

Transportation

7



Chapter 7—Transportation

Introduction

This chapter of the DEIS addresses transportation conditions in Shoreline and analyzes potential impacts and associated mitigation needs related to the alternatives. The content and related tables and figures for this chapter were developed by Fehr and Peers for the City of Shoreline in 2022 as part of their work on the Transportation Element and background analysis and modeling as part of the Shoreline 2044 Comprehensive Plan update. It should be noted that the analysis and modeling was completed in alignment with the regional transportation model and matches that models forecasts for population, housing units, and jobs.

Affected Environment

An overview of the Transportation Element of the Shoreline 2044 Comprehensive Plan and existing characteristics of the multimodal transportation network and facilities are described in this section of the Transportation chapter of the DEIS.

The Transportation Element is designed to provide insight into the City’s intentions and commitments, so that public agencies and individual households can make decisions, coordinate development, and participate in achieving a shared vision. It also provides the foundation for development regulations contained in the Shoreline Development Code and Engineering Development Manual. For more information related to updated policies, as well as concurrency and level of service provisions, refer to the Supporting Analysis for the Transportation Element in the Draft 2044 Comprehensive Plan update document.



Several national, state, and regional agencies influence transportation mobility options in Shoreline, including the United States Department of Transportation, Washington State Department of Transportation, Puget Sound Regional Council, King County Metro, Sound Transit, and Community Transit. One purpose of the Transportation Element is to guide how the City focuses strategic efforts in local investments to create a connected, multimodal transportation system that utilizes regional transportation facilities and services.


In addition to the regulatory guiding framework of the Transportation Element, the City is also in the process of updating its Transportation Master Plan (TMP) in 2024. While separate from this Transportation Element, the TMP shares the same vision, goals, and guidance but provides more detailed implementation actions to provide a cohesive long-range blueprint for travel and mobility in Shoreline.


Street Network

Shoreline's street network is comprised of a variety of roadway types, which balance vehicle capacity with the needs of other uses (people walking, bicycling, and taking transit), and connects all users to local and regional facilities. **Table 7-1** describes the different types of roadways in Shoreline, also called street classification, and **Figure 7.1** maps their locations in Shoreline.

Table 7-1 City of Shoreline Street Classification

Type	Description ¹	Examples	Photo
Principal Arterial	Principal Arterials are roadways that provide a high degree of vehicular mobility with more restricted access and have regional significance as major vehicular and transit travel routes that connect between cities within a metropolitan area. They generally have sidewalks on both sides of the roadway, and some have bicycle facilities. Speed limits on Principal Arterials in Shoreline range from 25-40 mph.	Aurora Avenue N, N/NE 175th Street from Aurora Ave N to 15 th Ave NE, and 15th Avenue NE	 <p data-bbox="1008 569 1198 594">Aurora Avenue N</p>
Minor Arterial	Minor Arterials are generally designed to provide a high degree of intra-community connections and are less significant from a perspective of regional mobility, but many also provide transit service. They generally have sidewalks on at least one side of the roadway, and some have bicycle facilities. Speed limits on Minor Arterials in Shoreline are 30-35 mph.	Meridian Avenue N, N/NE 185th Street from Fremont Ave N To 10 th Ave NE, and NW Richmond Beach Road from 20 th Ave NW to Fremont Ave N	 <p data-bbox="997 1335 1209 1360">Meridian Avenue N</p>

<p>Collector Arterial</p>	<p>Collector Arterials assemble traffic from the interior of an area/community and deliver it to the closest Minor or Principal Arterial. Collector Arterials provide for both mobility and access to property and are designed to fulfill both functions. Some Collector Arterials provide transit service, sidewalks, and bicycle facilities, but there are gaps. The speed limit on Collector Arterials in Shoreline is 25-35 mph.</p>	<p>Greenwood Avenue N, Fremont Avenue N from N 165th Street to NW 205th Street, and NW Innis Arden Way</p>	 <p style="text-align: center;">Greenwood Avenue N</p>
<p>Local Primary</p>	<p>Local Primary roadways connect traffic to Arterials, accommodate short trips to neighborhood destinations and provide local access. They generally do not have transit service, sidewalks, or bicycle facilities. The speed limit on Local roadways in Shoreline is 25 mph.</p>	<p>25th Avenue NE from Ballinger Way NE to NE 205th Street, N 167th Street from Ashworth Ave N to Meridian Ave N, and 10th Ave NE from NE 155th St to NE 175th Street.</p>	 <p style="text-align: center;">10th Avenue NE</p>

Local Secondary	Local Secondary roadways provide local access. They generally do not have transit service, sidewalks, or bicycle facilities. The speed limit on Local roadways in Shoreline is 25 mph.	Wallingford Avenue N, 11th Avenue NE, 12th Avenue NE, NE 158 th Street	 <p data-bbox="1019 541 1182 569">NE 158th Street</p>
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Source: Shoreline TMP, 2011; Google Maps, 2020

1 Speed limits for specific facilities can be found in the Shoreline Municipal Code 10.20.010

Existing Vehicle Congestion

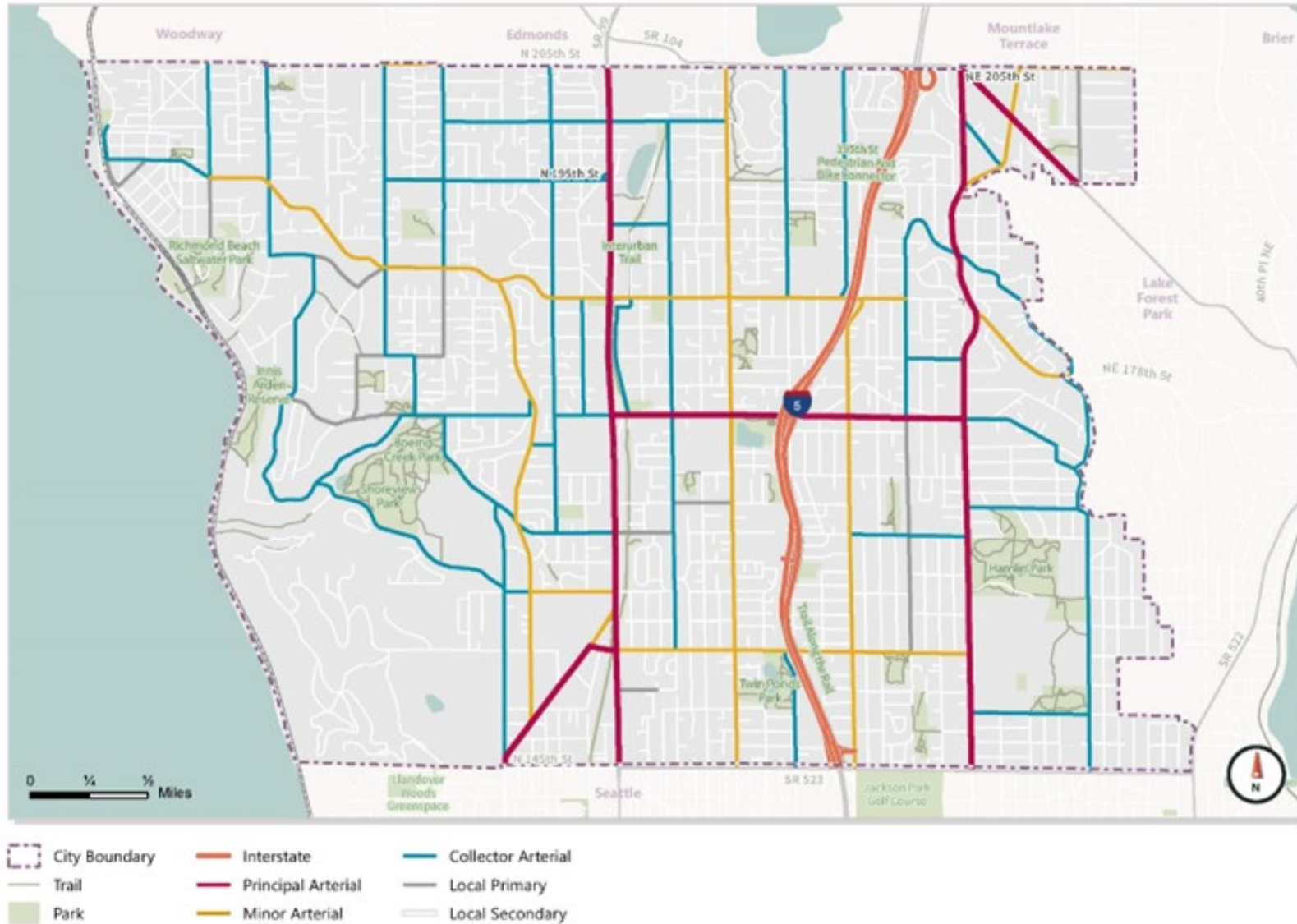
The operational performance of intersections within Shoreline is measured using a standard methodology known as level of service (LOS). LOS represents the degree of congestion at an intersection based on a calculation of average delay per vehicle at a controlled intersection, such as a traffic signal or stop sign. Individual LOS grades are assigned on a letter scale, A-F, with LOS A representing free-flow conditions with no delay and LOS F representing highly congested conditions with long delays. **Table 7-2** shows the definition of each LOS grade from the 6th Edition Highway Capacity Manual (HCM) methodology, which is based on average control delay per vehicle. Signalized intersections have higher delay thresholds compared with two-way and all-way stop-controlled intersections. HCM methodologies prescribe how delay is measured at different types of intersections: for signalized and all-way stop intersections, LOS grades are based on the average delay for all vehicles entering the intersection; for two-way stop-controlled intersections, the delay from the most congested movement is used to calculate LOS. LOS is usually calculated for the busiest hour of the day, or “peak hour”, to represent the worst observed conditions on the roadway.

Table 7-2 Intersection LOS Criteria Based on Delay

Level of Service	Signalized Intersections (seconds per vehicle)	Stop-Controlled Intersections (seconds per vehicle)
A	<= 10	<= 10
B	>10 to 20	>10 to 15
C	>20 to 35	>15 to 25
D	>35 to 55	>25 to 35
E	>55 to 80	>35 to 50
F	> 80	> 50

Source: 6th Edition Highway Capacity Manual

Figure 7.1 Existing Street Classification Map



The City's 2011 TMP identified LOS standards for the City's roadway network. In general, it required LOS D operations at signalized intersections along arterial streets and at unsignalized intersecting arterials for most streets.

Additionally, the City measures the performance of its roadway system based on the volume to capacity (V/C) ratio of principal and minor arterials. The V/C ratio compares roadway demand (vehicle volumes) with roadway supply (carrying capacity). If a roadway has a V/C of 1.0, the roadway is operating at full capacity. The 2011 TMP set a V/C standard of 0.90 or lower for most principal and minor arterials but recognized certain streets where these standards may not be achievable due to topographical, land ownership, or other feasibility constraints. This Transportation Element revises these standards for City-owned roadway facilities, specifically to allow for LOS E operations at intersections and a higher V/C (1.1) within King County [candidate] Countywide Centers. These revisions recognize that the City must balance the needs of vehicles with the needs of other street users, including people walking and bicycling in urban districts, like the four designated centers.

In addition to City facilities, there are also state-owned roadway facilities in Shoreline. The LOS standards for these facilities are assigned by the Washington State Department of Transportation (WSDOT) and are as follows:

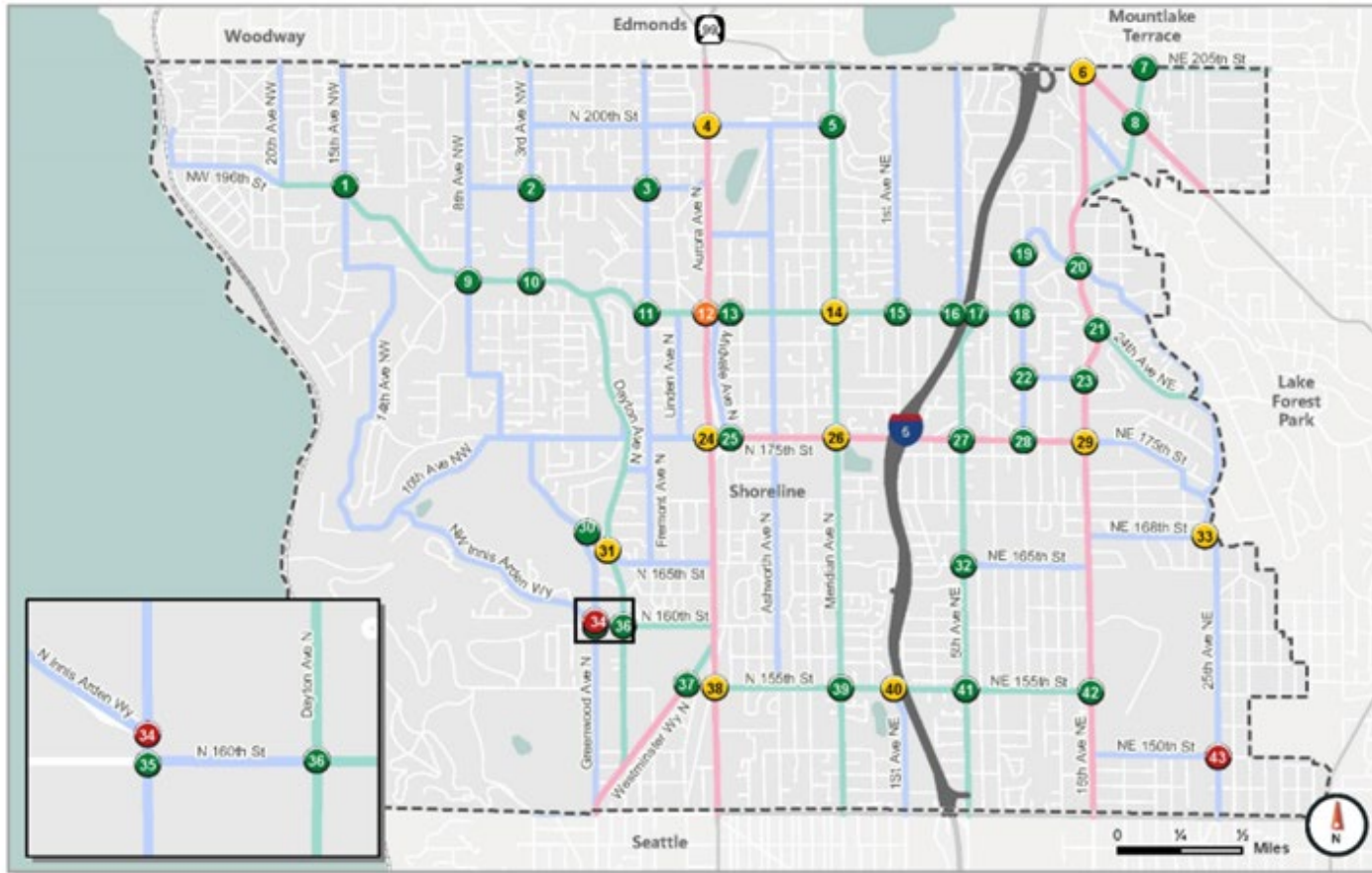
- SR 99 has a LOS standard of D
- SR 523 has a LOS standard of E mitigated⁵
- SR 104 from SR 99 to 15th Ave NE has a LOS standard of D
- SR 104 from 15th Ave NE to the eastern city limits has a LOS standard of E mitigated

Figure 7.2 and **Table 7-3** show how several intersections in Shoreline are operating today (intersection numbers on map correspond with Map ID# in table).

Measured Vehicle Speeds

Another way of checking intersection operations with actual travel data is by looking at average vehicle speeds which can be an indicator of congestion. Average vehicle speeds during the PM peak hour were compared to posted speed limits at 134 locations along Shoreline's roadway network. **Figure 7.3** shows that there is minimal congestion during the PM peak hour in Shoreline for locations with available speed data. None of the locations have PM peak period speeds that are more than 50 percent below the posted speed limit. Only about 30 percent of the analyzed locations have congested speeds that are 15 to 50 percent below the posted speed limit. Therefore, most vehicles are traveling at speeds that are close to the posted speed limits. Note that while this map doesn't report on 145th Street and 205th Street because they are outside of the City's jurisdiction, the City is monitoring their conditions and helping to plan these corridors with neighboring cities and transportation agencies.

Figure 7.2 Existing Level of Service in Shoreline



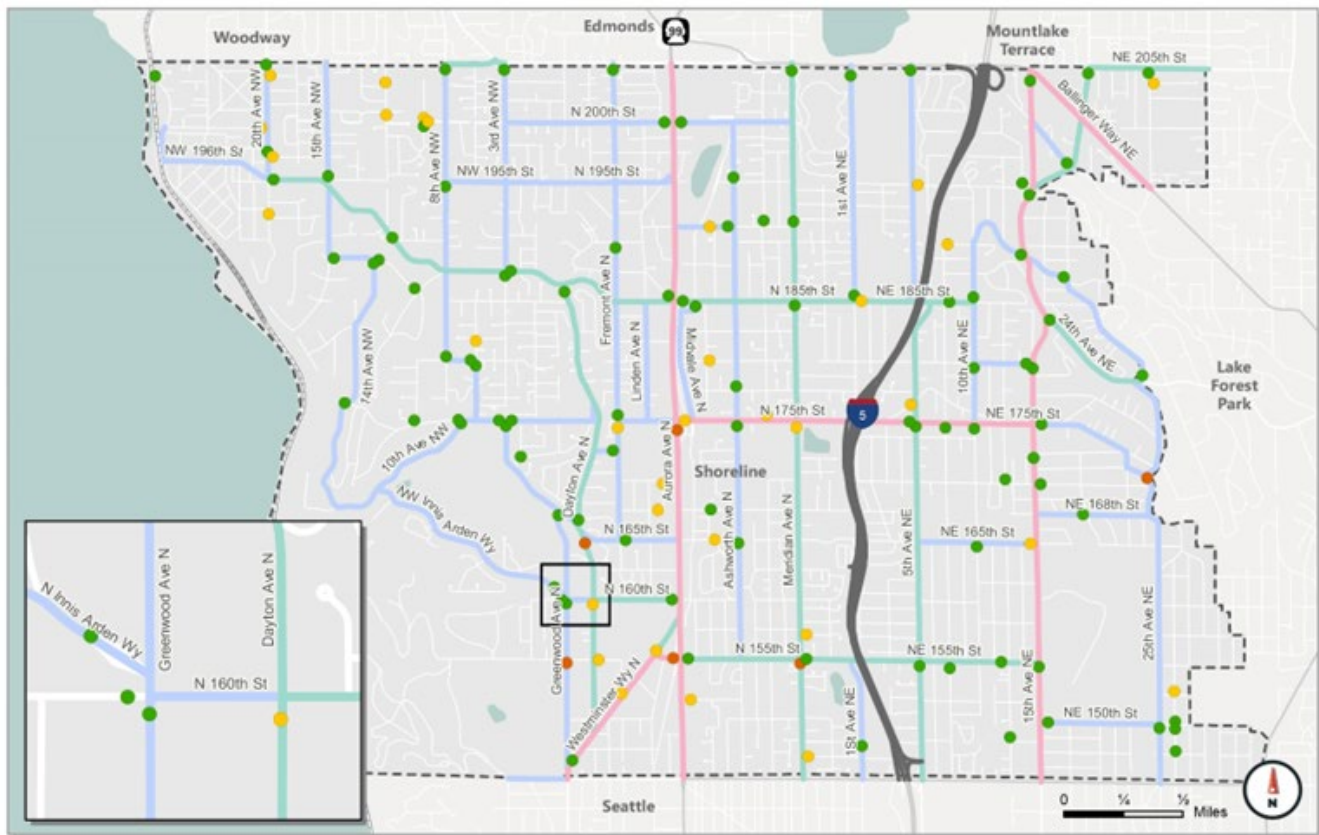
Note: Intersection numbers correspond with the Map ID number in Table 7-3.

Table 7-3 Existing Level of Service in Shoreline (mapped in the preceding Figure 7.2)

Map ID	Intersection Location	Delay (seconds)	LOS	Map ID	Intersection Location	Delay (seconds)	LOS
1	15th Ave NW & NW 195th St	19	C	23	15th Ave NE & NE 180th St	8	A
2	3rd Ave NW & NW 195th St	14	B	24	Aurora Ave N & N 175th St	55	D
3	Fremont Ave N & N 195th St	10	B	25	Midvale Ave N & N 175th St	10	B
4	Aurora Ave N & N 200th St	53	D	26	Meridian Ave N & N 175th St	49	D
5	Meridian Ave N & N 200th St	8	A	27	NE 175th St & 5th Ave NE	18	B
6	Ballinger Way NE & NE 205th St & 15th Ave NE	46	D	28	NE 175th St & 10th Ave NE	6	A
7	NE 205th St & 19th Ave NE	31	C	29	15th Ave NE & NE 175th St	38	D
8	Ballinger Way NE & 19th Ave NE	29	C	30	Greenwood Ave N & Carlyle Hall Rd	17	C
9	NW Richmond Beach Rd & 8th Ave NW	26	C	31	Dayton Ave N & Carlyle Hall Rd	26	D
10	3rd Ave NW & NW Richmond Beach Rd	17	B	32	5th Ave NE & NE 165th St	10	A
11	Fremont Ave N & N 185th St	25	C	33	24th Ave NE & NE 168th St	26	D
12	Aurora Ave N & N 185th St	59	E	34	Greenwood Ave N & NW Innis Arden Wy	97	F
13	Midvale Ave N & N 185th St	7	A	35	Greenwood Ave N & N 160th St	18	C
14	Meridian Ave N & N 185th St	40	D	36	Dayton Ave N & N 160th St	15	B
15	1st Ave NE & NE 185th St	15	B	37	Westminster Way N & N 155th St	19	B
16	5th Ave NE & NE 185th St (West Side of I-5)	19	C	38	Aurora Ave N & N 155th St	49	D
17	5th Ave NE & NE 185th St (East Side of I-5)	16	B	39	Meridian Ave N & N 155th St	34	C
18	10th Ave NE & NE 185th St	9	A	40	1st Ave NE & N 155th St	26	D

Map ID	Intersection Location	Delay (seconds)	LOS	Map ID	Intersection Location	Delay (seconds)	LOS
19	10th Ave NE & NE Perkins Way & NE 190th St	8	A	41	5th Ave NE & NE 155th St	13	B
20	NE Perkins Way & 15th Ave NE	20	B	42	15th Ave NE & NE 155th St	21	C
21	15th Ave NE & 24th Ave NE	7	A	43	25th Ave NE & NE 150th St	96	F
22	10th Ave NE & NE 180th St	10	B				

Figure 7.3 Speed Analysis



PM Peak Hour Speed Deviation
 ● 0-15% below posted speed ● 15-25% below posted speed ● 25-50% below posted speed

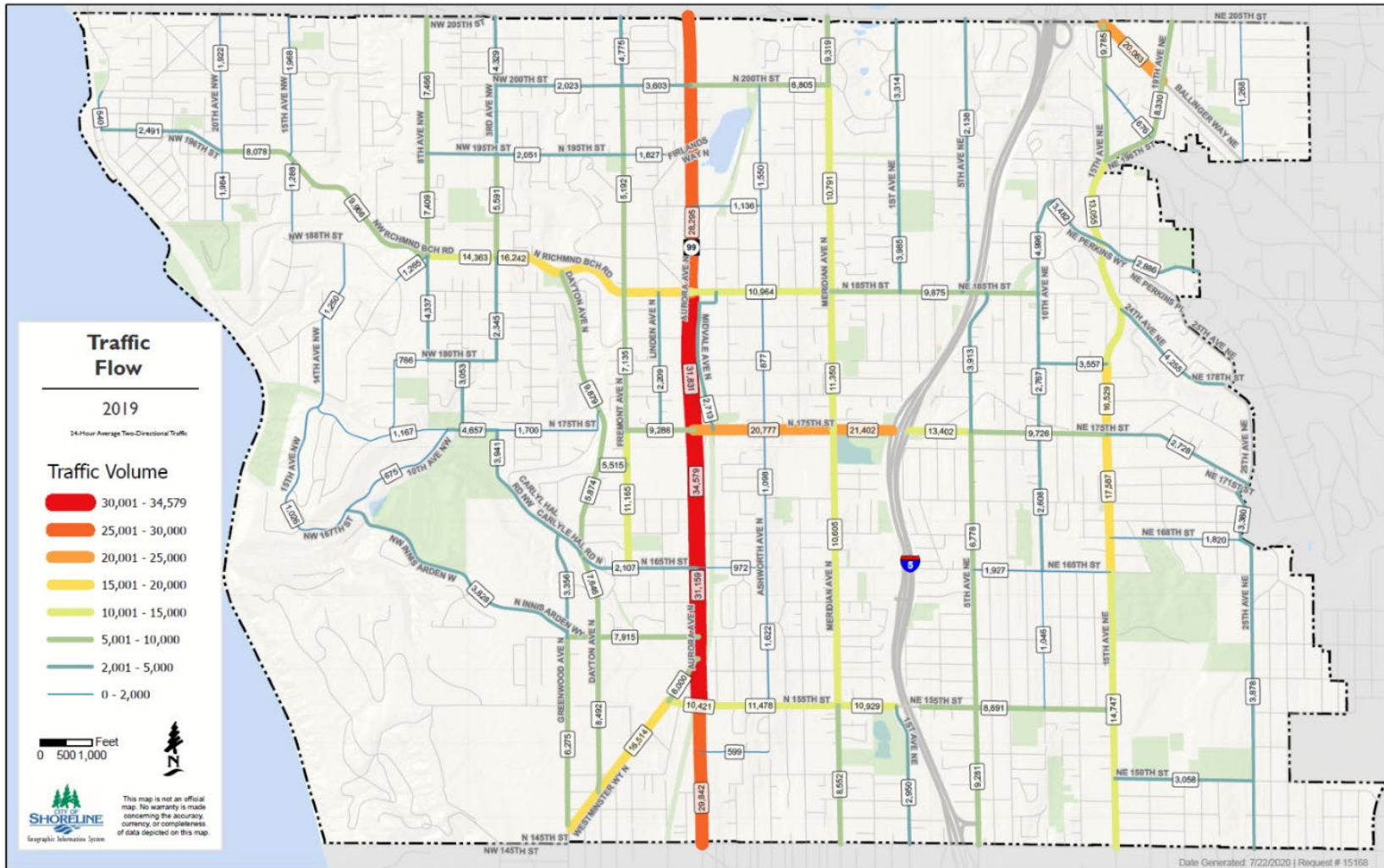
Roadway Functional Classification
 — Interstate — Minor Arterial
 — Principal Arterial — Collector Arterial

Speed Analysis

Existing Traffic Volumes

Figure 7.4 shows average weekday traffic volumes for roadways in Shoreline as of 2019.

Figure 7.4 Existing Traffic Volumes



Future Traffic Growth

By 2044, the City’s Comprehensive Plan anticipates adding 13,330 additional households and 10,000 new jobs. To understand how this growth (and anticipated regional growth outside of the city) will impact Shoreline’s transportation system, the City must project growth and its impacts into the future using specialized travel models. For this Transportation Element, the City has projected just over 20 years into the future, developing a travel model with horizon year 2044. This travel model was based on the Puget Sound Regional Council (PRSC) regional model, which considers many data points such as local and regional transportation investments (such as extending light rail to Lynnwood), road usage charges, and demographic shifts in household size, income, and composition to understand how travel patterns might change in the future. This modeling effort provides one of the best means to evaluate anticipated traffic congestion in 2044 both on local streets and on state facilities.

Future Vehicle Congestion

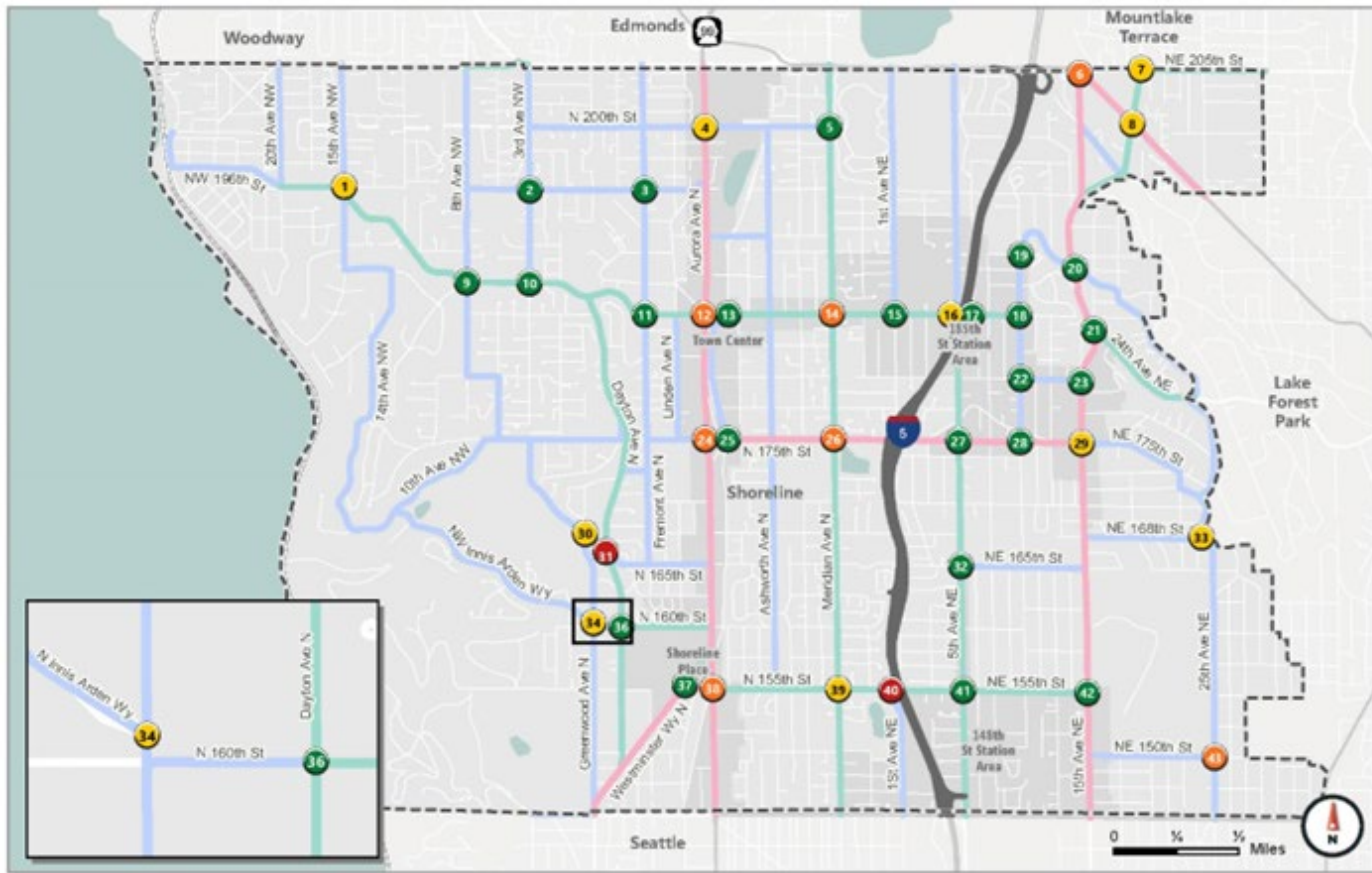
The City must balance the needs of vehicles with the needs of other street users, including people walking and bicycling. This is especially true in urban districts, like the four designated [candidate] Countywide Centers (areas near the 148th Street and 185th Street light rail stations, Shoreline Place, and “Town Center” along Aurora Avenue) where Shoreline will be concentrating the most growth as these areas will be adjacent to more transportation options. King County’s designated Countywide Centers are locations with zoned densities that can support high-capacity transit and shorter trips on foot to nearby supportive land uses and can serve as a focal point for investment. In part due to more transportation options in these areas, this Transportation Element proposes to revise the City of Shoreline LOS policy to allow more automobile delay (LOS E) at intersections within the Countywide Centers and along state routes but maintain the current LOS policy (LOS D) outside of these areas. State routes serve as important regional connections and are more impacted by regional travel patterns outside of the City’s control. They also carry the highest volumes of traffic within the City, so these facilities often experience higher levels of delay.

This balanced approach allows the City to incentivize growth in the Countywide Centers where infrastructure is available to support more trips by foot, bike, and transit, while upholding a more stringent intersection delay standard in areas where less supportive multimodal infrastructure exists.

Using the projected traffic growth from the City’s travel model, the projected 2044 delay and LOS at key intersections was calculated. The following **Figure 7.5** and **Table 7-4** show the expected LOS for intersections in Shoreline in 2044. It is important to note that not all arterial intersections were studied as part of this effort; as growth occurs, localized impacts to intersections are studied on a project-by-project basis for compliance with LOS standards.

In addition to evaluating traffic growth in local facilities, State guidance requires that this Transportation Element consider estimated traffic impacts to state-owned transportation facilities resulting from land use growth anticipated by 2044. **Table 7-5** summarizes traffic operations projected on state facilities by 2044, based on the modeling assumptions described above. Aurora Ave N is not included in Table 6. The City of Shoreline considers the Aurora Corridor to be mitigated to the extent feasible as it relates to non-transit vehicles. Any future vehicle-oriented improvements to the Aurora Corridor will focus on transit speed and reliability rather than adding general capacity improvements to encourage more trips through the City by single occupant vehicles.

Figure 7.5 Future Automobile Level of Service in Shoreline by 2044



Note: Intersection numbers correspond with the information in Table 7-4.

Table 7-4 Future Level of Service in Shoreline (Mapped in Figure 7.5)

Map ID	Intersection Location	Delay (seconds)	LOS	Map ID	Intersection Location	Delay (seconds)	LOS
1	15th Ave NW & NW 195th St	26	D	23	15th Ave NE & NE 180th St	22	C
2	3rd Ave NW & NW 195th St	17	C	24	Aurora Ave N & N 175th St	72	E
3	Fremont Ave N & N 195th St	12	B	25	Midvale Ave N & N 175th St	12	B
4	Aurora Ave N & N 200th St	54	D	26	Meridian Ave N & N 175th St	73	E
5	Meridian Ave N & N 200th St	9	A	27	NE 175th St & 5th Ave NE	23	C
6	Ballinger Way NE & NE 205th St & 15th Ave NE	62	E	28	NE 175th St & 10th Ave NE	8	A
7	NE 205th St & 19th Ave NE	37	D	29	15th Ave NE & NE 175th St	42	D
8	Ballinger Way NE & 19th Ave NE	43	D	30	Greenwood Ave N & Carlyle Hall Rd	30	D
9	NW Richmond Beach Rd & 8th Ave NW	30	C	31	Dayton Ave N & Carlyle Hall Rd	53	F
10	3rd Ave NW & NW Richmond Beach Rd	26	C	32	5th Ave NE & NE 165th St	13	B
11	Fremont Ave N & N 185th St	32	C	33	24th Ave NE & NE 168th St	26	D
12	Aurora Ave N & N 185th St	79	E	34	Greenwood Ave N & NW Innis Arden Wy ¹	31	D
13	Midvale Ave N & N 185th St	8	A	35	Greenwood Ave N & N 160th St ¹		
14	Meridian Ave N & N 185th St	59	E	36	Dayton Ave N & N 160th St	17	B
15	1st Ave NE & NE 185th St	18	B	37	Westminster Way N & N 155th St	25	C
16	5th Ave NE & NE 185th St (West Side of I-5)	28	D	38	Aurora Ave N & N 155th St	78	E
17	5th Ave NE & NE 185th St (East Side of I-5)	29	C	39	Meridian Ave N & N 155th St	52	D
18	10th Ave NE & NE 185th St	14	B	40	1st Ave NE & N 155th St	55	F
19	10th Ave NE & NE Perkins Way & NE 190th St	9	A	41	5th Ave NE & NE 155th St	19	B
20	NE Perkins Way & 15th Ave NE	27	C	42	15th Ave NE & NE 155th St	25	C
21	15th Ave NE & 24th Ave NE	7	A	43	25th Ave NE & NE 150th St	43	E
22	10th Ave NE & NE 180th St	15	C				

Source: Fehr & Peers, 2021

¹ The intersections of Greenwood Ave N & NW Innis Arden Wy and Greenwood Ave N & N 160th St are planned as a single roundabout intersection in 2044.

Table 7-5 Future Level of Service on State Facilities not Discussed Above

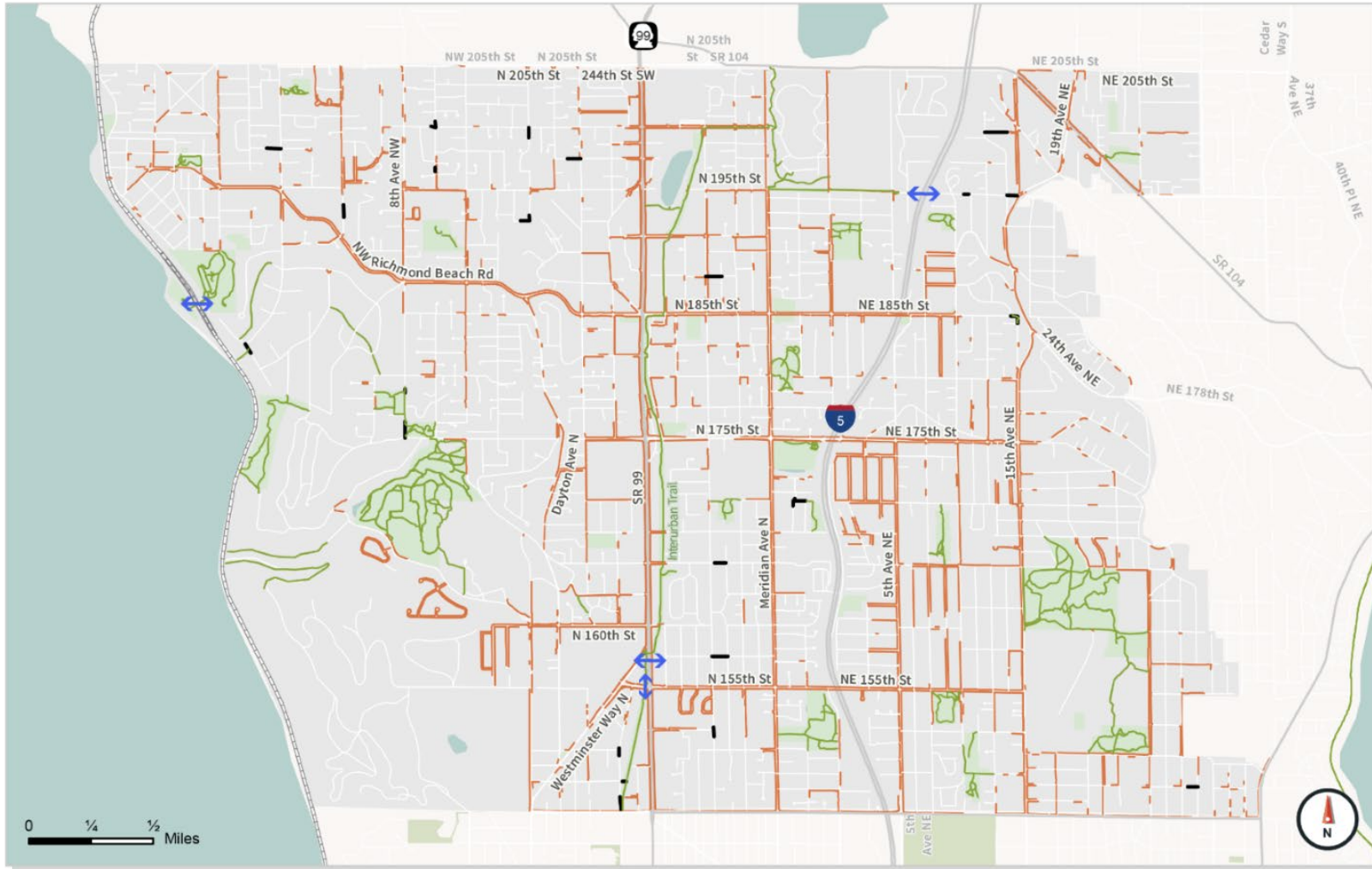
ID	Facility	From	To	LOS Standard	V/C Ratio (2019)		V/C Ratio (2044)		Notes on Impacts under 2044 Conditions
					NB/EB	SB/WB	NB/EB	SB/WB	
1	Interstate 5	NE 145th St	NE 175th St	LOS D	0.89	0.75	0.90	0.74	SB meets LOS D standard; NB exceeds LOS D standard
2	Interstate 5	NE 175th St	SR 104	LOS D	0.80	0.72	0.81	0.73	Meets LOS D standard along both directions
3	SR 104	west of I-5	-	LOS D	0.50	0.54	0.51	0.57	Meets LOS D standard along both directions
4	SR 104	east of I-5	-	LOS E Mitigated	0.36	0.27	0.36	0.26	Meets LOS E Mitigated standard along both directions
5	N/NE 145 th (SR 523)	west of I-5	-	LOS E Mitigated	0.47	0.40	0.41	0.53	Meets LOS E Mitigated standard along both directions
6	NE 145 th (SR 523)	east of I-5	-	LOS E Mitigated	0.56	0.54	0.63	0.52	Meets LOS E Mitigated standard along both directions

Walking and Bicycling

Facilities for walking and bicycling are essential components of the City’s multimodal transportation system. Safe and convenient pedestrian infrastructure makes it easier and more convenient to take short trips by foot or wheelchair. Pedestrian infrastructure includes a range of treatments spanning from sidewalks and crosswalks, to trails and shared-use paths. Most of the City’s principal and minor arterials have sidewalks; some lower classified roadways (including local streets) also have sections of sidewalk. Even where sidewalks are present, they are not always wide enough to accommodate passing another person comfortably or provide a buffer from fast-moving traffic. Many sections have insufficient lighting, and some sections are in substandard condition or not ADA compliant. An inventory of all existing sidewalks and shared-use paths is shown in **Figure 7.6**.

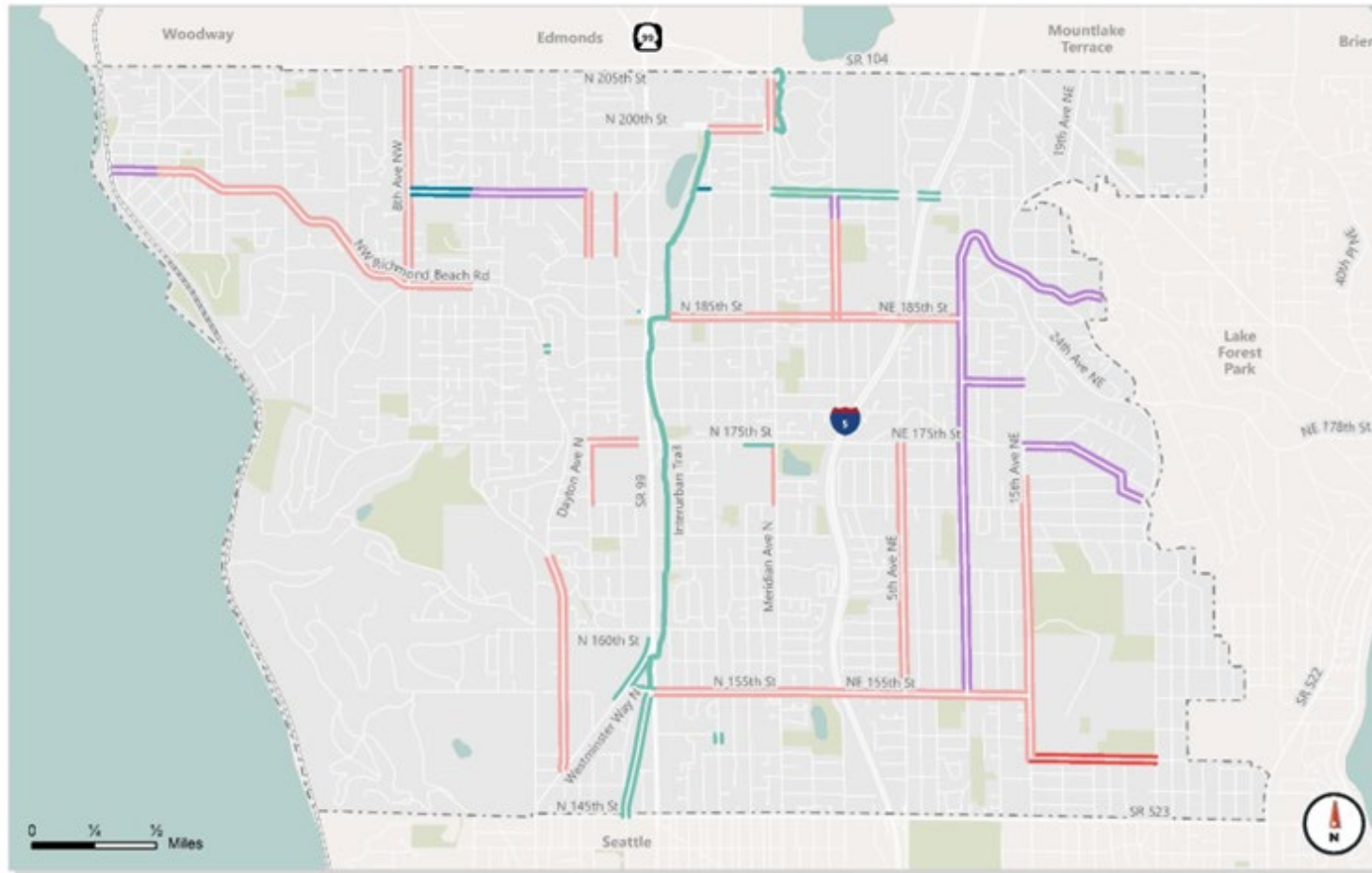
Bicycling facilitates longer trips than walking with similar benefits to the environment, individuals, and the community. Electric bikes and scooters provide even more mobility options for longer trips and make trips in difficult terrain easier. There is a variety of different bicycling infrastructure types that can appeal to bicyclists and riders of electric bikes and scooters with varying levels of experience and confidence. Bicycle facilities currently found in Shoreline include shared-use paths/trails, bike lanes, sharrows, and signed bicycle routes. While there are bike lanes on some key roadways, such as sections of NE 155th Street, NE 185th Street, NW Richmond Beach Road, 15th Avenue NE, and 5th Avenue NE, there are many gaps in the bicycle network and many of the facilities are not comfortable for users of all ages and abilities. Shoreline’s existing bicycle network is shown in **Figure 7.7**.

Figure 7.6 Existing Sidewalks



- Existing Trail
- Park
- ↔ Existing Pedestrian/Bicycle Bridge
- Existing Pathways
- Existing Sidewalks

Figure 7.7 Existing Bicycle Facilities



Existing Bike Facilities

- Bike Facility - Horizontal and Vertical Separation
- Bike Facility - Horizontal Separation
- Bike Facility - No Horizontal or Vertical Separation
- Bike Facility - Vertical Separation
- Shared Lane/Sharrow

- City Boundary
- Park

City of Shoreline
Existing Bike Facilities

Transit

To provide convenient and equitable connections to transit for Shoreline residents, employees, and visitors, the City must support access to transit by all modes of travel and ensure that street infrastructure enables transit to operate safely, efficiently, and reliably. While transit has historically been made up of fixed route bus and light rail services, flexible microtransit is another important service that can provide first and last mile connections to fixed route transit and key local destinations.

King County Metro Transit (KC Metro), Community Transit (CT), and Sound Transit (ST) all serve travelers in Shoreline. Additionally, travelers have access to KC Metro paratransit service, Community Van and Ride Share programs, and Transportation Network Companies (TNCs) such as Uber and Lyft. KC Metro connects Shoreline through bus transit service to destinations throughout King County; CT provides service to destinations throughout Snohomish County; and ST offers regional bus service from Shoreline to Seattle, Mountlake Terrace, Lynnwood, and Everett via I-5. **Figure 7.8** shows KC Metro's service plan (as of March 2022) and **Figure 7.9** shows CT and ST routes.

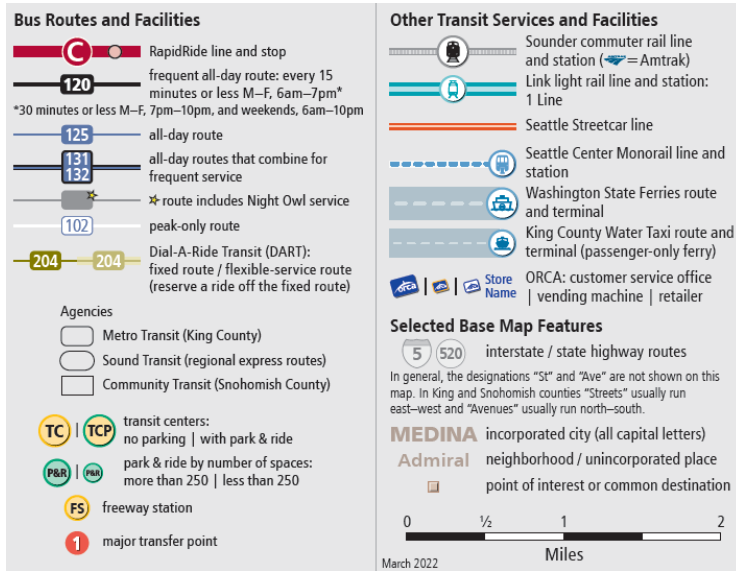
The Aurora Village Transit Center is located on the north side of N 200th Street and just east of Aurora Avenue. The facility serves as a multi-modal transfer point which connects CT and KC Metro transit service. The City of Shoreline also has nine Park & Ride facilities, ranging in size from 20 to 393 parking spaces.

There are various factors that act as deterrents and/or limit the use of transit in Shoreline including:

- Gaps in active transportation infrastructure.
- Lack of safe and comfortable access to transit facilities, such as missing, narrow, or deteriorated pedestrian facilities and lack of lighting; and/or busy intersections or a lack of crosswalks.
- Potential transit riders may find deficiencies in the network or feel uncomfortable or at risk while riding on transit.

KC Metro, CT, and ST are currently implementing long range planning efforts to provide reliable, consolidated services throughout Shoreline and the Puget Sound region. The adoption of Sound Transit plans (ST2, ST3) by regional voters and the development of the KC Metro Connects Plan lay groundwork that establishes a roadmap for fixed-route transit service over the next 25 years. Based on known information in 2022 from transit service providers and their plans, **Figure 7.10** provides a look at what future transit service in Shoreline will look like, including KC Metro routes, and Sound Transit light rail and bus rapid transit (BRT) service. Additionally, CT is working on extending transit service provided by Swift Blue Line to integrate with the region's long-range plans.

Figure 7.8 2021 King County Metro Route Network*



**This route network is in flux, and another route restructure will occur when light rail service begins.*

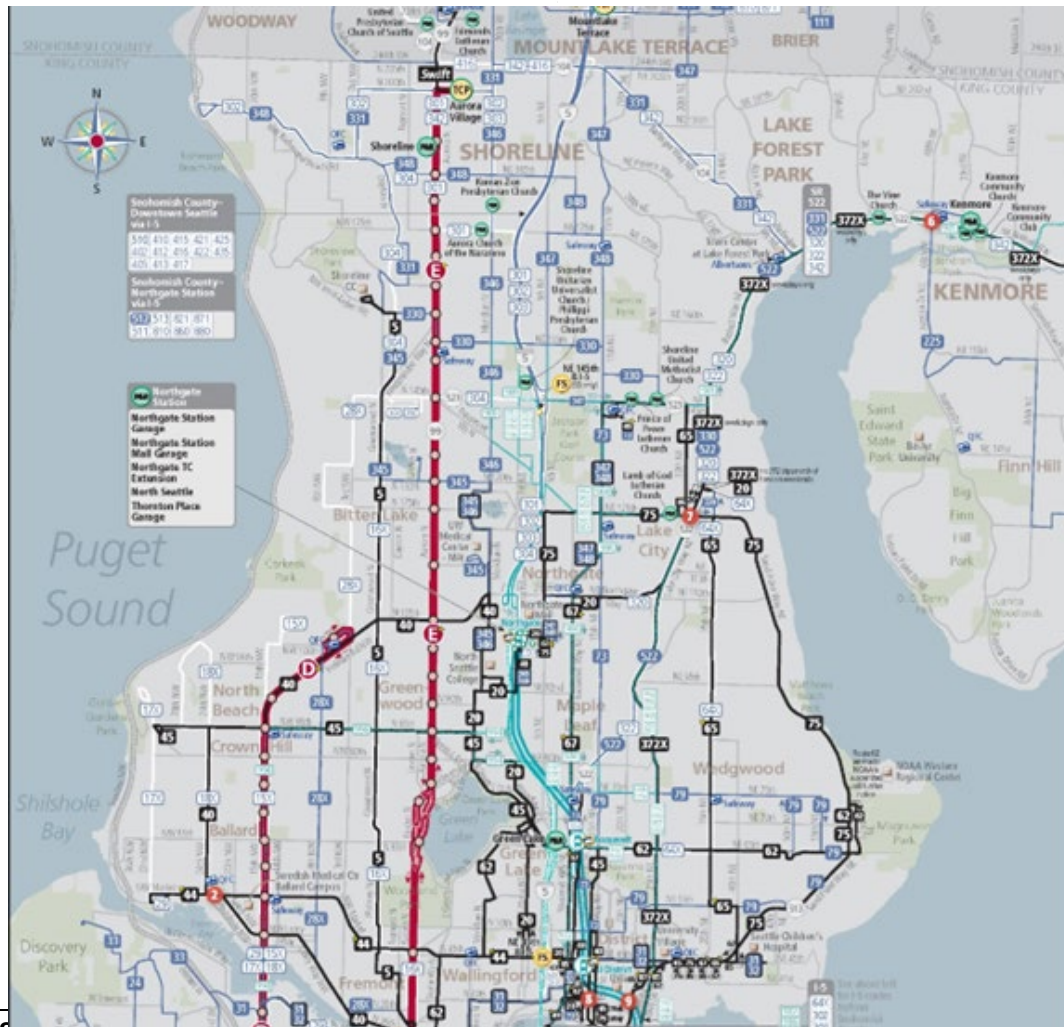


Figure 7.9 Existing Community Transit and Sound Transit Routes

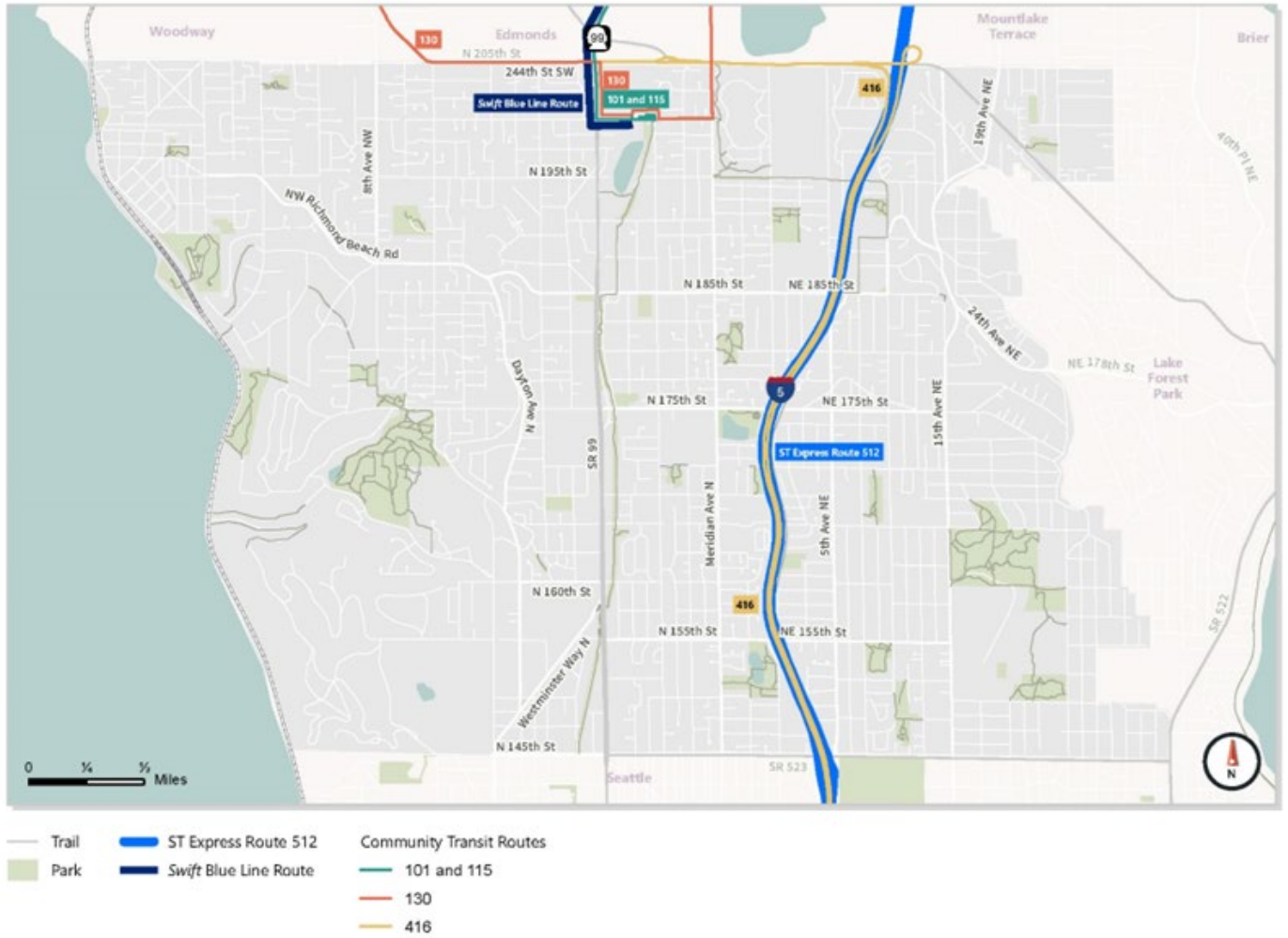
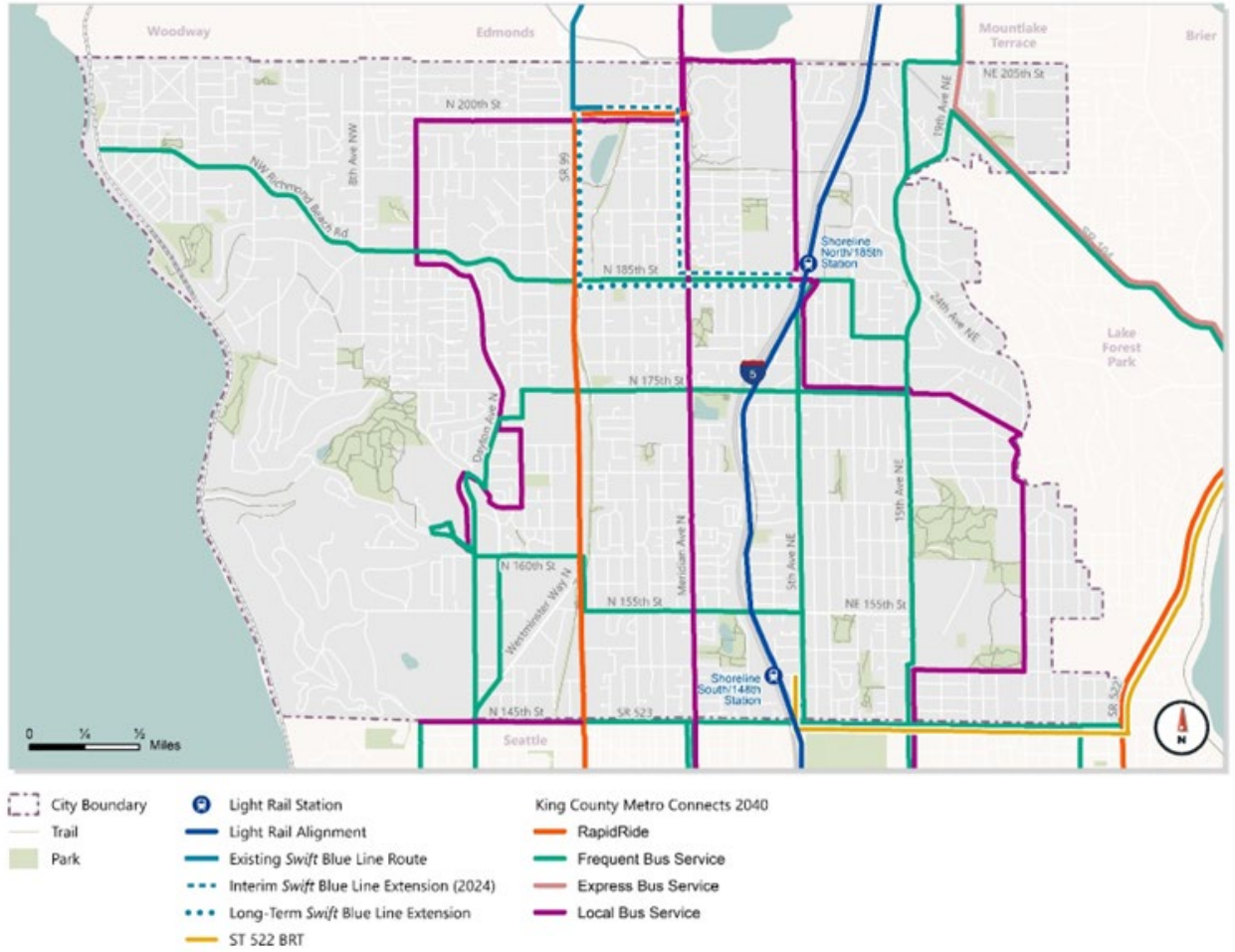


Figure 7.10 Future Fixed Route Transit Service



Freight and Truck Mobility

Freight plays a critical role in the economic vitality of Shoreline; businesses and residents rely on freight shipped via trucks. Truck sizes range from single-unit trucks (such as package delivery, moving, and garbage trucks that navigate through neighborhoods), to large semi-truck trailers delivering vehicles and freight to local businesses. Trucks delivering wholesale and retail goods, business supplies, and building materials throughout Shoreline contribute to and are impacted by traffic congestion. The City partners with regional agencies and the State to build and maintain Freight and Goods Transportation System (FGTS) routes. Designated FGTS routes aim to prevent heavy truck traffic on lower volume streets and promote the use of adequately designed roadways. WSDOT classifies roadways using five freight tonnage classifications, which are described in **Table 7-6**.

Table 7-6 WSDOT Freight Classification

Freight Corridor	Description
T-1	More than 10 million tons of freight per year
T-2	Between 4 million and 10 million tons of freight per year
T-3	Between 300,000 and 4 million tons of freight per year
T-4	Between 100,000 and 300,000 tons of freight per year
T-5	At least 20,000 tons of freight in 60 days and less than 100,000 tons per year

Source: WSDOT Washington State Freight and Goods Transportation System (FGTS) 2019 Update, 2020

As shown in **Figure 7.11**, I-5, which is part of the national Interstate Highway system, is a T-1 corridor that runs north/south through Shoreline and moves more than 10 million tons of freight per year. The only T-2 corridor within city limits is 175th Street, on both sides of I-5. Several roadways in Shoreline are classified as T-3 corridors, as they facilitate the movement of between 300,000 and 4 million tons of freight per year.

Figure 7.11 WSDOT Classified Freight Routes

To practically address this challenge, the City considers adjacent land uses in developing plans for its layered, multimodal transportation network. By considering the function of multiple streets and transportation facilities together, this approach allows for certain transportation facilities (such as streets, trails, and intersections) to emphasize specific modes or user types. These plans will help the City identify future improvement projects to be implemented.

The following sections outline the City of Shoreline’s modal networks.

Pedestrian Plan

The Pedestrian Plan is intended to optimize the comfort of individuals on foot and those using mobility devices, such as wheelchairs. The fundamental expectations for physical space, modal separation, and street crossing amenities are informed by the neighborhood and land use context of a given street; low volume/low speed neighborhood streets may require fewer facilities while pedestrians traveling on a higher speed street may feel safer with more space and separation from vehicles. Therefore, pedestrian facility standards are tailored to different neighborhood/street contexts.

Previously listed **Policy T-60** states to, “Establish a connected and complete pedestrian network by constructing the sidewalks outlined in the Sidewalk Prioritization Plan (SPP).” The Pedestrian Plan includes existing sidewalks and future sidewalks that were identified in the 2018 Sidewalk Prioritization Plan, existing and future pedestrian/bicycle bridges, existing and future trails, and areas with public access known as “unimproved right of way” that could accommodate a future pathway connection to expand the walking network. The Pedestrian Plan shows unimproved ROW broken into two categories:

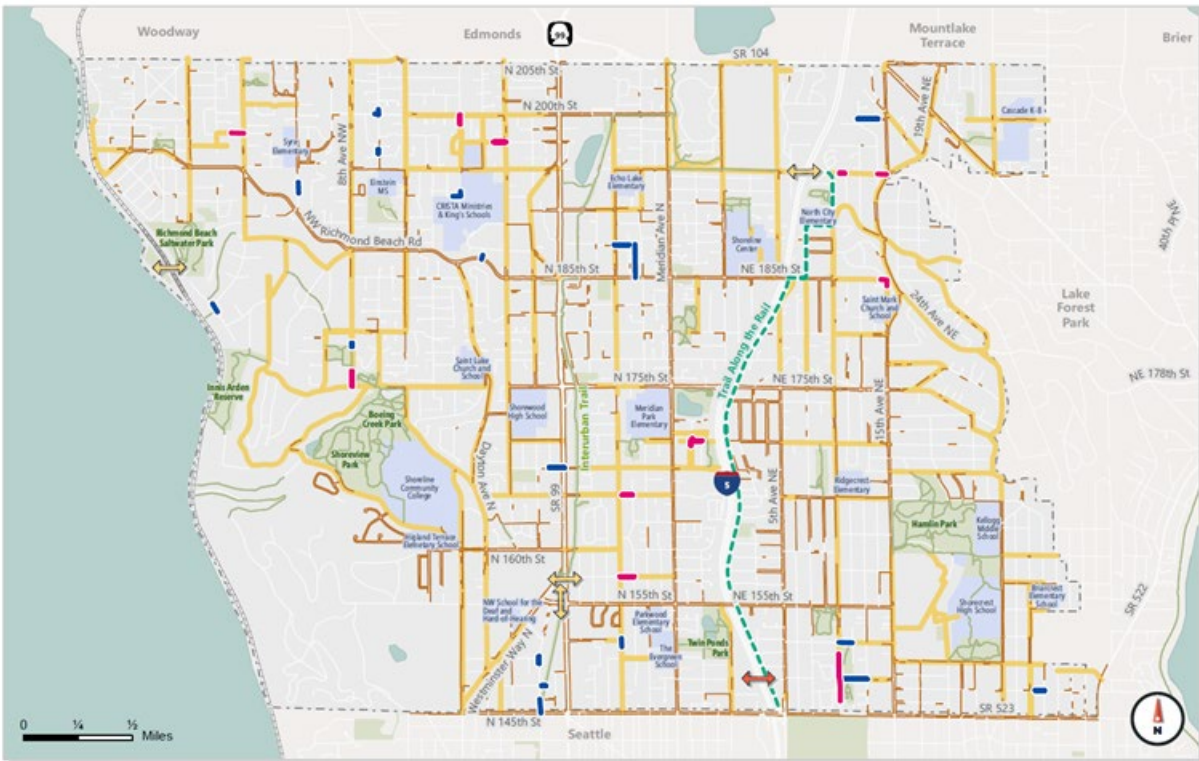
- Unimproved ROW associated with a future sidewalk project in the Sidewalk Prioritization Plan (in red)
- Unimproved ROW that is not part of the Sidewalk Prioritization Plan (in blue).

The 2018 Sidewalk Prioritization Plan (SPP) was developed as early work for the Transportation Element and TMP updates. The SPP differs from the Pedestrian Plan in that the SPP prioritizes the implementation of roughly 75 miles of new sidewalk projects whereas the Pedestrian Plan is a comprehensive map of the City’s existing and future planned sidewalks as well as unimproved right of way, trails, and pedestrian/bicycle bridges.

The SPP lives and is updated outside of the Transportation Element as its level of specificity is too detailed to be included in the Transportation Element, which is a high-level, 20-year guidance document. The City intends to update the data inputs into the SPP approximately every five years and to revisit the prioritization criteria and metrics every 10 years in coordination with each TE update.

Existing and future planned sidewalk can be viewed in **Figure 7.12**. The map indicates areas where sidewalk exists but does not specify if the sidewalk meets standards set forth in **Policy T60.1** of this document. Shared-use paths, trails, and facilities such as pedestrian lighting help to enhance the planned network.

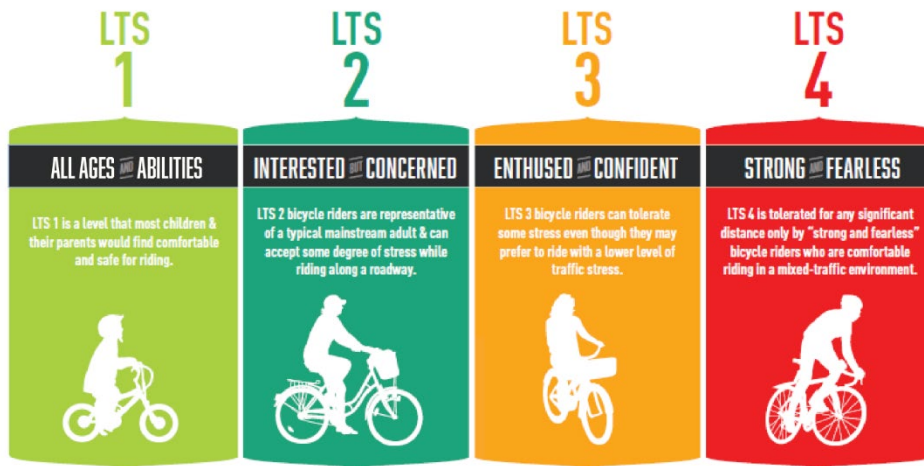
Figure 7.12. Pedestrian Plan



Bicycle Plan

Level of traffic stress (LTS) is the current industry recognized practice for planning bicycle facilities and was developed by the Mineta Institute and San Jose State University in 2012. This approach provides a framework for designing bicycle facilities that meet the needs of the intended users of the system. The following **Figure 7.13** describes the four typical categories of bicyclists, each of which requires different levels of accommodation to feel comfortable using the system.

Figure 7.13 Bicycle Level of Traffic Stress Categories



Source: Fehr & Peers, 2022

Figure 7.14 identifies the City’s vision for a connected network of low-stress (LTS 1 and 2) routes in Shoreline. This network considers variables like grade and freeway crossings, in addition to the typical variables that impact the roadway comfort for bicycling, such as traffic speeds and traffic volumes. These variables help to determine an appropriate type of separation.

Figure 7.15 defines how LTS is measured on specific streets and can guide the identification of capital treatments to provide the City’s desired LTS level on individual streets.

It is important to provide bicycle facilities on a range of street types, including busy arterial streets, not just lower volume neighborhood streets. Bicyclists need to be able to connect to key destinations and commercial corridors which are often located along arterial streets. A successful modal network for bicycles will also consider how facilities are connected. When a bicycle facility along an arterial corridor comes to an intersecting arterial, the corridor LOS and associated intersection treatments should be carried across the arterial. Otherwise, the arterial intersection may become a barrier to bicycle travel.

As noted in **Policy T-61**, the City seeks to establish a low-stress bicycle network that connects major destinations, transit stops and stations, and residential and employment centers. **Figure 7.16** shows the Bicycle Modal Plan for the City of Shoreline.

Transit Plan

Many Shoreline residents rely on public transit for their commuting needs; some must rely solely on this means of transportation to make local and broader regional connections. Since King County Metro, Community Transit, and Sound Transit operate the transit service in Shoreline, the City’s role in transit service is focused on providing access to transit, supporting flexible microtransit options, and hosting transit service on Shoreline streets.

Although transit agencies are responsible for determining route locations, frequency, and bus stop treatments, the City is empowered to advocate for additional transit service (to enhance speed and reliability, and support connectivity and planned growth) and for transit stops and stations along City roadways. The City can also explore

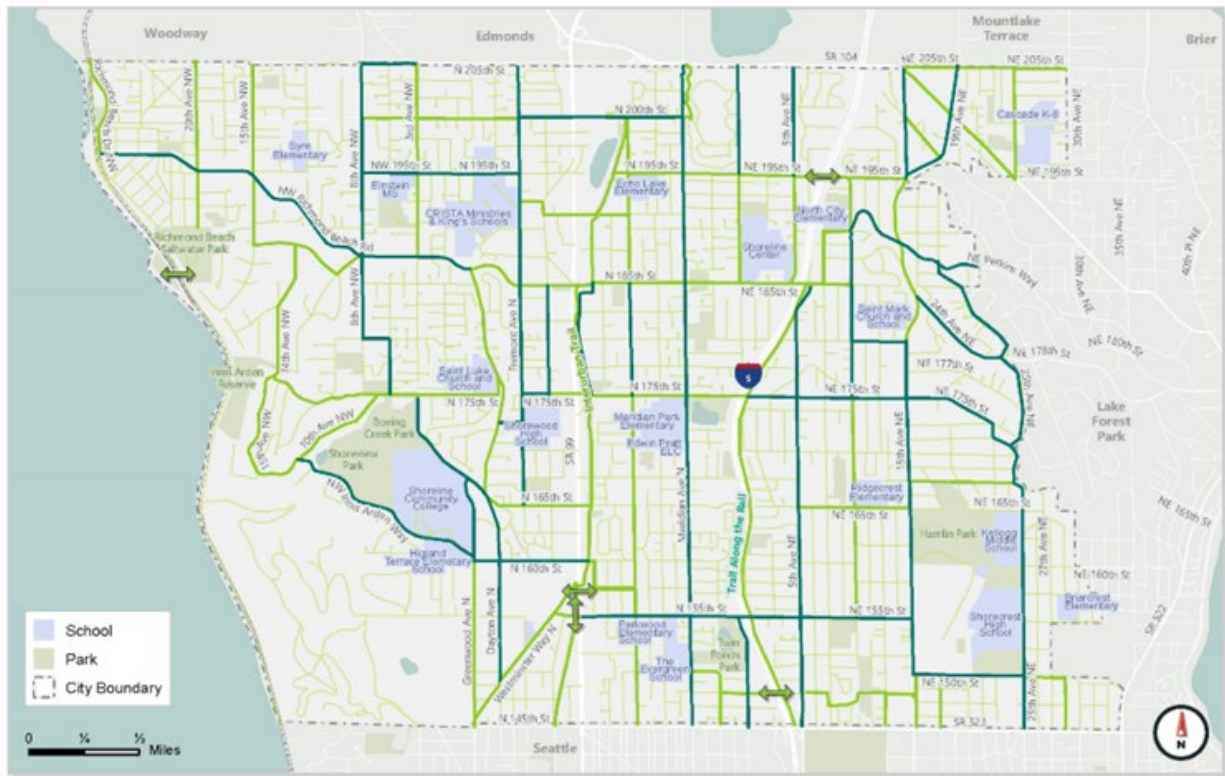
and advocate for microtransit services, either run by the transit agencies or other providers, which support first and last mile connections to the fixed route system.

The City actively engages with transit operators in developing priority connections and service standards. This process involves identifying the following:

- Priority connections between key destinations (including neighborhood centers and major regional destinations) based on travel needs and demand, and desired connections between transit services.
- Frequent transit service that could connect Shoreline’s growth centers to the region, and neighborhoods to urban centers and the regional transit spine. Each connection is designed to meet a wide variety of user groups and trip purposes and meet the needs of multiple markets.
- Preferred travel paths that represent a balance between transit travel speed and coverage (access to transit) for Shoreline’s growth centers and neighborhoods.
- Appropriate “Service Families” that define the desired level of service in terms of the frequency of service by time of day. These standards are established by identifying potential transit demand based on population and employment density measures (persons and jobs per acre), as well as overall travel demand measures (all-day person trips) along each corridor.

As noted in **Policy T-62**, the City will advocate for transit service that is aligned with Shoreline’s land use and demographics, which is outlined in the Transit Modal Plan described in **Table 7-7** and shown in **Figure 7.17**.

Figure 7.14 Bike LTS Vision



- Desired Minimum Level of Traffic Stress (LTS)
- 1
 - 2
- Local Road (LTS 1)
- Pedestrian/Bicycle Bridge (LTS 1)

City of Shoreline
Bicycle Level of Traffic Stress (LTS) Vision

Figure 7.15 LTS Designations by Posted Speed Limit, Traffic Volume, and Bicycle Infrastructure

Speed Limit (mph)	Traffic Volume	Bicycle Infrastructure			Buffered Bike Lane	Protected Bike Lane	Physically Separated Bike Path
		No Marking	Sharrow Lane Marking	Striped Bike Lane			
≤25	Local streets	1	1	1	1	1	1
	Up to 7k	3	3	2	2	1	1
	≥7k	3	3	2	2	1	1
30	<15k	4	3	2	2	1	1
	15-25k	4	4	3	3	3	1
	≥25k	4	4	3	3	3	1
35	<25k	4	4	3	3	3	1
	≥25k	4	4	4	3	3	1
40	Any volume	4	4	4	4	3	1

Figure 7.16 Bicycle Plan

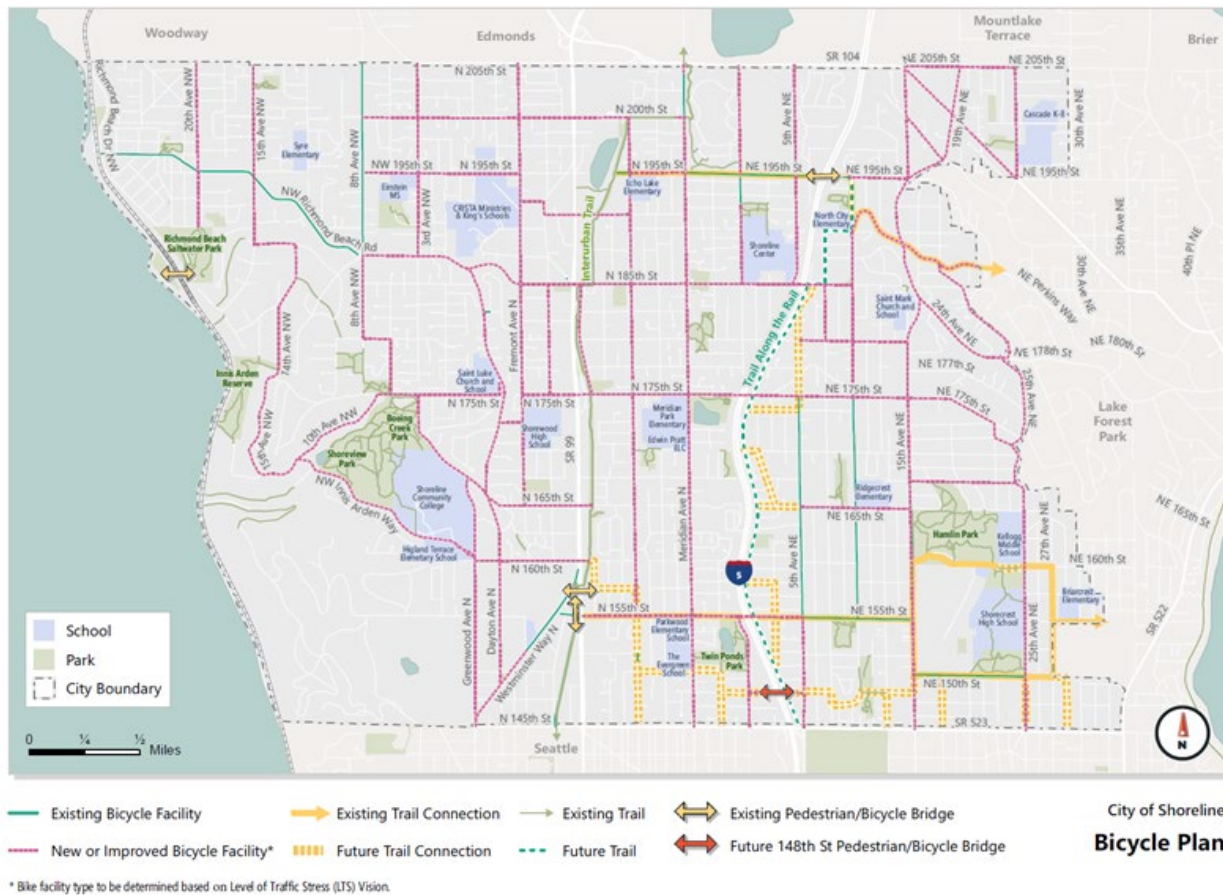
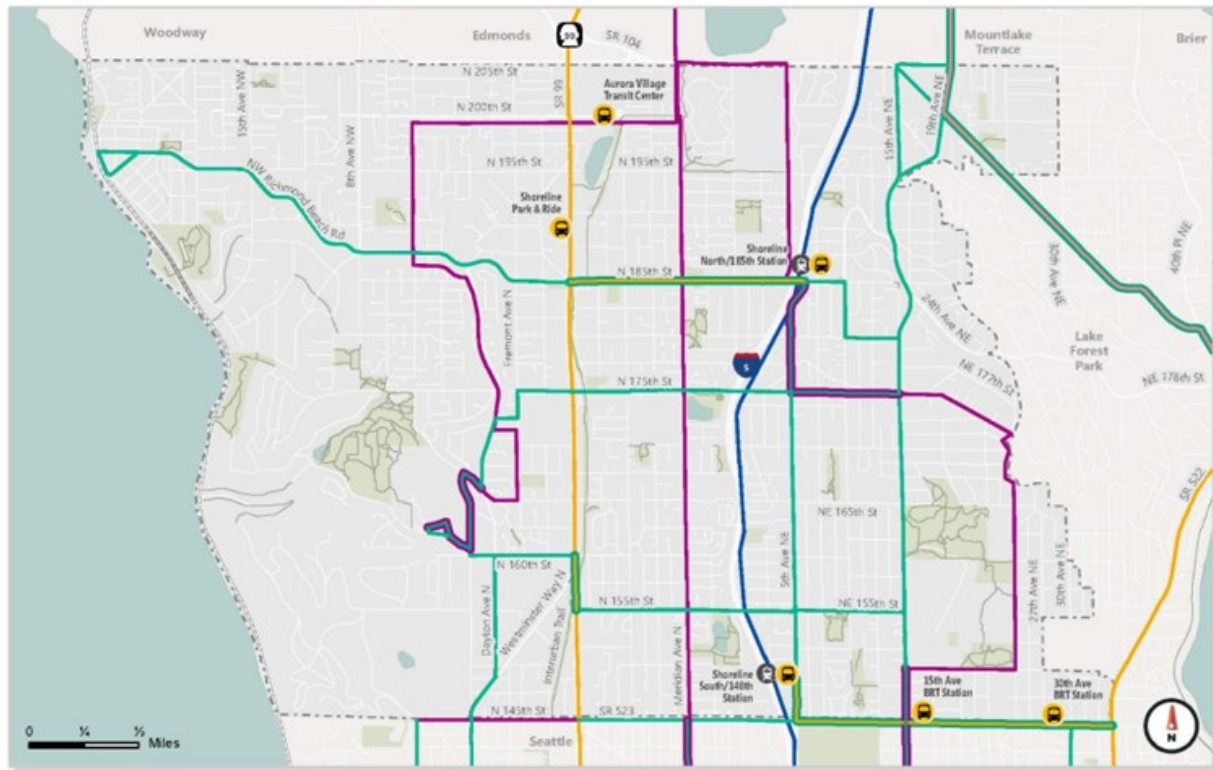


Table 7-7 Transit Accommodation

Policy	Performance Measure	Potential Projects/Actions
Tier 1: Light Rail, BRT, Frequent, and Express Bus Service		
Support frequent and reliable light rail/bus service.	Strive for target travel speeds along key transit routes.	<ul style="list-style-type: none"> Speed and reliability treatments, such as transit signal priority and queue jumps. Advocate for increased service/reduced headways.
Strive to maximize rider comfort and security.	Bus stop/sub shelter amenities.	<ul style="list-style-type: none"> Investments in comfort/amenities at major stops and stations; e.g., lighting; seating; comfortable shelters; real time transit information.

<p>Strive to maximize rider access.</p>	<p>Number of people that can access stops on a low stress network. cur</p> <p>High quality connections to light rail and BRT.</p>	<ul style="list-style-type: none"> • Sidewalks/trails connecting to stops and stations. • Enhanced street crossings. • Bike parking and amenities. • Curb space management considerations. • Develop shared-use mobility hubs. • Advocate for increased transit service to light rail stations.
<p>Tier 2: Local Bus Service</p>		
<p>Support continuous service.</p>	<p>Strive for continuous service based on hours/day and days/week; minimum headways.</p>	<ul style="list-style-type: none"> • Advocate for continuous service.
<p>Strive to maximize rider comfort and security.</p>	<p>Bus stop/bus shelter amenities.</p>	<ul style="list-style-type: none"> • Investments in comfort/amenities at major stops and stations; e.g., lighting; seating; comfortable shelters.
<p>Strive to maximize rider access.</p>	<p>Number of people that can access stops on a low stress network.</p>	<ul style="list-style-type: none"> • Accessible sidewalks/trails connecting to stops. • Enhanced street crossings. • Develop shared-use mobility hubs.

Figure 17.7 Transit Plan



- City Boundary
- Existing Trail
- Light Rail Station
- BRT Station*
- Light Rail Service
- "Bus Rapid Transit" Bus Service
- Frequent Bus Service
- Express Bus Service
- Local Bus Service

City of Shoreline
Transit Plan

*There are additional BRT stops on Aurora Avenue not shown on this map.

Shared-Use Mobility Hub Plan

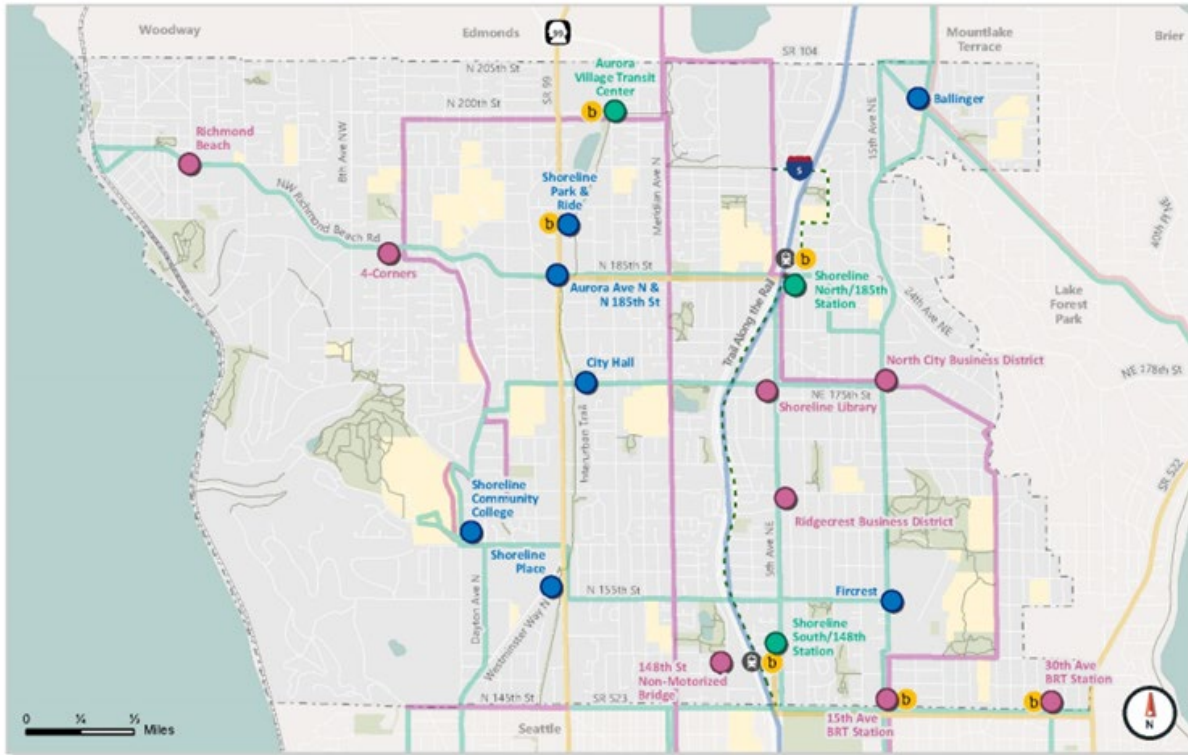
The City of Shoreline is interested in creating “mobility hubs” in strategic locations throughout the City to help people make trips without using personal cars. The hubs would provide centralized points throughout Shoreline where people could readily access “shared-use mobility” services, such as scootershare, bikeshare, carshare, rideshare (e.g., Uber and Lyft), carpool, vanpool, and micro/flexible transit forms of public transit such as bus and light rail. Mobility hubs can offer a range of services, such as bike parking and lockers, charging stations for personal and shared e-bikes, public art, Wi-Fi, bus shelters, and more. The City is particularly interested in integrating mobility hubs into mixed-use development surrounding the upcoming light rail stations and frequent bus service/Bus Rapid Transit, and connecting residents to neighborhoods, commercial services, and other key destinations.

Policy T-64 states that Shoreline will provide mobility hubs at locations that support the City’s land use vision. Shoreline envisions having three “types” of mobility hubs, each with a range of features and amenities appropriate for the neighborhood and location. These are classified as:

- **Regional hubs** - A robust type of mobility hub co-located with major transit hubs, providing the most features and amenities. They will support the largest number of people from within and outside of Shoreline.
- **Central hubs** - A medium size mobility hub, providing sufficient amenities to support commuting, leisure, and recreation at and around hubs. They will connect people to key locations in Shoreline.
- **Neighborhood hubs** - The smallest type of mobility hub, providing simple and comfortable amenities to accommodate active transportation and transit access for local communities.

Figure 7.18 shows the Shared-Use Mobility Hub Plan for the City of Shoreline. **Table 7-8** lists potential features and amenities by mobility hub type. Each hub would be analyzed and designed with public input to help determine the right amenities to include at each location.

Figure 7.18 Shared-Use Mobility Hub Plan



Recommended Shared-Use Mobility Hubs

- Regional Mobility Hub
- Central Mobility Hub
- Neighborhood Mobility Hub

- City Boundary
- Existing Trail
- Future Trail
- Light Rail Station
- BRT Station

- Light Rail Service
- "Bus Rapid Transit" Bus Service
- Frequent Bus Service
- Express Bus Service
- Local Bus Service

City of Shoreline
Shared-Use Mobility Hub Plan

Table 7-8 Mobility Hub Potential Amenities

Typology	Potential Features and Amenities
<p>Regional Hubs</p> <p><i>Example: Shoreline South/148th Station</i></p>	<p>Amenities listed for Neighborhood Hubs and Central Hubs, and:</p> <ul style="list-style-type: none"> • Bus layover zones* • Wi-Fi & cell phone charging stations
<p>Central Hubs</p> <p><i>Example: Shoreline Place</i></p>	<p>Amenities listed for Neighborhood Hubs, and:</p> <ul style="list-style-type: none"> • Covered bus stops with real-time arrival and departure information* • Bike/scooter parking (lockers for long-term, racks in front of cafes and retail) • Well-marked sidewalks, pedestrian signals • Rideshare pick-up/drop-off zones and kiss-and-ride • EV car charging stations • Greenspace or retail/residential integration • Carshare parking • Drinking fountain • Portland Loo-style bathrooms
<p>Neighborhood Hubs</p> <p><i>Example: 4-Corners</i></p>	<ul style="list-style-type: none"> • Covered bus stops* • Seating/lean rail, garbage and recycling cans • Pedestrian-scale lighting • Universal wayfinding signs • Bike/scooter parking (racks with the potential for lockers) • Bike repair station • EV bike charging station • Scootershare and bikeshare pick-up/drop-off zones • Public art • Crosswalk improvements

*Agency coordination/partnership opportunity

Automobile Plan

The Automobile Plan for the City of Shoreline sets the standard for vehicle traffic flow on its main roadways compared to the level of delay acceptable to the City. The operational performance of intersections within Shoreline is measured using a standard methodology known as level of service (LOS). LOS represents the degree of congestion at an intersection based on a calculation of average delay per vehicle at the intersection. These measurements generally represent morning or afternoon “rush hour” delays and are often referred to as a.m. or p.m. “peak” hour. Individual LOS grades are assigned on a letter scale, A-F, with LOS A representing free-flow conditions with no delay and LOS F representing highly congested conditions with long delays. It is not standard practice to strive for

LOS A conditions as this may represent an overbuilt roadway with too much investment in vehicle capacity at the expense of other travel modes.

Table 7-9 shows the definition of each LOS grade from the 6th Edition Highway Capacity Manual (HCM) methodology, which is based on average control delay per vehicle. Signalized intersections have higher delay thresholds compared with two-way and all-way stop-controlled intersections. Highway Capacity Manual methodologies prescribe how delay is measured at different types of intersections: for signalized and all-way stop intersections, LOS grades are based on the average delay for all vehicles entering the intersection; for two-way stop-controlled intersections, the delay from the most congested movement is used to assess LOS.

Table 7-9 Intersection LOS Criteria Based on Delay

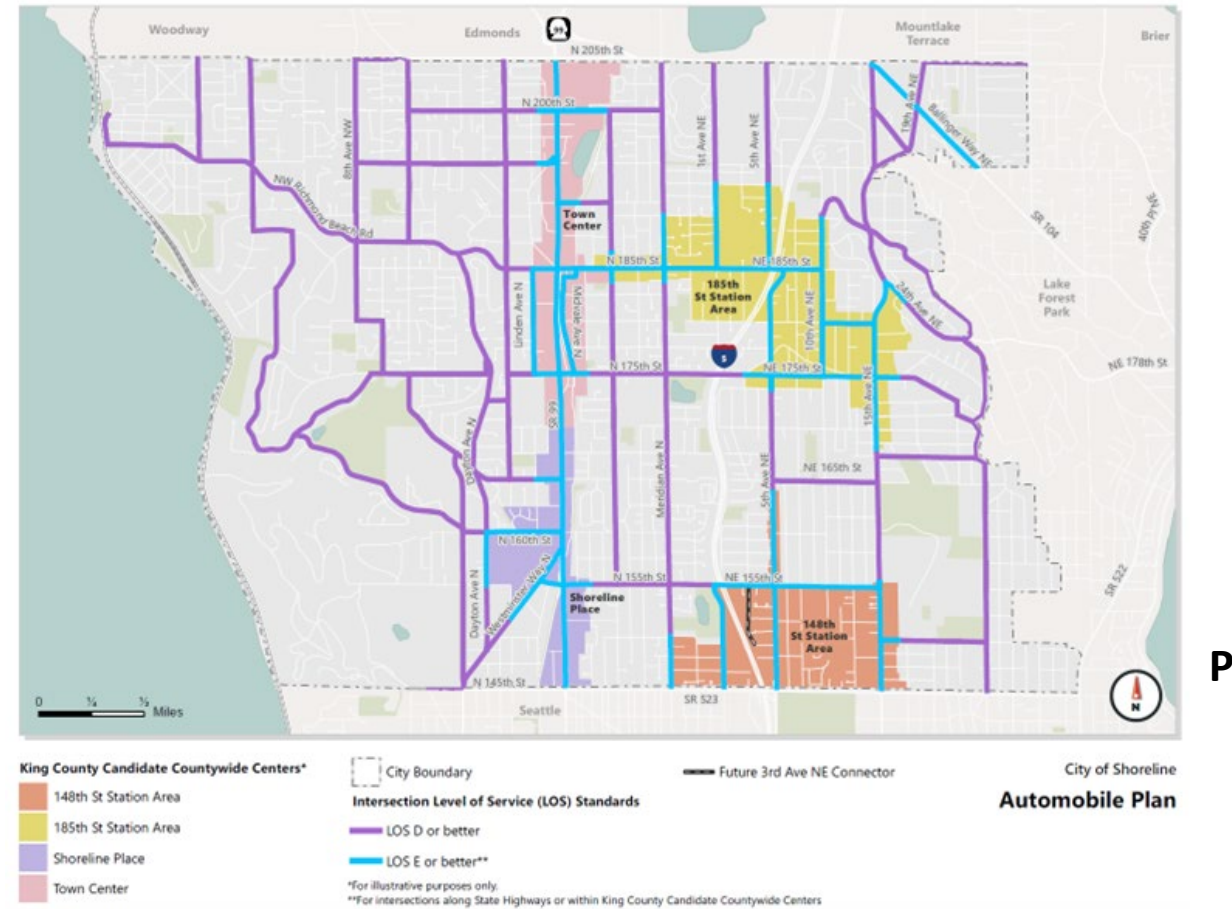
Level of Service	Signalized Intersections (seconds per vehicle)	Stop-Controlled Intersections (seconds per vehicle)
A	<= 10	<= 10
B	>10 to 20	>10 to 15
C	>20 to 35	>15 to 25
D	>35 to 55	>25 to 35
E	>55 to 80	>35 to 50
F	> 80	> 50

Source: 6th Edition Highway Capacity Manual

As noted in **Policy T-60**, the City of Shoreline Automobile Plan allows more automobile delay (LOS E) along State Routes and at intersections within the four designated King County [candidate] Countywide Centers in areas near the 148th Street and 185th Street light rail stations, Aurora Square, and “Town Center” along Aurora Avenue where Shoreline will be concentrating the most growth in coming years. Intersections outside of these areas will be held to an LOS D standard (see **Figure 7.19**).

This balanced approach allows the City to incentivize growth in the Centers where denser land use and multimodal infrastructure is available to support more trips by foot, bike, and transit, while upholding a more stringent intersection delay standard in areas where less supportive multimodal infrastructure exists. As growth occurs and congestion increases in our denser land use areas, the City will continue to monitor traffic safety Citywide through its Annual Traffic Report. Additionally, the City will work proactively with redevelopment projects to identify potential safety impacts of increased traffic and mitigation where appropriate.

Figure 7.19 Automobile Plan



P

Potential Impacts and Mitigation Measures

Growth under the alternatives would result in the need and demand for improvements to Shoreline’s multimodal transportation system. Specific Transportation Element project needs are listed in the following section, which if addressed, would provide a safer and more connected multimodal system utilizing a Complete Streets approach to improvements to address identified needs. Under Action Alternative 3, it would be expected that the need for improvements would occur at much faster pace, in step with faster paced growth (achieving growth targets by 2034 rather than 2044). The same level of improvements would be needed as listed; however, if growth continues at this pace from 2034 to 2044, there would be a need for additional improvements beyond those analyzed and listed in this chapter of the DEIS. The City will be proactively monitoring growth on an annual basis to determine if a faster pace may necessitate the need to update transportation planning, analysis, modelling, and definition of needed improvements and projects.

Refer to the plans described previously under Model Networks for proposed level of service standards and refer to the Transportation Element of the Draft 2044 Comprehensive Plan update document for a

discussion of opportunities and constraints around realizing the vision and goals for transportation in Shoreline. Also refer to the Transportation Element and Capital Facilities Element for the City's anticipated financial resources over the next 20 years to implement projects that address these needs.

During the Transportation Element development process, many transportation needs and project ideas to meet those needs were identified across the City. Project ideas came from a variety of sources including community ideas shared during the three outreach series, projects carried forward from past plans, projects identified as needed to provide sufficient capacity to accommodate Shoreline's planned growth, as well as projects that would help construct the modal networks presented in the previous section.

Overall, well over 100 ideas were identified (see **Table 7-10**, which further describes these project ideas). These project ideas are high-level, not prioritized or financially constrained, but encompass the complete list of possible project needs identified through this planning process. Project ideas are grouped into the following categories:

Intersection (I) and Multimodal Corridor (MMC) Project Ideas

These project ideas provide capacity to accommodate anticipated future travel demand and build out pedestrian, bicycle, and transit modal networks to safely accommodate all users on Shoreline streets. Notably, concepts include future capacity projects that the City has previously committed to:

- N 160th St / Greenwood Ave N / N Innis Arden Way – Roundabout to be installed.
- Meridian Ave N from N 155th St to N 175th St – Restripe with two-way left turn lane in key locations.
- N 185th St from 1st Ave NE to 5th Ave NE (west of I-5) – Sound Transit to rechannelize to three-lane cross section by station opening.
- 8th Ave NE and NE 185th Street – Sound Transit to install a Roundabout.
- 5th Ave NE and NE 185th Street – Sound Transit to install a signal.
- 5th Ave NE and NE 148th Street – Sound Transit to install a signal.
- 5th Ave NE and I-5 NB on ramp – Sound Transit to install a signal.

Project ideas also include the following additional capacity projects needed to meet the City's proposed LOS standard by 2044:

- Dayton Ave N & Carlyle Hall Road – Realign intersection geometry and signalize.
- 1st Ave NE & N 155th St – Redesign as urban compact roundabout.
- 25th Ave NE & NE 150th St – Redesign as urban compact roundabout.
- Meridian Ave N & N 175th St – Lane reconfigurations and signal phase changes to improve capacity.
- Meridian Ave N from N 155th St to N 175th St (NB) – Either widen or provide a segment LOS exemption.
- Meridian Ave N from N 175th St to N 185th St (NB) – Either widen or provide a segment LOS exemption.

The City has already begun design on two major corridors, 175th Street (Stone Ave to I-5) and 145th Street (Aurora Ave/Interurban Trail to I-5). These projects do not appear on the project ideas list, but the City is committed to securing funding to implement their construction.

Unimproved Right-of-Way (R)

Areas with public access known as “unimproved right of way” that could accommodate a future pathway connection to expand the walking network.

Trail Along the Rail (TAR)

An approximately 2.5 mile shared-use trail running roughly parallel to the planned Lynnwood Link Light Rail Extension alignment between 145th Street and 195th Street.

Trail Connection (T)

Future on-street trail connections including the planned 145th Street Off-Corridor Bike Network and planned on-street connections to the Trail Along the Rail. These connections will help bicyclists navigate from trails to their final destinations. While these routes have various bicycle facility types, they tend to be on low-speed, low volume local streets.

Bridge Project (B)

The only bridge concept is the 148th Street Non-Motorized Bridge, which will provide pedestrian and bicycle access across Interstate 5 to the Shoreline South/148th light rail station. The bridge is currently under design with several funding sources.

Shared-Use Mobility Hubs (SUM)

Shared-use mobility hubs are places of connectivity where different modes of transportation come together seamlessly at concentrations of employment, housing, shopping, and recreation; and at major transit facilities. Shared-use mobility hubs can include space for bike share, scooter share, car share, as well as curb space for ride hailing services/pickups like Uber and Lyft. They also can provide creature comforts like public bathrooms, information kiosks, outdoor seating, bike parking, public art, and cell-phone recharging stations. There are 18 proposed locations for shared-use mobility hub projects which are categorized into the following three typologies:

- **Regional hubs** are near light rail stations or major bus stations and should have the most features and amenities, as they will support the largest quantity of people from within and outside of Shoreline.
- **Central hubs** connect to key locations in Shoreline and should have sufficient amenities to support commuting, leisure, and recreation at and around hubs.
- **Neighborhood hubs** are the smallest type of mobility hubs and should focus on simple, pedestrian-friendly, and comfortable amenities for local communities.

Table 7-10 describes the full list of project ideas. It is important to note that these project ideas are high-level only. Specific details, including specific designs and project termini, are subject to change.

Table 7-10 Project Ideas List

Street	From	To	Description
Multimodal Corridors			
20th Ave NW	NW 205th St	NW 190th St	20th Ave NW from NW 205th St to NW 190th St improve to bike LTS 1 and fill Sidewalk Gaps
15th Ave NW	N 205th St	NW 188th St	15th Ave NW from N 205th St to NW 188th St improve to bike LTS 1 and fill sidewalk gaps
NW 188th St	15th Ave NW	Springdale Ct NW	NW 188th St from 15th Ave NW to Springdale Ct NW improve to bike LTS 1
14th Ave NW / 15th Ave NW / NW 167th St	NW 188th St	NW Innis Arden Way	14th Ave NW / 15th Ave NW from NW 188th St to NW Innis Arden Way improve to bike LTS 1 and fill sidewalk gaps
10th Ave NW	NW Innis Arden Way	NW 175th Street	10th Ave NW from NW Innis Arden Way to NW 175th Street improve to bike LTS 1 and fill sidewalk gaps
NW/N 175th St/St Luke Pl N	10th Ave NW	Dayton Ave N	NW/N 175th St from 10th Ave NW to St Luke Pl N/Dayton Ave N improve to bike LTS 1 and fill sidewalk gaps
6th Ave NW	NW 175th St	NW 180th St	6th Ave NW from NW 175th St to NW 180th St improve to bike LTS 2 and fill sidewalk gaps
NW 180th St	8th Ave NW	6th Ave NW	NW 180th St from 8th Ave NW to 6th Ave NW improve to bike LTS 2 and fill sidewalk gaps
8th Ave NW	NW 180th St	NW Richmond Beach Rd	8th Ave NW from NW 180th St to NW Richmond Beach Rd improve to bike LTS 2 and fill sidewalk gaps
NW Innis Arden Way	10th Ave NW	Greenwood Ave N	NW Innis Arden Way from 10th Ave NW to Greenwood Ave N improve to bike LTS 1 and fill sidewalk gaps
Greenwood Ave N	N 145th St	N 160th St	Greenwood Ave N from N 145th St to N 160th St improve to bike LTS 1 and fill sidewalk gaps
Greenwood Ave N	N 160th St	Carlyle Hall Rd N	Greenwood Ave N from N 160th St to Carlyle Hall Rd N improve to bike LTS 2 and fill sidewalk gaps
Westminster Way N	N 145th St	Fremont Ave N	Westminster Way N from N 145th St to Fremont Ave N improve to bike LTS 1 and fill sidewalk gaps and accommodate frequent bus service
Dayton Ave N	Westminster Way N	N 160th St	Dayton Ave N from Westminster Way N to N 160th St improve to bike LTS 2 and fill sidewalk gaps and accommodate

			frequent bus service
Dayton Ave N	N 160th St	Carlyle Hall Rd N	Dayton Ave N from N 160th St to Carlyle Hall Rd N improve to bike LTS 2 and fill sidewalk gaps
Dayton Ave N	Carlyle Hall Rd N	N 171st St	Dayton Ave N from Carlyle Hall Rd N to N 171st St improve to bike LTS 1 and fill sidewalk gaps and accommodate frequent bus service
Dayton Ave N	N 171st St	N Richmond Beach Rd	Dayton Ave N from N 171st St to N Richmond Beach Rd improve to bike LTS 1 and fill sidewalk gaps and accommodate local bus service
N 160th St	Greenwood Ave N	SR 99	N 160th St from Greenwood Ave N to SR 99 improve to bike LTS 2 and accommodate frequent bus service
N 165th St	Dayton Ave N	SR 99	N 165th St from Dayton Ave N to SR 99 improve to bike LTS 1 and fill sidewalk gaps
Carlyle Hall Rd NW / 3rd Ave NW	Dayton Ave N	NW 175th St	Carlyle Hall Rd NW / 3rd Ave NW from Dayton Ave N to NW 175th St improve to bike LTS 2 and fill sidewalk gaps
N 155th St	SR 99	Meridian Ave N	N 155th St from SR 99 to Meridian Ave N to provide bike LTS 2 and accommodate frequent bus service
N 155th St	Meridian Ave N	5th Ave NE	N 155th St from Meridian Ave N to 5th Ave NE improve to bike LTS 2 and accommodate frequent bus service
Ashworth Ave N	N 145th St	N 155th St	Ashworth Ave N from N 145th St to N 155th St improve to fill sidewalk gaps and build future trail connection
N 150th St	Ashworth Ave N	Meridian Ave N	N 150th St from Ashworth Ave N to Meridian Ave N improve to fill sidewalk gaps and build future trail connection
Ashworth Ave N	155th St	N 157th St	Ashworth Ave N from 155th St to N 157th St improve to bike LTS 1 and fill sidewalk gaps and build future trail connection
Ashworth Ave N	N 157th St	N 175th St	Ashworth Ave N from N 157th St to N 175th St improve to bike LTS 1 and fill sidewalk gaps
Ashworth Ave N	N 175th St	N 185th St	Ashworth Ave N from N 175th St to N 185th St improve to bike LTS 2 and fill sidewalk gaps
Ashworth Ave N	N 185th St	N 200th St	Ashworth Ave N from N 185th St to N 200th St improve to bike LTS 1 and fill sidewalk gaps
Meridian Ave N	N 145th St	N 175th St	Meridian Ave N from N 145th St to N 175th St improve to bike LTS 2 and accommodate local bus service

Meridian Ave N	N 175th St	N 185th St	Meridian Ave N from N 175th St to N 185th St reconfigure the intersection of Meridian Ave N and 175th St and provide bike LTS 2 and accommodate local bus service
Meridian Ave N	N 185th St	N 195th St	Meridian Ave N from N 185th St to N 195th St improve to bike LTS 2 and accommodate local bus service
Meridian Ave N	N 195th St	N 200th St	Meridian Ave N from N 195th St to N 200th St improve to bike LTS 2 and fill sidewalk gaps and accommodate local bus service
Meridian Ave N	N 200th St	N 205th St	Meridian Ave N from N 200th St to N 205th St improve to fill sidewalk gaps and accommodate local bus service
NW Richmond Beach Rd	8th Ave NW	Dayton Ave N	NW Richmond Beach Rd from 8th Ave NW to Dayton Ave N to provide bike LTS 2 and accommodate frequent bus service
N Richmond Beach Rd	Dayton Ave N	Fremont Ave N	N Richmond Beach Rd from Dayton Ave N to Fremont Ave N improve to bike LTS 2 and accommodate frequent bus service
3rd Ave NW	NW Richmond Beach Rd	NW 195th St	3rd Ave NW from NW Richmond Beach Rd to NW 195th St improve to bike LTS 1 and fill sidewalk gaps and accommodate local bus service
3rd Ave NW	NW 195th St	N 205th St	3rd Ave NW from NW 195th St to N 205th St improve to bike LTS 1 and fill sidewalk gaps and accommodate local bus service
NW 200th St	8th Ave NW	3rd Ave NW	NW 200th St from 8th Ave NW to 3rd Ave NW improve to bike LTS 1
NW/N 200th St	3rd Ave NW	Fremont Ave N	NW/N 200th St from 3rd Ave NW to Fremont Ave N improve to bike LTS 2 and fill sidewalk gaps and accommodate local bus service
N 200th St	Fremont Ave N	SR 99	N 200th St from Fremont Ave N to SR 99 improve to bike LTS 2 and fill sidewalk gaps and accommodate local bus service
N 200th St	SR 99	Ashworth Ave N	N 200th St from SR 99 to Ashworth Ave N improve to bike LTS 2 and accommodate local bus service
Fremont Ave N	N 165th St	N 172nd St	Fremont Ave N from N 165th St to N 172nd St improve to bike LTS 2 and fill sidewalk gaps and accommodate local bus service
Fremont Ave N	N 172nd St	N 205th St	Fremont Ave N from N 172nd St to N 205th St improve to bike

			LTS 2 and fill sidewalk gaps
N 172nd St	Dayton Ave N	Fremont Ave N	N 172nd St from Dayton Ave N to Fremont Ave N improve to LTS 2 and accommodate local bus service
N 193rd St	Fremont Ave N	Firlands Way N	N 193rd St from Fremont Ave N to Firlands Way N improve to bike LTS 1
Firlands Way N	N 193rd St	N 192nd St	Firlands Way N from N 193rd St to N 192nd St improve to bike LTS 1 and fill sidewalk gaps
N 192nd St	Firlands Way N	Ashworth Ave N	N 192nd St from Firlands Way N to Ashworth Ave N improve to bike LTS 1
N 195th St	Ashworth Ave N	Meridian Ave N	N 195th St from Ashworth Ave N to Meridian Ave N improve to bike LTS 1
Linden Ave N	N 185th St	N 175th St	Linden Ave N from N 185th St to N 175th St improve to bike LTS 2 and fill sidewalk gaps
Midvale Ave N	N 185th St	N 175th St	Midvale Ave N from N 185th St to N 175th St improve to bike LTS 2
N 185th St	Fremont Ave N	SR 99	N 185th St from Fremont Ave N to SR 99 improve to bike LTS 1 and accommodate frequent bus service
N 185th St	SR 99	5th Ave NE (west of I-5)	N 185th St from SR 99 to 5th Ave NE improve to bike LTS 1 and accommodate Bus Rapi Transit
N 185th St	5th Ave NE (west of I-5)	10th Ave NE	N 185th St from 5th Ave NE to 10th Ave NE improve to bike LTS 1 and accommodate frequent bus service
N 175th St	Fremont Ave N	Stone Ave N	N 175th St from Fremont Ave N to Stone Ave N improve to bike LTS 1 and fill sidewalk gaps and accommodate frequent bus service
N 175th St	Stone Ave N	Meridian Ave N	N 175th St from Stone Ave N to Meridian Ave N improve to bike LTS 1 and fill sidewalk gaps and accommodate frequent bus service
N 175th St	Meridian Ave N	I-5	N 175th St from Meridian Ave N to I-5 improve to bike LTS 1 and accommodate frequent bus service
N 175th St	I-5	15th Ave NE	N 175th St from I-5 to 15th Ave NE improve to bike LTS 2 and accommodate frequent bus service, address safety concerns.
N 175th St / 22nd Ave NE / NE 171st	15th Ave NE	25th Ave NE	N 175th St / 22nd Ave NE / NE 171st St from 15th Ave NE to 25th Ave NE improve to bike LTS 2 and fill sidewalk gaps and

St			accommodate local bus service
1st Ave NE	NE 195th St	NE 205th St	1st Ave NE from NE 195th St to NE 205th St improve to bike LTS 2 and fill sidewalk gaps
1st Ave NE	N/NE 185th St	N/NE 193rd St	1st Ave NE from N/NE 185th St to N/NE 193rd St improve to bike LTS 2
5th Ave NE	NE 185th St	NE 205th St	5th Ave NE from NE 185th St to NE 205th St improve to bike LTS 2 and fill sidewalk gaps and accommodate local bus service
10th Ave NE	NE 175th St	NE 180th St	10th Ave NE from NE 175th St to NE 180th St improve to bike LTS 2 and fill sidewalk gaps
10th Ave NE	NE 180th St	N 185th St	10th Ave NE from NE 180th St to N 185th St improve to bike LTS 2 and fill sidewalk gaps and accommodate frequent bus service
10th Ave NE	N 185th St	NE 190th St	10th Ave NE from N 185th St to NE 190th St improve to bike LTS 2 and fill sidewalk gaps
8th Ave NE	NE 180th St	N 185th St	8th Ave NE from NE 180th St to N 185th St improve to bike LTS 1 and fill sidewalk gaps
NE 180th St	5th Ave NE	10th Ave NE	NE 180th St from 5th Ave NE to 10th Ave NE improve to bike LTS 1
NE 180th St	10th Ave NE	15th Ave NE	NE 180th St from 10th Ave NE to 15th Ave NE improve to fill sidewalk gaps and accommodate frequent bus service
NE 205th St	15th Ave NE	19th Ave NE	NE 205th St from 15th Ave NE to 19th Ave NE improve to bike LTS 1 and accommodate frequent bus service
NE 205th St	19th Ave NE	25th Ave NE	NE 205th St from 19th Ave NE to 25th Ave NE improve to bike LTS 1
15th Ave NE	NE 205th St	NE 196th St	15th Ave NE from NE 205th St to NE 196th St improve to bike LTS 2 and accommodate frequent bus service
Forest Park Dr NE	15th Ave NE	NE 196th St	Forest Park Dr NE from 15th Ave NE to NE 196th St improve to bike LTS 1 and fill sidewalk gaps
Ballinger Way NE	15th Ave NE	19th Ave NE	Ballinger Way NE from 15th Ave NE to 19th Ave NE improve to bike LTS 1 and accommodate frequent bus service
Ballinger Way NE	19th Ave NE	25th Ave NE	Ballinger Way NE from 19th Ave NE to 25th Ave NE improve to bike LTS 1 and fill sidewalk gaps and accommodate frequent

			bus service
19th Ave NE / NE 196th St	NE 205th St	NE 195th St	19th Ave NE / NE 196th St from NE 205th St to NE 195th St improve to bike LTS 2 and fill sidewalk gaps and accommodate frequent bus service
25th Ave NE	NE 205th St	NE 195th St	25th Ave NE from NE 205th St to NE 195th St improve to bike LTS 1 and fill sidewalk gaps
15th Ave NE	NE 195th St	24th Ave NE	15th Ave NE from NE 195th St to 24th Ave NE improve to bike LTS 1 and fill sidewalk gaps and accommodate frequent bus service
24th Ave NE	15th Ave NE	25th Ave NE	24th Ave NE from 15th Ave NE to 25th Ave NE improve to bike LTS 2 and fill sidewalk gaps
25th Ave NE	NE 178th St	NE Perkins Way	25th Ave NE from NE 178th St to NE Perkins Way improve to bike LTS 2 and fill sidewalk gaps
25th Ave NE	NE 178th St	NE 171st St	25th Ave NE from NE 178th St to NE 171st St improve to bike LTS 2 and fill sidewalk gaps
25th Ave NE	NE 171st St	NE 150th St	25th Ave NE from NE 171st St to NE 150th St improve to bike LTS 2 and fill sidewalk gaps and accommodate local bus service
25th Ave NE	NE 150th St	NE 145th St	25th Ave NE from NE 150th St to NE 145th St improve to bike LTS 2 and build future trail connection
15th Ave NE	24th Ave NE	NE 180th St	15th Ave NE from 24th Ave NE to NE 180th St improve to bike LTS 1 and fill sidewalk gaps and accommodate frequent bus service
15th Ave NE	NE 180th St	Hamlin Park Rd	15th Ave NE from NE 180th St to Hamlin Park Rd improve to bike LTS 2 and accommodate frequent bus service
NE 168th St	15th Ave NE	25th Ave NE	NE 168th St from 15th Ave NE to 25th Ave NE improve to bike LTS 1 and fill sidewalk gaps
NE 165th St	5th Ave NE	15th Ave NE	NE 165th St from 5th Ave NE to 15th Ave NE improve to bike LTS 1 and fill sidewalk gaps
15th Ave NE	Hamlin Park Rd	NE 155th St	15th Ave NE from Hamlin Park Rd to NE 155th St improve to fill sidewalk gaps and accommodate frequent bus service
15th Ave NE	NE 155th St	NE 150th St	15th Ave NE from NE 155th St to NE 150th St to fill sidewalk gaps and accommodate frequent bus service

15th Ave NE	NE 150th St	N 145th St	15th Ave NE from NE 150th St to N 145th St to provide bike LTS 1 and accommodate frequent bus service
NE 150th St	15th Ave NE	25th Ave NE	NE 150th St from 15th Ave NE to 25th Ave NE improve to fill sidewalk gaps and accommodate local bus service
NE 150th St	25th Ave NE	28th Ave NE	NE 150th St from 25th Ave NE to 28th Ave NE improve to fill sidewalk gaps and build future trail connection
28th Ave NE	NE 150th St	NE 145th St	28th Ave NE from NE 150th St to NE 145th St to build future trail connection
17th Ave NE	NE 150th St	NE 145th St	17th Ave NE from NE 150th St to NE 145th St to build future trail connection
5th Ave NE	NE 155th St	NE 145th St	5th Ave NE from NE 155th St to NE 145th St improve to bike LTS 2 and accommodate frequent bus service
1st Ave NE	N 155th St	N 145th St	1st Ave NE from N 155th St to N 145th St improve to bike LTS 2 and fill sidewalk gaps
Triangle formed by Richmond Beach Dr NW / NW 195th Pl / NW 196th St			Triangle formed by Richmond Beach Dr NW / NW 195th Pl / NW 196th St improve to fill sidewalk gaps and accommodate frequent bus service
NW 196th St	23rd Ave NW	20th Ave NW	NW 196th St from 23rd Ave NW to 20th Ave NW improve to fill sidewalk gaps and accommodate frequent bus service
NE 174th St	1st Ave NE	5th Ave NE	NE 174th St from 1st Ave NE to 5th Ave NE to build future trail connection
Unimproved Right-of-Way			
N 148th St	Linden Ave N	Interurban Trail	Unopened Right of Way
3rd Ave NE Connector	NE 149 th St	NE 151 st St	Unopened Right of Way
Linden Ave N	N 150th St	150 feet south of N 150th St	Unopened Right of Way
Linden Ave N	Southern termini of Linden Ave N (between N 148th St and N 145th St)	N 145th St	Unopened Right of Way

Ashworth Ave N	N 152nd St	Ashworth Ave N (northern termini south of N 152nd St)	Unopened Right of Way
N 157th St	Ashworth Ave N	Densmore Ave N	Unopened Right of Way
N 165th St	Ashworth Ave N	Densmore Ave N	Unopened Right of Way
Corliss Ave N connection	Corliss Ave N (northern termini south of N 171st St)	Corliss Ave N (southern termini south of N 171st St)	Unopened Right of Way
Corliss Pl N connection	Corliss Pl N	Corliss Ave N (southern termini south of N 171st St)	Unopened Right of Way
NE 147th St	27th Ave NE	28th Ave NE	Unopened Right of Way
Near 15th Pl NE	NE 185th St	NE 184th Pl	Unopened Right of Way
NE 195th St	10th Ave NE	11th Ave NE	Unopened Right of Way
Near NE 195th St	14th Ave NE	15th Ave NE	Unopened Right of Way
Near NE 200th Ct	12th Ave NE	15th Ave NE	Unopened Right of Way
N 188th St	Ashworth Ave N	Densmore Ave N	Unopened Right of Way
Near N 193rd St	Palatine Ave N	Greenwood Ave N	Unopened Right of Way
N 198th St	Near Dayton Ave N	Fremont Ave N	Unopened Right of Way
Greenwood Pl N	Near NW 200th St	Greenwood Pl N (northern termini south of NW 200th St)	Unopened Right of Way
5th Ave NW	NW 197th St	NW 196th Pl	Unopened Right of Way
Near intersection of NW 200th St and 5th Ave NW	NW 200th St	5th Ave NW	Unopened Right of Way
12th Ave NW	Southern termini of 12th Ave NW south of NW 196th St	Northern termini of 12th Ave NW north of NW Richmond Beach Rd	Unopened Right of Way
NW 198th St	15th Ave NE	Eastern termini of NW 198th St west of	Unopened Right of Way

		15th Ave NE	
17th Ave NW	17th Pl NW/16th Ave NW	17th Ave NW	Unopened Right of Way
8th Ave NW	Near Sunset Park		Unopened Right of Way
8th Ave NW	NW 177th Pl	NW 175th St	Unopened Right of Way
Daytona Pl N	N 188th St	N Richmond Beach Rd	Unopened Right of Way
Near 148th St	through Paramount Open Space		Unopened Right of Way
N 167th St	Whitman Ave N	Aurora Ave N	Unopened Right of Way
NE 152nd St	10th Ave NE	11th Ave NE	Unopened Right of Way
West side of Paramount Open Space			Unopened Right of Way
Trail Connections			
near 148th St	I-5	15th Ave NE	Eastside Off-Corridor Bike Network
5th Ave NE/ NE 174th St	NE 185th St	NE 174th St/1st Ave NE	Eastside Off-Corridor Bike Network
NE 150th St	15th Ave NE	17th Ave NE	Eastside Off-Corridor Bike Network
N 150th St/Corliss Ave N	Meridian Ave N	N 145th St	145th Street Off-Corridor Bicycle Network
12th Ave NE	NE 148th St	NE 145th St	Eastside Off-Corridor Bike Network
25th Ave NE	25th Ave NE	NE 150th St	Off-Corridor Trail Network
multiple local streets	Interurban Trail	N 145th St	Off-Corridor Trail Network
near NE 160th St	near Hamlin Park	west of 25th Ave NE	Trail Network
NE 165th St	I-5	5th Ave NE	Off-Corridor Trail Network
3rd Ave NE	NE 170th St	NE 165th St	Off-Corridor Trail Network
NE 158th St / 3rd Ave NE	1st Ave NE	NE 149th St	NE 158th St / 3rd Ave NE from 1st Ave NE to NE 149th St to build on-street future trail connection
Trail Along the Rail			
TAR Segment	NE 195th St	NE 189th St	Trail Along the Rail; Phase 1
TAR Segment	NE 155th St	NE 149th St	Trail Along the Rail; Phase 2

TAR Segment	NE 159th St	N 155th St	Trail Along the Rail; Phase 3
TAR Segment	NE 163rd St	NE 161st St	Trail Along the Rail; Phase 3
TAR Segment	NE 170th St	NE 163rd St	Trail Along the Rail; Phase 3
TAR Segment	N 175th St	NE 174th St	Trail Along the Rail; Phase 3
TAR Segment	NE 180th St	N 175th St	Trail Along the Rail; Phase 4
Shared Use Mobility Hubs			
Ashworth Avenue N & N 200th Street	-	-	Aurora Village Transit Center
NE 185th Street & 5th Avenue NE	-	-	Shoreline North/185th Station
NE 151st Street & 5th Avenue NE	-	-	Shoreline South/148th Station
Westminster Way N & N 155th Street	-	-	Shoreline Place
N 160th Street & Dayton Avenue N	-	-	Shoreline Community College
N 185th Street & Aurora Avenue N	-	-	Aurora Ave N & N 185th St
Aurora Avenue N & N 192nd Street	-	-	Shoreline Park & Ride
NW Richmond Beach Road & 3rd Avenue NW	-	-	4-Corners
NE 175th Street & 15th Avenue NE	-	-	North City Business District
NE 165th Street & 5th Avenue NE	-	-	Ridgecrest Business District
N 149th Street & 1st Avenue NE	-	-	148th St Non-Motorized Bridge
15th Avenue NE & NE 146th Street	-	-	15th Ave BRT Station
NE 155th Street & 15th Avenue NE	-	-	Fircrest

Ballinger Way NE & 19th Avenue NE	-	-	Ballinger
NE 145th Street & 30th Avenue NE	-	-	30th Ave BRT Station
N 175th Street & Midvale Avenue N	-	-	City Hall
NW 195th Street & 20th Avenue NW	-	-	Richmond Beach
N 175th Street & 5th Avenue NE	-	-	Shoreline Library
Bridges			
NE 148th Street	-	-	148th St Bridge
Intersections			
Meridian Avenue N & N 175th Street	-	-	Meridian Avenue N & N 175th Street
Dayton Avenue N & Carlyle Hall Road	-	-	Dayton Avenue N & Carlyle Hall Road
1st Ave NE & N 155th Street	-	-	1st Ave NE & N 155th Street
25th Ave NE & NE 150th Street	-	-	25th Ave NE & NE 150th Street
N 160th St & Greenwood Ave N & N Innis Arden Way	-	-	N 160th St & Greenwood Ave N & N Innis Arden Way
145th Corridor			
N 145th Street	Greenwood Avenue N	Interurban Trail	Greenwood to the Interurban Trail
N 145th Street	Interurban Trail	Wallingford Ave N	Interurban Trail to Wallingford Ave N
N 145th Street	Wallingford Ave N	Corliss Ave N	Wallingford to Corliss Ave N

FUNDING AND IMPLEMENTATION

The previous section presents an expansive list of the types of projects that would be needed to complete the City of Shoreline's overall transportation vision. A key planning requirement of the Growth Management Act is the concept of fiscal restraint in transportation planning. A fiscally-constrained Transportation Element must first allow for operation and maintenance of existing facilities, and then capital improvements. To introduce fiscal constraint into the plan, an inventory of past revenues and costs was undertaken to identify funds that are likely to be available for capital construction and operations.

Revenues that fund transportation operations and capital in Shoreline include those from outside sources and grants, general city funds, real estate excise taxes, vehicle license fees, sales tax, impact fees, and gas tax receipts. Each of these funding sources has different eligibility requirements, in terms of activities they can fund. For example, the City of Shoreline collects vehicle license fees, which are dedicated to the maintenance and rehabilitation of existing streets.

Significant, Unavoidable Adverse Impacts

Under any of the alternatives, traffic congestion would be mitigated to varying degrees through implementation of the transportation improvements identified in this chapter, as well as through compliance with City codes and standards, significant unavoidable adverse impacts generally would not be expected to occur.

However, significant unavoidable adverse impacts could result if one or more planned improvement projects identified to address expected impacts are not implemented. It is expected that all of the new roadway connections and intersection improvements identified in this chapter would be implemented over time through capital funding, the City's traffic impact fee program, grants, and/or as part of a proposed development. Projects will be prioritized and updated through regular capital facilities and transportation improvements planning, as required under the Growth Management Act. Over periods between updates, transportation concurrency is intended to manage the transportation system and ensure that development cannot be approved without suitable associated mitigation.