NORTH BEND
easy to reach. . .hard to leave

CITY OF NORTH BEND

Transportation Element

OCTOBER 2022

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1 INTRODUCTION

Introduction

The City of North Bend (City) Transportation Element (TE) provides a framework to guide transportation investments over the next 20 years in accordance with the community's vision and goals.

The TE includes both short- and long-range strategies (programs, policies, and project recommendations) that advance the development of an integrated multimodal transportation system in North Bend. The last update to the Transportation Element was in 2012. The City is required to update the TE by 2024 to align with adoption of the City's Comprehensive Plan and comply with the State's Growth Management Act (GMA). Beyond meeting these requirements, the TE update plays a vital role in maintaining the City's eligibility for future grant funding and identifies the future transportation system necessary to accommodate the growth and development of North Bend. This TE provides an overview of North Bend's transportation system – describing both the existing system and potential future opportunities and constraints. In doing so, this document serves as a long-range planning road map that will aid the community in achieving its overall transportation vision in the future.

Several national, state, and regional agencies influence transportation mobility options in North Bend, including the United States Department of Transportation, Washington State Department of Transportation (WSDOT), Puget Sound Regional Council (PSRC), and King County Metro. One purpose of the Transportation Element is to guide how the City focuses strategic efforts in local investments to create a multimodal transportation system that seamlessly connects with regional transportation facilities and services.

The Transportation Element is designed to provide insight into the City's intentions and commitments, so that public agencies, as well as private entities, can make decisions, coordinate development, and participate in achieving a shared vision. It also provides the foundation for development regulations contained in the North Bend Municipal Code and Public Works Standards.



2 OPPORTUNITIES & CONSTRAINTS

Opportunities and Constraints

Nearly 7,500 residents currently live in North Bend – a picturesque city that covers 4.27 square miles of the Snoqualmie Valley area of King County. Since its founding in 1909, North Bend has been widely admired for its beautiful setting, access to outdoor recreational activities, and high quality of life.

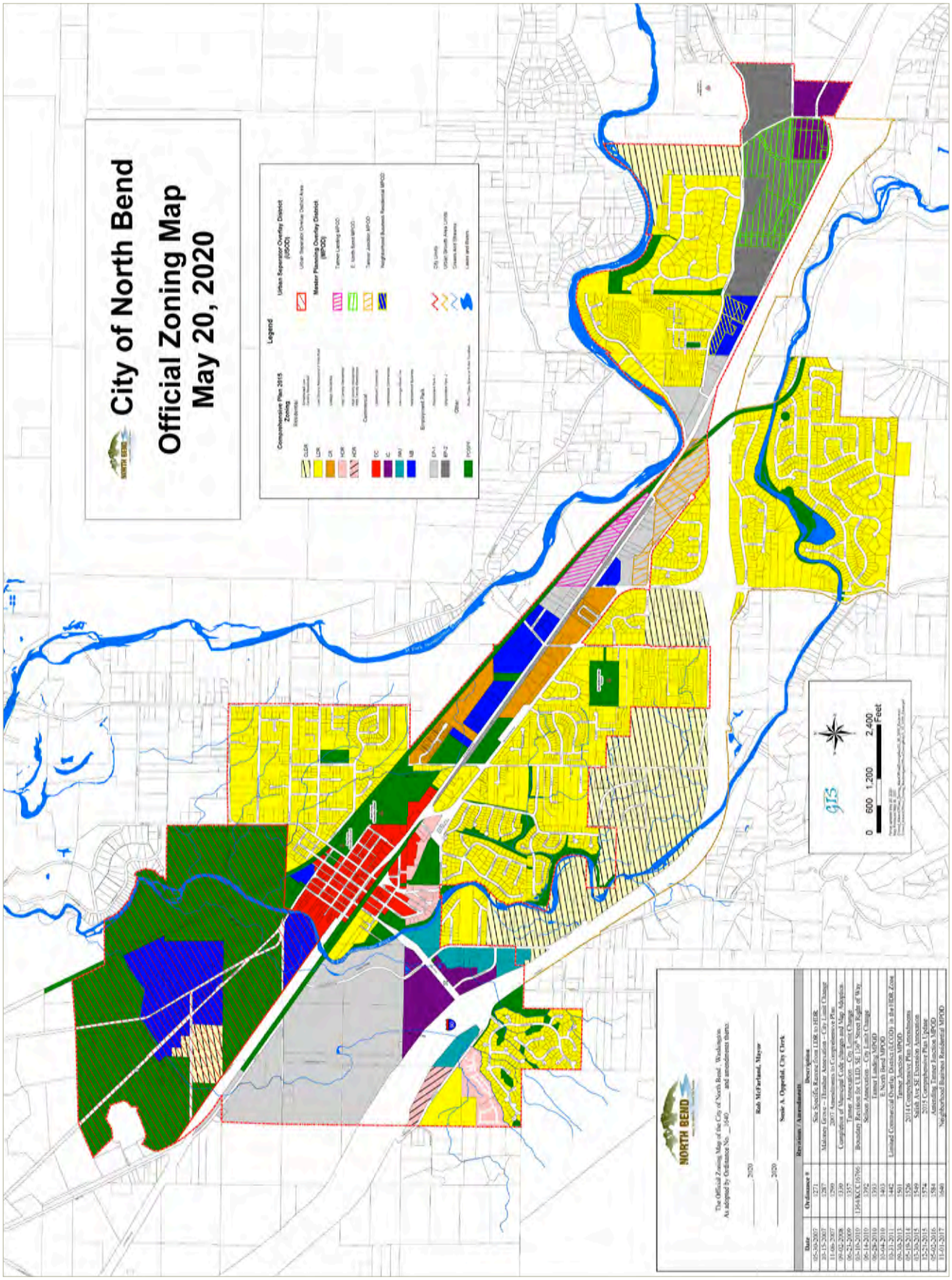
Bordered by the city of Snoqualmie to the north and by the unincorporated community of Tanner to the south, North Bend is located approximately 30 miles east of Seattle. The city's motto is "easy to reach…hard to leave", reflecting its ability to attract people of diverse interests from many parts of the Seattle metro area and beyond.



Existing Land Use

The City of North Bend's zoning map, shown in **Figure 1**, describes the types of allowable land uses throughout the city. Zoning has major implications for the transportation network, as it influences the types and densities of land uses in the City and the distances people typically travel to access destinations.

Figure 1. North Bend Zoning Map



Downtown North Bend

Downtown North Bend is the heart of the community, providing opportunities to live, work, shop, and play within a short walking distance. The downtown core has both residential and commercial uses and is the gathering spot for the community. With seasonal events, shops, restaurants, parks, and incredible views of Mt. Si, Downtown North Bend offers much while maintaining its small-town scale.

The corridors of the downtown area tend to accommodate and attract a high level of travel by all modes, and as such, the city strives to maintain and enhance its multimodal transportation facilities (including sidewalks, crosswalks, bike lanes, trails, and traffic signals) to ensure safe and efficient travel throughout the downtown area.



Schools

The Snoqualmie Valley School District (SVSD) educates nearly 7,400 students as of the 2021-2022 academic year. Of the eleven K-12 schools in the SVSD that serve families throughout Fall City, Snoqualmie, and North Bend, two are within North Bend city limits (North Bend Elementary School and Opstad Elementary School). Twin Falls Middle School is located approximately 300 feet beyond the eastern city limit. In addition to these schools there are several preschools, daycares, and learning centers throughout the city.

Transportation networks surrounding schools can become congested before and after class sessions each day, as roadways in the vicinity of the schools generally were not designed for the traffic volumes that exist today. Students can arrive at school by walking, biking, being dropped off, driving a personal vehicle for older students, or taking the school bus. The interaction between the various modes during a compressed timeframe can lead to safety concerns. Few students walk and bike to school due to the lack of safe routes, circuitous/unconnected streets that create long distances between home and school, and other concerns. The City has made strides towards improving bicycle and pedestrian facilities in the vicinity of schools and is interested in pursuing additional projects in the future.



Parks and Recreation Areas

North Bend is an outdoor recreational paradise, providing superior access to many parks and outdoor activities; approximately 23 percent of the city's land area is designated for Parks, Open Space, and Public Facilities. Throughout North Bend there are a variety of neighborhood parks, waterfront parks and greenbelts ranging from small pocket parks to the Tollgate Farm Park, which is over 450 acres. In addition to these local parks, residents and visitors alike enjoy regional recreational areas, such as Mt. Si, Snoqualmie Pass, and Mt. Baker-Snoqualmie National Forest.

Parks generally attract active transportation users such as walkers and cyclists. Some of the more popular parks also attract many automobiles which, among other considerations, can lead to parking and traffic safety issues. Parks attract users of all ages and abilities, so planning for a safe transportation network near the vicinity of parks is critical.



TA Seattle East Travel Center

The TA Seattle East Travel Center is located at the east end of town, near the intersection of 468th Avenue SE and SE North Bend Way, and provides refueling, parking, food, and rest for truck drivers. As a gateway between the Puget Sound and Snoqualmie Pass, North Bend is home to one of only a few truck stops / travel centers in the region.

During the winter months, this busy truck stop can experience sudden peak truck parking demands when Snoqualmie Pass is closed due to severe weather events. Spillover truck parking is a reported issue on City streets that can pose both a hazard and a nuisance for city residents.



Roadway Network

Portions of North Bend, such as the downtown core, are laid out on a grid system. However, many areas of the City are not laid out on a grid and lack connectivity due to topography, cul-de-sacs, private drives, dead ends, and other missing links. Recent roadway improvements have included installation of roundabouts, which facilitate traffic movement and increase safety. State Route (SR) 202/Bendigo Boulevard is a major route that traverses Downtown North Bend. While it carries local trips and provides access to North Bend homes and businesses, it also carries commuters traveling between Redmond, Sammamish, Fall City, Snoqualmie, and beyond, leading to increasing congestion in the City. Interstate 90 (I-90) serves as the primary east-west connection for visitors to North Bend and has interchanges at SR 202/Bendigo Boulevard, 436th Avenue SE, and 468th Avenue SE.

Figure 2 shows the city's primary roadway network. North Bend's streets are classified into principal and minor arterials, collectors, and local streets, as shown in **Table 1** and **Figure 2.**



ROUNDABOUTS

Roundabouts are a type of roadway design and traffic control feature involving a circular intersection where drivers travel counterclockwise around a center island. Studies by the Federal Highway Administration (FHWA) have found that roundabouts can increase traffic capacity by 30 to 50 percent compared to intersections controlled by traffic signals or stop signs. Studies by the Insurance Institute for Highway Safety (IIHS) and FHWA have shown that roundabouts typically achieve an overall reduction in collisions of approximately 37 percent, including a reduction in pedestrian collisions of approximately 40 percent.

Source: Washington State Department of Transportation, 2022

Figure 2. Existing Roadway Network

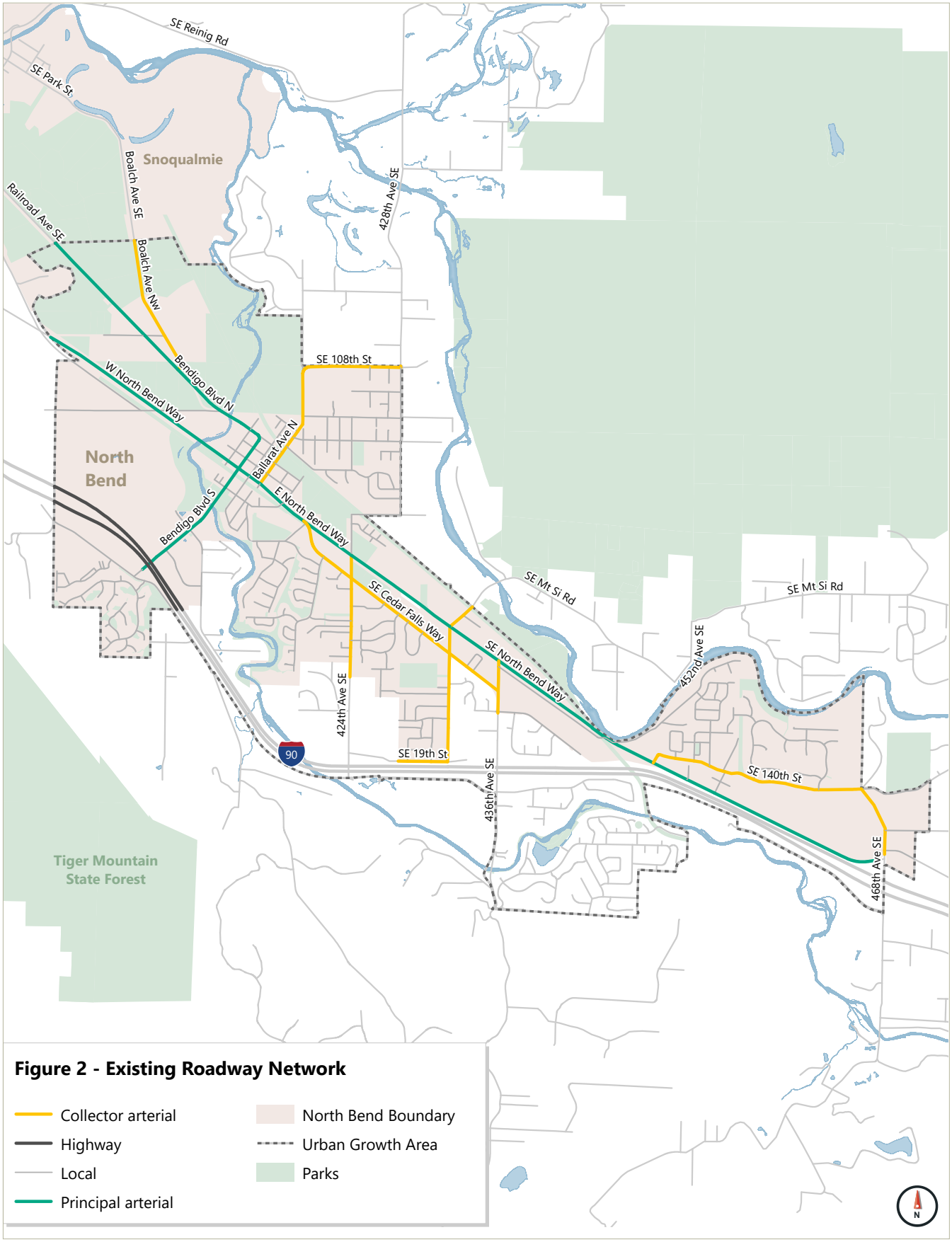
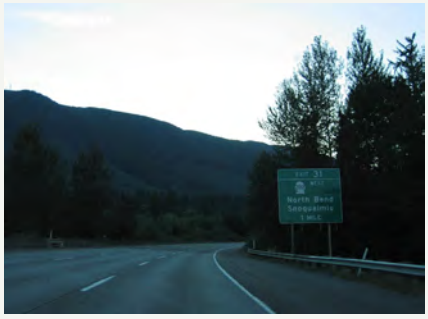


Table 1. Existing Roadway Classifications

Roadway Type	Description	Example	Photo
Freeway/ Interstate	The highest classification of arterials, providing connections between cities and carrying high volumes of traffic.	■ I-90	
Principal/ Major Arterial	Principal/major arterials connect major community centers and facilities and serve high-volume corridors. The primary function of a major arterial is to provide vehicular mobility, though they also may play a role in providing direct access to land uses.	■ Bendigo Blvd (SR-202) ■ North Bend Way ■ 436th Ave SE ■ 468th Ave SE	
Minor Arterial	Minor arterials are designed for higher volumes, but they tend not to be major regional travel ways. Minor arterial streets provide inter-neighborhood connections.	■ SE Cedar Falls Way ■ Maloney Grove Ave SE ■ Ballarat Ave ■ NE 4th St ■ Mt. Si Rd ■ South Fork Road ■ 424th Ave SE ■ NE 12th St	
Collectors	Collectors distribute trips between local streets and arterials and serve as transition roadways to or from commercial and residential areas. Collectors have lower volumes than arterials and must balance the needs of all travel modes.	■ SW Mt. Si Blvd ■ Main Ave ■ 3rd St ■ Park St ■ Orchard Dr/Healy Ave ■ 6th St ■ Pickett Ave ■ 424th Ave SE ■ 432nd Ave SE ■ 415th Ave SE	
Local Roads	Local roads are the lowest functional classification, providing circulation and access within residential neighborhoods. All roadways that have not been designated as an arterial or collector are considered local roads.		

Traffic Operations

The operational performance of intersections within North Bend 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 2 shows the definition of each LOS grade from the Highway Capacity Manual (HCM), 6th Edition methodology, which is based on average control delay per vehicle. Signalized intersections and roundabouts have higher delay thresholds compared with two-way and all-way stop-controlled intersections. HCM methodology prescribes how delay is measured at different types of intersections: for signalized, roundabout, 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 2. Intersection LOS Criteria Based on Delay

Level of Service	Signalized/Roundabout 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

The City's 2012 TE identified LOS standards for the City's roadway network. In general, it requires LOS D operations at signalized and unsignalized intersections along arterial streets. The TE recognized there are certain intersections where these standards may not be achievable due to limited rights-of-way, land ownership, or other feasibility constraints. Currently, one intersection is exempt from the LOS standards:

- SR 202/Bendigo Boulevard & North Bend Way

In addition to City facilities, there are also state-owned roadway facilities in North Bend. The LOS standards for these non-City facilities are assigned by WSDOT in coordination with PSRC and are as follows:

- I-90 has a LOS standard of D
- SR 202 has a LOS standard of D, except for the exemption noted above

Table 3 shows how several intersections in North Bend are operating today.

Table 3. Existing Level of Service in North Bend

#	Study Intersection	Control	Peak Hour	Existing	
				Delay(s)	LOS
1	8th St & North Bend Way	TWSC	PM	15	B
2	Bendigo Blvd & North Bend Way	Signal	PM	46	D
3	Main Ave & North Bend Way	TWSC	PM	46	E
4	Ballarat Ave & North Bend Way	TWSC	PM	59	F
5	140th St & North Bend Way	TWSC	PM	10	A
6	468th Ave & North Bend Way	TWSC	PM	12	B
7	Bendigo Blvd & South Fork Ave	Signal	PM	12	B
8	Bendigo Blvd & Park St	Signal	PM	11	B
9	Bendigo Blvd & 4th St	TWSC	PM	13	B
10	Maloney Grove Ave & Cedar Falls Way	TWSC	PM	14	B
11	436th Ave & Cedar Falls Way	TWSC	PM	12	B
12	Middle Fork Road & 140th St/468th Ave	TWSC	PM	11	B

Source: Fehr & Peers, 2022

Future Growth

By 2044, the City anticipates adding 1,748 new households and 2,218 new jobs. To understand how this growth (and anticipated regional growth outside of the city) will impact North Bend'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 20 years into the future, developing a travel model with horizon year 2044. This travel model was based on the PSRC regional model, which considers many data points such as local and regional transportation investments, 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 Operations

Using the projected traffic growth from the City's travel model, the projected 2044 delay and LOS at key intersections was calculated. Table 4 below shows the expected LOS for intersections in North Bend in 2044.

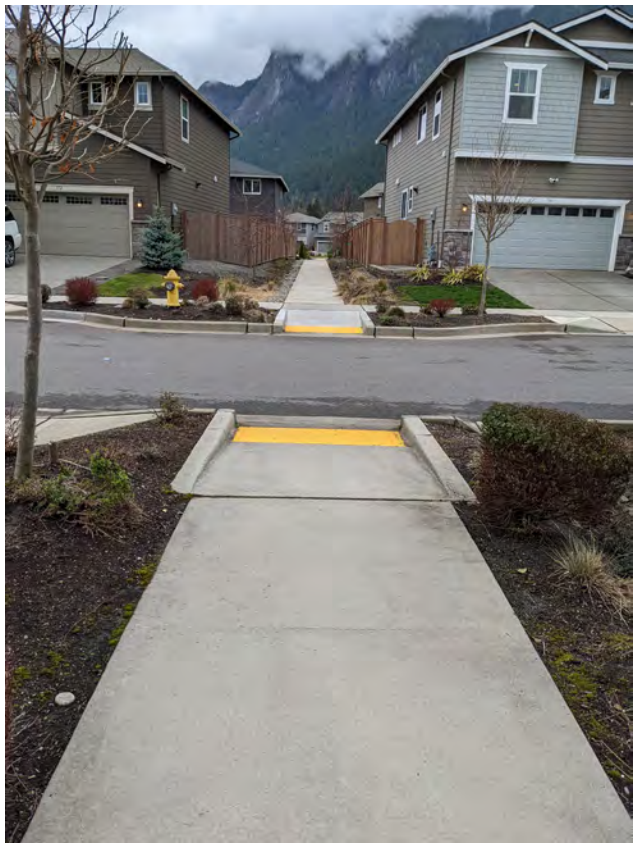
Table 4. Future Level of Service In North Bend

#	Study Intersection	Control	Peak Hour	Existing	
				Delay(s)	LOS
1	8th St & North Bend Way	Roundabout	PM	4	A
2	Bendigo Blvd & North Bend Way	Signal	PM	37	D
3	Main Ave & North Bend Way	Signal	PM	7	A
4	Ballarat Ave & North Bend Way	Signal	PM	8	A
5	140th St & North Bend Way	TWSC	PM	10	B
6	468th Ave & North Bend Way	TWSC	PM	15	C
7	Bendigo Blvd & South Fork Ave	Signal	PM	14	B
8	Bendigo Blvd & Park St	Signal	PM	10	A
9	Bendigo Blvd & 4th St	Roundabout	PM	3	A
10	Maloney Grove Ave & Cedar Falls Way	Roundabout	PM	2	A
11	436th Ave & Cedar Falls Way	TWSC	PM	17	C
12	Middle Fork Road & 140th St/468th Ave	Roundabout	PM	4	A

Source: Fehr & Peers, 2022

Walking and Biking

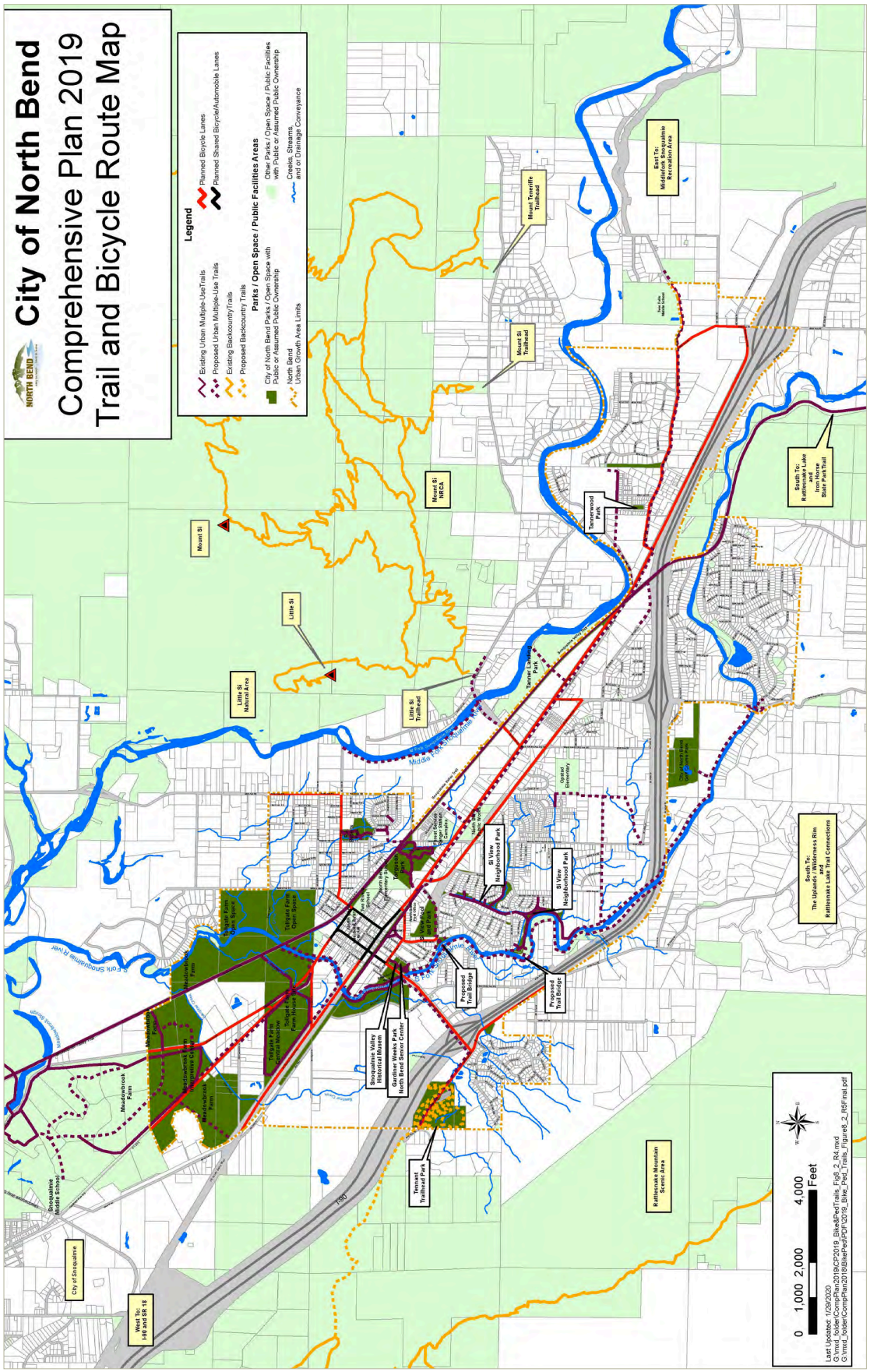
Facilities for walking and biking are a critical component of the overall transportation network. North Bend's existing trail network and bicycle facilities are shown in **Figures 3 and 4**.



Existing Network

Sidewalks are provided on many City roadways in the downtown area. Pedestrian connections are more limited in other areas of the City, and some sidewalks end abruptly. The City has an extensive network of trails, including a linear park along the South Fork Snoqualmie River. However, pedestrian access at the South Fork Snoqualmie River Bridge is particularly challenging due to narrow and uneven sidewalks. Beyond expanding sidewalk and trail coverage, there are several ways the City's pedestrian network could be made more complete, including the addition of street furniture (places to sit) and pedestrian-scale lighting, as well as safe crossing locations. While marked crosswalks exist at most downtown intersections, several intersections do not include traffic control features to help people safely cross. The City installed a rectangular rapid-flashing beacon (RRFB) on Park Street and plans to install RRFBs at more locations in the next few years.

Figure 3. Existing Trail Network



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Figure 4. Existing and Proposed Bicycle Network



The City of North Bend's bicycle network includes three types of facilities:

- **Multi-Use Paths:** A two-way paved or unpaved facility that is physically separated from motor vehicle traffic, used by bicyclists, pedestrians, and other active modes. Multi-use paths are often located independent of the roadway network, such as a greenway.
- **Bicycle Lanes:** An exclusive space for bicyclists established by painting lines and symbols on the roadway surface. Bicycle lanes are for one-way travel, typically provided in both directions on two-way streets.
- **Shared-Use Bike Routes:** A roadway designated with signage and markings to be shared between bicycles and motorized vehicles.

The crown jewel of North Bend's trail network is the 3.6-mile segment of the Snoqualmie Valley Regional Trail (SVRT), which runs parallel to the Snoqualmie River. The SVRT is approximately 32 miles long and connects Duvall, Carnation, Fall City, Snoqualmie, and North Bend, terminating at the Palouse to Cascades Trail in Iron Horse State Park. The SVRT is frequented by cyclists, hikers, pedestrians, horseback riders, and many other active mode users.



Public Transit

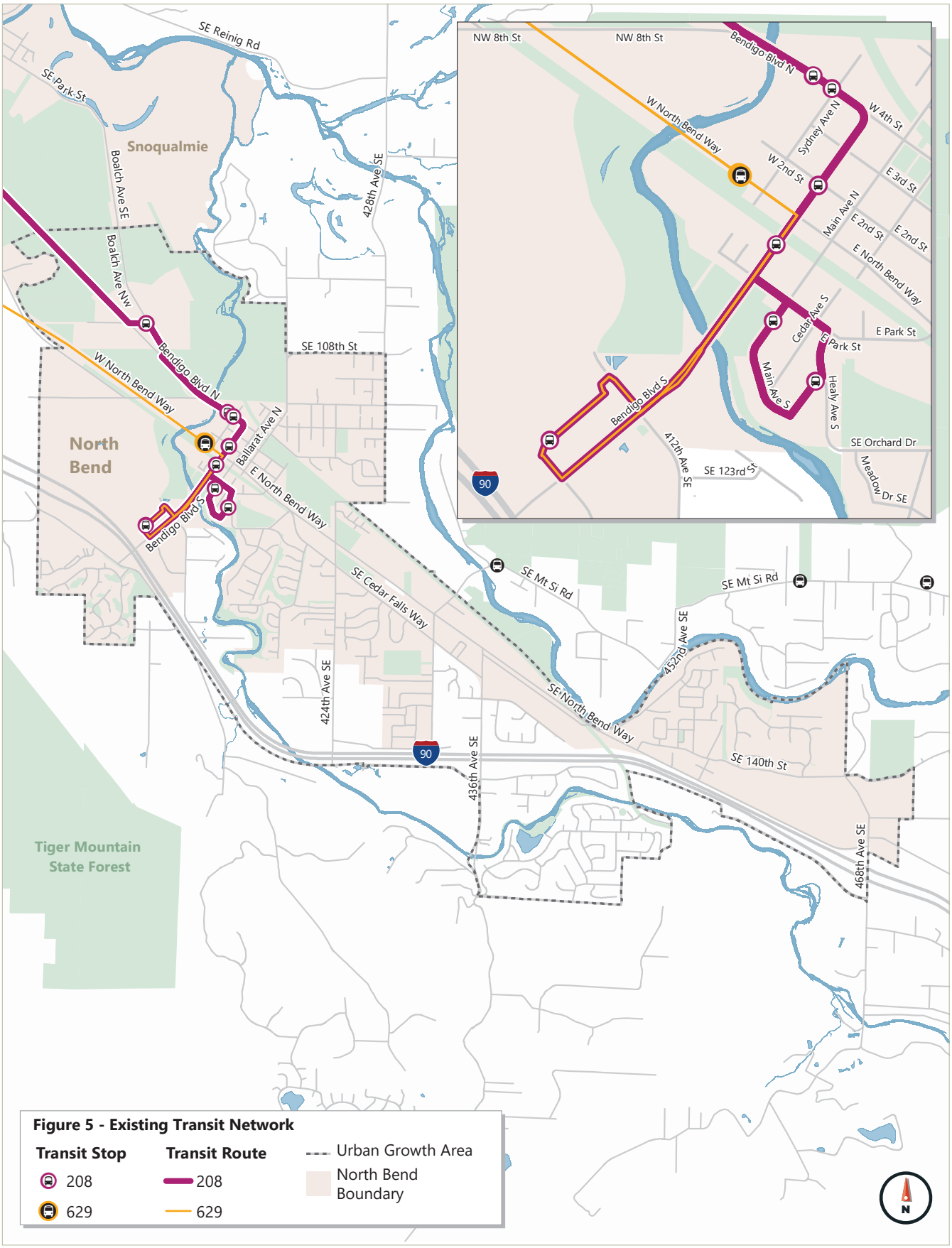
While transit service is not robust, North Bend is served by both King County Metro (KCM) and Snoqualmie Valley Transportation (SVT). KCM is King County's primary transit bus agency and serves North Bend with Route 208. SVT provides both door-to-door and deviated fixed route public transit services for the cities and communities of Monroe, Duvall, Carnation, Fall City, Preston, Snoqualmie, and North Bend. These limited transit services provide an additional mobility option for some trips and are a life-line service for community members who do not have access to a car. **Figure 5** shows the existing transit network in North Bend.

Park & Ride Facilities

Park & ride lots are multipurpose off-street public parking facilities that are meant to provide parking for travelers connecting to a high-occupancy vehicle travel mode. An example of this includes commuters who are connecting with a bus, carpool, or vanpool. Underutilized park & ride lots may also serve as overflow parking for patrons, employees, and visitors of the area. The North Bend Park & Ride is located at the northwest end of Downtown North Bend on North Bend Way. Transit service at this park & ride is provided by Snoqualmie Valley Transportation and Trailhead Direct, a seasonal service connecting North Bend with recreational activities in the surrounding area.



Figure 5. Existing Transit Network



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Freight and Truck Mobility

Truck Routes

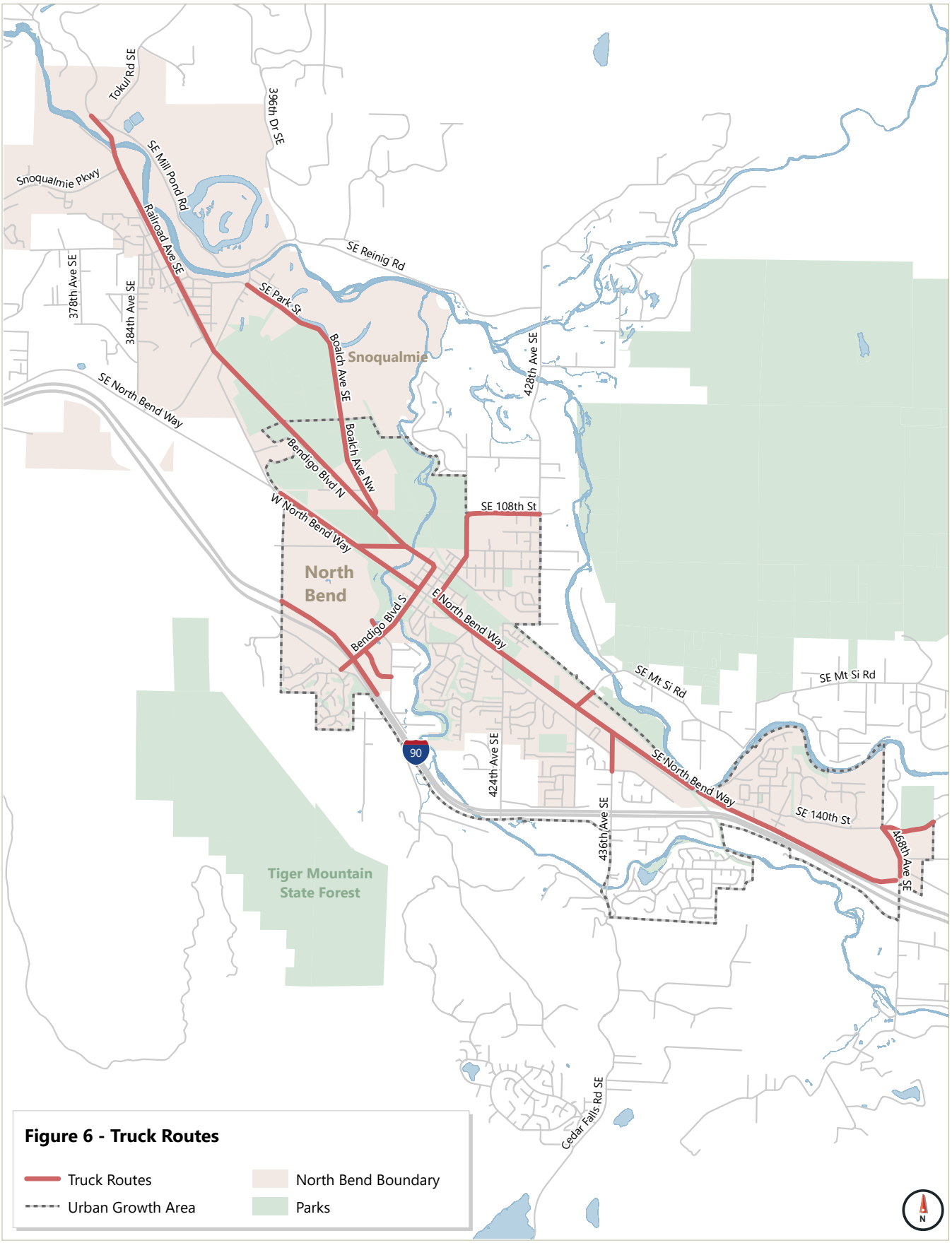
The City of North Bend has designated fourteen truck routes within its city limits to improve truck accessibility, improve public safety, reduce traffic congestion, as well as preserve the physical state of local streets, as shown in **Figure 6.**

Truck Parking

North Bend is home to one of the few truck stops / travel centers in the region. Truck stops play a vital role in reducing truck-related fatalities and serious injuries due to driver fatigue and facilitate goods movement which fuels the region's economy. The TA Seattle East Travel Center at the east end of town provides refueling, parking, food, and rest for truck drivers, but can lead to truck parking spillover hazards and nuisance when Snoqualmie Pass is closed.



Figure 6. Truck Routes



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Parking

Parking is an important resource that should be managed to promote economic development and accessibility. The existing parking supply is generally adequate to meet typical parking demands, though some hotspots exist in downtown where demand can exceed supply. The perceived lack of parking in these areas is exacerbated by limited wayfinding signage that could help travelers know where to park nearby.

Emergency Vehicle Access

The City of North Bend has its fire protection and emergency medical services provided by Eastside Fire & Rescue Station 87. This station was built in 2013 and is located at 500 Maloney Grove Avenue SE. The facility houses one ladder truck, engine, tender, aid car, and one medical unit. Average response times are between 5 and 6 minutes.

Safety

Collision data was obtained from WSDOT to identify existing safety hotspots and overall collision trends in North Bend. Data was compiled for the time period of January 2014 through December 2021, the most recent data available. In total, 552 collisions occurred in North Bend, an average of approximately 70 crashes each year. A total of 40 injuries were reported, all nonfatal. As expected, more collisions occur on higher volume streets, such as North Bend Way. Collisions between all modes are shown in **Figure 7.**

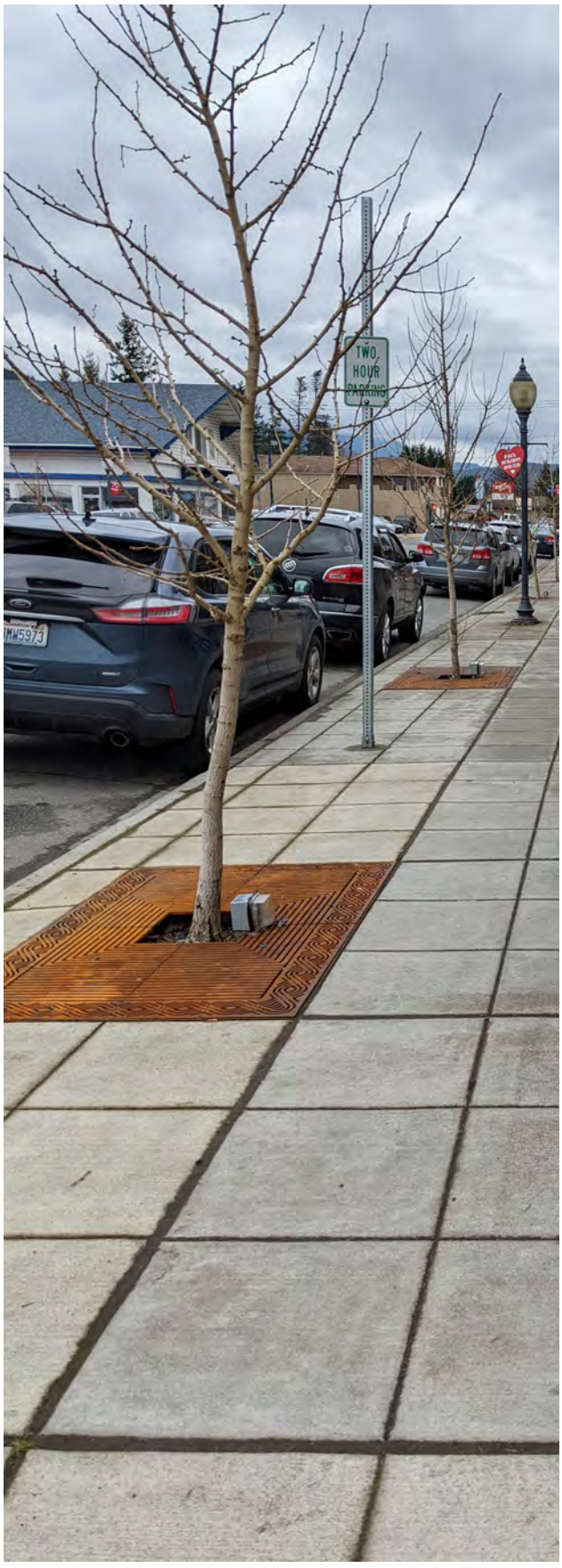
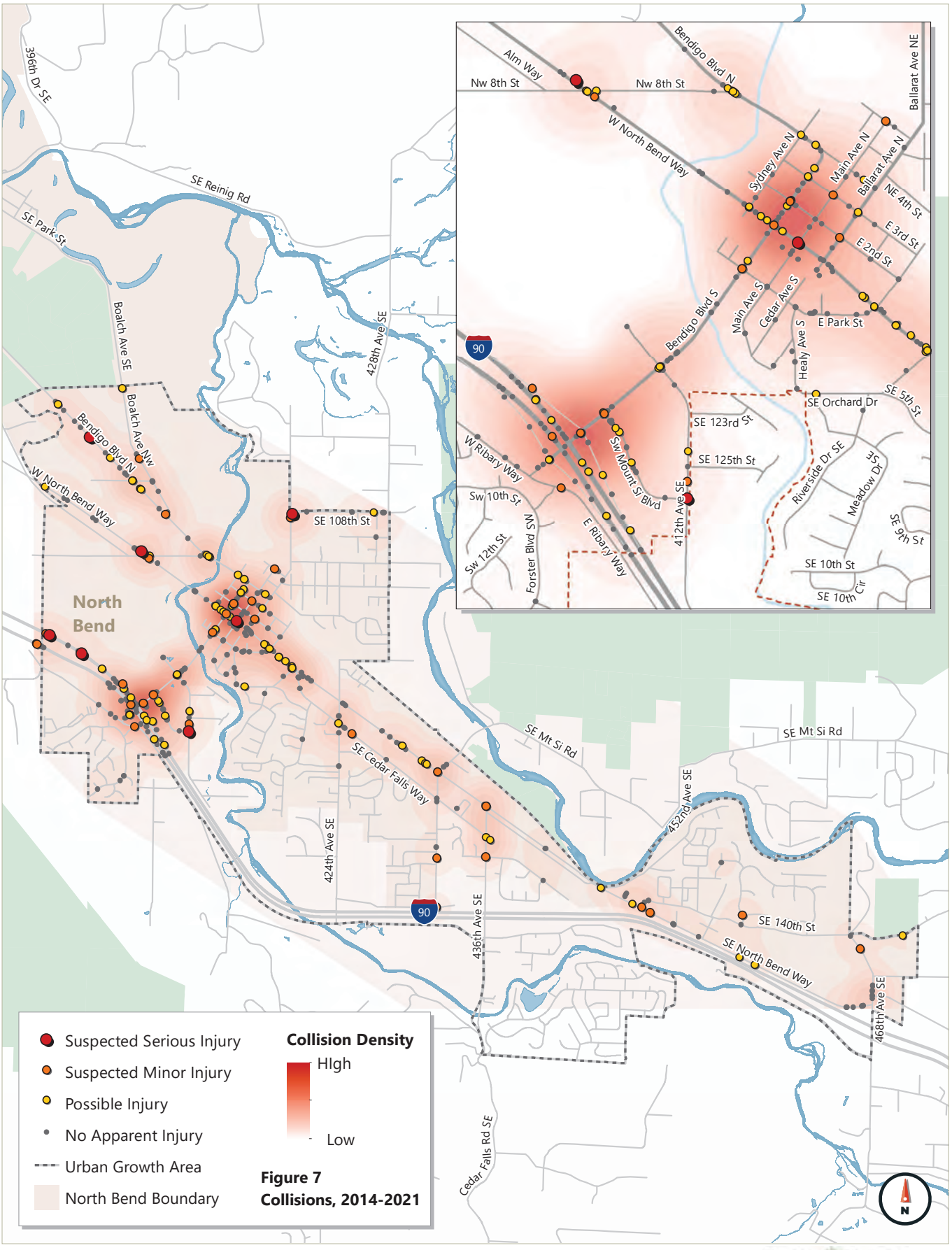


Figure 7. Collision Heatmap (2014-2021)



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3 OUTREACH

Outreach

The North Bend City Council, Planning Commission, and community members played a vital role in the development of this Transportation Element.

The project team tapped into the collective wisdom of community members, receiving feedback and input from three stakeholder interviews, two Planning Commission meetings, and one City Council meeting. In addition, the City posted an outreach flyer in the City's quarterly Business Bulletin newsletter requesting input from the public on transportation priorities.

Stakeholder Meetings

As part of the Transportation Element update, the City selected three local organizations to interview to understand stakeholder perspectives on transportation priorities for the City. The three organizations selected were: the North Bend Downtown Foundation, Snoqualmie Valley Transportation, and the Snoqualmie Valley Chamber of Commerce.

Planning Commission Workshop #1 – May 2022

This Planning Commission workshop focused on presenting a summary of the City's transportation opportunities and constraints, introducing the multimodal level of service concept and layered network approach. This workshop presented an opportunity for the Planning Commission to confirm that the approach to the Transportation Element update and performance measures identified were in alignment with their desires for the transportation system prior to project evaluation.

Planning Commission Workshop #2 – September 2022

This Planning Commission workshop focused on gaining feedback on the draft Transportation Element content, including the updated goals, objectives, and policies, and draft project list. Feedback from this workshop was incorporated into the final Transportation Element document.

City Council Meeting – November 2022

This City Council meeting will present the final Transportation Element document, including the final project list, for discussion and potential adoption by the City Council.



4 GOALS, OBJECTIVES, AND POLICIES

Goals, Objectives, and Policies

The purpose of the Goals, Objectives and Policies chapter of the Transportation Element is to guide the development of transportation facilities and services in North Bend in a manner consistent with the overall goals of the Comprehensive Plan.

The Goals, Objectives and Policies of the Transportation Element play a central role in plan implementation. The following definitions are intended to provide guidance as to the purpose of "Goals," "Objectives," and "Policies."

Goals articulate the preferred vision for the future. They indicate what ought to exist in a community or what is desired to be achieved in the future.

Objectives are statements of the desired short-term and more measurable aims of the TE; the objectives articulate how a goal will be achieved.

Policies are decision-oriented statements which guide the Mayor, City Council, Planning Commission, and staff in their efforts to evaluate new projects, proposed changes to adopted ordinances, or other initiatives affecting the transportation network within the City.

GOAL CATEGORIES

In this section, goals, objectives and policies are defined under the following major categories:

Goal 1 – Streets and Highways

Goal 2 – Environmental Quality

Goal 3 – Single Occupant Vehicle Trip Reduction

Goal 4 – Pedestrian and Bicycle Transportation

Goal 5 – Public Transportation

Goal 6 – Streetscape

Goal 7 – Capital Facilities

Goal 1 - Streets and Highways

Develop a multi-modal transportation system that is consistent with the land use element of the Comprehensive Plan that preserves and enhances the livability of North Bend and the Upper Snoqualmie Valley.

OBJECTIVE 1.1	Policy 1.1
For transportation facilities, local community standards must be adhered to in accordance with the following policies:	1. Streets and highways should be located and designed to meet the demands of both existing and projected land uses as provided for in the North Bend Comprehensive Plan. 2. Safe and efficient movement of pedestrian and bicycle traffic throughout North Bend, especially in school and recreational areas, and the downtown should be prioritized. 3. Integrate economic development factors, including business access and curbspace management, into long-range transportation planning.

OBJECTIVE 1.2	Policy 1.2
Streets should be located, connected, designed, and improved in a manner that will conserve land, materials, and energy.	1. Streets should be designed with the minimum pavement areas required in order to reduce impermeable surfaces, consistent with current AASHTO safety standards. 2. Future street construction shall provide accommodations for people walking and bicycling consistent with the modal maps presented in this Transportation Element and the Parks and Open Space Element. 3. Collector and arterial streets should be designed to accommodate public transportation, bicycles, and truck access.

OBJECTIVE 1.3

Design standards for streets should provide reasonable guidance for the development of streets that are safe, functionally efficient, aesthetically pleasing, and cost effective. All new transportation improvements should be scaled to the function they are designed to perform in conformance to the density and land uses they serve. The following policies should provide guidance for the design of new transportation improvements:

Policy 1.3

1. Adequate, but not excessive on-street parking should be encouraged on commercial and residential streets where it can be safely accommodated.
2. Streets should be designed to accommodate vehicles that use the street most frequently rather than for large vehicles which may use the street only occasionally.
3. Required street widths should be related to the function and level of service standards for the street, while reducing impervious surface to the maximum degree feasible.
4. Residential streets should be designed to preserve existing trees and vegetation.
5. Landscaping should be utilized to provide visual and physical barriers but should be carefully designed not to interfere with visibility and traffic safety.
6. Subject to available funding, undergrounding of existing overhead utilities should be explored and encouraged at the time of street improvement through the establishment of Utility Local Improvement Districts (ULIDs). Utilities shall continue to be underground for all new construction.
7. Circulation from private property to the public street system should be designed in a manner that provides a safe and convenient access system that respects community needs and values.
   a. For safety reasons, limit and provide access to the street network in a manner consistent with the function and purpose of each roadway. Require the preparation of comprehensive access plans and consolidation of access points in commercial and high-density residential areas through shared driveways and local access streets, which minimize the number of curb-cuts and sidewalk crossings.
   b. Access onto state highways shall be regulated according to RCW 47.50.
8. In conjunction with the Washington State Target Zero Plan, prioritize transportation planning, design, improvement, and operational efforts with the goal of achieving zero serious or fatal injury collisions.
9. Plan and implement the transportation system utilizing urban street design principles in recognition of the link between urban design, safety, economic development, community health, and transportation system design.

OBJECTIVE 1.4	Policy 1.4
Circulation through the City of North Bend should be primarily via the system of collector and arterial streets, bicycle, and pedestrian paths.	**1.** Encourage the efficient movement of people and goods through an effective and inter-connected collector and arterial street system that protects sensitive areas including wetlands, riparian corridors, floodways, and channel migration zones. **2.** To minimize trip distances and maximize pedestrian and bicycle mobility, ensure that future developments are interconnected, with multiple access points into and between neighborhoods. **3.** Vehicular and pedestrian connectivity between neighborhoods shall be a priority. The use of dead end streets and cul-de-sacs should be avoided. When unavoidable, the length of a dead end street, including cul-de-sac, should be limited.

OBJECTIVE 1.5	Policy 1.5
Improve traffic safety and reduce congestion through appropriate street design and site layout during the development process	**1.** New development shall be required to dedicate and improve street rights-of-way for private and public streets as specified by City Standards and the Transportation Element of the Comprehensive Plan. **2.** In some cases, such as for the installation of sidewalks, the City may acquire easements and/ or development rights in lieu of rights-of-way. **3.** Collaborate with WSDOT and other regional agencies (including the Port of Seattle) as appropriate to increase the supply of off-street facilities for overnight truck parking along the I-90 corridor. **4.** Collaborate with WSDOT and King County to plan for, and efficiently manage spillover truck parking demand due to emergency closures of I-90, especially in winter months.

OBJECTIVE 1.6	Policy 1.6
Collaborate with the City of Snoqualmie, King County, the Snoqualmie Valley School District, the Si View Metropolitan Park District, and the State, where appropriate, to plan, develop, and maintain North Bend's transportation system.	**1.** Participate in local and regional forums to coordinate strategies and programs that further the goals of the Comprehensive Plan and implement the Transportation Element. **2.** Work with neighboring jurisdictions and regional and state agencies to coordinate transportation system improvements and assure that funding requirements are met.

OBJECTIVE 1.7	Policy 1.7
Document citizen requests concerning traffic calming and develop an annual process to prioritize them for corrective actions.	**1.** Preserve the neighborhood environment through use of traffic calming techniques, which slow, but do not block through access.

OBJECTIVE 1.8	Policy 1.8
Provide a designated system of roadways that provide reliable truck mobility through the City, and to/from the growing number of businesses in the City, while minimizing negative community aspects.	**1.** Consider the movement of freight in the design, operations and maintenance of the City's transportation system. **2.** Designate two types of truck routes on the City's arterial and collector streets: **a.** Through Truck Routes, principally on arterial streets – for movements through the City, and **b.** Truck Access Routes, principally on collector streets – for movements between the Through Truck Routes and freight destinations within the City. Through Truck Routes will include I-90 and Bendigo Boulevard/SR202. **3.** On designated truck routes, give design consideration to the additional requirements of truck weight, turning radius requirements, and slower travel speed relative to the construction of pavements, intersections and traffic signals. **4.** Restrict truck parking in residential neighborhoods.

Goal 2 - Environmental Quality

Develop public and private transportation improvements that minimize adverse impacts on the natural environment, air and water quality, public health and energy consumption, and support healthful mobility options including walking and biking.

OBJECTIVE 2.1	Policy 2.1
Comply with federal and state air quality requirements related to the North Bend transportation system.	**1.** Participate in efforts by the State and Puget Sound agencies to improve air quality as it is affected by the movement of people and goods. **2.** Work with the Puget Sound Regional Council, WSDOT and other agencies and jurisdictions in the development of transportation control measures and air quality programs where warranted. **3.** Prioritize the purchase of electric vehicles whenever possible for the City's vehicle fleet. **4.** Support widespread use of electric vehicles by identifying opportunities to increase electric vehicle charging infrastructure when planning and designing transportation projects and facilities, on City rights-of-way, or through other transportation policies and programs.

OBJECTIVE 2.2	Policy 2.2
Reduce the adverse environmental and health impacts of vehicle emissions and associated pollution.	**1.** Implement an idling policy for all City vehicles and educate the public about the benefits of not idling vehicles. **2.** Develop and implement idling measures that reduce or prohibit the idling of vehicles. **3.** Encourage truck facilities to employ geolocator technology to improve lot flow and aid incoming drivers of lot space. **4.** Make education materials available at North Bend truck stop facilities and the truck drivers to inform and educate truck operators of emission reduction programs, rebates, and incentives. **5.** Require for any permit meeting the city established threshold for compliance with the new code that commercial truck facilities provide heating and cooling as well as auxiliary power for convenience and refrigeration of cargo thereby permitting engine shut off and to comply with city idle code(s). **6.** Work with County, State and Federal transportation agency planners and stakeholders to ensure that sufficient truck stop and parking facilities are provided and planned for along I-90 and Highway 18, between approximately the Snoqualmie summit and Preston, or as otherwise necessary to reduce the adverse impacts from trucks in North Bend.

OBJECTIVE 2.3

Comply with federal and state stormwater controls and treatment, groundwater protection, critical areas, and endangered species act requirements related to construction, operation, and maintenance of the North Bend transportation system.

OBJECTIVE 2.4

Plan, design, and construct transportation projects and facilities to increase climate resiliency to the maximum extent feasible.

Policy 2.4

1. Modify design standards for the transportation system to ensure that future development increases city-wide resilience to climate change.
2. Develop a resilient transportation system that protects against major disruptions and climate change by developing recovery strategies and by coordinating disaster response plans.

Goal 3 - Single Occupant Vehicle Trip Reduction

Manage the City's transportation system and develop improvements that minimize trips by single occupant vehicles.

OBJECTIVE 3.1	Policy 3.1
To reduce traffic congestion, greenhouse gas emissions, and use of fossil fuels, seek ways to reduce overall vehicle miles traveled and single occupant vehicle trips by North Bend residents and employees.	**1.** Establish and implement vehicle parking maximums and reduce vehicle parking minimums in the City's parking regulations to reduce the oversupply of vehicle parking not required by the actual parking demand. **2.** Encourage use of bicycle and pedestrian modes of transportation for local trips by way of providing complete and interconnected streets and sidewalks, ensuring ample and convenient bicycle parking, and orienting buildings and land uses to sidewalks and pedestrians rather than to parking lots and vehicles. **3.** Ensure that transportation concurrency requirements address all modes of transportation, including bicycle and pedestrian mobility. **4.** Coordinate and encourage joint public/private efforts to participate in transportation demand management and traffic reduction strategies. **5.** Establish city work policies which support City employees to telecommute or to work flex schedules (such as longer days with a 4-day work week) to reduce commuting needs. **6.** Anticipate, adapt to, and leverage innovative and disruptive transportation technologies to reduce single occupant vehicle travel.

Goal 4 - Pedestrian and Bicycle Transportation

Create a bicycle and pedestrian-friendly environment throughout North Bend that connects neighborhoods to the downtown, to cultural, historic, and recreational facilities, and to other transportation elements such as park-and-ride lots and transit routes and to include connectivity to the City of Snoqualmie.

OBJECTIVE 4.1

Pedestrian Facilities - safe, attractive and barrier free pedestrian facilities should be provided as an essential element of the City's circulation and recreation system, in accordance with the following policies:

Policy 4.1

1. Construct pedestrian facilities along all streets, and bicycle facilities along arterial and collector streets, in accordance with the City's street design standards.
2. Objects located on the sidewalk such as poles, benches, planters, bike racks, awnings, etc., should not impede people walking or access for people in wheelchairs.
3. Sidewalks should be located to accommodate existing natural features, such as significant trees within rights-of-way, when present.
4. Pedestrian safety should be a high priority in areas frequented by children, such as near schools, libraries, and park and recreation facilities. Pedestrian facilities should be provided in these areas based on the pedestrian priority network map presented in this Transportation Element.
5. Implement a system of pedestrian street and roundabout crossings and signage which prioritizes pedestrian safety, minimizes crossing distances, reduces pedestrian exposure to vehicle traffic, lowers vehicle speeds, and improves accessibility for all.
6. Prioritize sidewalk construction funding, based on the following criteria:
   a. The improvement will comply with the latest Americans with Disabilities Act ADA) standards;
   b. The improvement will improve pedestrian safety (e.g., the route occurs along a roadway with high vehicular speeds or volumes);
   c. The improvement will result in links to key destinations, including schools and parks, based on the priority pedestrian network map presented in this Transportation Element.
7. Where possible, build pedestrian facilities to include curb, gutter and sidewalk, with planter strip and appropriate levels of illumination. Sidewalks should be at least five feet wide and wider within Downtown and along arterial streets.
8. Require development to provide additional sidewalks and/or trails to complete missing links, increase pedestrian safety, and provide linkages to key destinations.
9. Payment-in-lieu of construction will be allowed under the following conditions:
   a. The City's latest six-year Capital Improvement Program (CIP) includes and specifically identifies City project for sidewalks at the location of the development project, and
   b. The City determines that it will be in the best interest of the City to construct sidewalks at the development project location as part of and concurrently with the City's identified capital project.

OBJECTIVE 4.2

Bicycle Facilities - safe bicycle routes should be an integral part of the City's street and recreation plans, in accordance with the applicable policies in Objective O3.1 and the following additional policies:

Policy 4.2

1. Construct and maintain a connected bicycle network that is safe and comfortable for people of all ages and abilities, connects to essential destinations, provides access to transit, and is easily accessible.
2. Sidewalks are not desirable for bicycle traffic due to obstacles and the presence of pedestrians. Separate bicycle facilities should be provided in congested areas, consistent with the Parks and Open Space Element.
3. Encourage the use of bicycles for all trip types by providing appropriate bicycle facilities to close gaps within the City's low stress bicycle network, based on the level of traffic stress (LTS) map presented in this Transportation Element, and by maintaining existing roadway shoulders in a smooth and stable condition for safe bicycle travel.
4. Adopt and implement bicycle parking standards that ensure bicycle parking sufficient to accommodate 5 to 10% of projected use at all public and commercial facilities. Require the bicycle parking facilities be provided near the building entrance.



Goal 5 - Public Transportation

The public transportation system shall enable all persons to have reasonable access to locations of employment, health care, education, and community business activities.

OBJECTIVE 5.1	Policy 5.1
Collaborate with King County Metro and other providers to offer transit options as a means to reduce air pollution and greenhouse gas emissions, conserve energy, increase accessibility and relieve traffic congestion in accordance with the following policies:	**1.** Encourage public transportation use by providing bus stop amenities (shelters, benches, bike racks, etc.), prioritizing locations with ridership potential and access to locations of employment, health care, education, and community business activities. **2.** Public transportation should be convenient and flexible enough to meet community needs. **3.** New development and redevelopment in activity centers shall be designed to provide and encourage pedestrian access to transit, in coordination with local transportation providers including Snoqualmie Valley Transportation. **4.** The city should work with larger employers to implement transportation strategies that encourage transit or active transportation usage by workers. **5.** Promote the use of the Snoqualmie Valley Transportation's shuttles and dial-a-ride transit for local trip needs. **6.** Collaborate with the Snoqualmie Valley School District to provide bus stop amenities for prominent school bus stop locations. Require such facilities through the permitting process for new residential development where feasible and proportional. **7.** Support the placement of pedestrian access and signage to better integrate the North Bend Railroad Depot with Downtown. **8.** Promote the use of the North Bend Park and Ride for carpooling and transit services.

SNOQUALMIE VALLEY MOBILITY COALITION

North Bend is a member city of the Snoqualmie Valley Mobility Coalition (SVMC). The SVMC advocates for a complete, well-connected, multimodal mobility system for the Snoqualmie Valley area, emphasizing transit accessibility. Specifically, the SVMC advocates for full weekend transit service for the area, transit service along the SR 18 corridor connecting North Bend with South King County, and adequate local feeder service to access regional fixed route services.

Goal 6 - Streetscape

Incorporate streetscape design in the development and redevelopment of North Bend streets to enhance our scenic beauty and help preserve our historic downtown and neighborhoods.

OBJECTIVE 6.1	Policy 6.1
Follow adopted design standards to create an attractive street system consistent with the character of the City of North Bend.	**1.** Implement roadway design standards that enhance the small town atmosphere of North Bend. **2.** Crosswalks should be a minimum of six feet wide and designed to meet ADA standards. **3.** Encourage more efficient use of existing public rights-of-way to increase parking opportunities within Downtown. **4.** Street lights shall be utilized for the safety and welfare of North Bend residents and the traveling public while protecting the rural character, quality of life, and economic well-being of the city with the following guidelines: **a.** Lighting fixtures shall be standardized and enhance the character and reflect on the history of the community; and **b.** Unnecessary light and glare which cause light pollution that may diminish the natural environment, including the beauty, high quality, and visibility of the night sky, shall be avoided by requiring shielded, full cut-off, and directional lighting fixtures. **5.** Street trees should be installed along all streets in accordance with the City's street tree standards. **6.** Develop a Downtown circulation pattern that provides adequate capacity for traffic demand while implementing temporary street closures, within Downtown, that provide a multi-purpose right-of-way during times of community gatherings. **7.** Minimize the visual clutter of traffic control electrical boxes, vaults, and other such transportation-related equipment through appropriate placement, screening, and landscaping.

Goal 7 - Capital Facilities

Establish appropriate levels of service for transportation facilities to adequately serve existing and future development.

OBJECTIVE 7.1	Policy 7.1
Identify and define the transportation facilities in the City of North Bend.	1. Maintain an inventory of existing transportation facilities owned or operated by the City and Washington State within North Bend. Include in the inventory the locations and capacities of such facilities and systems. 2. Establish and maintain a traffic count program. 3. Maintain a traffic collision record system to help evaluate and determine appropriate traffic safety measures.

OBJECTIVE 7.2

Establish level of service standards for City owned transportation facilities in North Bend and adopt the State and PSRC level of service standards for state owned and regional facilities in order to achieve and maintain the desired quality of life and vision for the City of North Bend.

Policy 7.2

1. Establish multimodal level of service standards which do the following:
   - **a.** Measure the quality of life based on the City's vision of its future and values,
   - **b.** Achieve and maintain existing development and growth anticipated in the land use plan, and
   - **c.** Align with the projects identified in the TIP and the goals, objectives, and policies in the Comprehensive Plan.

The following are the multimodal standards for the City:

- **a.** Traffic Operations: All arterial street intersections shall operate at LOS D or better during peak periods, except the Bendigo Boulevard/North Bend Way intersection, which shall be exempted due to constrained right-of-way and urban character.
- **b.** Transit (including school buses): Provide bus stop amenities (shelters, benches, bike racks, etc.) at locations, including new developments and redevelopments, with ridership potential and access to locations of employment, health care, education, and community business activities.
- **c.** Pedestrian: Prioritize construction of new pedestrian facilities, or replacement of existing facilities, in areas within one-quarter mile radius of parks or schools, as shown on the pedestrian priority network map presented in this Transportation Element.
- **d.** Bicycle: Prioritize construction of new bicycle facilities that will close gaps within the City's low-stress bicycle network, based on the bicycle level of traffic stress network map presented in this Transportation Element.

Use the level of service standards to

- **a.** Determine the need for transportation facilities, and
- **b.** Test the adequacy of such facilities to serve proposed development. In addition, use the level of service standards for city-owned transportation facilities to develop the City's annual budget and 6-year Transportation Improvements Program (TIP).

2. Re-assess the TIP annually to ensure that transportation facility needs, financing, and levels of service are consistent with the land use plan. The annual update should be coordinated with the annual budget process, and amendments to the Capital Facilities Element of the Comprehensive Plan.
3. Re-evaluate proposed land use plan designations as necessary should funding for necessary transportation infrastructure not be available.

OBJECTIVE 7.3

Provide a variety of responses to the demands of growth on transportation facilities.

Policy 7.3

1. Ensure that new development meets concurrency requirements and provides for mitigation measures when required to maintain levels of service consistent with adopted transportation level of service standards.
2. Make the most efficient use of existing transportation facilities, including techniques such as:
   a. Transportation demand management; and
   b. Encourage development that uses existing facilities.
3. Provide additional transportation facility capacity when existing facilities are used to their maximum level of efficiency consistent with adopted standards for levels of service.
4. Actively engage the public, especially historically underserved populations, during the planning and design of transportation facilities to identify and reduce negative community impacts.

OBJECTIVE 7.4

Coordinate transportation planning and programming with state, county, and local agencies.

Policy 7.4

1. Coordinate with non-City providers of transportation facilities and services on a joint program for maintaining adopted levels of service standards, funding, and construction of capital improvements. Work in partnership with non-City transportation facility providers to prepare functional plans, including the PSRC Regional Transportation Plan, consistent with the City of North Bend Comprehensive Plan.
2. Establish interagency planning mechanisms to assure coordinated and mutually supportive transportation facility plans from non-City providers (WSDOT, King County Roads and Metro Transit, adjoining cities, etc.) of transportation facilities.
   a. Establish priority areas for transportation improvements consistent with the Comprehensive Plan.
   b. Periodically assess development trends and transportation facility needs to identify and remedy deficiencies or reassess the land use plan.
3. Regularly coordinate with WSDOT, King County Roads and Metro Transit, and the City of Snoqualmie to ensure that levels of service for transportation facilities are compatible.
4. Coordinate Federal, State, County, City agencies, the Ports, and freight mobility industry leaders to develop a Regional Plan for freight mobility and staging, within the Puget Sound region, that allows for efficient mobility while reducing or eliminating impacts on North Bend's streets and air and water quality.

OBJECTIVE 7.5	Policy 7.5
Annually develop a six-year transportation improvements program with which to facilitate implementation of the Comprehensive Plan.	**1.** Prepare and utilize the six-year TIP to identify transportation projects necessary to respond safety issues, the planned growth of the community, and maintain desired levels of service. **2.** Prepare and utilize the six-year TIP to integrate North Bend transportation capital projects and resources with other agencies in order to maximize financing opportunities such as grants, bonds, city funds, donations, impact fees and other available funding. **3.** Maintain the TIP as follows: **a.** Provide for annual review of the Capital Facilities Plan contained in the Capital Facilities Element by the City Council and incorporate a citizen participation process; **b.** Ensure that the Capital Facilities Plan is consistent with the overall Comprehensive Plan; **c.** Define the projects' need and links to levels of service and facility plans; **d.** Consider operations and maintenance impacts of projects where appropriate; and **e.** Establish project priorities in the order of safety first and then LOS.

OBJECTIVE 7.6	Policy 7.6
Establish mechanisms to ensure that the required transportation facilities are financially feasible.	**1.** Base the financing plan for transportation facilities on realistic estimates of current local revenues and external revenues that are reasonably anticipated to be received by the City on an ongoing basis. **2.** Finance the six-year TIP within the City's financial capacity to achieve a balance between available revenue and needed transportation facilities. If the projected funding is inadequate to finance needed transportation facilities based on adopted level of service standards and forecasted growth, the City could do one or more of the following: **a.** Lower the level of service standard; **b.** Change the Land Use Plan; **c.** Increase the amount of revenue from existing sources; and/ or **d.** Adopt new sources of revenue. **3.** Design roads to be financially feasible to maintain, by means of reduced impervious surfaces and implementation of low impact strategies that reduce maintenance costs, in addition to providing a well-connected street system, reducing the miles of roadway necessary to provide adequate circulation and access throughout the City.

OBJECTIVE 7.7	Policy 7.7
Establish mechanisms to ensure that the required transportation facilities are fully funded.	1. Match revenue sources to transportation improvements on the basis of sound fiscal policies. 2. Revise the TIP in the event that revenue sources for transportation improvements, which require voter approval in a local referendum, are not approved. 3. Ensure that the ongoing operating and maintenance costs of a transportation facility are financially feasible prior to constructing the facility.

OBJECTIVE 7.8	Policy 7.8
Ensure existing and future development pay for the costs of needed transportation improvements.	1. Ensure that existing development pays for transportation improvements that reduce or eliminate existing deficiencies, and pays for some or all of the cost to replace obsolete or worn out facilities. Existing development may also pay a portion of the cost of transportation improvements needed by future development. Existing development's payments may take the form of user fees, charges for services, special assessments, and taxes. 2. Ensure that future development pays a proportionate share of the cost of new facilities that it requires. Future development may also pay a portion of the cost to replace obsolete or worn-out facilities. Future development's payments shall take the form of one or more of the following: voluntary contributions for the benefit of any transportation facility, impact fees, mitigation payments, capacity fees, dedications of land, provision of transportation facilities, and future payments of user fees, charges for services, special assessments, and taxes. 3. Whenever another governmental agency causes transportation impacts or costs to the City of North Bend, the City should negotiate with that entity to defray any costs not mitigated as a result of the other government agency's actions. This could include reciprocal concurrency agreements with adjacent jurisdictions to facilitate the collection of mitigation fees or construction of needed improvements to impacted intersections. 4. In the annual budget, the city shall maintain its bridges, arterials, and collector streets system and implement safety improvements as a high priority. Development of new bridges, arterials, and collector streets should, subject to the availability of outside grant opportunities, be a secondary budget priority.

OBJECTIVE 7.9	Policy 7.9
Seek to mitigate disproportionate financial burdens to the City due to the siting of essential transportation facilities and freight mobility facilities.	**1.** Through joint planning or interlocal agreements, the City shall seek to mitigate disproportionate financial burdens due to the siting of essential transportation facilities. **2.** The City shall seek amenities or incentives for neighborhoods in which the facilities are located and require compensation for adverse impacts.



5 TRANSPORTATION MODAL NETWORKS

Transportation Modal Networks

North Bend envisions a future transportation system that serves all users and modes of travel by offering a safe and robust network of sidewalks, bicycle facilities, intersections, and roadways.

This chapter describes North Bend's vision for its future transportation network. The needed infrastructure to achieve this vision is described in the Capital Plan chapter. This TE looks to provide a 'layered' transportation network, which focuses on accommodating all modes of travel. While some of the roadway improvements are needed to meet the City's vehicular LOS standard, many of the future improvements will focus on providing safer and more complete facilities for walking, bicycling, and riding transit to improve access and mobility for all roadway users.

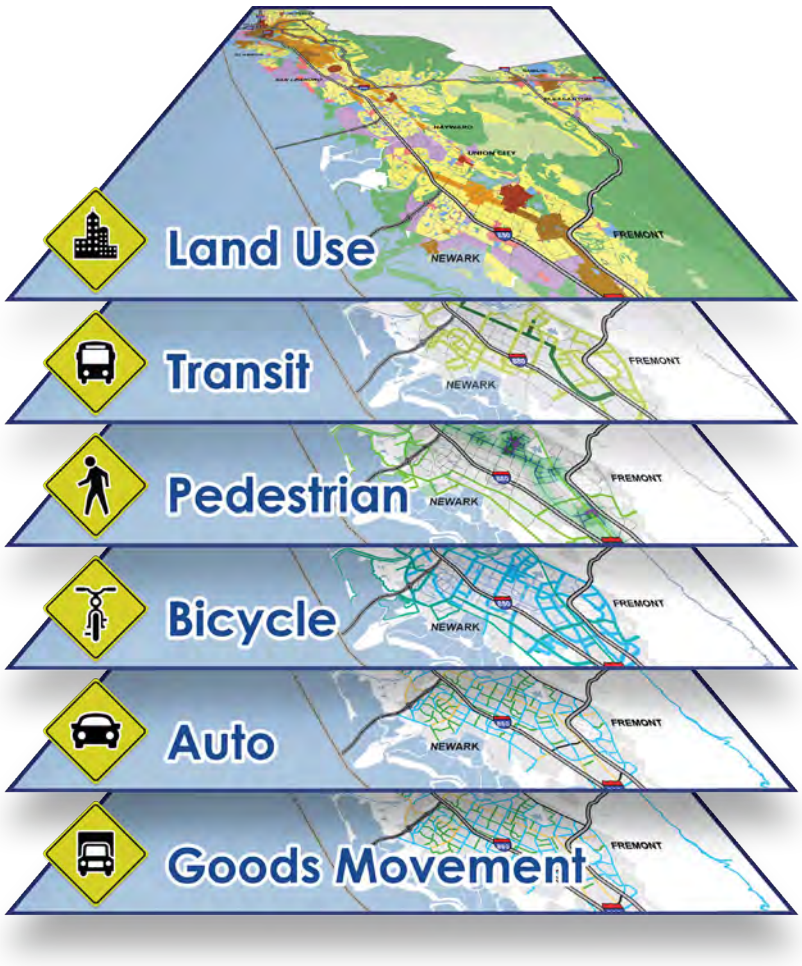
Introduction to the Layered Network

It can be a challenge for a single roadway to satisfy the demands and expectations of all modes at any given time. Generally, this is also not desirable from a user or a planning perspective. In response to this challenge, the City of North Bend has adopted a layered network approach that focuses on how the City's transportation network can function as a system to meet the needs of all users. In such a system, individual travel modes are prioritized on different facilities throughout the overall network. Figure 8 illustrates the concept of a layered network. The City will implement this layered network through a system of modal networks that define each street's user priorities and associated infrastructure needs.

Modal Networks

Streets in North Bend serve different travel purposes, and the modal networks therefore prioritize a different balance of users on each corridor. Determining how the entire transportation network fits together in North Bend requires identifying desirable streets for each mode, combining them to locate overlaps, and then assigning priority to certain modes. The following sections review the networks for each mode and establish a LOS standard or capital planning guidance for each.

Figure 8. Layered Network Concept



INTRODUCTION TO LEVEL OF SERVICE

The following sections define LOS for various modes of transportation. As described in the Opportunities and Constraints chapter, the most commonly used metric of transportation performance is vehicular LOS, as defined by the Highway Capacity Manual (HCM). However, this metric does not consider how the system is performing for other modes of transportation, such as walking, cycling, and transit.

The experience of these other modes is often not captured by a metric like congestion or delay. Factors like the quality of built environment, including the presence of dedicated facilities and buffering from vehicle traffic, tend to be more indicative of how well these modes are performing for people walking and biking in North Bend. As such, LOS planning guidance for these modes assesses existing infrastructure available for these users and identifies areas of the transportation system that are not safe or comfortable to navigate.

Pedestrian Priority Network

While some areas of North Bend have nearly full sidewalk coverage, other areas have sidewalk gaps that detract from a contiguous and welcoming walking environment. Typically, sidewalk coverage is more important for arterial streets than for local streets since local streets tend to have low traffic volumes and speeds. Moreover, dense areas with commercial land uses and streets that serve schools, parks, and churches are particularly important locations to provide for safe walking since there may be a larger portion of vulnerable roadway users on those streets.

For the purposes of Pedestrian LOS guidance, priority streets are defined as all principal and minor arterials, and collectors that are within a quarter mile of a school or park. Prioritizing these roadways for pedestrian accommodations should make walking in and around major destinations easier. In addition to the presence of pedestrian facilities along a corridor, the City also emphasizes the importance of safe pedestrian crossings. Particularly downtown and within a quarter mile of schools and parks, the City should look for opportunities to provide enhanced crossings at regular intervals where practicable. **Figure 9** shows the pedestrian priority network for the City.

Pedestrian LOS

Table 5 establishes guidance in terms of the level of accommodation that the City wishes to provide within the pedestrian priority network. Within these areas, pedestrian LOS is based on whether one or both sides of the street offer a pedestrian facility such as a sidewalk or a protected shoulder. Accordingly, the City requires all new and improved public roadways to offer sidewalks on both sides of the roadway.

North Bend's 2023-2028 Transportation Improvement Program identified a list of short-range pedestrian facility projects, many of which are located in areas that are currently in need of sidewalks. Several of these projects will help to fill gaps in the pedestrian network, improving the overall roadway conditions.

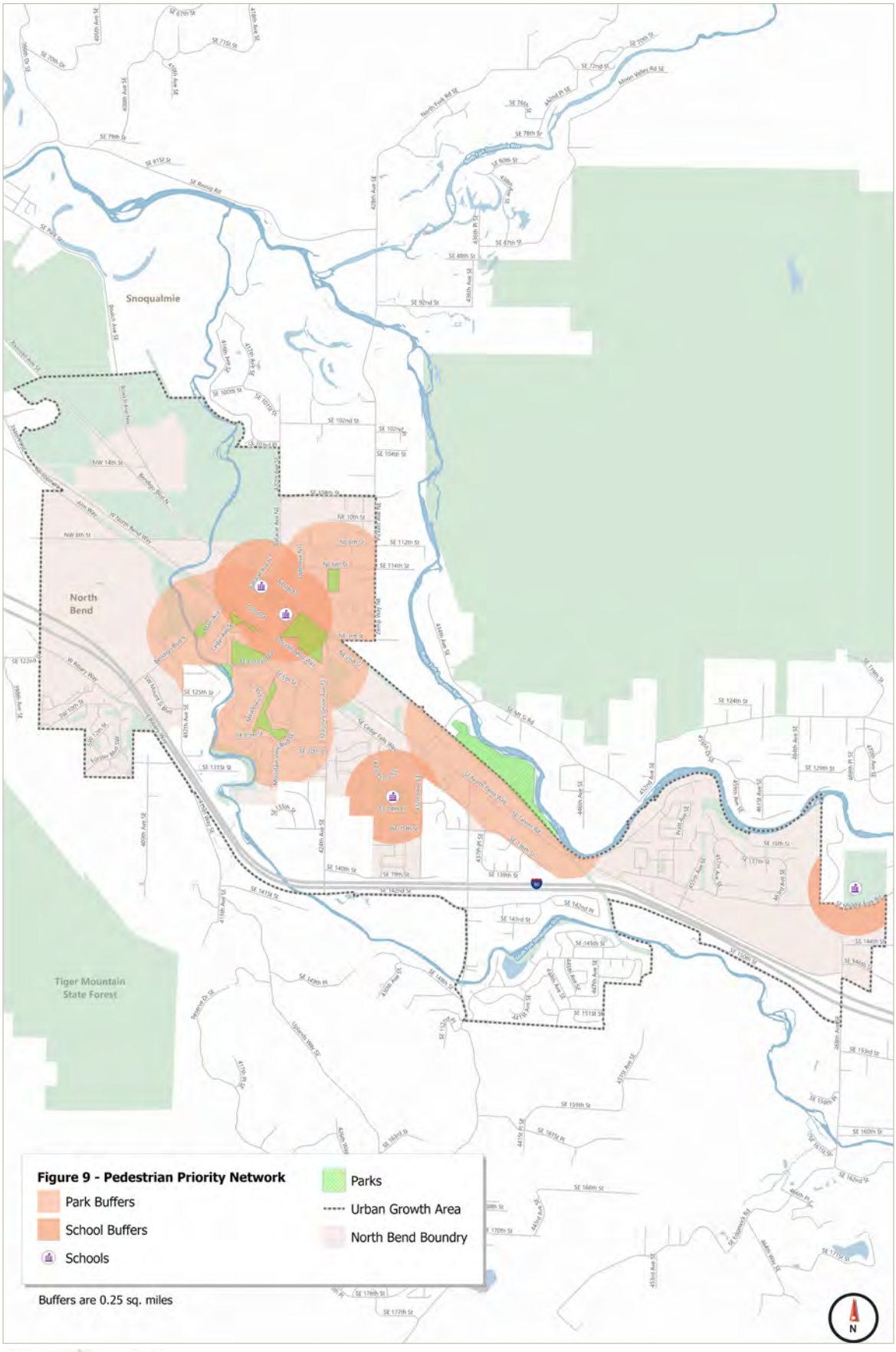
Table 5. Pedestrian Priority Network Level of Service Guidance

COMPONENT	COLLECTORS & ABOVE IN DOWNTOWN URBAN CENTER	COLLECTORS & ABOVE THAT ARE WITHIN A 1/4 MILE WALKSHED OF A PEDESTRIAN DESTINATION	ON STREETS WITH HIGHER FREIGHT/ SPEEDS	ARTERIALS ELSEWHERE
Minimum Sidewalk Width	8 feet	8 feet	6 feet	6 feet
Minimum Amenity Zone	4 feet	4 feet	4 feet	2 feet
Sidewalk - Side of Street	Both	Both	Both	Both

PRACTICAL CONSIDERATIONS

The City recognizes that achieving the pedestrian LOS guidance may not be feasible everywhere in the Pedestrian Priority Network due to right of way needs, sensitive habitats, and topography. However, by setting this LOS guidance, the City provides a vision for future pedestrian connectivity.

Figure 9. Pedestrian Priority Network



Bicycle Priority Network

Some areas of North Bend, such as the Snoqualmie Valley Regional Trail, provide excellent protected bicycling environments for all ages and abilities, but other areas are more limited in bicycle facilities. Level of traffic stress (LTS) is the current state of the practice in planning bicycle facilities. This approach provides a framework for designing bicycle facilities that meet the needs of the intended users of the system. The figure below describes the four typical categories of cyclists, each of which requires different levels of accommodation to feel comfortable using the system.

Table 6 defines how LTS is measured on specific streets and can guide the identification of capital treatments to provide the City's desired low-stress level (LTS 1 or 2) on individual streets. **Figure 11** shows the existing level of traffic stress along all roadways in North Bend. This network primarily considers two key variables that impact the comfort level of roadways for bicycling – traffic speeds and traffic volumes. These variables help to determine an appropriate type of facility that will enable a low-stress route.

Figure 10. Bicycle Level of Traffic Stress Categories

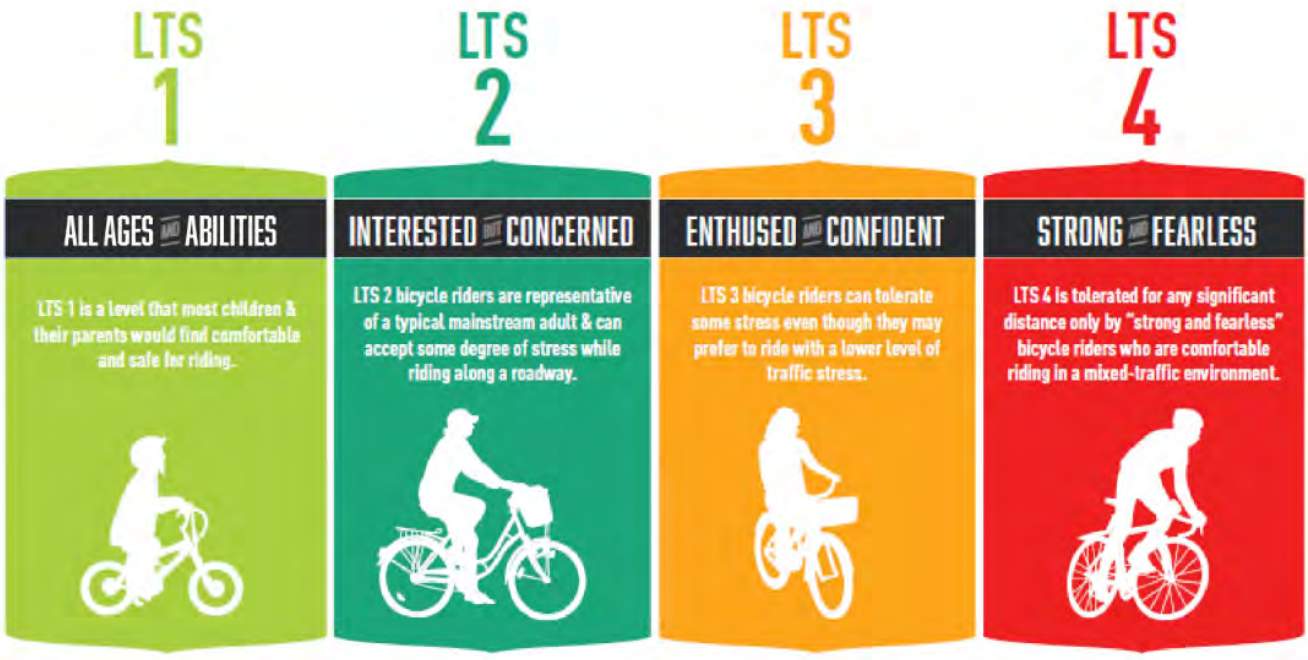


Table 6. LTS Designations

Speed Limit (MPH)	Traffic Volume	No Marking	Sharrow Lane Marking	Striped Bike Lane	Buffered Bike Lane	Protected Bike Lane	Physically Separated Bike Path
≤ 25	Local Streets	1	1	1	1	1	1
	Up to 7k	3	2	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 11. Existing Bicycle LTS



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.

The City seeks to establish a low-stress bicycle network that connects major destinations, transit stops and stations, and residential and employment centers. **Figure 4** shows the future bicycle network proposed for North Bend.

North Bend's 2023-2028 Transportation Improvement Program identifies a list of short range bicycle facility projects, many of which are located in areas that are currently in need of bicycle facilities. Several of these projects help fill gaps in the bicycle network and would improve the LOS of roadway segments.

PRACTICAL CONSIDERATIONS

The City recognizes achieving bicycle LTS 1 or 2 may not be feasible on all collectors and arterials due to right of way needs, sensitive habitats, and topography. However, by setting this LOS guidance, the City provides a vision for future bicycle connectivity.

BICYCLE FACILITY TYPES

FOG LINE

A fog line is a solid white line painted on the side of the roadway. This creates a designated space for people to ride their bike when there is not enough right-of-way for a conventional bike lane, and it designates the width of the outside travel lane. However, unlike conventional bike lanes, there is no bike pavement marking indicating preferential bicycle use.

CONVENTIONAL BIKE LANE

A conventional bike lane is a striped lane on a roadway that is designated for exclusive use by people riding bicycles. Conventional bike lanes include pavement markings indicating one-way bike use. These facilities are established along roadways where there is current or anticipated bicycle demand and where it could be unsafe for cyclists to ride in the travel lane.

BUFFERED BIKE LANE

Buffered bike lanes are conventional bicycle lanes enhanced with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. These facilities should be provided to maximize modal separation along roadways with high travel speeds, volumes, and/or truck traffic.

SHARED USE PATH

Shared use paths are paved trails for the exclusive use of pedestrians, cyclists, skaters, and other active transportation users. They are wide enough for two-way travel. They are typically separated from motorized vehicular traffic by an open space, barrier, curb, or exist in an independent corridor.

Transit

The City aims to create corridors that are welcoming to transit and facilities that are comfortable for users. To increase transit use, the City can provide the following amenities:

- Street lighting
- Pedestrian and bicycle facilities for connecting to transit stops
- Real time arrival information
- Enhanced bus stop amenities, such as bus shelters, benches, and trash cans

North Bend's level of transit accommodation is defined based on the amenities in **Table 7.**

The City can reach the highest level of accommodation by providing amenities such as benches, shelters, garbage cans, and lighting for transit and by ensuring the availability of sidewalks and marked crosswalks for pedestrians. As a minimum target, the City can reach a moderate transit LOS by providing transit stop amenities and pedestrian access improvements where feasible.

REGIONAL TRANSIT COORDINATION

Effective coordination with regional transit agencies is a top priority in this plan to ensure that the local and regional transportation systems complement one another, especially as each system expands. A key element of this will be partnering with King County Metro and Snoqualmie Valley Transportation to provide transit options for getting across town and efficient connections to neighboring cities.

Freight and Auto Network

Nearly every street in North Bend's roadway network is utilized at some point each day by residents and workers to access homes, jobs, and other destinations. Many of these streets are local streets, which do not see significant traffic volumes throughout the day. Other streets are an important part of the freight delivery network.

Table 7. Transit Level of Service Guidance

Policy	Performance Measure	Potential Projects/Actions
Support continuous service.	Strive for continuous service, based on hours/day and days/week; minimum headways	Advocate for continuous service
Strive to maximize rider comfort and security.	Stop amenities.	Investments in comfort/amenities at major stops and stations; e.g., lighting; seating; comfortable shelters
Strive to maximize rider access.	Number of people that can access stops on a low stress network.	Sidewalks/trails connecting to stops. Enhanced street crossings

Freight and Auto LOS

The City's standard for PM peak hour delay is LOS D or better at most intersections. However, some streets are permitted to function at higher levels of delay during the PM peak period. In recognition of other considerations that may impact mobility, such as cost, right of way, and impact on other modes, the City accepts a lower LOS standard at the following location:

- LOS F – SR 202/Bendigo Boulevard & North Bend Way

Table 3 and **Table 4** summarize existing and future year (2044) forecast delay at intersections in the City, with 2023-2028 TIP projects and other assumed improvements in place. Furthermore, the capital list provided in the next chapter includes future roadway projects that would maintain the City's LOS standard through 2044, as well as ensure that other components of the City's roadway network offer sufficient capacity to handle anticipated future demand volumes.

WHY DEFINE LOS FOR CERTAIN INTERSECTIONS?

LOS F indicates systems which are over capacity. These conditions lead to increased congestion and travel delay for drivers. Although this measure seems counter-productive, the City is committed to mobility for all, which means that in addition to considering vehicular travel, it must also take into account factors such as:

- **COST:** Maintaining LOS D operations everywhere would require substantial capital investment that would detract from the City's ability to invest throughout North Bend. This strategy would not only be impractical but could also hinder investments for other modes.
- **RIGHT OF WAY:** Substantial right-of-way impacts, such as street widening, intersection modifications, and removal of parking can be challenging to overcome.
- **OTHER MODES:** Roadway improvements for vehicular travel may negatively impact other modes. For example, adding additional lanes will increase the amount of time it takes pedestrians and cyclists to cross the street.
- **LOCAL IDENTITY:** Some locations are of historical, cultural, or recreational importance to the City. Widening roadways may detract from the local identity and sense of place that residents and visitors enjoy.

Growth Management Act requirements: The State's concurrency law stipulates that the City must be able to maintain its stated LOS policy in order to continue permitting development. Setting an LOS standard that is unrealistic for the above reasons would put North Bend in jeopardy of being able to permit development intended to provide more walkable, bikeable, and transit accessible options. As such, this Element sets a realistic LOS standard at key intersections where the conditions above make the City's LOS D standard that applies elsewhere infeasible.

IMPACTS OF GROWTH ON STATE FACILITIES

As North Bend continues to grow and regional recreational use increases, traffic volumes will increase on I-90, which serves as a critical link for North Bend residents and employees to the rest of the region. To understand the magnitude of change in I-90 volumes related to local and regional growth, PM peak hour percentage volume increases for each of the three I-90 interchanges serving the City are shown below as estimated by the PSRC-based travel model developed for this TE update.

Table 8. Percentage Volume Increase at I-90 Interchanges

Interchange	Future Volume Increase
I-90/SR 202/Bendigo Boulevard	15%
I-90/436th Avenue SE	40%
I-90/468th Avenue SE	40%

Downtown Parking

North Bend's on-street parking supply downtown is currently available on a first-come, first-serve basis, with time restrictions in some locations. Anticipated development in the central core may necessitate more active parking management in the future as demand for parking increases. Wayfinding signage to improve access to available parking may help connect drivers with existing facilities, including park and ride lots.

The City should monitor parking use in downtown and consider the following actions, as appropriate, to manage demand:

- Once on-street parking supply utilization exceeds 85 percent on downtown roadway segments during business hours, consider reducing time limits or implementing parking charges to encourage parking space turnover.
- As downtown develops, review the City's parking code to ensure it supports an urban setting.
- Consider encouraging more shared parking by developing public parking facilities that promote a "park once" concept in the downtown.



6 PLAN IMPLEMENTATION

Plan Implementation

This Transportation Element provides the foundation for updating the City's six-year Transportation Improvement Program, working toward the 2044 planning horizon. This Element should be viewed as a living document. While it can serve as the blueprint for transportation in North Bend over the next several years, realistically, the plan is most useful over the next five-to-seven years, at which point it should be updated.

The recommended projects and programs of the Transportation Element were developed through a combination of technical methods (LOS and gaps analysis) and input from the community and stakeholders. Implementing the Transportation Element will require close coordination among the City departments, citizens, businesses, and other agencies within the region.

Projects

The previous chapter describes the City's vision for accommodating travel for everyone in North Bend, as guided by a framework of multimodal networks and policies to achieve this vision. This section describes the Transportation Element's project list, which if built, would provide a safer and more connected multimodal system. The following section describes the City's anticipated financial resources over the next 20 years to implement these projects.

During the Transportation Element development, many transportation needs and project ideas to meet those needs were identified across the City. Project ideas came from a variety of sources: projects carried forward from past plans, projects to provide sufficient capacity to accommodate North Bend's planned growth, as well as projects that would help construct the modal networks presented in the previous chapter.

Overall, there are 40 projects identified on the Transportation Element's project list. These 40 projects are shown in **Figure 12** and **Table 9.**

Anticipated Funds

While funding available for transportation over the next two decades cannot be forecast with certainty, a conservative estimate is that future annual budgets will be similar to the average capital facilities expenditures of the five-year period from 2017 to 2021. Using this approach, the amount anticipated to be available for transportation capital projects (excluding funds dedicated to parks, utilities, stormwater, and wastewater management) is approximately $4.9 million per year. Thus, an approximate financial constraint for the TE is $97.4 million (in 2022 dollars) over the next 20 years.

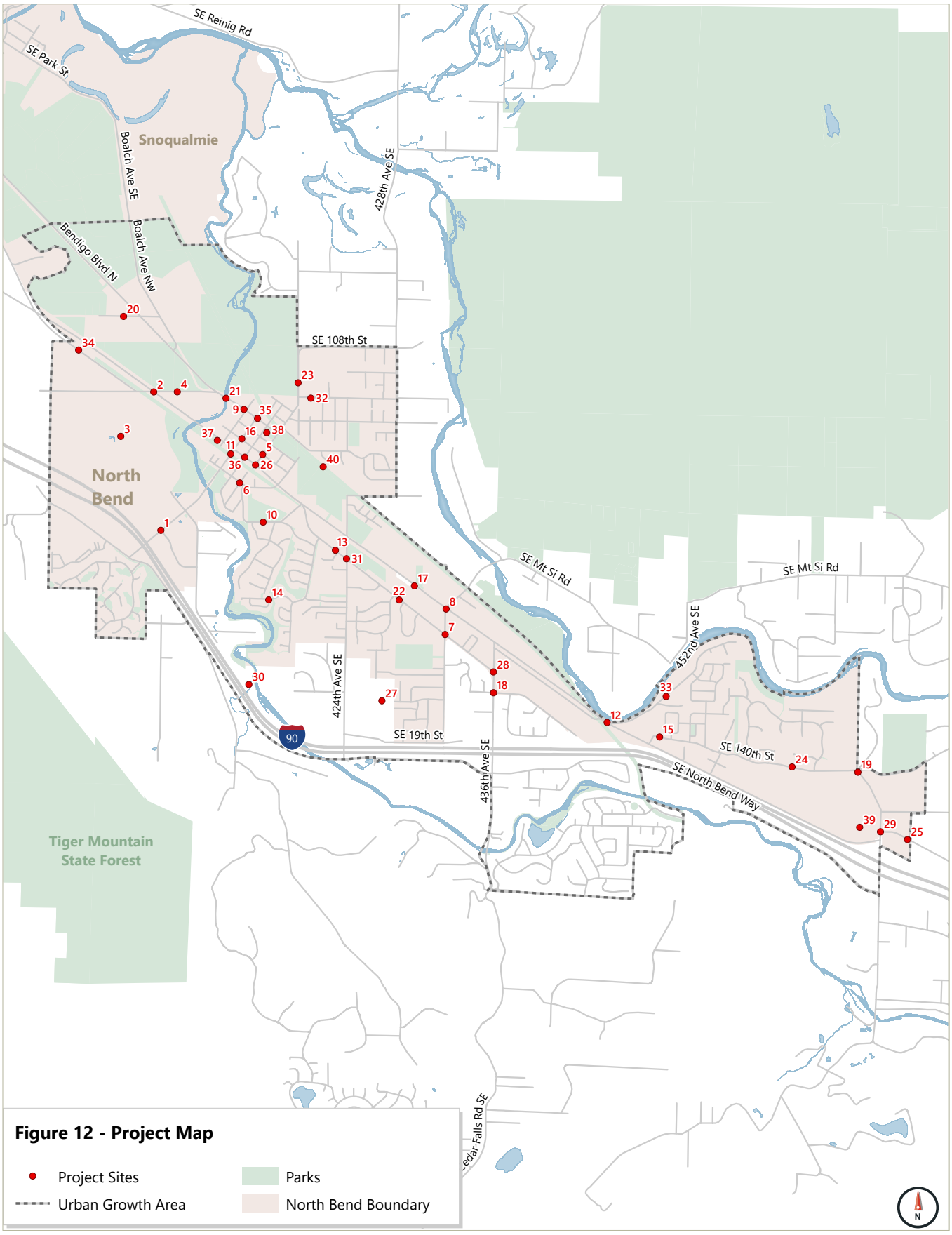
The project list in **Table 9** shows the total estimated cost of the 40 projects identified to be approximately $99 million, or $1.6 million more than the approximate financial constraint of $97.4 million. It is unknown how much of these costs could be recovered if re-development contributes to some of these improvements over the 20-year period (beyond established impact fee obligations) or if the City is very successful in securing competitive grants. However, these estimates provide a general framework for how the City could spend available funding to expand mobility over the life of this TE.

Table 9. Project List

Project #	Year Planned	Project Name	Design and Construction Costs
1	2025	Roundabout at Bendigo Boulevard S and SW Mount Si Boulevard	$8,647,205
2	2025	Roundabout at W North Bend Way and NW 8th Street	$4,901,000
3	2025	South Fork Avenue SW Extension – Bendigo Boulevard S to NW 8th Street (Nintendo Bypass)	$6,081,000
4	2027	NW 8th Street Widening and Sidewalk between W North Bend Way and Bendigo Boulevard N (includes new Ribary Creek bridge)	$2,000,000
5	2027	Downtown Parking Lot/Garage	$3,200,000
6	2026	Park Street Corridor Re-Channelization (add center turn lane and relocate 1 sidewalk, possibly acquire ROW and relocate sidewalk)	$3,400,000
7	2023	Mid-Block Crosswalk across SE Cedar Falls Way near Stilson Avenue SE and Stilson Avenue SE Sidewalk to Opstad Elementary School	$700,000
8	2026	Roundabout at E North Bend Way and SE Mount Si Road	$3,000,000
9	2024	Wastewater Treatment Plant Frontage Improvements	$590,000
10	2025	SE Orchard Drive Sidewalk between Meadow Drive SE and Riverside Drive SE on South Side	$550,000
11	2028	McClellan Alley Improvements and Bendigo Boulevard S Sidewalks	$3,000,000
12	2023	E North Bend Way Rechannelization between Snoqualmie Valley Trail and SE Tanner Road	$140,000
13	2024	SE Cedar Falls Way Sidewalk between Mountain View Boulevard SE and Mount Teneriffe Drive SE on South Side	$600,000
14	2024	Old Si View to New Si View Pedestrian Connection	$50,000
15	2023	SE 140th Street Sidewalk between E North Bend Way and Tanner Falls Frontage on North Side	$300,000
16	2028	Bendigo Boulevard N Traffic Reconfiguration between W 3rd Street and W North Bend Way	$300,000
17	2026	Tanner Trail Phase 2 and 3 Construction	$1,500,000
18	2023	Roundabout at 436th Avenue SE and SE 136th Street	$2,400,000
19	>2028	Roundabout at 468th Avenue SE and SE Middle Fork Road	$2,100,000
20	>2028	NW 14th Street Widening and Reconstruction West of Bendigo Boulevard N (Phase 2)	$500,000
21	>2028	Pedestrian Bridge over South Fork Snoqualmie River at Wastewater Treatment Plant	$1,200,000
22	>2028	SE Cedar Falls Way Pedestrian Improvements between Maloney Grove Avenue SE and 436th Avenue SE	$1,500,000

Project #	Year Planned	Project Name	Design and Construction Costs
23	>2028	Ballarat Avenue NE Widening and Sidewalk between NE 6th Street to NE 12th Street	$1,450,000
24	>2028	SE 140th Street Sidewalk between Eagles Nest Place SE and Twin Falls Middle School on North Side	$2,500,000
25	>2028	SE 146th Street Reconstruction between 468th Avenue SE and East City Limits	$700,000
26	>2028	Traffic Signal at E North Bend Way and Ballarat Avenue	$750,000
27	>2028	SE 16th Street Extension between Maloney Grove Avenue SE and 436th Avenue SE	$3,400,000
28	>2028	Left Turn Pocket and Sidewalks on 436th Avenue SE between SE Cedar Falls Way and SE North Bend Way	$500,000
29	>2028	Traffic Signal at SE 146th Street and 468th Avenue SE	$600,000
30	>2028	South Fork Avenue SE Extension – New Bridge across South Fork Snoqualmie River between SW Mount Si Boulevard and Maloney Grove Avenue SE	$20,000,000
31	>2028	Roundabout at SE Cedar Falls Way and Maloney Grove Avenue SE	$2,100,000
32	>2028	NE 8th Street Storm and Reconstruction Project	$775,000
33	>2028	SE Tanner Road Improvements – North of SE North Bend Way	$600,000
34	>2028	Alm Way Bridge Replacement	$1,500,000
35	>2028	Roundabout at Bendigo Boulevard N and W 4th Street	$6,586,000
36	>2028	Traffic Signal at North Bend Way and Main Avenue	$750,000
37	>2028	Bus Stop Amenity and Signage Improvements at North Bend Park & Ride	$500,000
38	>2028	Bus Stop Amenity Improvements at North Bend Library	$500,000
39	>2028	Truck Stop Circulation, Wayfinding, and Signage Study	$50,000
40	>2028	Snoqualmie Valley Trail Paving and Improvements	$9,120,000
		Total	**$99,040,205**

Figure 12. Project Map



Additional Funding Options

This long-range planning effort has identified many transportation investments that would greatly enhance North Bend's transportation network but exceed forecasted revenues over the next few decades. Additional revenue sources that the City could consider implementing to enhance its ability to fund transportation system maintenance and rehabilitation, as well as new capital, are described below.

Levy Lid Lift

Cities can levy either a single-year or multi-year levy lid lift to increase property taxes in taxing districts without banked capacity beyond the one percent limit. While these property tax increases require a vote of the people, they are flexible funds that can be used to pay for maintenance, operations, or capital costs.

- **Cons:** Requires voter approval to implement
- **Pros:** Flexible funds that can be used for programmatic or capital expenditures; in many cities, levy lid lift is one of the options with the highest potential for revenue generation
- **Other consideration:** These funds would be a tax on locals, rather than visitors

Local Improvement Districts (LIDs)

Local Improvement Districts (LIDs) are special purpose financing mechanisms that can be created by cities to fund capital improvements in specific areas. LIDs generate funds by implementing proportionate special assessments on property owners that benefit from improvements. LID revenues are limited in their use to specific capital projects that benefit owners in the special purpose area for which they were created. Cities are authorized to form LIDs under RCW 35.43 without voter approval; however, LID formation is a complex process and must first be demonstrated to be financially feasible. Additionally, if the City receives protests from "property owners who would pay at least 60 percent of the total cost of the improvement" the LID will be dissolved.

In addition to transportation specific revenue options, the City has other revenue and financing options that can be used for transportation. Some of these options create additional revenues for the City but others are revenue neutral, suggesting a reduction of spending in other places.

Limited Tax General Obligation (LTGO) Bonds and Unlimited Tax General Obligation (UTGO) Bonds

These are financing tools cities can levy. Debt bears additional costs through interest, and any use of bonding capacity for transportation projects reduces the remaining bonding capacity available for other city projects. LTGO bonds will impact the General Fund, while UTGO bonds will have an additional tax burden.

Cities, TBDs, and LIDs may issue general obligation bonds, by special election or council decision, to finance projects of general benefit to the jurisdiction. In addition to the principal and interest costs of issuing debt, there are usually costs associated with issuing bonds, including administrative time, legal and underwriting costs, and insurance costs. The Washington State Constitution limits the amount of debt municipalities can incur to five percent of the City's assessed value of taxable properties; the Washington State Legislature has statutorily limited the debt carrying capacity further to 2.5 percent of the assessed value. Taking on additional bond debt will affect cities' credit rating, so best practices suggest using less than two-thirds of the debt capacity to maintain credit rating.

LTGO bonds can be used for any purpose, but funding for debt service must be made available from existing revenue sources. UTGO bonds can be used only for capital purposes, and replacement of equipment is not permitted.

Implementation of one of these policy options, following a detailed evaluation of the potential revenue generation and approval by City Council, would increase the funds available for the City to invest in programmatic and capital transportation improvements. These policy options could allow the City to leverage revenue generated partially by visitors or new development to improve existing facilities for all modes and create new connections, especially for bicyclists and pedestrians.

Implementation

The Transportation Element will guide local and regional transportation investments and define the City's future transportation policies, programs, and projects for the next 20 years. In this way, the Transportation Element helps the City assess the relative importance of transportation projects and programs; and schedule their planning, engineering, and construction as North Bend growth takes place and the need for improved and new facilities is warranted. The Transportation Element establishes a methodology for prioritizing projects to be included in future Transportation Improvement Plans (TIPs) and Capital Improvement Plans (CIPs).

As the City implements the project list described in this chapter, it will be important that the multimodal level of service criteria and goals, objectives, and policies described in this Transportation Element are used to prioritize investments such that the City's limited financial resources are used to best advance the community's vision and goals for the City.