

PLANNING COMMISSION AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE: Comprehensive Plan Update, Transportation Element		
DEPARTMENT: Planning & Community Development		
PRESENTED BY: Miranda Redinger, Associate Planner Rachael Markle, AICP, Director P&CD		
<input type="checkbox"/> Public Hearing	<input checked="" type="checkbox"/> Study Session	<input type="checkbox"/> Recommendation Only
<input type="checkbox"/> Discussion	<input type="checkbox"/> Update	<input type="checkbox"/> Other

INTRODUCTION & BACKGROUND

On January 5, 2012, staff and Commissioners discussed the proposed process for the Comprehensive Plan Update and public involvement. On February 2nd, the Parks, Recreation, and Open Space and Community Design Elements were discussed. The subject of tonight's agenda item will be the Transportation Element.

This element will be treated a little differently than other elements because of the recent adoption of the Transportation Master Plan (TMP), in the same way that the Parks, Recreation, and Open Space Element will be a direct reflection of the recently adopted Parks, Recreation and Open Space (PROS) Plan. Because Council has already approved policy language, and directed staff to improve consistency between guiding documents, the recommendation is a wholesale replacement of the current text with language directly from the master plans.

Ordinance No. 615, which adopted the TMP in December 2011, contains the following repeal of the existing Comprehensive Plan Transportation Element Goals and Policies (Attachment A) and replaces them with those from the TMP (Attachment B).

Section 1. Repeal, New Comprehensive Plan Chapters. The Shoreline Comprehensive Plan chapters *Transportation Element Goals & Policies* chapter, pp 55-61, and *Transportation Element- Supporting Analysis* chapter, pp 117-181 are repealed in their entirety and a revised *Transportation Element* chapter is adopted as set forth in Exhibit A attached hereto and incorporated herein.

It also repealed the existing Transportation Element Analysis (Attachment C), and provided replacement sub-elements required by the Growth Management Act listed in the ordinance (Attachment D). However, it merely lists the requirements and provides references to page numbers in the TMP, rather than providing the actual analysis, so Attachment D represents the preliminary version of information included in the TMP. Currently, there are redundancies and some language is missing or yet to be updated, so this copy is more to give you an idea of what the final analysis will look like rather

Approved By:

Project Manager 

Planning Director 

than a document fit for final review. Staff will continue to work on it and include a complete version in the draft Comprehensive Plan for review this fall.

TRANSPORTATION MASTER PLAN

The Transportation Master Plan (TMP) is the City's long range plan for transportation. It identifies programs, policies and projects to help achieve the City's vision for its transportation network and will be used in the development of future Capital Improvement Plans (CIP) and grant applications. The TMP includes bicycle and pedestrian system plans and a three-year transit plan that identifies the City's vision of how these networks will be developed in the future. The TMP also establishes the foundation for development of a new concurrency program and the potential adoption of a transportation impact fee in early 2012.

Development of the TMP began in April 2009 with internal staff meetings and project planning efforts. Public involvement was initiated the following July with a public open house to gather citizen feedback about bicycle, pedestrian and transit issues. Residents were also asked to participate in a citizens' advisory committee to help staff develop policy and system plan recommendations for bicycle and pedestrian transportation. Twelve residents volunteered and this committee met eight times from September 2009 through May 2010. Staff met with Council several times from March through August 2010 to receive policy direction on several aspects of the TMP update. In April 2011, an open house was held for residents to view draft materials developed by staff and provide feedback. A representative from Sound Transit was also present to provide information about Sound Transit's North Corridor Transit project.

The draft TMP was released in September 2011. The Planning Commission met on September 29 and October 6 to discuss the staff recommended changes to the Comprehensive Plan and Development Code and held a public hearing on October 27, 2011.

If you are interested in more information, a summary of the TMP and Comprehensive Plan and Development Code amendments that were included in the November 21, 2011 Council staff report which can be found at <http://cosweb.ci.shoreline.wa.us/uploads/attachments/cck/Council/Staffreports/2011/Staffreport112111-8b.pdf>

QUESTION FROM 1.5.12 MEETING

At the January meeting, Commissioner Behrens questioned the intent of goal and policy statements and whether they should be measurable. Staff found the following information on the City of Portland's Bureau of Planning and Sustainability Comprehensive Plan website.

- **Goals** are the broadest expressions of a community's desires. Goals give direction to the plan as a whole. Goals are concerned with the long term, and often describe ideal situations that would result if all plan purposes were fully realized. Since goals are value-based, their attainment is difficult to measure.

- **Policies** are broad statements that set preferred courses of action. Policies are choices made to carry out the goals in the foreseeable future. Policies need to be specific enough to help determine whether a proposed project or program would advance community values expressed in the goals.
- **Objectives** are specific statements that carry out a plan in the short term. Objectives are measurable benchmarks that can be used to assess incremental progress in achieving the broader purposes expressed in policies and goals.

Staff proposes to include goals and policies in the 2012 Comprehensive Plan, but not to delve to the level of specificity required to create measurable objectives. One reason is the time it would take to coordinate public and internal processes to craft these objectives would prohibit completion of the Plan by the Council deadline of December 2012. It is also because the functional Master Plans that are one facet of implementing the Comprehensive Plan do contain objectives, called implementation strategies. For example, PROS Plan contains 40 implementation strategies, and the TMP contains over 200 implementation strategies.

Staff may create a separate list of strategies and projects that would implement other aspects of the Comprehensive Plan, but that would be prohibitively time-consuming to attempt to undertake as part of the update process. These could potentially be incorporated into future Planning and Community Development departmental work plans at the direction of Council.

RELEVANT COUNCIL AND FRAMEWORK GOALS

Direction contained in the Transportation Element and Master Plan supports the following city-wide goals:

Council Goal 2: Provide safe, efficient and effective infrastructure to support our land use, transportation and surface water plans.

Framework Goal 2: Provide high quality public services, utilities, and infrastructure that accommodate anticipated levels of growth, protect public health and safety, and enhance the quality of life.

Framework Goal 13: Encourage a variety of transportation options that provide better connectivity within Shoreline and throughout the region.

Framework Goal 14: Designate specific areas for high density development, especially along major transportation corridors.

NEXT STEPS

The April discussion will focus on the Natural Environment and Capital Facilities/Utilities Elements. The Natural Environment Element will be a new addition to Shoreline's Comprehensive Plan while the Capital Facilities/Utilities Elements were previously two separate chapters that are being merged.

Staff is still working to finalize the date and speaker for Natural Environment topic for the Speaker's Series. The 4th Wednesday date on which the other Speaker's Series events have been held is not available in March due to a conflict with the Shoreline Eats4Health event already scheduled in the Council Chambers.

If you have questions or comments prior to the meeting, please contact Miranda Redinger at (206) 801-2513 or by email at mredinger@shorelinewa.gov.

ATTACHMENTS

Attachment A- Transportation Element, Goals & Policies, existing

Attachment B- Transportation Element, Goals & Policies, proposed

Attachment C- Transportation Element, Analysis, existing

Attachment D- Transportation Element, Analysis, proposed (based on exhibit to Ord. No. 615)

The proposal is for this section to be deleted and replaced entirely by policies adopted for the 2011 Transportation Master Plan.

Transportation Element Goals & Policies

Introduction

The Transportation Element will guide the development and funding of a transportation network that provides mobility for residents and employees within the City of Shoreline in a way that preserves citizens' quality of life. The City's transportation system will be designed around safe and friendly streets that can accommodate pedestrians and bicycles as well as automobiles and buses. Because of Shoreline's location between the City of Seattle and Snohomish County, the City should also pursue a strategic plan to coordinate transportation improvements with neighboring jurisdictions and transit providers. The Transportation Element establishes policies on how to prioritize the City's transportation system improvements and how to identify the City's strategic interests in regional investments, adjacent transportation facilities and funding alternatives.

Transportation Goals

- 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.
- Goal T III:** Support increased transit coverage and service that connects local and regional destinations to improve mobility options for all Shoreline residents.
- Goal T IV:** Provide a pedestrian system that is safe, connects to destinations, accesses transit, and is accessible by all.
- Goal T V:** Develop a bicycle system that is connective and safe and encourages bicycling as a viable alternative method of transportation

- Goal T VI:** Protect the livability and safety of residential neighborhoods from the adverse impacts of the automobile.
- Goal T VII:** Encourage alternative modes of transportation to reduce the number of automobiles on the road.
- Goal T VIII:** Develop a transportation system that enhances the delivery and transport of goods and services
- Goal T IX:** Secure reliable and fair funding to ensure continuous maintenance and improvement of the transportation system.
- Goal T X:** Coordinate the implementation and development of Shoreline's transportation system with our neighbors and regional partners.
- Goal TXI:** Maintain the transportation infrastructure so that it is safe and functional.

Transportation Policies

Safe and Friendly Streets

- 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.
- T2:** Use engineering, enforcement, and educational tools to improve traffic safety on City roadways.
- T3:** Monitor traffic accidents, citizen input/complaints, traffic violations, and traffic growth to identify and prioritize locations for safety improvements.
- T4:** Develop a detailed traffic and pedestrian safety plan for arterials, collector arterials and high potential hazard locations.
- T5:** Develop a safe roadway system as a high priority. Examples of methods to improve safety include:
- center left turn lanes,
 - median islands,
 - turn prohibitions,
 - signals, illumination,
 - access management, and
 - other traffic engineering techniques.
- T6:** 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.

- T7:** Designate “Green Streets” on select arterials and neighborhood collectors that connect schools, parks, neighborhood centers and other key destinations. Compile design standards for each “Green Street” type.
- T8:** Develop a comprehensive detailed street lighting and outdoor master lighting plan to guide ongoing public and private street lighting efforts.
- T9:** Minimize curb cuts (driveways) on arterial streets by combining driveways through the development review process and in implementing capital projects.

Multi-Modal Transportation System

- T10:** Implement the Transportation Master Plan that integrates “Green Streets”, bicycle routes, curb ramps, major sidewalk routes, street classification, bus routes and transit access, street lighting and roadside storm drainage improvements. Promote adequate capacity on the roadways and intersections to provide access to homes and businesses.
- T11:** Coordinate transportation infrastructure design and placement to serve multiple public functions when possible, i.e. integrate storm water management, parks development and transportation facility design.
- T12:** Implement a coordinated signal system that is efficient and which is flexible depending on the demand or time of day, and responsive to all types of users.
- T13:** Adopt LOS E at the signalized intersections on the arterials within the City as the level of service standards for evaluating planning level concurrency and reviewing traffic impacts of developments, excluding the Highways of Statewide Significance (Aurora Avenue N and Ballinger Way NE). The level of service shall be calculated with the delay method described in the Transportation Research Board’s Highway Capacity Manual 2000 or its updated versions.
- T14:** The City of Shoreline shall pursue the development of a multi-modal measure for Level of Service that takes into account not only vehicular travel and delay, but transit service and other modes of travel.
- T15:** Assure that vehicular and non-motorized transportation systems are appropriately sized and designed to serve the surrounding land uses and to minimize the negative impacts of growth.
- T16:** Design transportation improvements to support the city’s land use goals and fit the character of the areas through which they pass.
- T17:** Utilize the Arterial Classification Map as a guide in balancing street function with land uses. Minimize through traffic on local streets.
- T18:** Develop a regular maintenance schedule for all components of the transportation infrastructure. Develop maintenance schedules based on safety/imminent danger, and on preservation of resources.

- T19:** Inventory and inspect the transportation infrastructure.
- T20:** Establish a pavement management system.
- T21:** Upgrade our signal system so that it is responsive, fully interconnected, and moves people efficiently and safely.

Local and Regional Public Transit

- T22:** Develop a detailed transit plan in coordination with transit providers to identify level of service targets, facilities and implementation measures to increase Shoreline residents' and students' transit ridership.
- T23:** Work with transit service providers to provide safe, lighted, and weather protected passenger waiting areas at stops with high ridership, transfer points, Park and Ride, and park and pool lots.
- T24:** Work with all transit providers to support "seamless" service into Shoreline across the county lines and through to major destinations.
- T25:** Work with Sound Transit to study the development of a low impact commuter rail stop in the Richmond Beach/Point Wells area. The Richmond Beach residents shall be involved in the decision making process as far as location, design, and access to the service.

Pedestrian System

- T26:** Provide adequate, predictable, and dedicated funding to construct pedestrian projects.
- T27:** Place high priority on sidewalk projects that abut or provide connections to schools, parks, transit, shopping, or large places of employment.
- T28:** Reinforce neighborhood character and abutting land uses when developing and designing the pedestrian system.
- T29:** Provide sidewalks on arterial streets and neighborhood collectors.
- T30:** Develop flexible sidewalk standards to fit a range of locations, needs and costs.
- T31:** Work with the School District to determine and construct high priority safe school walk routes. The City should partner with the School District to achieve these goals.
- T32:** Coordinate sidewalk design and construction with adjacent jurisdictions where sidewalks cross the City boundaries.
- T33:** Provide pedestrian signalization at signalized intersections, and install midblock crossings if safety warrants can be met. Consider over- and under-crossings where feasible and convenient for users. Use audio and visual pedestrian aids where useful.

- T34:** Implement the City's curb ramp program to install wheelchair ramps at all curbed intersections.
- T35:** Require all commercial, multi-family and residential short-plat and long-plat developments to provide for sidewalks or separated all weather trails, or payment in lieu of sidewalks.
- T36:** Develop an off-street trail system that serves a recreational and transportation function. Preserve rights-of-way for future non-motorized trail connections, and utilize utility easements for trails when feasible.

Bicycle System

- T37:** Reinforce neighborhood character and abutting land uses when developing and designing the bicycle system.
- T38:** Work with the bicycle community to develop bicycle routes connecting schools, recreational and commuter destinations, including transit linkages. Aggressively pursue construction of the Interurban Trail as the spine of the City's bicycle system.
- T39:** Work with neighboring jurisdictions and other agencies to ensure that Shoreline's bicycle routes/corridors and designs are compatible and connect with one another.
- T40:** Work with Lake Forest Park to develop a bicycle linkage to the Burke-Gilman trail.
- T41:** Work with the School District to determine and encourage safe bike routes to schools. The City should partner with the School District to achieve these goals.
- T42:** Accommodate bicycles in future roadway or intersection improvement projects.
- T43:** Require new commercial developments to provide convenient bicycle parking facilities for employees and visitors/customers. Encourage merchants to install bike parking facilities.
- T44:** Reduce barriers to bicycle travel and reduce bicycle safety problems.

Neighborhood Protection

- T45:** Work with neighborhood residents to reduce speeds and cut-through traffic on non-arterial streets with education, enforcement, traffic calming, signing, or other techniques. Design new residential streets to discourage cut-through traffic while maintaining the connectivity of the transportation system.
- T46:** Streamline the Neighborhood Traffic Safety Program process and improve opportunities for public input.
- T47:** Monitor traffic growth on collector arterials and neighborhood collectors and take measures to keep volumes within reasonable limits.

Transportation Demand Management

- T48:** 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.
- T49:** Support educational programs for children and residents that communicate transportation costs, safety, and travel choices.
- T50:** Support state and federal tax policies that promote transit and ridesharing.
- T51:** Develop parking system management and regulations to support alternatives to the single occupant vehicle
- T52:** Analyze alternatives by which employers and/or developers not subject to the Commute Trip Reduction Act can encourage their employees and tenants to pursue alternative transportation choices.
- T53:** Work with Shoreline Community College and King County Metro to reduce employee and student use of single occupant vehicles and promote transit and carpooling.

Freight Mobility System

- T54:** Incorporate new strategies, as they are developed, into Shoreline's TDM programs that promote or provide alternatives to driving alone.
- T55:** Ensure that service and delivery trucks, and other freight transportation can move with minimal delay on appropriate streets and rail systems in our city as shown on the truck route map.
- T56:** Minimize the disruption of arterial traffic flow by developing time-limited loading zones in commercial areas and regulating areas that don't have loading zones. Develop a plan for business access streets to provide freight loading zones on less-heavily traveled roadways.
- T57:** Discourage truck traffic through residential neighborhoods during typical sleeping hours.
- T58:** Work with developers/property owners along the Aurora Avenue North corridor and in North City to plan business access streets as a part of redevelopment.

Funding

- T59:** Aggressively seek grant opportunities to implement the adopted Transportation Element to ensure that Shoreline receives its fair share of regional and federal funding. Pursue grant opportunities for joint project needs with adjacent jurisdictions.
- T60:** Analyze and if feasible implement a City-wide development impact fee program which will include transportation system improvements, and where feasible, use SEPA to provide traffic mitigation for system-wide impacts.

- T61:** Support efforts at the state and federal level to increase funding for the transportation system.
- T62:** Allocate resources in the City's Transportation Improvement Program and Capital Improvement Program according to the project prioritization matrices.
- T63:** Balance project costs against reasonably expected revenue sources for the Transportation Master Plan (TMP). The TMP shall be updated bi-annually to reflect changes in revenue availability and revisions to the project list.
- T64:** 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 level of service standards:
- Phase development which is consistent with the Land Use Plan until such time that adequate resources can be identified to provide adequate transportation improvements;
 - Reassess the 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 level of service standards to reflect levels that can be maintained, based on known financial resources.

Regional Coordination

- T65:** Advocate the City's strategic interest in high capacity transit, local and express bus service and other transit technologies. Work with local and regional agencies to obtain a fair share of transit service and facilities.
- T66:** Develop short-, medium- and long-range priorities and implementation strategies for improvements to the state highway system within and adjacent to the City of Shoreline. Advocate for added access to and connections on to I-5 through the City of Shoreline.
- T67:** Develop interlocal agreements with neighboring jurisdictions for development impact mitigation, for coordination of joint projects, and management of pass-through traffic. Consider annexing the sections of NE 145th and NE 205th Streets that are adjacent to the City. Work with adjacent jurisdictions and stakeholders to jointly study the 145th, 205th and Bothell Way NE corridors to develop level of service standards as part of a plan and funding strategy for future improvements.
- T68:** Work with neighboring jurisdictions to reduce air quality impacts and manage storm water runoff from the transportation system.
- T69:** Pursue methods of reducing the impact on Richmond Beach Drive at the King/Snohomish County line (e.g. closing) if the Point Wells property is not annexed by the City of Shoreline. Consider the extension of 205th only as potential mitigation for future development of Point Wells.

This page intentionally blank

TRANSPORTATION ELEMENT

INTRODUCTION

The Transportation Element will guide the development and funding of a transportation network that provides mobility for residents and employees within the City of Shoreline in a way that preserves citizens' quality of life. The City's transportation system will be multi-modal transportation, with an emphasis on moving people and a "Complete Streets" approach where the system accommodates all users. Because of Shoreline's location between the City of Seattle and Snohomish County, as well as the multiple entities that influence transportation in Shoreline, such as the Washington State Department of Transportation and transit agencies, the City should work to coordinate transportation improvements with neighboring jurisdictions and transit providers.

The Transportation Element establishes policies on how to prioritize Shoreline's transportation system improvements and how to identify the City's strategic interests in regional investments, adjacent transportation facilities and funding alternatives. The transportation policies are designed to guide the actions of public agencies, such as the City, as well as private decisions related to individual developments. The Transportation Element also provides the foundation for development regulations contained in the Shoreline Development Code and Engineering Development ~~Guide~~Manual.

The City's transportation system supports development of the land uses envisioned by the Comprehensive Plan and helps to shape the form of development within Shoreline's mixed-use, commercial and residential neighborhoods. To further that purpose, the City has adopted a Transportation Master Plan (TMP). The TMP is the City's long-range blueprint for travel and mobility in Shoreline. 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 then 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 programs.~~

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 and adopted as an amendment to the Comprehensive Plan.

Comment [r1]: Make sure this is completely accurate. Are we really adopting the WHOLE TMP as an amendment to the Comp Plan or is it just the Goals & Policies?

GOALS

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.

Goal T III: Protect the livability and safety of residential neighborhoods from the adverse impacts of the automobile.

Goal T IV: Encourage alternative modes of transportation to reduce the number of automobiles on the road.

Goal T V: Maintain the transportation infrastructure so that it is safe and functional.

Goal T VI: Develop a transportation system that enhances the delivery and transport of goods and services.

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

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

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

Goal T X: Support and encourage increased transit coverage and service that connects local and regional destinations to improve mobility options for all Shoreline residents.

Goal T XI: Secure reliable funding to ensure continuous maintenance and improvement of the transportation system.

POLICIES

Sustainability and Quality of Life

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 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.

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.

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

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.

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

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 property owners.

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

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 transportation resources.

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.

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 the Puget Sound Regional Council, Sound Transit and King County Council.

- Develop partnerships with the local business community to advocate at the federal, state and regional level for common interests.

Bicycle System

Policy T14: Implement the Bicycle System Plan included in the City's Transportation Master 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.

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

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.

Pedestrian System

Policy T17: Implement the Pedestrian System Plan included in the City's Transportation Master Plan through a combination of public and private investments.

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.

Policy T19: Design crossings that are appropriately located and provide safety and convenience for pedestrians. (***New Recommended Policy***)

Policy T20: Develop flexible sidewalk standards to fit a range of locations, needs and costs. (***Existing Comprehensive Plan Policy T30***)

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.

Transit System

Policy T22: Make transit a more convenient, appealing and viable option for all trips through implementation of the Shoreline Transit Plans included in the City's Transportation Master Plan.

Comment [r2]: Does this mean all of the other policies are existing?

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

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.

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

Policy T26: Work with Metro Transit to implement RapidRide Bus Rapid Transit 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.

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.

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

Policy T29: Work with Sound Transit, the Shoreline School District, the Washington State Department of Transportation, 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.

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.

Policy T31: Support and encourage the development of additional high capacity transit service in Shoreline.

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

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-and-ride lots throughout the City.

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

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

Master Street Plan

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.

Concurrency and Level of Service

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). 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 – N 185th Street: V/C may not exceed 1.10
- 15th Ave NE from N 150th Street – N 175th Street: V/C may not exceed 1.10

Policy T40: The following levels of service are the desired frequency of transit service in the City of Shoreline:

- Headways on all-day service routes should be no less than thirty minutes, including weekends and evenings (strive for twenty-minute or less headways during the day on these routes)

Comment [r3]: Is this in the Comp Plan or TMP?
Or will this be the Comp Plan Analysis section?

- Headways on peak-only routes should be no more than twenty minutes (strive for fifteen-minute or less headways on these routes).

Transportation Improvements

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.

Policy T42: Consider and coordinate the construction of new capital projects with upgrades or projects needed by utility providers operating in the City.

Policy T43: Pursue corridor studies on key corridors to determine improvements that address safety, capacity and mobility and support adjacent land uses.

Policy T44: Expand the City's pedestrian network. Prioritize projects shown on the Pedestrian System Plan included in the City's Transportation Master 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, Ballinger, or connects to Aurora Avenue N.
- Connects to transit.
- Links major destinations such as neighborhood businesses, high-density housing, schools and recreation facilities.

Policy T45: Prioritize projects that complete the City's bicycle networks, as shown on the Bicycle System Plan included in the City's Transportation Master 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.

Policy T46: Coordinate with the Washington State Department of Transportation to evaluate and design improvements to the interchange at NE 175th Street and I-5. Develop a funding strategy for construction.

Funding

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.

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.

Policy T50: Develop and implement a City-wide transportation impact fee program to fund growth related transportation improvements and, when necessary, use the State Environmental Policy Act to provide traffic mitigation for localized development project impacts.

Policy T51: Provide funding for maintenance, preservation and safety.

Growth Management Act Sub-elements

The seven sub-elements of the Transportation Element required by the Growth Management Act, RCW 36.70A.070(6), are included in the Transportation Master Plan and incorporated herein by reference:

- A. Land use assumptions used to estimate travel. This sub-element is set forth in the Transportation Master Plan (2011) ("TMP"), Pages 263-268.
- B. Traffic impacts to state-owned transportation facilities. This sub-element is set forth in the TMP (2011), Page 267.
- C. Facilities and service needs. This sub-element is set forth in the TMP (2011), including an inventory of transportation facilities and services at TMP Pages 119, 251-268; level of service standards for Shoreline roads and transit routes at TMP Pages 190; level of service for state highways at TMP Pages 183-184; actions required for bringing local road into compliance with levels of service at TMP Page 195; ten-year forecast of traffic at TMP Pages 263-268; and local and state system needs to meet current and future demands at TMP Page 192.

Comment [m4]: The following section was included in Ordinance 615, which adopted the TMP in December 2011. Staff proposes to amend that ordinance with the one that adopts the Comprehensive Plan, so that the subelements below will actually comprise the Analysis section (3.1.12 Staff Report Attachment D).

- D. Finance. This sub-element is set forth in the TMP (2011), including funding capability at TMP Pages 195, 240-241; multiyear financing plan at Pages 195, 240-241; proposals to increase funding or reassess land use assumptions if funding falls short of needs at TMP Page 195; and.
- E. Intergovernmental coordination efforts. This sub-element is set forth in TMP (2011), Pages 59-60.
- F. Demand-management strategies. This sub-element is set forth in TMP (2011), Pages 43-44.
- G. Pedestrian and Bicycle Component. This sub-element is set forth in TMP (2011) Pages 74-78, 94-99.

This page intentionally blank

Transportation Element Supporting Analysis

Existing Conditions

Multi-Modal Transportation and the Community

Transportation remains a high priority for most Shoreline citizens, particularly as it relates to neighborhood quality of life. The City inherited a substantial street grid system from King County, however many of the streets lack sidewalks, curbs and gutters. Citizens consistently cite the lack of sidewalks as a pressing transportation issue. Significant new housing or employment growth resulting in greater traffic congestion is not anticipated, but increasing regional traffic has led to heavier traffic volumes on City arterials, with some spillover into neighborhoods. As a result, citizens are very concerned about preventing and managing neighborhood cut-through traffic. The City does not control the county or regional transit systems, but planned regional investments in transit may increase ridership opportunities for Shoreline citizens, if properly designed.

Roadway Network

Shoreline is greatly impacted by state highways. State Route 99 and Interstate 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.

Shoreline is also bordered by three state highways; SR 104 (NE 205th Street), SR 523 (NE 145th Street), and SR 522 (Bothell Way NE). Even though these three corridors are not currently inside the corporate limits of the City, Shoreline citizens and businesses rely on them for a majority of their travels. Generally, the sidewalk systems along these streets are in disrepair, illumination is lacking, and the lanes are narrow and do not include provisions to improve transit operations. Shoreline should aggressively work with WSDOT, transit providers, and neighboring jurisdictions to improve these corridors.

Interstate 5 has three full interchanges with direct impact on Shoreline: NE145th 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 arterials in Shoreline often receive spillover through-traffic: 15th Avenue NE, 5th Avenue NE, 1st Avenue NE, and Meridian are the streets that tend to pick up the overflow traffic.

Aurora Corridor Project

The Aurora Corridor Project is the City of Shoreline’s plan to redesign and redevelop the three miles of Aurora Avenue North (State Route 99) that run through Shoreline. The goal of the plan is to improve pedestrian and vehicle safety, pedestrian and disabled access,

Transportation Element – Supporting Analysis

vehicular capacity, traffic flow, transit speed and reliability, nighttime visibility and safety, storm water quality, economic investment potential and streetscape amenities.

For funding and design purposes, the plan is divided into two sections: North 145th to 165th Streets and North 165th to 205th Streets. The current funded project is North 145th to 165th Streets and construction is scheduled to begin in 2005. The budget for this project is \$25,043,009 with 87% of the funding coming from federal, state and county grants and 13% from money set aside by the City for the project.

The City has completed both a State Environmental Policy Act (SEPA) and a National Environmental Policy Act (NEPA) environmental assessment review for Aurora North 145th to 165th Streets. The original design concept was developed during the Aurora Corridor Multi-Modal Pre-Design Study, a public process involving over 60 public meetings, open houses and briefings at City Council meetings. Based on the analysis in the final EIS, the City Council approved Alternative A – Modified in December 2002 that includes the following features:

- 7-foot sidewalks
- 4-foot amenity zone for bus stops, street and pedestrian lights, landscaping and pedestrian amenities such as benches and trash cans
- Two through lanes and a Business Access/Transit (BAT) lane in each direction at the curb
- Continuous street lighting and pedestrian-level lighting at intersections
- Underground utilities
- Landscaping
- Bus zone enhancements
- Stormwater facilities and water quality treatment that meets or exceeds city, county and state requirements
- 750-foot average spacing for left/U-turns within raised medians
- New traffic signals/pedestrian crossings at 152nd and 165th
- Narrower sidewalks at five locations to avoid impacts to buildings

Street Classifications

Federal and State guidelines require that streets be classified based on function. Generally, streets are classified as either arterials or local 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 City of Shoreline's 1998 Comprehensive Plan used the following designations, which are illustrated in Figure T-1. (Note: revisions to this system are noted later in this element.)

- Legend**
- City Area
 - Parks
 - Arterial Class**
 - Interstate
 - State Route
 - Principal Arterial
 - Minor Arterial
 - Collector Arterial
 - Residential Street
 - Outside Shoreline



This map is not for official use. No warranty is made concerning the accuracy, currency, or completeness of the data on this map.
Copyright © 2008 by the City of Shoreline, WA
 All rights reserved.

Previous Street Classifications

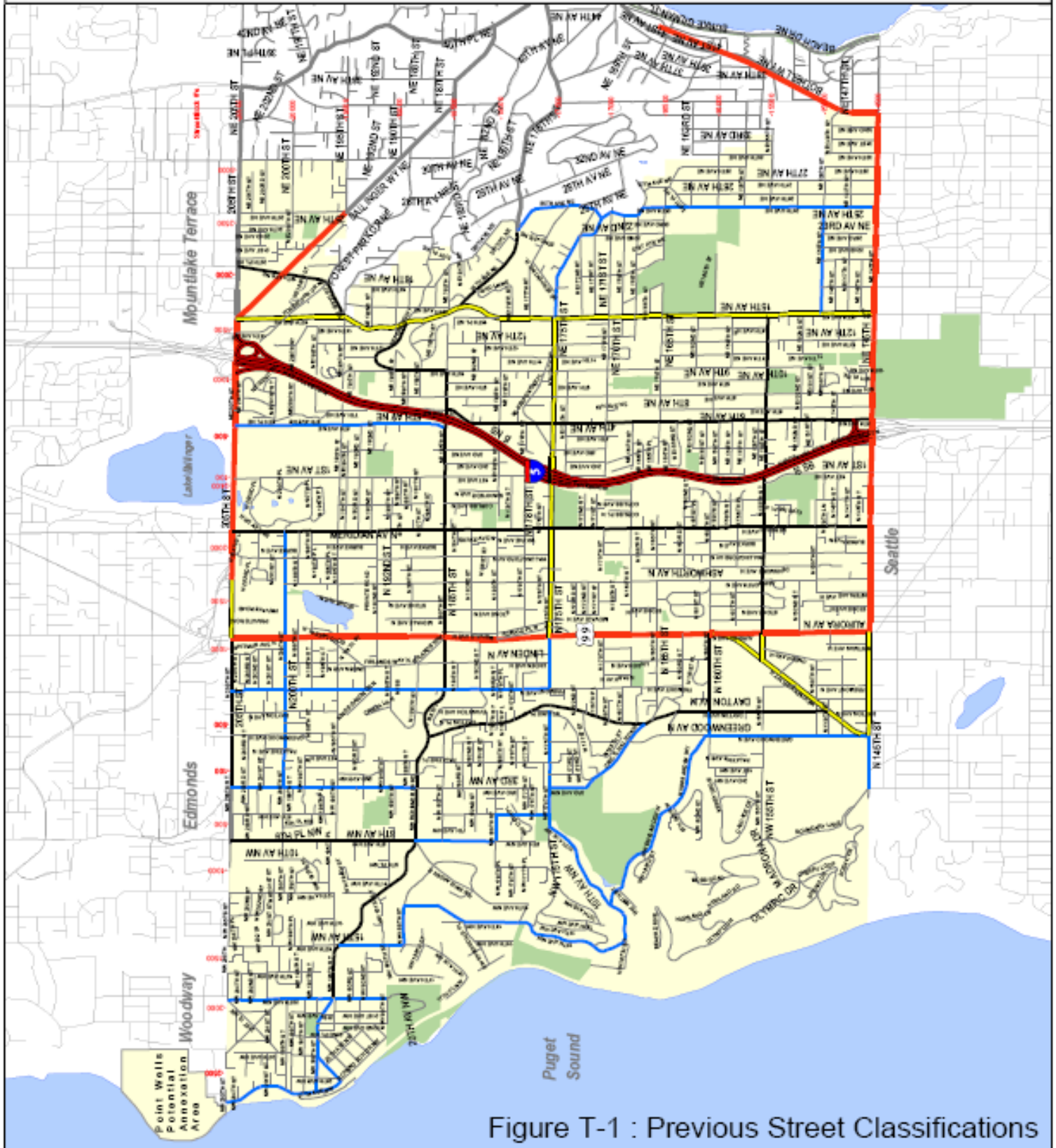


Figure T-1 : Previous Street Classifications

Transportation Element – Supporting Analysis

Arterials – The primary function of arterials is to provide a high degree of vehicular mobility by limiting property access. The vehicles on arterials are predominantly for through traffic. Arterials are generally connected with interstate freeways or limited access expressways. Sidewalks are required by the City’s development code. Arterials are further classified into three classes: Principal Arterials, Minor Arterials and Collector Arterials.

- Principal Arterials have higher levels of local land access controls and regional significance as major vehicular travel routes that connect between cities within a metropolitan area.
- Minor Arterials are generally designed to provide a high degree of intra-community connections and are less significant from a perspective of a regional mobility.
- Collector Arterials assemble traffic from the interior of an area/community and deliver it to the closest Minor or Principal Arterials. Collector Arterials provide for both mobility and access to property are designed to fulfill both functions.

Local Streets – All other streets are generally designated as local streets. Shoreline further classifies local streets into two categories: Neighborhood Collectors and Local Streets.

- Neighborhood Collectors channel traffic from local streets to Collector Arterials. In new and redeveloped areas sidewalks are typically required by the City’s development code, and traffic calming devices are usually permitted.
- Local Streets provide local access to residential areas. Buses are not allowed except for short distances, and with new development or redevelopment sidewalks are typically required by the City’s development code, although with some design flexibility.

Existing Traffic

The pattern for the daily traffic volumes reflects the street classifications. The highest number of traffic is observed on State highways, which are principal arterials. SR 99 (Aurora Avenue N) had the highest overall average daily traffic for any facility in Shoreline. Over a two-year period (2000-2002), traffic volumes range from 35,300 in the north to 45,000 around North 160th Street. However, SR 104 (North 205th Street) near the I-5 interchange had daily traffic volumes around 50,000. Traffic along SR 523 (Northeast 145th Street) had volumes ranging from 24,000 to 31,000. Other principal arterials that had significant traffic but are not State routes include: 15th Avenue NE, Meridian Avenue N, Northwest Richmond Beach Road, North 185th Street, North 175th Street, North 155th Street and Westminster Way North. Figure T-2 summarizes the existing average weekday traffic volumes for Shoreline.



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

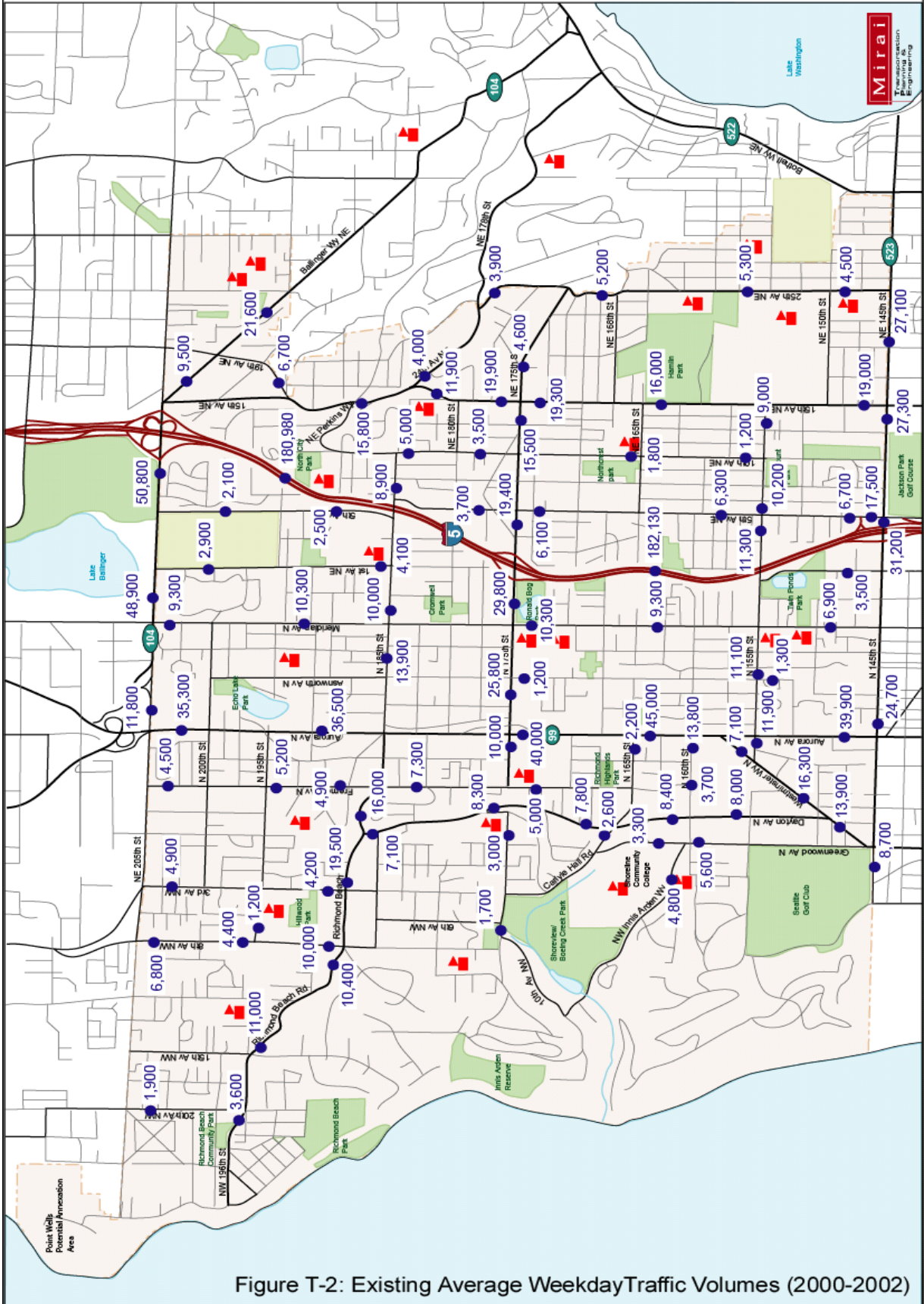


Figure T-2: Existing Average Weekday Traffic Volumes (2000-2002)

Local and Regional Public Transit

Public transit is an integral part of Shoreline's commitment to address neighborhood quality of life issues. Shoreline citizens view public transit as a way to address issues of traffic congestion, transportation options, pollution, and a sense of community. Unlike central cities in the Puget Sound region, Shoreline does not have a concentrated base of employment or major population centers. 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 people of Shoreline. The library, city hall, community center and many parks and schools are scattered throughout the city. The major transit destination within the city is Shoreline Community College, a major commuter college.

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 and adjacent areas. Both Metro and Community Transit provide park-and-rides, vanpools, paratransit, Dial-A Ride Transportation (DART), and local and commuter express bus service throughout their primary service areas and to neighboring major centers. Sound Transit is the regional transit agency for the Puget Sound region and provides express bus service from Shoreline to Seattle, Lynnwood, and Everett. Sound Transit's Sounder commuter rail between Seattle and Everett operates along Shoreline's coast but currently does not have any stations within the city limits.

Facilities

Bus stops in the city are located along most principal, minor and collector arterials and next to park-and-rides. Metro Transit and Community Transit use the Aurora Village Transit Center as a major transfer point. The transit center accommodates a park-and-ride, and 12 bus bays that allow for local, inter-community and regional bus connections. Community Transit provides connections to the Edmonds-Kingston ferry and the Edmonds Sounder station. The freeway station at North 145th Street provides connections between the North Jackson Park-and-Ride, Metro's express buses, and Sound Transit service. Five Metro Transit lines and two Sound Transit routes serve the freeway station.

The Aurora Village Transit Center, Shoreline Park-and-Ride, Shoreline Community College, and the North 145th Avenue freeway station provide shelters, benches and route-specific schedule information. However, only 47 out of the 288 Shoreline stops have shelters. Most shelter locations are oriented towards morning peak period bus route operations.

A survey of bus stops in Shoreline conducted in the spring of 2003 indicated that the most heavily utilized stops are the Aurora Village Transit Center, Shoreline Community College, along Aurora Avenue North, and a couple of stops along North 175th Street and 15th Avenue North. The Aurora Village Transit Center has the largest number of boardings and alightings. Outside of the Transit Center, Shoreline Community College has the next highest number of boardings and alightings, followed by the Shoreline Park-and-Ride.

Metro Transit has eight designated park-and-ride lots located throughout the city; three are permanent facilities, and five are parking lots leased from local churches. The Shoreline Park-and-Ride located on Aurora Avenue North has the largest capacity with 400 parking spaces. The smallest park-and-ride lot is located at Shoreline United Methodist Church with 20 spaces. A study conducted by Metro Transit in the spring of 2003 found utilization rates for the permanent park-and-ride lots ranging from 68% to 74%. The leased lot at Aurora Church of Nazarene had the highest utilization rate at 97%. The remainder five lots have excess capacity. See Table 1 for a complete listing.

Table 1: Shoreline Park-and-Ride Facilities

Name	Location	Capacity	2003 Utilization
<i>Aurora Church of Nazarene</i>	<i>1900 N 175th ST</i>	67	97%
<i>Shoreline United Methodist Church</i>	<i>NE 145th ST & 25th AVE NE</i>	20	75%
Shoreline	18821 Aurora AVE N	400	74%
Aurora Village Transit Center	1524 N 200 th ST	200	74%
North Jackson Park	14711 5 th AVE NE	68	68%
<i>Korean Zion Presbyterian Church</i>	<i>17920 Meridian AVE N</i>	25	52%
<i>Prince of Peace Lutheran Church</i>	<i>14514 20th AVE NE</i>	40	40%
<i>Bethel Lutheran Church</i>	<i>NE 175th ST & 10th AVE N</i>	85	27%

NOTE: *Italicized* are leased parking lots.

Transit priority treatments are provided at several locations along I-5 and Aurora Avenue North corridors. In addition to the high occupancy vehicle lanes on I-5, ramp metering and queue by-pass lanes for transit and carpools have been constructed at the interchanges with North 145th Street, North 175th Street, and North 205th Street/Lake Ballinger Way. Business access/transit (BAT) lanes have been constructed in the northbound shoulder of Aurora Avenue North.

Service

As of January 2004, 28 bus routes operate within the city of Shoreline as well as four routes that skirt its southeastern border along Lake City Way. 15 out of the 28 routes operate only during peak periods. The remaining routes run throughout the day, seven days a week. Overall, Metro Transit provides for the majority of the service with 20 fixed routes operating in the Shoreline area. Using Metro Transit's classification system, current transit services are categorized as follows:

- **Community:** These 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

Transportation Element – Supporting Analysis

overall service, several routes connect Shoreline neighborhoods including: 330, 331, 346, 347, 348, and 358.

- **Inter-community:** These routes connect communities and neighboring areas such as Mountlake Terrace, Lake City, Lake Forrest Park, Kenmore and Northgate. Routes include: 330, 331, 345, 346, 347, 348, and 355.
- **Regional:** These routes connect Shoreline to urban centers outside including: Downtown Seattle, University District, Bellevue, Renton, Lynnwood and Everett. Routes include Metro 5, 77, 242, 243, 301, 303, 304, 308, 316, 342, 355, 358, 373, 416 Community Transit 100, 101, 118, 416, 630 and Sound Transit 510, and 511.
- **Custom:** Custom bus routes operate at specific times to specific destinations such as an employment area or school. Metro operates route 949 to the Boeing Everett plant and route 995 to Lakeside School.

In addition to fixed route service, Metro Transit provides primary paratransit service for Shoreline to King County under its ACCESS Transportation program. Community Transit also provides DART to destinations in Shoreline from Snohomish County. A regional coalition of transit agencies, including Community and Sound Transit, provide regional connections for special need riders. Table T-2 illustrates that most Shoreline bus routes provide peak period regional service to Downtown Seattle. However, the majority of inter-community services to neighboring areas have all day service.

Table T-3 provides an overview of service availability for each of the 28 bus routes serving Shoreline. Most lines service regional north-south corridors running at 30-minute headways. Recently, Metro added route 348, which provides east-west connections through the city. Evening headways are either 30 or 60 minutes. Saturday service runs on 30-minute headways while the frequency of buses on Sunday runs at 60-minute intervals. Routes that have an end point in Shoreline tend to terminate at Shoreline Community College or at the Aurora Village Transit Center. Most of the regional and one of the inter-community bus routes operate only during peak periods. The remaining routes offer a mix of inter-community and regional bus service throughout most of the day during the weekday. Figures T-3 and T-4 show all day and peak period transit service coverage, respectively.

Table T-4 provides an overview of weekday service destinations to and from the city of Shoreline. Almost seven out of ten buses that service Shoreline have a regional connection (68.9%).

Roughly one-third of all bus service is destined to and from Downtown Seattle (32.7%). This equates to roughly half of all regional transit service (47.4%). Metro Transit routes 5 and 358, which provide all-day service, contribute over two-thirds of all Downtown Seattle bus service. The remaining seven routes only provide peak period service.

The next largest percentage of transit service (30.7%) makes connections to inter-community destinations. Locations included neighboring Montlake Terrace, Lake City, Lake Forrest Park, Kenmore and Northgate. With the exception of Metro Transit route 330, all-day bus service was evenly distributed among the remaining five servicing routes.

The third largest percentage of overall transit service (23.0%) is regional destinations to points north: Edmonds, Lynnwood and Everett. Half of the transit service is provided by

Community Transit route 101, which makes connections to the Edmonds / Kingston ferry and Sound Transit's Sounder commuter rail station.

Outside of the custom bus services, connections to the University District and points east of Lake Washington comprised of the smallest percentage of overall service (4.3%). About nine percent of all bus service had connecting service between both Downtown Seattle and points north of Shoreline. Sound Transit routes 510 and 511 provide over 84% of this service.

Transportation Element – Supporting Analysis

Table T-2: Transit Service Classification

Service Type	Route	Provider	Major Destinations
Regional	5	Metro Transit	Shoreline CC, Greenwood, Woodland Park Zoo, Fremont, Downtown Seattle
<i>Regional</i>	<i>77</i>	<i>Metro Transit</i>	<i>North City, Jackson Park, Maple Leaf, Downtown Seattle</i>
<i>Regional</i>	<i>100</i>	<i>Community Transit</i>	<i>Aurora Village TC, Edmonds CC, Everett Station</i>
Regional	101	Community Transit	Aurora Village TC, Edmonds CC, Mariner P&R
Regional	118	Community Transit	Aurora Village, Alderwood Mall, Ash Way P&R
<i>Regional</i>	<i>242</i>	<i>Metro Transit</i>	<i>North City, Northgate TC, Green Lake P&R, Montlake, Safeco, Overlake</i>
<i>Regional</i>	<i>243</i>	<i>Metro Transit</i>	<i>Jackson Park, Lake City, Ravenna, University Village, Montlake, Evergreen Point, Bellevue, Wilburton P&R</i>
<i>Regional</i>	<i>301</i>	<i>Metro Transit</i>	<i>Aurora Village TC, Firdale Village, Richmond Highlands, Shoreline P&R, I-5 Freeway Stations, Downtown Seattle (Tunnel)</i>
<i>Regional</i>	<i>303</i>	<i>Metro Transit</i>	<i>Shoreline P&R, Aurora Village TC, Richmond Highlands, Jackson Park, Northgate TC, Downtown Seattle, First Hill</i>
<i>Regional</i>	<i>304</i>	<i>Metro Transit</i>	<i>Richmond Beach, NE 145th ST Freeway Station, Downtown Seattle</i>
<i>Regional</i>	<i>308</i>	<i>Metro Transit</i>	<i>Horizon View, Lake Forrest Park, Lake City, Jackson Park, Downtown Seattle</i>
<i>Regional</i>	<i>316</i>	<i>Metro Transit</i>	<i>Meridian Park, N Seattle CC, E Green Lake, Downtown Seattle</i>
<i>Regional</i>	<i>342</i>	<i>Metro Transit</i>	<i>Shoreline P&R, Aurora Village TC, Lake Forest Park, Kenmore P&R, I-405 Freeway Stations, Bellevue TC, Newport Hills, Kennydale, Renton Boeing, Renton TC</i>
<i>Regional</i>	<i>355</i>	<i>Metro Transit</i>	<i>Shoreline CC, Greenwood, University District, Downtown Seattle</i>
Regional	358	Metro Transit	Aurora Village TC, Shoreline P&R, Aurora AVE N, W Green Lake, Downtown Seattle
<i>Regional</i>	<i>373</i>	<i>Metro Transit</i>	<i>Aurora Village TC, Shoreline P&R, Richmond Heights, Jackson Park, Maple Leaf, University District, UW Campus</i>
<i>Regional</i>	<i>416</i>	<i>Community Transit</i>	<i>Edmonds Ferry, Aurora Village TC, Downtown Seattle</i>
Regional	510	Sound Transit	Downtown Seattle, Lynnwood, Everett
Regional	511	Sound Transit	Ash Way P&R, Lynnwood, Downtown Seattle
Regional	630	Community Transit	Edmonds CC TC, Edmonds Ferry, Aurora Village, Lynnwood TC
<i>Inter-community</i>	<i>330</i>	<i>Metro Transit</i>	<i>Shoreline CC, Fircrest, Lake City</i>
<i>Inter-community</i>	<i>331</i>	<i>Metro Transit</i>	<i>Shoreline CC, Richmond Highlands, Aurora Village TC, Ballinger Terrace, Lake Forrest Park, Kenmore P&R</i>
<i>Inter-community</i>	<i>345</i>	<i>Metro Transit</i>	<i>Shoreline CC, Northwest Hospital, N Seattle CC, Northgate TC</i>
<i>Inter-community</i>	<i>346</i>	<i>Metro Transit</i>	<i>Aurora Village TC, Richmond Highlands, Haller Lake, Northwest Hospital, Northgate TC</i>
<i>Inter-community</i>	<i>347</i>	<i>Metro Transit</i>	<i>Mountlake Terrace P&R, Ballinger Terrace, Shoreline Library, Jackson Park, Northgate TC</i>
<i>Inter-community</i>	<i>348</i>	<i>Metro Transit</i>	<i>Richmond Beach, North City, Shoreline Community Center & Library, Jackson Park, Northgate TC</i>
<i>Custom</i>	<i>949</i>	<i>Metro Transit</i>	<i>Everett Boeing Plant</i>
<i>Custom</i>	<i>995</i>	<i>Metro Transit</i>	<i>Lakeside School</i>

NOTE: *Italicized routes only operate during peak periods.*

Table T-3. Transit Service Headways by Time Period

Route	Provider	Peak		Midday	Early Evening	Late Evening	Saturday	Sunday
		Peak dir	Both dir					
<i>77</i>	<i>Metro Transit</i>	15	-	-	-	-	-	-
<i>100</i>	<i>Community Transit</i>	20	-	-	-	-	-	-
<i>242</i>	<i>Metro Transit</i>	30	-	-	-	-	-	-
<i>243</i>	<i>Metro Transit</i>	30	-	-	-	-	-	-
<i>303</i>	<i>Metro Transit</i>	25	-	-	-	-	-	-
<i>304</i>	<i>Metro Transit</i>	25	-	-	-	-	-	-
<i>308</i>	<i>Metro Transit</i>	30	-	-	-	-	-	-
<i>316</i>	<i>Metro Transit</i>	25	-	-	-	-	-	-
<i>342</i>	<i>Metro Transit</i>	30	-	-	-	-	-	-
<i>355</i>	<i>Metro Transit</i>	15	-	-	-	-	-	-
<i>373</i>	<i>Metro Transit</i>	30	-	-	-	-	-	-
<i>416</i>	<i>Community Transit</i>	20	-	-	-	-	-	-
<i>949</i>	<i>Metro Transit</i>	180	-	-	-	-	-	-
<i>995</i>	<i>Metro Transit</i>	180	-	-	-	-	-	-
<i>301</i>	<i>Metro Transit</i>	15	30	-	-	-	-	-
<i>330</i>	<i>Metro Transit</i>	-	30	-	-	-	-	-
510	Sound Transit	30	-	60	30	60	60	60
511	Sound Transit	30	-	30	30	60	60	60
118	Community Transit	-	30	30	60	-	60/30/60	60
630	Community Transit	-	30	30	60	-	60	60
5	Metro Transit	-	30	30	30	30	30	30
101	Community Transit	15	20	15	15	30	30	30
331	Metro Transit	-	30	30	30	60	30/60	60
345	Metro Transit	-	30	30	30	60	60/30/60	60
346	Metro Transit	-	30	30	60	60	60/30/60	60
347	Metro Transit	-	30	30	60	60	60/30/60	60
348	Metro Transit	-	30	30	60	60	60/30/60	60
358	Metro Transit	8	15	15	30	30	30/15/30	30

NOTE: *Italicized routes only service during peak periods.*

Table T-4: Weekday Transit Service by Destination

Service Type	Destination	Route	Provider	Number of Buses	% of Total Service	% of Service Type	% of Destination
Regional	Downtown Seattle (SOUTH)	5	Metro Transit	81	7.5%	10.8%	22.9%
		<i>77</i>	<i>Metro Transit</i>	9	0.8%	1.2%	2.5%
		301	Metro Transit	41	3.8%	5.5%	11.6%
		303	Metro Transit	14	1.3%	1.9%	4.0%
		304	Metro Transit	10	0.9%	1.3%	2.8%
		308	Metro Transit	8	0.7%	1.1%	2.2%
		316	Metro Transit	14	1.3%	1.9%	4.0%
		355	Metro Transit	20	1.8%	2.7%	5.6%
		358	Metro Transit	157	14.5%	21.0%	44.4%
	TOTAL		354		32.7%	47.4%	100%
	Downtown Seattle – Edmonds / Lynnwood / Everett (N-S)	416	Community Transit	15	1.4%	2.0%	15.5%
		510	Sound Transit	35	3.2%	4.7%	36.1%
		511	Sound Transit	47	4.3%	6.3%	48.5%
		TOTAL		97		8.9%	13.0%
	Edmonds / Lynnwood / Everett (NORTH)	100	Community Transit	19	1.8%	2.5%	7.6%
		101	Community Transit	127	11.7%	17.0%	51.0%
		118	Community Transit	45	4.2%	6.0%	18.1%
		630	Community Transit	58	5.4%	7.8%	23.3%
		TOTAL		249		23.0%	33.3%
	University District / Bellevue / Renton (SOUTH-EAST)	242	Metro Transit	15	1.4%	2.0%	31.9%
243		Metro Transit	6	0.6%	0.8%	12.8%	
342		Metro Transit	11	1.0%	1.5%	23.4%	
373		Metro Transit	15	1.4%	2.0%	31.9%	
TOTAL			47		4.3%	6.3%	100%
TOTAL				747	68.9%	100%	-
Inter-community	Mountlake Terrace / Lake City / Lake Forrest Park / Kenmore / Northgate	330	Metro Transit	22	2.0%	6.6%	6.6%
		331	Metro Transit	61	5.6%	18.3%	18.3%
		345	Metro Transit	61	5.6%	18.3%	18.3%
		346	Metro Transit	64	5.9%	19.2%	19.2%
		347	Metro Transit	62	5.7%	18.6%	18.6%
		348	Metro Transit	63	5.8%	18.9%	18.9%
	TOTAL		333		30.7%	100%	100%
TOTAL				333	30.7%	100%	-
Community	Shoreline	-	-	-	-	-	-
Custom	Everett Boeing Plant	949	Metro Transit	2	0.2%	50%	100%
	Lakeside School	995	Metro Transit	2	0.2%	50%	100%
	TOTAL			4	0.4%	100%	-
TOTAL				1084	100%	-	-

NOTE: *Italicized* routes only service during peak periods.

Figure T-3 maps out the all-day transit service and their destinations. This figure illustrates how much of this service provides connections to inter-community destination and provides connections throughout most of Shoreline. Connections to points north are only provided at the freeway station of Aurora Village transit center. For only peak period transit service, Figure T-4 illustrates how the majority of the service provides connections to 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 Aurora Village Transit Center.

- LEGEND**
- INTER COMMUNITY
 - REGIONAL Snohomish County (CT)
 - Downtown Seattle (KCM)
 - Snohomish County / Downtown Seattle (ST/CT)
 - University District / Bellevue / Renton (KCM)
 - Park & Ride
 - Transit Center / Freeway Station



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

Peak Period Only
Transit Service Coverage

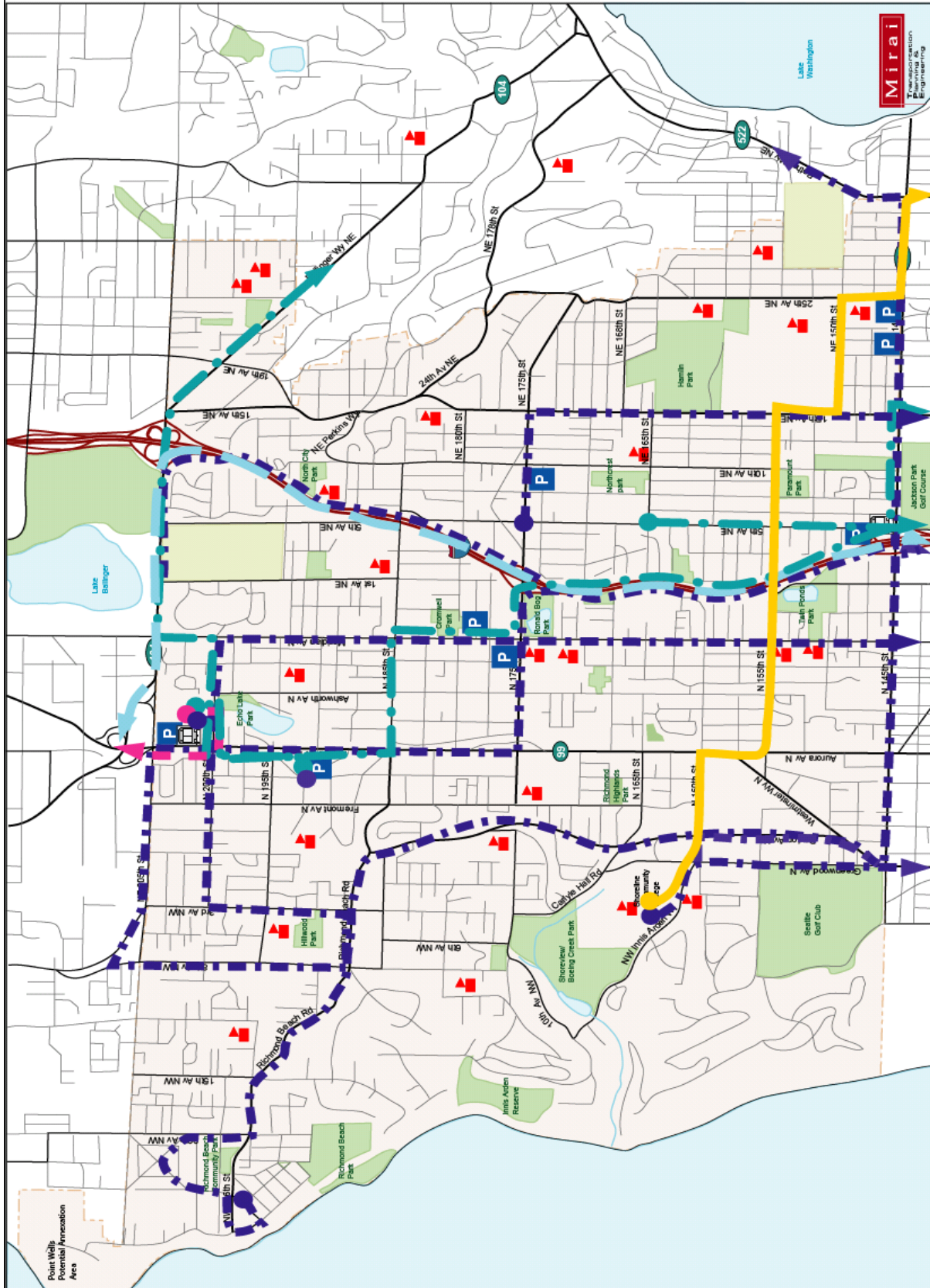


Figure T-4: Peak Period Only Transit Service Coverage

Pedestrian and Bicycle Systems




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 do recreation activities. In addition, many of residents of the city's 85-90 group homes have limited mobility and need the safety and access provided by sidewalks. However, only about one-third of Shoreline's arterial streets and even fewer local streets have sidewalks. Figure T-5 illustrates existing sidewalks.

Bicyclists in Shoreline must generally ride in traffic due to the lack of sidewalks, wide shoulders or exclusive bike lanes. The city provides bike lanes on N/NE 155th Street between Midvale Avenue N and 5th Avenue N and recently created lanes on N/NE 185th Street when that roadway was reduced from four to three lanes between Stone Avenue N and 1st Avenue N. At the end of 2003, a similar lane reduction project was completed for 15th Avenue NE between NE 150th Street and NE 175th Street where bicycle lanes were added. The lanes on 155th end rather abruptly at 5th Avenue N to accommodate on-street parking for Paramount Park users. Bicyclists can cross under I-5 on NE 155th and over I-5 on the N 195th pedestrian overpass (dismounting is suggested due to the narrow walkway). Street maintenance also improves the bicycle environment for riders using roadway shoulders. Figure T-6 illustrates existing bike facilities.

One of the most important pathway projects for pedestrians and bicyclists in Shoreline is completion of the Interurban Trail. The Interurban Trail's close proximity to Aurora Avenue N and the economic core of Shoreline will provide access to nearby shopping, services and employment, plus access to transit centers at Aurora Village and the Shoreline Park and Ride. When completed, the Interurban Trail will be a three-mile non-motorized transportation system developed along the former Interurban Rail Line. The trail project, when completed, will also include rest stops, trailhead, interpretive historical and natural features, and directional signs. Owned by Seattle City Light and used as an electrical power transmission corridor, the 100-foot-wide former rail corridor runs from Seattle to Everett, roughly parallel to Aurora Avenue.

Shoreline and Seattle have agreed on the benefits of adding a trail to the transmission right-of-way corridor. The City is working with a regional committee of public agencies that are developing sections of the Interurban Trail through their jurisdictions. Snohomish County has completed about 80 percent of its Interurban corridor from Everett to just north of the King-Snohomish County line. Seattle is in the planning and design stages on its section between N 108th and 129th Streets.

LEGEND

-  Sidewalk - NW side
-  Sidewalk - SE side
-  Sidewalk - Both side



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

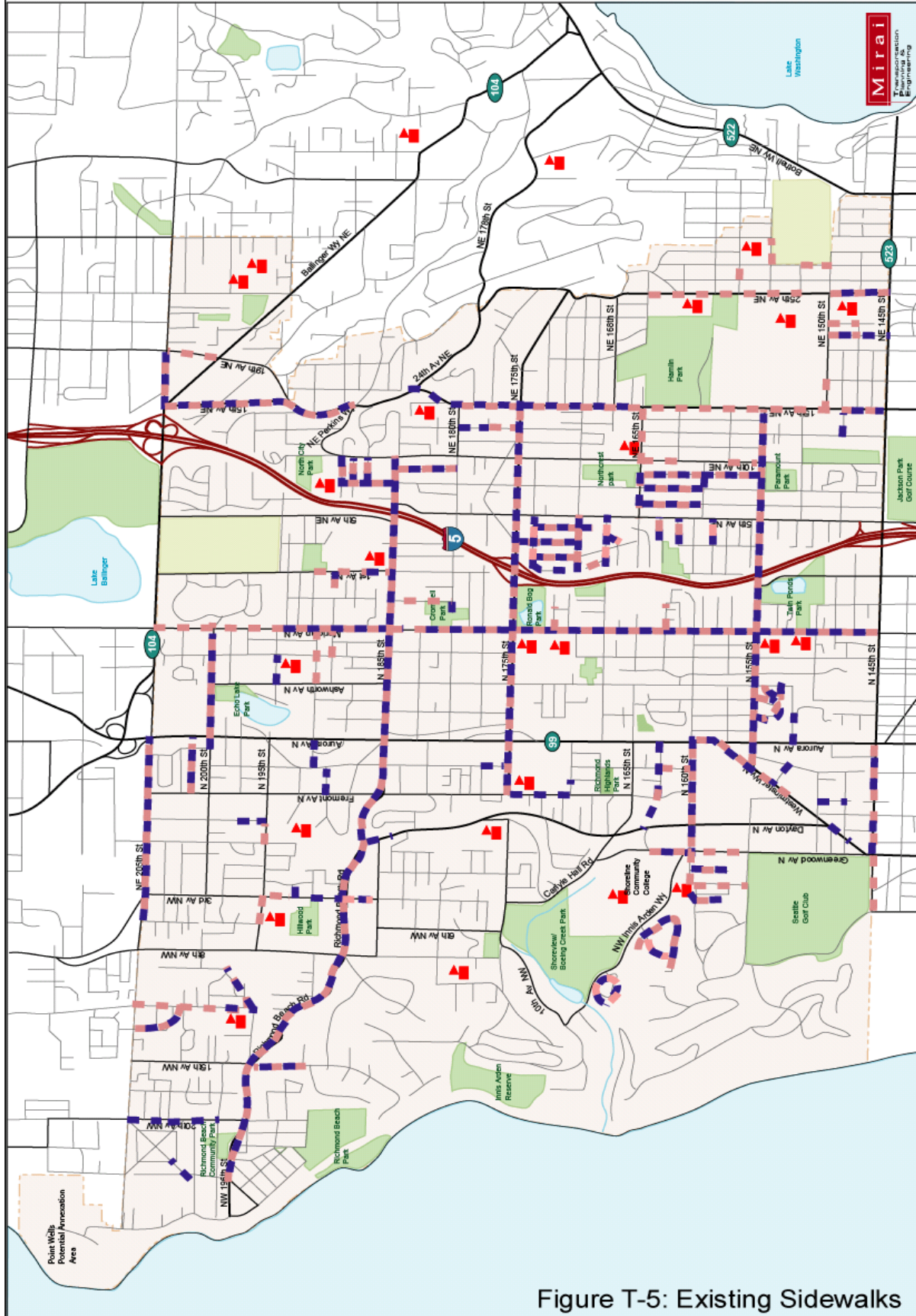


Figure T-5: Existing Sidewalks

LEGEND

- Existing
- Under Construction



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

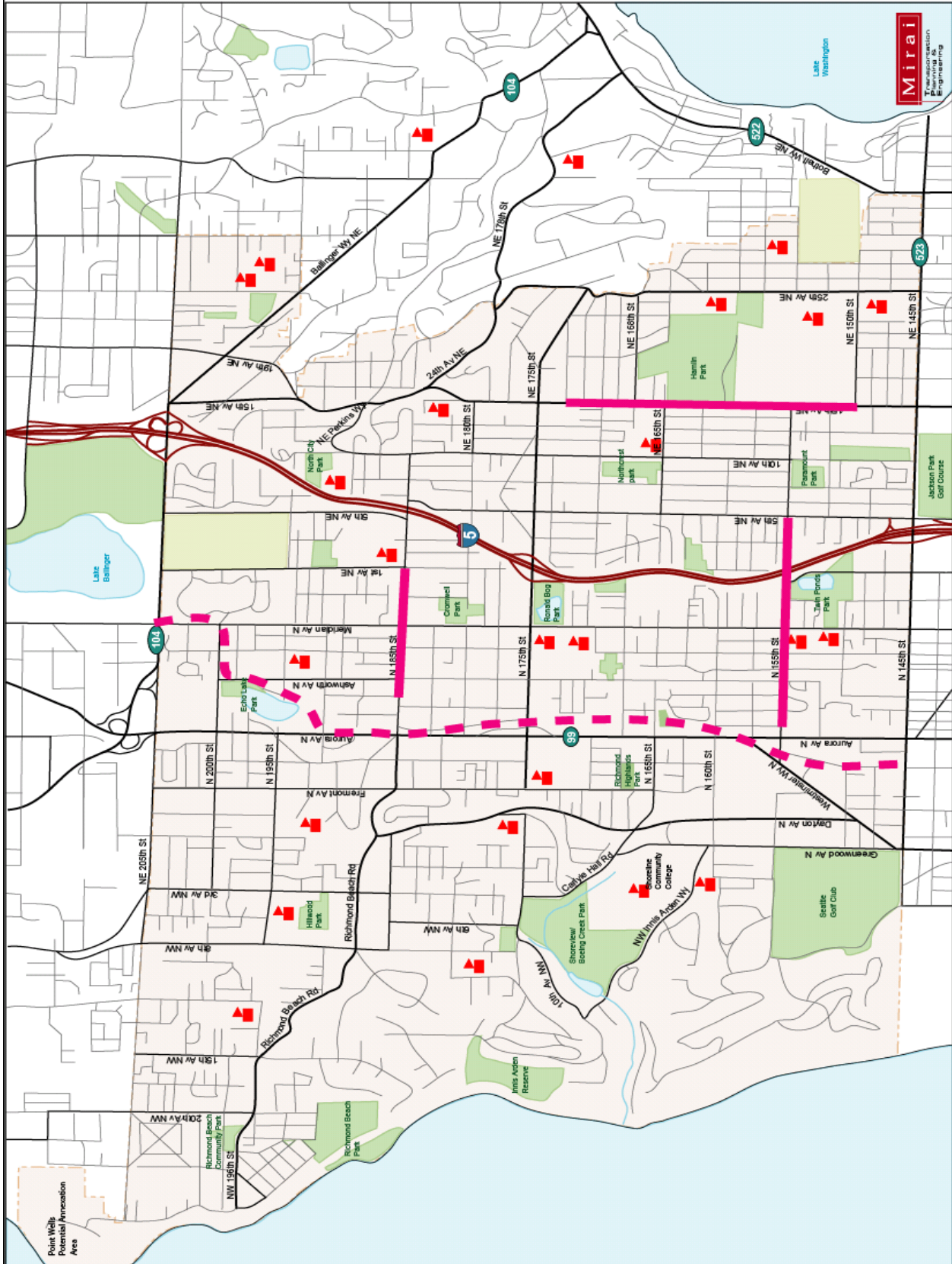


Figure T-6: Existing Bicycle System Map

Transportation Element – Supporting Analysis

Accident Analysis

Six years of accident data, 1998-2003, were collected for assessing accident locations in the City of Shoreline. Washington State Department of Transportation (WSDOT) provided the data for all state highway facilities; data for the remaining streets was from the City of Shoreline. Note that data from August to December 2003 was incomplete. A summary of the six-year accident data for Shoreline's worst intersections is shown in Table T-5. Midblock accidents are summarized in Table T-6.

Table T-5: Intersection Accident Analysis (1998-2003)

Location		Total Accidents*	Entering Volume**	Accident Rate***
Street	Cross Street			
15 th Ave NE	NE 155 th St	28	6,315	0.89
	NE 175 th St	30	8,821	0.68
3 rd Ave NW	Richmond Beach Rd NW	38	7,158	1.06
5 th Ave NE	NE 175 th St	27	5,835	0.93
Aurora Ave N****	N 145 th St	30	15,974	0.38
	N 152 nd St	35	N/A	N/A
	N 155 th St	43	15,862	0.54
	N 160 th St	43	14,740	0.58
	N 175 th St	38	17,049	0.45
	N 185 th St	27	15,967	0.34
	N 205 th St	32	15,624	0.41

* Total number of accidents from 1/1/98 to 12/31/03, 8/1/03 to 12/31/03 is incomplete.

** In thousands

*** Number of accidents per million vehicles per year

**** Based on intersection analysis and not shown accidents based on corridor analysis

The majority of the accidents at intersections for the city of Shoreline occurred along Aurora Avenue N. For the six-year period, the intersection at N 155th Street and Aurora Avenue N and at N 160th Street and Aurora Avenue N both had the highest number of observed accidents with 43. The next two highest accident locations at intersections were also on Aurora Avenue: N 152nd Street and N 175th Street. This stretch of Aurora is highly commercialized and has several two through lanes in each direction. Left-turn lanes and pockets are provided at all intersections including the cross streets.

However, when these numbers were normalized by volume, the accident rate is relatively low along Aurora Avenue N. At N 160th Street and Aurora Avenue N, the rate is only 0.58 accidents per million vehicles per mile. At N 155th Street, the accident rate drops to 0.54. For the intersections with the most total accidents, the highest accident rate was observed at NE 175th Street and 5th Avenue N with 1.06. This intersection is in a primarily low-density residential area and is situated at the top of a hill. Figures T-7 and T-8 map out these locations.

For mid-block locations, Aurora Avenue N was the focus for the majority of accidents. The highest number was observed between N 152nd and N 155th Street on Aurora Avenue N where 91 accidents occurred. The next highest number of accidents for a mid-block location occurred between N 170th and N 175th Street where 66 accidents were observed. These locations are highly commercialized with several driveways connecting to Aurora Avenue N. The roadway has 2 lanes for each direction and a center two-way left-turn lane.

When these numbers accounted for daily traffic, the block between N 152nd and N 155th Street remained a problem spot. It had the second highest accident rate of 1.44 accidents

per million vehicles per year. However, the highest mid-block accident rate was calculated to be along N 205th Street between Aurora Avenue N and Meridian Avenue N. This five-lane roadway is heavily commercialized with the Aurora Village shopping center to the south and a center two-way left-turn lane. Figures T-9 and T-10 map out these locations.

Transportation Element – Supporting Analysis

Table T-6: Mid-block Accident Analysis (1998-2003)

Location			Total	Daily Traffic	Accident
Street	Cross Street 1	Cross Street 2	Accidents*		Rate**
15 th Ave NE	Forest Park Dr NE	Ballinger Way NE	7	9,500	0.48
	NE 145 th St	NE 146 th St	7	19,000	0.24
	NE 146 th St	NE 147 th St	8	19,000	0.27
	NE 148 th St	NE 150 th St	6	18,500	0.21
	NE 150 th St	NE 151 st St	6	18,000	0.22
	NE 169 th St	NE 170 th St	5	17,650	0.18
	NE 172 nd St	NE 175 th St	12	19,300	0.40
	NE 175 th St	NE 177 th St	5	19,900	0.16
NE 180 th St	NE 184 th St	5	6,000	0.54	
19 th Ave NE	Ballinger Way NE	NE 205 th St	9	8,430	0.69
25 th Ave NE	NE 153 rd St	NE 155 th St	7	4,900	0.93
5 th Ave NE	NE 145 th St	NE 148 th St	12	14,500	0.45
	NE 153 rd St	NE 155 th St	5	6,400	0.51
Aurora Ave N	N 145 th St	N 149 th St	40	39,900	0.65
	N 149 th St	N 152 nd St	30	40,485	0.48
	N 152 nd St	N 155 th St	91	41,070	1.44
	N 155 th St	N 160 th St	57	42,243	0.88
	N 160 th St	N 163 rd St	31	44,414	0.45
	N 163 rd St	N 165 th St	8	45,000	0.12
	N 165 th St	N 167 th St	33	44,000	0.49
	N 167 th St	N 170 th St	38	43,000	0.57
	N 170 th St	N 175 th St	66	40,000	1.07
	N 175 th St	N 180 th St	30	38,833	0.50
	N 180 th St	N 182 nd St	10	37,677	0.17
	N 182 nd St	N 183 rd St	15	37,000	0.26
	N 183 rd St	N 185 th St	40	37,000	0.70
	N 185 th St	N 192 nd St	35	36,500	0.62
	N 192 nd St	N 195 th St	26	35,900	0.47
N 195 th St	N 198 th St	22	35,900	0.40	
N 198 th St	N 199 th St	11	35,600	0.20	
N 199 th St	N 200 th St	31	35,450	0.57	
N 201 st St	N 205 th St	44	35,300	0.81	
Ballinger Way NE	15 th Ave NE	19 th Ave NE	23	36,200	0.41
Fremont Ave N	N 175 th St	N 178 th St	5	5,700	0.57
Greenwood Ave N	N 145 th St	N 148 th St	5	5,600	0.58
Meridian Ave N	N 172 nd St	N 175 th St	6	10,300	0.38
	N 180 th St	N 183 rd St	5	10,300	0.32
N 145 th St	Whitman Ave N	Aurora Ave N	5	18,000	0.18
N 152 nd St	Aurora Ave N	Stone Ln N	12	N/A	N/A
N 155 th St	Aurora Ave N	Midvale Ave N	15	11,500	0.85
N 160 th St	Linden Ave N	Aurora Ave N	17	13,800	0.80
N 175 th St	Aurora Ave N	Midvale Ave N	5	25,800	0.13
	Densmore Ave N	Wallingford Ave N	5	27,800	0.12
	Meridian Ave N	Corliss Ave N	14	29,800	0.31
	Midvale Ave N	Ashworth Ave N	12	25,800	0.30
	Wallingford Ave N	Meridian Ave N	10	27,800	0.23
N 185 th St	Aurora Ave N	Midvale Ave N	12	14,500	0.54
	Linden Ave N	Aurora Ave N	7	14,750	0.31
	Meridian Ave N	Corliss Ave N	5	10,000	0.32
N 200 th St	Aurora Ave N	Ashworth Ave N	14	7,500	1.21
N 205 th St	Aurora Ave N	Meridian Ave N	47	11,800	2.59
	Fremont Ave N	Whitman Ave N	6	8,675	0.45
	Whitman Ave N	Aurora Ave N	7	8,675	0.52
NE 175 th St	12 th Ave NE	15 th Ave NE	14	15,500	0.59
NE 185 th St	3 rd Ave NE	5 th Ave NE	6	9,450	0.41
NW Innis Arden Way	6 th Ave NW	Greenwood Ave N	5	4,800	0.68
NW Richmond Beach Rd	15 th Ave NW	12 th Ave NW	14	11,000	0.83
	8 th Ave NW	3 rd Ave NW	27	15,000	1.17

*Total number of accidents from 1/1/98 to 12/31/03. 8/1/03 to 12/31/03 is incomplete.

** Number of accidents per million vehicles per year.



This map is NOT an official map. No warranty is made concerning the accuracy, currency or completeness of data depicted on this map.

Number of Accidents at Intersections (1998-2003)

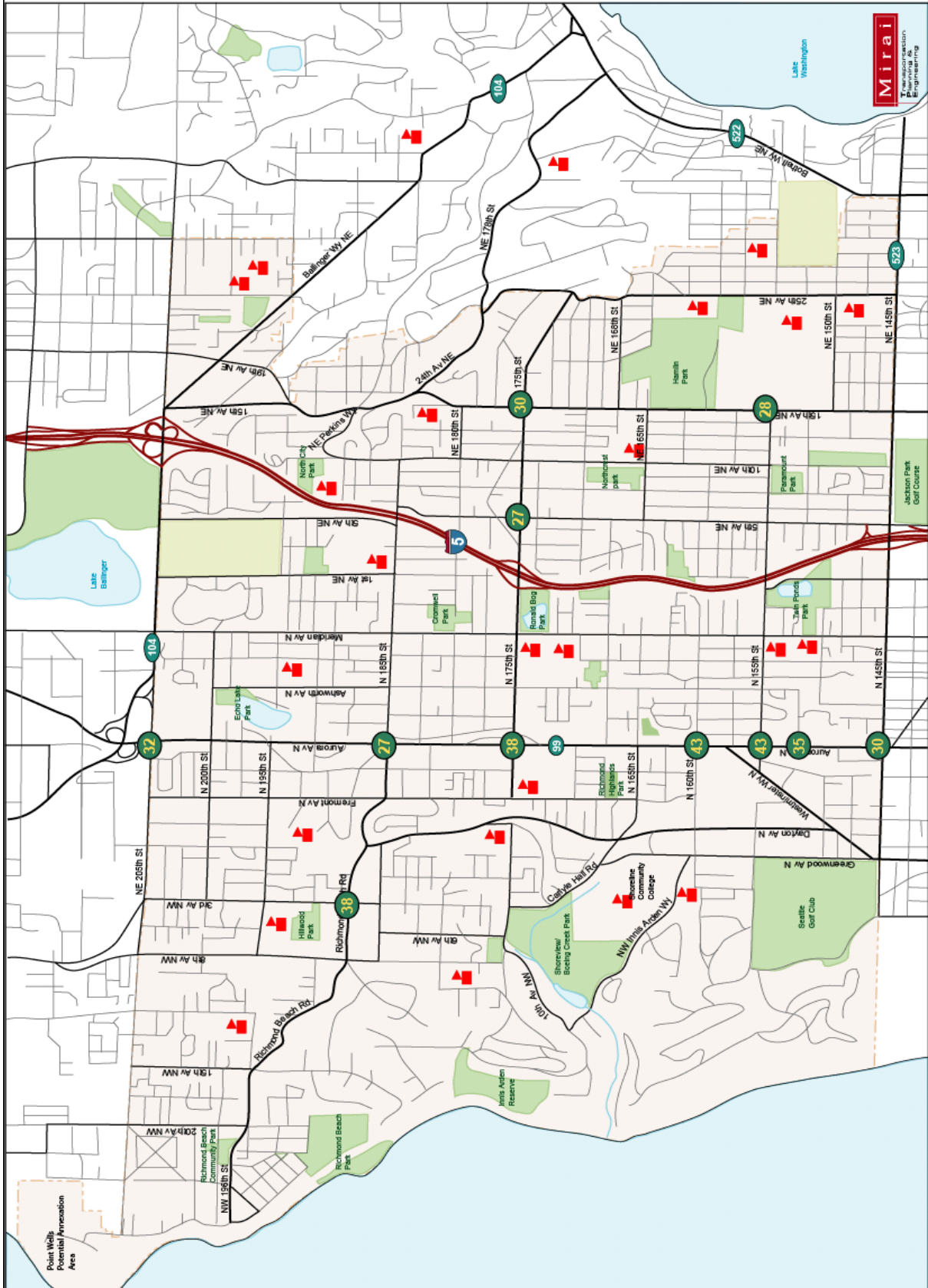


Figure T-7: Number of Accidents at Intersections (1998-2003)



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

Accidents Rates at
Intersection Locations
(1998-2003)

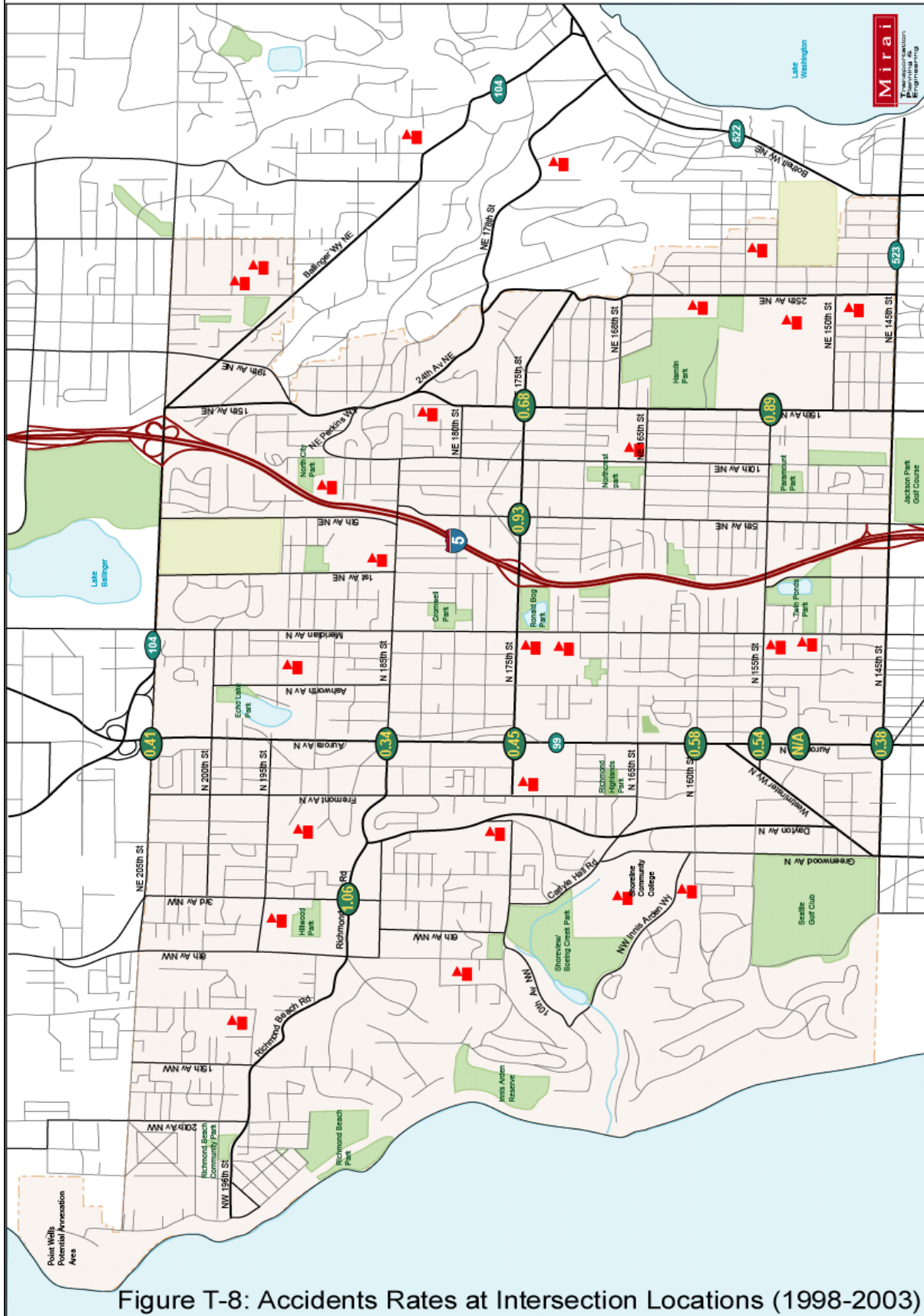
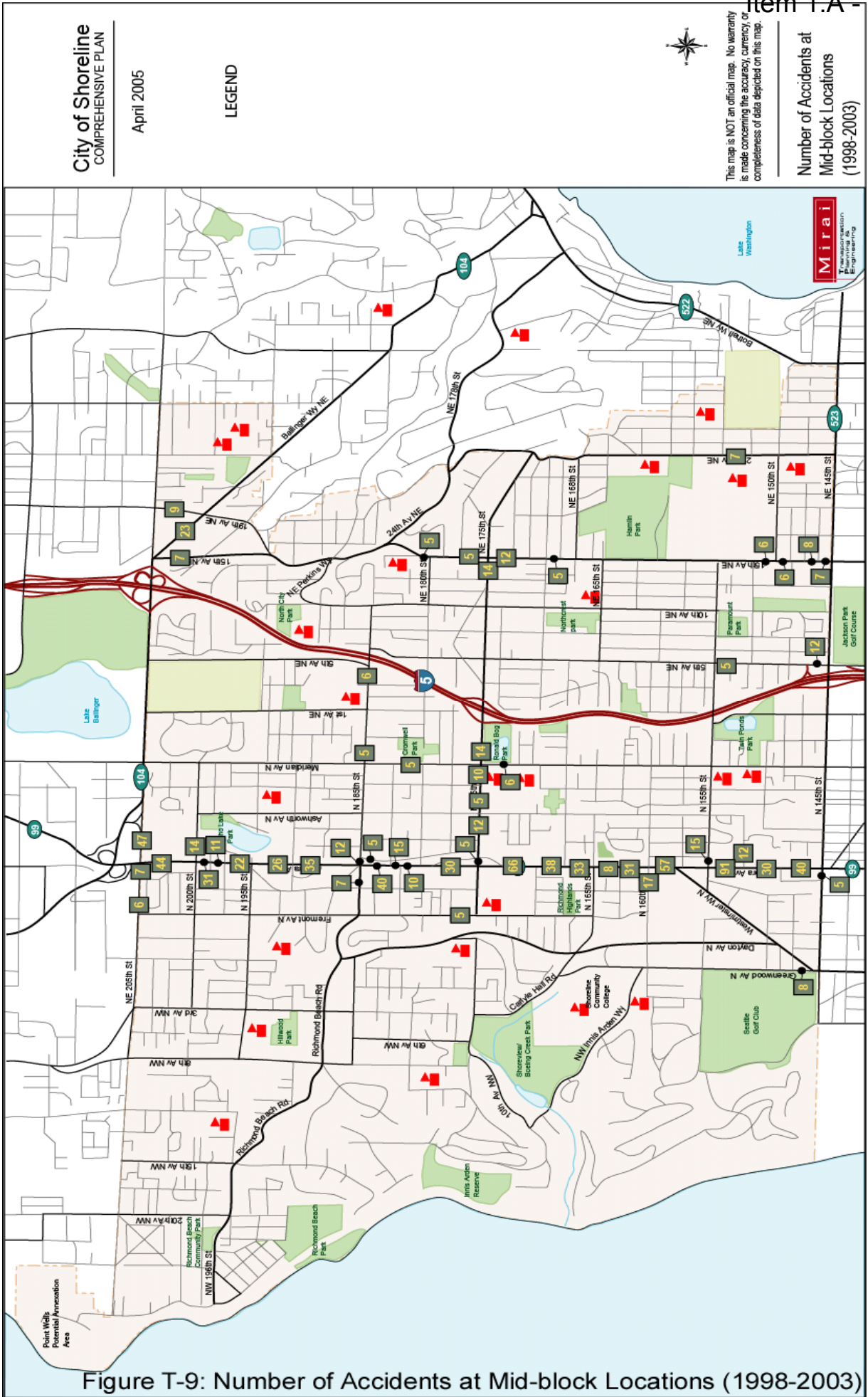


Figure T-8: Accidents Rates at Intersection Locations (1998-2003)





This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

Accidents Rates at
Mid-block Locations
(1998-2003)

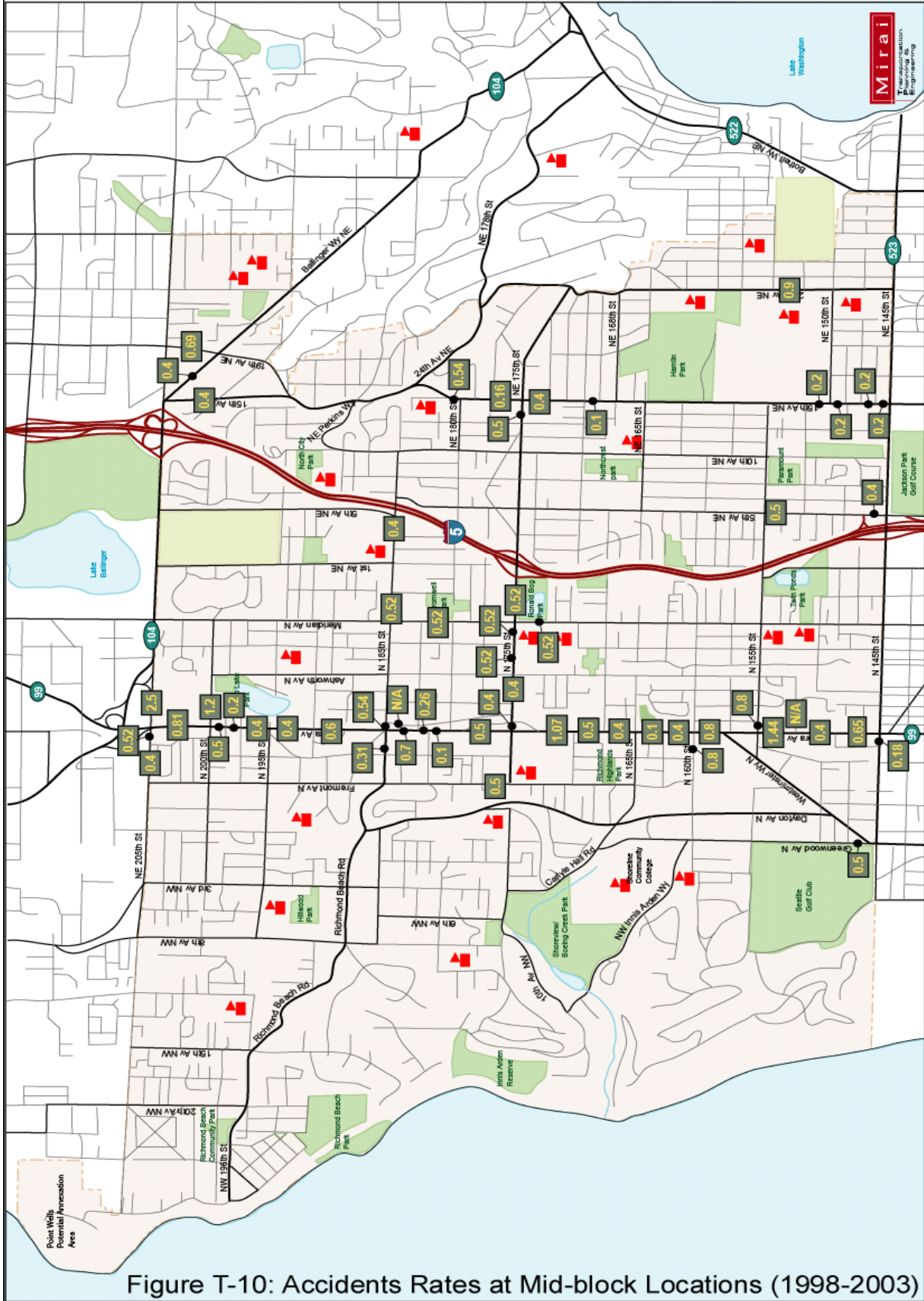


Figure T-10: Accidents Rates at Mid-block Locations (1998-2003)

Pedestrian-Bicycle Accident Data

This same set of six-year accident data, 1998 – 2003, was coded for pedestrian and bicycle related accidents. From this data, only the location and number of incidents was provided. Accident locations are mapped out in Figure T-11. Note that data from August to December 2003 was incomplete.

A total of 129 accidents were reported. However, not one location had more than two vehicle incidents involving a pedestrian or bicyclists. These accidents were observed at 106 unique locations. 60 of them were at intersections and the remaining 46 occurred at mid-block locations. Most of the accidents occurred along arterials. Aurora Avenue N had the highest number of accidents where 31 were reported. Other corridors with a concentrated number of accidents included: N/NE 155th Street (12), N/NE 175th Street (10), 15th Avenue NE (8) and N/NE 185th Street (7). Almost all of the accidents that occurred in residential areas were within a half-mile radius to a school or park.

Shoreline's 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 residential (non-arterial) streets. The City developed this program with the help of citizens, school district officials, fire and police department representatives and technical experts.

Transportation Demand Management

Transportation demand management (TDM) seeks to balance the expense of additional roadway capacity projects by reducing the peak period demand for vehicle space. 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. Most TDM programs focus on reducing work trips through a combination of the following techniques:

- charging for single-occupant vehicle parking at worksites;
- providing free or low cost bus passes to employees, as an employee benefit package, to encourage them to utilize transit or vanpools;
- providing cash, incentives or subsidies to employees who carpool, walk, or bicycle to work;
- allowing flexible hours at work sites, so that employees can shift their commute trip to non-peak periods;
- developing telecommute programs so that employees do not need to commute into the office to work every day;
- providing guaranteed ride home programs to employees that bus, carpool, or vanpool;
- providing worksite amenities that reduce the need for one to have a car. These amenities can include: cash machines, food services, daycare, break rooms, showers and clothes lockers.

The City of Shoreline also has six sites required to comply with the state's Commute Trip Reduction (CTR) Law. This law sets goals for single occupant commute trip reduction at worksites that employ over 100 regular full time employees. As the City continues to grow

Transportation Element – Supporting Analysis

and new businesses locate here, additional sites may be subject to the CTR law. The City, large employers, Sound Transit, Metro Community Transit need to work together to provide good transit service to these sites.

LEGEND

- School
- @ Intersection with 1 incident
- @ Mid-block with 1 incident
- @ Intersection with 2 incidents
- @ Mid-block with 2 incidents



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

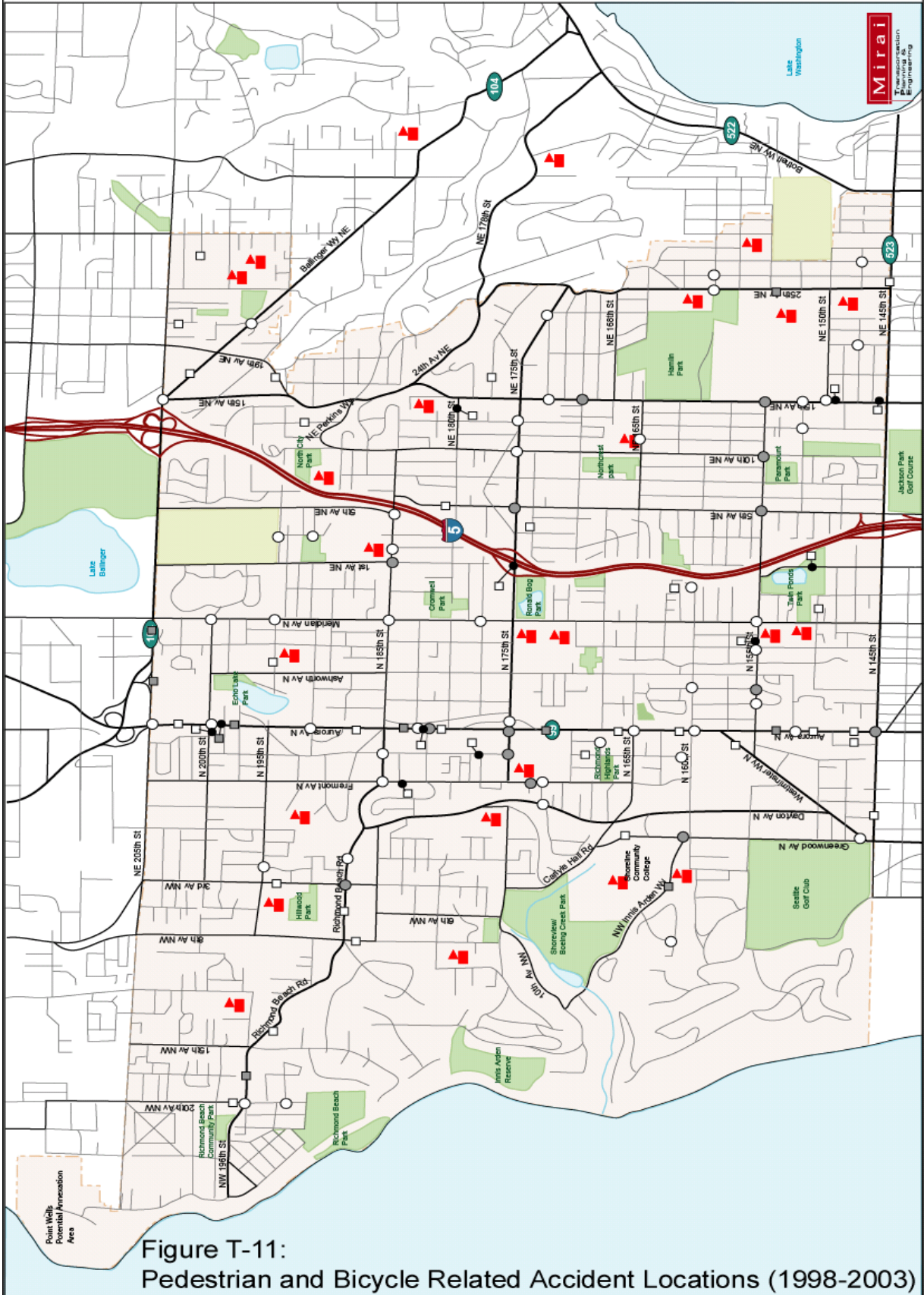


Figure T-11:
Pedestrian and Bicycle Related Accident Locations (1998-2003)

Roadway and Transit Level of Service

Transportation and Growth Management

The 1990 Growth Management Act (GMA) requires each local jurisdiction to identify facility and service needs based on level of service standards for all arterials and transit routes. Level of service standards are used to judge the performance of the transportation system. The GMA further requires that a transportation element include specific actions and requirements for bringing into compliance any facilities or services that are below an established level of service standard. It also requires that system expansion needs be identified for at least ten years, based on the traffic forecasts for the adopted land use plan and level of service standards.

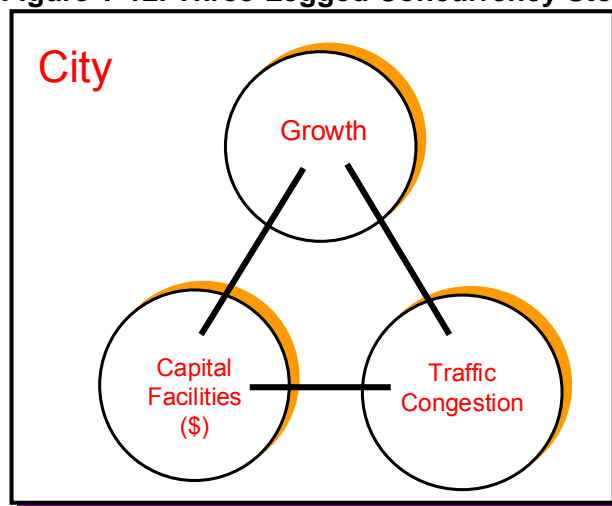
If probable funding falls short of meeting identified needs, the jurisdiction is given two options: 1) to raise additional funding, and/or 2) to reassess the land use assumptions. Under the GMA it is also possible to lower the LOS standards. The relationship between LOS standards, funding needs to accommodate increased travel, and land use assumptions is referred to as “concurrency”. The concept of concurrency is illustrated Figure T-12. The three “legs” of the concurrency stool represent the following planning components:

- 1: Growth
- 2: Traffic congestion (measured with the level of service standards)
- 3: Resources needed to fund new capital facilities

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:

1. Reduce growth by denying or delaying land use permit applications
2. Increase funding for new facilities
3. Change the level of service standard

Figure T-12. Three-Legged Concurrency Stool



Level of Service Standards for Roads

The GMA allows each local jurisdiction to choose a Level of Service (LOS) method and standards. Level of Service is a qualitative measure used to denote intersection operating conditions. It generally describes levels of traffic congestion at signalized and unsignalized intersections in an urban area. The level of service standard is one of the cornerstones of Shoreline’s Transportation Element. Two of the most important criteria to be applied for selecting a LOS methodology are 1) whether it is easy to administer and 2) whether it is technically/legally proven. The City of Shoreline in the past used a relatively simple but technically unreliable method to calculate level of service. This method is referred to as a critical movement volume-to-capacity ratio method. The Transportation Research Board explained the method in Transportation Research Circular Number 212 in 1980 but it was not adopted as a tool to calculate level of service. The most recent Highway Capacity Manual 2000 (HCM 2000) defines level of service with seconds of delays at an intersection in urban areas. For addressing transportation concurrency and level of service for the City of Shoreline, the consultant used the Transportation Research Board’s HCM 2000 method. Using this delay method, LOS was calculated for the PM peak hour with the 2022 volumes from the Shoreline traffic model and LOS was calculated using Synchro software.

Level of service is represented on a scale ranging from A at the highest level to F at the lowest level. As shown in Table T-7, level of service is based on the average delay time per vehicle entering the intersection as defined in the Highway Capacity Manual 2000. It also provides qualitative descriptions of each level of service (LOS) rating. Intersection delay is the travel time in seconds experienced by a driver traveling through the intersection, compared with a free flow condition.

LOS A and B represent minimal delays, and LOS C represents generally acceptable delays. LOS D represents an increasing amount of delay and an increasing number of vehicles stopped at the intersection. An intersection with LOS E is approaching capacity and is processing the maximum number of vehicles possible through the intersection. LOS F means that the intersection is operating with excessive delays, meaning that it has a high level of traffic congestion. Vehicles approaching an intersection with LOS F may have to wait for more than one signal cycle to get through the intersection.

Table T-7. Level of Service Definition

LOS	Average Signalized Intersection Delay Per Vehicle (seconds)	Average Unsignalized Intersection Delay Per Vehicle (seconds)	Descriptions of Level of Service Operations
A	≤10	≤10	Highest driver comfort. Little delay. Free flow.
B	>10 and ≤20	>10 and ≤15	High degree of driver comfort. Little delay.
C	>20 and ≤35	>15 and ≤25	Some delays. Acceptable level of driver comfort. Efficient traffic operation.
D	>35 and ≤55	>25 and ≤35	Long cycle length. Some driver frustration. Efficient traffic operation.
E	>55 and ≤80	>35 and ≤50	Approaching capacity. Notable delays. High level of driver frustration.
F	>80	>50	Flow breaks down. Excessive delays.

Source: 2000 Highway Capacity Manual

Level of Service for Highways of Statewide Significance

The GMA requires WSDOT to identify transportation facilities and services of statewide significance. Once these facilities are identified, local jurisdictions are required to include them in their inventories of essential facilities, along with level-of-service 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). The City of Shoreline currently has three state highways of statewide significance passing through or adjacent to the city: SR 99 (Aurora Avenue), Interstate 5, and NE 205th Street between SR 99 and Interstate 5. (Note: NE 205th is outside the City of Shoreline's City limits.)

The Puget Sound Regional Council (PSRC) has designated two state highways in or adjacent to Shoreline that are not of "statewide significance" as "regionally significant": NE 145th Street and Ballinger Way. (Note: NE 145th Street is mostly owned by King County and outside the City of Shoreline.) The PSRC, its member cities and counties, and WSDOT worked together to adopt level of service standards for regionally significant highways. The proposed standard that applies to the City of Shoreline (Tier 1) is LOS "E/mitigated," meaning that congestion should be mitigated (through alternative means of travel such as transit) when PM peak hour LOS falls below LOS E.

Level of Service Methodology for Roadways and Intersections

The City of Shoreline's 1997 Comprehensive Plan used a volume-to capacity ratio methodology for calculating levels of service. This technique is based on the "Critical Movement Summation" concept developed by traffic engineers in the 1970s to calculate intersection capacity. In essence, LOS with this method is based on a calculated critical intersection volume and compares that volume against a benchmark intersection capacity that is stratified by level of service. Since that time, transportation researchers have found that the critical volume-to-capacity ratio is one of several factors that affect the level of service. The quality of signal progression, the cycle length, the green ratio, the roadway grade, pedestrian crossings, availability of on-street parking and the lane width will influence the level of service.

At this time, it is commonly believed among the transportation experts that the Highway Capacity Manual (HCM) 2000 method produce most useful information by which to effectively understand levels of traffic congestion in an urban street network. The HCM 2000 methodology can calculate level of service for each approach leg of an intersection, whereas the V/C method cannot. For these reasons, this study used the HCM 2000 delay method to calculate intersection levels of service for signalized and unsignalized intersections throughout the City of Shoreline. The LOS table in Appendix 4-1 of the Transportation Master Plan provides the existing (2002) averaged delay and level of service for each intersection legs at each signalized intersection as well as the volume-to-capacity ratio at the same intersection. The table also shows the 1996 volume-to-capacity ratios, which can be compared against the 2001/2002 volume-to-capacity ratios. Appendix 4-1 of the Transportation Master Plan also shows the existing (2002) levels of service for the selected unsignalized intersections.

LOS Standard

The city's transportation consultant, Mirai Associates, believes that the disadvantages of the City's past LOS method and standards outweighed the advantages. The problem with the past LOS approach of the area-wide intersection averaging method is that the public as well as the policy makers may not gain a clear understanding of the implications of averaged LOS findings. As the result, it would be difficult to establish effective policies to address the issue of transportation concurrency in the city. Mirai Associates therefore recommended that the city adopt LOS E to best balance levels of congestion, the cost of added capacity and the need to minimize diversion of traffic onto neighborhood streets.

Transportation Policy T13 state's the LOS method and standard:

Adopt LOS E at the signalized intersections on the arterials within the City as the level of service standards for evaluating planning level concurrency and reviewing traffic impacts of developments, excluding the Highways of Statewide Significance (Aurora Avenue N and Ballinger Way NE). The level of service shall be calculated with the delay method described in the Transportation Research Board's Highway Capacity Manual 2000 or its updated versions.

Future Study

The City will, in the future, develop a multi-modal LOS measure to emphasize person trips, rather than simply vehicle trips, as directed in Transportation Policy T14:

The City of Shoreline shall pursue the development of a multi-modal measure for Level of Service that takes into account not only vehicular travel and delay, but transit service and other modes of travel.

Existing Level of Service (2002)

Existing PM peak hour levels of service for all arterial intersections, including state facilities and selected unsignalized intersections were calculated. The results are shown in Appendix 4-1 of the Transportation Master Plan (2004). We found that one intersection within the City is currently operating at LOS F: North 175th Street and Meridian Avenue.

One intersection on the arterial adjacent to the City is operating at LOS F: North 145th Street and I-5 Northbound Ramp/5th Avenue NE location. (145th Street belongs to King County.)

We also found that four intersections within the City are operating at LOS E:

- North 185th Street and Meridian Avenue
- North 185th Street and Aurora Avenue
- North 175th Street and Aurora Avenue
- North 155th Street and Aurora Avenue

As pointed out above, Aurora Avenue N is designated as a Highway of Statewide Significance by the state and because of the law, Aurora Avenue will be excluded from a concurrency analysis.

Transportation Element – Supporting Analysis

The following intersections, adjacent to and located outside the City, are operating at LOS E:

- North 145th Street and Greenwood Avenue
- North 145th Street and 15th Avenue NE
- North 145th Street and Bothell Way NE
- North 205th Street and Meridian Avenue North

Several other intersections that operate at LOS D or better also have at least one approach (i.e. one “leg”) at LOS E or F:

- North 155th Street and Meridian Avenue – Eastbound approach at LOS F
- Perkins Way and 15th Avenue NE: Eastbound approach at LOS F
- 24th Avenue NE and 155th Avenue NE: Westbound approach at LOS E
- North 155th Street and 15th Avenue NE: Eastbound approach at LOS E
- North 205th Street and Aurora Avenue: Northbound & Eastbound approaches at LOS E
- North 200th Street and Aurora Avenue: Northbound & Eastbound approaches at LOS E
- Ballinger Way NE and 19th Avenue NE: Northbound and Southbound at LOS F
- North 205th Street and 15th Avenue NE: Northbound at LOS E
- North 205th Street and 19th Avenue NE: Eastbound at LOS F

Two unsignalized intersections operate at LOS E or F at one approach:

- 15th Avenue NE and NE 150th Street: Westbound at LOS F
- 5th Avenue NE and NE 185th Street: Northbound at LOS F

Future No Action Level of Service (2022)

Tables in Appendix 4-1 of the Transportation Master Plan show the future (2022) levels of service for the signalized intersections on all arterials, and selected unsignalized intersections, if no transportation improvements are made beyond what is currently funded in the City’s capital improvement plan. Most of the LOS E intersections listed above degrade to LOS F.

In addition to one intersection (N 175th Street and Meridian Avenue North), which is operating at LOS F, five intersections will operate at LOS F within the City. They are

- North 205th Street and Aurora Avenue N
- North 175th Street and Aurora Avenue N
- North 155th Street and Aurora Avenue N
- North 185th Street and Meridian Avenue N
- Perkins Way and 15th Avenue NE

As noted above, Aurora Avenue North within the City of Shoreline is designated as the Highway of Statewide Significance, and it is excluded for a concurrency evaluation under the GMA.

For the adjacent arterials, in addition to the intersection of N 145th Street and I-5 Northbound ramps/5th Avenue, which is operating LOS F, two additional intersections will operate at LOS F:

- N 145th Street and Bothell Way
- N 205th Street and Meridian Avenue N

Five additional intersections will operate at LOS E within the City:

- North 155th Street and Meridian Avenue
- North 175th Street and 15th Avenue NE
- North 185th Street and Aurora Avenue N
- North 200th Street and Aurora Avenue N
- Ballinger Way NE and 19th Avenue NE

In addition to the two unsignalized intersections at LOS F in 2002, the following two additional unsignalized intersections will operate at LOS F at one approach in 2022:

- 10th Avenue NE and NE 185th Street
- 5th Avenue NE and NE 165th Street

Future Level of Service with Improvements (2022)

The following improvement projects are identified to meet the recommended level of service E standard for the arterial signalized intersections within the City of Shoreline and/or to reduce the risks of not meeting the LOS standard:

- North 175th Street and Meridian Avenue N: provide a westbound right turn lane and add a northbound through lane
- North 185th Street and Meridian Avenue N: provide an additional northbound through lane
- Perkins Way NE and 15th Avenue NE: provide westbound and eastbound left turn lanes
- N 155th Street and Meridian Avenue N: provide an additional northbound through lane
- NE 175th Street and 15th Avenue NE: provide a eastbound right turn lane, an additional northbound through lane and separate a westbound left turn lane from the existing through lane
- Ballinger Way NE and 19th Avenue NE: provide northbound and southbound left turn lanes on 19th Avenue

To reduce delays at unsignalized intersections, two new signals should be installed at the following locations:

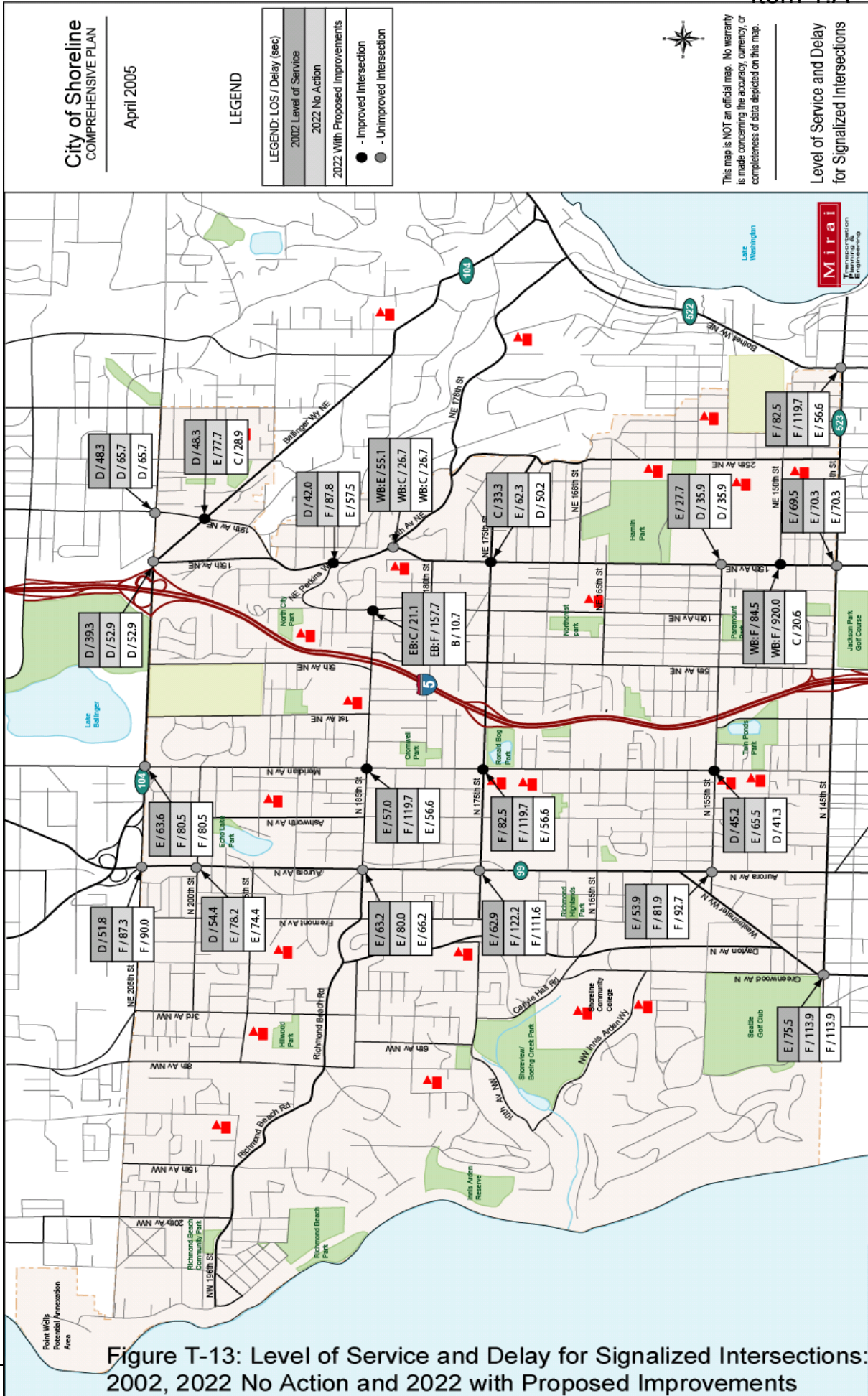
- NE 150th Street and 15th Avenue NE (This project is listed in the CIP.)
- NE 185th Street and 5th Avenue NE

To improve access to the neighborhoods and improve safety, the following improvements are recommended on N 175th Street between Aurora Avenue N and Meridian Avenue N:

Transportation Element – Supporting Analysis

- Install a signal at N 175th Street and Ashworth Avenue N with left turn lanes on N 175th Street and provide sidewalks
- Install a signal at N 175th Street and Stone Avenue N, extend Stone Avenue N from the north to N 175th Street, and convert the existing signal at N 175th Street and Midvale Avenue N to a pedestrian actuated signal as a part of the Interurban Trail crossing.

The 2022 levels of service with the recommended improvements are shown in Appendix 4-1 of the Transportation Master Plan. The recommended improvements will bring the congested intersections to operate at LOS E or better in 2022 except for the several intersections on Aurora Avenue North within the City of Shoreline. Figure T-13 shows LOS and delay for signalized intersections for 2002, 2022 no action and 2022 with improvements.



Transportation Element – Supporting Analysis

Recommended Level of Service for Transit

The recommended level of service (LOS) for transit in the City of Shoreline is based upon a number of factors. LOS needs to account for availability and the quality of transit service. Measures of availability looks 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. However, due to the availability of certain measures, the recommended LOS standard will primarily focus upon measures of availability. In addition, grading will be dependent upon the type of service: community, inter-community and regional. Tables T-8, T-9 and T-10 summarize the recommended LOS standards for each service.

Table T-8. Level of Service Definition: Community Service

LOS	Guideline					
	Peak Headways	Vehicle/Hr	Off Peak Headways	Vehicle/Hr	Daily Hours of Service	Description of LOS
A	< 10 min	> 6	< 20 min	> 3	19 - 24	Passengers do not need schedules.
B	10 – 14 min	5 - 6	20 - 40 min	1 – 3	17 - 18	Frequent service, passengers consult schedules.
C	15 – 20 min	3 - 4	20 - 40 min	1 - 3	14 - 16	Maximum desirable time to wait if bus missed.
D	21 – 30 min	2	40 - 60 min	1	12 - 13	Service unattractive to choice riders.
E	31 – 60 min	1	> 60 min	< 1	4 - 11	Service available during hour.
F	> 60 min	< 1	> 60 min	< 1	0 - 3	Service unattractive to all riders.

Table T-9. Level of Service Definition: Inter-Community Service

LOS	Guideline					
	Peak Headways	Vehicle/Hr	Off Peak Headways	Vehicle/Hr	Daily Hours of Service	Description of LOS
A	< 20 min	> 3	< 30 min	> 2	19 - 24	Passengers do not need schedules.
B	20 – 30 min	2 - 3	30 - 45 min	1 - 2	17 - 18	Frequent service, passengers consult schedules.
C	31 – 45 min	1 – 2	45 - 60 min	1	14 - 16	Maximum desirable time to wait if bus missed.
D	46 – 60 min	1	> 60 min	< 1	12 - 13	Service unattractive to choice riders.
E	> 60 min	<1	> 60 min	< 1	4 - 11	Service available during hour.
F	> 60 min	< 1	None	0	0 - 3	Service unattractive to all riders.

Table T-10. Level of Service Definition: Regional Service

LOS	Guideline					
	Peak Headways	Vehicle/Hr	Off Peak Headways	Vehicle/Hr	Daily Hours of Service	Description of LOS
A	< 20 min	> 3	< 30 min	> 2	19 - 24	Passengers do not need schedules.
B	20 – 30 min	2 - 3	30 - 45 min	1 - 2	17 - 18	Frequent service, passengers consult schedules.
C	31 – 45 min	1 – 2	45 - 60 min	1	14 - 16	Maximum desirable time to wait if bus missed.
D	46 – 60 min	1	> 60 min	< 1	12 - 13	Service unattractive to choice riders.
E	> 60 min	<1	> 60 min	< 1	4 - 11	Service available during hour.
F	> 60 min	< 1	None	0	0 - 3	Service unattractive to all riders.

Table T-11 summarizes the transit LOS for each transit route servicing Shoreline. For the size and population density of Shoreline, a community oriented transit service is not feasible due to costs and potential ridership. However, most inter-community transit service for the city of Shoreline was operating at LOS B, which is appropriate given Shoreline’s demographics. Regional service is currently operating at a LOS B for the routes serviced by Sound Transit and Community Transit. However, Metro Transit route 358 along Aurora Avenue N was already at a LOS A. On less traveled corridors, an LOS of B to C is appropriate. Most peak hour service was operating at an LOS B.

The average interval between transit stops in urban areas should be within ¼ mile of each other. As a general rule, ¼ mile is accepted as a comfortable walking distance for pedestrians. This spacing is dependent is greatly dependent upon the availability of public right of way, pedestrian crossings, safety and topography. Figure T-14 maps out the coverage area around each bus stop in Shoreline regardless of the type of transit service. The orange ring represents a radius of 1/8 mile and the tan ring represents a radius of ¼ mile away from the transit stop. Most of Shoreline’s resident are within a quarter mile from a transit stop. Connections to transit stops through the sidewalk infrastructure is limited.

Table T-11. Level of Service for Existing Transit Service

Route	Provider	Peak		Midday	Early Evening	Late Evening	Saturday	Sunday	LOS
		Peak dir	Both dir						
77*	<i>Metro Transit</i>	15	-	-	-	-	-	-	A
100*	<i>Community Transit</i>	20	-	-	-	-	-	-	A
242*	<i>Metro Transit</i>	30	-	-	-	-	-	-	B
243*	<i>Metro Transit</i>	30	-	-	-	-	-	-	B
303*	<i>Metro Transit</i>	25	-	-	-	-	-	-	B
304*	<i>Metro Transit</i>	25	-	-	-	-	-	-	B
308*	<i>Metro Transit</i>	30	-	-	-	-	-	-	B
316*	<i>Metro Transit</i>	25	-	-	-	-	-	-	B
342*	<i>Metro Transit</i>	30	-	-	-	-	-	-	B
355*	<i>Metro Transit</i>	15	-	-	-	-	-	-	A
373*	<i>Metro Transit</i>	30	-	-	-	-	-	-	B
416*	<i>Community Transit</i>	20	-	-	-	-	-	-	B
301*	<i>Metro Transit</i>	-	15/30	-	-	-	-	-	B
330*	<i>Metro Transit</i>	-	30	-	-	-	-	-	B
510	<i>Sound Transit</i>	30	-	60	30	60	60	60	B
511	<i>Sound Transit</i>	30	-	30	30	60	60	60	B
118	<i>Community Transit</i>	-	30	30	60	-	60/30/60	60	B
630	<i>Community Transit</i>	-	30	30	60	-	60	60	B
5	<i>Metro Transit</i>	-	30	30	30	30	30	30	B
101	<i>Community Transit</i>	-	20/15	15	15	30	30	30	A
331	<i>Metro Transit</i>	-	30	30	30	60	30/60	60	B
345	<i>Metro Transit</i>	-	30	30	30	60	60/30/60	60	B
346	<i>Metro Transit</i>	-	30	30	60	60	60/30/60	60	B
347	<i>Metro Transit</i>	-	30	30	60	60	60/30/60	60	B
348	<i>Metro Transit</i>	-	30	30	60	60	60/30/60	60	B
358	<i>Metro Transit</i>	-	8/15	15	30	30	30/15/30	30	A

NOTE: *Italicized* routes provide regional transit service.

* Peak hour service only.

Bicyclists can catch a bus at any transit stop. All buses are equipped with bicycle racks and can carry up to two bikes at any time. For those who were not within close proximity of a bus stop, one of the eight Park and Rides are within a five-mile distance from any point in Shoreline. The blue “P” on the map represents a Park and Ride.

The majority of the stops are handicapped accessible. However, there are several that are not due to limited right-of-way and/or topography. Shelters are provided at most locations where there are a high number of boardings. King County Metro provides and maintains all bus stops in the city of Shoreline.

Figure T-15 represents the transit coverage for weekday and weekend service. Areas with a deficiency in transit service were similar to areas that were not within easy access to a transit stop. Areas that are noticeably outside of all day transit service are Briarcrest, the eastern edge of North City, Innis Arden, the Highlands, and parts of Richmond Beach.

LEGEND

● Bus Stop

Buffer Distance

1/8 mile

1/4 mile



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

Existing Transit Stop Coverage Areas

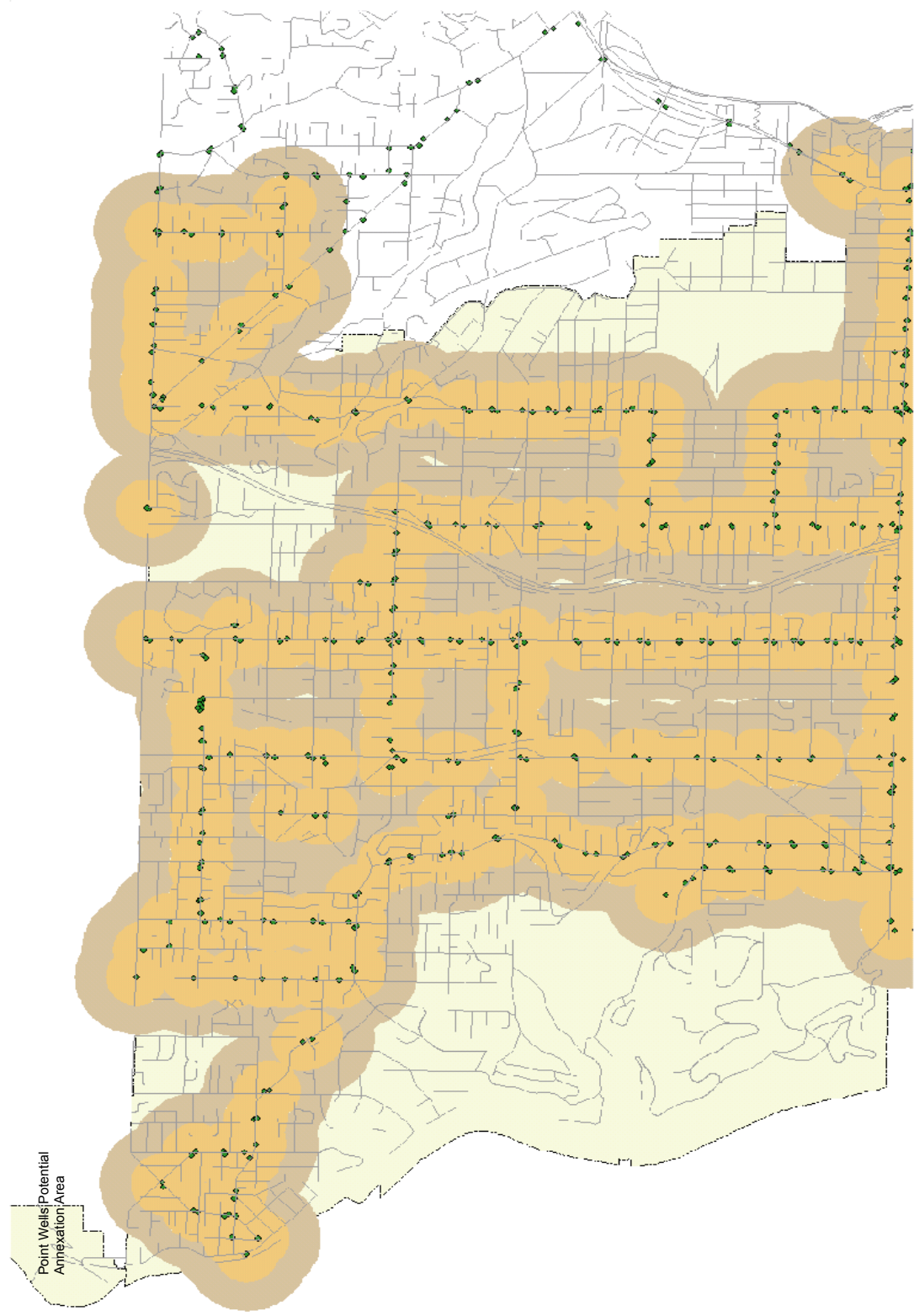


Figure T-14. Existing Transit Stop Coverage Areas

LEGEND

1/4 mile Radius



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

Existing All Day Transit
Service Coverage Area

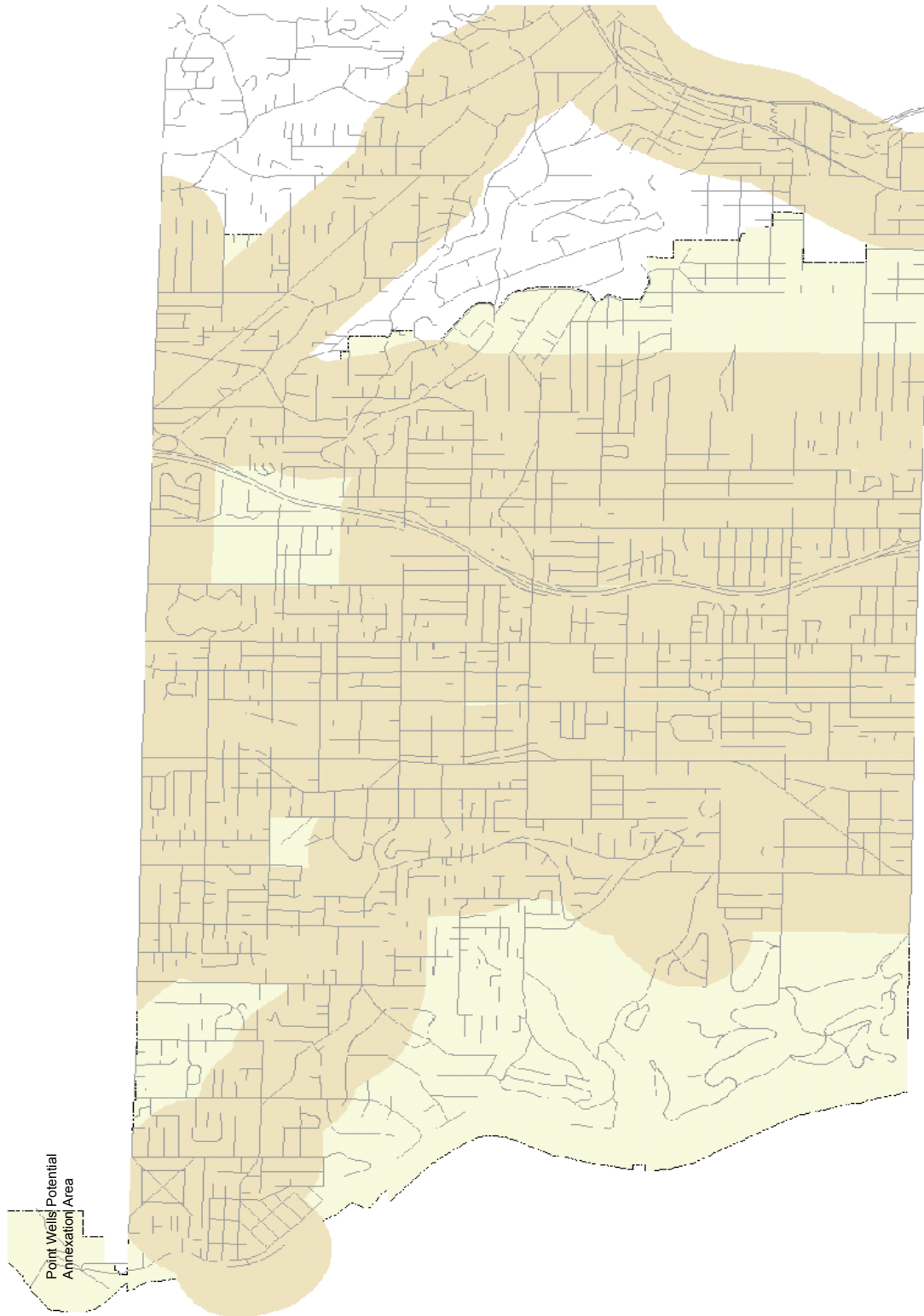


Figure T-15: Existing All Day Transit Service Coverage Area

Failure to Meet LOS: Remedial Actions

In the event that the City cannot fund the transportation capital improvements needed to maintain adopted transportation level of service standards, the City's policy T64 sets forth the options to be considered by the City Council:

- Phase development which is consistent with the Land Use Plan until such time that adequate resources can be identified to provide adequate transportation improvements;
- Reassess the 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 level of service standards to reflect levels that can be maintained, based on known financial resources.

Future Conditions

Understanding the future nature and volume of traffic in the city makes it possible to properly recommend transportation facility improvements for the City of Shoreline. Mirai Associates developed a 2022 Shoreline travel demand forecast model to analyze future traffic volumes. This model is based upon Puget Sound Regional Council's four-county regional transportation model. The City will be able to update this model as needed when land use forecasts and other input data are revised.

Demographic data sets, including household and employment forecasts associated with a system of transportation analysis zones (TAZs), form the basis for travel demand forecasting. Within the City of Shoreline, the planning department prepared household and employment forecasts. For the region outside the city, the model used PSRC's regional household and employment forecasts for 2020, with some adjustments.

Shoreline Zone Structure

The Shoreline transportation model can be described as a focused and refined regional transportation model. Within the construct of the regional model, Shoreline consists of approximately fourteen regional transportation analysis zones. To develop the Shoreline model, the regional transportation analysis zone structure was replaced with 117 Shoreline Analysis Zones (SAZs). With the inclusion of the Shoreline zone structure the total number of Transportation Analysis Zones in the Shoreline model was expanded to 953 from 850 TAZs in the PSRC model. Figure T-16 compares the Shoreline SAZ's to the PSRC's TAZs.

Transportation Element – Supporting Analysis

Current Year Land Use Data Refinement

The base year estimates of housing and employment are key inputs to the development of the Shoreline transportation demand forecasting model. Shoreline’s planning staff estimated the existing (base year 2002) housing units. The City used the assessor data from the City of Shoreline and the US Census Bureau’s Summary Files 1 and 3 (SF1, SF3). The City also provided the existing employment data. The existing employment was estimated using the 2001 data from the Washington State Employment Security Department. The employment data is referred to as “covered” data and typically accounts for 80 percent of the total employment in a region. The Puget Sound Regional Council, in accordance with agreements among the Washington State Employment Security Department, PSRC and the City of Shoreline, processed the initial employment dataset. The database consists of point level data for each employer in the study area. Each record has the employment sector data (two digit SIC code) and the estimate of employees in March of 2001. The final zonal estimates of “covered” employment are then factored to develop total employment in a zone.

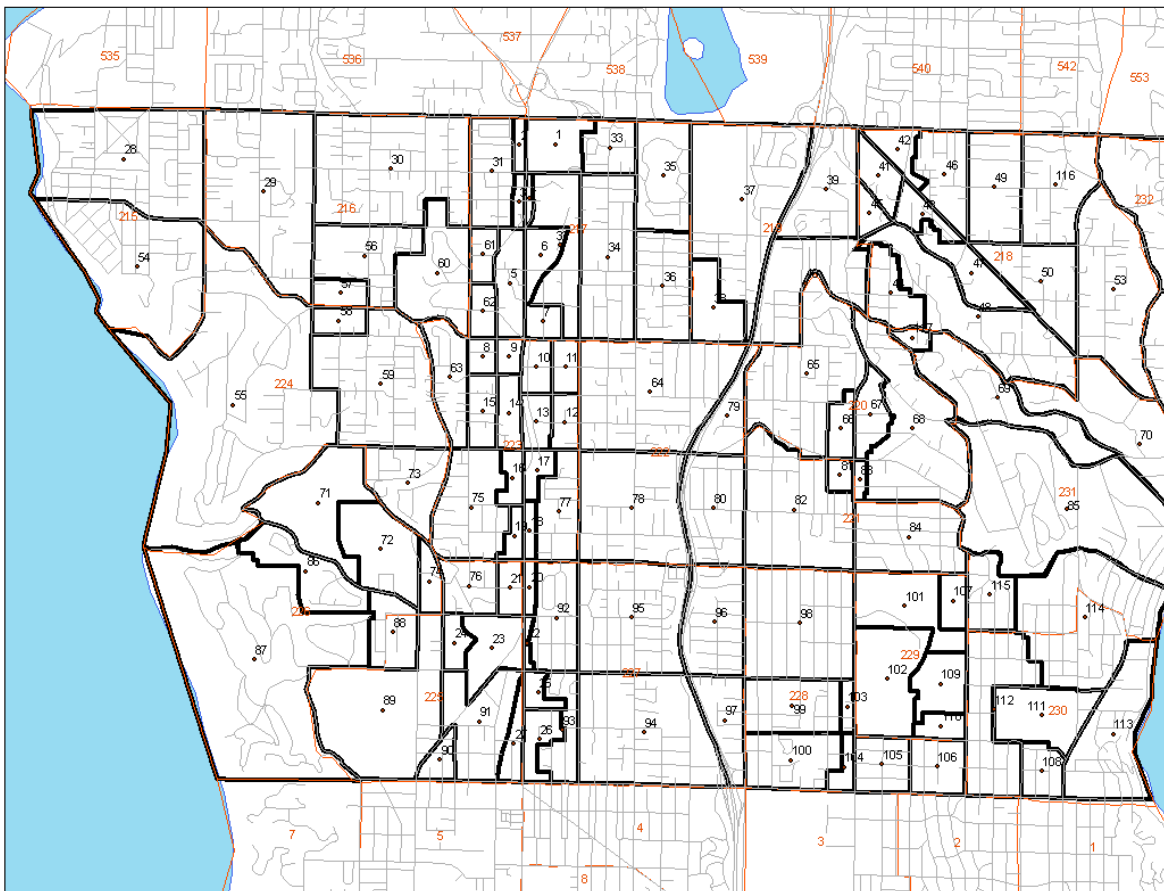


Figure T-16. Map Showing Shoreline’s SAZs and PSRC’s TAZs

Note: The black (bold) lines indicate the boundaries of Shoreline models SAZs and the red (pale) lines define the PSRC model’s TAZs. The Shoreline model’s SAZs extend into the City of Lake Forest Park in the east of the City of Shoreline.

The point level data was aggregated to the Shoreline SAZ system and summarized to develop estimates of five groups of employment sectors. The employment sectors include Retail, FIRES (Finance, Insurance, Real Estate and Services), Government and Education, Manufacturing and WTCU (Wholesale, Transportation, Communication and Utilities).

The transportation modeling process assigns different trip generation rates based on land use categories and factors such as household size, the number of workers in a household and employment types.

Year 2022 Land Use Forecasts

The City selected the year 2022 as the planning horizon for transportation forecasting. The City's planning department provided the 2022 housing and employment forecasts, using the growth estimates developed by King County. The City relied on the growth potential reported in the Buildable Lands Report published by King County on September 6, 2002.

To assist in the transportation analysis, the 2022 housing and employment data was aggregated into the Shoreline's 117 SAZs. The housing and employment forecasts for the remaining zones outside the City of Shoreline were obtained by interpolating the PSRC's 2020 and 2030 household and employment data, which was released in January of 2003.

Table T-12 shows 2001 households and employment data and 2022 households and employment forecasts for the City, which were used to develop the Shoreline travel forecasting model. Appendix 3-1 of the Transportation Master Plan shows the existing and 2022 land use data at the SAZ level.

The traffic forecasts developed for 2022 with the Shoreline model assume that the households in the City will grow by two thousand three hundred and employment will increase by about two thousand two hundred workers within the City. It is projected that households will grow by 8.7 percent and employment will grow by 12.7 percent. Table T-12 below shows these projections.

Table T-12. 2001 and 2022 Households and Employment for the City of Shoreline

	2001	2022	Difference (2022 - 2001)
Households			
Single Family	18,885	19,685	800 (4.2%)
Multifamily	7,163	8,671	1,508 (21.1%)
Total Households	26,048	28,356	2,308 (8.7%)
Employment			
Retail	5,188	6,294	1,106 (21.3%)
Office	7,134	8,191	1,069 (15%)
Other	5,216	5,288	72 (1.4%)
Total Employment	17,538	19,773	2,235 (12.7%)

2022 Traffic Volumes (PM Peak Hour)

In order to calculate intersection levels of service for the future planning year, the forecast volumes from the Shoreline model were “post-processed”, which means that the model volumes were adjusted with the existing traffic counts and checked for consistency through the traffic corridors within the City. The post-processing is a manual process done with spreadsheets. After completing the post-processing work, the 2022 PM peak hour traffic volumes input to Synchro software to calculate levels of service.

Figure T-17 shows the 2002 PM peak hour traffic volumes by direction and 2022 volumes forecasted with the Shoreline model on the major arterials in the City. Appendices 3-2 and 3-3 of the Transportation Master Plan (2004) show existing and 2022 traffic volumes at the all intersections where levels of service were calculated.

Impacts to State Owned Transportation Facilities

House Bill 1487, as passed by the 1998 Legislature, amended several RCWs relating to transportation and growth management planning including:

- Growth Management Act
- Priority Programming for Highways
- Statewide Transportation Planning
- Regional Transportation Planning Organizations

The Transportation Element is now required to include an assessment of impacts to state owned transportation facilities. The Shoreline model developed for the TMP includes the state owned facilities throughout the Puget Sound area, including those located within the City of Shoreline. The model developed 2022 traffic forecast volumes base on the households and employment growth projected by the City for the areas within the City and the land use growth projected by the Puget Sound Regional Council.

The City of Shoreline includes three state owned facilities: SR 99 (Aurora Avenue North) from 145th Street to 205th Street, Interstate-5 and a short segment of SR 104 (Ballinger Way NE) at the northeast corner of the City.

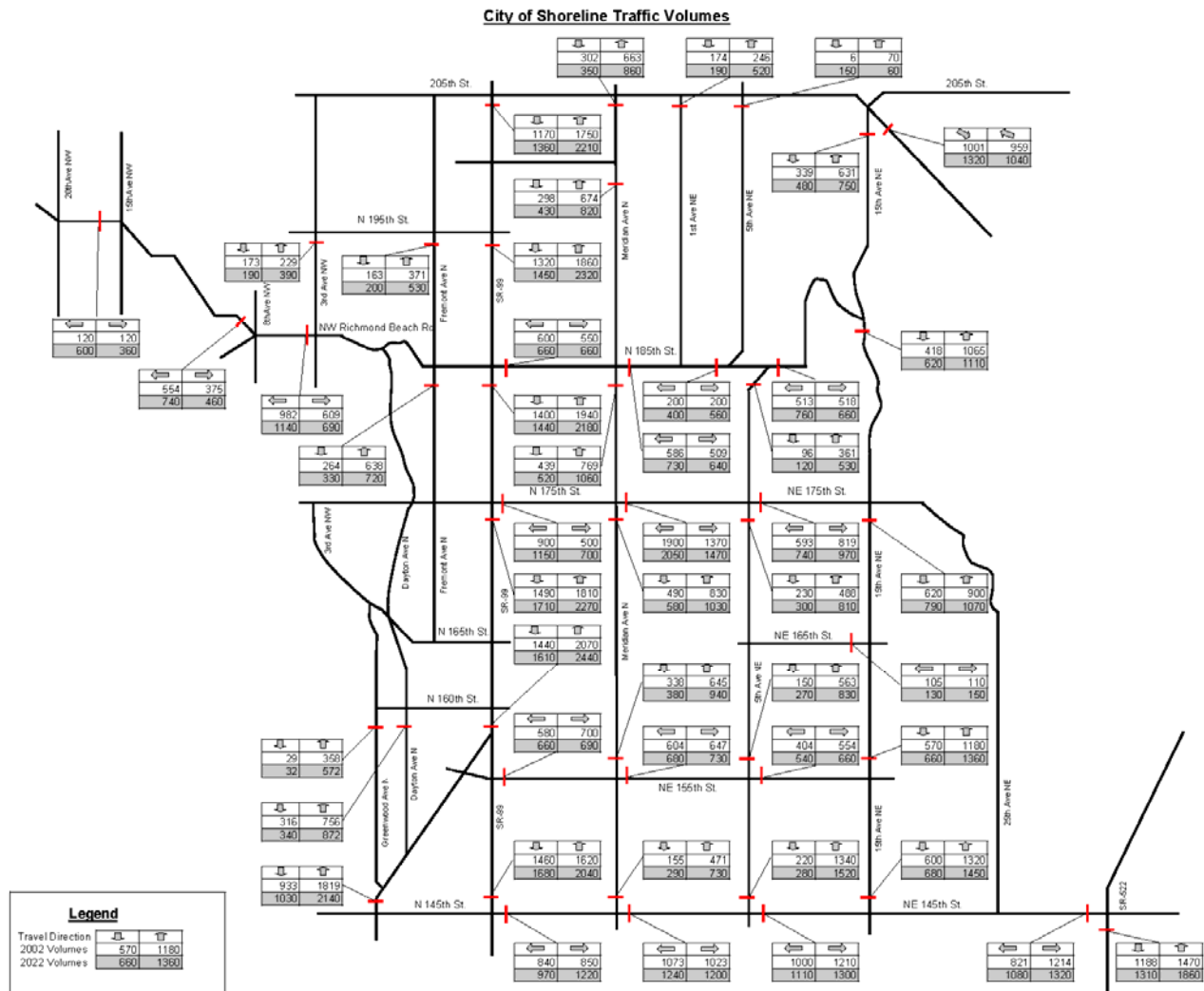
Interstate 5

The sections of I-5 within the City of Shoreline carry about 170,000 to 190,000 vehicles per day. During the AM peak hour, the southbound I-5 lanes are carrying over 6,000 vehicles per hour on the general purpose lanes, which are operating at capacity with poor levels of service. Likewise, during the PM peak hour, the northbound I-5 lanes are carrying the volumes close to 7,000 vehicles per hour, which indicates a condition of severe traffic congestion. There is little room to increase traffic volumes to the peak direction of I-5 during AM and PM peak period.

Because little additional capacity will likely be provided to the I-5 segments in Shoreline in the future, traffic growth will be accommodated for the most part by the Shoreline’s arterial streets. Regional growth and the resulting demand for more travel in the future will actually reduce access to I-5 from Shoreline. It is projected that traffic volumes on the City’s arterial streets along I-5 will increase because of the increased pass through traffic.

It is recommended that the City and State Department of Transportation work together to manage the current and forecasted congestion problems on I-5.

Figure T-17. 2002 Existing PM Peak Hour and 2022 Forecast PM Peak Hour Volumes on Major Arterials



*Transportation Element – Supporting Analysis****Aurora Avenue North (SR 99)***

As shown in Figure T-17 above, it is forecasted that the traffic volumes on Aurora Avenue North throughout the City will increase. During the PM peak hour, the volume of the increase will be about 200 to 400 vehicles per hour. The 2002 and 2022 levels of service for the intersections on Aurora Avenue North were calculated and discussed in the Chapter 4, and LOS sheets are provided in an appendix of the Transportation Master Plan.

The Aurora Avenue intersections within the City are operating LOS E or better today. However, with the forecasted traffic volumes, the following four intersections will operate at LOS F:

- North 205th Street and Aurora Avenue N
- North 175th Street and Aurora Avenue N
- North 155th Street and Aurora Avenue N
- North 185th Street and Meridian Avenue N

Although the projected employment growth along Aurora Avenue will add a relatively small amount of traffic to the future volumes on Aurora Avenue, the majority of the increased traffic on this facility will be the results of the regional growth and shifts of traffic from I-5.

Ballinger Way NE (SR 104)

Only three-quarters of a mile of SR 104 is located within the City of Shoreline. The City section of SR 104 has 5 lanes. The forecasted traffic growth during the PM peak hour is slight, about 100 vehicles per hour in each direction. The through traffic on Ballinger Way NE will operate at good levels of service. However, the approaching traffic from the side streets to Ballinger Way will experience increased delays. The recommended improvements in the TMP include improvements to reduce delays at those streets (at Ballinger Way and 19th Avenue NE).

Recommended Improvements: Safe and Friendly Streets

Transportation remains 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 and bicyclists as well as automobile drivers.

The City inherited a substantial street grid system from King County, however many of the streets lack sidewalks, curbs and gutters. Citizens consistently cite the lack of sidewalks as a pressing transportation issue. Safety remains the City's most important responsibility, and citizens support safety as their first priority. Citizens are also very concerned about preventing and managing neighborhood cut through traffic. The City does not control the county or regional transit systems, but planned regional investments in transit may increase ridership opportunities for Shoreline citizens, if properly designed.

The Transportation Element sets forth a series of recommendations to support the transportation policies of the City's Comprehensive Plan. The Transportation Element calls for increased funding for safety programs and also set forth an overlay of street design standards for "Green Streets" as identified in the Community Design Element of the Comprehensive Plan. Additional program details are included in the Transportation Master Plan. Recommended pedestrian, bicycle and roadway projects are prioritized by mode – but not across mode, i.e. roadway projects have not been evaluated against pedestrian

projects. These recommendations were developed using the evaluation criteria documented in the Transportation Master Plan and are intended to serve as a guide when selecting projects for grant applications and for funding within the City's 6-year Capital Investment Plan.

Enhanced Safety Programs

Safety Management Program

The City of Shoreline should continue to combine civil engineering, safety education and police enforcement tools to improve traffic safety on City roadways. The Transportation Master Plan recommends creating and funding a safety management program to provide additional resources to the transportation department. As one of the first steps for this program, the City should develop quantifiable performance-based goals and an evaluation process to prioritize emerging safety needs.

Street Lighting

The City of Shoreline should adopt and fund a street lighting plan that includes the following considerations:

- streetlight pole height standards;
- criteria for lamp fixture choice;
- lamp technology;
- color rendering and light spectrum criteria;
- light level standards; and
- nighttime safety criteria.

Due to evolving lighting technologies and lamp fixtures, the City should review this streetlighting plan on a regular basis.

Curb Ramps Program & Pedestrian Program

The City's curb ramp program includes the design and construction of curb ramps and bus pads. The ramps and bus pads are constructed to meet the standards of the Americans with Disabilities Act. The City should continue funding these programs, with additional emphasis emerging needs for pedestrian safety projects.

Neighborhood Traffic Safety Program

The City has instituted a successful Neighborhood Traffic Safety Program (NTSP) whereby citizens can work with their neighbors and the City to reduce traffic impacts on their neighborhood streets. The City should dedicate a staff person to the NTSP, while streamlining the program to make it more responsive. At the same time, the City should continue working to manage traffic impacts from the state highway system on city arterials.

“Green Streets”

The Community Design Element calls the City to develop a program to implement “Green Street” improvements that prioritizes connections to schools, parks, neighborhood centers and other key destinations. The public works department is charged with developing “Green Street” transportation standards to overlay existing street design standards. The “Green Street” standards will provide guidelines for an enhanced streetscape, including street trees, landscaping, lighting, pathways, crosswalks, bicycle facilities, decorative paving, signs, seasonal displays, and public art. The “Green Street” standards proposed in Table T-13

Transportation Element – Supporting Analysis

(identical to Table 6-2 in the Transportation Master Plan) vary consistent with the underlying street classification.

Table T-13. Design Guidelines for Transportation “Green Streets”

	Arterial “Green Street”	Neighborhood Collector “Green Street”
Vehicle Travel Lanes	2, 3 or 5	2
Vehicle Speed	Moderate	Slow
Turn/Median	Mix of medians and turn lanes that provide pedestrian refuge	None
On-Street Parking	Allowed	Usually
Landscaping	Street trees, landscaped medians and buffers between roadway and sidewalk	Street trees and buffers between roadway and sidewalk or mixed use path
Public Art	Included	Not included
Transit Amenities	High quality service supported with amenities at major stops and station areas	Buses/transit stops not generally allowed
Pedestrian Amenities	Sidewalk with buffering, special lighting and special crossing amenities tied to major transit stops	Sidewalk or mixed use path, with buffering, lighting and special crossing amenities
Bikeways	Striped or shared	Shared roadway or mixed use path
<p><i>Note: Application of green street design elements and guidelines shall depend upon the unique characteristics of the design project, available right of way, and the character and intensity of planned land use.</i></p>		

Street Classification Recommendations

The Transportation Element includes new Street Classifications. Table T-14 provides a general description of the new classification system, and Figure T-18 shows the new street classification map.

Table T-14: General Description of Classified Streets

	Arterial			Local Street	
	Principal Arterial	Minor Arterial	Collector Arterial	Neighborhood Collector	Local Street
Function	- To connect cities and urban centers with minimum delay - To channel traffic to Interstate system - To accommodate long and through trips	- To connect activity centers within the City - To channel traffic to Principal Arterials/Interstate - Accommodate some long trips	- To serve community centers and businesses - To channel traffic from Neighborhood Access streets to Minor or Principal Arterials - Accommodate medium length trips	- To serve residential areas - To channel traffic from local streets to Collector Arterials - Accommodate short trips such as shopping trips	- To provide local accesses - To serve residential areas
Land Access	- Limited local access – refer to the “Access Management Plan”	- Limited local access to abutting properties	- Local access with some control	- Local access with minimum restrictions	- Local access with minimum restrictions
Speed Limits	- 30 – 45 mph	- 30 – 40 mph	- 30- 35 mph	- 25 –30 mph	- 25 mph
Daily Volumes (vpd)	- More than 15,000 vpd	- 8,000 – 25,000 vpd	- 3,000 – 9,000 vpd	- less than 4,000 vpd	- Less than 4,000 vpd
Number of Lanes	- Three or more lanes	- Three or more lanes	- Two or more lanes	- One or Two lanes	- One or Two lanes
Lane striping	- Travel lanes delineated with stripes	- Travel lanes delineated with stripes	- Travel lanes delineated with stripes	- No travel lane striping	- No travel lane striping
Median	- Landscaped medians or two-way center left turn lanes	- Landscaped medians or two-way center left turn lanes	- Landscaped medians allowed	- Medians are not needed unless provided as traffic calming devices	- Medians may be provided as traffic calming devices
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	- Bike lanes or shared lanes desired	- Bike lanes or shared lanes desired	- Bike lanes or shared lanes desired	- Shared lanes can be provided	- Bike facilities not specifically provided; may include signed bike routes
Pedestrian Facilities*	- Sidewalks on both sides - Landscaped/amenity strips	- Sidewalks on both sides - Landscaped/amenity strips	- Sidewalks on both sides - Landscaped/amenity strips	- Sidewalks on both sides - Landscaped/amenity strips	- Safe pedestrian access through the use of sidewalks, trails, or other means.

- Legend**
- City Area
 - Parks
 - Arterial Class**
 - Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector Arterial
 - Neighborhood Collector
 - Local Street
 - Outside Shoreline



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data displayed on this map.
City of Shoreline, 2010

Street Classifications

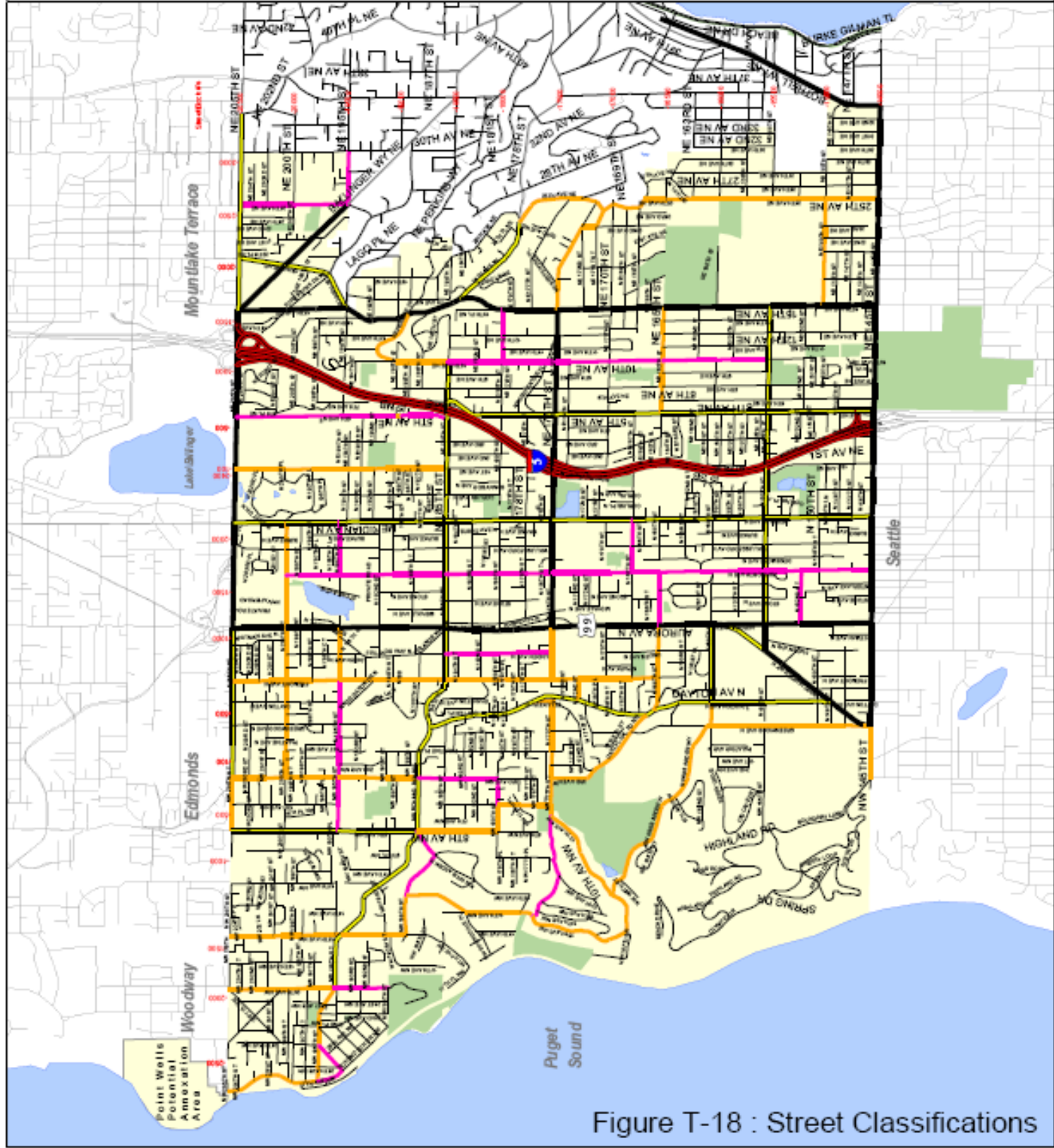


Figure T-18 : Street Classifications

Roadway Improvement Projects

Construction of the City of Shoreline's Aurora Corridor Project will address a number of congestion and safety issues within the City. Most of the city's remaining roadways function relatively well and do not experience high accident rates. Several will require additional turn lanes and/or through lanes at key intersections to prevent excessive congestion. Additional recommended roadway improvements were identified while evaluating the City's existing conditions and future traffic volumes. In addition, a number of planning studies have been recommended to better define project needs, including development of a multi-modal level of service standard, and a major subarea study of the Meridian Avenue North and North 175th corridors. A revised level of service standard may result in a different set of project recommendations.

Table T-15 lists the recommended roadway improvements, and Figure T-19 illustrates the locations on a map.

Transportation Element – Supporting Analysis

Table T-15. Roadway Projects Recommended for Funding

Roadway Projects Recommended for Funding				
Location	Improvement	Function/Benefit	Comment	Cost in 2004\$ (thousands)
All	Annual Road Surface Maintenance Program	Maintain existing system		\$13,000
Richmond Beach Drive and NW 196 th Street	Richmond Beach Over-crossing	Improve Neighborhood Access and Safety		\$1,868
N/A	Transportation Improvements CIP Project Formulation	Planning		\$800
All	Roads Capital Engineering			\$3,884
All	Neighborhood Traffic Safety Program	Improve Neighborhood Access and Safety		\$3,220
Aurora Ave N: 145 th to 165 th	Aurora Corridor Project	Safety and Operations		\$15,993
Aurora Ave N: 165 th to 205 th	Aurora Corridor Project	Safety and Operations		\$52,277
North City/15 th Ave NE	North City Business District/15 th Avenue NE Improvements	Safety and Operations		\$3,699
Dayton Ave N @ 175 th	Retaining Wall	Safety		\$388
5 th Ave NE	Street Drainage Improvements	Operations		\$166
Multiple (see Capital Facilities Plan)	Safety Management Program.	Safety	Document, prioritize and fund emerging safety needs. Develop street lighting standards and financing plan.	\$1,000
North 175 th Street and Meridian Ave N	Corridors Subarea Project	Meet LOS standard	Placeholder pending study outcome	\$2,060
Midvale Ave N: N 190 th to N 192 nd	Developer Funded Improvement			\$0
NE 175 th Street and 15 th Ave NE	Intersection analysis and improvements	Meet LOS standard		\$1,290
Multiple (see Capital Facilities Plan)	Planning Studies	Improve Neighborhood Access and Safety	Recommended studies include Richmond Beach Road, N. 175 th & Meridian Corridor Study, Multimodal LOS Study, Ballinger Way/I-5 Undercrossing, Transit Plan and "Green Street" Corridor Selection	\$535

LEGEND

- Roadway Project
- Study

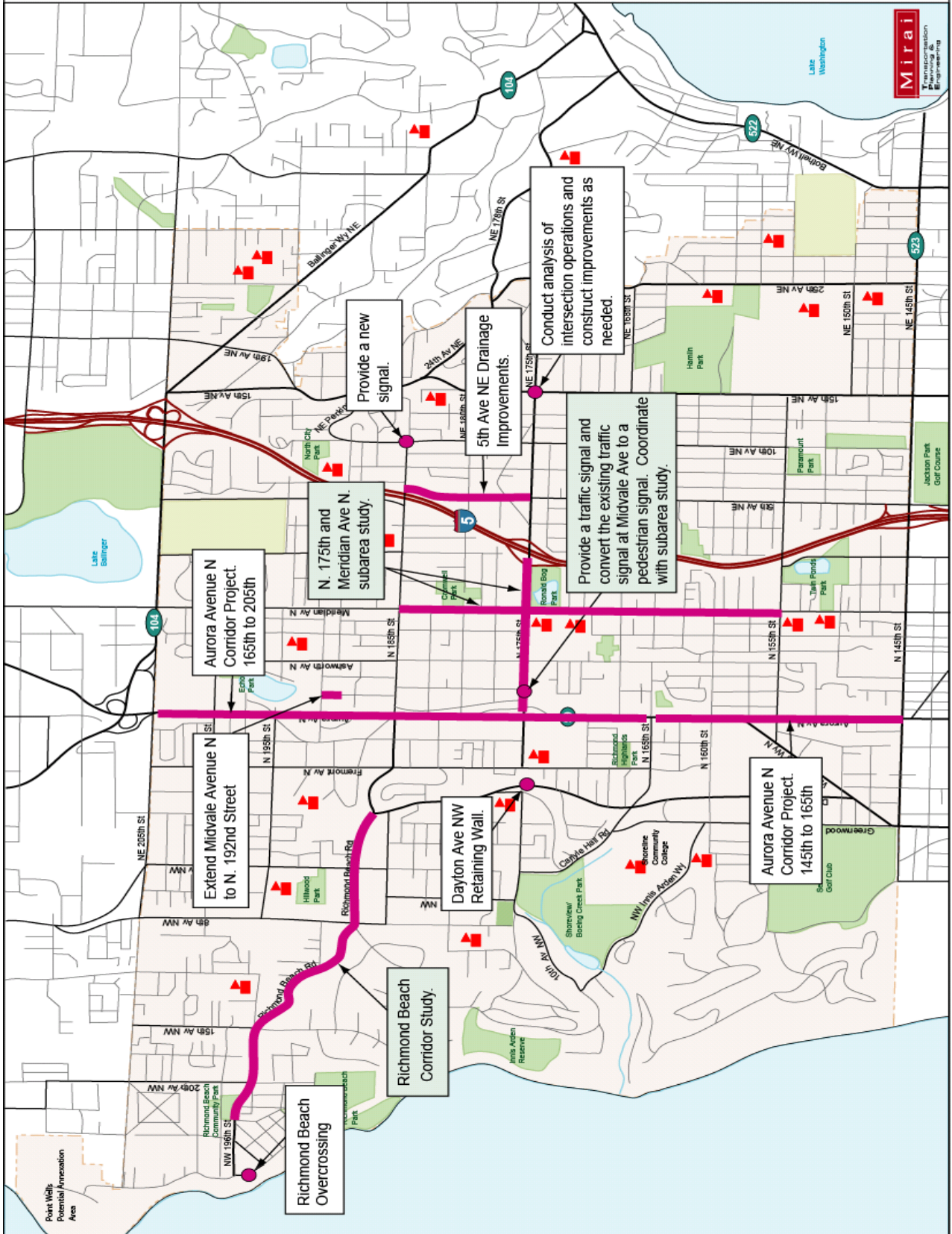


Figure T-19: Roadway Improvements Recommended for Funding

Transit Improvements

According to 2000 census data, 10.2% of Shoreline residents used transit as their primary mode to work while 12.8% carpooled and 2.1% either walked or biked to work. By 2020, it has been estimated that over 2,300 new housing units will be constructed and over 2,200 jobs will be created. Accommodating this anticipated growth while minimizing the impact of additional traffic is a high priority for the city of Shoreline. The transit strategy being adopted in this plan aims to:

- Proactively increase existing transit use by providing full-service, accessible transit, comprising high-frequency peak period service and extended off-peak service, weekdays and weekends and improved facilities.
- Tailor service levels and route structures to reflect the different needs of areas within the City by providing a mix of flexible and fixed routes, community bus routes, inter-community and commuter transit service.

Currently, transit service availability where provided in the city of Shoreline is considered fair to very good. However, the coverage of the service does not meet the needs of all residents. The recent addition of Metro Route 348 has improved east-west connections making connections with Richmond Beach to major destination points of Shoreline Center, the library and Hamlin

Park. Metro Transit's most recent review of their bus routes indicates that most bus routes are generally well utilized. However, route 330 and 346 had lower than average ridership.

Changes in demand and recent changes in service as well as citywide goals necessitate a reevaluation of the current transit service. Any improvements needed in service coverage will need coordination with the various transit authorities that serve Shoreline. Each agency has its own service standards that need to be met before changes can be made to Shoreline's transit services. The improvements noted below will result in improved transit service for Shoreline residents.

- Increase bus service efficiency along underserved, non-serviced corridors or overextended bus routes.
 - Improve the quality of all day cross-town service in the southern portion of the city: NE 155th Street corridor.
 - Reconfigure, increase, and/or add dedicated bus service to serve the Braircrest and eastern portions of North City.
- Improve accessibility to bus stops and transit facilities that enhance surrounding neighborhoods.
 - Add sidewalks and bicycle lanes
 - Add shelters at locations that meet the criterion of a minimum of 25 boardings in King County.
 - West side of Aurora Avenue N at the far side of N 200th Street;
 - North side of the Shoreline Community College entrance at the main campus entrance;
 - East side of the Shoreline Park & Ride roadway at the near side of N 192nd Street;
 - West side of Aurora Avenue N at the far mid block at N 175th Street;
 - West side of Aurora Avenue N at the far mid block at N 155th Street;

- West side of Aurora Avenue N at the far side of N 152nd Street;
 - East side of Aurora Avenue N at the near side of N 185th Street;
 - West side of Aurora Avenue N at the far side of N 170th Street;
 - West side of N 5th Avenue at the near side of NE 163rd Street;
 - East side of Aurora Avenue N at the far side of N 155th Street;
 - West side of 15th Avenue NE at NE 177th Street;
 - South side of N 175th Street at Densmore Avenue N;
 - East side of Aurora Avenue at the far side of N 160th Street
- Identify and improve lighting and visibility of bus stops.
 - Reference accident and crime statistics for incidents at or near transit stop locations.
 - Provide safe pedestrian crossings through the installation of curb “bulb outs” and pedestrian tablets.
 - See Curb Ramp & Pedestrian Improvement Program
- Consider the impact for proposed high-capacity transit corridors.
 - Identify preferred high-capacity corridors
 - Extensions of the Seattle Monorail Project’s Green Line;
 - Sound Transit’s Phase Two expansion;
 - Bus rapid transit opportunities, e.g. Metro Transit route 358 along Aurora Avenue N.
 - Consider impacts to existing transit service and conditions.
 - Rezone land use in impacted areas nearby proposed transit route that is supportive to transit;
 - Improve pedestrian accessibility and facilities along proposed corridors;
 - Identify potential inter-modal transfer locations;
 - Coordination of Park and Ride locations and possible expansion.

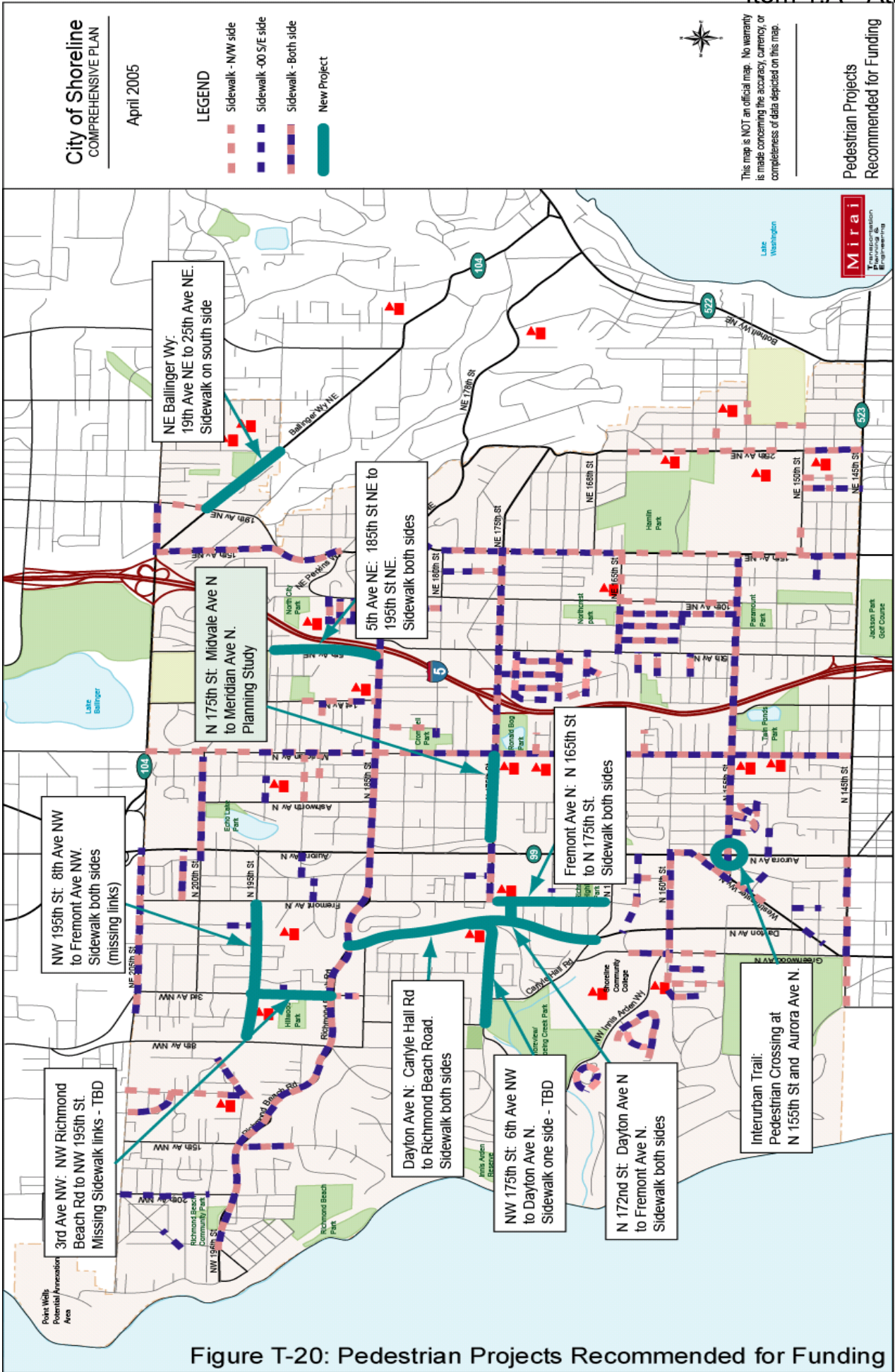
Pedestrian Improvements

Shoreline’s citizens continue to emphasize the importance of sidewalks for safety, enhanced mobility, convenience, and recreation. 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, shopping centers and community centers. Chapter 5 of the Transportation Master Plan (2004) describes evaluation criteria for recommending pedestrian improvements.

The top priority projects connect to the existing and proposed sidewalk framework, provide school and/or park access along arterials, link residences to three major destinations and connect to transit service. Those recommended as candidates for funding are listed below in Table T-16 and mapped on Figure T-20.

Table T-16. Pedestrian Projects Recommended for Funding

Pedestrian Projects Recommended for Funding			
Project	Location	Side of the Street	Cost in 2004\$ (thousands)
Interurban Trail Pedestrian Crossing	Citywide		\$2,917
Curb Ramp, Gutter and Sidewalk Program	Citywide		\$2,740
Traffic Small Works	Citywide		\$1,800
Pedestrian Program (see Capital Facilities Plan)	Citywide		\$18,850
	<u>Candidate Projects:</u>		
	NW 175th St: 6th Ave NW to Dayton Ave N	One Side TBD	\$1,289
	N 175th: Midvale to Meridian (Coordinate with N 175th planning study)	Both	\$2,779
	N 172nd St: Dayton Ave N to Fremont Ave N	Both	\$357
	Dayton Ave N: Carlyle Hall Rd to Richmond Beach Rd	Both	\$1,558
	3rd Ave NW: NW Richmond Beach Rd to NW 195th St	One Side TBD	\$818
	NE Ballinger Way: 19 th Ave NE to 25 th Ave NE	South Side	\$714
	Fremont Ave N: N 165 th St to N 175 th St	Both Sides	\$1,720
	5 th Ave NE: NE 185 th to NE 195 th St	Both Sides	\$1,720
	NW 195 th : 8 th Ave NW to Fremont Ave NW	Both Sides (missing links)	\$2,180



City of Shoreline
COMPREHENSIVE PLAN

April 2005

LEGEND

- - - Sidewalk - NW side
- - - Sidewalk -00 S/E side
- - - Sidewalk - Both side
- New Project



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

Pedestrian Projects Recommended for Funding



Figure T-20: Pedestrian Projects Recommended for Funding

Bicycle Improvements

Shoreline recognizes the importance of bicycling as a mode 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. Key elements for Shoreline's bicycle system should include the following:

Lake to Sound Trail (east-west link). An east-west connection through the city of Shoreline that provides links with North City to the east with Richmond Beach to the west

Interurban Trail (north-south link). An off road facility offering bicyclists and pedestrians a safe, separated trail along the Aurora Avenue N corridor, ultimately connecting to Seattle and Snohomish County.

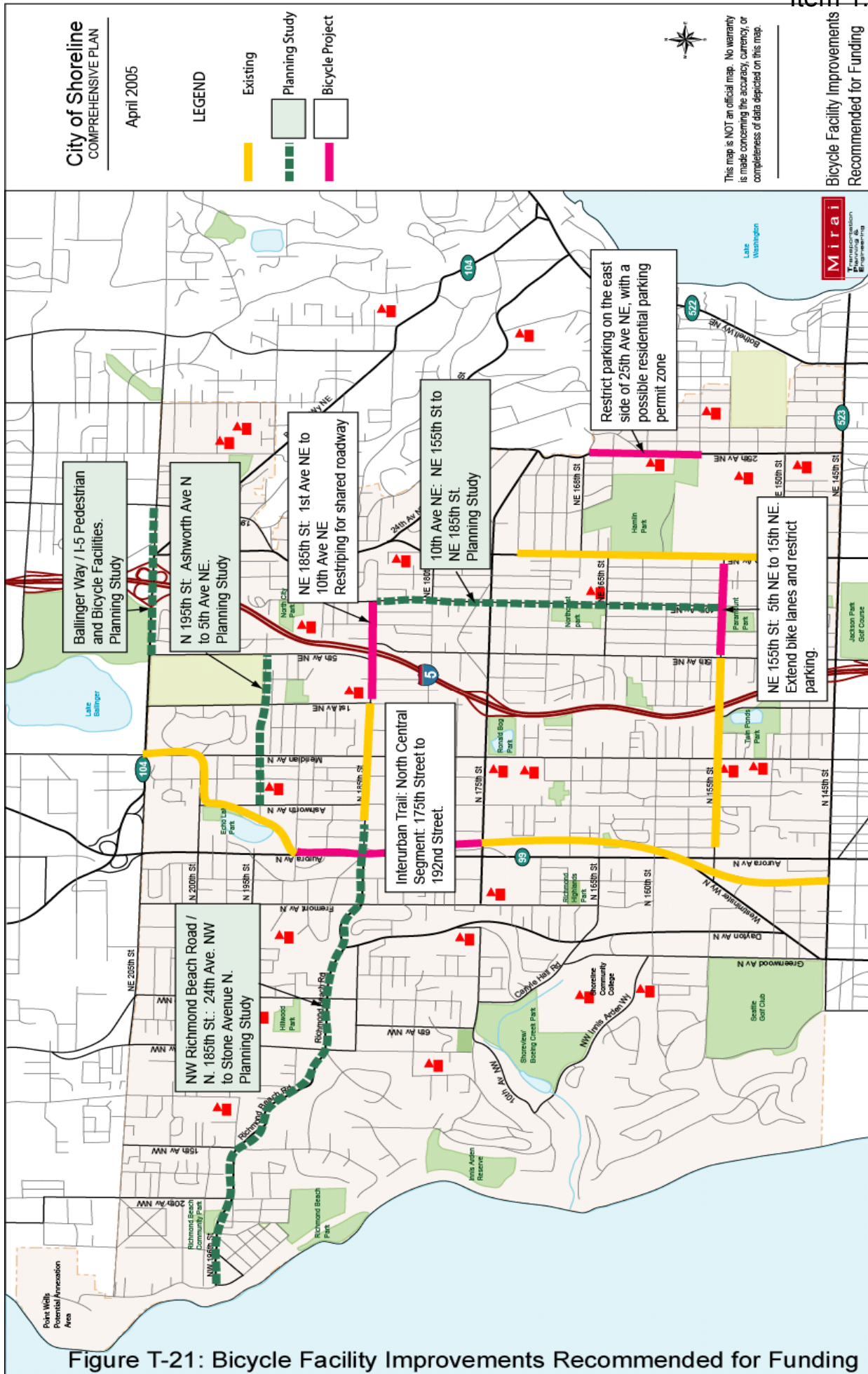
Shoreline Loop (circulator route). A continuous pedestrian/bicycle loop within the city connecting neighborhoods with schools, local businesses, community institutions and other parts of the city.

Cross-town Connector (east-west link). An I-5 crossing, using a combination of bike lanes, sidewalks and mixed traffic applications. Study of a potential pedestrian/bicycle over- or underpass at either 167th Street or 165th Street is recommended.

Potential projects were evaluated within the prioritization matrix shown in Chapter 5 of the Transportation Master Plan (2004). Recommended bicycle improvement projects are listed in Table T-17 and mapped on Figure T-21.

Table T-17: Bicycle Projects Recommended for Funding

Bicycle Projects Recommended for Funding			
Project	Location	Improvement	Cost in 2004\$ (thousands)
Interurban Trail North Central Segment	North Central Segment: 175 th – 192 nd Street	Mixed use trail	\$1,971
Bicycle Program	Citywide		\$150
	<u>Candidate Projects</u>		
	NE 185 th Street: 5 th Ave NE to 10 th Ave NE	Restriping, shared roadway, both sides	\$120,000
	Restrict parking on the east side of 25 th Ave NE in the vicinity of Shorecrest High and Kellogg Middle Schools, with a possible residential parking permit zone for neighborhood residents.	East	Not estimated
	NE 155 th St: 5 th NE to 15 th NE. Extend bike lanes and restrict parking	South	\$22,000
Planning Studies	Multiple Locations (see Capital Facilities Plan)		Funded through “project studies” in Roadway Projects
	<u>Candidate Projects</u>		
	10th Avenue NE: NE 155th Street to NE 185th Street	10’ off-road asphalt trail, one side	Candidate for initial “Green Street” project. Study funded through “project studies”
	N 195th Street: Ashworth Avenue N to 5th Avenue NE	10’ off-road asphalt trail, one side	Candidate for initial “Green Street” project. Study funded through “project studies”
	NW Richmond Beach Road / N 185th Street: 24 th Ave NW to Stone Avenue N	Restriping, shared roadway, both sides	Study funded through “project studies” project placeholder in roadway projects.
	Ballinger Way/I-5 Pedestrian and Bicycle Facilities	Improved pedestrian and bicycle access under I-5 at Ballinger Way/N 205th	Study funded through “project studies”



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

Bicycle Facility Improvements Recommended for Funding

Figure T-21: Bicycle Facility Improvements Recommended for Funding

Transportation Demand Management (TDM)

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. With limited resources to build new capacity and continued employment growth, Transportation Demand Management (TDM) strategies are cost-effective, complementary, and efficient alternatives to additional investment in transportation facilities.

The City of Shoreline should emphasize the following elements in supporting TDM programs in the city and region:

- Provide tools and resources for employers and property owners to develop economical and effective choices for customers' and employees' access and mobility.
- Emphasize Incentives for developers and commuters. For employers and developers, incentives involve receiving a return for conducting TDM, such as preferential treatment in the development review process or bonuses in the development process. Incentives for travelers and commuters, on the other hand, can include subsidies, transit passes, and financial incentives.
- Encourage the development of organizations that coordinate transportation needs through public-private partnerships. A key TDM strategy supports the formation of organizing structures such as Transportation Management Associations (TMAs). These organizations allow local business, property owners, and residents to partner with the city to coordinate and implement comprehensive transportation services and infrastructure within a localized area.

Freight and Mobility System

Trucks delivering wholesale and retail goods, business supplies and building materials throughout the City are impacted by and themselves impact traffic congestion. The City must ensure that trucks have the ability to move to and through Shoreline. On the other hand, the City needs to ensure that residential streets are not unnecessarily impacted by cut-through truck traffic. The November 2000 North City Sub-Area Plan designates a number of business access routes to provide safer freight movements off of the main 15th Avenue NE roadway. Development of a business access road for businesses along Highway 99 would provide extra access for freight deliveries while moving trucks off of the heavily used Highway 99 corridor. The City should also develop time-limited loading zones in commercial areas. Figure T-22 shows the City's truck routes.

Regional Coordination

The City of Shoreline's greatest increase in projected travel over the next 25 years is in the area of regional travel. New employment and shopping opportunities will increase the need for travelers to be able to get to, into and through Shoreline to reach their destinations. If Shoreline's businesses are to be successful and thrive, the City and region must provide a broad range of multimodal improvements to address congestion and mobility needs.

Transportation Element – Supporting Analysis

Shoreline's transportation system 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 the Washington State Department of Transportation, the Puget Sound Regional Council, Sound Transit, King County (including Metro Transit), Snohomish County, Community Transit, and the neighboring cities of Seattle, Lake Forest Park, Edmonds and Woodway. The City of Shoreline can play an important role in facilitating regional action to provide and fund convenient travel choices. Shoreline will benefit from a more active role in representing the City's interests and the Comprehensive Plan goals and policies in this context. Given the multiplicity of forums, the City should focus its efforts on agencies that can provide funding or services to the City. This should be a three-step effort:

Step 1: Identify priorities. Identify those improvements involving other agencies that are most important to the City (especially transit and pedestrian improvements along Highway 99, the Interurban Trail, NE 145th, NE 205th and Interstate 5).

Step 2: Identify opportunities. Become familiar with federal, state, regional and county budget and appropriations processes. Participate in regional and county planning processes that will affect the city's strategic interests.

Step 3. Form strategic alliances. Develop strategic legislative agendas and strong working relationships with local, regional, state and federal agency staff and elected officials. Develop partnerships with the local business community to advocate at the federal, state and regional level for common interests.

- Legend
- City Area
 - Parks
 - Truck Routes



This map is NOT an official map. No warranty is made concerning the accuracy, currency, or completeness of the information depicted on this map.
DATE: 12/15/2015

Truck Routes

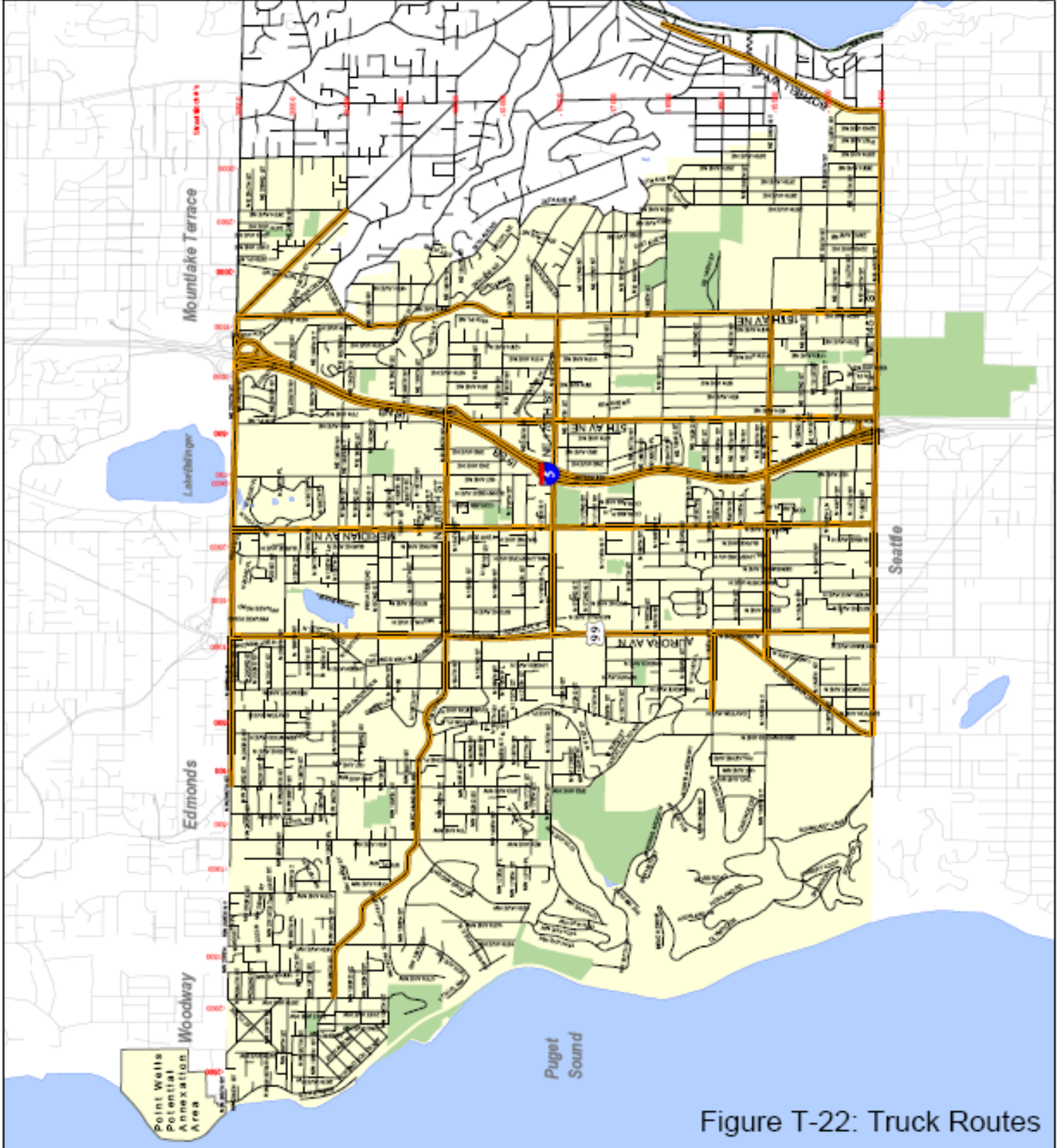


Figure T-22: Truck Routes

Financial Analysis

Financial Forecast

Based upon current funding sources and awarded grants, Table T-18 shows approximately \$132 million in funding expected to be available in the next 20 years for transportation capital projects. Approximately \$40 million comes from current federal or state grants.

Table T-18. 20-Year Transportation Revenue Forecast

20-Year Revenue Forecast (2004 dollars)	
	20-Year Forecast
Existing Reserves	\$9,518,426
CIP Revenue Forecast 2005-2010 (converted to 2004\$)	\$78,759,243
Local Revenue forecast 2011-2024	\$27,795,250
SWU Components	\$8,033,000
Assumed New Grants	\$7,503,000
Total Estimated Revenue 2005-2024	\$131,608,919

Federal and State Revenue Sources

Federal Funding

The federal funding picture for the 2004 Transportation Equity Act: A Legacy for Users (TEA-LU) has not yet been determined. Some Congressional observers envision a greater emphasis on roadway funding than in the previous Transportation Equity Act for the 21st Century (TEA-21), passed in 1998. At present, funding programs in TEA -21 emphasize multimodal improvements such as the Surface Transportation Program, which gives regions greater independence to invest in alternate modes of travel, including capital transit projects, such as High Occupancy Vehicle (HOV), Light Rail Transit (LRT), and park and ride facilities.

State Funding

The 2005 Legislature adopted a 9.5 cents gas tax increase phased in over the next four years (3 cents the first year, 3 cents the second year, 2 cents the third year, and 1.5 cents the fourth year), a weight fee on vehicles under 8,000 pounds (up to 4,000 lbs - \$10, 4,000 to 6,000 lbs - \$20, 6,000 to 8,000 lbs - \$30) and various fee increases for vehicle and driver licensing requests. A portion of this revenue is earmarked for cities and counties, but these funds were not included in the Table T-18 revenue calculations at the time this report went to press. Previously, the 2003 Legislature adopted a five-cent per gallon gas tax that is predicted to raise approximately \$4.178 billion dollars over a ten-year period. That revenue package also included a 0.3% vehicle transfer fee and a 15% vehicle gross weight fee. In past years, the Legislature recognized the need for an integrated transportation system as an essential element in the movement of goods, people and service. Consequently, local governments were provided a share of the revenue packages. The Motor Vehicle Fuel Tax and Motor Vehicle Excise Tax (MVET) continue to serve as the two major State revenue

sources for highway maintenance and arterial construction funds.

Funding Plan

Full funding of the additional investments beyond Priority Level 1A outlined in the Capital Facilities Plan within twenty years would require significant additional revenue. The entire recommended project lists in the Capital Facilities Plan and Transportation Master Plan more realistically represent 20-40 years of improvements.

This page intentionally blank

Growth Management Act Subelements

The seven subelements of the Transportation Element required by the Growth Management Act, RCW 36.70A.070(6), are included in the Transportation Master Plan and incorporated herein by reference:

- A. Land use assumptions used to estimate travel. This subelement is set forth in the Transportation Master Plan (2011) (“TMP”), Pages ~~263-268~~ 269-278.**
-

A p p e n d i x E : F o r e c a s t s

What Does the Future Hold?

Understanding the future nature and volume of traffic in the City makes it possible to recommend appropriate transportation facility improvements in Shoreline. This information builds upon an understanding of existing traffic volumes and flow patterns in the City. The City contracted with DKS Associates to develop a 2030 Shoreline travel demand forecast model to analyze future traffic volumes for the TMP. This model uses the Puget Sound Regional Council’s four-county regional transportation model as a base, but divides Shoreline into a much more detailed zone and network system. The City will be able to update this model as needed when land use forecasts are revised and other input data, such as new developments or roadway improvements, are constructed.

Demographic data sets, including household and employment forecasts associated with a system of transportation analysis zones (TAZs), form the basis for travel demand forecasting. Within Shoreline, household and employment forecasts were based upon future growth estimates developed by King County. For the region outside the City, the model used PSRC’s regional household and employment forecasts for 2030, with some adjustments.

In general, the traffic modeling shows that Shoreline’s future traffic issues are fairly manageable.

Traffic Model Development

The City began development of the traffic model in 2009. At that time, the most complete data set available for construction of the model was 2008 household and employment data from public records and surveys conducted by PSRC. Therefore, the travel demand model for existing conditions reflects 2008 population and employment and was validated with 2008

traffic counts. A 2030 travel demand model was also developed to forecast 2030 traffic volumes based on the projected growth in households and employment growth within the City of Shoreline and the surrounding region.

Shoreline Zone and Network Structure

The Shoreline transportation model is a refined focus area model developed from the Puget Sound Regional Council (PSRC) regional travel demand model. Within the construct of the regional model, Shoreline consists of approximately eighteen regional transportation analysis zones. To develop the Shoreline model, the regional transportation analysis zone structure was replaced with 141 Shoreline Analysis Zones (SAZs), shown in **Figure E1, Shoreline Analysis Zones**. These zones are a finer division of the analysis zones present in the PSRC travel demand forecast model, which incorporates the four counties of the Puget Sound Region – King, Snohomish, Pierce and Kitsap. Using the PSRC model as a base allows the City to analyze projected traffic growth in Shoreline on a microscopic scale while still incorporating the anticipated growth in the region that may impact Shoreline.

In addition to refining the transportation analysis zones, the roadway network was also refined to include all principal, minor and collector arterials and local primary streets. The interstate network was also refined to reflect interchange ramps separately from the I-5 mainline so that impacts on Shoreline streets at interchange ramp terminals is more accurately represented.

Current Year Land Use Data Refinement

The base year estimates of housing and employment are key inputs to the development of the Shoreline travel demand forecasting model. The City used data from the Office of Financial Management to document the number of households in Shoreline. Employment figures were drawn from an employee survey conducted by the Puget Sound Regional Council. The employment database consists of job data for each employer within the City of Shoreline. Each record includes the employment sector data and the estimated number of employees. The final zonal estimates of “covered” employment are then factored to develop total employment in a zone.

The data was aggregated to the Shoreline SAZ system and summarized to develop estimates of five groups of employment sectors. The employment sectors include Retail, FIRES (Finance, Insurance, Real Estate and Services), Government and Education, Manufacturing and WTCU (Wholesale, Transportation, Communication and Utilities). The transportation modeling process assigns different trip generation rates based on land use categories and factors such as household size, the number of workers in a household and employment types.

Year 2030 Land Use Forecasts

The City selected the year 2030 as the planning horizon for developing the future traffic forecasts. Using the growth estimates provided by King County, the City developed the 2030 housing and employment forecasts. To assist in the transportation analysis, the 2030 housing and employment data was aggregated into the Shoreline's 141 SAZs. The PSRC 2030 housing and employment data was used for the remaining zones outside the City of Shoreline. **Table E.1, Housing and Employment Change in Shoreline 2000-2030**, shows the changes to the City's demographics over the past ten years and the projections for future growth.

Table E.1. Housing and Employment Change in Shoreline 2000-2030

	2000	2009*	2000-2009 Change	2030 (Projected)	2009-2030 Projected Change
Housing Units	21,338	22,394	4.9%	26,656	19%
Single-Family	15,776	16,065	1.8%	n/a	n/a
Multi-Family	5,373	6,205	15.5%	n/a	n/a
Other**	189	124	-34.4%	n/a	n/a
Jobs	15,820	17,035	7.7%	21,336	25.2%

Sources: Office of Financial Management; Puget Sound Regional Council

*Jobs figure is based upon 2008 estimates from the Puget Sound Regional Council.

**Other includes Manufactured Homes, House Trailers and Special Housing. Special Housing is unusual living quarters that are not intended for permanent living (e.g., travel trailers, recreational vehicles, boats, boxcars, tents).

For development of the travel demand model, the City evaluated three land use scenarios – the Auroracentric scenario, Transit Oriented Development scenario and the Dispersed scenario. Each scenario was based upon the City's assigned growth targets for 2030 of 5,000 new households and 5,000 new jobs. Each of the 2030 land use scenarios include the two light rail station locations identified in the Sound Transit 2 package along Interstate 5 at NE 145th Street and NE 185th Street. Parking for 500 vehicles was assumed at each station. Each scenario also includes the same growth in households and employment for all zones outside of the City of Shoreline, in accordance with PSRC forecasts.

Following is a description of each scenario and the assumptions associated with each scenario.

1. Auroracentric scenario – This scenario assumed that the vast majority of household and job growth will be centered on the Aurora Avenue N corridor. All of the new jobs are allocated to the SAZs directly adjacent to Aurora and two SAZs just off of Aurora. Similarly, eighty percent of the new housing units are concentrated along Aurora Avenue N. High concentrations of new jobs and housing units are located at:

- Aurora Avenue N and N 145th to N 155th Streets
- Aurora Square (Aurora Avenue N and N 155th to N 160th Streets)
- Town Center (Aurora Avenue N and N 175th to N 185th Streets)
- Shoreline Park & Ride (Aurora Avenue N and N 188th to N 192nd Streets)
- Aurora Village (Aurora Avenue N and N 200th to N 205th Streets)

The remaining 20 percent of housing units (1,000 units) are distributed evenly throughout the City.

2. Transit Oriented Development scenario – This scenario assumes that new household and job growth will be concentrated around several transit hubs and corridors in Shoreline. Primary concentrations of new jobs and housing occur at:

- NE 145th Street and Interstate 5
- Bothell Way NE and NE 145th Street
- North City
- NE 185th Street and Interstate 5
- Shoreline Park & Ride (Aurora Avenue N and N 188th to N 192nd Streets)
- Ballinger Way NE and 15th Avenue NE
- The Aurora Corridor

Aurora Village (Aurora Avenue N and N 200th to N 205th Streets) is identified as another location for new jobs, and the area around 15th Avenue NE and NE 145th Street is identified as another location for new housing units. Approximately $\frac{1}{4}$ (1,250 units) of the City's household growth is dispersed evenly throughout the City in accordance with existing densities.

3. Dispersed scenario – This scenario assumes that job and housing growth is dispersed throughout the City in a similar manner to existing land uses, with some areas of concentrated growth. Job and household growth is located at:

- The Aurora Corridor
- Fircrest Residential Rehabilitation Center
- NE 145th Street and Bothell Way NE
- NE 165th Street and 5th Avenue NE
- Crista Ministries
- NE 145th Street and 15th Avenue NE

Additional new jobs would be located at Shoreline Community College, North City, Richmond Beach and the Hillwood neighborhood, and additional new housing units are located at Aurora Square and the neighborhood east of the commercial parcels on Aurora Avenue N from N 145th to N 150th Streets. The remaining 25 percent of the City's household growth would be dispersed evenly throughout the City in accordance with existing zoning.

The future traffic impacts of these three scenarios were shown by the traffic model to be similar throughout the City. In response to these results and current planning efforts underway at the time of the model's creation, staff created a "TOD Enhanced" scenario. This scenario assumes concentrations around the transit hubs in the original TOD scenario to a lesser degree, with additional increased concentrations of jobs and housing units in the Town Center (Aurora Avenue N from N 175th to N 185th Streets). **Table E-2, Growth Allocations to Shoreline Transportation Analysis Zones - TOD Enhanced Scenario**, displays where jobs and housing units are currently located in Shoreline and how growth was distributed throughout the City in the TOD Enhanced scenario.

Table E-2. Growth Allocations to Shoreline Transportation Analysis Zones - TOD Enhanced Scenario

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
1	400	841	1241	32	0	32
2	48	82	130	32	50	82
3	48	63	111	32	99	131
4	48	29	77	32	21	53
5	350	207	557	300	92	392
6	48	32	80	300	383	683
7	48	235	283	100	39	139
8	0	50	50	7	56	63
9	100	298	398	59	0	59
10	250	159	409	200	165	365

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
11	0	12	12	7	90	97
12	0	32	32	7	71	78
13	200	245	445	400	63	463
14	250	159	409	300	131	431
15	0	74	74	7	132	139
16	150	299	449	32	0	32
17	82	159	241	32	43	75
18	48	268	316	32	0	32
19	48	187	235	31	21	52
20	47	87	134	31	0	31
21	47	69	116	31	140	171
22	47	24	71	31	0	31
23	400	647	1047	250	3	253
24	150	881	1031	7	0	7
25	47	174	221	31	25	56
26	47	268	315	31	202	233
27	47	410	457	31	118	149
28	0	80	80	7	434	441
29	0	191	191	7	718	725

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
30	0	2	2	7	148	155
31	0	44	44	7	272	279
32	0	153	153	7	330	337
33	0	5	5	7	129	136
34	0	76	76	7	255	262
35	0	63	63	7	485	492
36	0	71	71	7	311	318
37	0	33	33	7	157	164
38	600	128	728	500	20	520
39	0	9	9	7	278	285
40	0	8	8	7	220	227
41	100	158	258	300	127	427
42	100	470	570	150	116	266
43	0	96	96	7	132	139
44	0	4	4	7	112	119
45	0	9	9	7	106	113
46	0	74	74	7	371	378
47	0	0	0	0	0	0
48	0	0	0	0	0	0

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
49	0	45	45	7	246	253
50	0	0	0	0	0	0
51	0	0	0	0	0	0
52	0	0	0	0	0	0
53	0	0	0	0	0	0
54	0	100	100	7	501	508
55	0	96	96	7	706	713
56	0	123	123	7	193	200
57	0	161	161	7	197	204
58	0	163	163	7	287	294
59	0	32	32	7	589	596
60	0	749	749	7	90	97
61	0	4	4	7	64	71
62	0	1	1	7	85	92
63	0	9	9	7	170	177
64	0	27	27	7	302	309
65	0	8	8	7	218	225
66	50	424	474	200	147	347
67	100	150	250	7	507	514

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
68	0	25	25	7	593	600
69	0	0	0	0	0	0
70	0	0	0	0	0	0
71	0	1	1	7	17	24
72	0	683	683	7	0	7
73	0	22	22	7	235	242
74	0	15	15	7	63	70
75	0	227	227	7	259	266
76	0	62	62	7	285	292
77	0	23	23	7	326	333
78	0	112	112	7	184	191
79	0	21	21	7	95	102
80	0	92	92	7	319	326
81	150	361	511	7	26	33
82	0	108	108	7	227	234
83	50	88	138	7	45	52
84	0	125	125	7	323	330
85	0	0	0	0	0	0
86	0	0	0	7	109	116

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
87	0	111	111	7	104	111
88	0	73	73	7	132	139
89	0	10	10	7	225	232
90	0	278	278	7	130	137
91	0	19	19	7	152	159
92	0	42	42	7	266	273
93	0	12	12	7	103	110
94	0	192	192	7	263	270
95	0	38	38	7	322	329
96	0	7	7	6	273	279
97	0	27	27	50	82	132
98	0	48	48	6	314	320
99	0	38	38	6	224	230
100	0	11	11	6	138	144
101	0	0	0	6	0	6
102	0	1097	1097	6	0	6
103	0	20	20	6	111	117
104	0	241	241	100	32	132
105	0	133	133	100	278	378

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
106	0	55	55	6	87	93
107	0	89	89	6	0	6
108	200	94	294	100	234	334
109	0	224	224	6	0	6
110	0	4	4	6	0	6
111	0	0	0	0	0	0
112	0	208	208	6	391	397
113	0	0	0	0	0	0
114	0	0	0	0	0	0
115	0	12	12	6	158	164
116	0	0	0	0	0	0
117	0	0	0	6	29	35
118	0	28	28	6	341	347
119	0	36	36	6	266	272
120	0	18	18	6	152	158
121	0	17	17	6	231	237
122	0	9	9	6	150	156
123	0	11	11	6	107	113
124	200	6	206	150	88	238

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
125	0	1	1	6	145	151
126	50	48	98	50	134	184
127	0	0	0	6	93	99
128	0	46	46	6	297	303
129	0	42	42	6	311	317
130	100	2	102	100	80	180
131	0	28	28	6	105	111
132	100	2	102	100	112	212
133	0	19	19	6	128	134
134	0	63	63	6	106	112
135	0	459	459	6	195	201
136	0	103	103	6	230	236
137	100	6	106	50	188	238
138	150	0	150	100	32	132
139	0	0	0	0	0	0
140	0	0	0	0	0	0
141	0	81	81	6	208	214
TOTAL	5000	15830	20830	5000	21820	26820

2030 Traffic Volumes (PM Peak Hour)

The travel demand model assigns forecasted trips throughout the City based upon trip origins and destinations and the projected travel times on the roadway network. The trip assignment is an iterative process where travel times are updated after each assignment to reflect where congestion occurs in the network until an equilibrium is reached between individual assignments. The traffic volumes forecasted on the City of Shoreline roadway network were post-processed against 2008 traffic counts prior to being used for evaluation of the roadway network. Post-processing 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 to a traffic analysis software program, known as Synchro, to calculate levels of service at signalized intersections. **Figure E2, 2008 1 Hr PM Count Volumes** and **Figure E3, 2030 Base 1 Hr PM Post Processed Volumes**, show the 2008 PM peak hour traffic volumes by direction and 2030 PM peak hour traffic volumes forecasted with the Shoreline model on the arterials in the City. **Figure E4, Volume Difference 2030 Base vs. 2008 1 Hr PM Peak**, shows the projected net difference in number of trips on street segments throughout the City. The percent change in traffic volumes for the same street segments is shown in **Figure E5, Percent Growth 2030 Base vs. 2008 PM Peak**.

The anticipated capacity of roadways is based upon the number of lanes and type of facility that a roadway has, or will have in the future. By comparing the future traffic volume to the roadway capacity, the travel demand model can be used to identify the projected congestion for streets throughout Shoreline. The degree of congestion can be quantified using the Volume to Capacity (V/C) ratio. The V/C ratio divides the projected traffic volumes by the capacity of a roadway segment. The lower the V/C ratio, the less congested a roadway is. For arterial streets, V/C ratios of 0.8 or less represent stable operations, with little to no congestion. As the V/C ratio increases to 0.9–1.0, the transportation network begins to experience congested conditions with substantial increases in delays and excessive queues at signalized intersections. When the V/C ratio exceeds 1.0, the roadway has exceeded its capacity and the transportation network experiences significant congestion with very low travel speeds, long queues at intersections that do not clear within a single cycle and poor progression through a corridor. **Figure E6, Volume/Capacity Ratio at Count Locations Shoreline 2030 Base 1 Hr PM Peak**, displays the forecast congestion for roadway segments in Shoreline.

Impacts to State-Owned Transportation Facilities

State law requires that the transportation element of the City's Comprehensive Plan include an assessment of impacts to state-owned transportation facilities. The Shoreline model developed for the TMP incorporates the state-owned facilities throughout the Puget Sound

area, including those located within the City of Shoreline. Three state-owned facilities are located within the City of Shoreline: SR 99 (Aurora Avenue N) from N 145th Street to N 205th Street, Interstate 5 and a short segment of SR 104 (Ballinger Way NE) at the northeast corner of the City. Shoreline also borders SR 522 (Bothell Way NE) at the southeast corner of the City and SR 523 (N/NE 145th Street from SR 522 to Aurora Avenue N) on the southern edge of the City. The impacts to state routes that border Shoreline were not analyzed.

Interstate 5

The sections of Interstate 5 (I-5) within the City of Shoreline carry about 159,000 to 191,000 vehicles per day. During the AM peak hour, the southbound I-5 lanes carry over 9,000 vehicles per hour on the general purpose lanes, which operate at capacity with poor levels of service. Likewise, during the PM peak hour, the northbound I-5 lanes carry 7,000-9,000 vehicles per hour, which indicates severe traffic congestion. There is little room for traffic volumes to increase in the peak direction of I-5 during AM and PM peak period. Because of this lack of capacity on I-5, Shoreline receives spillover on other streets, such as Aurora Avenue N, Meridian Avenue N, 15th Avenue NE, 5th Avenue NE and Dayton Avenue N.

There are no current plans to expand I-5 in the Shoreline area, so traffic growth will be accommodated for the most part by the Shoreline's arterial streets. Regional growth and the resulting demand for more travel in the future will actually reduce access to I-5 from Shoreline. It is projected that traffic volumes on the City's arterial streets near I-5 will increase because of the increased pass-through traffic. This plan recommends that the City and State Department of Transportation work together to manage the current and forecasted congestion problems on I-5.

Aurora Avenue N (SR 99)

By 2030, the traffic volumes on Aurora Avenue N throughout the City are expected to increase. During the PM peak hour, the projected increase in traffic volumes is between 200 and 700 vehicles, representing an increase of 16–47 percent along the corridor; the highest concentrations of growth occurring from N 165th to N 185th Streets and north of N 192nd Street. The PM Peak direction on Aurora Avenue N is northbound. The V/C ratio in the northbound direction ranges from .74 (moderate levels of congestion) to .99 (roadway is at capacity).

Ballinger Way NE (SR 104)

Less than one mile of SR 104 is located within the City of Shoreline. The City section of SR 104 has 5 lanes. The projected traffic growth during the PM peak hour is 200-400 vehicles

southbound and a small reduction in volume in the northbound direction of approximately 10–70 vehicles. Ballinger Way NE is expected to have low to moderate levels of congestion, except at the intersection with NE 195th Street, where the V/C ratio is expected to be 1.09.

Impacts to Shoreline Arterial Streets

All arterial streets in Shoreline are forecast to experience some level of growth. The highest levels of growth will be on the Principal and Minor Arterials, including N/NE 155th Street, N/NE 175th Street, N/NE 185th Street, Dayton Avenue N, Westminster Way N and 15th Avenue NE. Most Collector Arterials will experience a moderate amount of growth.

Without any improvements or modifications, several arterial streets in Shoreline are expected to experience high levels of congestion by 2030. Meridian Avenue N is forecast to operate at or above capacity from N 155th Street to N 200th Street, as is 15th Avenue NE from NE 150th Street to NE 175th Street. Small segments of Greenwood Avenue N, 8th Avenue NW, Dayton Avenue N, Fremont Avenue N, NE 175th Street, NE 185th Street, and 5th Avenue NE are forecast to operate at or above capacity. More detail on the impacts and projects proposed to mitigate these impacts are addressed in Chapter 10.

- B. Traffic impacts to state-owned transportation facilities. This subelement is set forth in the TMP (2011), Page ~~267~~ 276-277.**
-

Impacts to State-Owned Transportation Facilities

State law requires that the transportation element of the City's Comprehensive Plan include an assessment of impacts to state-owned transportation facilities. The Shoreline model developed for the TMP incorporates the state-owned facilities throughout the Puget Sound area, including those located within the City of Shoreline. Three state-owned facilities are located within the City of Shoreline: SR 99 (Aurora Avenue N) from N 145th Street to N 205th Street, Interstate 5 and a short segment of SR 104 (Ballinger Way NE) at the northeast corner of the City. Shoreline also borders SR 522 (Bothell Way NE) at the southeast corner of the City and SR 523 (N/NE 145th Street from SR 522 to Aurora Avenue N) on the southern edge of the City. The impacts to state routes that border Shoreline were not analyzed.

Interstate 5

The sections of Interstate 5 (I-5) within the City of Shoreline carry about 159,000 to 191,000 vehicles per day. During the AM peak hour, the southbound I-5 lanes carry over 9,000 vehicles per hour on the general purpose lanes, which operate at capacity with poor levels of service. Likewise, during the PM peak hour, the northbound I-5 lanes carry 7,000-9,000 vehicles per hour, which indicates severe traffic congestion. There is little room for traffic volumes to increase in the peak direction of I-5 during AM and PM peak period. Because of this lack of capacity on I-5, Shoreline receives spillover on other streets, such as Aurora Avenue N, Meridian Avenue N, 15th Avenue NE, 5th Avenue NE and Dayton Avenue N.

There are no current plans to expand I-5 in the Shoreline area, so traffic growth will be accommodated for the most part by the Shoreline's arterial streets. Regional growth and the resulting demand for more travel in the future will actually reduce access to I-5 from Shoreline. It is projected that traffic volumes on the City's arterial streets near I-5 will increase because of the increased pass-through traffic. This plan recommends that the City and State Department of Transportation work together to manage the current and forecasted congestion problems on I-5.

Aurora Avenue N (SR 99)

By 2030, the traffic volumes on Aurora Avenue N throughout the City are expected to increase. During the PM peak hour, the projected increase in traffic volumes is between 200 and 700 vehicles, representing an increase of 16-47 percent along the corridor; the highest

concentrations of growth occurring from N 165th to N 185th Streets and north of N 192nd Street. The PM Peak direction on Aurora Avenue N is northbound. The V/C ratio in the northbound direction ranges from .74 (moderate levels of congestion) to .99 (roadway is at capacity).

Ballinger Way NE (SR 104)

Less than one mile of SR 104 is located within the City of Shoreline. The City section of SR 104 has 5 lanes. The projected traffic growth during the PM peak hour is 200-400 vehicles southbound and a small reduction in volume in the northbound direction of approximately 10-70 vehicles. Ballinger Way NE is expected to have low to moderate levels of congestion, except at the intersection with NE 195th Street, where the V/C ratio is expected to be 1.09.

- C. Facilities and service needs. This subelement is set forth in the TMP (2011), including an inventory of transportation facilities (pages 130-131) and services at TMP Pages ~~119~~ 120-121, ~~251-268~~ 255-268; level of service standards for Shoreline roads and transit routes at TMP Pages ~~190~~ 193; level of service for state highways at TMP Pages ~~183-184~~ 185-186; actions required for bringing local road into compliance with levels of service at TMP Page ~~195~~ 196-197; ten-year forecast of traffic at TMP Pages ~~263-268~~ 269-278; and local and state system needs to meet current and future demands at TMP Page ~~192~~ 194-195.
-

S h o r e l i n e ' s T r a n s i t S y s t e m

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.

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.

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.

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.

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).

Appendix D: Master Street Plan

The Master Street Plan identifies specific roadway cross-sections for all Arterial Streets and Local Primary Streets in the City of Shoreline. It is intended to guide the development of streets throughout the City. The planned cross-sections for these streets establish the location of future curbs so that streets can be constructed in the proper location.

The Master Street Plan also identifies a general cross-section for Local Secondary Streets which provide for travel in each direction, on-street parking and sidewalks on each side of the street. Due to the large number of Local Secondary Streets in the City, 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 when redevelopment occurs. Additionally, because the needs and conditions of the Local Secondary Streets vary greatly throughout the City, the design criteria must be flexible.

The design criteria for Local Secondary Streets may vary in the following ways:

- Curb-to-curb widths
- Ditch on one side in the place of amenity zones
- Sidewalk on one side only

- Parking on one side only
- Wider amenity zone
- Meandering sidewalk
- Pervious walkways
- Curb on one side only
- Concrete edge – at-grade sidewalk

Many of these features will also be included as part of Green Street projects in the City.

In accordance with the adopted policies and implementation strategies associated with the Master Street Plan, the following principles accompany its implementation:

Frontage improvements shall support the adjacent land uses and fit the character of the areas in which they are located. Five feet is the standard sidewalk width adjacent to single family residential land uses, and eight feet is the standard sidewalk width adjacent to all land uses other than single-family residential. Increased width may be required if determined by a traffic study.

The amenity zone should be developed in a manner that is appropriate and complimentary to the adjacent land uses and use of the street. The minimum width for amenity zones is five feet. Amenity zones should generally be landscaped and, where possible, utilized for stormwater management purposes. Amenity zones adjacent to roadways that do not have off-street parking shall be landscaped as much as possible. In areas where a wide pedestrian walking surface is desired, such as commercial areas, 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.

The identified cross-sections should still allow for flexibility to account for site-specific, unique or unforeseen circumstances (such as presence of bus stops), topography, sensitive areas and presence of significant vegetation (large trees).

The maximum right-of-way needs for street classifications are as follows:

- Principal Arterial – 122 feet
- Minor Arterial – 84 feet
- Collector Arterial – 80 feet
- Local Primary Street – 66 feet
- Local Secondary Street – 90 feet

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
ARTERIAL STREETS AND LOCAL PRIMARY STREETS								
Collector Arterial	1st Ave NE	N 145th St	N 149th St	60	26-37	63	36	East side properties must dedicate 3 feet in conjunction with redevelopment.
Collector Arterial	1st Ave NE	N 149th St	NE 155th St	82-123	30-36	63-66	36	Wider amenity zones where there is extra right-of-way.
Collector Arterial	1st Ave NE	NE 185th St	Approx. 175 feet south of NE 190th St	60	35	65	38	Property on the east will dedicate 5 feet at the time of redevelopment
Collector Arterial	1st Ave NE	Approx. 175 feet south of NE 190th St	Approx. 130 feet north of NE 192nd St	60	47-60	60	48	Utilize the eastern 18' for back in angle parking and sidewalk. A portion of the sidewalk is on City property or will be dedicated.
Collector Arterial	1st Ave NE	Approx. 130 feet north of NE 192nd St	NE 195th St	60	21-29	60	39	Property at the SE corner of 1st and 193rd was required to install parking as part of Conditional Use permit.

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Collector Arterial	1st Ave NE	NE 195th St	N 205th St	60	29	60	29	Utilize the eastern 16.5 ' for natural stormwater treatment
Collector Arterial	3rd Ave NW	NW 171st St	NW 175th St	60-90	22-34	62	36	On-street parking to be provided where feasible
Local Primary Street	3rd Ave NW	NW 180th st	NW Richmond Beach Rd	60	24-30	60	30	
Collector Arterial	3rd Ave NW	NW Richmond Beach Rd	NW 205th St	60	28-36	60	36	
Minor Arterial	5th Ave NE	NE 145th St	NE 148th St	60	43			
Minor Arterial	5th Ave NE	NE 148th St	NE 163rd St	60	43	66	44	Combined bicycle and parking lane. Need to acquire 3 feet from each side.
Minor Arterial	5th Ave NE	NE 163rd St	Approx. 300 feet north of NE 165th St	60-90	43-50	84	56	Combined bicycle and parking lane. Need to acquire 12 feet from each side. Construct wider amenity zone or

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
								sidewalk where ROW exceeds 84 feet.
Minor Arterial	5th Ave NE	Approx. 300 feet north of NE 165th St	NE 174th St	60-72	43	66	44	Combined bicycle and parking lane. Need to acquire 3 feet from each side.
Minor Arterial	5th Ave NE	NE 174th St	NE Serpentine Pl	60	24-42	70	44	Need to acquire 5 feet from each side.
Minor Arterial	5th Ave NE	NE Serpentine Pl	NE 185th St	52-124	22-36	66	44	Combined bicycle and parking lane. Need to acquire 3 feet from each side.
Collector Arterial	5th Ave NE	NE 185th St	NE 195th St	30-116	16-28	70	38	
Collector Arterial	5th Ave NE	NE 195th St	NE 205th St	60	25	60	43	Utilize the western 17 feet for natural stormwater treatment; use the eastern 21 ' for a combination of parking, amenity zone, natural stormwater treatment and sidewalk, based upon topography and soils.

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Collector Arterial	6th Ave NW	NW 175th St	NW 180th St	60	24	60	36	This cross-section allows for an uphill climbing lane and downhill shared/signed lane
Collector Arterial	8th Ave NW	NW 180th St	NW 185th St	60	20	60	38	
Collector Arterial	8th Ave NW	NW 185th St	NW Richmond Beach Rd	60	29-35	64	38	Property on the east side will dedicated 8' at the time of redevelopment
Minor Arterial	8th Ave NW	NW Richmond Beach Rd	Approx. 80 feet north of NW 190th St	60	22	75	50	For this cross-section, no parking on either side of the street and no bicycle lane on the west side. Figures include a right turn lane, SB through lane, left turn lane and NB through lane.
Minor Arterial	8th Ave NW	Approx. 80 feet north of NW 190th St	NW 205th St	60-75	20-32	60	38	On-street parking allowed where ROW is wider
Local Primary	10th Ave NE	NE 155th St	NE 175th St	70-80	25-36	60	32	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Street								
Collector Arterial	10th Ave NE	NE 175th St	NE 185th St	70-80	32	70-80	38	Utilize the space behind the west sidewalk for natural stormwater management
Collector Arterial	10th Ave NE	NE 185th St	NE 190th St	60-160	32	60	38	Would consider vacating and squaring the intersection at 185th and 10th; sharrow in both travel lanes
Collector Arterial	10th Ave NW	NW Innis Arden Way	NW 175th St	60	20	60	32	No sidewalk on the south side. On-street parking on the south side accommodated where possible. Cross-section across the bridge is two 12 foot travel lanes and an 8 foot sidewalk on the north side with no amenity zone.
Local Primary Street	10th Ave NW	NW 175th St	NW 180th St	50-60	20	60	36	
Collector	14th Ave NW	Springdale Ct NW	NW 175th St	60	20	60	36	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Arterial								
Principal Arterial	15th Ave NE	NE 145th St	NE 150th St	60-77	52-55	86	56	Two travel lanes in each direction
Principal Arterial	15th Ave NE	NE 150th St	NE 152nd St	60-73	44-54	90	60	Two travel lanes in each direction
Principal Arterial	15th Ave NE	NE 152nd St	NE 155th St	60-65	44-50	74	44	
Principal Arterial	15th Ave NE	NE 155th St	NE 165th St	60-65	42-50	70	44	
Principal Arterial	15th Ave NE	NE 165th St	NE 169th St	60	44	68	44	
Principal Arterial	15th Ave NE	NE 169th St	NE 172nd St	60	44	70	44	
Principal Arterial	15th Ave NE	NE 172nd St	NE 175th St	60-70	52-44	59	44	
Principal Arterial	15th Ave NE	NE 175th St	NE 180th St	70-80	40-54	79	58	Sidewalk located on private property in some locations. Two travel lanes in each direction

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Principal Arterial	15th Ave NE	NE 180th St	24th Ave NE	42-95	40-44	74	44	Narrower sidewalks and less dedication required in front of SF properties
Principal Arterial	15th Ave NE	24th Ave NE	NE 190th St	57-80	42-44	68	44	
Principal Arterial	15th Ave NE	NE 190th St	Ballinger Way NE	60-90	40-60	74	44	Narrower sidewalks and less dedication required in front of SF properties
Collector Arterial	15th Ave NW	NW 167th St	NW 175th St	60	20	50	26	
Collector Arterial	15th Ave NW	NW 188th St	Approx. 50 feet north of NW 191st St	60	20	60	36	All dedication would come from the west side, as the ROW is offset 10 ‘
Collector Arterial	15th Ave NW	Approx. 50 feet north of NW 191st St	NW Richmond Beach Rd	50-60	20-37	65	36	MF properties will dedicate 7.5 feet on each side.
Collector Arterial	15th Ave NW	NW Richmond Beach Rd	NW 205th St	40-60	24-100	60	36	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Minor Arterial	19th Ave NE	Forest Park Dr NE	NE 199th St	60	36	60	36	
Minor Arterial	19th Ave NE	NE 199th St	NE 205th St	60-70	36-40	64	36	
Local Primary Street	20th Ave NW	Saltwater Park Entrance	NW 195th	60	18	50	30	
Collector Arterial	20th Ave NW	NW 195th St	NW 205th St	40-50	22-30	60	36	
Collector Arterial	22nd Ave NE	NE 171st St	NE 172nd St	60	24-34	60	38	
Minor Arterial	24th Ave NE	24th Pl NE	15th Ave NE	60-110	26-37	60	38	
Collector Arterial	25th Ave NE	NE 145th St	NE 150th St	30-60	28-38	60	38	
Collector Arterial	25th Ave NE	NE 150th St	NE 153rd St	60	31	60	37.5	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Collector Arterial	25th Ave NE	NE 153rd St	NE 165th St	30	30-31	60	37.5	
Collector Arterial	25th Ave NE	NE 165th St	NE 168th St	60	35-43	60	38	
Collector Arterial	25th Ave NE	NE 168th St	NE 175th St	60	24-30	60	38	
Collector Arterial	25th Ave NE	NE 175th St	NE 177th St	60	23-26	60	38	
Collector Arterial	25th Ave NE	NE 177th St	NE 178th St	60-110	27	50	24	Amenity zone will be the shoulder. Preferred width on the east
Collector Arterial	25th Ave NE	NE 178th St	NE 185th St	55-67	26	60	36	
Local Primary Street	25th Ave NE	NE 195th St	NE 200th St	60	23-25	60	32	Sharrows in travel lanes

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Local Primary Street	25th Ave NE	NE 200th St	NE 205th St	60	23	60	38	Sharrows in travel lanes
Local Primary Street	Ashworth Ave N	N 155th St	N 175th St	60	24-28	60	32	
Local Primary Street	Ashworth Ave N	N 175th St	N 185th St	60	23-28	60	36	
Collector Arterial	Ashworth Ave N	N 185th St	N 192nd St	60	24-30	60	42	Shoulder is 4 feet wide.
Collector Arterial	Ashworth Ave N	N 192nd St	N 195th St	60	20-29	62.5	36	Development on the east must dedicated 2.5 feet
Collector Arterial	Ashworth Ave N	N 195th St	N 199th St	60	23	60	36	
Collector Arterial	Ashworth Ave N	N 199th St	N 200th St	60	27	62.5	36	Development on the east must dedicated 2.5 feet if developed as something other than single-family; the cross-

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
								section on the west will match the park if the City acquires additional property and extends the existing improvements.
Principal Arterial	Aurora Ave N	N 145th St	N 205th St	89-227	58-122	110	110	When redeveloping, property owners must construct full frontage improvements if interim improvements were constructed with the Aurora Corridor Improvement project. Cross-section is wider at intersections where additional lanes are required.
Principal Arterial	Ballinger Way NE	15th Ave NE	Approximately 600 feet south east of 19th Ave NE	90-120	62-86	120	60	2 travel lanes in each direction. The amenity zone width to be adjusted for BAT lanes.
Principal Arterial	Ballinger Way NE	Approximately 600 feet south east of 19th Ave NE	22nd Ave NE	100	48-56	90	40	The amenity zone width to be adjusted for BAT lanes.

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Principal Arterial	Ballinger Way NE	22nd Ave NE	25th Ave NE	80-90	42-58	68	28	All widening to occur on the east/northeast, the amenity zone width to be adjusted for topography or for BAT lanes.
Collector Arterial	Carlyle Hall Rd N	NW 171st St	Dayton Ave N	60-90	22-34	62	36	On-street parking to be provided where feasible
Collector Arterial	Carlyle Hall Road N	Evanston Place N	Dayton Ave N	60+	30+	60	38	
Minor Arterial	Dayton Ave N	Westminster Way N	N 160th St	90-111	38-54	66	44	
Minor Arterial	Dayton Ave N	N 160th St	Carlyle Hall Road N	95-108	30-38	60	38	
Minor Arterial	Dayton Ave N	Carlyle Hall Road N	N 172nd St	60	22-30	60	38	
Minor Arterial	Dayton Ave N	N 172nd St	St. Luke Pl N	60	22-30	52	32	
Minor Arterial	Dayton Ave N	St. Luke Pl N	N Richmond	60-75	22-28	60	38	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
			Beach RD					
Collector Arterial	Fremont Ave N	N 165th St	N 205th St	60-72	28-39	68	46	
Collector Arterial	Forest Park Dr	15th Ave NE	NE 196th St	60	21-23	60	36	
Principal Arterial	Greenwood Ave N	N 145th St	Westminster Way N	80+	62+			
Collector Arterial	Greenwood Ave N	Westminster Way N	N 155th St	60	22-39	60	38	West side pedestrian improvements are trail-like due to topographic separation
Collector Arterial	Greenwood Ave N	N 155th St	N 160th St	60	22-32	60	38	
Collector Arterial	Greenwood Ave N	N Innis Arden Way	Carlyle Hall Rd N	60	22	60	36	
Local Primary	Innis Arden Drive	Ridgefield Rd NW	NW Richmond Beach Rd	60-120	20	58	34	Sidewalk with no amenity zone across culvert/bridge

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Street								
Collector Arterial	Linden Ave N	N 175th St	N 185th St	60	20-26	64	38	This is a Green Link Street per the Town Center Code
Collector Arterial	Midvale Ave N	N 175th St	N 185th St	20-60	22-37	46.5	30	17 feet on SCL property for back in angle parking; This is a Storefront Street per the Town Center Code
Minor Arterial	Meridian Ave N	N 205th St	N 145th St	60-105	38-55	68	44	
Collector Arterial	Perkins Pl NE	NE 185th St	Perkins Way NE	60	20	60	36	
Collector Arterial	Richmond Beach Dr NW	NW 195th	NW 196th	60	20	60	38	
Collector Arterial	Richmond Beach Dr NW	NW 196th St	NW 199th St	60	20	60	36	
Local Primary	Ridgefield Rd NW	NW Innis Arden	Springdale Ct	60	20	54	34	Add amenity zone to sidewalk

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Street		Dr	NW					on the south side where possible
Collector Arterial	Springdale Ct NW	14th Ave NW	NW 188th St	60	20	60	36	
Collector Arterial	St. Luke Pl	NW 175th St	Dayton Ave N	60	37	54	36	
Principal Arterial	Westminster Way N	Greenwood Ave N	Fremont Ave N	90	60-64	68	44	Two travel lanes in each direction
Principal Arterial	Westminster Way N	Fremont Ave N	N 155th St	90-125	60-78	90	60	Two travel lanes in each direction
Minor Arterial	Westminster Way N	N 155th St	Aurora Ave N	100	60			
Local Primary Street	N 152nd St	Aurora Ave N	Approx. 375 feet west of Ashworth Ave N	50-60	20-34	66	36	Each side of the street must dedicate 3 feet; begin on-street parking at Scottish Rite center

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Principal Arterial	N 155th St	Westminster Way N	Aurora Ave N	115-220	70-80			
Minor Arterial	N 155th St	Aurora Ave N	Midvale Ave N	74-88	47-70			
Minor Arterial	N 155th St	Midvale Ave N	Stone Ave N	74	42	72	42	
Minor Arterial	N 155th St	Stone Ave N	I-5	72	42	68	42	
Minor Arterial	N 160th St	Dayton Ave N	Aurora Ave N	50-72	40-43	72	43	
Local Primary Street	N 165th St	Aurora Ave N	Interurban Trail	60	27-36	63	36	The cross-section does not have bicycle lanes, it has a 12 foot left turn pocket; redevelopment must dedicate 1.5 feet on both sides and expand the sidewalk width to 8 feet.
Local Primary Street	N 165th St	Interurban Trail	Ashworth Ave N	60	27-36	60	30	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Collector Arterial	N 165th St	Evanston Place N	Aurora Ave N	60	26	60	38	
Local Primary Street	N 167th St	Ashworth Ave N	Meridian Ave N	60	22	60	30	
Collector Arterial	N 172nd St	Fremont Ave N	Dayton Ave N	60	36	60	36	
Collector Arterial	N 175th St	Fremont Ave N	Fire Dept	73	42	70-73	44	
Collector Arterial	N 175th St	Fire Dept	Aurora Ave N	66-71	43-52			
Principal Arterial	N 175th St	Aurora Ave N	Midvale Ave N	62	54-55			
Principal Arterial	N 175th St	Midvale Ave N	Meridian Ave N	70-100	44-60	94	55	2 travel lanes in each direction. Wider sidewalks to accommodate bicycles.

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Principal Arterial	N 175th St	Meridian Ave N	1st Ave NE	90-159	50-75	105	66	Includes a right turn lane at on ramps. Wider sidewalks to accommodate bicycles
Minor Arterial	N 185th St	Fremont Ave N	Approx. 140 feet west of Aurora Ave N	70-80	56	67	55	
Minor Arterial	N 185th St	Approx. 140 feet west of Aurora Ave N	Aurora Ave N	60	44			
Minor Arterial	N 185th St	Aurora Ave N	Midvale Ave N	60	42			
Minor Arterial	N 185th St	Midvale Ave N	Ashworth Ave N	60-72	41-42	72	42	
Minor Arterial	N 185th St	Ashworth Ave N	1st Ave NE	60-70	42	66	42	
Collector Arterial	N 195th St	Greenwood Ave N	Fremont Ave N	60-88	22-28	66	36	
Collector	N 195th St	Fremont Ave N	Linden Ave N	60	30	60	36	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Arterial								
Collector Arterial	N 200th St	1st Ave NW	Whitman Ave N	58-60	32-36	66	44	
Collector Arterial	N 200th St	Whitman Ave N	Aurora Ave N	60	37-40			
Collector Arterial	N 200th St	Aurora Ave N	Approx. 720 feet east of Aurora Ave N	60	40			
Collector Arterial	N 200th St	Approx. 720 feet east of Aurora Ave N	Ashworth Ave N	60	50	70	42	All widening to the north
Collector Arterial	N 200th St	Ashworth Ave N	Meridian Ave N	60	40	60	39	
Collector Arterial	NE 150th St	15th Ave NE	20th Ave NE	60	30-36	64	38	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Collector Arterial	NE 150th St	20th Ave NE	25th Ave NE	60	39	62	38	City has constructed meandering path on the north side, resulting in a varying sidewalk/amenity zone width
Minor Arterial	NE 155th St	I-5	15th Ave NE	60-72	41	68	42	
Collector Arterial	NE 165th St	5th Ave NE	10th Ave NE	60	30-45	60-65	36	
Collector Arterial	NE 165th St	10th Ave NE	15th Ave NE	60	44	63	36	
Collector Arterial	NE 168th St	15th Ave NE	25th Ave NE	60-64	22-29	60	36	
Collector Arterial	NE 168th St	25th Ave NE	25th Ave NE	64	27	60	38	
Collector Arterial	NE 171st St	22nd Ave NE	25th Ave NE	60	20	60	38	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Principal Arterial	NE 175th St	1st Ave NE	Approx. 120 feet west of 3rd Ave NE	90-159	50-75	105	66	Includes a right turn lane at on ramps. Wider sidewalks to accommodate bicycles
Principal Arterial	NE 175th St	Approx. 120 feet west of 3rd Ave NE	15th Ave NE	60-100	26-56	94	55	2 travel lanes in each direction. Wider sidewalks to accommodate bicycles.
Collector Arterial	NE 175th St	15th Ave NE	Approx. 300 feet east of 15th Ave NE	60-81	40	60	44	Two travel lanes in each direction, 8 feet of north sidewalk in ROW, 2 feet on private property
Collector Arterial	NE 175th St	Approx. 300 feet east of 15th Ave NE	NE 172nd St	60	24-33	60	38	
Minor Arterial	NE 178th St	24th PI NE	25th Ave NE	60	30	60	38	
Collector Arterial	NE 180th St	10th Ave NE	14th Ave NE	60	32	60	39	
Collector	NE 180th St	14th Ave NE	15th Ave NE	60	35	60	34	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Arterial								
Minor Arterial	NE 185th St	1st Ave NE	10th Ave NE	60-260 +	42	66	42	No amenity zones required across the bridge over I-5.
Minor Arterial	NE 196th St	15th Ave NE	Forest Park Dr NE	60-80	36-39	45.5-49.5	24	Parking to be accommodated on SE side where possible
Minor Arterial	NE 196th St	Bridge		60-80	36-39	38	24	
Collector Arterial	NE Perkins Way	10th Ave NE	15th Ave NE	60	26-36	40	27	Cross section will be no less than 40 feet. It will consist of 27 feet of asphalt to accommodate two 12 foot travel lanes and one 5 foot bicycle lane in each uphill direction, a pedestrian walkway on the north side of the roadway and widened shoulder and parking where possible.
Collector Arterial	NE Perkins Way	15th Ave NE	City Limits	60	25-41	60	38	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Minor Arterial	NE 205th Street	19th Ave NE	30th Ave NE	N/A	N/A	30	22	
Collector Arterial	NW 167th St	10th Ave NW	15th Ave NW	60	20	60	36	
Collector Arterial	NW 175th St	St. Luke's Pl	3rd Ave NW	60	28	60	36	Provide amenity zone on the south where feasible and allow the sidewalk to meander due to topography.
Collector Arterial	NW 175th St	3rd Ave NW	3rd Ave NW	60	28-34	54.5	36	
Collector Arterial	NW 175th St	6th Ave NW	10th Ave NW (s leg)	60	28	50	33	Parking on the north side to consist of parking pullouts where feasible
Local Primary Street	NW 175th St	10th Ave NW (s leg)	10th Ave NW (n leg)	60	20	48	26	
Local Primary Street	NW 175th St	10th Ave NW (n leg)	14th Ave NW	60	20	60	32	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Local Primary Street	NW 180th st	3rd Ave NW	6th Ave NW	60	32	60	30	
Collector Arterial	NW 180th St	6th Ave NW	8th Ave NW	50-60	20-35	60	36	
Local Primary Street	NW 180th St	8th Ave NW	10th Ave NW	60	20	60	36	
Collector Arterial	NW 188th St	15th Ave NW	Springdale Ct NW	60	20	60	32	
Collector Arterial	NW 195th St	8th Ave NW	Greenwood Ave N	50-60	28-32	66	36	
Minor Arterial	NW 195th St	15th Ave NW	20th Ave NW	60-85	44			
Local Primary Street	NW 195th St	Richmond Beach Dr NW	NW 196th	60	27	60	38	
Collector	NW 196th St	20th Ave NW	24th Ave NW	64-74	42-44			

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Arterial								
Collector Arterial	NW 196th St	Richmond Beach Dr NW	24th Ave NW	60	26-32	68	46	
Collector Arterial	NW 200th St	1st Ave NW	3rd Ave NW	60	30	66	44	
Collector Arterial	NW 205th Street	3rd Ave NW	8th Ave NW	40-50	19-20	50	30	
Collector Arterial	NW Innis Arden	Greenwood Ave N	Approx. 450 feet east of 6th Ave NW	80	22			
Collector Arterial	NW Innis Arden	Approx. 450 feet east of 6th Ave NW	6th Ave NW	80	22	60	32	8 foot width on south/west side is shoulder
Collector Arterial	NW Innis Arden	6th Ave NW	10th Ave NW	60-81	21-24	46	32	

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Minor Arterial	NW Richmond Beach Rd	Fremont Ave N	2nd Ave NW	80-110	44			
Minor Arterial	NW Richmond Beach Rd	2nd Ave NW	8th Ave NW	60-80	44-54	79	66	
Minor Arterial	NW Richmond Beach Rd	8th Ave NW	15th Ave NW	60-83	44			
LOCAL SECONDARY STREETS								
Local Secondary Street	Generic Cross-Section			Varies	Varies	60	32	
Local Street - Storefront Street	N 178th St, N 180th St, N 183rd St	Town Center Boundaries				64	36	
Local Street - Greenlink Street	Stone Ave N	Town Center Boundaries				60	32	Combined travel lanes/on-street parking
Local Street	NW 200th Ave	3rd Ave NW	8th Ave NW			56	32	Combined travel lanes/on-street parking

FUNCTIONAL CLASSIFICATION	STREET NAME	FROM	TO	TOTAL EXISTING RIGHT-OF-WAY	EXISTING CURB TO CURB WIDTH	REQUIRED RIGHT-OF-WAY	PLANNED CURB TO CURB WIDTH	NOTES
Local Secondary Street	Firlands Way N	N 185th St	N 188th St	92	25	90	58	This is a Storefront Street per the Town Center Code; redesign the intersection at Firlands & Linden
Local Secondary Street	N 152nd St	Approx. 375 feet west of Ashworth Ave N	Ashworth Ave N	60	30	60	24	Amenity zone width needs to be flexible to accommodate topography.
Local Secondary Street	N 195th St	Ashworth Ave N	Wallingford Ave N	60	40	71	45	The south side must dedicate 11 feet. Less ROW is needed if parallel parking is installed on-street instead of angle-in parking.
Local Secondary Street	N 195th St	Wallingford Ave N	Meridian Ave N	60	30	60	30	

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.

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."

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 traffic impact analysis (TIA) 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 TIA 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 TIA 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.

A p p e n d i x E : F o r e c a s t s

What Does the Future Hold?

Understanding the future nature and volume of traffic in the City makes it possible to recommend appropriate transportation facility improvements in Shoreline. This information builds upon an understanding of existing traffic volumes and flow patterns in the City. The City contracted with DKS Associates to develop a 2030 Shoreline travel demand forecast model to analyze future traffic volumes for the TMP. This model uses the Puget Sound Regional Council's four-county regional transportation model as a base, but divides Shoreline into a much more detailed zone and network system. The City will be able to update this model as needed when land use forecasts are revised and other input data, such as new developments or roadway improvements, are constructed.

Demographic data sets, including household and employment forecasts associated with a system of transportation analysis zones (TAZs), form the basis for travel demand forecasting. Within Shoreline, household and employment forecasts were based upon future growth estimates developed by King County. For the region outside the City, the model used PSRC's regional household and employment forecasts for 2030, with some adjustments.

In general, the traffic modeling shows that Shoreline's future traffic issues are fairly manageable.

Traffic Model Development

The City began development of the traffic model in 2009. At that time, the most complete data set available for construction of the model was 2008 household and employment data from public records and surveys conducted by PSRC. Therefore, the travel demand model for existing conditions reflects 2008 population and employment and was validated with 2008 traffic counts. A 2030 travel demand model was also developed to forecast 2030 traffic volumes based on the projected growth in households and employment growth within the City of Shoreline and the surrounding region.

Shoreline Zone and Network Structure

The Shoreline transportation model is a refined focus area model developed from the Puget Sound Regional Council (PSRC) regional travel demand model. Within the construct of the regional model, Shoreline consists of approximately eighteen regional transportation analysis zones. To develop the Shoreline model, the regional transportation analysis zone structure was replaced with 141 Shoreline Analysis Zones (SAZs), shown in **Figure E1, Shoreline Analysis Zones**. These zones are a finer division of the analysis zones present in the PSRC travel demand forecast model, which incorporates the four counties of the Puget

Sound Region – King, Snohomish, Pierce and Kitsap. Using the PSRC model as a base allows the City to analyze projected traffic growth in Shoreline on a microscopic scale while still incorporating the anticipated growth in the region that may impact Shoreline.

In addition to refining the transportation analysis zones, the roadway network was also refined to include all principal, minor and collector arterials and local primary streets. The interstate network was also refined to reflect interchange ramps separately from the I-5 mainline so that impacts on Shoreline streets at interchange ramp terminals is more accurately represented.

Current Year Land Use Data Refinement

The base year estimates of housing and employment are key inputs to the development of the Shoreline travel demand forecasting model. The City used data from the Office of Financial Management to document the number of households in Shoreline. Employment figures were drawn from an employee survey conducted by the Puget Sound Regional Council. The employment database consists of job data for each employer within the City of Shoreline. Each record includes the employment sector data and the estimated number of employees. The final zonal estimates of “covered” employment are then factored to develop total employment in a zone.

The data was aggregated to the Shoreline SAZ system and summarized to develop estimates of five groups of employment sectors. The employment sectors include Retail, FIRES (Finance, Insurance, Real Estate and Services), Government and Education, Manufacturing and WTCU (Wholesale, Transportation, Communication and Utilities). The transportation modeling process assigns different trip generation rates based on land use categories and factors such as household size, the number of workers in a household and employment types.

Year 2030 Land Use Forecasts

The City selected the year 2030 as the planning horizon for developing the future traffic forecasts. Using the growth estimates provided by King County, the City developed the 2030 housing and employment forecasts. To assist in the transportation analysis, the 2030 housing and employment data was aggregated into the Shoreline’s 141 SAZs. The PSRC 2030 housing and employment data was used for the remaining zones outside the City of Shoreline. **Table E.1, Housing and Employment Change in Shoreline 2000-2030**, shows the changes to the City’s demographics over the past ten years and the projections for future growth.

Table E.1. Housing and Employment Change in Shoreline 2000-2030

	2000	2009*	2000-2009 Change	2030 (Projected)	2009-2030 Projected Change
Housing Units	21,338	22,394	4.9%	26,656	19%
Single-Family	15,776	16,065	1.8%	n/a	n/a
Multi-Family	5,373	6,205	15.5%	n/a	n/a
Other**	189	124	-34.4%	n/a	n/a
Jobs	15,820	17,035	7.7%	21,336	25.2%

Sources: Office of Financial Management; Puget Sound Regional Council

*Jobs figure is based upon 2008 estimates from the Puget Sound Regional Council.

**Other includes Manufactured Homes, House Trailers and Special Housing. Special Housing is unusual living quarters that are not intended for permanent living (e.g., travel trailers, recreational vehicles, boats, boxcars, tents).

For development of the travel demand model, the City evaluated three land use scenarios – the Auroracentric scenario, Transit Oriented Development scenario and the Dispersed scenario. Each scenario was based upon the City’s assigned growth targets for 2030 of 5,000 new households and 5,000 new jobs. Each of the 2030 land use scenarios include the two light rail station locations identified in the Sound Transit 2 package along Interstate 5 at NE 145th Street and NE 185th Street. Parking for 500 vehicles was assumed at each station. Each scenario also includes the same growth in households and employment for all zones outside of the City of Shoreline, in accordance with PSRC forecasts.

Following is a description of each scenario and the assumptions associated with each scenario.

1. Auroracentric scenario – This scenario assumed that the vast majority of household and job growth will be centered on the Aurora Avenue N corridor. All of the new jobs are allocated to the SAZs directly adjacent to Aurora and two SAZs just off of Aurora. Similarly, eighty percent of the new housing units are concentrated along Aurora Avenue N. High concentrations of new jobs and housing units are located at:

Aurora Avenue N and N 145th to N 155th Streets

Aurora Square (Aurora Avenue N and N 155th to N 160th Streets)

Town Center (Aurora Avenue N and N 175th to N 185th Streets)

Shoreline Park & Ride (Aurora Avenue N and N 188th to N 192nd Streets)

Aurora Village (Aurora Avenue N and N 200th to N 205th Streets)

The remaining 20 percent of housing units (1,000 units) are distributed evenly throughout the City.

2. Transit Oriented Development scenario – This scenario assumes that new household and job growth will be concentrated around several transit hubs and corridors in Shoreline.

Primary concentrations of new jobs and housing occur at:

NE 145th Street and Interstate 5

Bothell Way NE and NE 145th Street

North City

NE 185th Street and Interstate 5

Shoreline Park & Ride (Aurora Avenue N and N 188th to N 192nd Streets)

Ballinger Way NE and 15th Avenue NE

The Aurora Corridor

Aurora Village (Aurora Avenue N and N 200th to N 205th Streets) is identified as another location for new jobs, and the area around 15th Avenue NE and NE 145th Street is identified as another location for new housing units. Approximately $\frac{1}{4}$ (1,250 units) of the City's household growth is dispersed evenly throughout the City in accordance with existing densities.

3. Dispersed scenario – This scenario assumes that job and housing growth is dispersed throughout the City in a similar manner to existing land uses, with some areas of concentrated growth. Job and household growth is located at:

The Aurora Corridor

Fircrest Residential Rehabilitation Center

NE 145th Street and Bothell Way NE

NE 165th Street and 5th Avenue NE

Crista Ministries

NE 145th Street and 15th Avenue NE

Additional new jobs would be located at Shoreline Community College, North City, Richmond Beach and the Hillwood neighborhood, and additional new housing units are located at Aurora Square and the neighborhood east of the commercial parcels on Aurora Avenue N from N 145th to N 150th Streets. The remaining 25 percent of the City's household growth would be dispersed evenly throughout the City in accordance with existing zoning.

The future traffic impacts of these three scenarios were shown by the traffic model to be similar throughout the City. In response to these results and current planning efforts underway at the time of the model's creation, staff created a "TOD Enhanced" scenario. This scenario assumes concentrations around the transit hubs in the original TOD scenario to a lesser degree, with additional increased concentrations of jobs and housing units in the Town Center (Aurora Avenue N from N 175th to N 185th Streets). **Table E-2, Growth Allocations to Shoreline Transportation Analysis Zones - TOD Enhanced Scenario,**

displays where jobs and housing units are currently located in Shoreline and how growth was distributed throughout the City in the TOD Enhanced scenario.

Table E-2. Growth Allocations to Shoreline Transportation Analysis Zones - TOD Enhanced Scenario

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
1	400	841	1241	32	0	32
2	48	82	130	32	50	82
3	48	63	111	32	99	131
4	48	29	77	32	21	53
5	350	207	557	300	92	392
6	48	32	80	300	383	683
7	48	235	283	100	39	139
8	0	50	50	7	56	63
9	100	298	398	59	0	59
10	250	159	409	200	165	365
11	0	12	12	7	90	97
12	0	32	32	7	71	78
13	200	245	445	400	63	463
14	250	159	409	300	131	431
15	0	74	74	7	132	139
16	150	299	449	32	0	32

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
17	82	159	241	32	43	75
18	48	268	316	32	0	32
19	48	187	235	31	21	52
20	47	87	134	31	0	31
21	47	69	116	31	140	171
22	47	24	71	31	0	31
23	400	647	1047	250	3	253
24	150	881	1031	7	0	7
25	47	174	221	31	25	56
26	47	268	315	31	202	233
27	47	410	457	31	118	149
28	0	80	80	7	434	441
29	0	191	191	7	718	725
30	0	2	2	7	148	155
31	0	44	44	7	272	279
32	0	153	153	7	330	337
33	0	5	5	7	129	136
34	0	76	76	7	255	262
35	0	63	63	7	485	492

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
36	0	71	71	7	311	318
37	0	33	33	7	157	164
38	600	128	728	500	20	520
39	0	9	9	7	278	285
40	0	8	8	7	220	227
41	100	158	258	300	127	427
42	100	470	570	150	116	266
43	0	96	96	7	132	139
44	0	4	4	7	112	119
45	0	9	9	7	106	113
46	0	74	74	7	371	378
47	0	0	0	0	0	0
48	0	0	0	0	0	0
49	0	45	45	7	246	253
50	0	0	0	0	0	0
51	0	0	0	0	0	0
52	0	0	0	0	0	0
53	0	0	0	0	0	0
54	0	100	100	7	501	508

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
55	0	96	96	7	706	713
56	0	123	123	7	193	200
57	0	161	161	7	197	204
58	0	163	163	7	287	294
59	0	32	32	7	589	596
60	0	749	749	7	90	97
61	0	4	4	7	64	71
62	0	1	1	7	85	92
63	0	9	9	7	170	177
64	0	27	27	7	302	309
65	0	8	8	7	218	225
66	50	424	474	200	147	347
67	100	150	250	7	507	514
68	0	25	25	7	593	600
69	0	0	0	0	0	0
70	0	0	0	0	0	0
71	0	1	1	7	17	24
72	0	683	683	7	0	7
73	0	22	22	7	235	242

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
74	0	15	15	7	63	70
75	0	227	227	7	259	266
76	0	62	62	7	285	292
77	0	23	23	7	326	333
78	0	112	112	7	184	191
79	0	21	21	7	95	102
80	0	92	92	7	319	326
81	150	361	511	7	26	33
82	0	108	108	7	227	234
83	50	88	138	7	45	52
84	0	125	125	7	323	330
85	0	0	0	0	0	0
86	0	0	0	7	109	116
87	0	111	111	7	104	111
88	0	73	73	7	132	139
89	0	10	10	7	225	232
90	0	278	278	7	130	137
91	0	19	19	7	152	159
92	0	42	42	7	266	273

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
93	0	12	12	7	103	110
94	0	192	192	7	263	270
95	0	38	38	7	322	329
96	0	7	7	6	273	279
97	0	27	27	50	82	132
98	0	48	48	6	314	320
99	0	38	38	6	224	230
100	0	11	11	6	138	144
101	0	0	0	6	0	6
102	0	1097	1097	6	0	6
103	0	20	20	6	111	117
104	0	241	241	100	32	132
105	0	133	133	100	278	378
106	0	55	55	6	87	93
107	0	89	89	6	0	6
108	200	94	294	100	234	334
109	0	224	224	6	0	6
110	0	4	4	6	0	6
111	0	0	0	0	0	0

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
112	0	208	208	6	391	397
113	0	0	0	0	0	0
114	0	0	0	0	0	0
115	0	12	12	6	158	164
116	0	0	0	0	0	0
117	0	0	0	6	29	35
118	0	28	28	6	341	347
119	0	36	36	6	266	272
120	0	18	18	6	152	158
121	0	17	17	6	231	237
122	0	9	9	6	150	156
123	0	11	11	6	107	113
124	200	6	206	150	88	238
125	0	1	1	6	145	151
126	50	48	98	50	134	184
127	0	0	0	6	93	99
128	0	46	46	6	297	303
129	0	42	42	6	311	317
130	100	2	102	100	80	180

TAZ NUMBER	NEW JOBS	EXISTING JOBS	TOTAL JOBS	NEW HOUSING UNITS	EXISTING HOUSING UNITS	TOTAL HOUSING UNITS
131	0	28	28	6	105	111
132	100	2	102	100	112	212
133	0	19	19	6	128	134
134	0	63	63	6	106	112
135	0	459	459	6	195	201
136	0	103	103	6	230	236
137	100	6	106	50	188	238
138	150	0	150	100	32	132
139	0	0	0	0	0	0
140	0	0	0	0	0	0
141	0	81	81	6	208	214
TOTAL	5000	15830	20830	5000	21820	26820

2030 Traffic Volumes (PM Peak Hour)

The travel demand model assigns forecasted trips throughout the City based upon trip origins and destinations and the projected travel times on the roadway network. The trip assignment is an iterative process where travel times are updated after each assignment to reflect where congestion occurs in the network until an equilibrium is reached between individual assignments. The traffic volumes forecasted on the City of Shoreline roadway network were post-processed against 2008 traffic counts prior to being used for evaluation of the roadway network. Post-processing 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 to a traffic analysis

software program, known as Synchro, to calculate levels of service at signalized intersections. **Figure E2, 2008 1 Hr PM Count Volumes** and **Figure E3, 2030 Base 1 Hr PM Post Processed Volumes**, show the 2008 PM peak hour traffic volumes by direction and 2030 PM peak hour traffic volumes forecasted with the Shoreline model on the arterials in the City. **Figure E4, Volume Difference 2030 Base vs. 2008 1 Hr PM Peak**, shows the projected net difference in number of trips on street segments throughout the City. The percent change in traffic volumes for the same street segments is shown in **Figure E5, Percent Growth 2030 Base vs. 2008 PM Peak**.

The anticipated capacity of roadways is based upon the number of lanes and type of facility that a roadway has, or will have in the future. By comparing the future traffic volume to the roadway capacity, the travel demand model can be used to identify the projected congestion for streets throughout Shoreline. The degree of congestion can be quantified using the Volume to Capacity (V/C) ratio. The V/C ratio divides the projected traffic volumes by the capacity of a roadway segment. The lower the V/C ratio, the less congested a roadway is. For arterial streets, V/C ratios of 0.8 or less represent stable operations, with little to no congestion. As the V/C ratio increases to 0.9–1.0, the transportation network begins to experience congested conditions with substantial increases in delays and excessive queues at signalized intersections. When the V/C ratio exceeds 1.0, the roadway has exceeded its capacity and the transportation network experiences significant congestion with very low travel speeds, long queues at intersections that do not clear within a single cycle and poor progression through a corridor. **Figure E6, Volume/Capacity Ratio at Count Locations Shoreline 2030 Base 1 Hr PM Peak**, displays the forecast congestion for roadway segments in Shoreline.

Impacts to State-Owned Transportation Facilities

State law requires that the transportation element of the City's Comprehensive Plan include an assessment of impacts to state-owned transportation facilities. The Shoreline model developed for the TMP incorporates the state-owned facilities throughout the Puget Sound area, including those located within the City of Shoreline. Three state-owned facilities are located within the City of Shoreline: SR 99 (Aurora Avenue N) from N 145th Street to N 205th Street, Interstate 5 and a short segment of SR 104 (Ballinger Way NE) at the northeast corner of the City. Shoreline also borders SR 522 (Bothell Way NE) at the southeast corner of the City and SR 523 (N/NE 145th Street from SR 522 to Aurora Avenue N) on the southern edge of the City. The impacts to state routes that border Shoreline were not analyzed.

Interstate 5

The sections of Interstate 5 (I-5) within the City of Shoreline carry about 159,000 to 191,000 vehicles per day. During the AM peak hour, the southbound I-5 lanes carry over 9,000 vehicles per hour on the general purpose lanes, which operate at capacity with poor levels of service. Likewise, during the PM peak hour, the northbound I-5 lanes carry 7,000-9,000 vehicles per hour, which indicates severe traffic congestion. There is little room for traffic volumes to increase in the peak direction of I-5 during AM and PM peak period. Because of this lack of capacity on I-5, Shoreline receives spillover on other streets, such as Aurora Avenue N, Meridian Avenue N, 15th Avenue NE, 5th Avenue NE and Dayton Avenue N.

There are no current plans to expand I-5 in the Shoreline area, so traffic growth will be accommodated for the most part by the Shoreline's arterial streets. Regional growth and the resulting demand for more travel in the future will actually reduce access to I-5 from Shoreline. It is projected that traffic volumes on the City's arterial streets near I-5 will increase because of the increased pass-through traffic. This plan recommends that the City and State Department of Transportation work together to manage the current and forecasted congestion problems on I-5.

Aurora Avenue N (SR 99)

By 2030, the traffic volumes on Aurora Avenue N throughout the City are expected to increase. During the PM peak hour, the projected increase in traffic volumes is between 200 and 700 vehicles, representing an increase of 16–47 percent along the corridor; the highest concentrations of growth occurring from N 165th to N 185th Streets and north of N 192nd Street. The PM Peak direction on Aurora Avenue N is northbound. The V/C ratio in the northbound direction ranges from .74 (moderate levels of congestion) to .99 (roadway is at capacity).

Ballinger Way NE (SR 104)

Less than one mile of SR 104 is located within the City of Shoreline. The City section of SR 104 has 5 lanes. The projected traffic growth during the PM peak hour is 200-400 vehicles southbound and a small reduction in volume in the northbound direction of approximately 10–70 vehicles. Ballinger Way NE is expected to have low to moderate levels of congestion, except at the intersection with NE 195th Street, where the V/C ratio is expected to be 1.09.

Impacts to Shoreline Arterial Streets

All arterial streets in Shoreline are forecast to experience some level of growth. The highest levels of growth will be on the Principal and Minor Arterials, including N/NE 155th Street,

N/NE 175th Street, N/NE 185th Street, Dayton Avenue N, Westminster Way N and 15th Avenue NE. Most Collector Arterials will experience a moderate amount of growth.

Without any improvements or modifications, several arterial streets in Shoreline are expected to experience high levels of congestion by 2030. Meridian Avenue N is forecast to operate at or above capacity from N 155th Street to N 200th Street, as is 15th Avenue NE from NE 150th Street to NE 175th Street. Small segments of Greenwood Avenue N, 8th Avenue NW, Dayton Avenue N, Fremont Avenue N, NE 175th Street, NE 185th Street, and 5th Avenue NE are forecast to operate at or above capacity. More detail on the impacts and projects proposed to mitigate these impacts are addressed in Chapter 10.

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

D. Finance. This subelement is set forth in the TMP (2011), including funding capability at TMP Pages 195 196, 240-241 243-244; multiyear financing plan at Pages 195, 240-241; proposals to increase funding or reassess land use assumptions if funding falls short of needs at TMP Page 195; and.

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 traffic impact analysis (TIA) 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 TIA 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 TIA 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.

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.

- E. **Intergovernmental coordination efforts. This subelement is set forth in TMP (2011), Pages ~~59-60~~ 60.**
-

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.

- F. Demand-management strategies. This subelement is set forth in TMP (2011), Pages ~~43-44~~ 45.
-

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.

- G. **Pedestrian and Bicycle Component. This subelement is set forth in TMP (2011) Pages ~~74-78~~ 76-80, ~~94-99~~ 97-101.**
-

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.

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.

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

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.

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.

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.

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

Replace storm grates with bicycle-friendly grates.

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

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

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).

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.

Implementation Strategies

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.

Implementation Strategies

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.

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

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.

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

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.

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

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.

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

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

Encourage private development projects to integrate public space with sidewalks.

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.

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.

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

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.

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