identify areas for improved transit service and ensure that its land use policies are supportive of and encourage transit usage by residents.

The City of Shoreline has developed a tiered approach to achieving its transit goals with the development of short, medium and long-range plans. Complete with individual time frames, each plan outlines the policies for each planning period and suggests actions required to achieve these policies. These plans generally correspond with the planning time frames of the City's transit providers and aim to achieve the following:

Shoreline's Short Range Transit Plan (until 2021). During this time frame, the City anticipates minor improvements to the transit system that build upon existing routes and completion of the Aurora Corridor Improvement Project, which will facilitate the successful implementation of bus rapid transit (BRT) from Shoreline to downtown Seattle. Long-range planning activities, including alignment determination and station area planning for light rail, as well as the redevelopment of the Shoreline Park & Ride, are all anticipated to occur within this time frame.

Shoreline's Medium Range Transit Plan (2021-2023). Light rail service to Northgate is scheduled to begin during this time period and Shoreline will want to ensure residents can access light rail via bus conveniently and quickly. The City will begin implementing projects identified in the long-range planning efforts of the Short Range Transit Plan and work to expand BRT service to additional corridors in Shoreline.

Shoreline's Long Range Transit Plan (2023+). Light rail service is scheduled to begin in Shoreline in 2023. This should result in changes to transit service in Shoreline, with an emphasis on east-west feeder service to light rail stations and continued bus service throughout the City. The City will monitor development in the vicinity of and transit service to the light rail stations to ensure their successful operation. Planning efforts will continue as

light rail continues to expand north and options possibly become available for the creation of east-west light rail facilities.

In addition to the specific policies and actions identified in each plan, Shoreline has adopted the following general policies and actions that span the entire planning period:

- **Goal TX:** Support and encourage increased transit coverage and service that connects local and regional destinations to improve mobility options for all Shoreline residents.
- **Policy T22:** Make transit a more convenient, appealing and viable option for all trips through implementation of the Shoreline Transit Plans.

  Implementation Strategies

  22.1. Strive to make all transit destinations accessible with no more than one transfer.

  22.2. Expand transit service into areas of the City with transit supportive densities and appropriate infrastructure that are currently not served or underserved.

  22.3. Ensure the transit network in Shoreline includes east-west routes and north-south routes that intersect with each other, connecting residents to services and other destinations throughout the City.

  22.4. Support the ongoing programs of transit providers to provide bicycle racks on all buses and trains.

  22.5. Educate residents about the availability and use of trip planning services available from all transit providers serving the City. Support efforts by transit providers to make this information accessible to all users.

  22.6. Ensure ACCESS and DART paratransit services are available to persons with disabilities in Shoreline that are unable to use fixed route bus service. Paratransit should provide a comparable level of service to that of regular bus service through coverage areas and span of service.

  22.7. Request placement of current schedules at all bus stops. Encourage transit providers to extend real-time information about bus arrivals at all RapidRide stops.

  22.8. Explore options for public or privately funded shuttle service from transit centers to major employers and employment nodes (like shopping centers or locations with multiple employers) in Shoreline as a means to reduce single-occupancy vehicle use and support CTR programs.

  22.9. Advocate for elimination of the Metro Transit two-zone fare policy.

22.10. Ensure that shelter alignment and design considers weather, street orientation and the visibility of adjacent land uses.

22.11. Work with property and business owners along transit corridors to encourage transit usage. Encourage King County to enter into agreements with property owners adjacent to transit routes for park & ride facilities on private property.

Discussion: Property and business owners located adjacent to transit routes can be instrumental in encouraging transit use. Property owners can provide park & ride spaces for transit users, understanding that these users are more likely to patronize their businesses as a result. Businesses may be able to encourage transit use through subsidized bus passes or discounts for customers that utilize transit to reach their facility.

❖ **Policy T23:** Monitor the level and quality of transit service in the City and advocate for improvements as appropriate.

Implementation Strategies

23.1. Review transit reports regarding ridership, park & ride usage and safety on a regular basis.

23.2. Examine existing routes that serve new development to determine if additional or enhanced service is merited.

23.3. Ensure that new employers subject to Commute Trip Reduction (CTR) laws are complying with state law, and coordinate with them to determine if additional transit service would assist with that goal.

23.4. Work with providers to minimize standing and overcrowding on buses through bus size, frequency of service and infrastructure that helps prevent bus delays.

23.5. Work with Metro Transit when bus stop consolidations are proposed for routes serving Shoreline to ensure that elimination of stops results in appropriate, safe stop spacing that achieves the desired result of improved transit speed and reliability.

23.6. Ensure all bus stops are fully ADA compliant. Improvements to currently non-compliant bus stops can be made by public agencies or private development.

23.7. Form a partnership with Metro Transit to fund a program to improve accessibility to bus stops.

23.8. Ensure all bus stops are clean, safe and well lit. Encourage residents and businesses to participate in the "Adopt-a-Stop" program and provide trash removal and recycling bins at stops that do not have shelters or trash removal services provided by transit agencies.

23.9. Encourage efforts by transit agencies to provide transit security on all buses, including on-board security systems and transit police.

23.10. Support measures to reduce transit vehicle dwell time, like off-board fare collection.

23.11. Allow transit buses on arterial streets only. Proposals to use a non-arterial street for regular routing must be approved by the Shoreline Public Works Director.

Discussion: Local streets are typically not designed to handle transit vehicles. They often do not have curb, gutter, and sidewalks, are not constructed to carry repeated heavy vehicles, and have quality of life impacts on residents of these streets.

❖ **Policy T24:** Encourage development that is supportive of transit and advocate for expansion and the addition of new routes in areas with transit-supportive densities and uses.

Implementation Strategies

24.1. Evaluate land use policies, zoning and development regulations to determine what types of changes are required in order to support transit. Make modifications as needed. Continue land use policies and development code incentives that encourage increased density along Aurora Avenue N and transit-oriented development (TOD) along defined transit corridors.

24.2. Create development regulations that require transit supportive investments by private developers. These may include pedestrian facilities that access transit, housing that is oriented toward transit usage or locations near high-capacity transit (HCT).

24.3. Identify and implement City capital projects and improvements that are transit supportive, such as TSP, queue jumps, bus pullouts, sidewalks and bicycle facilities.

Shoreline's Short Range Transit Plan

In the next 10 years, the City of Shoreline would like to see improvements to existing service as well as expansion of service. Increases in ridership, enhancements to the quality of service and overall improvements to facilities are all anticipated. Through these efforts, residents will have improved options for transportation to work and for other activities. A reduction in personal vehicle usage translates to reduced vehicle emissions, resulting in improved air quality and reducing Shoreline's contribution to global climate change.

During this time, Shoreline will complete improvements to Aurora Avenue N, and the Metro BRT system will be up and running. This time frame will also be a period of intense long-range planning activity in preparation for light rail expansion into the City and potential development of new BRT lines. The planning outcomes during this time frame will direct development and actions during the medium- and long-range plan time frames.

In an effort to improve service for riders transferring between providers, the City will encourage and foster communication between Metro Transit and Community Transit to promote improved cross-county transit service. One large component of this effort will be the relocation of the AVTC function to the Shoreline Park & Ride and development of a new TOD at this site.

Figure T, Proposed Transit Enhancements: Short Range Plan, displays the changes outlined in the Short Range Transit Plan.

❖ **Policy T25:** Encourage transit providers to expand service on existing transit routes in accordance with adopted transit agency service guidelines.

Implementation Strategies

25.1. Work with transit providers to provide appropriate service to Shoreline neighborhoods, based upon ridership demand, productivity and land uses. Participate in the planning processes of transit providers to determine service levels for various types of transit service.

Discussion: Transit service providers have different methodologies for determining their service types and appropriate service levels. Generally, headways on all-day service routes in Shoreline are 30 minutes, including weekends and evenings, and headways on peak-only routes usually range from 15-30 minutes. As transit providers evaluate their service strategies, the City should encourage service that is frequent and appropriate for routes in Shoreline.

25.2. Encourage Community Transit to expand Swift service farther into Shoreline, with a

potential terminus at the Shoreline Park & Ride or a more southern location.

25.3. Explore routing options to reduce travel times between Shoreline Community College, North Seattle Community College, Edmonds Community College and Northgate. Begin and coordinate efforts between Community Transit and Metro Transit to provide bus service between Shoreline Community College and Edmonds Community College. Work with Metro Transit to provide transit service between the two Shoreline high schools and between the Shoreline high schools and Shoreline Community College.

25.4. Work with Metro Transit and Community Transit to allow transfers between providers to occur on Aurora Avenue N without the need for a transfer at the AVTC. Keep Swift and RapidRide BRT services on Aurora Avenue N to improve the ease of transfers.

- **Policy T26:** Work with Metro Transit to implement RapidRide BRT service on the Aurora Avenue N corridor and operate it as a convenient and appealing option for riders in Shoreline and those that want to come to Shoreline.

<u>Implementation Strategies</u>

26.1. Advocate for off-board fare payment at all RapidRide stops.

26.2. Advocate for a BRT system that includes appropriate stop spacing (approximately one mile apart) located at signalized intersections and underlying local service with more frequent stops.

26.3. Coordinate with Metro Transit and the City of Seattle to encourage and support continuous BAT lanes along the entire length of the Aurora Avenue N corridor and pursue grant funding to construct these facilities.

Discussion: Lanes dedicated for exclusive use by transit (or very limited use by vehicles) are an essential component of speedy and reliable BRT service. Without these dedicated lanes, both BRT and local service buses will be stuck in general-purpose traffic and the concept of faster service with fewer stops will be lost.

26.4. Ensure east-west transit routes serving Shoreline connect with the BRT corridor on Aurora Avenue N.

- **Policy T27:** Work with transit agencies to improve east-west service across the City of Shoreline and service from Shoreline to the University of Washington.

Implementation Strategies

27.1. Encourage Metro Transit, in accordance with their Strategic Plan, to expand Route 330, running from Shoreline Community College to Lake City, from a peak-only service to an all-day service.

27.2. Work with Metro Transit to ensure that north-south routes that intersect east-west routes do so at similar times in order to reduce delays associated with transfers.

27.3. Encourage Metro Transit to expand Route 373, running from the AVTC to the University of Washington, from a peak-only service to an all-day service, in accordance with their Strategic Plan. Emphasize the need for express bus service from Shoreline to the University of Washington during the peak period.

❖ **Policy T28:** Strengthen Aurora Avenue N as a high-usage transit corridor that encourages cross-county, seamless service.

Implementation Strategies

28.1. Study options for the relocation of all or a portion of the AVTC function to the Shoreline Park & Ride. This relocation may be in conjunction with construction of a TOD at the Shoreline Park & Ride and should occur once the Aurora Corridor Improvement Project is completed. Coordinate with Metro Transit and Community Transit to study the impacts of rerouting service from the AVTC to the Shoreline Park & Ride.

28.2. Work with private developers to create a TOD at the Shoreline Park & Ride and/or nearby properties that could incorporate a transit center. Perform an analysis to identify the appropriate densities and uses of the property. The analysis should also outline the parking needs for the transit center (taking into account the demand at both the AVTC and the Shoreline Park & Ride), the future parking needs once light rail service is available in Shoreline, and the layover and bus bay needs for current and future needs of Metro Transit and Community Transit.

28.3. Coordinate with Metro Transit and Community Transit to reroute service from the AVTC to the Shoreline Park & Ride. Ensure that the northernmost area of the City is still provided

transit coverage, that transit service is improved as a result of this change, and that riders are provided with additional and easier transfers.

- **Policy T29:** Work with Sound Transit, the Shoreline School District, WSDOT, Metro Transit, the City of Seattle and Shoreline neighborhoods to develop the final light rail alignment and station area plans for the areas surrounding the future Link light rail stations.

Implementation Strategies

29.1. Participate in the Sound Transit planning process and environmental review to identify the final alignment for light rail from Northgate to Lynnwood. Advocate for two stations in Shoreline that will result in the highest ridership, most cost-effective solution and compatibility with planned surrounding land uses. Should the final light rail alignment be located on I-5, it should be on the side(s) that takes advantage of potential TOD, increased employment and residential densities, and land in public ownership, such as the Shoreline Conference Center and NE 185th Street.

29.2. Work with the neighborhoods and communities surrounding the future light rail stations to determine the types of land uses desired near the stations. Modify the City's land use policies and development regulations, as needed, to create the underlying zoning that will result in development of the stations as desired.

29.3. Determine the desired and needed traffic mitigation for the station areas based upon the planned future land use and anticipated future traffic demand in the area, including provisions for bicycle and pedestrian facilities at and connecting to the stations.

29.4. Coordinate with Sound Transit during their planning process to ensure the City's future land use plans are considered and integrated into station area designs.

29.5. Closely monitor and participate in Sound Transit's required mode study, alternatives analysis and environmental process, and coordinate with cities to the north and south of Shoreline regarding Sound Transit planning and design.

Shoreline's Medium Range Transit Plan

In this short time frame, light rail service to Northgate will begin. Bus service will be restructured to feed the light rail station at Northgate, making bus transportation to Northgate a convenient and appealing option for Shoreline residents. BRT service on Aurora Avenue N and bus service on other north-south corridors will continue, as will east-west service providing connections for residents throughout the City.

During this time, Shoreline will begin implementing much of the planning work developed earlier. Capital improvements will continue to be installed by the City, as well as private investors. It is anticipated that some new development will have occurred within the City, in particular along the Aurora Avenue corridor, in North City and within the newly established Town Center area.

By this time, Shoreline's Aurora Corridor Improvement Project will be complete and BRT will be in service on Aurora Avenue N. Additionally, it is anticipated that the AVTC will have relocated to the Shoreline Park & Ride, with the associated changes to service. The City will continue to advocate for appropriate improvements to local bus service and will begin focusing even more efforts on the implementation of additional future HCT, including light rail and new BRT lines.

Because Shoreline is served by three transit providers, the City will continue to encourage and facilitate coordination among Metro Transit, Community Transit and Sound Transit. This coordination will be extremely important in order to ensure that light rail stations are developed in accordance with the City's plans and bus service is readily available to light rail and BRT stations.

Figure U, Proposed Transit Enhancements: Medium Range Plan, displays the changes outlined in the Medium Range Transit Plan.

- **Policy T30:** Work with Metro Transit to develop a plan to orient bus service to serve the light rail station at Northgate coinciding with the opening of service at Northgate.

  Implementation Strategies

  30.1. Coordinate with Metro Transit to ensure fast, frequent and reliable bus service to Northgate from Shoreline upon the beginning of light rail service at Northgate. Evaluate the frequency of existing routes that travel through Shoreline to Northgate and increase frequency, as merited, in accordance with the Metro Strategic Plan. Increase frequency of headways during peak periods.

  30.2. Advocate for the creation of a new express bus route from Shoreline Community College to Northgate that travels on N 145th Street.

- **Policy T31:** Support and encourage the development of additional HCT service in Shoreline.

  Implementation Strategies

  31.1. Work with Metro Transit and the City of Seattle to identify future BRT lines serving Shoreline, including Greenwood Avenue N, 15th Avenue NE, SR 523/N/NE 145th Street and SR 522/Bothell Way NE, and work with Metro Transit and Sound Transit to incorporate these routes into their planning processes.

  31.2. Develop specific BRT route plans with transit providers and the communities they will serve, including Seattle.

  31.3. Participate in Sound Transit discussions regarding development of the next phase of

improvements (ST3) including:

- Advocate for a commuter rail station that serves Richmond Beach.
- Identify locations and routes that would be appropriate for light rail expansion, including east-west and new north-south routes. This may include connections to proposed extensions into Ballard and Bothell Way NE (SR 522).

31.4. Work with Seattle and cities to the north to develop a plan for improved HCT on Aurora Avenue N. This may include the implementation of improved BRT service by Sound Transit (or a combination of Sound Transit, Metro Transit and Community Transit) along the entire corridor from Seattle to Everett. Other HCT options, such as a continuous street car, may also be considered.

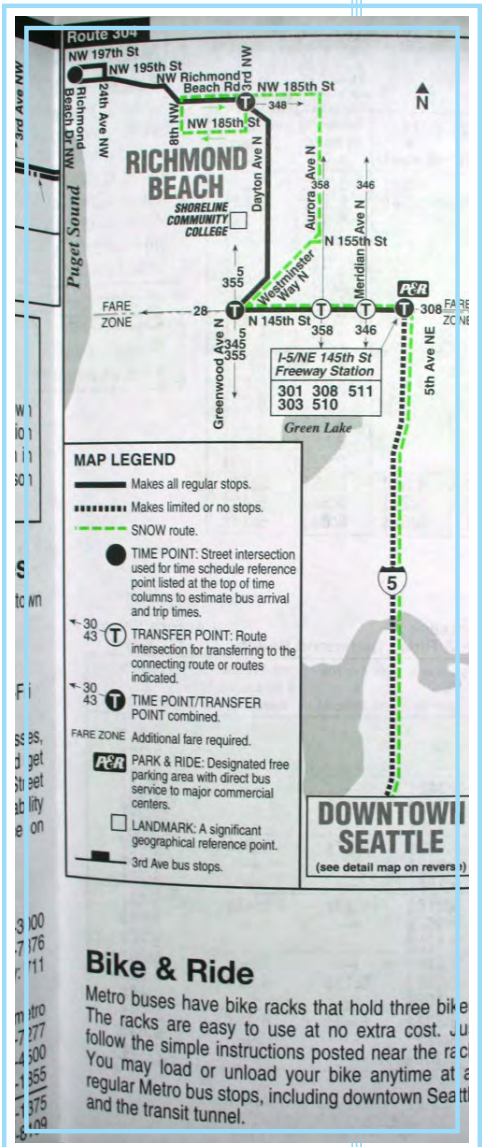
❖ **Policy T32:** Continue to install and support the installation of transit supportive infrastructure.

Implementation Strategies

32.1. Include projects in the Shoreline Capital Improvement Plan that make it easier, safer and more convenient for residents to access transit.

32.2. Ensure private developers continue to construct improvements that are transit-supportive.

32.3. Advocate for reconstruction of the SR 104/SR 99 interchange to include BAT lanes, which will provide seamless BAT lanes across the King/Snohomish County line.



Shoreline's Long Range Transit Plan

At the beginning of this time frame, light rail service to Shoreline will be operational. Bus service will be restructured to feed the light rail stations in Shoreline. North-south service will still be needed on corridors other than light rail for residents wishing to reach destinations outside the reach of light rail. East-west service that feeds the light rail stations, other HCT corridors and park & ride lots and connects residents to destinations throughout the City will continue.

With light rail in its infancy, Shoreline is likely to see interest in development around the transit stations. The City may choose to reexamine the land use plans for the station areas, as attitudes about the presence of the stations may change to favor additional increased densities beyond the original station area boundaries. The transportation systems serving these areas may need modifications as well, depending upon their performance.

Sound Transit will likely be in a planning mode that examines additional system expansions beyond ST2. This will be an

opportunity for the City to advocate for street car service or light rail expansions into the City, including east-west service, as well as additional north-south locations.

The long-range plan for transit service in Shoreline focuses on maintaining quality service in the City and expanding the system to make transit an increasingly appealing option for trips. As revenues grow for the three transit agencies and coordination improves among them, efficiency will also improve and additional hours will be available to provide service to the City.

Figure V, Conceptual Transit Enhancements: Long Range Plan, displays the changes outlined in the Long Range Transit Plan.

- **Policy T33:** Work with Metro Transit, Sound Transit and Community Transit to develop a bus service plan that connects residents to light rail stations, high-capacity transit corridors, and park & ride lots throughout the City.

  Implementation Strategies

  33.1. Work with Metro Transit to direct feeder routes from all areas of the City to the Shoreline light rail stations throughout the entire day and on weekends, with additional frequency during the peak periods.

  33.2. Strengthen links between the Shoreline Park & Ride and the light rail line through increased bus frequency, new routes and/or direct service between the two facilities.

- **Policy T34:** Implement traffic mitigation for measures at light rail station areas.

  Implementation Strategies

  34.1. Work with Metro Transit to redirect commuter routes that travel to downtown Seattle via I-5 to light rail. Reallocate those hours to feeder routes that will bring commuters from park & ride lots or other areas of Shoreline to the light rail stations.

  34.2. Work with Sound Transit to implement traffic mitigation in the light rail station areas, as developed in the station area planning process.

  34.3. Improve bicycle and pedestrian facilities in the vicinity of the light rail stations to encourage and support non-motorized transportation to the stations.

  34.4. Work with the City of Seattle, WSDOT, Sound Transit and Metro Transit to improve N/NE 145th Street from Lake City Way NE to Greenwood Avenue N in order to provide better east-west bus connections to the Aurora Avenue N BRT line, the light rail station at NE 145th Street and the future BRT line on Lake City Way NE.

- **Policy T35:** Promote livable neighborhoods around the light rail stations through land use patterns, transit service and transportation access.

  Implementation Strategies

  35.1. Ensure feeder routes to the light rail stations are serving all neighborhoods in Shoreline and operating at frequencies that encourage light rail use.

  35.2. Monitor traffic traveling to and from the light rail stations to ensure surrounding neighborhoods are not experiencing cut-through traffic or other negative impacts. Implement appropriate solutions to minimize impacts and improve safety.

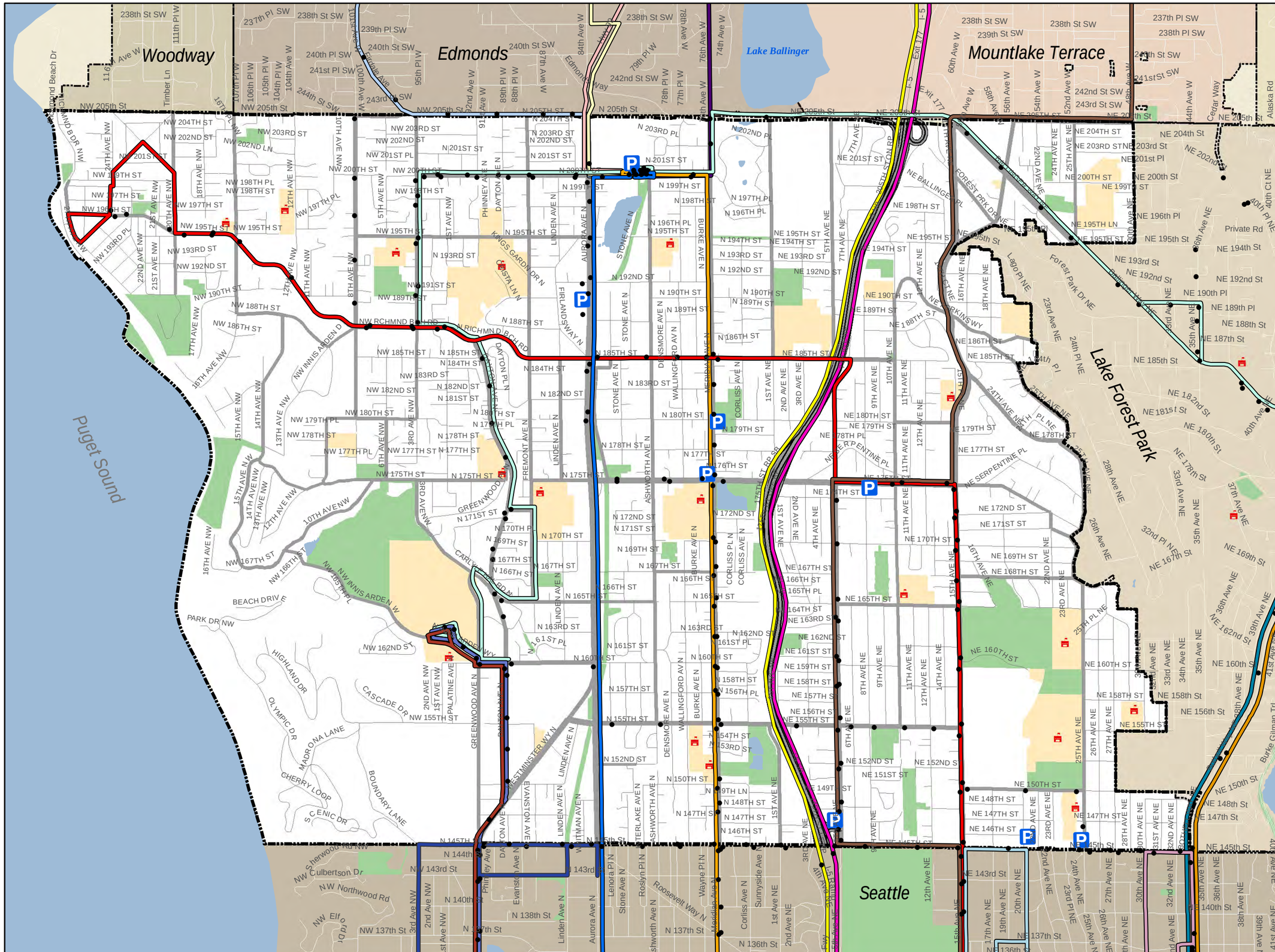


Figure O

Bus Routes: All-Day Service

- Bus Stop
- Park and Ride (P&R)

Metro Transit:

- 5: Downtown Seattle Shoreline
- 28: Downtown Seattle Shoreline
- 65: North Seattle-University District
- 73: Downtown-Cowen Park -Jackson Park
- 331: Kenmore-Aurora Village-Shoreline Community College
- 345: Northgate Transit Center-Shoreline Community College
- 346: Northgate Transit Center-Aurora Village
- 347: Northgate Transit Center-Richmond Beach
- 348: Northgate Transit Center-Richmond Beach
- 358: Downtown Seattle-Aurora Village
- 372: Woodinville-Kenmore-University District (Seattle)

Community Transit:

- Swift & 101: Aurora Village Transit Center-Everett Station
- 118: Aurora Village Transit Center-Ash Way Park and Ride
- 130: Aurora Village Transit Center-Lynnwood Transit Center
- 131: Aurora Village Transit Center-Edmonds Community College

Sound Transit:

- 510: Everett-Downtown Seattle
- 511: Ash Way Park and Ride-Downtown Seattle
- 522: Woodinville-Downtown Seattle

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1 inch = 1,983 feet

CITY OF SHORELINE

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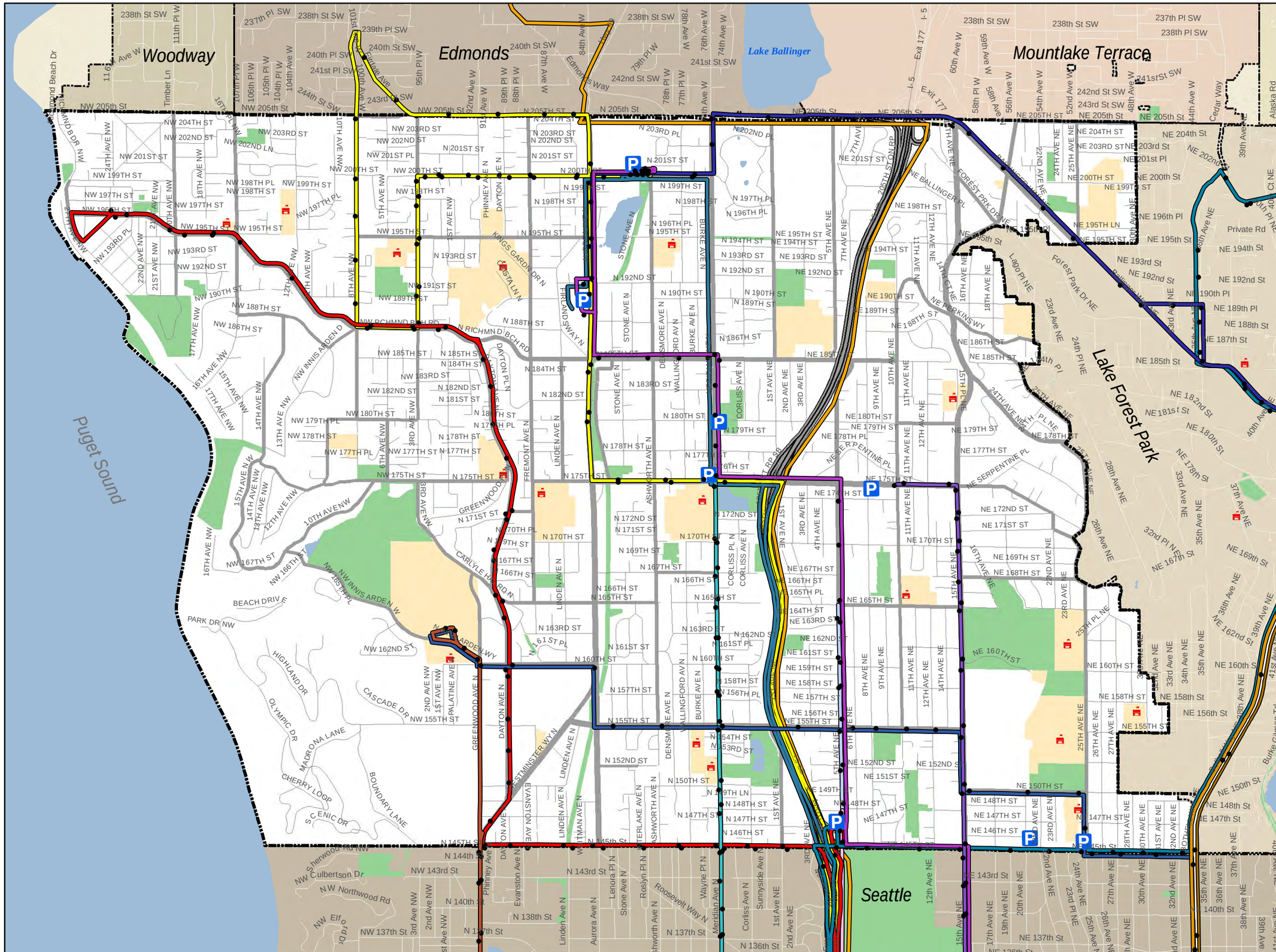

Figure P

Bus Routes: Peak-Only Service

- Bus Stop
- Park and Ride (P&R)

Metro Transit:

- 77: North City-Downtown Seattle
- 242: Ridgecrest-Overlake (Bellevue)
- 243: Jackson Park (Seattle)-Bellevue
- 301: Richmond Highlands-Downtown Seattle
- 303: Shoreline Park and Ride-First Hill (Seattle)
- 304: Richmond Beach-Downtown Seattle
- 306: Woodinville-Downtown Seattle
- 308: Horizon View-Downtown Seattle
- 309: Kenmore-First Hill(Seattle)
- 312: Bothell-Downtown Seattle
- 316: Meridian-Downtown Seattle
- 330: Shoreline Community College-Lake City (Seattle)
- 342: Shoreline Park and Ride-Renton
- 355: Shoreline Community College-Downtown Seattle
- 373: University District (Seattle)-Aurora Village Transit Center

Communtiy Transit

- 416: Edmonds-Downtown Seattle

Other Map Features:

- School
- School Property
- Park or Trail

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1 inch = 1,983 feet

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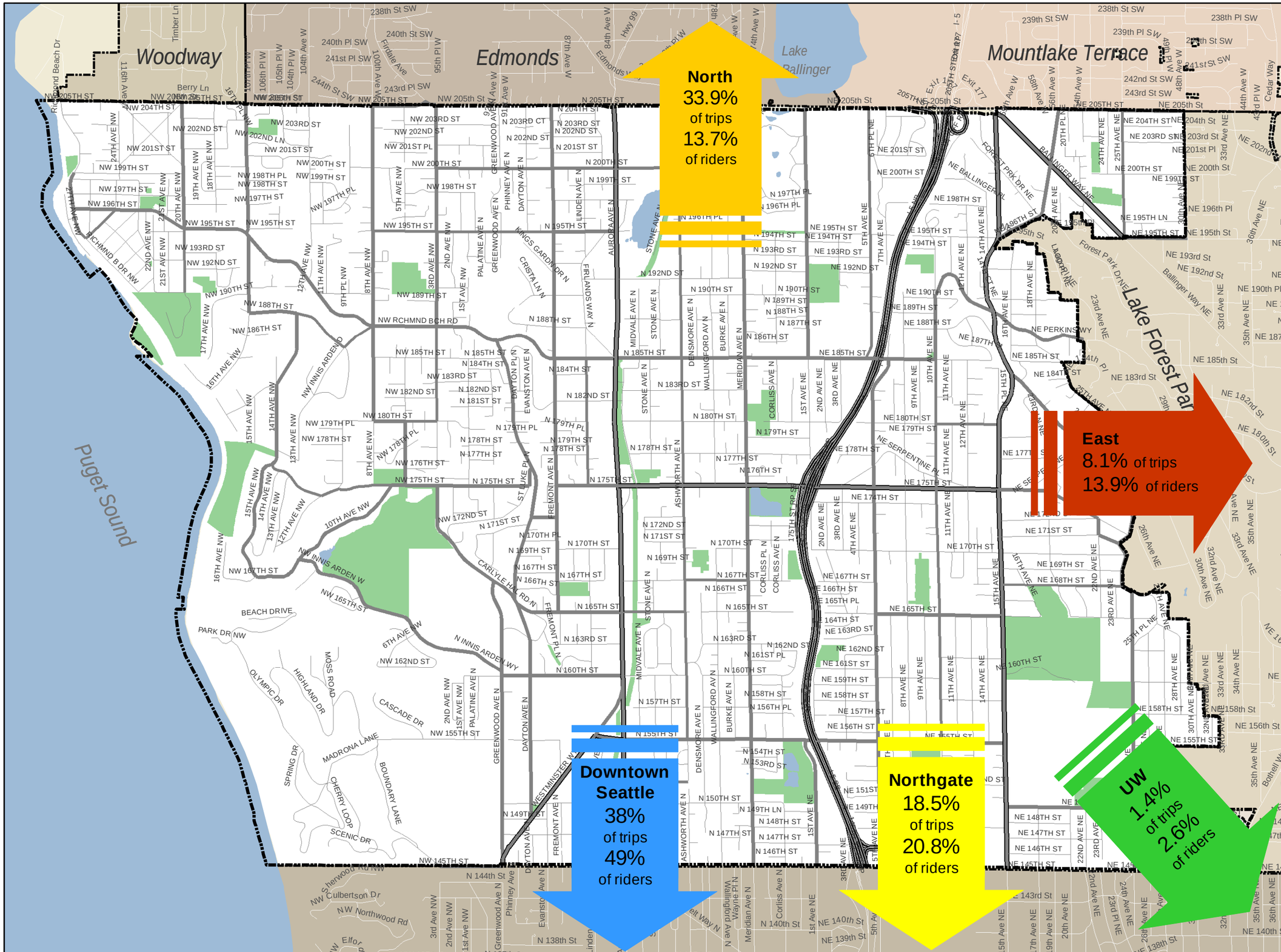
Figure Q

2010 Weekday Transit Trips & Ridership



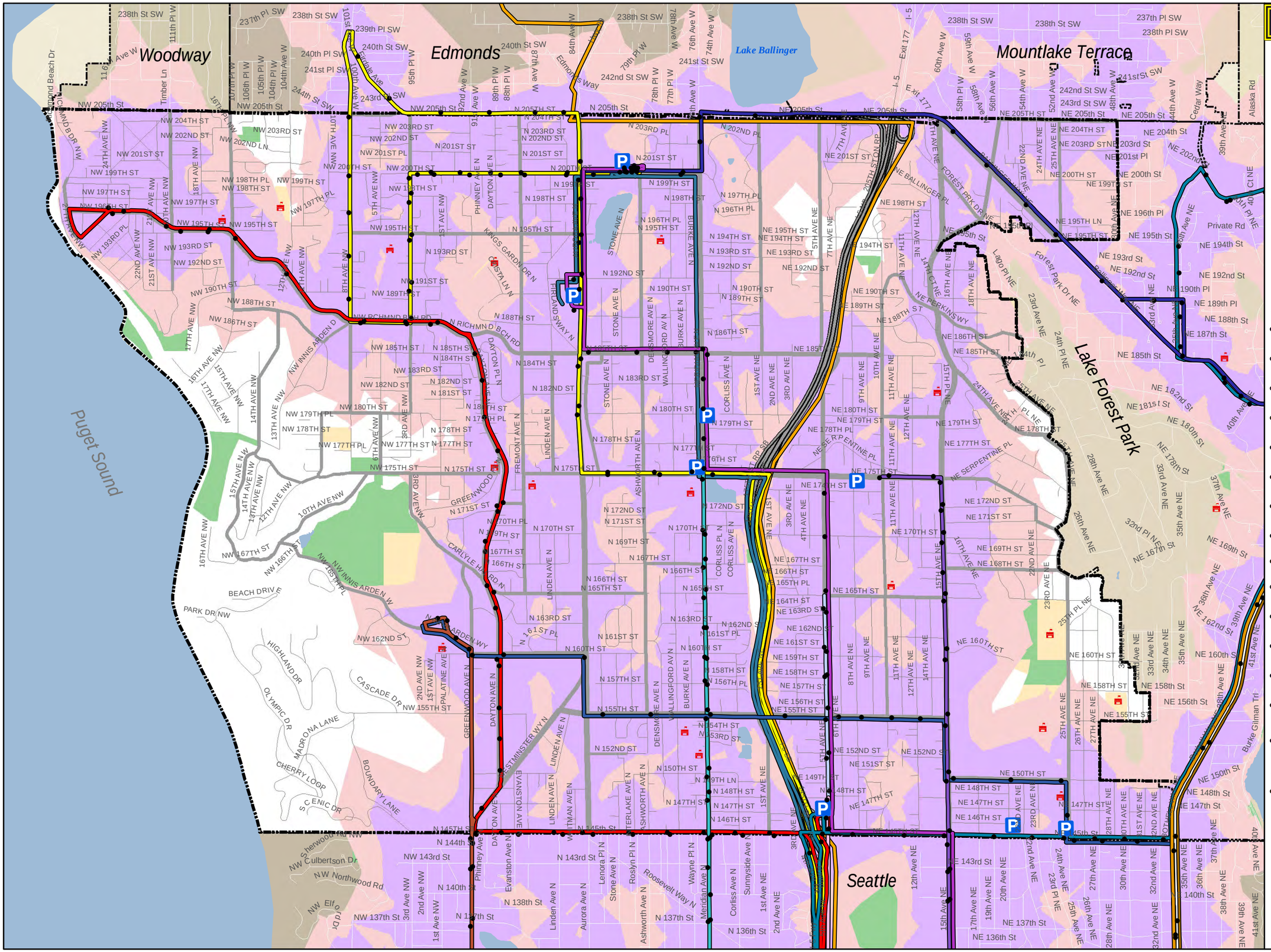


Figure R

Proximity to Bus Routes: Peak-Only Service

Transit Service Area

- less than 1/4 Mile
- 1/4 to 1/2 Mile
- Bus Stop
- Park and Ride (P&R)

Metro Transit:

- 77: North City-Downtown Seattle
- 242: Ridgecrest-Overlake (Bellevue)
- 243: Jackson Park (Seattle)-Bellevue
- 301: Richmond Highlands-Downtown Seattle
- 303: Shoreline Park and Ride-First Hill (Seattle)
- 304: Richmond Beach-Downtown Seattle
- 306: Woodinville-Downtown Seattle
- 308: Horizon View-Downtown Seattle
- 309: Kenmore-First Hill(Seattle)
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- 316: Meridian-Downtown Seattle
- 330: Shoreline Community College-Lake City (Seattle)
- 342: Shoreline Park and Ride-Renton
- 355: Shoreline Community College-Downtown Seattle
- 373: University District (Seattle)-Aurora Village Transit Center

Community Transit:

- 416: Edmonds-Downtown Seattle

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1 inch = 1,983 feet

CITY OF SHORELINE

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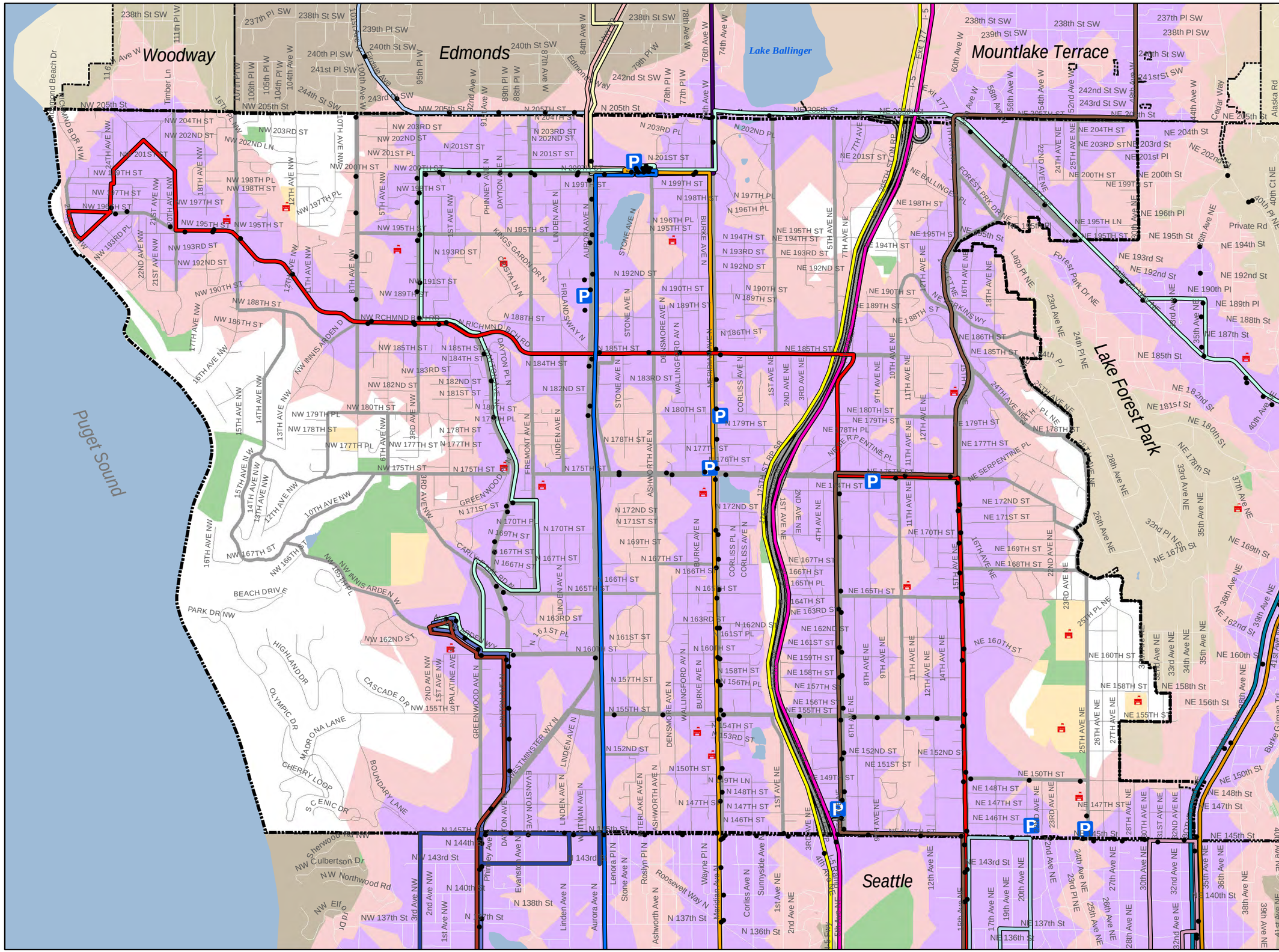

Figure S

Proximity to Bus Stops: All-Day Service

Transit Service Area:

- less than 1/4 Mile
- 1/4 to 1/2 Mile
- Bus Stop
- Park and Ride (P&R)

Metro Transit:

- 5: Downtown Seattle Shoreline
- 28: Downtown Seattle Shoreline
- 65: North Seattle-University District
- 73: Downtown-Cowen Park -Jackson Park
- 331: Kenmore-Aurora Village-Shoreline Community College
- 345: Northgate Transit Center-Shoreline Community College
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Community Transit:

- Swift & 101: Aurora Village Transit Center-Everett Station
- 118: Aurora Village Transit Center-Ash Way Park and Ride
- 130: Aurora Village Transit Center-Lynnwood Transit Center
- 131: Aurora Village Transit Center-Edmonds Community College

Sound Transit:

- 510: Everett-Downtown Seattle
- 511: Ash Way Park and Ride-Downtown Seattle
- 522: Woodinville-Downtown Seattle

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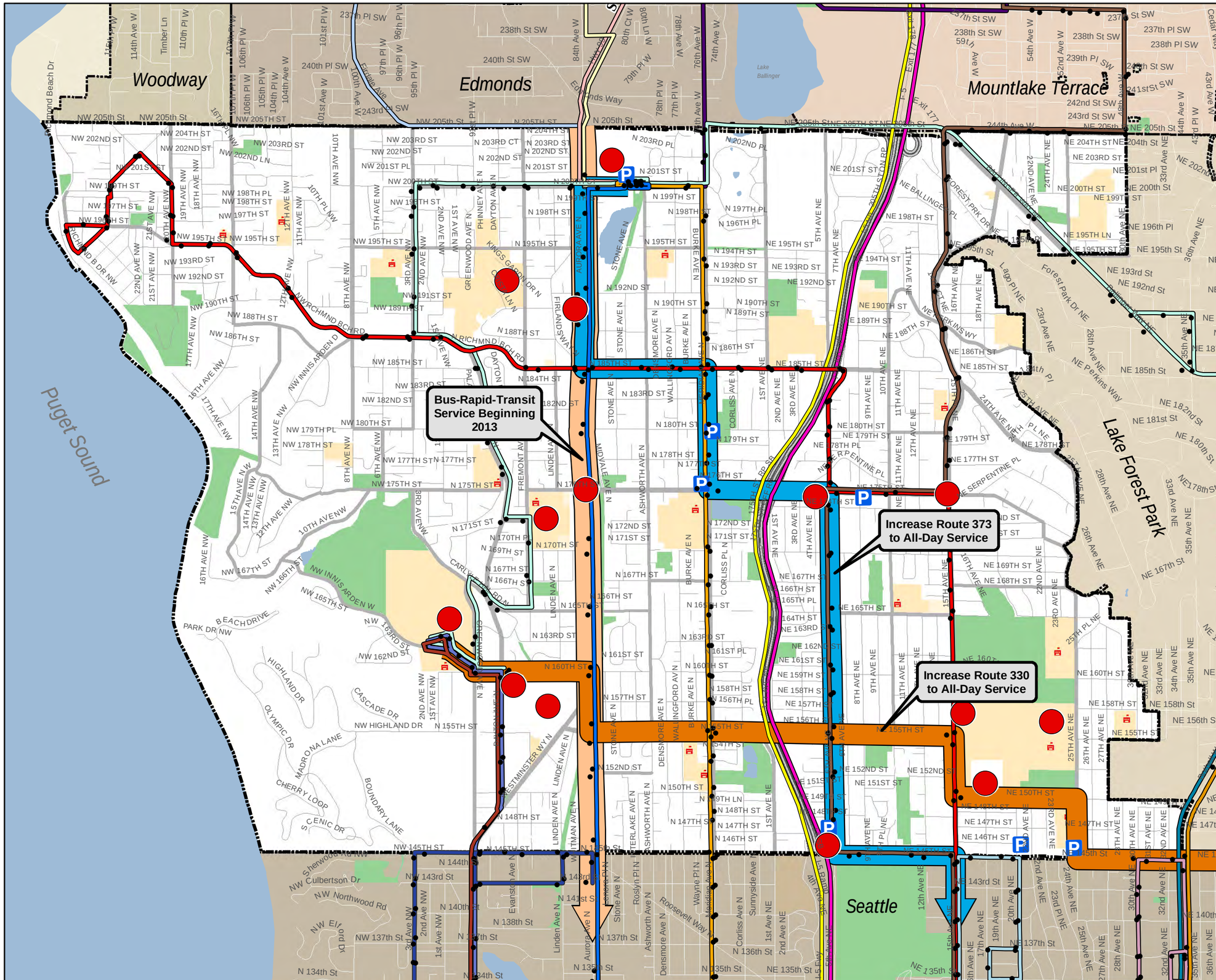
1 inch = 1,983 feet

CITY OF SHORELINE

Figure T

Proposed Transit Enhancements: Short-Range Plan



Legend

Recommended Enhancement

- Bus Stop
- Park and Ride (P&R)

Metro Transit:

- 5: Downtown Seattle-Shoreline
- 28: Downtown Seattle-Shoreline
- 65: North Seattle-University District
- 73: Downtown-Cowen Park-Jackson Park
- 331: Kenmore-Aurora Village-Shoreline Community College
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- 118: Aurora Village Transit Center-Ash Way Park and Ride
- 130: Aurora Village Transit Center-Lynnwood Transit Center
- 131: Aurora Village Transit Center-Edmonds Comm. College

Sound Transit:

- 510: Everett-Downtown Seattle
- 511: Ash Way Park and Ride-Downtown Seattle
- 522: Woodinville-Downtown Seattle

Other Map Features

- Transit Attractions/Destinations
- School
- School Property
- Park

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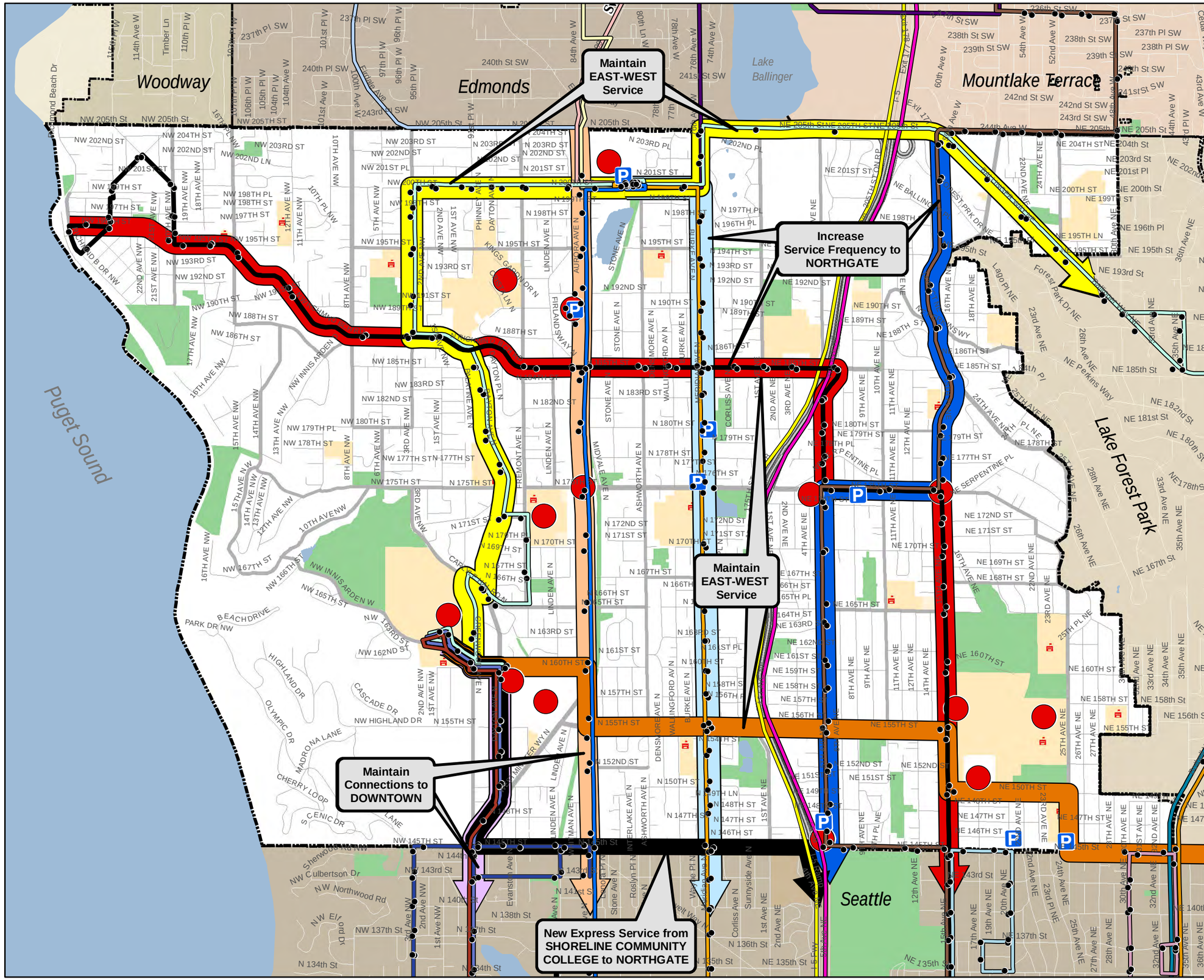
1 inch = 2,046 feet

CITY OF SHORELINE

Figure U

Proposed Transit Enhancements: Medium-Range Plan

Light Rail Service to Northgate



Legend

Recommended Enhancement

- Bus Stop
- Park and Ride (P&R)

Metro Transit:

- 5: Downtown Seattle-Shoreline
- 28: Downtown Seattle-Shoreline
- 65: North Seattle-University District
- 73: Downtown-Cowen Park-Jackson Park
- 331: Kenmore-Aurora Village-Shoreline Community College
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Sound Transit:

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- 511: Ash Way Park and Ride-Downtown Seattle
- 522: Woodinville-Downtown Seattle

Other Map Features

- Transit Attractions/Destinations
- School
- School Property
- Park

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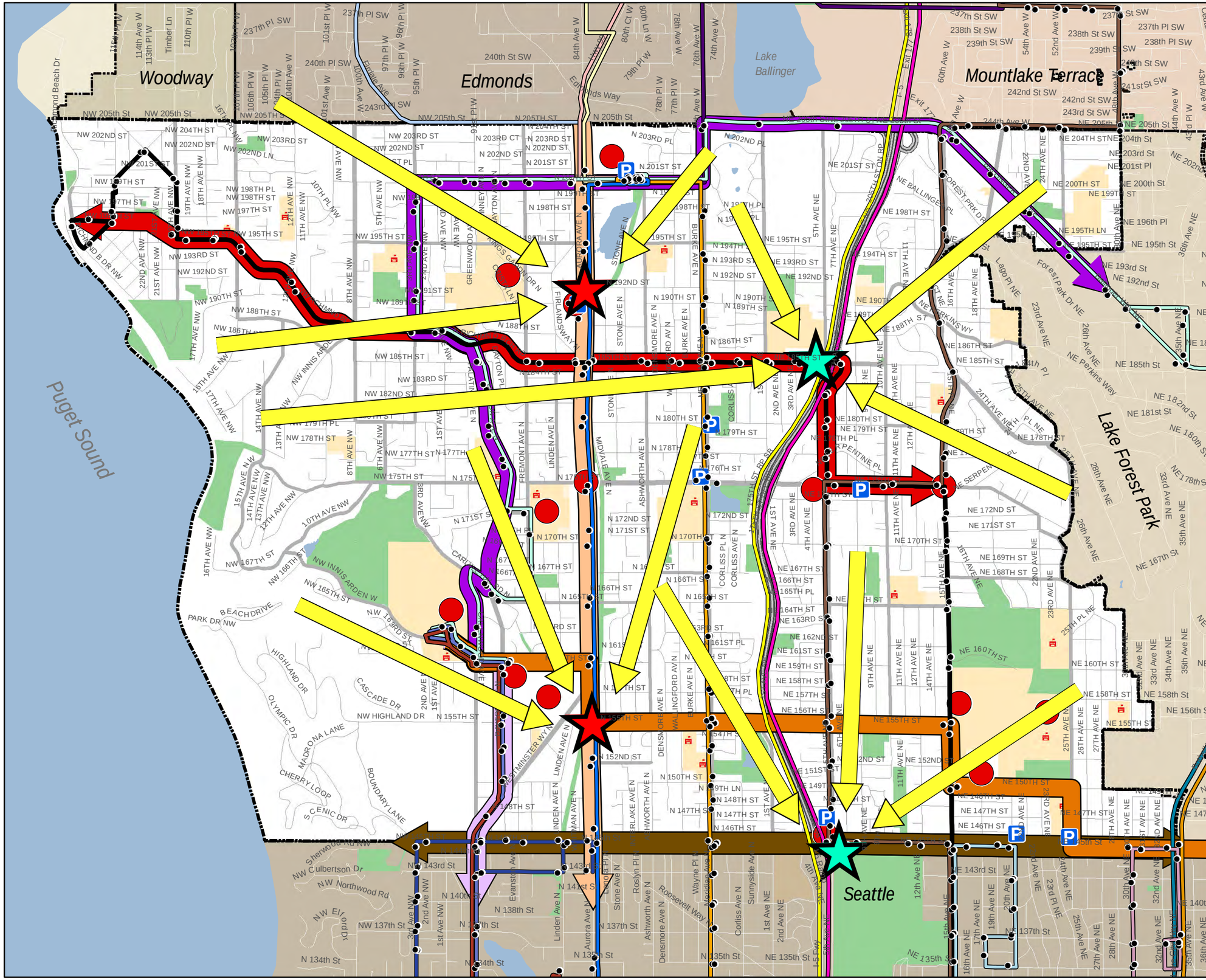

Figure V

Conceptual Transit Enhancements: Long Range Plan

Light Rail Service in Shoreline

Legend

Light Rail Station Scenario Options

- Light Rail Station (Scenario #1)
- Light Rail Station (Scenario #2)
- Transit Connection To Be Determined

Bus Locations

- Bus Stop
- Park and Ride (P&R)

Metro Transit:

- 5: Downtown Seattle-Shoreline
- 28: Downtown Seattle-Shoreline
- 65: North Seattle-University District
- 73: Downtown-Cowen Park-Jackson Park
- 331: Kenmore-Aurora Village-Shoreline Community College
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Other Map Features:

- Transit Attractions/Destinations
- School
- Park and Trail
- School Property

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1 inch = 2,046 feet

CITY OF SHORELINE

N W E S

Master Street Plan

Master Street Plan

A Plan for All Streets

The Master Street Plan provides guidance for future right-of-way improvements. The Shoreline Master Street Plan was developed by the City to help guide property owners, developers, architects, landscape architects and engineers involved with the design, permitting and construction of improvements to Shoreline's right-of-way. In developing this Master Street Plan, the City considered and attempted to balance the access and mobility needs of all users including motorists, pedestrians, bicyclists, transit and freight while responding to anticipated growth. The design criteria strive to balance safety, preservation and maintenance of the roadway infrastructure and environmental conservation.

The Shoreline Master Street Plan was developed by the City to help guide property owners, developers, architects, landscape architects and engineers involved with the design, permitting and construction of improvements to Shoreline street right-of-way.

The Master Street Plan identifies specific roadway cross-sections for all Arterial Streets and Local Primary Streets in Shoreline, dividing each roadway into segments to identify where there are differing right-of-way needs, such as number of travel lanes or bicycle facilities. In addition to the planned cross-section for Arterial Streets and Local Primary Streets, the Master Street Plan includes an inventory of the existing street cross-sections and right-of-way for these streets. The planned cross-sections establish the location of future curbs so that streets can be constructed in the proper location.

For Local Secondary Streets, the Master Street Plan identifies the options for street cross-sections, rather than a specific cross-section for each street, including green streets. A determination of the appropriate cross-section for a given Local Secondary Street will be made at the time modifications to the street are funded or redevelopment occurs.

While the Master Street Plan establishes the cross-section for a roadway, the design standards, such as sight distances, curb radii and profile grade, are contained in the City's Engineering Development Guide.

The **Shoreline Master Street Plan** is contained in **Appendix D**.

- **Policy T36:** Design City transportation facilities with the primary purpose of moving people and goods via multiple modes, including automobiles, freight trucks, transit, bicycles and walking, with vehicle parking identified as a secondary use.

- **Policy T37:** Implement the standards outlined in the Master Street Plan for development of the City's roadways.
- **Policy T38:** Frontage improvements shall support the adjacent land uses and fit the character of the areas in which they are located.

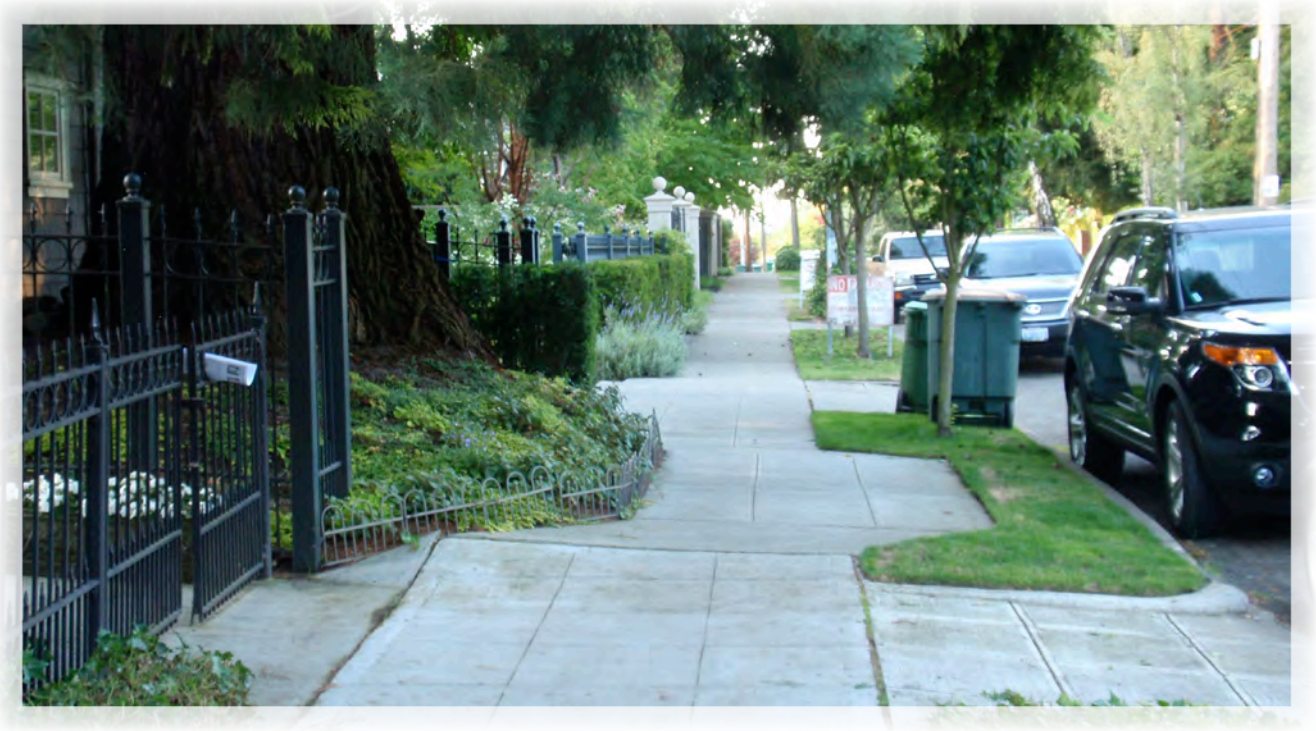
Implementation Strategies

38.1. Utilize the Street Classification Map as a guide in balancing street function with land uses. Minimize through-traffic on local streets.

38.2. Require frontage improvements as part of City capital projects such as park improvements and facility developments.

38.3. Develop the amenity zone in a manner that is appropriate and complementary to the adjacent land uses.

Discussion: Amenity zones should generally be landscaped and, where possible, utilized for stormwater management purposes. In areas where a wide pedestrian walking surface is desired, such as Town Center, the amenity zone may be a hard surface treatment with trees in pits. Amenity zones that are adjacent to on-street parking areas should be landscaped as much as possible, but may include limited hard surface areas for drivers or passengers exiting vehicles. Amenity zones adjacent to roadways that do not have on-street parking shall be landscaped as much as possible.



38.4. Allow for flexibility in the implementation of the Master Street Plan to address site-specific, unique or unforeseen circumstances, such as the presence of bus stops, topography or large trees. Sidewalks should be separated from the curb by a five-foot wide amenity zone/ landscaping strip. Sidewalks adjacent to single family residential development shall be a minimum of five feet wide. Require the construction of wider sidewalks (a minimum width of eight feet) adjacent to uses other than single-family residential including, but not limited to:

- Commercial uses
- Medium and high density residential uses
- Parks
- Churches
- Libraries
- Schools
- Sports and social clubs
- Major transit facilities
- Civic facilities
- Conference centers
- Museums
- Medical facilities
- Day cares

38.5. Assure that motorized and non-motorized transportation systems are appropriately sized and designed to serve the surrounding land uses and to minimize the negative impacts of growth.

38.6. Require new development and redevelopment to upgrade substandard frontage improvements in accordance with the Master Street Plan.

38.7. Require the dedication of right-of-way and construction of frontage improvements in conjunction with new development in a manner that is equitable, and related to the impacts of adjacent land use. Dedication or building setbacks should be required during the permit review process to ensure new development is served by the appropriate street cross-section identified in the Master Street Plan.

Discussion: The Master Street Plan establishes the required cross-section for all roadways in the City. In order to ensure the needed right-of-way is available for transportation improvements and that frontage improvements are constructed in the correct location, staff will evaluate the existing right-of-way and roadway improvements during permit review. Determinations shall be based upon the need for right-of-way improvements associated with adjacent land uses, such as wider sidewalks, and the historic patterns of dedications in the vicinity. For example, if only half of the needed right-of-way is present and it is clear that all of the existing right-of-way was dedicated by owners opposite a property wishing to develop, the remaining half can be exacted from the developing property. Front yard setbacks should at a minimum be sufficient to avoid conflicts with future transportation projects.

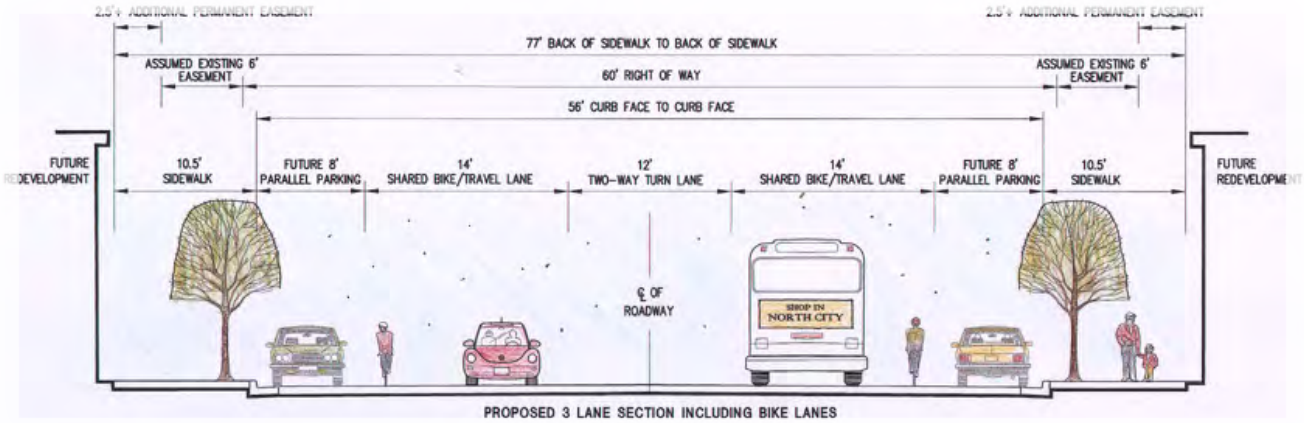


Image: courtesy of KPG for the North City Project

Concurrency & Level of Service

Concurrency and Level of Service

The relationship between LOS standards, funding needs to accommodate increased travel, and land use assumptions is referred to as "concurrency".

Transportation and Growth Management

The Growth Management Act (GMA) requires each local jurisdiction to identify facility and service needs based on level of service (LOS) standards for all arterials and transit routes. LOS standards are used to judge the performance of the transportation system. The GMA further requires that the transportation element of a city's comprehensive plan include specific actions and requirements for bringing into compliance any facilities or services that are below an established level of service standard. The relationship between LOS standards, funding needs to accommodate increased travel, and land use assumptions is referred to as "concurrency".

Concurrency is balanced when growth is matched with needed facilities. If any of the features is unbalanced, one of the following three actions must be taken:

- Reduce growth by denying or delaying land use permit applications
- Increase funding for new facilities
- Change the level of service standard

Transportation concurrency requires adequate transportation facilities to be available concurrent with private development. Development is not allowed if it causes the LOS on transportation facilities to fall below standards adopted in the comprehensive plan. In the case of transportation facilities, the GMA defines "concurrent with development" to mean that improvements or strategies are in place at the time of development, or that a financial commitment is in place to complete the improvements or strategies within six years.

Transportation concurrency is determined by comparing the capacity of transportation facilities needed by each application for development to the uncommitted capacity that is (or will be) available. If the uncommitted available capacity is equal to, or greater than the capacity required, the applicant passes the concurrency test. If the uncommitted available capacity is less than the capacity required, the applicant fails the concurrency test.

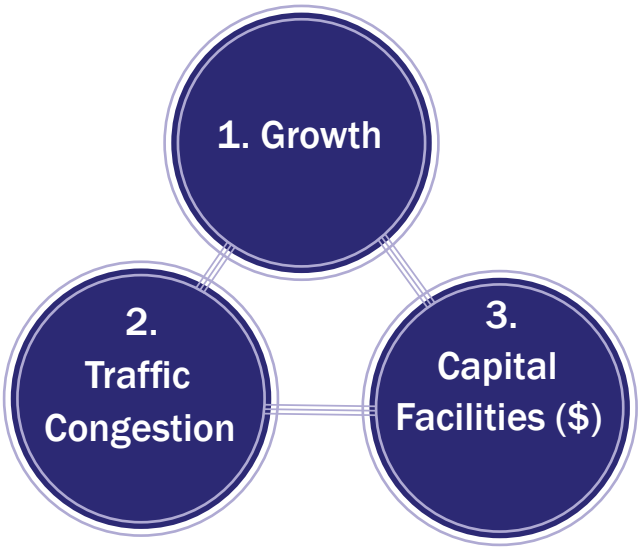
If the concurrency test is "failed," there are several

alternatives: (1) the applicant can mitigate the impacts to achieve a satisfactory LOS, (2) the applicant can revise the proposed development to reduce the impacts and maintain a satisfactory LOS, or (3) the application is denied and the proposed development does not occur.

The concept of concurrency is illustrated on **Figure 8.1**. The three legs of the concurrency stool represent the following planning components:

1. Growth
2. Traffic congestion (measured with LOS standards)
3. Resources needed to fund new capital facilities

Figure 8.1. Three-Legged Concurrency Stool



When developing the concurrency recommendations included in this chapter, the City of Shoreline considered the various functions and needs of its transportation network and the desire to have a system that works well for all users. As the following methodology explains, the City took a two-tiered approach to evaluating concurrency that looked at the network in a more comprehensive manner. The recommended concurrency standard results in improvements to both roadway segments and intersections that will help traffic flow throughout the City. The traffic improvements will also result in improvements for pedestrians, bicyclists and transit through implementation of the Shoreline Complete Streets standards for roads.

The policy language in this chapter recommends that Shoreline adopt LOS D for all signalized intersections on arterials and unsignalized intersecting arterials, with additional volume to capacity standards for Principal and Minor Arterials. With these standards, the City will accept intersections that operate at LOS D or better and will help balance levels of congestion, the cost of added capacity, and the need to minimize diversion of traffic onto neighborhood streets.

LOS Standards for Roads and Intersections

The GMA allows each local jurisdiction to choose a LOS methodology and standards, and the jurisdiction has flexibility regarding how to apply concurrency within their plans, regulations, and permit systems. LOS is a qualitative measure used to denote roadway or intersection operating conditions. It generally describes levels of traffic congestion along a roadway segment or at

Level of Service (LOS) is a qualitative measure used to denote roadway or intersection operating conditions. It generally describes levels of traffic congestion along a roadway segment or at signalized and unsignalized intersections in an urban area.

signalized and unsignalized intersections in an urban area.

The LOS standard is one of the cornerstones of the Shoreline Transportation Master Plan. Two of the most important criteria to be applied for selecting a LOS methodology are whether it is easy to administer and whether it is technically/legally accepted.

The Volume to Capacity (V/C) ratio is a common LOS metric for evaluating traffic operations on roadway segments. The V/C ratio compares the volume of traffic traveling over a section of roadway against the theoretical capacity of that roadway segment. Low V/C ratios indicate low levels of congestion, while V/C ratios of 1.0 or greater indicate high levels of congestion.

Intersection delay is a LOS methodology for evaluating traffic operations at signalized intersections. The Highway Capacity Manual 2010 (HCM 2010) defines LOS at signalized intersections based on the average delay experienced per vehicle traveling through the intersection. At signalized intersections, average vehicle delays of 35 seconds or less represent stable operating conditions with little or no congestion. Average vehicle delays in excess of 80 seconds per vehicle indicates high levels of congestion and jammed conditions at intersections.

LOS is typically represented as a “report card” grading system ranging from A at the highest level to F at the lowest level. LOS A and B represent minimal delays and LOS C represents generally acceptable delays. LOS D represents an increasing amount of delay where vehicle movements become more limited based on the density of surrounding vehicles; speeds begin to reduce on roadway segments and an increasing number of vehicles are stopped at intersections. LOS E represents unstable flow where vehicle speeds are highly variable and intersection operations are approaching capacity, resulting in long queues with more vehicles stopped for longer durations. LOS F represents conditions when the volumes exceed the capacity of the system, which results in slow vehicle speeds, excessive delays, and long queues. Vehicles approaching an intersection with LOS F frequently have to wait for more than one signal cycle to get through the intersection. **Table 8.1, Level of Service Descriptions**, summarizes LOS for roadway segments and signalized intersections.

Table 8.1. Level of Service Descriptions

Level of Service	Roadway Segments V/C Ratio	Signalized Intersections Average Delay (sec/veh)	General Description
A	≤ 0.60	≤ 10	Free Flow
B	> 0.60 - 0.70	> 10 - 20	Stable Flow (slight delay)
C	> 0.70 - 0.80	> 20 - 35	Stable Flow (acceptable delay)
D	> 0.80 - 0.90	> 35 - 55	Approaching Unstable Flow (speeds somewhat reduced, more vehicles stop and may wait through more than one signal cycle before proceeding)
E	> 0.90 - 1.0	> 55 - 80	Unstable Flow (speeds reduced and highly variable, queues occur, many vehicles have to wait through more than one signal cycle before proceeding)
F	> 1.0	> 80	Forced Flow (jammed conditions, long queues occur that do not clear, most vehicles wait through more than one signal cycle before proceeding)

Source: Highway Capacity Manual 2010

LOS can be measured during different times of the day. Typically, traffic volumes during the PM peak periods are used with the hour experiencing the worst traffic congestion being the time frame measured. However, AM peak periods are also used, as well as the average daily traffic for a roadway or intersection.

Many cities apply LOS to intersections using the PM peak period traffic volumes. The focus of this type of analysis is on vehicles and the capacity of an intersection to manage the highest traffic demand. This often results in the construction of large intersections with excess capacity during the non-peak period. By measuring LOS on both roadway segments and intersections, Shoreline was able to more comprehensively evaluate impacts to the City's transportation network. As a result, the City has identified roadway improvements that both increase capacity and, in accordance with the City's roadway development standards, benefit all users including bicyclists, pedestrians, transit and vehicles.

LOS for Highways of Statewide Significance (HSS)

The GMA requires WSDOT to identify transportation facilities and services of statewide significance. HSS include interstate highways and other principal arterials that are needed to connect major communities in the state. Local jurisdictions are required to include these in their inventories of essential facilities, along with LOS standards, needs and impacts, but cities and counties may not deny development based upon their performance (i.e., they are excluded from local concurrency requirements). Two HSS pass through the City of Shoreline: SR 99 (Aurora Avenue N) and I-5. Two other HSS, SR 104 (NE 205th Street) between SR 99 and I-5 and SR 522 (Bothell Way NE), are adjacent to the City. The standard that applies to Shoreline is LOS "E/ mitigated," meaning that congestion should be mitigated (through alternative means of travel such as transit) when PM peak hour LOS is worse than LOS E.

LOS for Regionally Significant State Highways

Regionally significant state highways are state transportation facilities that are not designated as being of statewide significance (also called non-HSS). Puget Sound Regional Council (PSRC) has designated two state highways in or adjacent to Shoreline as regionally significant: SR 523 (N/NE 145th Street) and SR 104 (Ballinger Way NE). PSRC, its member cities and counties and WSDOT worked together to adopt LOS standards for regionally significant state highways and they are subject to local concurrency requirements. The LOS on regionally significant state highways in Shoreline is also "E/mitigated."

Figure W, Highways of Statewide Significance and Regionally Significant State Highways, identifies these roadways in and adjacent to the City of Shoreline.

LOS Methodology for Roadways and Intersections

In order to estimate the future LOS on its roadways and develop a concurrency standard, the City of Shoreline developed a citywide traffic demand model. A description of the forecasting process is included in **Appendix E**. For addressing transportation concurrency and level of service for Shoreline, both V/C ratios on roadway segments and the delay at signalized intersections were used. The V/C ratios were determined by assigning growth throughout the City in accordance with the transit-oriented development (TOD) Enhanced Scenario described in **Appendix E** and comparing the anticipated traffic volumes to the capacity of roadway segments. The travel demand model was used to identify the projected V/C ratio for all streets in Shoreline, except Local Secondary Streets.

Delay at signalized intersections was determined by first "post-processing" forecasted volumes from the Shoreline TOD Enhanced Scenario model for intersections. The post-processing was completed in accordance to the methodology published in the National Highway Cooperative Research Program Report 255. This includes adjusting the forecasted volumes based on the existing traffic counts and checking for consistency along traffic corridors within the City. The 2030 PM peak hour post-processed traffic volumes were input into a traffic analysis software program, known as Synchro, to calculate LOS at signalized intersections.

Roadway Evaluation

The Shoreline travel demand model was used to create a 2030 Baseline condition map for the City. The 2030 Baseline conditions assume that no roadway improvements would be constructed between 2008 and 2030, other than the Aurora Corridor Improvement Project from N 145th Street to N 205th Street that is currently funded and under construction. **Figure E-6, Volume/ Capacity Ratio at Count Locations Shoreline 2030 Base 1 Hr PM Peak**, in **Appendix E**, shows the results of this model.

The travel demand model was used to identify future roadway congestion for all arterials and Local Primary Streets in Shoreline. Based upon an evaluation of the projected traffic operations under the 2030 Baseline conditions, the City established the following criteria to determine future roadway improvement projects:

- The roadway is a Principal or Minor Arterial

- The roadway is not a state highway, as these roadways are exempt from concurrency standards
- The average V/C ratio along the project corridor is greater than 0.90
- The ability to mitigate the impacts of growth is entirely within the jurisdiction of the City (i.e. does not require improvements in neighboring jurisdictions)

Exceptions to these standards include areas where widening the roadway cross-section is not feasible due to significant topographic constraints, where the ability to construct improvements is not entirely within the City of Shoreline, or where recent rechannelization and safety improvements have been installed, resulting in an acceptable level of increased congestion in light of the improved operational safety of the roadway. Exempted roadway segments include:

Dayton Avenue N from N 175th Street to N 180th Street. This segment of the roadway is bounded by steep slopes, which restrict roadway widening.

Westminster Way N from N 145th Street to N 149th Street. Roadway improvements located entirely within Shoreline cannot correct the congestion problems at this location. In order to alleviate these problems, improvements to the intersection at N 145th Street and Greenwood Avenue N are required. Coordination with the City of Seattle is needed to make the intersection improvements.

5th Avenue NE from NE 145th Street to the I-5 on-ramps. Roadway improvements located entirely within Shoreline cannot correct the congestion problems at this location. In order to alleviate these problems, improvements to the intersection at NE 145th Street and 5th Avenue NE are required. Coordination with the City of Seattle and WSDOT is needed to make the changes to the intersection and roadway segments.

15th Avenue NE from NE 150th Street to NE 175th Street. Increased congestion is acceptable, as Shoreline rechannelized the roadway for improved operational safety.

After evaluating the results of the 2030 Baseline Condition Map according to the criteria listed above, the following roadway projects were identified as future projects:

- Addition of a center two-way left-turn lane on Meridian Avenue N from N 145th Street to N

205th Street
- Addition of a center two-way left-turn lane on Fremont Avenue N from N 175th Street to N 185th Street
- Addition of a center two-way left-turn lane on NE 185th Street from 1st Avenue NE to 10th Avenue NE
- Extension of left-turn pockets on N 175th Street between Meridian Avenue N and the I-5 on- and off-ramps
- Addition of a center two-way left-turn lane on 5th Avenue NE from NE 170th Street to NE 175th Street

After the projects above were identified, a 2030 All Projects model was developed, in which the proposed roadway improvements listed above were coded into the roadway network for the 2030 conditions. Also included were two rechannelization and safety projects which have been identified as priorities by the community. They are not needed to accommodate growth; however, they have an impact on traffic flow on other streets:

1. Addition of a center two-way left-turn lane on NE 155th Street from 5th Avenue NE to 15th Avenue NE
2. Rechannelization of 15th Avenue NE from NE 175th Street to NE 196th Street from a four-lane cross-section to a three-lane cross-section

The 2030 All Projects model was used to evaluate the impacts that these lane geometry changes would have on traffic operations within Shoreline. The proposed roadway projects would increase capacity in locations where a center two-way left-turn lane is added, such as NE 155th Street. Capacity may be decreased in locations where the roadway is rechannelized from a four-lane to a three-lane cross-section, as on 15th Avenue NE. These changes in capacity affect the projected traffic volumes, as some traffic would divert from roadways where the capacity is reduced and shift to roadways where the capacity is increased. Based on these shifts in traffic patterns, the projected traffic volumes under the 2030 All Projects model is greater than the projected traffic volumes under 2030 Baseline conditions for some project locations where the addition of a center, two-way left-turn lane is proposed.

The model results with these projects included are shown in **Figure X, V/C Ratio at Count Locations Shoreline 2030 All Projects, 1HR PM Peak**. Significant changes resulting from the integration of these projects include:

- Increased congestion northbound on Meridian Avenue N from N 145th Street to N 205th Street as traffic shifts from other arterials to Meridian Avenue N.
- Reduced congestion on NE 185th Street from 1st Avenue NE to 10th Avenue NE.
- Reduced congestion on N 175th Street from Meridian Avenue N to the I-5 on-ramps, particularly for eastbound vehicles.
- Minor reductions in congestion on NE 155th Street from 5th Avenue NE to 15th Avenue NE.
- Reduced congestion on 15th Avenue NE from NE 175th Street to NE 196th Street.

After coding all projects except the center two-way left-turn lane on 5th Avenue NE from NE 170th Street to NE 175th Street into the travel demand model, the travel demand model showed reduced congestion on 5th Avenue NE from NE 170th Street to NE 175th Street as traffic volumes shifted to other routes. With the other projects in place, the 5th Avenue NE roadway segment is projected to operate at an acceptable V/C ratio (less than 0.90), thus no additional improvements

are needed. In response, the center two-way left-turn lane at this location was removed from the proposed project list.

In order to alleviate congestion on Meridian Avenue N, a center two-way left-turn lane on N 175th Street between Stone Avenue N and Meridian Avenue N and traffic calming measures on Meridian Avenue N, such as speed restrictions, were coded into the travel demand model. These improvements resulted in reduced congestion on Meridian Avenue N and an average V/C ratio for the corridor of less than 0.90. The model results including these project mitigations are shown in **Figure Y, V/C Ratios at Count Locations Shoreline 2030 All Projects with Mitigation, 1HR PM Peak**.

Intersection Evaluation

Upon evaluation of the operational conditions under the 2030 Baseline conditions, signalized intersection improvements were also identified for additional analysis. When determining which signalized intersections to evaluate, the following criteria were utilized:

- The intersection is located on a Principal or Minor Arterial
- The intersection is not located on a state highway, as these roadways are exempt from concurrency standards
- At least one leg of the intersection has a V/C ratio of 0.90 or greater
- The ability to mitigate the impacts of growth is entirely within the jurisdiction of the City (i.e. did not require improvements in neighboring jurisdictions)

Using these criteria, the following five intersections were identified for detailed analysis:

- N 185th Street and Meridian Avenue N
- N 185th Street and 1st Avenue NE
- N 175th Street and Meridian Avenue N
- NE 175th Street and 15th Avenue NE
- NW Richmond Beach Road and 8th Avenue NW

In addition to these projects, the following two intersections were evaluated:

- NE 175th Street and the I-5 southbound on-/off-ramp
- NE 175th Street and the I-5 northbound on-/off-ramp

Shoreline is experiencing congestion issues at these latter two locations, and improvements at these intersections would enhance many of the other projects identified to accommodate growth. Due to their exemption from concurrency standards and the high level of coordination required with WSDOT to design and implement these projects, they are not included as part of the City's concurrency program.

Table 8.2, Intersection Operations Summary of Level of Service and Delay (PM Peak), summarizes the intersection LOS for the existing, 2030 Baseline and 2030 All Projects conditions. For the intersection level analysis, the intersection lane geometry was modified to reflect how the seven identified roadway projects would affect the lane geometry at the intersection level (i.e., a center two-way left-turn lane would result in a new or extended left-turn pocket at an intersection). The projected traffic volumes at the intersections were also updated to reflect the 2030 All Projects conditions. The change in LOS between 2030 Baseline and 2030 All Projects conditions

is due to the increase in traffic volumes under the 2030 All Projects conditions along with the change in roadway geometry due to the proposed roadway improvement projects. The far right column in **Table 8.2** summarizes the improvements that were assumed would be made at the intersection level as a part of the proposed roadway improvement projects included in the 2030 All Projects conditions.

Table 8.2. Intersection Operations Summary of Level of Service and Delay (PM Peak)

Intersection	2008 Existing Conditions		2030 Baseline (Optimized)		2030 All Projects (Optimized)		Description of Intersection Improvements Assumed as Part of the 2030 Roadway Projects
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	
N 185th St/ Meridian Ave N	D	54	F	92	F	124	Center two-way left-turn lane on N 185th St and Meridian Ave N extends the lengths of the southbound and westbound left-turn pockets over existing conditions.
NE 185th St/ 1st Ave NE	A	8	B	19	C	22	Center two-way left-turn lane on NE 185th St extends the length of the westbound left-turn pocket over existing conditions.
N 175th St/ Meridian Ave N	D	51*	E	76*	E	73	Extension of westbound left-turn pocket on N 175th St provides additional storage capacity for turning vehicles over existing conditions. Remove split-phase signal operation and optimize for eight-phase signal operation.
NE 175th St/ 15th Ave NE	D	51*	E	62*	F	85*	Rechannelization of 15th Ave NE north of NE 175th St was assumed to mirror the channelization on 15th Ave NE south of NE 175th St. This includes retaining two northbound and southbound through-lanes at the intersection and tapering to the three-lane cross section approximately 500 feet north of the intersection.
NE 175th St/ I-5 southbound ramps	C	29	B	18	C	21	Extension of eastbound left-turn pocket on NE 175th St provides additional storage capacity for turning vehicles over existing conditions.
NE 175th St/ I-5 northbound ramps	D	45	C	29	D	37	N/A
NW Richmond Beach Rd/ 8th Ave NW	C	30	C	30	C	33	N/A

* Signal operates with split phase signal timing. Split phasing consists of having two opposing approaches timed consecutively rather than concurrently (i.e., all movements originating from the west followed by all movements from the east).

Source: FHWA Publication Number FHWA-HRT-04-091, August 2004

The LOS threshold for future operations of the evaluated intersections was established as LOS D. For Shoreline purposes, the intersection LOS is the average of all movements and lanes. Any intersection that is projected to operate worse than a LOS D under the 2030 Project Conditions was further evaluated to determine what additional intersection improvements would be

necessary for the intersection to operate at least at LOS D conditions. Based on the initial results of the operations analysis, the following intersections are projected to operate below a LOS D:

- N 185th Street and Meridian Avenue N
- N 175th Street and Meridian Avenue N
- NE 175th Street and 15th Avenue NE

The three intersections projected to operate below LOS D were evaluated further to determine what additional modifications would be necessary to improve the intersection operations to LOS D under the 2030 All Projects conditions. **Table 8.3, Additional Intersection Improvements and Resulting Level of Service (PM Peak)** summarizes the intersection improvements and resulting LOS during the PM peak hour with the additional intersection improvements in place. Improvements at N 185th Street and Meridian Avenue N would include coordinating the signal timing with the intersection of NE 185th Street and 1st Avenue NE, therefore the change in LOS at that intersection was also reported in **Table 8.3**. A graphical summary of the changes in intersection lane configuration and change in LOS for each intersection movement for each scenario is shown in **Figure Z, Proposed Intersection Projects**.

Table 8.3. Additional Intersection Improvements and Resulting Level of Service (PM Peak)

Intersection	2030 Projects (Optimized)		2030 Projects plus Intersection Improvements		Description of Intersection Improvements
	LOS	Delay (sec)	LOS	Delay (sec)	
N 185th St/ Meridian Ave N	F	124	D	47	500-FT NB/SB add/drop lanes – involves widening north and southbound approaches to include a second through lane and receiving lane. 50-FT EB right-turn pocket – involves widening eastbound approach to include a right-turn pocket. Coordinate signal timing with 1st Ave NE.
NE 185th St/ 1st Ave NE	C	22	B	17	Coordinate with N 185th St/Meridian Ave N improvements (above).
N 175th St/ Meridian Ave N	E	73	D	46	500-FT NB add lanes – involves widening northbound approach to include a second through lane.
NE 175th Street/ 15th Ave NE	F	85*	D	52	Re-stripe westbound approach to provide a dedicated left-turn pocket and shared through/right lane. With dedicated left-turn pockets, remove split-phase signal operation and optimize for eight-phase signal operation.

* Signal operates with split-phase signal timing.

Adopted and Recommended LOS Standards for Roadways

Although not all signalized intersections were modeled as part of the 2030 traffic model, the projected V/C ratios for the Shoreline street network indicate that traffic will flow fairly well throughout the City, with minimal or acceptable levels of congestion. Because most of the City's intersections currently experience LOS C or better and are not projected to degrade significantly in the future, the City has adopted LOS D for all signalized intersections. This means the City will

accept intersections that operate at LOS D or better and will help balance levels of congestion, the cost of added capacity, and the need to minimize diversion of traffic onto neighborhood streets.

❖ **Policy T39:** Adopt LOS D at the signalized intersections on arterials and unsignalized intersecting arterials within the City as the level of service standard for evaluating planning level concurrency and reviewing traffic impacts of developments, excluding the Highways of Statewide Significance and Regionally Significant State Highways (I-5, Aurora Avenue N and Ballinger Way NE). Intersections that operate worse than LOS D will not meet the City's established concurrency threshold. The level of service shall be calculated with the delay method described in the Transportation Research Board's Highway Capacity Manual 2010 or its updated versions. Adopt a supplemental level of service for Principal Arterials and Minor Arterials that limits the volume to capacity (V/C) ratio to 0.90 or lower, provided, the V/C ratio on any leg of a Principal or Minor Arterial intersection may be greater than 0.90 if the intersection operates at Level of Service (LOS) D or better. These Level of Service standards apply throughout the City, unless an alternative Level of Service standard is identified in the Facilities and Service subelement of the Transportation Element for intersections or road segments, where an alternate level of service has been adopted in a subarea plan, or for Principal or Minor Arterial segments where:

- Widening the roadway cross-section is not feasible, due to significant topographic constraints; or
- Rechannelization and safety improvements result in acceptable levels of increased congestion in light of the improved operational safety of the roadway.
- Arterial segments meeting at least one of these criteria are:
  - Dayton Avenue N from N 175th Street to N 185th Street: V/C may not exceed 1.10
  - 15th Avenue NE from NE 150th Street to NE 175th Street: V/C may not exceed 1.10

Implementation Strategies

39.1. Develop and adopt a concurrency program based upon the anticipated trip increase in Shoreline associated with growth. Integrate program incentives and rewards for development that constructs or enhances non-motorized transportation or transit.

39.2. Develop and adopt an impact fee program to reimburse the City for the costs of transportation capacity improvements associated with growth.

39.3. Pursue one of the following actions in the event that the City is unable to fund the transportation capital improvements needed to maintain adopted transportation LOS standards:

- Phase development that is consistent with the Land Use Plan until such time that adequate resources can be identified to provide adequate transportation improvements;
- Reassess land use policies and regulations to reduce the travel demand placed on the system to the degree necessary to meet adopted transportation service standards; or
- Reassess the City's adopted transportation LOS standards to reflect levels that can be maintained based on known financial resources.

❖ **Policy T40:** Adopt the following levels of service as the desired frequency of transit service in the City of Shoreline:

- Headways on all-day service routes should be no less than 30 minutes, including weekends and evenings (strive for 20-minute or less headways during the day on these routes);
- Headways on peak-only routes should be no more than 20 minutes (strive for 15-minute or less headways on these routes).

LOS Standards for Transit

The LOS for transit is based upon a number of factors. LOS needs to account for both the availability and the quality of transit service. Measures of availability look at the frequency of the service, hours of service, accessibility, and service coverage. When looking at the quality of service, issues of reliability, safety and travel times are of concern.

Because Shoreline is not a transit provider and has no control over how transit service is provided, the City cannot reasonably prohibit development if transit service does not meet the City's transit LOS. Therefore, the recommended LOS for transit expresses a preference for transit service in Shoreline. The City's vision for transit and desired service levels are expressed in the three-tiered plans outlined in Chapter 6.

Existing and Recommended Concurrency Program

The City hired Henderson, Young & Company to help design a transportation concurrency program in conjunction with development of this Transportation Master Plan. The first step in development of a new program recommendation was the establishment of goals. These goals included the following:

- Shoreline's transportation concurrency program should be simple.
  - It should be understandable to the applicants and the community.
  - It should be easy for City staff to implement and administer.
  - Shoreline is nearly built out, therefore the program will not be used enough to require or justify a more complex approach.
- Shoreline's transportation concurrency program should support the City's interest in increasing the use of transit as an alternative to single occupancy vehicles.
- Shoreline's transportation concurrency program should support a simple, fair and predictable program for mitigating the impact of development on the transportation system.
- Shoreline's transportation concurrency program should support transportation planning and land use decisions that improve travel time and reduce travel delays.

While Shoreline also supports bicycle and pedestrian modes as alternatives to single occupancy vehicles, development of a multi-modal concurrency program is extremely complicated, and non-motorized LOS metrics and standards are not yet developed sufficiently to become part of the City's concurrency and mitigation program.

There are several key elements of Shoreline transportation plans that will serve as benchmarks for the City's transportation concurrency program, including:

- LOS is the heart of concurrency. It must be understandable, accurate, and defensible. The nature of the LOS controls the nature of the concurrency ordinance. LOS standards for transportation concurrency will be the same as the City's standards in the transportation element of the comprehensive plan and the transportation plan.
- Traffic counts and trip generation will be measured during the weekday PM peak period in order to be consistent with the City's adopted standards.
- The metric for vehicular traffic will measure traffic volume compared to road capacity (V/C ratio).
- Concurrency will be tested as early as possible in the development process.

Transportation impact fees are charges that local governments may assess on new development projects. The fees reimburse at least a portion, if not all, of the costs incurred by the municipality to provide transportation facilities needed to serve new development.

- Applications for rezoning, subdivision or site plan approval will be tested for concurrency. If the concurrency requirement is fulfilled, the concurrency approval will apply automatically to subsequent development permits for the same development.
- Concurrency must be tested no later than during the application for a building permit. If the proposed development has not been tested previously for concurrency, it must be tested during the application for a building permit. If the proposed development was tested and approved for concurrency before the building permit, no further concurrency test will be required.

- Transportation concurrency will be evaluated in one citywide service area. Multiple service areas or corridors would add complexity.

Using the goals outlined above, Henderson, Young & Company developed a concurrency program based upon the capacity of the City to accommodate future vehicle trips. The program identifies the capacity for additional vehicle trips the City's transportation network can accommodate in the future, based upon an assumed level of growth. Development will be permitted within the City as long as the cumulative number of trips from new construction does not exceed the network's capacity. The application of this program and its methodology are outlined in **Appendix F**.

A fundamental component of the concurrency program is the development of a transportation impact fee program for the City. Transportation impact fees are charges that local governments may assess on new development projects. The fees reimburse at least a portion, if not all, of the costs incurred by the municipality to provide transportation facilities needed to serve new development. Transportation impact fees may only be used to fund facility needs that are reasonably related to growth and may only be used to pay the development's proportionate share of the cost of transportation facilities that benefit the new development. Impact fees cannot be used to correct existing deficiencies in the transportation network.

Due to the considerable cost of building new roads and upgrading existing roads, transportation impact fees for streets and roads are one of the most commonly imposed types of impact fees in Washington. Setting fee schedules for impact fees is a complex process. Local jurisdictions must be able to demonstrate that the rates charged, and the traffic generation projections and other assumptions

used, are reasonable and are related to the demand created by the new development. An impact fee system can help assure funds are available and transportation facilities can be completed in a manner that meets the transportation concurrency requirements of the GMA.

Concurrency programs have benefits to project applicants as well. They can support a simple, fair and predictable program for mitigating the impact of development on the transportation system. As a result, the impacts of growth are proportional and applicants that cross the LOS threshold are not saddled with the entire burden to mitigate traffic congestion in an area. A concurrency program can also reduce or eliminate the requirement and expense of a developer-prepared traffic impact analysis.

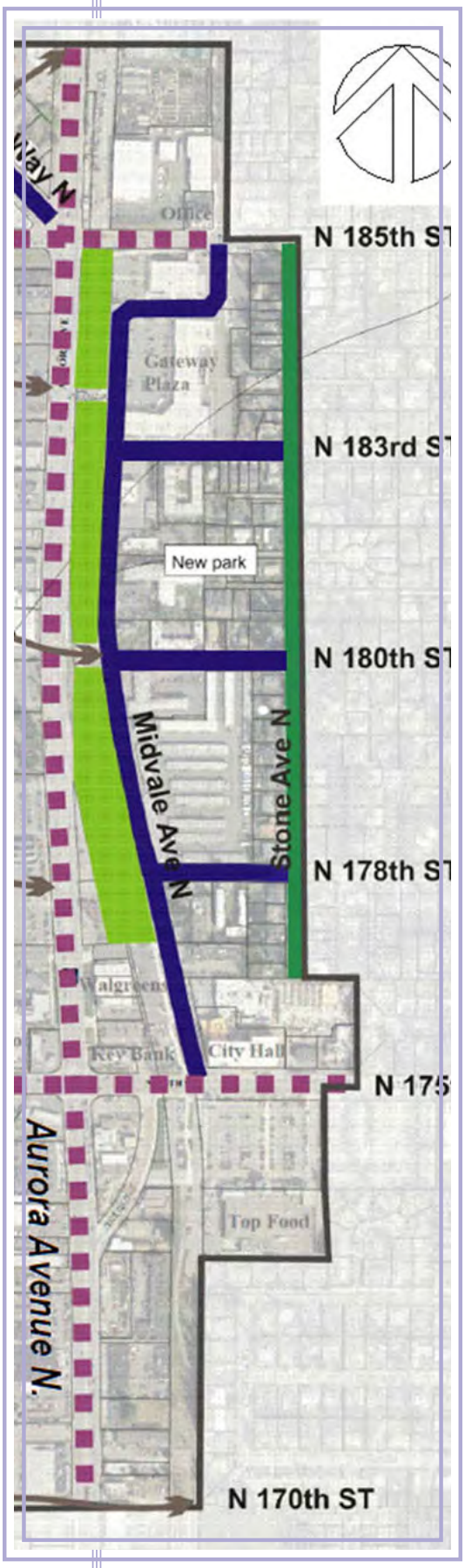
Using the traffic model and the criteria established to identify intersection improvements, the City has identified the following projects that will improve capacity and mitigate the impacts of forecasted growth:

- Addition of a center two-way left-turn lane and traffic calming measures on Meridian Avenue N from N 145th Street to N 205th Street
- Intersection improvements at N 185th Street and Meridian Avenue N
- Addition of a center two-way left-turn lane on N 175th Street from Stone Avenue N to Meridian Avenue N
- Intersection improvements at N 175th Street and Meridian Avenue N
- Extension of left-turn pockets on N/NE 175th Street between Meridian Avenue N and the I-5 on-/off-ramps
- Intersection improvements at NE 175th Street and 15th Avenue NE
- Addition of a center two-way left-turn lane on NE 185th Street from 1st Avenue NE to 7th Avenue NE

The location of these projects is shown on **Figure AA, Proposed Roadway Projects to Accommodate Growth**. The costs of these projects will be utilized to develop the City's impact fee program.

One aspect of the concurrency methodology that helps achieve the City's goals for multi-modal transportation is the application of trip reduction credits. Using a list of pre-approved improvements that qualify as "credits," developers can reduce the trip count that would be assigned to a given development. A reduction in the number of trips applied to a development would reduce the payment required as part of the City's impact fee program. Credits may include actions such as:

- Installing a bus shelter on or in the vicinity of the site
- Installing preferential carpool/vanpool parking facilities
- Installing bike lockers or employee showers
- Construction of a specific type of development that the City would like to encourage
- Locating development near a Link light rail station
- Locating development near park & ride/transit centers
- Locating development near bus transit corridors
- Installing additional sidewalks/non-motorized trails beyond frontage improvements required by code
- Installing bike lanes



Shoreline considered other credit options such as landlord-provided bus passes to tenants or employer-sponsored commute trip reduction programs. However, these programs require regular oversight by the City and require continued participation by future tenants or property owners, which could make these less effective measures.

Funding provided by the developer for designated City programs or projects is another potential form of credits. Programs or projects may include:

- Funding for Transit Signal Priority (TSP)
- Funding for sidewalks
- Funding for bike lanes
- Funding for City-identified roadway or intersection improvement projects
- Funding for signal improvements
- Funding for Intelligent Transportation Systems (ITS) components

The transportation concurrency and mitigation program will consider the impact of proposed development on the major components of the transportation system, including arterial streets and intersections, but it will not deal with smaller components, such as local streets and unsignalized intersections. The transportation concurrency and mitigation program also excludes specific impacts by proposed development on arterial intersections, or road segments that are not identified by the travel demand model as impacted by overall growth in Shoreline. The City will use other programs, such as project-specific transportation impact studies (TIS) pursuant to the State Environmental Policy Act (SEPA), to consider the impact of development on the transportation elements listed below that are excluded from transportation concurrency and mitigation.

Non-arterial streets and alleys, on-site streets, driveways and parking. These improvements are required for local access, safety and local mobility. They are typically required by development regulations, such as subdivision or site plan regulations. They are not considered in evaluating LOS, therefore they are not included in transportation concurrency. They are not included in the City's transportation plan capital improvements, thus they are not part of the mitigation program, and therefore no credit against mitigation fees is given for making these improvements.

Frontage improvements on arterials streets. If the TIS shows an impact on an arterial that is also on the City's mitigation program list, the applicant will receive a credit against their mitigation fee for making the frontage improvement. If a segment or intersection of an arterial has been removed from the mitigation program list, applicants will receive credits for the frontage improvements they are required to make within five years after a segment or intersection has been removed from the mitigation program list. If the impacted arterial or collector is not on the mitigation program list, and has not been on the mitigation program list for more than five years, the applicant will be required to make the frontage improvement, but will not receive credit against their mitigation fee for the frontage improvement.

Intersections and/or segments of arterials that are not included in capital improvement projects in the City's transportation plan. If the TIS shows an impact on an arterial that is not on the City's mitigation program list, the applicant's mitigation will be limited to the applicant's proportionate share of the cost, or the applicant must be provided a latecomer agreement that can provide reimbursement to the applicant for portions of the cost that exceed their proportionate share.

Developments that result in transportation impacts outside of the PM peak period or have significant non-motorized needs. Many uses, such as schools and churches, have significant traffic impacts at times other than the PM peak period and these impacts should be analyzed. Additionally, some uses have transportation demands beyond those of vehicles. For example, schools generate high pedestrian and bicycle volumes. These types of situations require evaluation of the transportation impacts resulting from significant land use developments. Additional mitigation may be required to accommodate the transportation needs of these types of uses.

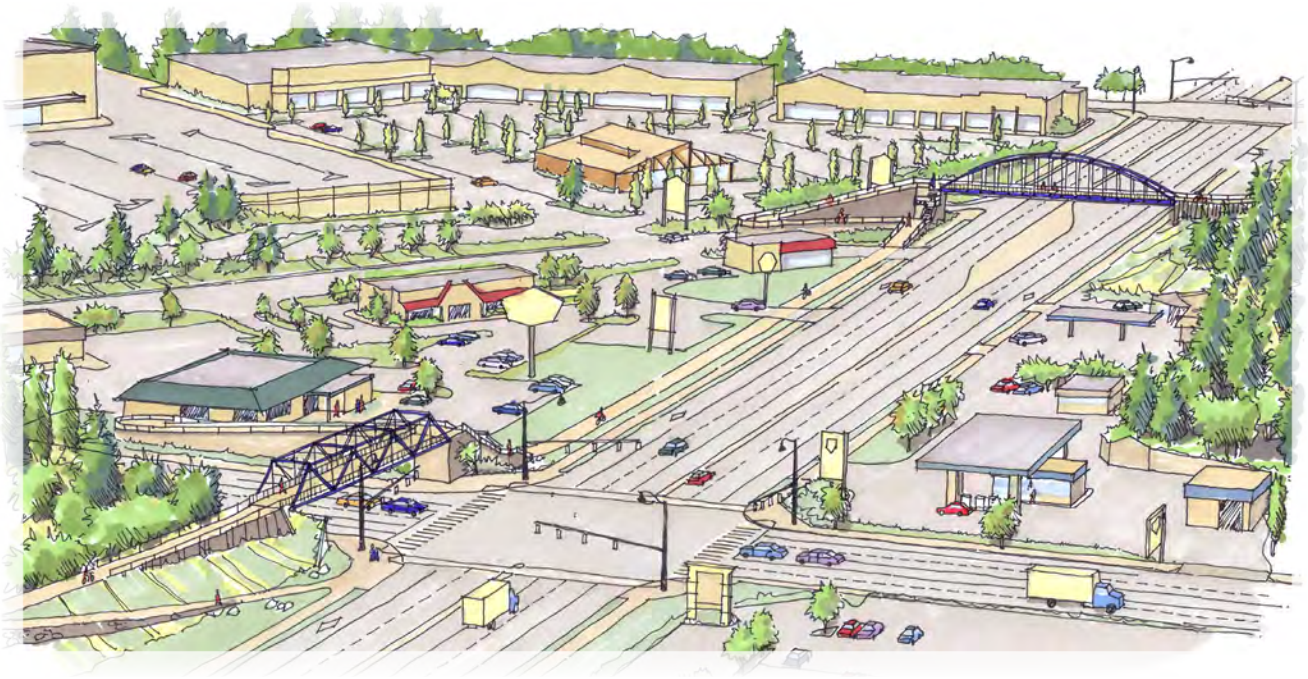


Image: courtesy of CH2MHill for the Interurban Trail Project

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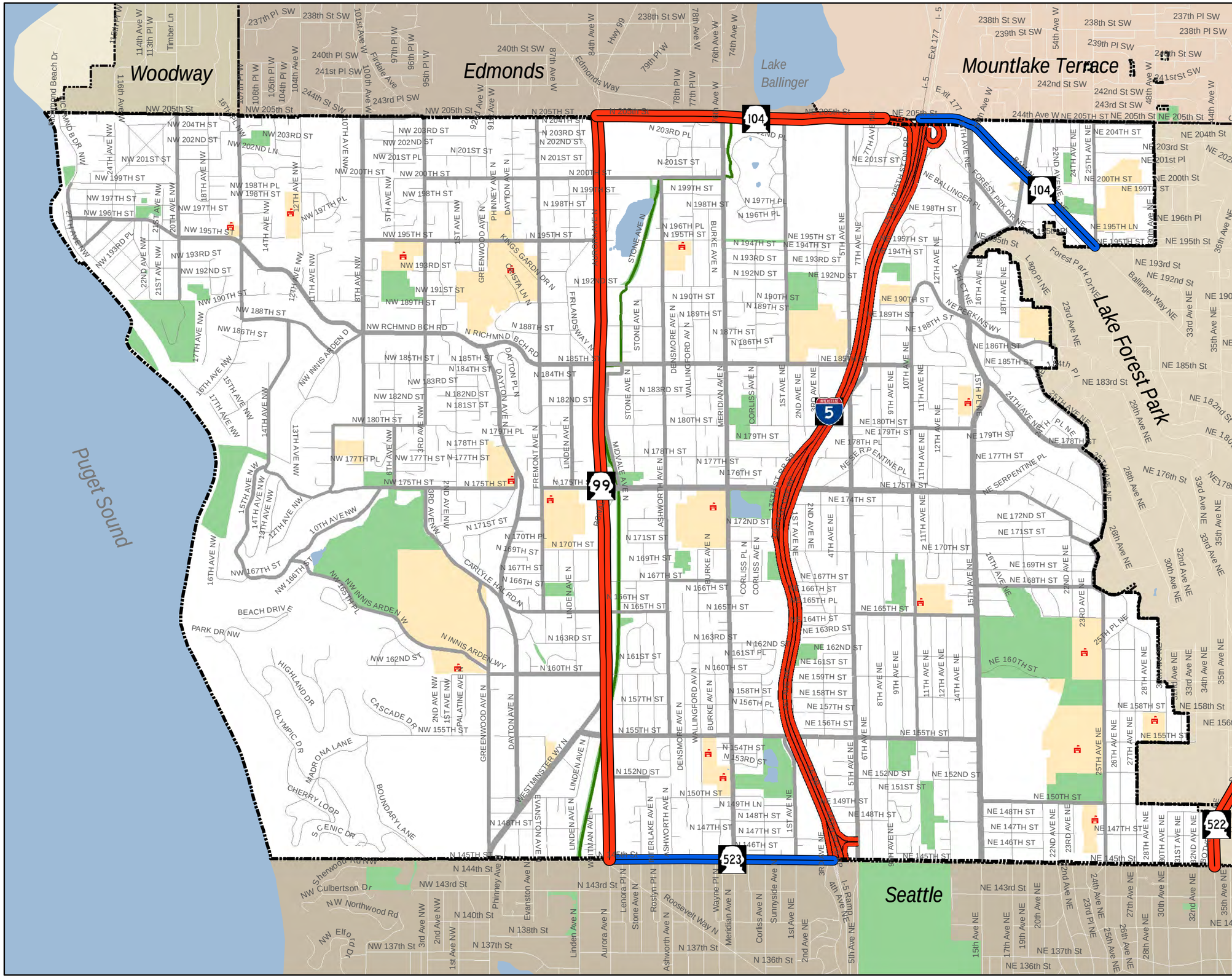


Figure W

Highways of Statewide Significance and Regionally Significant State Highways

Legend

- Highways of Statewide Significance
- Regionally Significant State Highways

Other Map Features:

- School
- School Property
- Park or Trail

0 500 1,000 2,000 3,000 Feet

1 inch = 1,995 feet

CITY OF SHORELINE

N W E S

Figure X

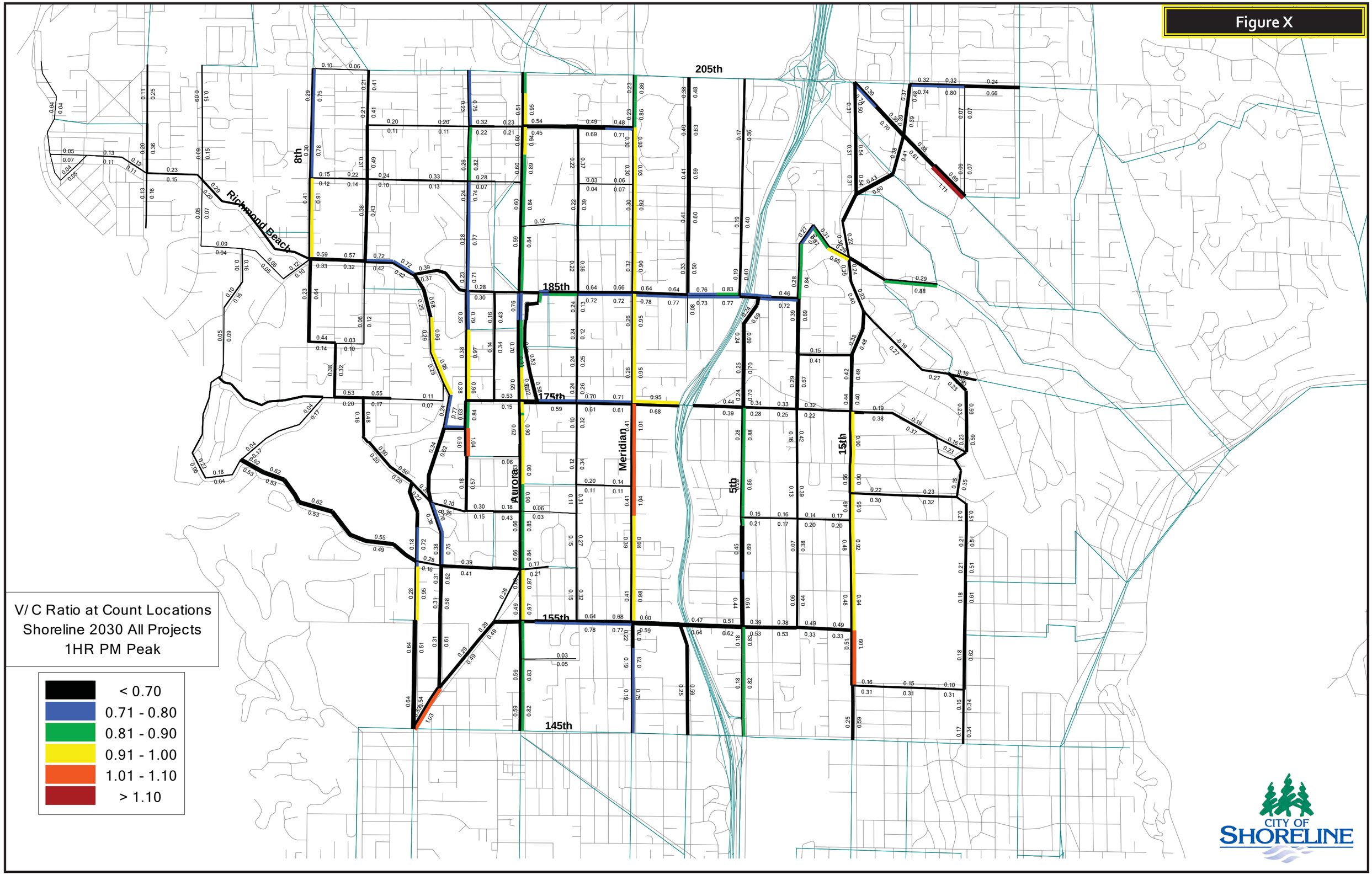
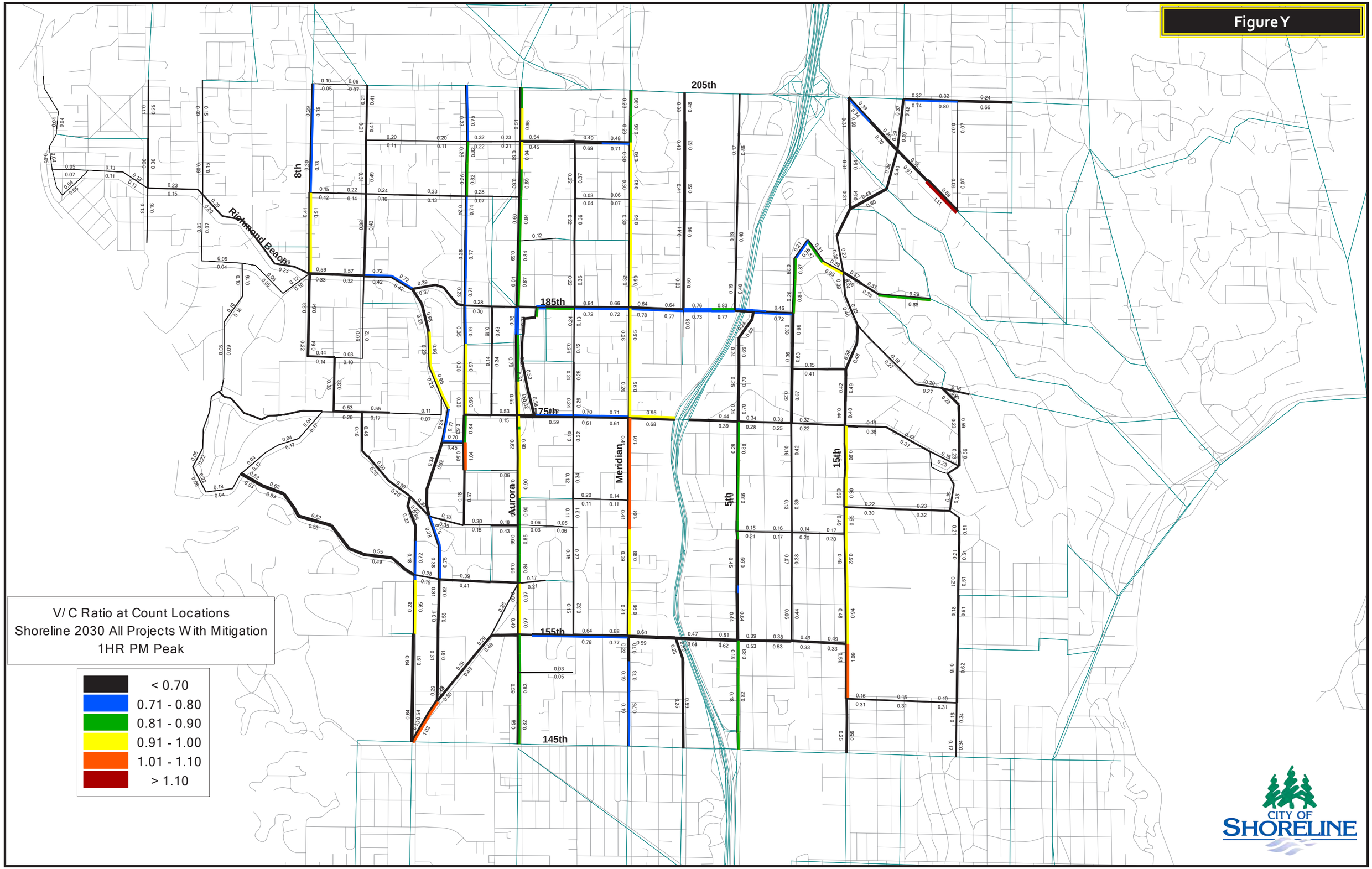

205th
185th
175th
155th
145th
8th
Richmond Beach
Aurora
Meridian
5th
15th
V/ C Ratio at Count Locations
Shoreline 2030 All Projects
1HR PM Peak
< 0.70
0.71 - 0.80
0.81 - 0.90
0.91 - 1.00
1.01 - 1.10
> 1.10
CITY OF
SHORELINE

Figure Y


205th
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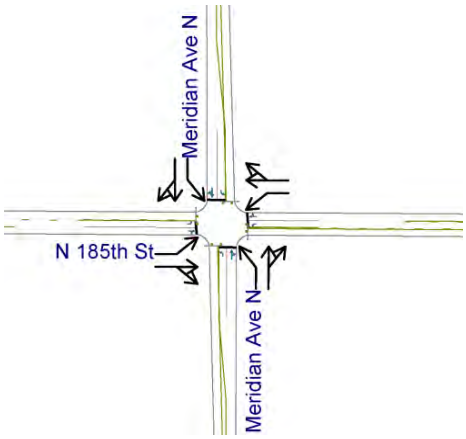
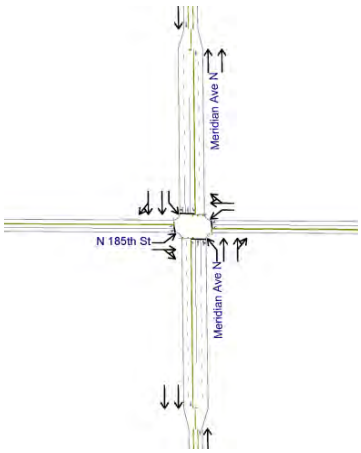
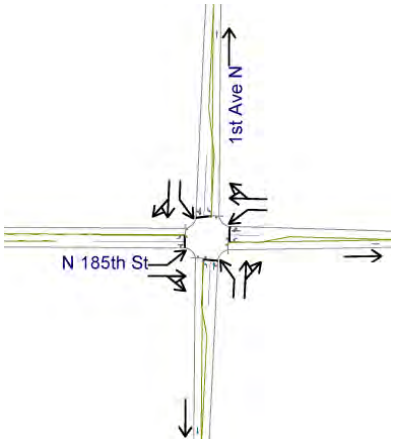
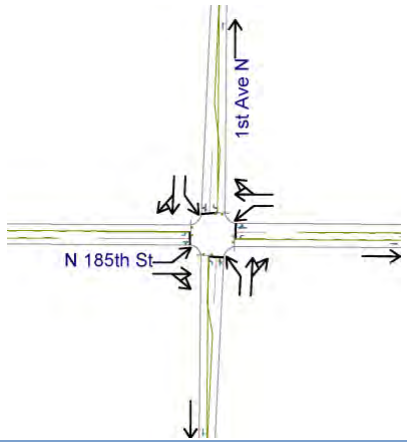
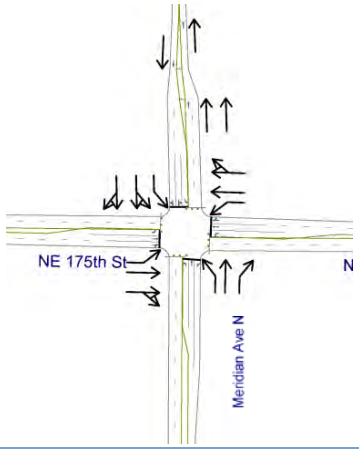
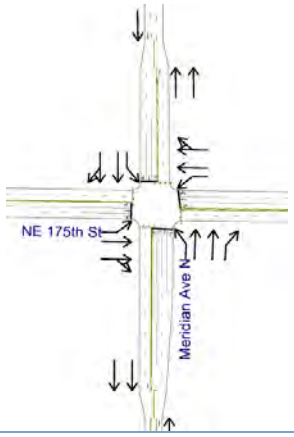
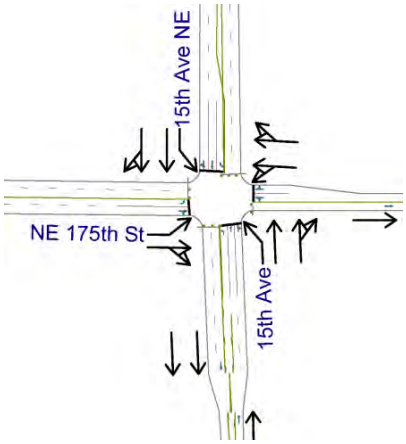
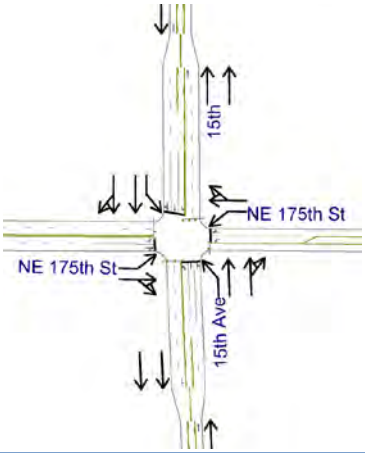
Richmond Beach
Aurora
Meridian
5th
15th
V/C Ratio at Count Locations
Shoreline 2030 All Projects With Mitigation
1HR PM Peak
< 0.70
0.71 - 0.80
0.81 - 0.90
0.91 - 1.00
1.01 - 1.10
> 1.10
CITY OF SHORELINE

Figure Z, Proposed Intersection Projects

Intersection	Existing Conditions	2030 Project + Intersection Improvement
N 185th St/ Meridian Ave N		• Add NB & SB add/drop lanes on Meridian Ave N • Coordinate signal timing with N 185th St/1st Ave NE 
N 185th St/ 1st Ave NE		• Coordinate signal timing with N 185th St/Meridian Ave NE 
N 175th St/ Meridian Ave		• Add an additional NB through lane on Meridian Ave NE • Rechannelize SB approach with single left turn lane and modify signal phasing • Increase WB left turn pocket length 
N 175th St/ 15th Ave NE		• Rechannelize WB approach to provide dedicated left turn pocket and modify signal phasing 

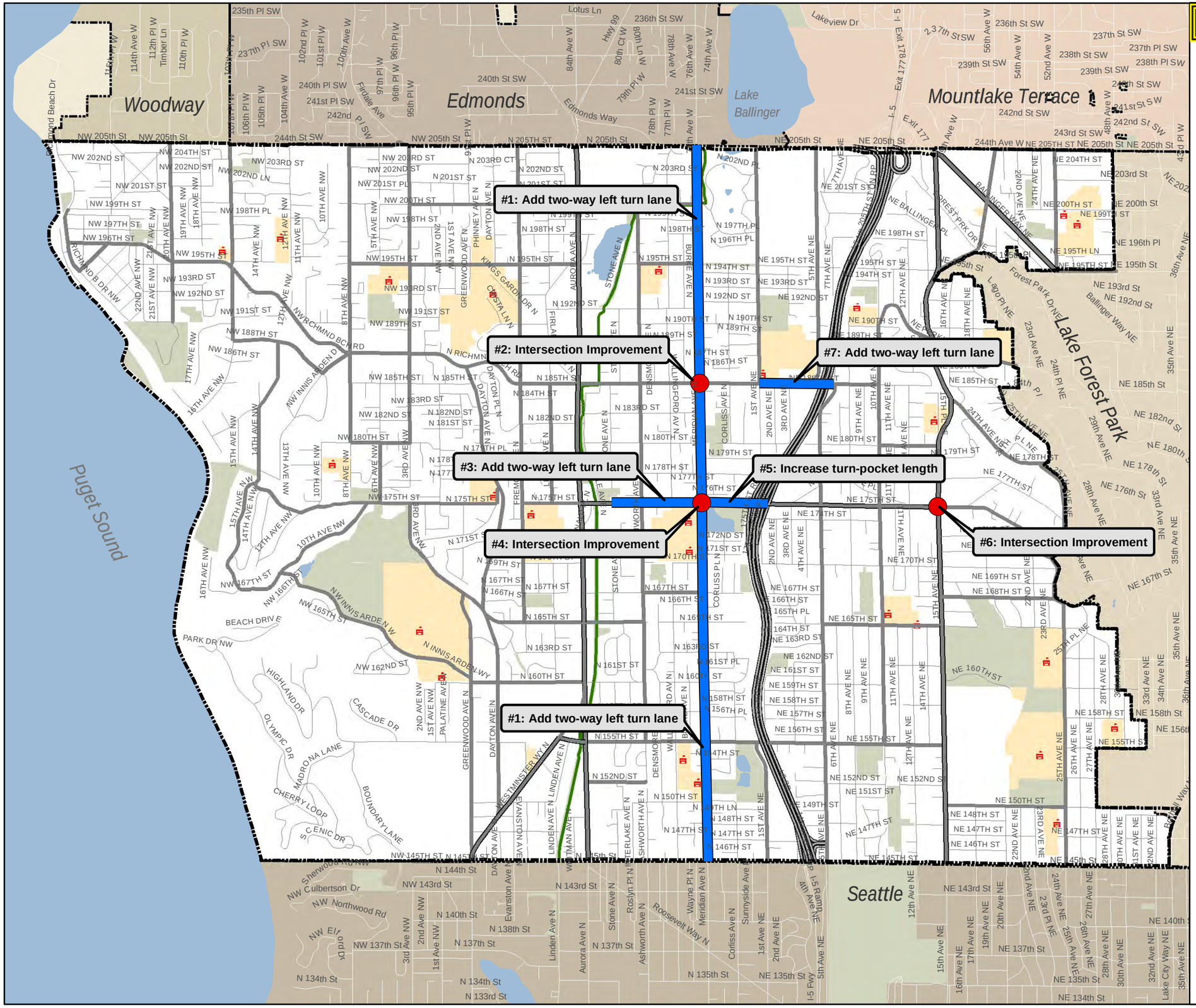


Figure AA

Roadway Projects to Accommodate Growth

Legend

- Intersection Improvements
- Roadway Improvements

Proposed Projects:

1 Add Two-way Left Turn Lane: Meridian Ave N (N 145th St to N 205th St)
2 Intersection Improvement: Meridian Ave N / N 185th St
3 Add Two-way Left Turn Lane: N 175th St (Stone Ave N to Meridian Ave N)
4 Intersection Improvement: Meridian Ave N / N 175th St
5 Increase Turn-pocket Length: N 175th St (Meridian Ave N to I-5)
6 Intersection Improvement: 15th Ave NE / NE 175th St
7 Add Two-way Left Turn Lane: NE 185th St (1st Ave NE to 7th Ave NE)

0 500 1,000 2,000 3,000 Feet

1 inch = 2,132 feet

CITY OF SHORELINE

N W E S

Recommended Transportation Improvements

Recommended Transportation Improvements

What to Build

Transportation is a high priority for most Shoreline citizens, particularly as it relates to neighborhood quality of life. Citizens want streets to be attractive, welcoming and safe for pedestrians, bicyclists, transit users and drivers. Safety remains a high priority for the City.

Upon incorporation, the City inherited a substantial street grid system from King County; however, most of the streets lack sidewalks, curbs and gutters. Citizens consistently cite the lack of sidewalks as a pressing transportation issue as well as the need for expanded bicycle facilities. Residents are also very concerned about preventing and managing neighborhood cut-through traffic. Additional and improved transit service is another high priority for citizens, and while the City does not control the county or regional transit systems, planned regional investments in transit may increase ridership opportunities for Shoreline citizens if properly designed.

This chapter of the TMP sets forth a series of project recommendations to support the transportation policies of the Shoreline Comprehensive Plan. These recommendations call for construction of sidewalks and bicycle facilities that will continue to improve the City's pedestrian and bicycle system, intersection improvements to improve safety, and projects to accommodate future growth. The recommendations also include the need for two corridor studies that will evaluate the multi-modal needs and improvements to two roadways in or adjacent to Shoreline.

Many of the streets recommended for improvements are called out in multiple projects of various modes or in more than one of the system plans (bicycle or pedestrian). For example, projects needed to accommodate growth may also be combined with other safety or non-motorized projects, such as installation of sidewalks and bicycle facilities, when they are in the same location. If one system plan calls for an improvement, other system plan needs will be included in the project scope.

Similarly, some projects may be dependent upon completion of other projects. There are many locations where a relatively minor project such as construction of bicycle lanes cannot occur in the short term, as the asphalt surface of the roadway is not wide enough to accommodate the lanes. Upon completion of a sidewalk or road widening project, there would then be adequate room to construct the bicycle lanes. **Figure BB, Recommended Projects for Funding**, displays all

of the traffic, intersection, pedestrian, bicycle and growth projects recommended for funding. In areas where there is overlap among these projects, the City will coordinate improvements to maximize efficiency and cost effectiveness and minimize disruptions to residents.

- **Policy T41:** Projects should be scheduled, designed and constructed with the following criteria taken into consideration:
  - Service and greatest benefit to as many people as possible.
  - Ability to be flexible and respond to a variety of needs and changes.
  - Coordination with other City projects to minimize costs and disruptions.
  - Ability to partner with private development and other agencies and leverage funding from outside sources.
  - Flexibility in the implementation of projects when funding sources or opportunities arise.

Implementation Strategies

41.1. Implement projects, programs and services that improve the safety and efficiency of the City's transportation network.

Discussion: Shoreline is fully built out, with very little opportunity to expand or construct new transportation facilities. Through expanded transit service, additional multi-modal transportation opportunities and use of technology, such as signal progression and a traffic management center, Shoreline can more efficiently utilize the existing transportation network.

41.2. Ensure that projects are coordinated and minimize conflicts between different modes.

Discussion: At many of the locations identified for improvements, multiple projects are called out. Most commonly, these are bicycle and pedestrian improvements. Projects must be coordinated to ensure that the construction of one type of improvement does not impede or conflict with another. For example, if bicycle lanes are to be constructed on a roadway, there should be a sidewalk on at least one side of the street to allow a separated location for pedestrians that is not in conflict with bicyclists.

Shoreline is fully built out, with very little opportunity to expand or construct new transportation facilities. Through expanded transit service, additional multi-modal transportation opportunities and use of technology, Shoreline can more efficiently utilize the existing transportation network.

- **Policy T42:** Consider and coordinate the construction of new capital projects with upgrades or projects needed by utility providers operating in the City.

Implementation Strategies

42.1. Work with the City's utility providers to integrate needed utility upgrades and improvements into capital projects and/or coordinate the timing of major projects.

Roadway and intersection improvement projects are needed throughout Shoreline to address a variety of transportation needs and issues including safety, capacity, traffic flow and maintenance.

Discussion: By combining projects, the City and utility providers can minimize disruption to residents and businesses near the project, as well as drivers, pedestrians, bicyclists and transit users. The City and utility providers may also be able to minimize costs by using a single contractor and reducing mobilization costs associated with projects.

42.2. Coordinate with significant projects initiated by utility providers when possible to implement Shoreline's transportation needs.

Recommended Traffic and Intersection Improvement Projects

Roadway and intersection improvement projects are needed throughout Shoreline to address a variety of transportation needs and issues including safety, capacity, traffic flow and maintenance.

Traffic and Intersection Improvement projects were ranked using the following criteria:

- Improvements to safety at high accident locations.
- Improvements to capacity.
- Improvements to transit operations.
- Pedestrian improvements.
- Bicycle improvements.
- Major destination connections.
- Existing infrastructure preservation.

Appendix G includes the detailed project descriptions, project rankings in accordance with the criteria, costs and potential funding sources. In addition to the locations identified for projects, a few intersections and roadway segments have accident rates that are high for the City of Shoreline. The solution for many of these locations does not require a capital improvement but rather increased enforcement, education and/or engineering.

Roadway Improvements

The recommended roadway projects included in this plan are multi-modal, addressing the needs of pedestrians, bicyclists, transit users and motorists. Most of the projects can be accomplished within the existing right-of-way, such as roadway rechannelization that reduces the number of lanes from four to three. The rechannelization projects may allow the City to install bicycle lanes in the remaining roadway. New or improved sidewalks are included in all of the project descriptions other than the major preservation projects (roadway overlays). N/NE 175th Street needs

improvements from Stone Avenue N to 15th Avenue NE and includes widening of an existing roadway. These improvements will tie into the improvements recently constructed by the Aurora Corridor Improvement Project.

Table 9.1, Roadway Improvements Recommended for Funding, identifies and describes the recommended roadway improvement projects.

Table 9.1. Roadway Projects Recommended for Funding

STREET	FROM	TO	PROJECT DESCRIPTION
N/NE 175th St	Stone Ave N	15th Ave NE	This project will design and construct improvements on N/NE 175th St between Stone Ave N and 15th Ave NE. The improvements include: ◦ Two traffic lanes in each direction ◦ A center lane with two-way left-turn areas, medians and turn pockets ◦ Intersection improvements, including the intersections at I-5 ◦ Lowering the profile of the roadway between Ashworth Ave N and Stone Ave N to meet sight distance requirements ◦ Curb and gutter and sidewalks with amenity zones. Sidewalks will be wide enough to include integrated bicycle lanes ◦ Illumination ◦ Landscaping ◦ Retaining walls
N 160th St	Greenwood Ave N	Aurora Ave N	Rechannelize the existing four-lane cross section to a boulevard-style three-lane cross section (one lane in each direction with a center left-turn lane and median landscaping) with bicycle lanes on both sides of the street
Major Preservation Projects			Perform significant maintenance work on the following roadways: ◦ Meridian Ave N: N 145th St to N 205th St ◦ Westminster Way N: N 145th St to N 155th St ◦ N/NE 155th St: Aurora Ave N to 15th Ave NE; roadway rechannelized from 5th Ave NE to 15th Ave NE to include a center turn lane and bicycle lanes in both directions ◦ N/NE 185th St: Midvale Ave N to 10th Ave NE; roadway rechannelized to include a center turn lane and bicycle lanes in both directions. Work may include milling the roadway and sealing the joints between the concrete panels to improve the smoothness and improve the pavement life span ◦ N/NE 175th St: Stone Ave N to 25th Ave NE ◦ NW/NW Richmond Beach Rd: Richmond Beach Dr NW to Fremont Ave N; roadway may be rechannelized to include a center turn lane and bicycle lanes in both directions ◦ Fremont Ave N: N 175th St to N 185th St; roadway rechannelized to include a center turn lane and bicycle lanes in both directions
15th Ave NE	NE 172nd St	NE 195th St	Improve the roadway to include sidewalks on the west side, appropriate lane configuration and bicycle facilities. A design study is needed to identify a preferred transportation solution for this roadway segment. Rechannelization of the roadway from four lanes to three and bicycle lanes is a possibility, including through the North City center

Intersection Improvements

The recommended intersection projects included in this plan address pedestrian and vehicle safety issues. For many of these projects, the specific design has not been determined. Capacity improvements and traffic operational improvements are elements of some of the projects. **Table 9.2, Intersection Improvements Recommended for Funding**, identifies and describes the recommended intersection improvement projects.

Table 9.2. Intersection Improvements Recommended for Funding

STREET	AT	PROJECT DESCRIPTION
NW Richmond Beach Rd	3rd Ave NW	This project will design and construct left-turn lanes on NW Richmond Beach Rd at the intersection with 3rd Ave NW and install signal modifications. The improvements will also include storm drainage, pavement widening, curb-and-gutter and sidewalks, retaining walls and street lighting
N 160th St	Greenwood Ave N and NW Innis Arden Way	This project will improve the operations and safety of this five-way intersection at N 160th St, Greenwood Ave N and NW Innis Arden Way. Illumination, landscaping and bus zone and layover improvements will be included. This project also includes the construction of new sidewalk on the north side of N 160th St, from Dayton Ave N to Greenwood Ave N
8th Ave NW	NW Richmond Beach Rd	This project will improve safety and capacity at the intersection with the installation of dedicated turn lanes, sidewalks and curb ramps. A roundabout may be explored as a potential solution
15th Ave NW	NW Richmond Beach Rd	This project will reconfigure the roadway alignment at the existing off-set intersection to improve operations and safety. One option for this intersection is a roundabout

Signal Operations

In order to help manage Shoreline's traffic network and create better traffic flow, the City optimizes and coordinates traffic signals on an as-needed basis. Much of this work is handled by King County, with whom the City has contracted to maintain all of the City's traffic signals.

Intelligent Transportation System (ITS) improvements help roadways operate more efficiently. By improving efficiency, there is also an improvement in safety, productivity, travel speed and reliability. Elements of an ITS system include variable message signs that help drivers make informed decisions about travel routes (such as indicating lane closures or estimated travel times to destinations), real-time traffic flow maps, traffic monitoring cameras and communications between each traffic signal and a traffic management center (TMC). The City has taken steps to incorporate ITS components in some projects. For example, new fiber optic lines and traffic monitoring cameras are included with the Aurora Corridor Improvement project. With the construction of City Hall in 2009, the City included space and technological infrastructure for a TMC that will be used to manage these components as they are added to the system.

Bridge Repair

There is one bridge in Shoreline utilized by vehicles that is currently in need of repair. This bridge is located on 10th Avenue NW, near Hidden Lake, and the extent of repairs needed is not known

at this time. An evaluation of the bridge will be performed in order to determine if the bridge can be rehabilitated to a safe condition or if full replacement is required.

Corridor Studies

NW Richmond Beach Road and N/NE 145th Street are two roadways that need multiple transportation improvements along the length of the corridor. Both of these roadways are expected to experience significant growth, and the improvements will need to be coordinated to improve operations along the length of the corridor. There are currently locations along the corridors with existing capacity or safety needs. Other locations on the corridors are expected to require improvements; however, it is unknown what those improvements are at this time prior to a study.

A large mixed-use project at Point Wells, located in unincorporated Snohomish County adjacent to the City's northwest border, is in its planning stages. Richmond Beach Drive NW is a low-volume, two-lane roadway that lacks sidewalks, stormwater management facilities and other amenities and is the only road that will serve this development. Traffic accessing the Point Wells development will utilize Richmond Beach Drive NW and NW Richmond Beach Road, greatly increasing the traffic volumes on these roads and other streets in the corridor. These increased traffic volumes are likely to impact the safety and capacity of the roadway and intersections, requiring improvements along the length of the corridor. A comprehensive corridor study will include significant involvement from the Richmond Beach residents, as the development potential of the Point Wells site will increase traffic volumes in the corridor dramatically over existing conditions.

NW/N/NE 145th Street forms the southernmost border of Shoreline and is a complicated street to operate and improve. The City of Seattle operates all of the traffic signals on it. The City of Seattle also owns the eastbound lanes, while the westbound lanes are in unincorporated King County. From SR 99 to SR 522, N/NE 145th Street is a state highway (SR 523), thus WSDOT is involved with corridor operations. Shoreline does not own any of the right-of-way but experiences significant traffic and safety issues associated with this street, including the lack of a sidewalk system that is ADA accessible. Furthermore, Shoreline cannot improve the sidewalks on the north side of this street without coordination with King County. With the potential location of a light rail station on I-5 at NE 145th

Intelligent Transportation System (ITS) improvements help roadways operate more efficiently. By improving efficiency, there is also an improvement in safety, productivity, and travel speed and reliability.

Shoreline citizens continue to emphasize the importance of sidewalks for safety, enhanced mobility, convenience and recreation. Shoreline has great potential to be a "walkable community," with many activities and resources within walking distance of neighborhoods.

Street and overall regional growth, traffic volumes are expected to increase on this roadway and improvements will be needed. In order to determine the multi-modal needs of this roadway, a corridor study that involves all of the affected jurisdictions including transit providers is needed.

❖ **Policy T43:** Pursue corridor studies on key corridors to determine improvements that address safety, capacity and mobility and support adjacent land uses.

Implementation Strategies

43.1. Involve stakeholders, including residents, in the development of corridor studies.

43.2. Determine the scope, estimated costs and funding options for projects identified in the studies as part of the study.

Pedestrian Project Improvements

Shoreline citizens continue to emphasize the importance of sidewalks for safety, enhanced mobility, convenience and recreation. Shoreline has great potential to be a "walkable community," with many activities and resources within walking distance of neighborhoods. The City's roadway grid system provides multiple east-west and north-south connections, and the City offers a number of public spaces including parks, commercial districts and community centers. With limited funds, it is challenging to know where to start and spend resources to best serve the community.

Pedestrian Project Improvements

Candidate projects were identified from multiple sources. Projects needed to complete the City's Pedestrian System plan comprise the majority of projects considered. Projects identified in the City's 2012-2017 TIP were also included, as well as new projects that construct non-motorized improvements in existing, undeveloped right-of-way.

Because the need for pedestrian improvements is so great, the City ranked the candidate projects using the following criteria:

- Can be combined with other capital projects or leverage other funding.
- Proximity to a school or park.
- Located on an arterial.
- Connects to an existing walkway or sidewalk.
- Connects to transit routes.
- Located in an activity center, such as Town Center, North City or Ballinger, or connects to Aurora Avenue N.
- Links major destinations.

All criteria were equally weighted, resulting in a listing of high, medium and low-priority pedestrian improvements. **Table 9.3, Priority Pedestrian Projects Recommended for Funding**, lists the high-ranking pedestrian projects (these projects are not listed in priority order).

Table 9.3, Priority Pedestrian Projects Recommended for Funding

STREET	FROM	TO	DESCRIPTION
20th Ave NW	Saltwater Park entrance	NW 195th St	Construct sidewalks on the west and east sides of the street
NW/N 195th St	3rd Ave NW	Aurora Ave N	Construct sidewalks on the north and south sides of the street
Ashworth Ave N	N 195th St	N 200th St	Construct sidewalks on the west and east sides of the street
Ashworth Ave N	N 185th St	N 192nd St	Construct sidewalks on the west side of the street, where needed
15th Ave NE	NE 181st St	NE 196th St	Construct and improve sidewalks on the west and east sides of the street, where needed, to complete sidewalks on both sides of the street
NE 165th St	10th Ave NE	15th Ave NE	Construct sidewalks on the south side of the street
15th Ave NE	NE 150th St	NE 165th St	Construct sidewalks on the east side of the street
NE 150th St	15th Ave NE	25th Ave NE	Construct sidewalks on south side of the street
25th Ave NE	NE 145th St	NE 150th St	Construct sidewalks on the east side of the street
N 192nd St	Across Aurora Ave N		Construct pedestrian and bicycle bridge across Aurora Ave N
N 175th St	Stone Ave N	Meridian Ave N	Construct sidewalks on the north and south sides of the street and improve existing sidewalks. Replace the existing asphalt walkway adjacent to Meridian Park Elementary School with a sidewalk.
1st Ave NE	NE 145th St	NE 155th St	Construct sidewalks on the east and west sides of the street, where needed, to complete sidewalks on both sides of the street
15th Ave NW	NW 195th St	NW 205th St	Construct sidewalks on the west and east sides of the street
3rd Ave NW	NW 189th St	NW 195th St	Construct sidewalks to fill in gaps on the east side of the street
NW/N 175th St	6th Ave NW	St. Luke's Place N	Construct sidewalks on the north side of the street
N Innis Arden Way	10th Ave NW	Greenwood Ave N	Construct sidewalks on the north and south sides of the street
3rd Ave NW/ Carlyle Hall Rd NW	NW 175th St	Dayton Ave N	Construct sidewalks on the east side of the street and the west side of the street, where needed
Fremont Ave N	N 165th St	N 205th St	Construct sidewalks on the west side of the street from N 165th St to N 175th St and on the west and east sides of the street from N 175th St to N 205th St
Linden Ave N	N 175th St	N 185th St	Construct sidewalks on the east side of the street from N 175th St to N 177th St, on the west and east sides of the street from N 177th St to N 182nd St and on the west side of the street from N 182nd St to N 185th St
N 170th St	Fremont Ave N	Aurora Ave N	Construct sidewalks on the north and south sides of the street
N 165th St	Dayton Ave N	Aurora Ave N	Construct sidewalks on the north and south sides of the street
N 192nd	Interurban Trail	Ashworth Ave N	Construct sidewalks on the south side of the street

STREET	FROM	TO	DESCRIPTION
NE 180th St	10th Ave NE	15th Ave NE	Construct sidewalks on the north and south sides of the street
NE 175th St/ 22nd Ave NE/ NE 171st St	15th Ave NE/ NE 171st St/ 22nd Ave NE	22nd Ave NE/ NE 175th St/ 25th Ave NE	Construct sidewalks on both sides of the streets, where needed, to complete sidewalks on both sides of the streets
NE 168th St	15th Ave NE	25th Ave NE	Construct sidewalks on the north and south sides of the street
NE 165th St	5th Ave NE	6th Ave NE	Construct a sidewalk on the north side of the street to fill in the gap
Westminster Way N	N 145th St	N 153rd St	Construct sidewalks on both sides of the street
Ballinger Way NE	19th Ave NE	25th Ave NE	Construct sidewalks on the southeast side of the street, where needed

A complete listing of all the candidate pedestrian projects, including their costs and ranking, is found in **Appendix H**. This list will be used to help the City develop its annual six-year Capital Improvement Plan (CIP) and the six-year Transportation Improvement Program (TIP). Although the complete project list identifies high-, medium- and low-priority projects, the City would take advantage of opportunities to construct improvements out of sequence. Circumstances that may result in construction of lower-priority projects before higher-priority projects include coordination with larger capital projects or when grant funding for a specific project may be secured. Construction of pedestrian improvements by private development may also result in projects being implemented out of sequence. The total estimated construction cost for implementation of the entire pedestrian system is $110-120 million. This estimate does not include the cost of large capital projects that incorporate pedestrian facilities, such as redevelopment of N/NE 175th Street, nor does it include design, environmental review or right-of-way acquisition.

The TMP proposes establishing four programs to implement the high-priority pedestrian projects. They include:

Priority Gap: This program is dedicated to completing missing gaps in sidewalks. Gaps are generally less than five blocks long. By filling in these missing segments, the City can achieve a larger benefit by connecting existing segments and completing continuous walkways along a street or corridor. The primary focus will be to complete sidewalks on one side of the street.

Transit Connections: Sidewalks that connect pedestrians to transit routes can help encourage ridership by providing people with a safer travel path and waiting areas. This program includes sidewalk projects that connect to transit corridors throughout the City.

Interurban Trail Connections: The Interurban Trail is the primary north-south, non-motorized pedestrian facility in the City. It serves as both a transportation facility and recreation facility. Residents have regularly expressed a desire for improved connections to the trail. This program will construct sidewalks that connect neighborhoods to the Interurban Trail.

School Connections: This program focuses on constructing sidewalks that connect to primary and secondary schools in Shoreline. Many of the schools in the City are not served by sidewalks, and parents are often reluctant to have children walk or bike to school because of the lack of sidewalks or safe pedestrian facilities. Additional sidewalks will provide safer travel routes for children and promote more walking.

Appendix H includes a matrix identifying the programs into which each of the candidate pedestrian projects fall. Some projects fall into more than one category.

As shown in **Figure M, Unimproved City Right-of-Way** (Chapter 5), there are several segments of unused right-of-way throughout the City that can be used for pedestrian and bicycle connections. Many of these segments are outside of the Pedestrian System Plan. Providing these connections results in better connectivity between neighborhoods and can reduce walking distances. These projects are generally smaller in scale and less expensive than typical sidewalk projects; however, they do not achieve many of the objectives of the larger system plan. These will be built as hard surface connections, such as asphalt, and will be ADA accessible if feasible.

In addition to the projects identified, upgrades to existing substandard sidewalks are needed. Many of these upgrades will be completed in conjunction with major capital projects that redesign an entire street. Additionally, private development that triggers frontage improvements will be required to construct new sidewalks or upgrade substandard sidewalks in accordance with the City's Master Street Plan.

❖ **Policy T44:** Expand the City's pedestrian network. Prioritize projects shown on the Pedestrian System Plan, using the following criteria:

- Can be combined with other capital projects or leverage other funding
- Proximity to a school or park.
- Located on an arterial.
- Connects to an existing walkway or the Interurban Trail.
- Located in an activity center, such as Town Center, North City or Ballinger, or connects to Aurora Avenue N.
- Connects to transit.
- Links major destinations such as neighborhood businesses, high-density housing, schools and recreation facilities.

Implementation Strategies

44.1. Create a sidewalk "gap" filling program dedicated to the design and construction of small sections of sidewalk, thereby completing larger, continuous walkways.

Discussion: By constructing short, missing segments of sidewalk (less than five blocks) in locations where there is a gap, the City can work to complete the larger pedestrian system, connecting parks, schools and other pedestrian destinations. Gaps will usually focus on completing sidewalks on one side of the street.

44.2. Develop a program as part of the City's CIP dedicated to completing sidewalks that connect to transit routes.

Discussion: The City's Pedestrian System Plan emphasizes completion of the sidewalk system on the arterial roadway network. Similarly, transit service in Shoreline is almost exclusively on arterial streets. Sidewalks that connect to transit will help encourage ridership as users have a safer path to and from their transit stop.

44.3. Develop a program as part of the City's Capital Improvement Plan dedicated to completing sidewalks that connect to schools and the Interurban Trail.

44.4. Create a program in the City's CIP dedicated to design and construction of pedestrian and bicycle projects within undeveloped right-of-way.

Bicycle Improvements

Shoreline recognizes the importance of bicycling as a mode of travel that addresses the City's transportation and recreational needs. At the city level, bicycle routes in the network connect neighborhoods to schools, City institutions, community businesses and recreational and commuter destinations including transit linkages. At a larger scale, these bike routes provide connections that link to the regional network, such as the Burke-Gilman Trail.

Shoreline recognizes the importance of bicycling as a mode of travel that addresses the City's transportation and recreational needs.

Bicycle Project Improvements

The Bicycle System Plan identifies the locations for bicycle facilities in Shoreline. Most of the identified facilities can be installed in conjunction with the City's regular operations and maintenance programs, such as new signage to denote bicycle routes. Pavement markings can be installed in conjunction with roadway overlays or rechannelization. Installation of some facilities will be included as part of larger capital projects, such as bicycle lanes on N/NE 175th Street from Stone Avenue N to 15th Avenue NE.

Candidate bicycle projects were ranked using the following criteria:

- Connects to the Interurban Trail.
- Completes a portion of the routes connecting the Interurban and Burke Gilman Trails.
- Provides access to bus rapid transit or light rail.
- Connects to existing facilities.
- Connects to high-density housing, commercial areas or public facilities.
- Connects to a regional route or existing or planned facilities in a neighboring jurisdiction.
- Links to a school or park.
- Can be combined with other capital projects or leverage other funding.

As with the pedestrian projects, the criteria were equally weighted. **Table 9.4, Bicycle Projects Recommended for Funding**, lists the high-ranking bicycle projects. Because most projects will likely be combined with other City projects or operations, costs for individual projects were not calculated. The total estimated cost for implementation of the entire bicycle system, through signage and roadway striping, is $1.8 million. This estimate does not include the cost of large capital projects that incorporate bicycle facilities, such as redevelopment of N/NE 175th Street.

Table 9.4. Bicycle Projects Recommended for Funding

STREET	FROM	TO	PROJECT DESCRIPTION
N/NE 175th St	Aurora Ave N	15th Ave NE	Construct bicycle lanes that are integrated with sidewalks
NW/N 145th St	3rd Ave NW	Aurora Ave N	Install signage to indicate a bicycle route. Signage can include freestanding signage, sharrows or other signing mechanisms
Ashworth Ave N	N 185th St	N 200th St	Install signage to indicate a bicycle route. Signage can include freestanding signage, sharrows or other signing mechanisms
NW/N Richmond Beach Rd/N 185th St	8th Ave NW	Aurora Ave N	Construct bicycle lanes
N 160th St	Greenwood Ave N	Interurban Trail	Construct bicycle lanes. Lane reduction will be necessary to include bicycle lanes.
Hamlin Park	15th Ave NE	Kellogg Middle School	Install signage to indicate a bicycle route. Signage can include freestanding signage, sharrows or other signing mechanisms
N 200th St	Fremont Ave N	Ashworth Ave N	Construct bicycle lanes in the uphill direction and install signage to indicate a bicycle route in the downhill direction. Signage can include freestanding signage, sharrows or other signing mechanisms
N 195th St	Interurban Trail	Meridian Ave N	Install signage to indicate a bicycle route. Signage can include freestanding signage, sharrows or other signing mechanisms
Meridian Ave N	N 145th St	N 205th St	Construct bicycle lanes
NE 155th St	5th Ave NE	15th Ave NE	Construct bicycle lanes
3rd Ave NW	NW Richmond Beach Rd	NW 205th St	Install sharrows
Fremont Ave N	N 165th St	N 205th St	Construct bicycle lanes
NE 185th St	1st Ave NE	10th Ave NE	Construct bicycle lanes
NE 195th St/10th Ave NE	5th Ave NE	NE 185th St	Install signage to indicate a bicycle route. Signage can include freestanding signage, sharrows or other signing mechanisms
NE 150th St	15th Ave NE	25th Ave NE	Construct bicycle lanes
20th Ave NE	NE 145th St	NE 150th St	Construct bicycle lanes
NE 160th St	25th Ave NE	31st Ave NE	Install signage to indicate a bicycle route. Signage can include freestanding signage, sharrows or other signing mechanisms

Appendix I contains the complete list of improvements needed to implement the entire bicycle system, as well as their rankings. This list will be used to help the City develop its annual six-year CIP and six-year TIP. It should be noted that while a project may be ranked highly, other lower prioritized projects may be constructed first. Examples may include private development that constructs improvements as part of the project, specific projects for which grant funding may be secured, or coordination with larger capital projects. The City would not bypass the opportunity to have improvements constructed out of prioritization sequence in these types of circumstances.

❖ **Policy T45:** Prioritize projects that complete the City's bicycle networks, as shown on the Bicycle System Plan, using the following criteria:

- Connects to the Interurban Trail.
- Completes a portion of the routes connecting the Interurban and Burke Gilman Trails.
- Provides access to bus rapid transit or light rail.
- Connects to existing facilities.
- Connects to high-density housing, commercial areas or public facilities.
- Connects to a regional route or existing or planned facilities in a neighboring jurisdiction.
- Links to a school or park.
- Can be combined with other capital projects or leverage other funding.

Implementation Strategies

45.1. Identify striping, signing and channelization projects that can be implemented through the City's Operations program in the near term. Develop a fund to achieve a reasonable amount of low-cost system signing.

45.2. Coordinate with the City's annual road surface maintenance program to include bicycle markings as part of overlay projects.

Projects to Accommodate Growth

As explained in Chapter 8, Concurrency and Level of Service, the City anticipates that seven projects will be needed to accommodate the growth expected by 2030. Some of these projects overlap or interface with the recommended roadway or intersection projects. For example, one roadway project recommends widening and rechannelizing N/NE 175th Street from Stone Avenue N to 15th Avenue NE, and the Bicycle System Plan identifies bicycle lanes on this street. One of the growth projects includes the same widening and rechannelization; however, the project limits are shorter (Stone Avenue N to Meridian Avenue N). The rechannelization and signal timing of the intersection at NE 175th Street and 15th Avenue NE may also be incorporated into the larger roadway project. Similarly, some of the major preservation projects are along the same roadway segments as growth projects, including Meridian Avenue N and NE 185th Street. The total estimated cost for the growth projects is approximately $32 million. These costs do not include the project at 15th Avenue NE and NE 175th Street, as this project can be completed through regular City operations practices, such as signal timing.

The projects needed to accommodate growth will be funded, in part, through adoption of the City's impact fee program. As with other projects, it is more cost-effective and efficient to combine growth projects with other roadway, intersection, pedestrian or bicycle projects.

In addition to the growth projects identified, the travel demand model identified the potential need to improve the interchange at NE 175th Street and I-5. Currently, this interchange experiences delays during the AM peak and PM peak periods, due in part to the ramp metering, and this backup affects other intersections. One potential new configuration for this intersection is a Single-Point Urban Interchange (SPUI). A SPUI is similar to the existing diamond interchange; however, the configuration allows opposing left turns to proceed simultaneously by combining two intersections of the diamond into one over or under the free-flowing road. The "single point" refers to the fact that all through traffic on the arterial street, as well as traffic turning left onto or off of the interchange, can be controlled from a single set of traffic signals. Because SPUIs use

space efficiently relative to the volume of traffic they handle, they are used extensively in freeway reconstruction in urban environments.

Reconstruction of this interchange would allow the City to improve bicycle and pedestrian safety at this location, as well as improve the operations of the nearby intersections. Because this project is not entirely within the jurisdiction of the City, it will require coordination with WSDOT. This project is estimated to cost approximately $58 million.

- **Policy T46:** Coordinate with WSDOT to evaluate and design improvements to the interchange at NE 175th Street and I-5. Develop a funding strategy for construction.

  Implementation Strategies

  46.1. Work with WSDOT to explore other capacity needs that can improve the performance of the interchange at NE 175th and I-5 and help keep traffic on the interstate and off of Shoreline streets. Improvements may include modifications to ramp metering and construction of a southbound collector-distributor lane from NE 205th Street to NE 145th Street.

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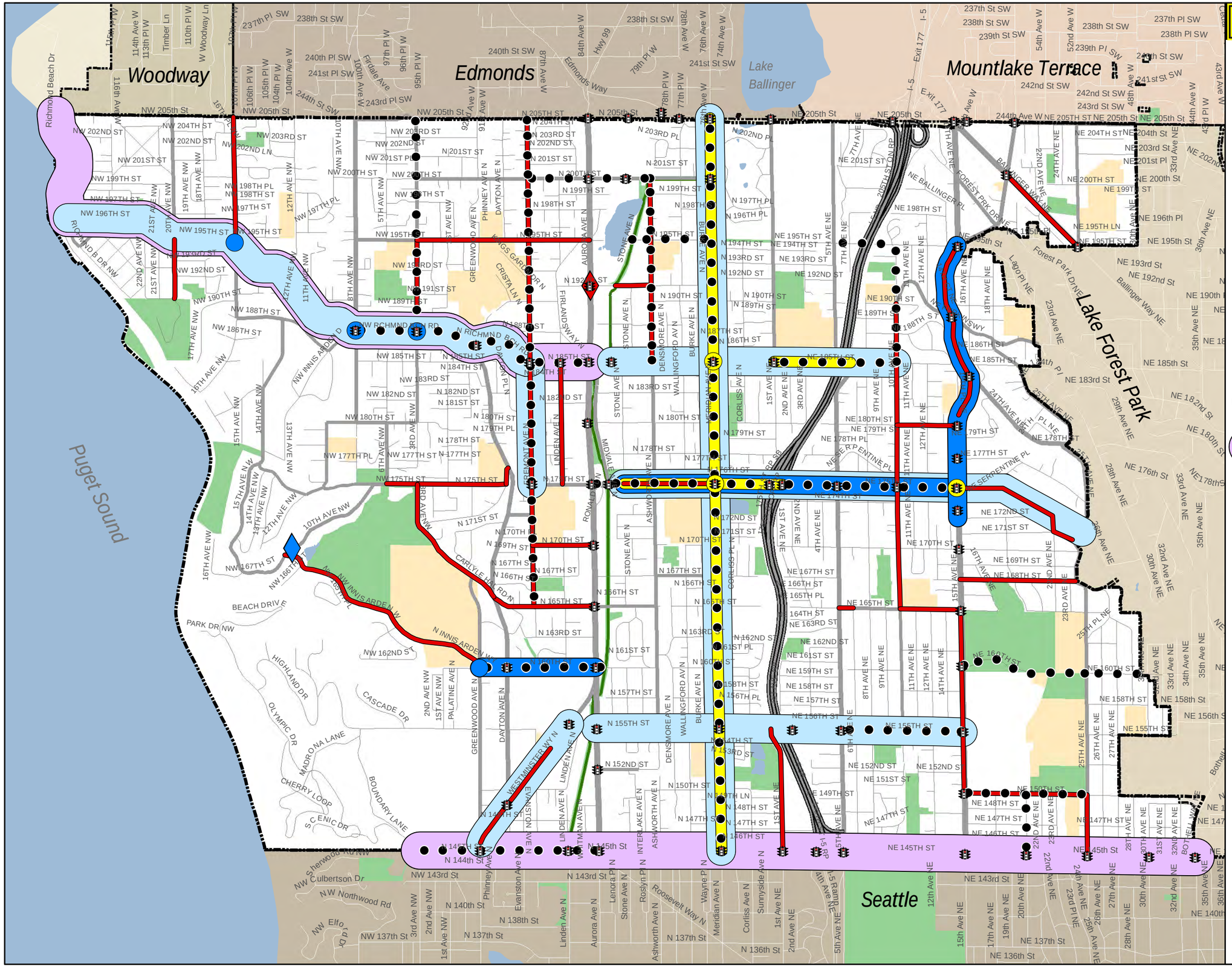


Figure BB

Recommended Projects for Funding

Legend

- Intersection & Roadway Improvement
- Bridge Improvement
- Major Preservation Project
- Corridor Study
- Pedestrian Bridge
- Pedestrian Improvement
- Bicycle Improvement
- Intersection & Roadway Improvement: Growth Project

Other Map Features:

- Current Traffic Signal
- School Property
- Park or Trail

0 500 1,000 2,000 3,000 Feet

1 inch = 2,000 feet

CITY OF SHORELINE

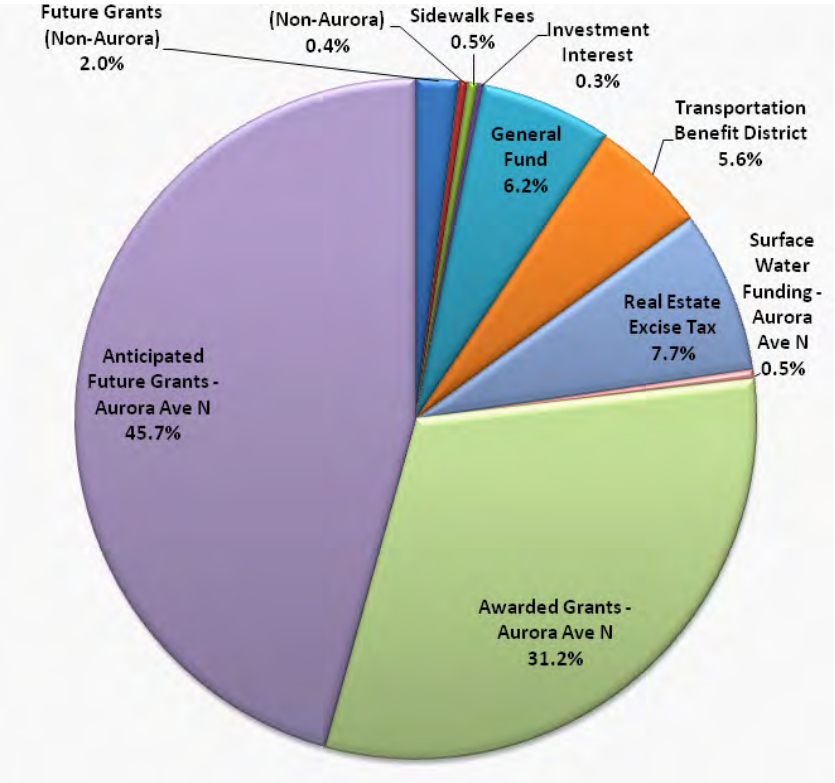
Funding

Funding - Financial Analysis

Overview of Revenue Sources

The City of Shoreline funds transportation capital projects from the General Fund, Real Estate Excise Tax (REET), Transportation Benefit District (TBD) and grant revenue from local, state and federal governments. **Figure 10.1, City of Shoreline 2012-2017 Transportation Revenues**, shows the proportionate share of each funding source over the next six years, based on the funding allocation in the 2012-2017 CIP.

Figure 10.1. City of Shoreline 2012-2017 Transportation Revenues



King County collects REET funds for the City. All real estate property sales in the county are taxed at a rate of 1.28 percent. A portion of these revenues, equal to a 0.5 percent tax rate, is distributed to the cities by King County on a monthly basis. The use of REET funds is restricted by state law. The first 0.25 percent of the REET tax rate must be spent on capital projects listed in the City's Comprehensive Plan. These projects may include local capital improvements, including streets, parks, pools and municipal buildings. Currently, these funds are not being used for street projects. The second 0.25 percent of the REET tax rate must be spent on public works projects for planning, acquisition, construction, reconstruction, repair, replacement, or improvement of transportation facilities.

The General Fund receives general purpose state and local taxes, such as property taxes, sales taxes and utility taxes. In the 2012-2017 CIP, the General Fund will provide approximately $529,000 for transportation improvements in 2012. By 2017, this amount will be reduced to approximately $311,000.

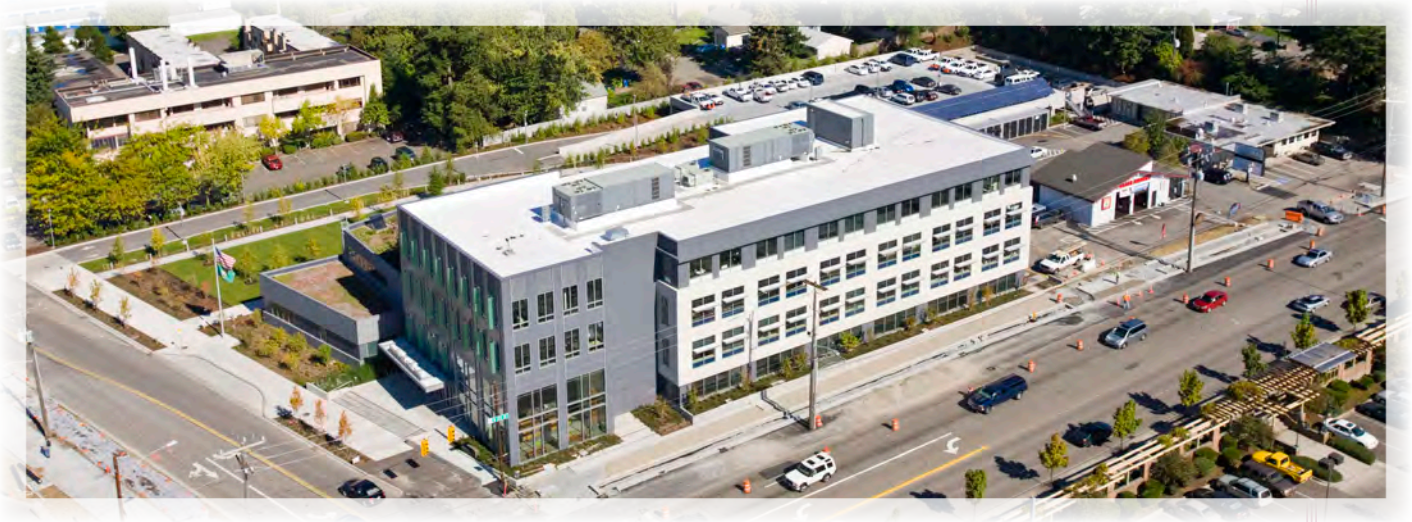


Image copyright Above the Rest Aerial Photography, Inc.

The City's Transportation Benefit District charges a $20 vehicle license fee, which is used for the preservation and maintenance of the City's roadways. For some projects, the City allows private developers to pay a fee in-lieu of constructing frontage improvements. These fees have traditionally funded a portion of the City's Priority Sidewalk Program.

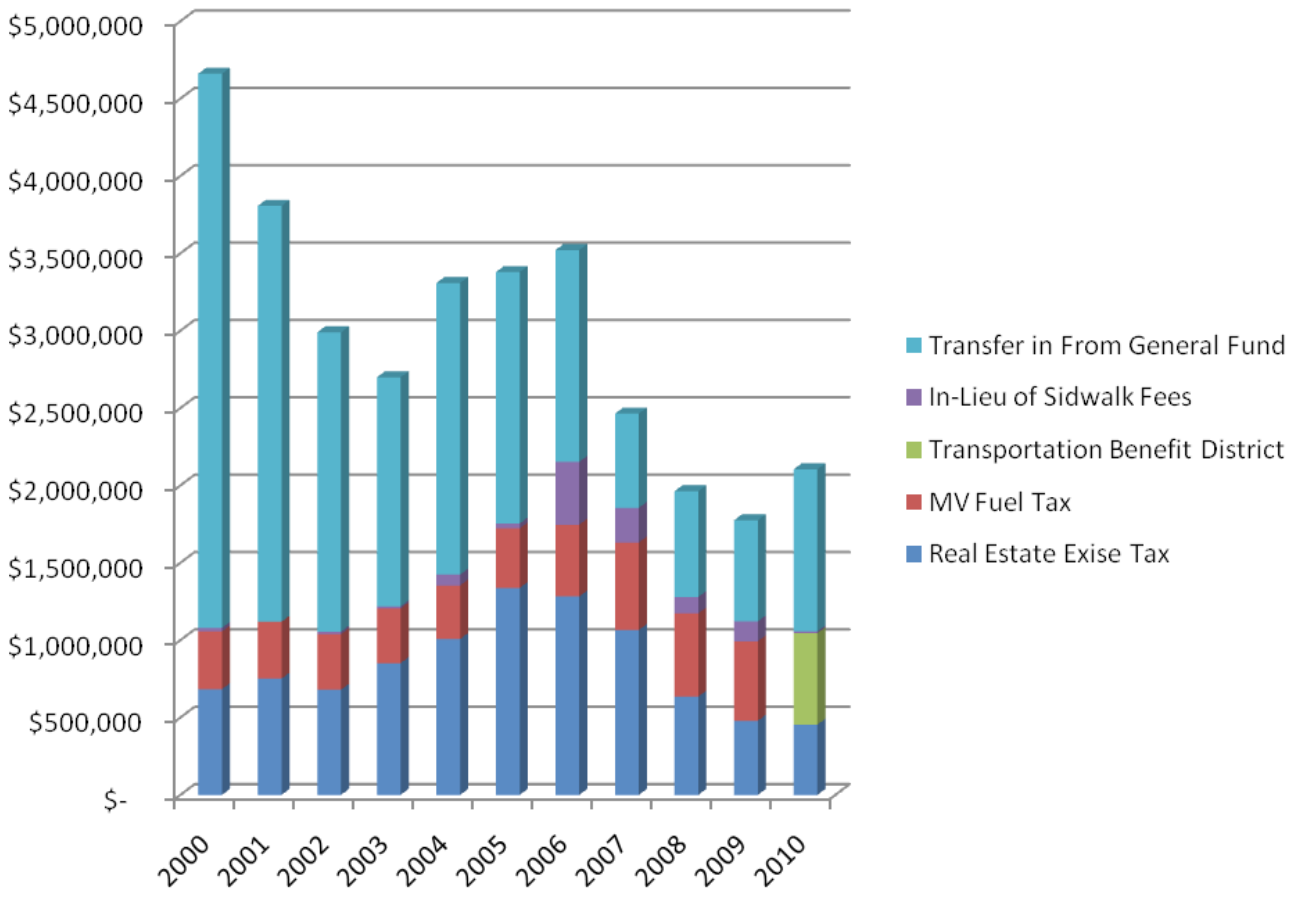
Over the past few years, the City has seen a steady decline in REET funds, investment interest, funds from the fee in-lieu program, and funds available in the General Fund to support transportation projects. Recent changes to the City's Development Code have eliminated the majority of opportunities to collect fees through the in-lieu program and very little additional funding is expected to be generated through this program. **Figure 10.2, Transportation Revenues, 2000-2010**, shows the decline of the funds[1].

The City of Shoreline funds transportation capital projects from the General Fund, Real Estate Excise Tax (REET), Transportation Benefit District (TBD) and grant revenue from local, state and federal governments.

The City's Transportation Benefit District charges a $20 vehicle license fee, which is used for the preservation and maintenance of the City's roadways.

1 Until 2006, approximately 68 percent of the revenue from the Motor Vehicle Fuel Tax was required by state law to be spent on street maintenance. These funds were deposited into the Street Fund. The remaining 32 percent was restricted to construction, improvement and repair of arterials and City streets. This portion was deposited into the Arterial Street Fund and then transferred to the Roads Capital Fund to support the annual road surface maintenance project. The State Legislature eliminated the restrictions on the use of fuel tax revenues during the 2005 legislative session. The City continued to deposit 56 percent of the original distribution into the City's Street Fund for ongoing street maintenance activities. The remaining 44 percent was deposited directly into the Roads Capital Fund to support the annual road surface maintenance project. In July of 2009, the City Council formed a Transportation Benefit District, adopting a $20 vehicle license fee, which became effective in 2010. This fee will be used for the preservation and maintenance of City streets in the Roads Capital Fund. This fee is expected to generate an additional $550,000. Therefore, beginning in 2010, the entire amount of fuel tax received is deposited in the City Street Fund for maintenance.

Figure 10.2. Transportation Revenues, 2000-2010



Because these revenue sources are so closely tied to the health of the economy, they can be somewhat unpredictable and the City cannot plan for transportation improvements with assurance that funding will be available. Due to these limited and unreliable resources, the City has very few transportation improvements identified in the 2012-2017 CIP. Until a more stable revenue source(s) is identified and secured, the opportunities to construct transportation improvements will be extremely limited and difficult to predict.

Historically, the largest sources of funding for Shoreline's transportation programs and projects have been grants.

Historically, the largest sources of funding for Shoreline's transportation programs and projects have been grants. The Aurora Corridor Improvement Project is funded by several grant sources. These grants – awarded and anticipated – represent over 75 percent of the City's transportation revenues for the next six years. REET funds, General Fund support, the City's Transportation Benefit District, investment interest and funds collected through the City's fee in-lieu program comprise one-fifth of the funding for transportation projects and programs.

The Aurora Corridor Improvement Project is partially funded by all of these sources, with the exception of the Transportation Benefit District. The remaining grant share reflects major federal grants, both those already awarded and those anticipated for future award, for projects other than the Aurora Corridor project.

While the Aurora Corridor Improvement Project continues to be highly successful in obtaining grants (the project was approximately 90 percent grant funded), it is unlikely that other transportation projects will be able to secure a similar level of grant funding. The competitive nature of grant funding and the specific requirements associated with available grants narrow the opportunities for many of the City's high priority projects to obtain outside funding.

Funding for transportation projects is available from federal, state and local resources. Each funding source has specific rules and guidelines about what types of projects they will fund, how much of a project will be funded and timelines for expenditure of funds.

Available Revenue Sources

Funding for transportation projects is available from federal, state and local resources. Each funding source has specific rules and guidelines about what types of projects they will fund, how much of a project will be funded and timelines for expenditure of funds. Most grant programs require a funding match, which means that the City must also contribute funding to the cost of a project. The granting agency may also have restrictions about the source of the funding match. For example, a state funded grant might be restricted from having another state funded grant serve as the match. Funding programs for bicycle and pedestrian transportation projects are very limited, especially in comparison to funding for highway and roadway projects. **Table 10.1, Federal and State Funding Sources**, identifies the federal and state funding sources listed in the next sections of this chapter, along with a description of the availability, required match, time frames for use and eligibility and restrictions associated with fund use.

Table 10.1. Federal and State Funding Sources

FUND NAME	FUNDING AND ADMINISTRATION SOURCE	FREQUENCY OF AVAILABILITY	MATCH NEEDED	ELIGIBILITY AND RESTRICTIONS
FEDERAL				
Congestion Mitigation and Air Quality (CMAQ)	Funded by Federal Government; allocated by PSRC; administered by WSDOT	Every two to three years	At least 20% (may be none depending on the project)	Funds projects and programs which reduce transportation-related emissions; can be used for projects that improve transportation efficiency and transit improvements and bicycle and pedestrian projects. Not for capacity expansion projects
Surface Transportation Program (STP)	Funded by Federal Government; administered by PSRC	Every two to three years	At least 13.5%	Funds projects to preserve and improve the transportation system; funds may be utilized on any Federal-aid highway, bridge projects on any public road, transit capital projects and bus terminals and facilities
Transportation Enhancements	Funded by Federal Government; allocated and administered by WSDOT	Every four to five years	None	Funds surface transportation projects that enhance the travel experience for all modes, strengthen the local economy, improve the quality of life and protect the environment
Highway Safety Improvement Program (HSIP)	Funded by Federal Government; allocated and administered by WSDOT	Invitation only	None	Funds projects that reduce fatal and serious injury collisions; funding must be spent in accordance with a state's Strategic Highway Safety Plan
Transportation, Community, and System Preservation (TCSP) Program	Funded by Federal Government; administered by WSDOT	Varies with federal appropriation process	None	Funds projects that integrate plans and practices that improve transportation efficiency, reduce environmental impacts of transportation, reduce the need for future infrastructure investments, ensure efficient access to jobs, services, and centers of trade and examine community development patterns and identify strategies to encourage private sector development patterns and investments that support these goals
Federal Transit Administration (FTA)	Funded by Federal Government; allocated by PSRC or directly to jurisdictions	Annually	Depends on program	Funds transit planning, vehicle purchases, facility construction, operations and other purposes
SAFETEA-LU/ TIGER III			Unknown	
Community Development Block Grant (CDBG)	US Department of Housing and Urban Developed (contracted through King County)	Annually	None	Must be for eligible projects that serve low-moderate income populations/areas. Low-moderate areas are based on census data

FUND NAME	FUNDING AND ADMINISTRATION SOURCE	FREQUENCY OF AVAILABILITY	MATCH NEEDED	ELIGIBILITY AND RESTRICTIONS
STATE				
Urban Arterial Program (UAP)	Transportation Improvement Board (TIB)	Annually, fund permitting	Local match determined by the City's valuation (currently match is 20%)	Funding for roadway projects that improve safety and mobility
Urban Corridor Program (UCP)	Transportation Improvement Board (TIB)	Annually, fund permitting	Local match determined by the City's valuation (currently match is 20%)	Funding for roadway projects with multiple funding partners that expand capacity. Projects are typically larger and require a great amount of cooperation within the community, including economic development
Urban Sidewalk Program (USP)	Transportation Improvement Board (TIB)	Annually, fund permitting	Yes, 20% match	Funding for pedestrian projects that support transportation primarily (not recreation). Must be on a federally classified route
Pedestrian and Bicycle Safety Funding	Funded and administered by WSDOT	Every 2 years, invitation only	None, but encouraged	Funds projects to help reduce collisions involving pedestrians and bicycles. They may also support increased mobility and encourage more people to bicycle and walk
Safe Routes to School	Funded by Federal Government and WSDOT; administered by WSDOT	Every 2 years	None, but encouraged	Funding is targeted to address engineering improvements, education and encouragement activities and enforcement that provide children with alternatives to riding the bus or being driven to school. Projects must be within two-miles of primary and middle schools (K-8). Partnerships between agencies are encouraged
Regional Mobility Grant Program	Funded and administered by WSDOT	Every 2 years	At least 20%	Funds local efforts to improve transit mobility and reduce congestion
Stormwater Grant Programs	Washington State Department of Ecology	Every 2 years or yearly	None	

Federal Funding Sources

The following federal programs are available to fund transportation programs. The funds from most of these sources for which Shoreline is eligible are allocated by the Puget Sound Regional Council and administered by WSDOT.

SAFETEA-LU is the federal surface transportation program that funds highways, highway safety and public transportation. SAFETEA-LU addresses many challenges facing the nation's transportation system such as improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity, and protecting the environment. It promotes

more efficient and effective federal surface transportation programs by focusing on transportation issues of national significance, while giving state and local transportation decision makers more flexibility for solving transportation problems in their communities. This program has had several names in the past, including the Intermodal Surface Transportation Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21).

SAFETEA-LU targets investment in projects that address the following:

- Safety
- Equity
- Innovative Finance
- Congestion Relief
- Mobility & Productivity
- Efficiency
- Environmental Stewardship

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

The primary purpose of CMAQ is to fund projects and programs which reduce transportation related emissions, including ozone, carbon monoxide and small particulate matter. CMAQ funding is authorized under SAFETEA-LU and can be used for projects that improve transportation efficiency, transit improvement projects and bicycle and pedestrian projects. CMAQ funds were used to finance a portion of the Aurora Corridor Improvement Project and have funded the Curb Ramp, Gutter and Sidewalk program in the past.

Image: courtesy of CH2MHill for the Aurora Project

Surface Transportation Program (STP)

Another SAFETEA-LU program, STP provides funding for projects to preserve and improve the transportation system consistent with regional priorities. The funds may be utilized on any Federal-aid highway, including the National Highway System, bridge projects on any public road, transit capital projects and intra-city and intercity bus terminals and facilities. The Aurora Corridor Improvement Project received funding from the STP.

Transportation Enhancements

Ten percent of the STP has been set aside for the

enhancement program. Through a variety of qualifying activities, the transportation enhancement program funds surface transportation projects that enhance the travel experience for people traveling by all modes, strengthen the local economy, improve the quality of life and protect the environment. Bicycle path projects are typically supported by this program. Transportation Enhancements funding was used for development of the Interurban Trail.

Highway Safety Improvement Program (HSIP)

The goal of HSIP is to reduce fatal and serious injury collisions. HSIP funds come from SAFETEA-LU and must be spent in accordance with the state Strategic Highway Safety Plan. In 2009, WSDOT provided funding through a competitive, invitation-only process. HSIP funds were used to finance a portion of the Aurora Corridor Improvement Project.

Transportation, Community, and System Preservation (TCSP) Program

Another program funded through SAFETEA-LU is TCSP. Jurisdictions are eligible for discretionary grants to carry out eligible projects to integrate transportation, community and system preservation plans and practices that:

- Improve the efficiency of the transportation system of the United States.
- Reduce environmental impacts of transportation.
- Reduce the need for costly future public infrastructure investments.
- Ensure efficient access to jobs, services, and centers of trade.
- Examine community development patterns and identify strategies to encourage private sector development patterns and investments that support these goals.

The Aurora Corridor Improvement Project received funding through the TCSP Program.

Federal Transit Administration (FTA)

The Federal Transit Administration (FTA) helps communities support public transportation by issuing grants for planning, vehicle purchases, facility construction, operations and other purposes. FTA administers this financial assistance according to the authorization in SAFETEA-LU. Each year, Congress appropriates funds for each program and FTA awards grants to eligible recipients to meet the goals of that program. Most of this funding is allocated to transit agencies. Because the Aurora Corridor Improvement Project included BAT lanes that improve transit operations, it received funding from the FTA.

Safe Routes to School

The Safe Routes to Schools program was developed to provide children a safe, healthy alternative to riding the bus or being driven to school. In order to receive funding from this program, projects must be within two miles of primary or middle schools (K-8). Funding is targeted to address all of the following:

- Engineering improvements that reduce potential pedestrian and bicycle conflicts with motor vehicle traffic, reduce traffic volume around schools, and/or establish safer and fully accessible crossings, walkways, trails or bikeways. These can include on- or off-street bicycle facilities, bicycle and pedestrian crossing improvements or sidewalk improvements.
- Education and encouragement activities that teach children about bicycling and walking

safety skills and the health and environmental benefits of walking and bicycling. Projects such as implementation and distribution of educational materials, safety training and events that educate and encourage walking and bicycling are examples of education and encouragement activities.

- Enforcement involves ensuring traffic laws are obeyed, such as enforcement of speeds, yielding to pedestrians in crossings and proper walking and bicycling behaviors. It can also include initiating community enforcement activities such as implementing an adult and/or student crossing guard program.

Funds from the Safe Routes to School program are administered and often supplemented by the State of Washington. Sidewalks in the vicinity of Briarcrest Elementary School are scheduled for construction in 2012 utilizing Safe Routes to School funding.

Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant

The TIGER Discretionary Grant Program, developed as part of the American Recovery and Reinvestment Act of 2009, provides funding for innovative, multi-modal and multi-jurisdictional transportation projects that promise significant economic and environmental benefits to an entire metropolitan area, a region or the nation. Projects previously funded through the TIGER grant program include roads, bridges, rail, ports, transit and intermodal facilities. Congress dedicated $1.5 billion for TIGER I and $600 million for TIGER II to fund projects. Each project is multi-modal, multi-jurisdictional or otherwise challenging to fund through existing programs. No projects in Shoreline have been funded through the TIGER program.

Community Development Block Grant (CDBG)

CDBGs are administered through the U.S. Department of Housing and Urban Development. The CDBG program provides annual grants to cities, urban counties and states to develop viable urban communities by providing decent housing and a suitable living environment and by expanding economic opportunities, principally for low and moderate-income persons. CDBG funds have been used for sidewalk repair and replacement throughout the City, as well as the 17th Avenue NE Green Streets Demonstration Project.

State Funding Sources

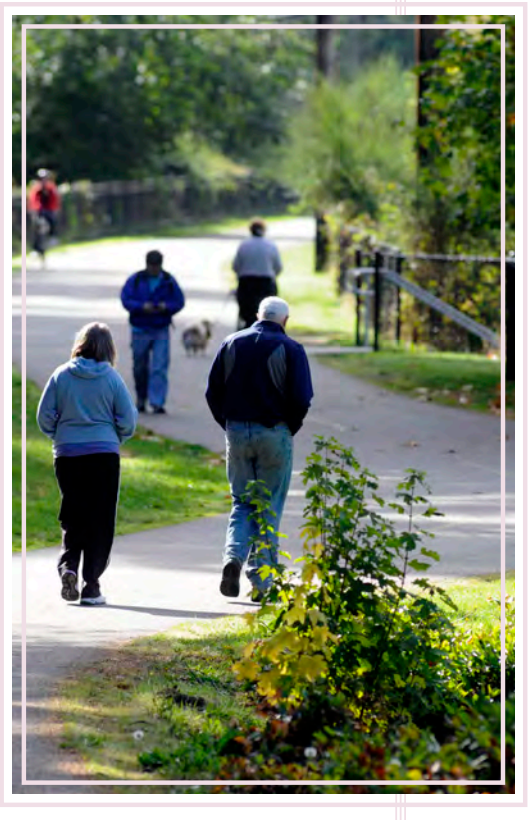
Several transportation funding programs are available from the State of Washington. Many of these funds are administered by WSDOT and are awarded through a competitive process.

Transportation Improvement Board (TIB)

The Washington State Legislature created TIB to foster state investment in local transportation projects. TIB is an independent state agency that distributes and manages street construction and maintenance grants to cities and urban counties throughout the state. The funding for TIB's grant programs is generated by three cents per gallon of the statewide gas tax.

TIB provides funding to urban jurisdictions through the following three programs:

- Urban Arterial Program (UAP) – These funds are best suited for roadway projects that improve safety and mobility. The Aurora Corridor Improvement Project received funding through the UAP.
- Urban Corridor Program (UCP) – Best suited for roadway projects with multiple funding partners that expand capacity. These may include multi-jurisdictional cooperation and partnerships with the business community. The UCP funded a portion of the Aurora Corridor Improvement Project.
- Urban Sidewalk Program (USP) – Best suited for sidewalk projects that improve safety and connectivity. Sidewalk projects that are eligible for this program must be transportation facilities, not recreation, and must be on a federally classified route, such as a principal, minor or collector arterial. Sidewalks constructed at N 175th Street and Meridian Avenue N were funded through the USP.



Pedestrian and Bicycle Safety Funding

Each year statewide there are nearly 400 fatal and injury collisions involving pedestrians and bicycles. The state-funded Pedestrian and Bicycle Safety program was established to address these collisions. Projects funded by these grants are focused on safety. They may also support increased mobility and encourage more people to bicycle and walk. Projects can include engineering improvements, such as construction of bicycle facilities, intersection improvements and safe routes to transit, or educational efforts that promote or inform the public about bicycle and pedestrian safety.

Regional Mobility Grant Program

The Regional Mobility Grant program supports local efforts to improve transit mobility and reduce congestion on the state's most heavily traveled roadways. Funded projects may include new transit services that connect urban centers, park & ride lots and expansions, new buses or rush-hour transit service along congested corridors. The Aurora Corridor Improvement Project received funding through the Regional Mobility Grant program.

Washington State Department of Ecology (DOE)

DOE provides funding for infrastructure projects, including transportation, through its Stormwater Grant Program. As part of the Water Quality Financial Assistance program, funding is allocated to local governments, tribes and non-profit organizations for "priority water quality projects." DOE granted funding to the Aurora Corridor Improvement Project due to the improvements to water quality resulting from the project.

Public Works Trust Fund

This is a low-interest rate loan program provided through the state. Their loan program includes but is not limited to funds for comprehensive plans, design and engineering, environmental reviews, construction bids and construction. The Public Works Trust Fund is financed with Public Works Assistance funds, which are state funds (not federal funds). The fund is made up of local taxes and loan repayments. The City has received two loans, both of which are being used to fund improvements to the City's drainage facilities and are the obligation of the City's Surface Water Fund.

Local Funding Sources

There are several local revenue sources authorized by the state which Shoreline can utilize for transportation projects. Many are voter-approved options and are established as a Transportation Benefit District (TBD). Cities may establish TBDs to fund a variety of transportation projects, such as capital improvements, operation of city streets, high-capacity transportation systems, and other transportation programs of regional or statewide significance. A specific project or purpose must be identified when a funding source is established through a TBD. **Table 10.2, Local Funding Sources**, identifies the following listed local funding sources, along with a description of the availability, required approval, time frames for use and eligibility and restrictions associated with fund use.

Table 10.2. Local Funding Sources

FUND NAME	FUNDING AND ADMINISTRATION SOURCE	FREQUENCY OF AVAILABILITY	VOTER APPROVAL REQUIRED	TIME FRAME TO ACQUIRE/ USE FUNDS	ELIGIBILITY AND RESTRICTIONS
Impact Mitigation Fee	Funds collected in conjunction with development; administered by the City	As development occurs	No	City has six years to spend funds on identified projects	Funds development for the capital costs or facilities needed to accommodate growth. Project list would be adopted by ordinance

FUND NAME	FUNDING AND ADMINISTRATION SOURCE	FREQUENCY OF AVAILABILITY	VOTER APPROVAL REQUIRED	TIME FRAME TO ACQUIRE/ USE FUNDS	ELIGIBILITY AND RESTRICTIONS
Motor Vehicle License Renewal Fee (TBD)	Funds collected by Washington State Department of Licensing; administered by the City	Continuous; the state distributes collected funds to the City each month	Yes, when fee exceeds $20/ vehicle; requires 50% voter approval; must be reauthorized by voters every ten years	Used in each year as collected – must spend annually what is collected	Current Shoreline TBD partially funds the City's annual road surface maintenance program. Other specific programs or projects that will be funded as part of the TBD must be identified prior to its approval
Sales Tax Increase (TBD)	Funds collected by the State of Washington; administered by the City	Continuous; the state distributes collected funds to the City each month	Yes; requires 50% voter approval; must be reauthorized by voters every ten years	Used in each year as collected – must spend annually what is collected	Another form of TBD used to fund specific projects, as well as long-term programs
General Obligation Bonds	Issued/ administered by the City		Yes; requires 60% voter approval	Bonds must be repaid within 15-25 years	Fund a one-time project, such as construction of specific improvements. Can be used for other City capital needs outside transportation
Property Tax Levy Lid Lift	Funds collected by King County Department of Assessments; administered by the City	Property taxes are due in April and October. They are collected by the county and remitted to the City daily as received	Yes; requires 50% voter approval; must be reauthorized by voters every six years		Usually funds ongoing programs, as well as specific projects. City is limited to a maximum property tax rate of $1.60/ per $1,000 assessed value. Current rate (2011) is $1.48. Can be used for other City needs outside transportation
Local Improvement District	Funds collected and administered by the City		Yes; created under the sponsorship of the City; must be approved by both the City and benefitted property owners that represent 60% of the assessed valuation of benefitting properties		Funds road improvements that will primarily benefit the property owners in the identified district. The increased value of the benefitted properties must be equal to or greater than the value of the project
Revenue Generating Business License Fees	Funds collected by the state on behalf of the City		No		Base license fee, plus an amount based on number of employees or number of employee hours worked within the City

Impact Mitigation Fee

The underlying premise of impact mitigation is that development, rather than the general taxpaying public, should be responsible for mitigating the impacts that occur as a result of

development. Mitigation of impact is a one-time payment by development for the capital costs or facilities needed to accommodate growth. Impact mitigation fees are allowed pursuant to the GMA.

The GMA mitigation addresses impacts on all arterial and collector streets in the City, not just the nearest streets to a development project. The amount of mitigation is limited to each applicant's proportionate share of the mitigation projects. No development is exempt from GMA mitigation. Each development's impact is determined by standardized trip generation tables and standardized costs per trip, so mitigation costs are predictable in advance. No development has to pay for traffic studies for impact mitigation.

Many cities in this region charge an impact mitigation fee associated with development. The fees cover a broad range, depending upon the estimated costs of the transportation improvements that will be needed to accommodate growth. Because impact fees can only be collected to pay for the impacts of growth, there needs to be another source of funding to cover the costs of correcting any existing deficiencies.

The underlying premise of impact mitigation is that development, rather than the general taxpaying public, should be responsible for mitigating the impacts that occur as a result of development.

Motor Vehicle License Renewal Fee

The Shoreline City Council established a TBD in 2009 consisting of an annual motor vehicle license renewal fee of $20. The fees collected through this district are used to fund the City's annual road surface maintenance program. With voter approval, this fee can be raised to up to $100. Specific programs or projects that will be funded as part of the TBD must be identified prior to its approval.

The existing TBD generates approximately $600,000 annually. Assuming vehicle ownership levels remain the same, it is estimated that for every $10 increase to the motor vehicle license renewal fee, the City would collect an additional $300,000.

Sales Tax Increase

A voter-approved sales tax of up to 0.2 percent, which may not exceed a ten-year period without voter reauthorization, is another option under TBD legislation. Similar to a property tax levy lid lift, a sales tax increase is used for specific projects as well as longer-term programs.

General Obligation Bonds

With a required 60 percent approval rate, Shoreline voters can

authorize the City to borrow money that will be paid back over time via a property tax increase. General obligation bonds are for a finite amount and generally fund a one-time project or funding package, such as construction of specific improvements. Common examples of the use of general obligation bonds include parks, school or fire districts. In May 2006, Shoreline voters approved a Parks and Recreation bond measure to fund purchase of new park property, park construction and trail improvements throughout the City.

Property Tax Levy Lid Lift

Voters can approve a property tax levy lid lift in order to provide a dedicated, six-year revenue source. This lift can be reapproved. The City's levy rate cannot exceed $1.60 per $1,000 of assessed property value. Due to its time frame, a levy lid lift is a common source of funding for on-going programs, as well as specific projects. The City's current levy rate of $1.48 was approved by voters in November 2010.

Local Improvement District

Local Improvement Districts are special assessment districts in which improvements primarily benefit the property owners in the district. They are created under the sponsorship of a municipal government and must be approved by both the local government and benefitted property owners. Many cities use these for sidewalk or sewer improvements. LIDs typically include a City match or contribution to the project.

Revenue Generating Business License Fees

State law allows municipalities to establish a fee structure that allows them to generate revenue beyond the cost of administering the business license. Fees are paid by the business owner. The fee structure can levy charges per employee, fees based upon the square footage of buildings, costs based upon categories of business type, or a combination thereof.

Local Grants and Funding Partnerships

Jurisdictions often form funding partnerships or provide grant funding when a project provides mutual benefit. For example, the Aurora Corridor Improvement Project includes BAT lanes, which will be used by Metro Transit. Use of these lanes will improve transit speed and reliability, and King County contributed funding to help with their construction. Similarly, King County has provided funding for signal synchronization on transit corridors in Shoreline.

Debt Capacity

There are two types of general obligation debt that the City is currently authorized to use for financing various projects including transportation system improvements. They each have statutory limitations and require approval by either the City Council or City voters.

1. **General Purpose Voted Debt:** As authorized by state law, the public may vote to approve bond issues for general government in an amount not to exceed 2.5 percent of the value of all taxable property within the City. This requires a 60 percent vote of the City electorate and must have a voter turnout of at least 40 percent of the last state general election. The debt would be repaid from an increase to the City's existing property tax levy. An amount up to 2.5 percent

of the City's assessed value can be levied. Currently, the City has no General Purpose Voted Debt.

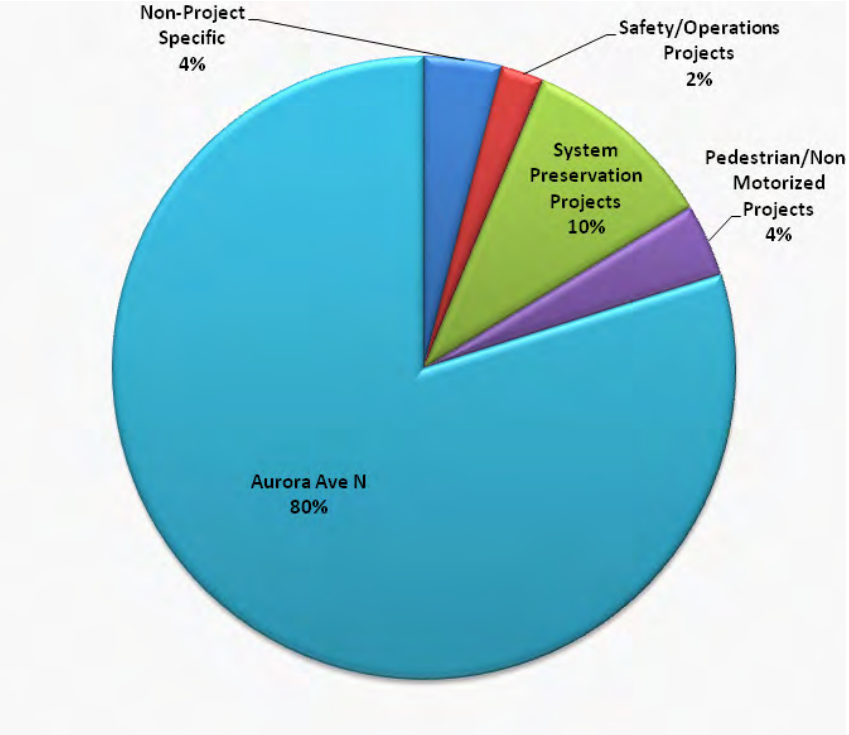
2. General Purpose Councilmanic Debt: The City Council may approve bond issues without voter approval up to 1.5 percent of the City's assessed valuation. This statutory authority can be used for any municipal purpose, including using the entire 1.5 percent for bonds. Councilmanic debt must be approved by a majority of the City Council and must be repaid from existing operational revenue sources – unlike general-purpose voted debt, in which taxpayers agree to pay additional property tax to repay the debt.

In July of 2009, the City Council authorized the issuance of bonds totaling $22,145,000 to purchase the Civic Center/City Hall. The bonds will be repaid over 30 years. The City has approximately 79 percent of its councilmanic debt capacity available; however, there are no existing revenue sources that could be dedicated to the repayment of general purpose councilmanic debt to support transportation projects.

Transportation Expenditures

Shoreline's transportation capital budget is primarily dedicated to the Aurora Corridor Improvement Project, consistent with the amount of funding acquired through grants. Since incorporation, the Interurban Trail and the Aurora Corridor Improvement Program have been the focus for transportation improvements and funding. Of the remaining capital budget funds, the most is spent on system preservation projects (10%), with the balance allocated to pedestrian and non-motorized projects (4%), safety and operations projects (2%) and non-project specific activities (4%), such as engineering for capital projects and General Fund overhead charges. **Figure 10.3, City of Shoreline 2011-2016 Transportation Expenditures**, shows these allocations.

Figure 10.3, City of Shoreline 2011-2016 Transportation Expenditures



Financial Forecast

In the past, the City of Shoreline has funded transportation projects through sources such as motor vehicle excise taxes, taxes on fuel consumption, REET, grants and General Fund support. These funding sources are becoming increasingly less reliable. In 2000, voters in Washington State eliminated the motor vehicle excise taxes, resulting in a significant reduction for transportation funding. Gasoline taxes are not inflation or price adjusted and are based solely on consumption. Therefore, as vehicles become more fuel efficient and drivers switch to electric vehicles and alternate modes of transportation, gasoline taxes diminish. REET can be an unstable revenue source, varying with the local real estate market and the general economy. Grants from all sources are highly competitive, each of which have specific eligibility criteria and restrictions for use of the funds. The amount of available funds in the General Fund to provide support for transportation projects continues to decline as the General Fund struggles to fund operating programs and services.

In order to plan for transportation improvements, the City must identify and secure predictable funding sources. Shoreline's Transportation Benefit District, established in 2009, provides approximately $600,000 annually. It is currently being used to fund the City's road surface maintenance program. While general obligation bonds are an available funding source, the City must be fiscally prudent and ensure that the City does not carry more debt than can be supported with existing revenues. The roadway projects to accommodate growth identified in this Transportation Master Plan will be fully funded through the collection of transportation impact fees authorized by the Growth Management Act. Full funding of the other transportation investments outlined in this plan within 20 years would require significant additional revenue. The entire recommended project lists in the Transportation Master Plan more realistically represent 20-50 years of improvements.

- **Goal XI:** Secure reliable funding to ensure continuous maintenance and improvement of the transportation system.

- **Policy T47:** Aggressively seek grant opportunities to implement the City's Transportation Master Plan and work to ensure that Shoreline receives regional and federal funding for its high-priority projects.

  Implementation Strategies

  47.1. Create a grant matching reserve fund in the City's Capital Improvement Plan for transportation projects.

  47.2. Pursue grant opportunities for joint project needs with adjacent jurisdictions.

- **Policy T48:** Support efforts at the state and federal level to increase funding for the transportation system.

- **Policy T49:** Identify and secure funding sources for transportation projects, including bicycle and pedestrian projects.

  Implementation Strategies

  49.1. Adopt a stable funding source for construction of sidewalks. Options may include LID, TBD, general obligation bonds or property tax levy lid lift.

  49.2. Develop and fund a program for pedestrian improvements such as the sidewalk "gap"

filling program, development of unused right-of-way, pedestrian connections to the Interurban Trail, pedestrian connections to transit routes and sidewalks to schools.

49.3. Establish a right-of-way acquisition fund that would allow the City to purchase right-of-way in advance of major capital projects, such as when new development occurs.

49.4. Develop a funding strategy for the installation and construction of bicycle facilities. The strategy should identify short-term, interim improvements, such as signage, and permanent capital improvements.

49.5. Develop a strategy to fund traffic and intersection improvements throughout the City. The strategy should include the identification of stable funding sources as well as grant opportunities for specific projects.

49.6. Direct funds collected through the City's impact fee program toward construction of bicycle and pedestrian improvements that are part of roadway capacity improvements.

49.7. Pursue grant funding from local, state and federal sources. Combine bicycle and pedestrian facility projects with other capital projects, such as roadway or parks projects, to improve funding possibilities.

49.8. Develop a phased bicycle system implementation plan that provides for installation of minor bicycle signage or facilities on all routes to maximize budget resources.

Discussion: In the short term, implement the City's bicycle system through signage, rechannelization and hot spots. Install larger capital investments on identified routes as funding becomes available in the long term.

49.9. Require major transit facilities, such as light rail stations and BRT stations, and transit-oriented developments to provide pedestrian facilities and adequate bicycle amenities. These can include covered bicycle racks, lockers or bicycle stations at their sites and facilities connecting to their sites.

49.10. Preserve needed right-of-way for future bicycle and pedestrian connections and utilize utility easements for trails when feasible.

49.11. Include construction of bicycle facilities identified on the City's Bicycle System Plan as projects that qualify for "credits" through the City's concurrency program.

- **Policy T50:** Develop and implement a citywide transportation impact fee program to fund growth-related transportation improvements and, when necessary, use SEPA to provide traffic mitigation for localized development project impacts.

- **Policy T51:** Provide funding for maintenance, preservation and safety.

Implementation Strategies

51.1. Identify the estimated operation and maintenance expenditures for capital projects before construction and integrate them into the City's annual operation and maintenance budget.

51.2. Develop a funding strategy for implementation of the City's pavement management program.