City of King City

TRANSPORTATION SYSTEM PLAN –

VOLUME 1
REVIEW DRAFT

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VOLUME 2

Volume 2 of the King City Transportation System Plan includes all background memoranda, and technical data that were the basis for its development. The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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CHAPTER 1.

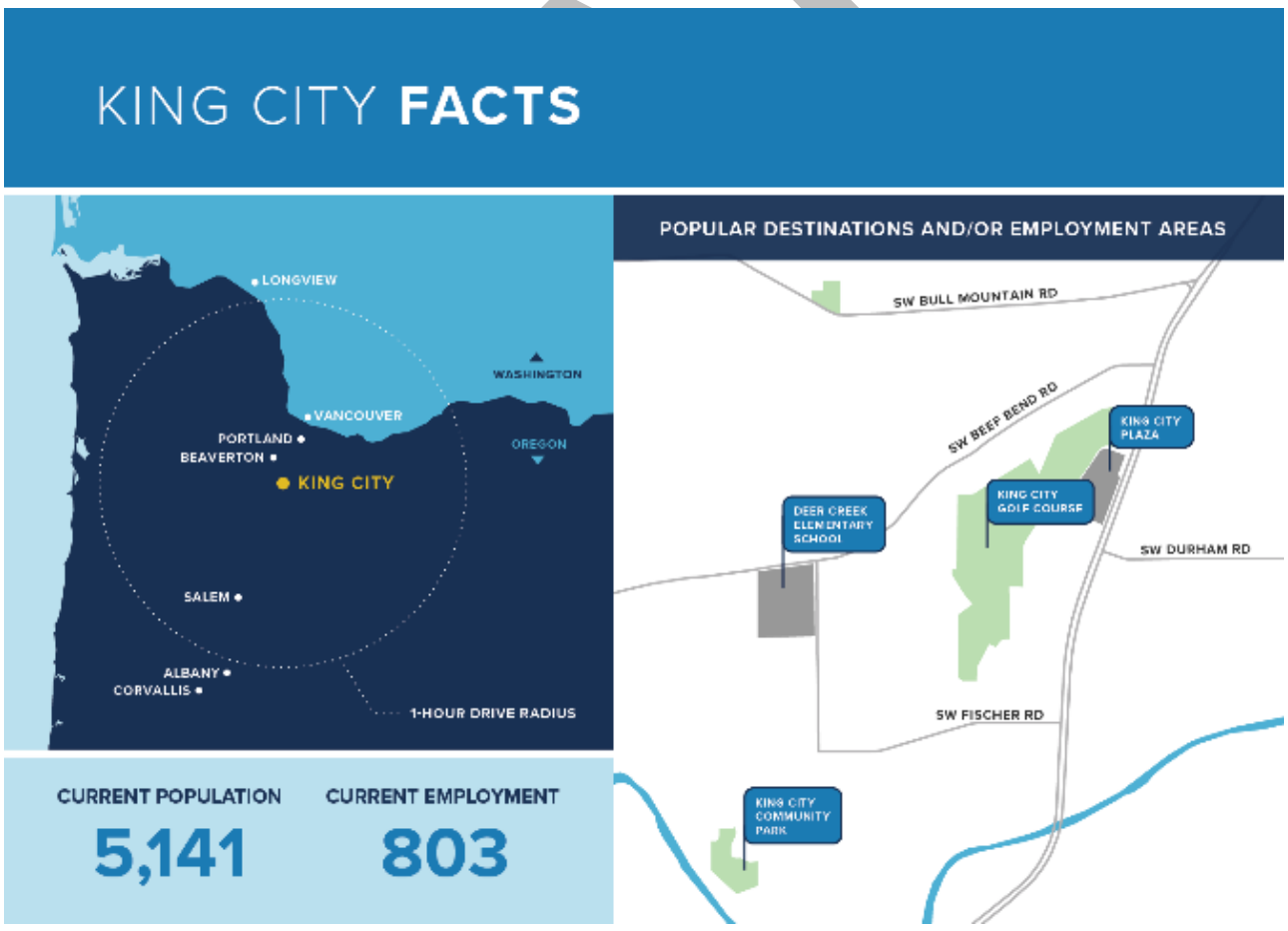
Context for the Plan

This chapter introduces King City and describes what a Transportation System Plan (TSP) is.

KING CITY AT A GLANCE

Initially developed as adult only retirement community, King City's roots began in 1963 to the south of SW Beef Bend Road, and west of Highway 99W (OR 99W). Here the community developed as one of the first planned unit developments in the region. With an abundance of recreational opportunities to attract residents, including a golf course, community center, and swimming pool. King City quickly grew to around 550 residents by 1966 when it was incorporated. As the City grew from its traditional roots as a retirement community into the 2000's, it has expanded southward and westward with new residential neighborhoods. While age restrictions have been dropped in the City, the original King City Civic Association still maintains those deeded restrictions requiring a 55-or-older householder and barring anyone under 18.

Today, King City has a population of 5,141 residents and includes 803 jobs. It is home to the regionally designated King City Town Center, which includes the King City Plaza, and is within a short distance of regionally significant employment and population centers, including those in the cities of Portland, Tigard, Beaverton, and Sherwood.



PLANNING AREA

The current City limits, shown in Figure 1, are generally bounded by OR 99W to the east, SW 137th Avenue to the west, SW Beef Bend Road to the north, and the Tualatin River to the south. Beyond the current City limits, is the Urban Growth Boundary (UGB), also shown in Figure 1. The UGB is a land use planning tool designed to control urban expansion and promote the efficient use of land, public facilities, and services. Land inside the UGB is intended for urban development that is supported by urban services such as roads, water and sewer systems, parks, schools and fire and police protection. This boundary also supports 20-years' worth of population and employment growth, of which cities must plan for urban services within their designated planning boundary.

King City is within the Portland metropolitan area's UGB managed by the Portland area regional government agency, Metro. The City is responsible for planning transportation infrastructure for all modes within its designated boundary, hereby referred to as "planning area", with the TSP being the City's tool for this effort. The City's planning area extends from OR 99W to SW Roy Rogers Road and from SW Beef Bend Road to the Tualatin River and portions of SW Elsner Road (see Figure 1).

The City's planning area includes three distinct areas: 1) the existing City limits; 2) developed unincorporated areas; and 3) the UGB expansion area, referred to as Kingston Terrace, which is currently being planned for future urban development. The TSP focuses on how to improve the existing transportation system for areas 1 and 2 noted above, and how to create a new system to serve future development in area 3.

KINGSTON TERRACE

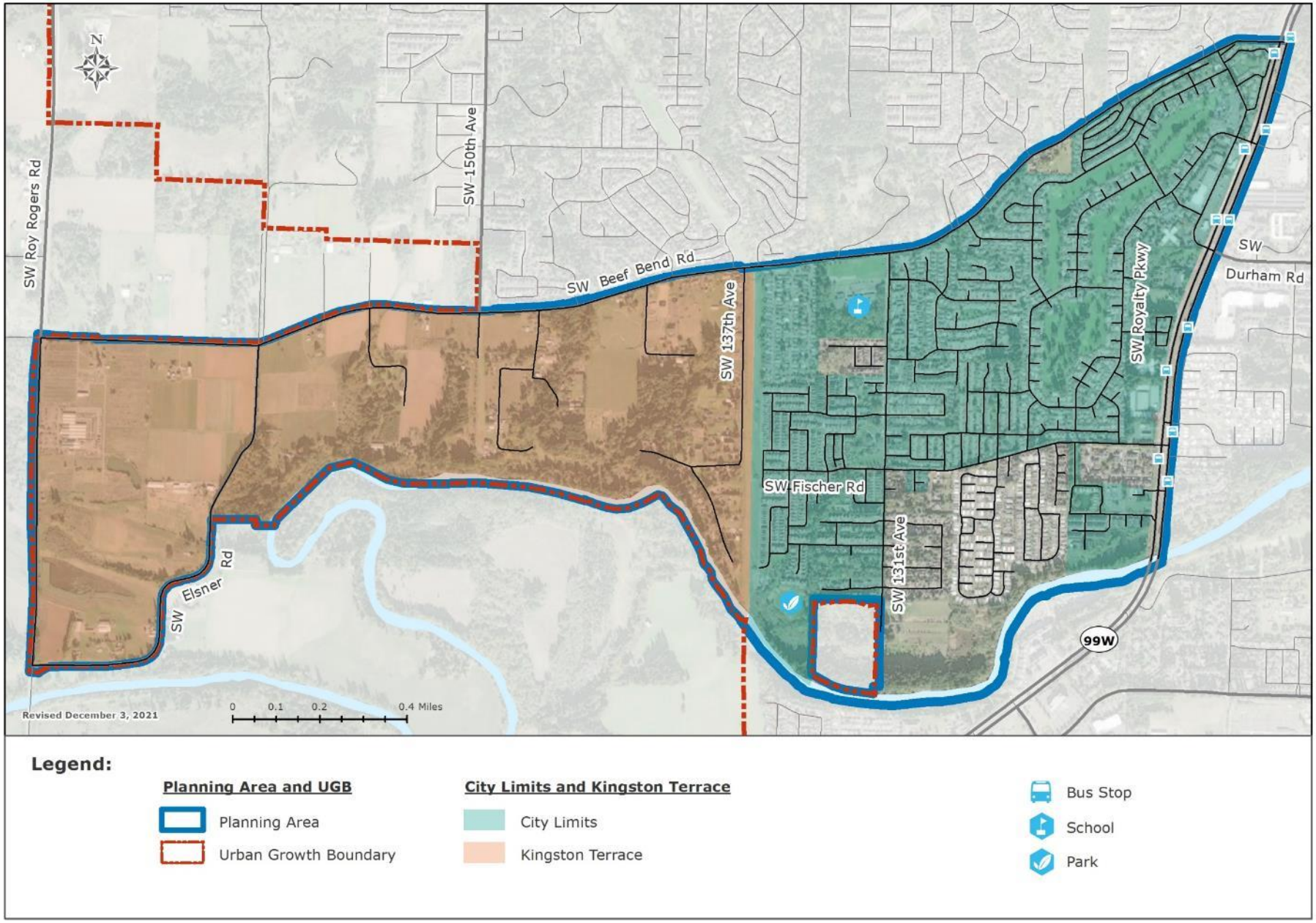
King City led a concept planning effort in 2017-2018 for the Kingston Terrace area, formerly called Urban Reserve Area 6D (URA 6D). This area had been identified by Metro as a suitable location for future urbanization, as it was determined that the existing UGB could not accommodate the anticipated future urban development and the additional land necessary for homes, businesses, and public facilities. The Metro UGB was later amended in 2018 to add four UGB expansion areas, including the King City URA 6D Concept Plan area.

A master planning process is currently underway for Kingston Terrace, to further refine the 2018 Concept Plan. A series of technical reports was prepared as part of this TSP in response to Metro conditions for the UGB amendment that assessed market demand for various types of land uses, outlined urban design guidelines for the area, and ultimately provided the land use assumptions that were used to develop the TSP (see TSP Chapter 3). More information can also be found in the following technical reports included in the Appendix: 1) URA 6D: Existing Land Use Conditions; 2) King City Market Analysis: Urban Reserve Area 6D; 3) Urban Design Guidebook; and 4) Land Use Assumptions Report.

Most of the future housing and employment growth over the next 20-years (i.e., through the TSP future horizon year of 2040) will be in Kingston Terrace. The conceptual alignments of transportation facilities identified in this TSP are based on the on-going Master Plan. These alignments are preliminary and will continue to be refined through the Master Plan process. The

adoption of the TSP will be coordinated with the development and adoption of the Kingston Terrace Master Plan, which is scheduled for completion in 2023.

FIGURE 1: PLANNING AREA FOR KING CITY



PURPOSE OF THE TSP

The King City TSP is a long-range plan to guide transportation investments within the City's planning area through the future horizon year of 2040. These transportation system improvements address current deficiencies and serve future local and regional needs, and align with the community's goals, objectives, and vision for the future. This TSP was developed through community and stakeholder input and is based on the City's transportation system needs, opportunities, and anticipated available funding. The state and regional requirements of the TSP are summarized in Figure 2 and Figure 3.

FIGURE 2: STATE REQUIREMENTS OF A TRANSPORTATION SYSTEM PLAN

FIGURE 3: REGIONAL REQUIREMENTS FOR THE TRANSPORTATION SYSTEM PLAN

Metro's Regional Transportation Functional Plan (RTFP) addresses how local TSPs should implement the Regional Transportation Plan through the following directives:

- Regional and state transportation needs identified in the 2040 RTP should be included in local plans.
- Local needs must be consistent with the RTP in terms of land use, system maps and non-single occupancy vehicle (SOV) modal targets.
- When developing solutions, local jurisdictions must consider a variety of strategies, in the following order:
    - TSMO (Transportation System Management Operations) including localized Transportation Demand Management, safety, operational and access management improvements.
    - Transit, bicycle, and pedestrian projects.
    - Traffic calming.
    - Land use strategies in OAR 660-012-0035(2) to reduce auto-dependence.
    - Roadway connectivity that includes pedestrian and bicycle facilities.
    - Motor vehicle capacity projects.
- Local jurisdictions can propose regional projects as part of the RTP process.
- Local jurisdictions can propose alternate performance and mobility standards; however, changes must be consistent with regional and statewide planning goals.
- Local jurisdictions must include performance measures for safety, vehicle miles traveled per capita, freight reliability, congestion, and walking, bicycling and transit mode shares.
- Local parking regulations must be consistent with the RTFP.

In compliance with state and regional requirements summarized in Figure 2 and Figure 3, King City created its first TSP, which will be used to make strategic decisions about transportation system investments, to support grant applications to fund future projects, and to ensure that projects are built in coordination with land use actions and future development, particularly in Kingston Terrace.

CHAPTER 2.

How the Plan Was Developed

This chapter describes how the TSP was developed. The process involved a formal decision-making structure, community engagement, and a structured technical analysis.

SETTING DIRECTION FOR THE PLAN

A transportation vision, and set of goals, objectives, and performance measures (see Figure 4) were used to guide the project team in the development, evaluation, and prioritization of solutions that best fit the community and provided the basis for policies to support Plan implementation. They were established with guidance from the Technical Advisory Committee (TAC) and the public.

Collectively, the transportation-related goals, objectives, and performance measures describe what the community wants the transportation system to do in the future, as summarized by a **vision statement**. A vision statement generally consists of an imaginative description of the desired condition in the future. It is important that the vision statement for transportation align with the community's core values.

Goals and objectives create manageable stepping stones through which the broad vision statement can be achieved. **Goals** are the first step down from the broader vision. They are broad statements that should focus on outcomes, describing a desired end state. Goals should be challenging, but not unreasonable.

Each goal is supported by more finite **objectives**. In contrast to goals, objectives should be specific and measurable. Where feasible, providing a targeted time period helps with objective prioritization and achievement. When developing objectives, it is helpful to identify key issues or concerns that are related to the attainment of the goal.

The solutions recommended through the TSP must be consistent with the goals and objectives. To accomplish this, **evaluation criteria** were developed based on the goals and objectives. For the King City TSP, they were used to inform the selection and prioritization of projects and policies for the plan by describing how well they support goal areas. The methodology for calculating the scores for each criterion can be found in Deliverable 5D and 5E, Transportation Performance Measures and Project Prioritization Framework, included in the Appendix.

FIGURE 4: DIRECTION FOR THE PLAN

VISION FOR THE PLAN

The overall vision statement for the TSP is described below.

> BY 2040, WE ENVISION A CITY WITH A **SMART AND EFFICIENT** TRANSPORTATION SYSTEM THAT SUPPORTS HEALTHY AND ACTIVE CITIZENS OF **ALL AGES AND ABILITIES**. PEOPLE TRAVEL IN A SAFE, ACCESSIBLE, AND CONVENIENT MANNER, USING TRANSPORTATION OPTIONS THAT ALLOW ALL USERS TO MEET DAILY NEEDS. THE TRANSPORTATION SYSTEM SUPPORTS A COMPETITIVE ECONOMY THAT INCREASES AFFORDABILITY AND PROVIDES FOR AN **ENHANCED NATURAL AND CULTURAL ENVIRONMENT**.

GOALS AND OBJECTIVES FOR THE PLAN

The King City TSP goals and objectives are documented below.

GOAL 1

ACCESSIBILITY AND CONNECTIVITY

THE TRANSPORTATION SYSTEM IS CONVENIENT, ACCESSIBLE, AND CONNECTS PEOPLE TO DESTINATIONS THROUGHOUT THE CITY AND BEYOND.

Objective a. Provide direct, continuous, and connected transportation facilities to minimize out-of-direction travel and decrease travel times for all users.

Objective b. Increase the proportion of trips made by walking, bicycling, transit, and carpooling.

Objective c. Complete all gaps in the bicycle and pedestrian networks, including trails.

Objective d. Increase household and job access to transit.

Objective e. Increase household and job access to low stress bike and walk networks.

Objective f. Increase travel options that serve popular destinations, such as schools, services, and parks.

Objective g. Increase the number of jobs that households can reach within a reasonable travel time.

GOAL 2

SAFETY AND SECURITY

THE TRANSPORTATION SYSTEM IS SAFE AND SECURE FOR PEOPLE OF ALL AGES AND ABILITIES.

Objective a. Reduce fatal and serious injury crashes for all modes of travel.

Objective b. Reduce crashes involving pedestrians and bicyclists by improving conditions along and across streets and at other conflict points with motor vehicles.

Objective c. Ensure the pedestrian and bike thoroughways are well maintained and clear of debris, obstacles, and obstructions.

Objective d. Provide attractive streetscapes that encourage active transportation, appropriate traffic volumes, vehicle speeds, and safety for all users.

Objective e. Reduce the transportation system's vulnerability to natural disasters and climate change.

GOAL 3

HEALTHY PEOPLE AND ENVIRONMENT

THE TRANSPORTATION SYSTEM PROTECTS THE NATURAL, CULTURAL, AND DEVELOPED ENVIRONMENTS, AND ENCOURAGES HEALTHY AND ACTIVE LIVING FOR ALL THROUGH COMFORTABLE AND CONVENIENT, LOWER-POLLUTING TRANSPORTATION ALTERNATIVES.

Objective a. Reduce vehicles miles traveled per capita.

Objective b. Improve public health by promoting and providing safe, comfortable, and convenient active transportation options to meet daily needs and access services.

Objective c. Design all transportation facilities to be welcoming and attractive for all people walking and bicycling.

Objective d. Increase household access to parks, open spaces, and natural areas.

Objective e. Use sensitive design and mitigation approaches to natural, cultural, and developed resources.

Objective f. Reduce transportation-related air pollutants.

GOAL 4

EQUITY

THE TRANSPORTATION SYSTEM ELIMINATES TRANSPORTATION-RELATED DISPARITIES AND BARRIERS AND IS AFFORDABLE FOR ALL USERS.

Objective a. Reduce household transportation costs by providing walkable neighborhoods, active transportation options, and reduced reliance on motor vehicle travel.

Objective b. Develop a multimodal transportation system that allows all users to access employment, education, and services.

Objective c. Develop a low stress bike and walk network for users of all ages and abilities.

Objective d. Promote transportation investments that offer system connectivity and efficiency benefits and avoid, minimize, and mitigate negative impacts.

Objective e. Prioritize infrastructure investments that serve those with the least access to transportation resources and with the greatest mobility needs.

GOAL 5

RELIABILITY AND EFFICIENCY

MANAGE AND OPTIMIZE THE TRANSPORTATION SYSTEM TO EASE CONGESTION SO PEOPLE AND GOODS CAN AFFORDABLY, RELIABLY, AND EFFICIENTLY REACH THEIR DESTINATION.

Objective a. Build an integrated and connected system of roadways, freight routes, transit, bicycle, and pedestrian facilities.

Objective b. Build infrastructure and capacity to support electric vehicles and other emerging technologies to increase travel options.

Objective c. Leverage technological advances to increase efficiency of travel across all modes for all road users.

Objective d. Increase the number of people and businesses with access to travel information.

Objective e. Increase the number of households and businesses with access to outreach, education, incentives, and other tools that increase shared trips and use of travel options.

GOAL 6

FISCAL RESPONSIBILITY

STRATEGICALLY DESIGN, OPERATE, AND MAINTAIN THE TRANSPORTATION SYSTEM TO MAXIMIZE ASSETS, MINIMIZE COSTS, AND ENHANCE THE SURROUNDING COMMUNITY THROUGH RIGHT-SIZED INFRASTRUCTURE.

Objective a. Preserve and maintain transportation system assets to maximize their useful life and minimize project construction and maintenance costs.

Objective b. Build transportation infrastructure that is sized appropriately and encourages economical operation and maintenance.

Objective c. Align the function of transportation facilities with evolving character and design of the cross-section to enhance the adjacent land uses through right-sized infrastructure.

Objective d. Develop new revenue sources to prepare for increased travel demand, balancing fairness and equity across the community.

GOAL 7

COLLABORATION

THE TRANSPORTATION SYSTEM DECISIONS ARE MADE IN A TRANSPARENT AND COLLABORATIVE MANNER, AND THE BENEFITS AND BURDENS OF INVESTMENTS ARE DISTRIBUTED EQUALLY AMONG ALL USERS.

Objective a. Create a multimodal transportation system that seamlessly connects to existing and planned infrastructure in surrounding communities.

Objective b. Make transportation investment decisions using a performance-based planning and programming framework that is aligned with the local and regional goals and supported by meaningful public engagement, multimodal data, and analysis.

Objective c. Improve coordination and cooperation among the owners and operators of the transportation system to enhance the efficiency of roadways and multimodal facilities, and encouraging improved transit service.

Objective d. Engage a wider diversity of people to provide input at all stages of developing and maintaining the transportation system and services.

PERFORMANCE BASED PLANNING PROCESS

The TSP utilizes a performance-based planning process. The community vision is distilled into the measurable goals and supporting objectives. These goals and objectives were used to identify evaluation criteria to help evaluate potential projects to enhance transportation system performance, and to measure long-term alignment between King City's transportation system and the community's vision, goals, and objectives. The plan process is illustrated below in Figure 5, along with the key questions that were considered during three development stages of the TSP.

FIGURE 5: PERFORMANCE BASED PLANNING PROCESS

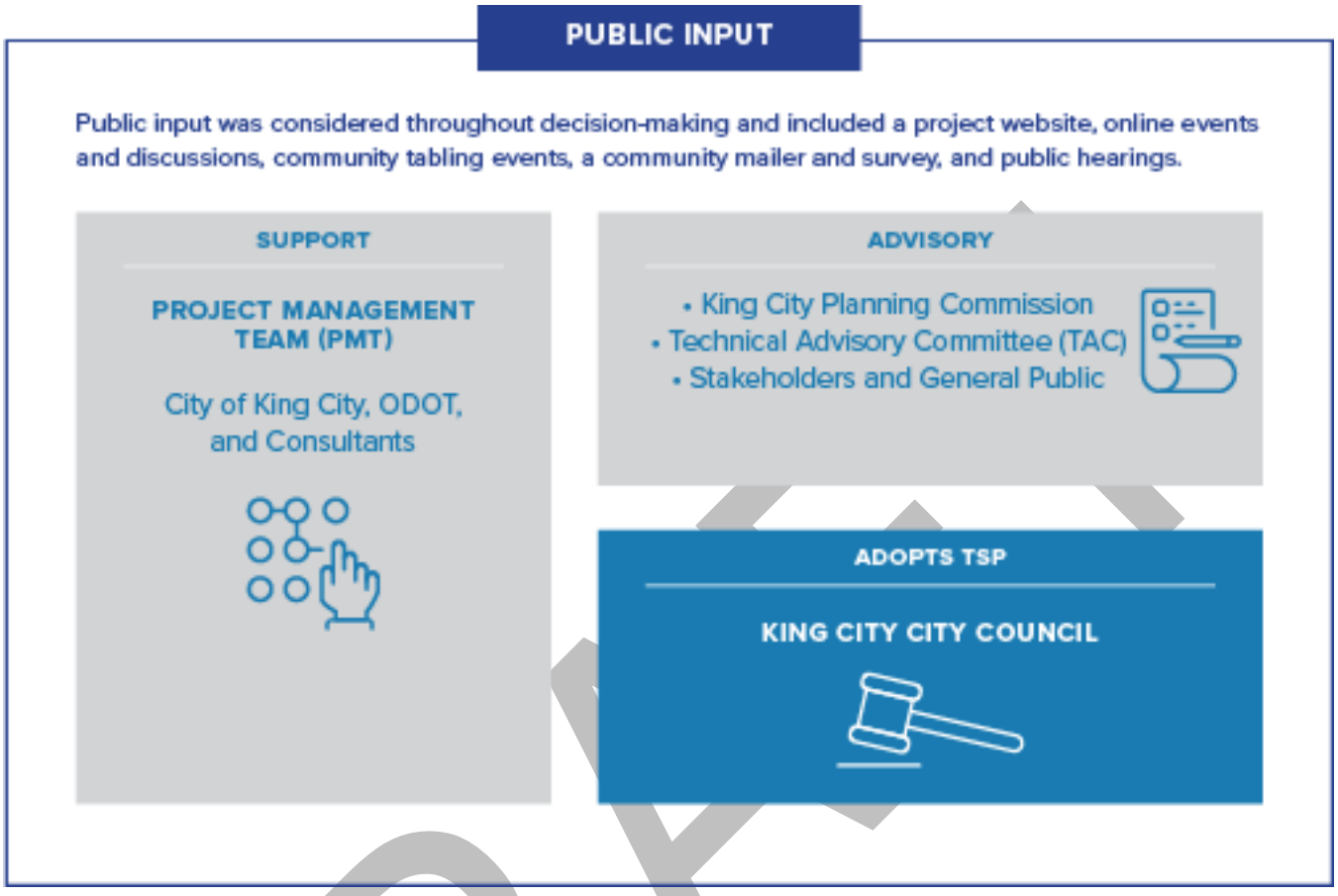
DECISION MAKING STRUCTURE

The decision-making structure for this TSP was developed to establish clear roles and responsibilities throughout the project. The decision-making structure (Figure 6) established a framework for broad-based community engagement for the project.

As the TSP was developed, the Project Management Team (PMT) worked with a Technical Advisory Committee (TAC) that included local business representatives, emergency service and transit providers, and agency staff members from the City of King City, Washington County, City of Tigard, City of Beaverton, the Oregon Department of Transportation, Metro, and the Oregon Department of Land Conservation and Development. The TAC was formed to provide community-based recommendations, and informed and guided the plan by reviewing draft deliverables, providing insight into community perspectives, commenting on technical and regulatory issues, and providing recommendations for the TSP.

The City Council and Planning Commission for King City were briefed during the development of this plan throughout the process. The PMT made recommendations to the City Council based on technical analysis and community input. The City Council made all final decisions pertaining to this TSP and is expected to adopt it sometime during 2023. The adoption of the TSP will be coordinated with the development and adoption of the Kingston Terrace Master Plan, which is scheduled for completion in 2023.

FIGURE 6: KING CITY TSP ROLES AND RESPONSIBILITIES



PUBLIC ENGAGEMENT

Public outreach was conducted between September 2020 and June 2021 to share information about the TSP project. Community members, stakeholders, and other interested parties were invited to share their ideas and feedback about how people currently get around, what can be improved, and potential transportation projects. This feedback was instrumental in guiding the development of the TSP, including a list of transportation projects, which will continue to be further refined through the Kingston Terrace Master Plan project.

TABLING EVENT WHERE PEOPLE COULD TALK TO STAFF AND PROVIDE INPUT ON PROJECTS

The Public Engagement Plan for the TSP, included in the Appendix, considered the demographic makeup of the project study area to inform outreach activities. Due to the COVID-19 pandemic, several engagement opportunities were adapted (virtual, in-person and by mail) to enable community members to safely participate and provide meaningful input. Approximately 350 people participated through a variety of outreach opportunities. These opportunities are summarized in Figure 7. These engagement opportunities were promoted through social media posts on the King City Facebook page, Nextdoor, Twitter, and Instagram, updates on the project website, postcards mailed to residents within the planning area, emails sent to interested parties, stakeholders, and community organizations, and press releases.

FIGURE 7: PUBLIC ENGAGEMENT FACTS

2 **ONLINE OPEN HOUSES** WITH A TOTAL OF 317 PARTICIPANTS

MAIL-IN SURVEY SENT TO ALL RESIDENTS WITHIN KING CITY CITY LIMITS AND UGB, WITH OVER 237 MAILED BACK TO THE PROJECT TEAM

FEEDBACK MAP OFFERED IN BOTH THE FIRST ONLINE OPEN HOUSE AND THE MAILED-IN SURVEY, RECEIVED 709 LOCATION-SPECIFIC COMMENTS

85 **APPROXIMATELY 85 ATTENDEES** OVER 2 IN-PERSON TABLING EVENTS

PROJECT WEBSITE WITH PROJECT UPDATES

SUMMARY OF COMMUNITY FEEDBACK

Overall, participants expressed satisfaction with the City's transportation network, particularly the street, walking, and biking networks. Most participants indicated that they predominantly use a car to get around, so there were relatively few comments regarding transit service. A complete summary of the outreach efforts can be found in the Appendix.

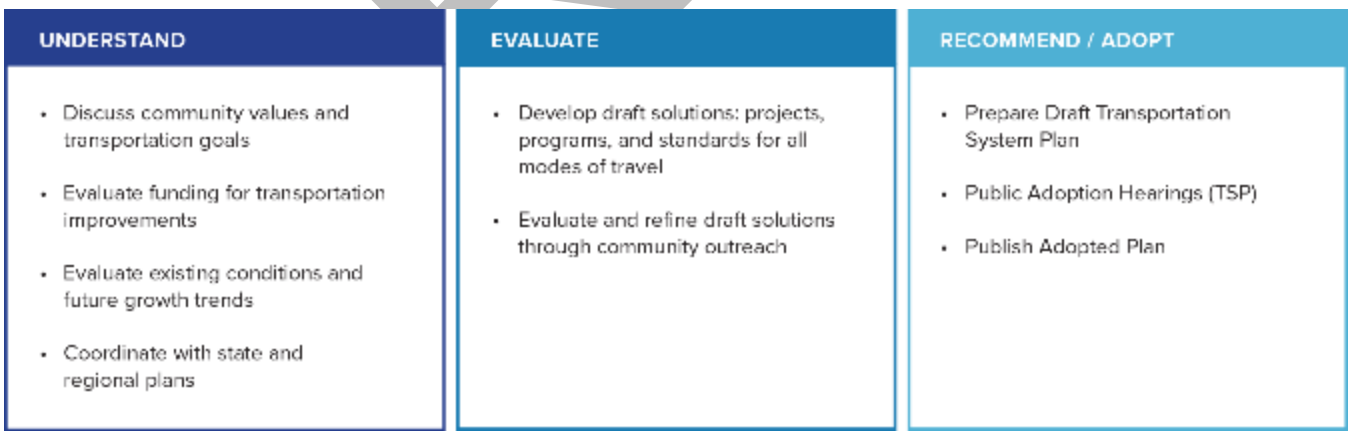
Common themes:

- **Safety of pedestrians and bicyclists.** Many expressed a desire to see more walking and biking trails throughout the City, preferable separated from vehicle traffic.
- **Traffic and potential impacts to neighborhoods.** Many residents expressed concerns with expected population growth in the UGB expansion area (Kingston Terrace) and the potential impact it could have on the level of traffic on existing streets.
- **Vehicles travelling unsafe speeds**. Many noted that speeding was already a problem and were worried it would get worse with increased vehicular traffic.
- **Desire to remain isolated and exclusive**. Many residents expressed concerns about a connected street network, preferring instead long cul-de-sacs or loops that feed back to Beef Bend. Many participants were concerned that an extension of SW Fischer Road or SW Capulet Lane would negatively impact the Edgewater and Rivermeade communities and suggested that instead other alternatives be considered such as widening SW Beef Bend Road to accommodate east/west vehicle traffic.

TECHNICAL DEVELOPMENT

Figure 8 illustrates the technical tasks involved in creating the TSP. These are categorized in three major stages: the first to understand system needs and constraints, the second to develop solutions, and the third to prepare and adopt the plan. Community input guided the TSP development through all stages.

FIGURE 8: KING CITY TSP DEVELOPMENT TECHNICAL TASKS



CHAPTER 3.

King City Transportation System Today & Tomorrow

This chapter describes the transportation system as it exists and operates today and in the future. The assessment is used to identify community transportation needs and determine where the transportation system can be improved to better accommodate them. Needs were determined based on a comprehensive multimodal existing conditions analysis and projecting future conditions through the planning horizon (2040) based on assumed growth in households and employment, and the transportation standards from Chapter 4.

FACTORS IMPACTING TRAVEL DECISIONS

Travelers often weigh a variety of factors when deciding how to commute to or from their destination. Whether the trip will be via motor vehicle, walking, bicycle, public transportation, golf cart, scooter, or other mode, the choice is often a balance between ease and convenience of travel, travel cost, and travel time.

LAND USE AND KEY DESTINATIONS

Land use is a key component of transportation system planning. Where people live and where they go to work, shop, or access services and the distance between these key destinations has a big impact on how they get around and the demands they place on the transportation system. The King City Town Center on both sides of OR 99W, and the future town center in Kingston Terrace along SW Beef Bend Road and SW Roy Rogers Road will be the biggest employment centers in King City, while residential land uses will be located between these employment areas.

Many trips also occur between community amenities within the City's planning area, including parks, civic (e.g., schools, libraries, community centers), essential retail and services (e.g., grocery stores, pharmacies), and medical uses. These amenities are primarily located in the King City Town Center, on both sides of OR 99W. In addition, the King City Community Park is located at the south end of the City along the Tualatin River, while Deer Creek Elementary School is located at the north side along SW Beef Bend Road (see the Appendix for the location of these destinations). Future community amenities will also likely be built as development occurs in the Kingston Terrace area.

Those destined for a park or school generally have a higher likelihood to walk or bicycle than those going to work or shopping. The distance of that destination also plays a role in mode choice. Trips that are shorter generally present a better opportunity to walk or bicycle, and longer distance trips more often are conducive to transit or motor vehicle modes. Residents in the City's planning area who work outside of it (as well as people who work in the City's planning area but live elsewhere) are likely to commute by motor vehicle due to travel distance, commute time, and/or lack of adequate facilities. However, some commuters may choose bicycling or transit if the regional transportation system offers convenient and comfortable biking facilities or transit services between destinations.

QUALITY AND AVAILABILITY OF FACILITIES

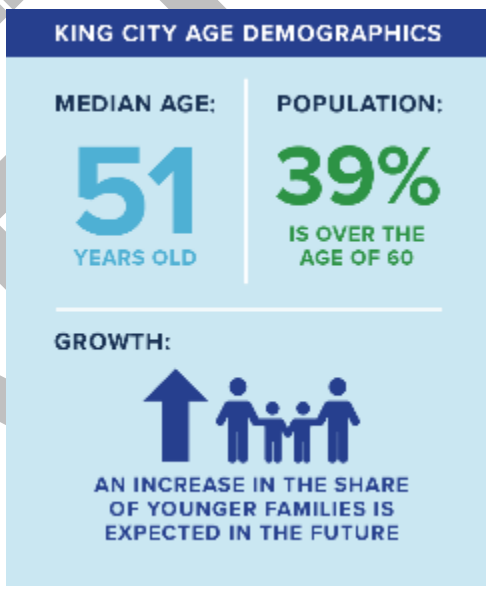
The availability of sidewalks, shared-use paths, curb ramps to provide wheelchair access, crosswalks, and bicycle facilities increases the comfort and access of those walking and biking. The lack of or poor quality of these facilities, particularly along or across higher volume or higher speed roadways, discourages people from utilizing non-motorized vehicle modes of transportation.

For transit, the distance to bus stops, frequency of service, route coverage, connections to other transportation modes, and amenities at stops are some of the factors that play a role in a user's decision to utilize it.

DEMOGRAPHICS

As shown in Table 1 and Figure 9, residents of King City have a median age of 51, with about 39 percent of all residents within the peak working age range (i.e., ages 25 to 59) and about 39 percent of the population over the age of 60. Both age demographics are significantly different than those of the region and state, with the City accounting for 10 percent fewer working aged residents and nearly a 20 percent larger share of residents aged over 60.

FIGURE 9: KEY DEMOGRAPHICS



As growth continues in the City, particularly in the Kingston Terrace area, it will likely result in an increase in the share of younger families, similar to that of the region and state. Although the City will always have a significant share of older residents given its retirement community origins. With the shifting age demographic, the City will continue to see people of all ages and abilities walking, biking, and using transit. It will also continue to see a lower share of work commute trips when compared to other cities in the region given the significant retirement community.

TABLE 1: KING CITY AGE DEMOGRAPHICS

AGE	KING CITY	WASHINGTON COUNTY	OREGON
UNDER 19 YEARS	23%	32%	31%
20-24 YEARS	4%	6%	7%
25-44 YEARS	22%	30%	27%
44-59 YEARS	17%	20%	20%
60 YEARS AND OLDER	39%	18%	23%
MEDIAN AGE	**51.4**	**36.4**	**39.2**

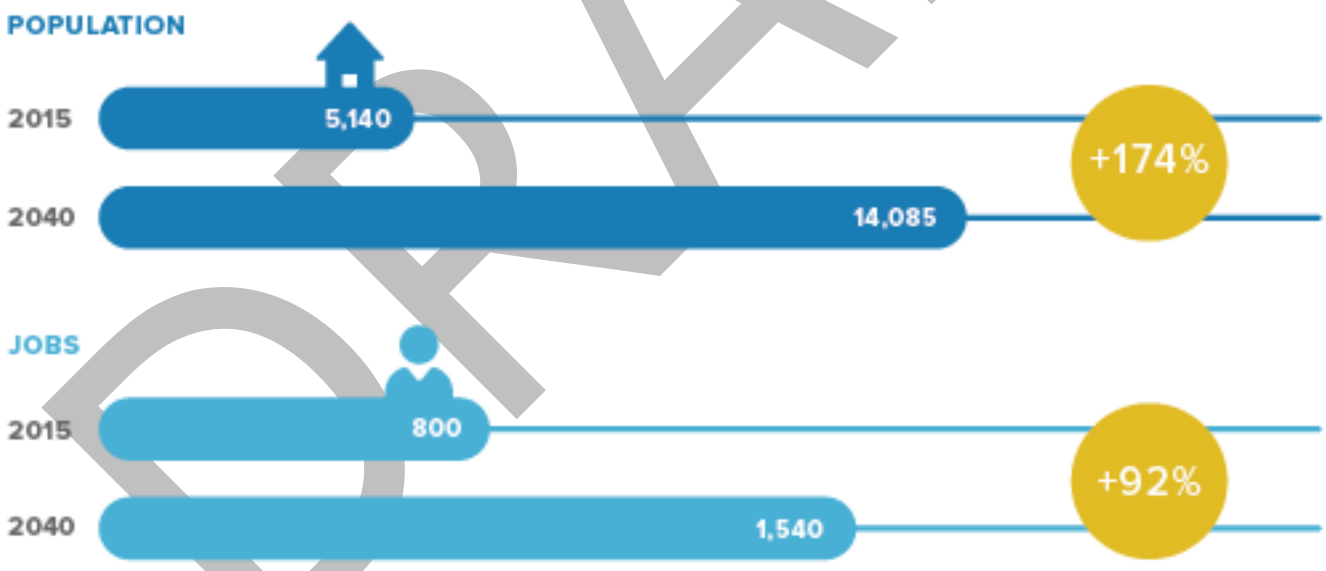
POPULATION AND EMPLOYMENT GROWTH

As growth occurs to the year 2040, the demands on the City's transportation system will be influenced by changes in population, housing, and employment. These changes in travel demands will require better ways to manage the system, more choices for getting around, and targeted improvements to make the system safer and more efficient.

The King City planning area is growing, and it is estimated that about 8,945 more people will live here by 2040. Coupled with the current estimated population of 5,140 for the King City planning area, the population in 2040 is forecast to be about 14,085. This includes an estimated 4,125 new households by 2040, for a total of 6,990 [1].

There are currently about 800 jobs in King City's planning area, and that total is estimated to increase to 1,540, with 740 more people working in the City's planning area by 2040 (see Figure 10). Projections for job growth indicate that the King City Town Center along OR 99W, and the future town center in Kingston Terrace along SW Beef Bend Road and SW Roy Rogers Road are likely to be the biggest employment centers in King City.

FIGURE 10. KING CITY PLANNING AREA POPULATION AND JOB GROWTH TRENDS



Source: Washington County 2015 and 2040 Westside Focus Area Travel Demand Models; based on the King City planning area.

[1] The land use assumptions (population, household and jobs) for all planning area Transportation Analysis Zones (TAZs) were updated based on growth for 2050 as recommended by the TAC and reflected in the Land Use Assumptions Report in the Appendix. The land use assumptions for TAZs in Tigard's River Terrace West and South areas were also updated to reflect the latest assumptions from that process (i.e., 4,541 housing units and 460 jobs).

TRAVEL DEMANDS AND CHARACTERISTICS

The number of people who choose to walk, bike, ride transit, or drive along with the distances they travel is important for assessing how well existing transportation facilities serve the needs of users. Available data on travel demand, travel mode choice, and trip length are used to better understand travel behavior in the community and inform the needs analysis for the transportation system. This data is largely derived from Washington County's Westside Focus Area Travel Demand Models, which is based on Metro's Travel Demand Model. Additional data is available from the US Census Bureau on employment-based trips; however, no other travel data is available from this source.

The following sections provide a summary of travel demands and characteristics in the City's planning area.

DAILY PERSON TRIPS

The increase in the number of residents and jobs in the King City planning area increases the overall number of person trips generated. Table 2 summarizes the total person trips (i.e., drive alone, shared ride, transit, walk, and bike trips) during an average weekday in the King City planning area for year 2015 and 2040. The transportation network in the planning area accommodates nearly 23,000 person trips during an average weekday as of 2015, and that number is estimated to increase by over 11,000 through 2040, to 34,148 daily person trips if the land develops according to the land use assumptions during an average weekday. Of these daily person trips in 2015, over 2,300 were bike, walk, or transit trips, and that amount is expected to increase by nearly 70 percent through 2040, to 4,003 daily trips. Drive alone trips (i.e., single occupant vehicle) are expected to increase by over 5,000 through 2040 during an average weekday, but this represents the smallest growth rate of all modes, at 43 percent. This is representative of the increase in jobs available in the planning area, and corresponding increase in retail or other destinations in closer proximity to households.

TABLE 2: PERSON TRIPS IN KING CITY PLANNING AREA

AVERAGE WEEKDAY PERSON TRIPS BY MODE	2015 DAILY PERSON TRIPS	2040 DAILY PERSON TRIPS	DAILY GROWTH (2015-2040)	DAILY GROWTH RATE (2015-2040)
DRIVE ALONE TRIPS (SOV)	12,044	17,220	5,176	43%
SHARED RIDE TRIPS	8,559	12,925	4,366	51%
TRANSIT TRIPS	1,210	2,110	900	74%
WALK TRIPS	846	1,324	478	57%
BIKE TRIPS	317	569	252	79%
TOTAL PERSON TRIPS	**22,976**	**34,148**	**11,172**	**49%**
TOTAL NON-SOV TRIPS	**10,932**	**16,928**	**5,996**	**55%**
TOTAL BIKE, WALK, TRANSIT TRIPS	**2,373**	**4,003**	**1,630**	**69%**

Source: Washington County 2015 and 2040 Westside Focus Area Travel Demand Models; based on the King City planning area.

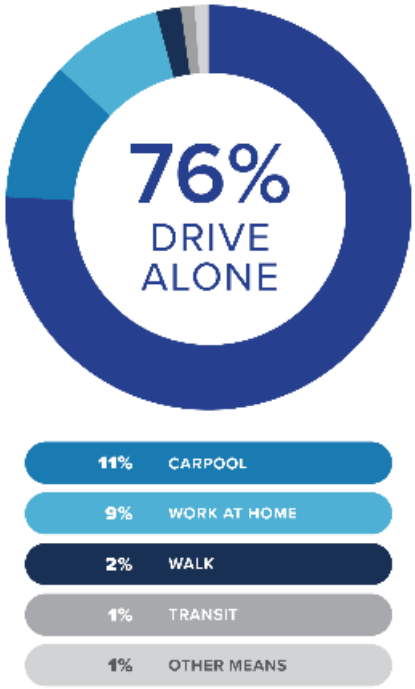
COMMUTER TRIPS

Much of the traffic in the King City planning area, especially during the more congested weekday peak periods, is related to employment. Residents in the King City planning area who are employed overwhelmingly commute to work outside of the planning area (98 percent), while jobs in the planning area are overwhelmingly filled by people who live outside of the planning area (94 percent)[2].

On average, almost 76 percent of employed residents in the King City planning area commute to work using single-occupant motor vehicles. About 11 percent of residents carpool to work and the remaining 13 percent work from home, walk, take transit, or use some other means of travel (see Figure 11).

About nine percent of employed residents in the King City planning area worked from home pre-COVID, and that figure likely increased due to COVID-19. It is not yet known how many of those workers will continue to telework after the threat of COVID-19 passes, but it seems likely that a higher percentage of workers will continue teleworking, at least part time. Any increase in the remote work share will change the demand on streets, including when and how they travel.

FIGURE 11: KING CITY PLANNING AREA COMMUTER MODE SHARE



Source: US Census Bureau, 2015-2019 American Community Survey

[2] US Census Bureau, OnTheMap. Home/Work Distance/Direction Analysis, 2018.

TRANSPORTATION SYSTEM FACTS

To address changing transportation needs within the City's planning area though 2040, the existing and future travel conditions must be considered. The transportation system review documented the existing pedestrian, bicycle, transit, and motor vehicle infrastructure. It also identified shortfalls and limitations regarding how people can travel within the City (such as lack of bike lanes or sidewalks). Solutions are identified in Chapter 5 for transportation infrastructure that is determined to not maintain acceptable service levels for residents.

STREET NETWORK

This TSP is less focused on reducing vehicle congestion, and instead addresses vehicle speeds, vehicle flow, and safety for everyone using the street. Traditionally, agencies have widened streets to respond to traffic congestion. But widening does not always work to reduce congestion in the long term. Widening is costly, has negative effects on adjacent properties, and makes the street even less safe and inviting for walking and biking. This TSP uses widening to add capacity as only the last option to respond to vehicle congestion issues, consistent with the regional requirements summarized in Figure 3 from Chapter 1. Instead, the TSP emphasize redesigning streets to slow vehicles and increase safety. The design of a street influences how a person drives more than the actual posted speed limit. For this reason, this TSP includes street standards designed so that vehicles operate more slowly, with projects to add roundabouts or mini roundabouts at intersections, center turn lanes and medians, and narrow travel lanes (i.e., 10 feet).

KEY STREETS

Major streets border the planning area, including:

- OR 99W (ODOT jurisdiction) that runs north-south along the east edge and provides a major connection with Tigard and Portland to the north, and Sherwood and McMinnville to the south.
- SW Roy Rogers Road (Washington County jurisdiction) that runs north-south at the west end, connecting SW Scholls Ferry Road to the north with OR 99W to the south in Sherwood.
- SW Beef Bend Road (Washington County jurisdiction) that runs east-west to the north and connects OR 99W with SW Roy Rogers Road.

Key streets that connect to OR 99W and provide access to neighborhoods are SW Royalty Parkway, SW 116th Avenue (SW Durham Avenue), and SW Fischer Road. Key streets that connect to SW Beef Bend Road include SW 116th Avenue, SW 131st Avenue, SW 137th Avenue, SW 150th Avenue, and SW Elsner Road. Existing connections to SW Roy Rogers Road are limited to SW Beef Bend Road and SW Elsner Road.

The regional connectivity requirements from the Metro Regional Transportation Plan require, to the extent possible, Arterials to be spaced at one mile intervals and Collectors to be spaced at half mile intervals, and Neighborhood or local streets to be provided at least every 530 feet (see the Appendix for more information). Streets within the current City limits largely comply with these standards, with SW Fischer Road and SW 131st Avenue serving as Collectors and OR 99W and SW Beef Bend Road serving as Arterials. However, several gaps were identified within the Kingston Terrace area, including:

- East to west connections between the current City limits and SW Roy Rogers Road, south of SW Beef Bend Road.
- North to south connections to SW Beef Bend Road, north of the Tualatin River.

The conceptual locations of future Collector and Neighborhood Routes have been identified to complete these gaps (see Figure 39 and Table 13 in Chapter 5). The alignments shown for these streets are preliminary and will continue to be refined through the Kingston Terrace Master Plan process and through the typical development review process. Two large scale widening projects are anticipated for SW Roy Rogers Road (expansion to five-lanes) and SW Beef Bend Road to three-lanes west of SW 131st Avenue. These are some of the biggest and most costly projects in this TSP and will be funded through a variety of agency partners. Other reconstruction projects in this TSP include adding bike facilities, sidewalks, enhanced crosswalks, lighting, landscaping, and stormwater facilities.

LOCAL STREET CONNECTIVITY

Connecting the street grid is critical to achieve the goals outlined in this TSP. This means connecting dead end streets and building new streets as land develops. New street connections distribute traffic and provide more route options. This is important for reducing greenhouse gas emissions and improving emergency responses. Also, a grid of smaller streets and shorter blocks is especially important for making it easier to walk, bike, and get to bus stops.

Most new Local streets will be built by new private development. When a private development project is approved, the builder or developer is required to provide a street network that complies with the standards included in Chapter 4. The connectivity standards require streets to be provided at a minimum spacing of 530 feet in most cases, consistent with regional requirements (see the Appendix for more information). These Local streets occur at more frequent intervals and are spaced closer than the larger streets (i.e., Arterial or Collector streets).

Local street connectivity in the current City limits was reviewed to identify areas that do not comply with the maximum street spacing standard of 530 feet. The major areas lacking connectivity include:

- The King City Golf Course. This limits east to west and north to south connectivity within the King City Civic Association area. This barrier also limits direct east to west routes to the King City Town Center from other areas of the City.
- Between SW King Richard Drive and SW Fitzwilliam Court.
- Between the King City Highlands neighborhood and the King City Civic Association. No east to west connections are available between SW Beef Bend Road and SW Morocco Drive.
- Between SW 131st Avenue and SW 137th Avenue, near Deer Creek Elementary School. The Mountain View Mobile Estates neighborhood prevents east to west connection in the area.
- Between SW 131st Avenue and SW Versailles Road, south of SW Fischer Road. The Eldorado Mobile Villas, King Village, and neighborhoods east of SW 131st prevent east to west connections in the area.

Should new development occur in any of these or other developed areas of the planning area, the connectivity standards in Chapter 4 should be met.

STREET NETWORK PERFORMANCE ASSESSMENT

Congestion and safety for all modes was reviewed at intersections and streets in the City's planning area. This assessment shows how safe and efficient the street system is and provides information to identify needed improvements for the TSP.

Street Network Congestion

This assessment identified locations on the roadway network that operate above thresholds for congestion under current and future conditions. These are locations where motorists experience significant delay. These thresholds, identified in Chapter 4, provide a metric for assessing the impacts of new development on the transportation system and for identifying where capacity improvements may be needed. They are the basis for requiring improvements needed to sustain the transportation system as growth and development occur.

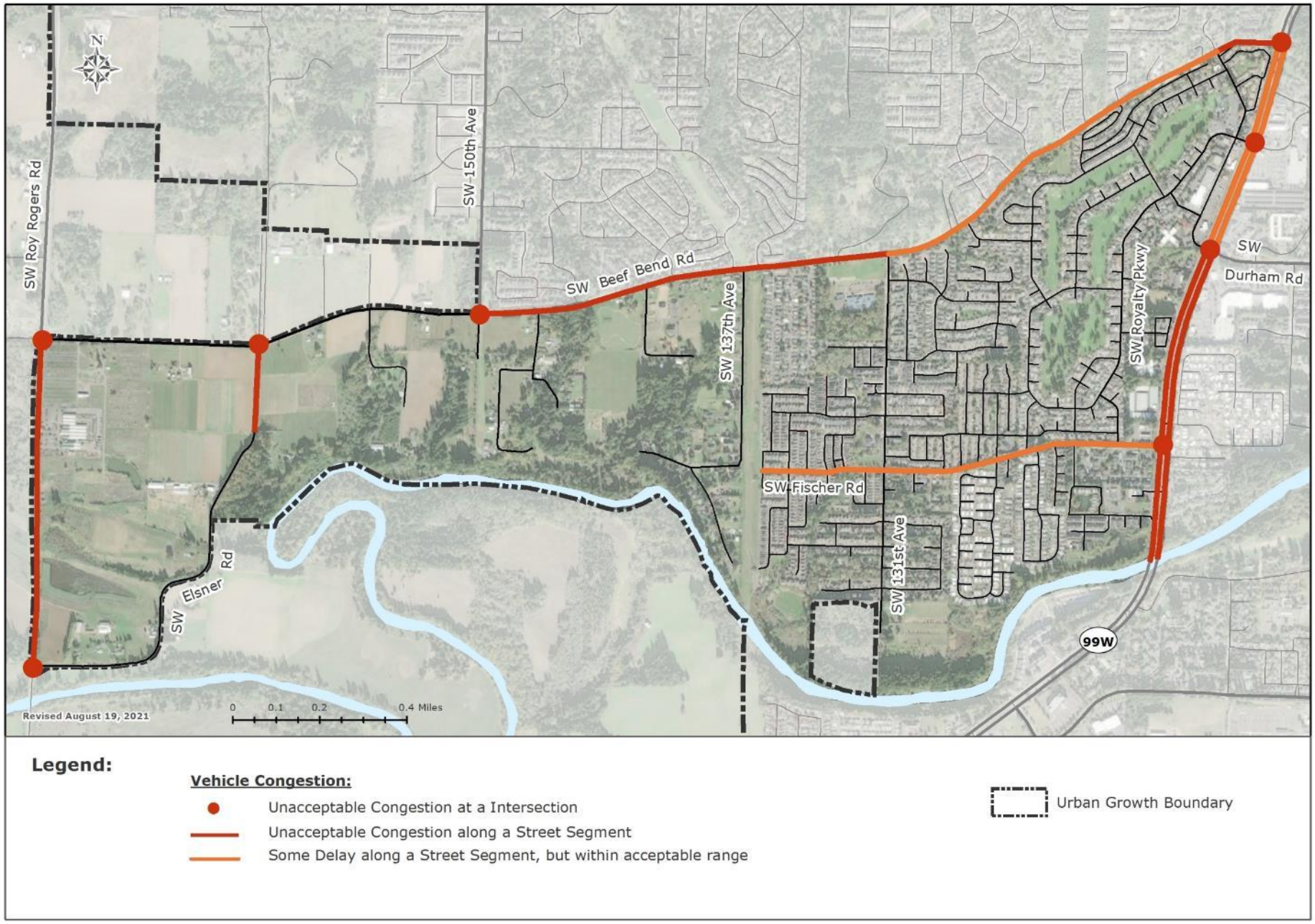
Figure 12 displays the results of the congestion analysis. The displayed conditions assume no improvements to the current street network. As shown, some minor congestion is expected along segments of OR 99W, SW Beef Bend Road and SW Fischer Road, while significant vehicle delay is expected along segments of OR 99W, SW Beef Bend Road, SW Roy Rogers Road and SW Elsner Road in the planning area.

In addition to these street segments, several intersections along Arterial streets are expected to be severely congested by 2040 during the weekday p.m. peak hour. This includes most intersections along OR 99W through King City, and several intersections along SW Beef Bend Road and SW Roy Rogers Road at the west end of the planning area where high growth is expected through 2040 (see Figure 12).

Delay for pedestrian and bicyclists at intersections has also been identified as a significant constraint for these users through field observations and public input. High delay occurs at signalized OR 99W intersections, and delay occurs at many unsignalized intersections along SW Beef Bend Road through the planning area. Out of direct travel delay also occurs for these users to reach a legal or controlled crossing, specifically along OR 99W and Beef Bend Road, and at OR 99W intersections related to prohibited pedestrian crossings along one leg at the traffic signals.

The TSP includes conceptual intersection enhancements, and locations of future Collector and Neighborhood Routes that will help to provide additional travel routes through Kingston Terrace and alleviate some of the local traffic from these major streets. A project to widen SW Roy Rogers Road to five-lanes, and SW Beef Bend Road to three-lanes is also included (see Figure 39 and Table 13 in Chapter 5).

FIGURE 12: STREET NETWORK CONGESTION (2040)



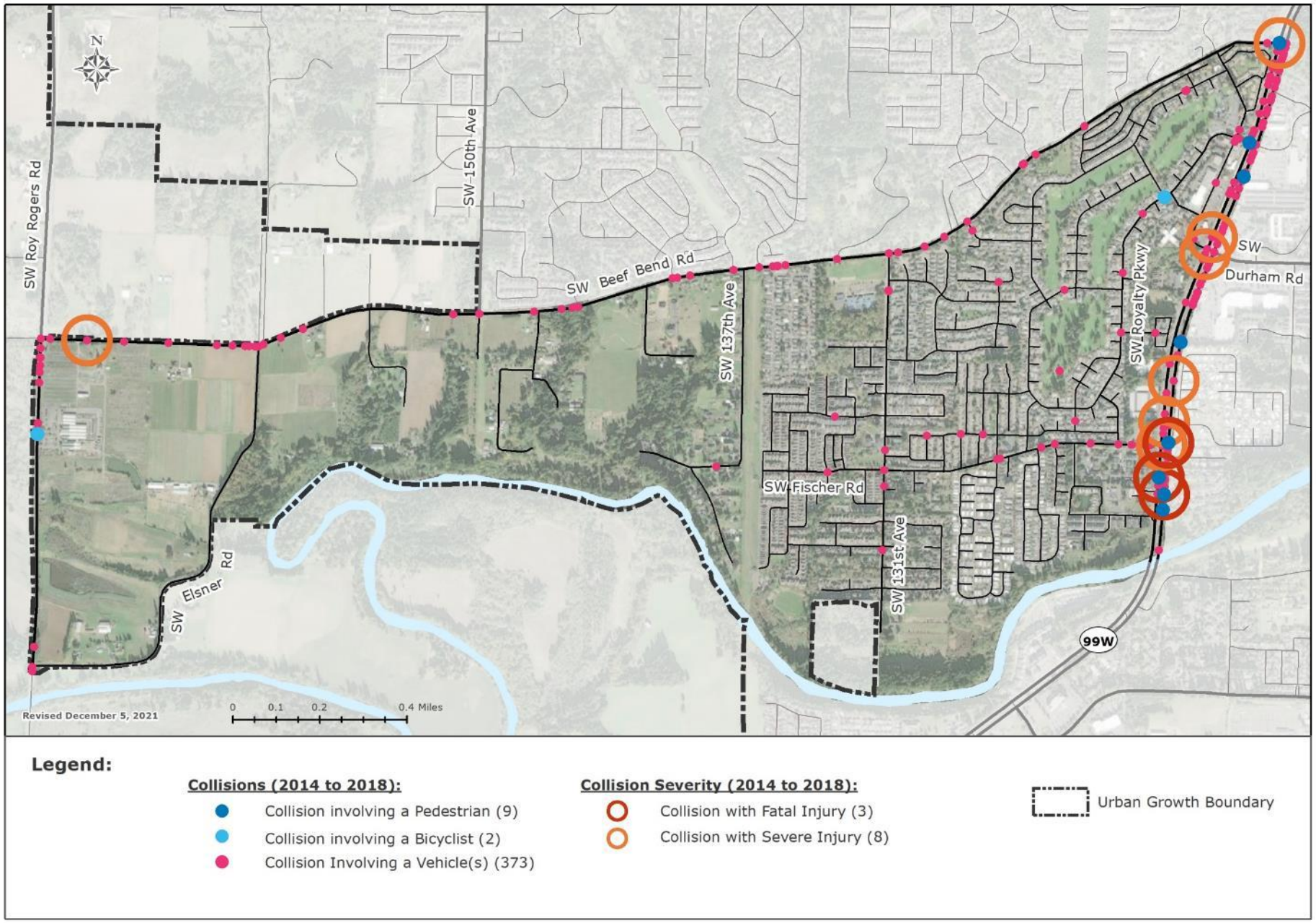
Street Network Safety

This assessment monitors the safety of travel in the planning area. It was used to track collision data over a 5-year period to provide trends related to total vehicle, pedestrian, and bicyclist collisions, fatal and severe injury collisions and total fatalities and severe injuries. Figure 13 shows data for the 5-year period between 2014 and 2018, with 384 collisions occurring in the City's planning area. Of these collisions, nine involved a pedestrian, two involved a bicyclist, and 373 involved a vehicle or multiple vehicles. All of the pedestrian collisions occurred along OR 99W, while the bicycle collisions occurred along SW Roy Rogers Road and SW Royalty Parkway. There were three fatalities, all pedestrians, and eight severe injuries, two of which were pedestrians. The fatalities occurred along OR 99W, near the SW Fischer Road intersection, with the pedestrian at fault in two of them, and the vehicle at fault in the third.

In addition, a safety analysis was evaluated for streets in the planning area. This included an analysis of collision rates at intersections and along street segments, and an identification of any top 10 percent ODOT Safety Priority Index System (SPIS) sites in the planning area. This analysis revealed that the entire segment of OR 99W through the planning area exceeded the statewide collision rate for similar facilities and identified OR 99W intersections with SW Beef Bend Road, SW 116th Avenue/SW Durham Road, and SW Fischer Road as safety focus areas.

The TSP includes several projects to improve this segment of OR 99W, specifically for pedestrians and bicyclists (see Figure 39 and Table 13 in Chapter 5). Another critical project is a regional study of the OR 99W Corridor through the planning area and neighboring jurisdictions, to develop a corridor-wide improvement plan to align the highway with the Commercial Corridor context zone from the ODOT Blueprint for Urban Design. Critical OR 99W focus areas in the planning area are expanded and improved pedestrian and bicycle crossings, improved access to transit, expanded pedestrian facilities and buffer from the vehicle travel way, protected and separated bicycle facilities, and improved traffic flow for vehicles and freight. Various projects in the TSP proposed along the highway through the planning area will likely be further refined in the future corridor study.

FIGURE 13: STREET NETWORK SAFETY



WALKING NETWORK

Walking supports healthy lifestyles, is an easy and economical way to travel, and is well suited for people of all ages and abilities. In this plan, "walking" and "pedestrian" are terms that include people who walk independently or use canes, wheelchairs, other walking aids, or strollers. Approximately two percent of commuters in the City walk to work, with one percent utilizing public transportation, which often includes walking at the beginning or end of the trip[3]. In addition to the work commute trips, walking trips are made to and from recreational areas, shopping areas, schools, and other key destinations in the City's planning area. Continuous and direct sidewalk connections to all key destinations and along all streets, in addition to safe crossing opportunities along major roadways, are essential to encourage walking and transit use.

The pedestrian network in the City's planning area, shown in Figure 14, is summarized in the following sections and is composed of sidewalks and pedestrian trails and accessways. An assessment of pedestrian facility gaps is also summarized later in this chapter.

SIDEWALKS

Many of the streets in the oldest City neighborhoods were initially built with narrow four-foot sidewalks. This width can make it difficult to walk side by side or maneuver with a wheelchair. Today, the City typically requires sidewalks on both sides of all new streets that are at least five feet wide. These slightly wider sidewalks are more accommodating to the needs of all pedestrians, including those in wheelchairs. This TSP continues to focus on completing needed sidewalks gaps and identifies priority routes for pedestrian travel that require even wider sidewalks between six and eight feet (i.e., streets with a Multimodal Area, Major Pedestrian or Neighborhood Pedestrian overlay; see Chapter 4 for more information).

TRAILS AND ACCESSWAYS

Trails or accessways can serve both recreational and transportation needs for pedestrians. Most are considered shared use paths and are well suited for citywide pedestrian and bicycle travel, and others offer only recreational opportunities for pedestrians. They can be separated or adjacent to the streets right-of-way and provide linear park facilities for pedestrian travel. Some provide shortcuts for people walking connecting a street to another street, a park, trail, or a major destination, like a school or shopping area.

[3] US Census Bureau, 2015-2019 American Community Survey

There is currently about one mile of trails or accessways in the City, including within King City Community Park and scattered throughout the residential neighborhoods. Many of these occur between two disconnected streets. This TSP encourages continuous street connections, but they are not always possible due to a variety of circumstances (see Chapter 4 for more information). For this reason, this TSP requires pedestrian accessways at spacing of no more than 530 feet along all streets, ensuring a pedestrian never has to walk more than 265 feet out of direction to access the next street (see Chapter 4 for more information). This standard may be met with public streets or accessways on public easements or rights-of-way.

In developing this TSP, pathways that will improve travel in the City were identified. This plan identifies nearly 5 miles of separated shared use paths, and about 7 miles of street adjacent shared-use paths to be built through 2040 (see Figure 39 and Table 13 in Chapter 5).

STREET CROSSINGS

Busy streets with fast moving traffic are a barrier to people walking or biking, which is why this TSP included projects to add enhanced crossings along Arterial and Collector streets (i.e., streets with the highest motor vehicle volumes and travel speeds) in common places where pedestrian travel is expected. Enhanced crossings are more than a crosswalk marking on the pavement. They may have traffic signals, flashing beacon systems, refuge islands, or bulb-outs. Today, there are 54 locations with marked crosswalks in the City's planning area, and all but one are within the current City limits. This TSP identifies 43 places where enhanced or improved crossings are needed within the City's planning area (see Figure 39 and Table 13 in Chapter 5). This includes crossing enhancements along the OR 99W and SW Beef Bend Road corridors. These crossing locations and improvements may shift as future development occurs and more information becomes available regarding crossing demand.

Marked crosswalks are located at the four traffic signals along OR 99W through King City, and they are spaced at intervals of at least 1,320 feet. This exceeds the commercial corridor Urban Context Design Guidance from the ODOT Blueprint for Urban Design, which suggests spacing of 500 to 1,000 feet between crossings. This spacing is also greater than the typical distance a pedestrian will walk and could result in out of direction travel for pedestrians wishing to cross OR 99W. Each of the existing highway intersections also prohibit pedestrian crossings along one leg to facilitate vehicle turning movements at the traffic signals, further increasing out of direction travel for pedestrians. This TSP includes a project to improve existing crossings and identifies three potential segments of OR 99W where crossings are needed to serve transit and nearby destinations (see Figure 39 and Table 13 in Chapter 5).

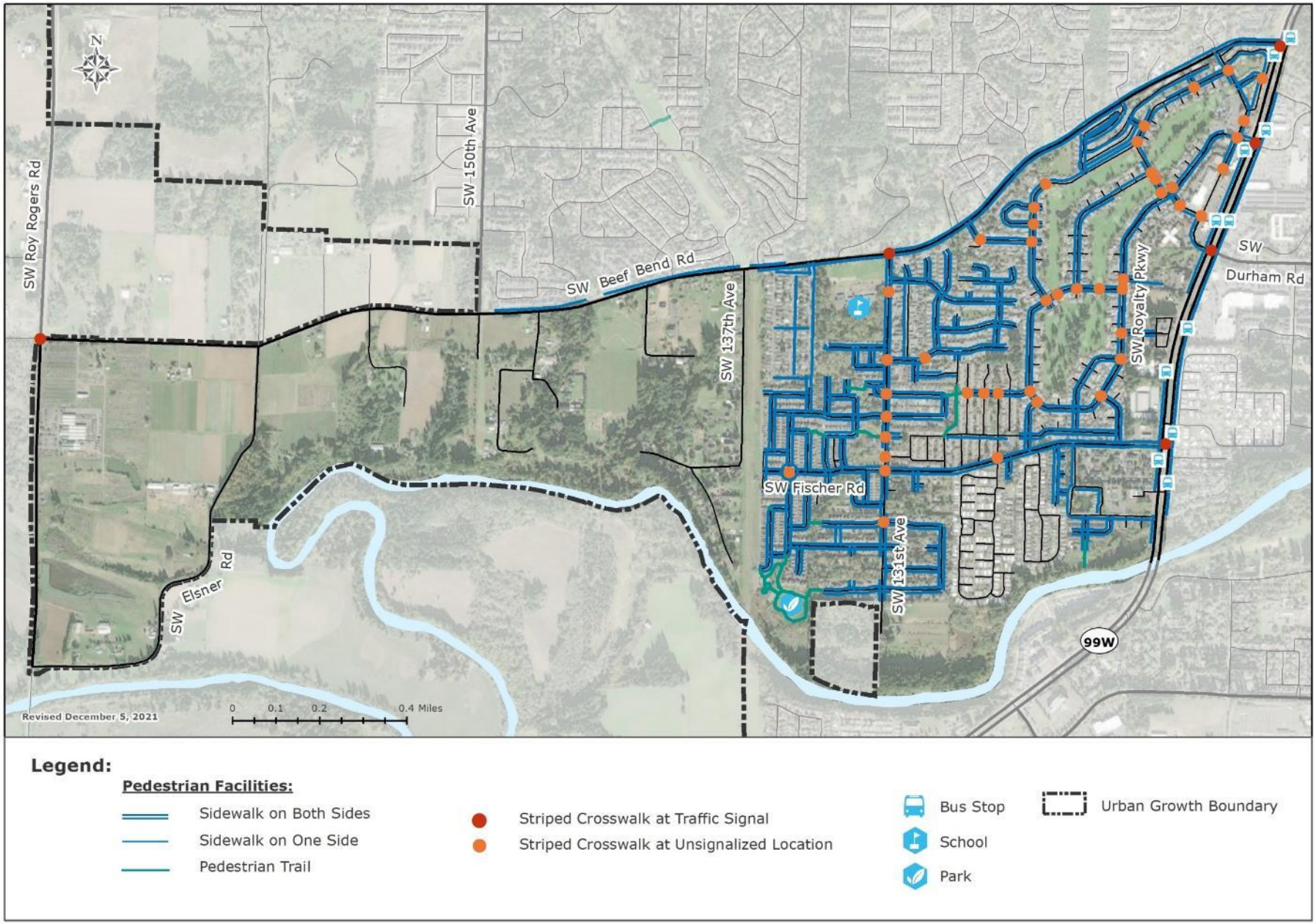
The SW 131st Avenue signalized intersection near Deer Creek Elementary School is the only marked crossing currently available along SW Beef Bend Road between OR 99W and SW Roy Rogers Road. More pedestrian activity is anticipated along SW Beef Bend Road, from a combination of pedestrian improvements and future development in the Kingston Terrace Master Plan area and Tigard's River Terrace on the north side of SW Beef Bend Road. Nine enhanced locations along SW Beef Bend Road are envisioned (see Figure 39 and Table 13 in Chapter 5).

Curb Ramps and Accessible Devices

Adding curb ramps and accessible devices to intersections or pedestrian crossings helps people with disabilities get around. Curb ramps make it easier for people using walking aids to get off and on a sidewalk. Adding accessible devices to traffic signals or beacons helps people with visual or hearing disabilities know when it is safe to cross the street.

The Americans with Disabilities Act (ADA) governs how we serve people with hearing, vision, and mobility disabilities. Many intersections in older parts of the City lack ADA compliant ramps, which provide important connections between sidewalks, making it easier to cross streets and handle the vertical drop at curbs. However, new curb ramps continue to be installed with recurring maintenance along streets in the City. While the presence of curb ramps is fairly consistent along streets in the King City Town Center, many of these are not ADA-compliant. This situation is complicated by the fact that many of the non-compliant streets and sidewalks are private. This TSP addresses how to make this area more accessible to people with disabilities by prioritizing curb ramp and sidewalk improvements here (see Figure 39 and Table 13 in Chapter 5).

FIGURE 14: PEDESTRIAN FACILITIES



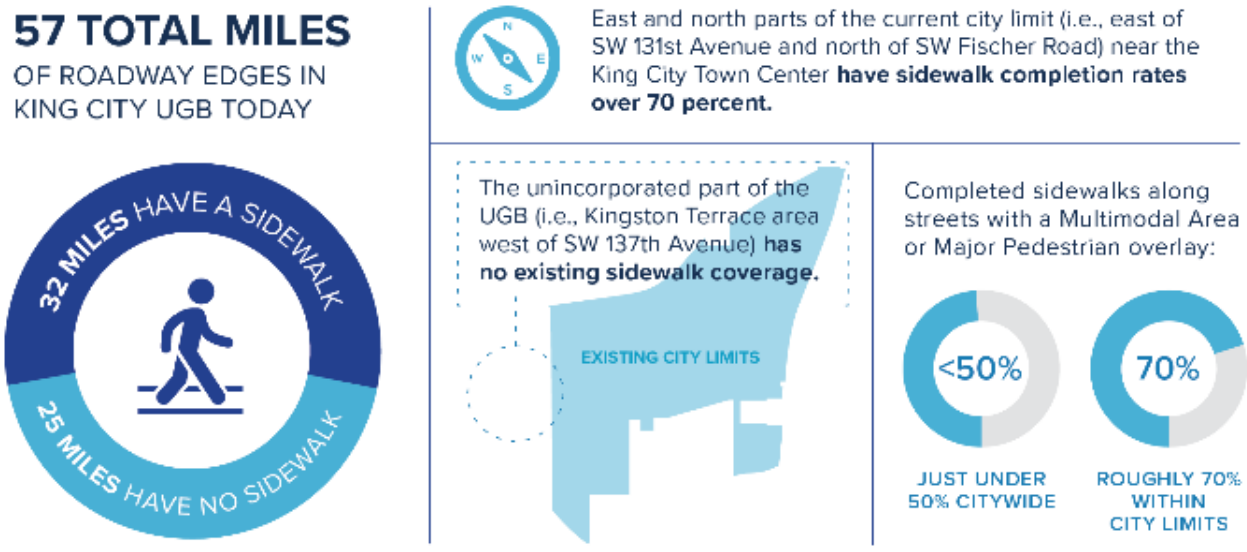
PEDESTRIAN FACILITY GAPS

As shown in Figure 14, the pedestrian network is fairly complete within the current City limits, with most residential development having a full sidewalk system with relatively few gaps. However, the pedestrian network in the planning area beyond the current City limits is less developed due to the rural nature of most existing land use. Critical gaps in the planning area occur along a few segments of OR 99W and most of SW Beef Bend Road and SW Roy Rogers Road. Some gaps also occur along low volume and low speed local streets throughout the planning area, although in many cases this condition is acceptable, and is less critical than the gaps along the major streets. East to west travel is also constrained for pedestrians through much of the current City limits and to the future Kingston Terrace area by existing development.

Of the 57 miles of potential sidewalks along streets in the City's planning area today, currently 32 miles of them have a sidewalk, and 25 miles or about 45 percent do not have a sidewalk (see Figure 15). The east and north parts of the current City limits (i.e., east of SW 131st Avenue and north of SW Fischer Road) near the King City Town Center have sidewalk completion rates over 70 percent, while the unincorporated part of the planning area (i.e., Kingston Terrace area west of SW 137th Avenue) has limited sidewalk coverage. This analysis assumes all streets should have sidewalks on both sides, but in some cases low volume and speed streets may be suitable without a sidewalk or with a sidewalk on only one side.

Sidewalks along streets with a Multimodal Area or Major Pedestrian route designation (shown in Figure 26 in Chapter 4) are just under 50 percent complete citywide, but roughly 70 percent complete within the current City limits. Many of the sidewalk gaps along these streets in the Kingston Terrace area will be completed once projects within the TSP are completed with new development. The TSP also includes projects to complete the sidewalk gaps or improve existing sidewalk corridors along streets within the current City limits (see Figure 39 and Table 13 in Chapter 5).

FIGURE 15: KING CITY SIDEWALK FACTS



Sidewalk Coverage Near Transit

One-quarter mile walking distance has become an accepted distance for gauging a transit stop's walkable area. This distance is based on the distance people are typically willing to walk to transit. Transit access coverage is estimated based on the actual street network surrounding the stops as-the-crow-flies.

The sidewalk gaps are shown in Figure 18. Of the streets within one-quarter mile of existing transit service, about 15 of the total 42 street miles lack a sidewalk (or 36 percent of the street miles), as summarized in Figure 16. About 2 miles of these sidewalk gaps are along streets with a Major Pedestrian route designation, including portions of OR 99W, SW Beef Bend Road and streets within the King City Town Center. Most of the sidewalk gaps are located along Local Streets with Local Pedestrian route designations, which are streets with the lowest motor vehicle volumes and travel speeds. There are also gaps at several street crossings in these areas, particularly at OR 99W intersections where pedestrian crossings are prohibited along one leg to facilitate vehicle turning movements at the traffic signals, further increasing out of direction travel for pedestrians. See the Pedestrian Level of Traffic Stress discussion later in this chapter for more information on the condition of these crossings.

FIGURE 16: SIDEWALK COVERAGE NEAR TRANSIT

Sidewalk Coverage Near Community Amenities

Sidewalk gaps near community amenities were also evaluated, including the King City Town Center, King City Community Park, and Deer Creek Elementary School (see the Appendix for the location of these destinations). Using a walking time of 10-minutes to and from these community amenities (based on average walking speeds and comfortable walking distances), a Geographic Information Systems (GIS) network analysis feature was used to create 10-minute walksheds around these locations based on the actual street network.

The TSP identified about 16 miles of sidewalk gaps within the 10-minute walksheds of these community amenities, or about 38 percent of all potential sidewalks in these areas (see Figure 17). Most of these sidewalk gaps are near the King City Town Center, although some key gaps are also located along SW Beef Bend Road near Deer Creek Elementary (see Figure 18. There are also gaps at several street crossings in these areas, see the Pedestrian Level of Traffic Stress discussion later in this chapter for more information on the condition of these crossings.

FIGURE 17: SIDEWALK COVERAGE NEAR COMMUNITY AMENITIES

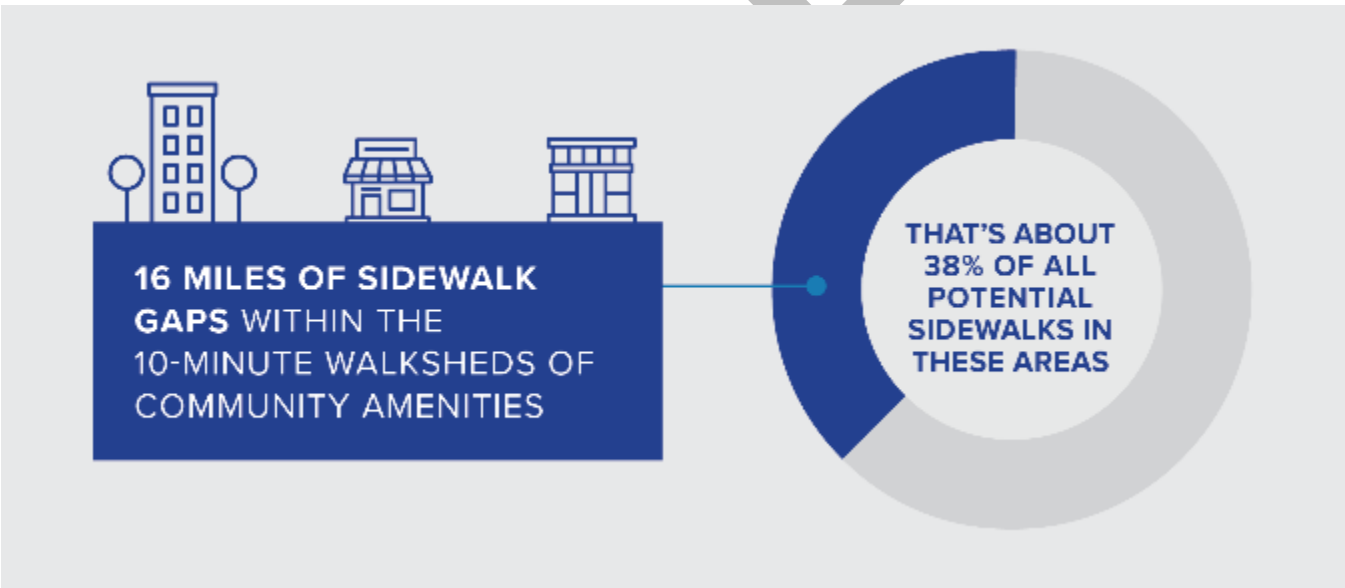
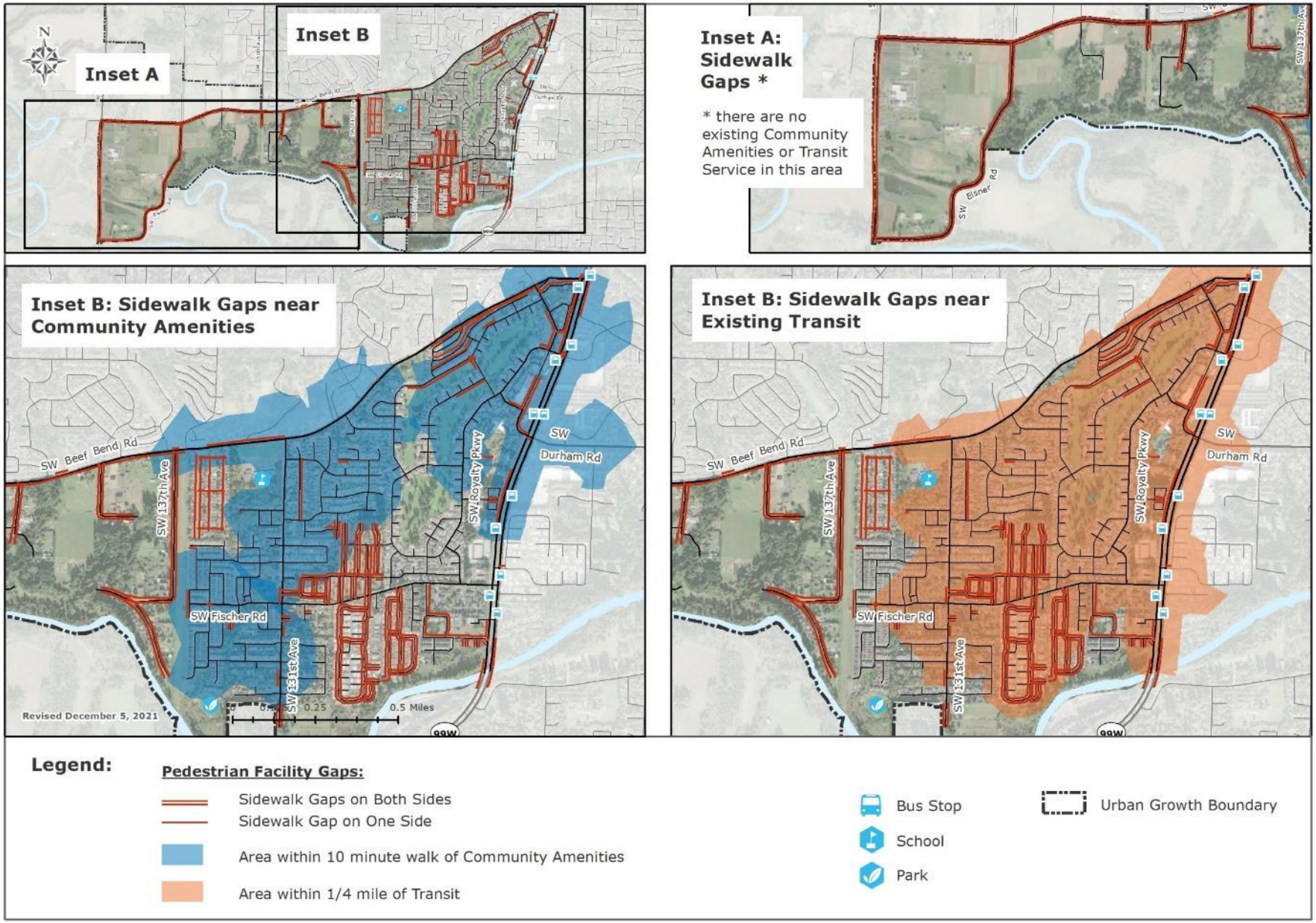


FIGURE 18: SIDEWALK GAPS NEAR EXISTING TRANSIT AND COMMUNITY AMENITIES



PEDESTRIAN LEVEL OF TRAFFIC STRESS

The pedestrian level of traffic stress (LTS) evaluation provides a metric to understand a multimodal user's perception of the safety and comfort of the transportation network. This method was used to understand key gaps and barriers to walking to be addressed through targeted improvements.

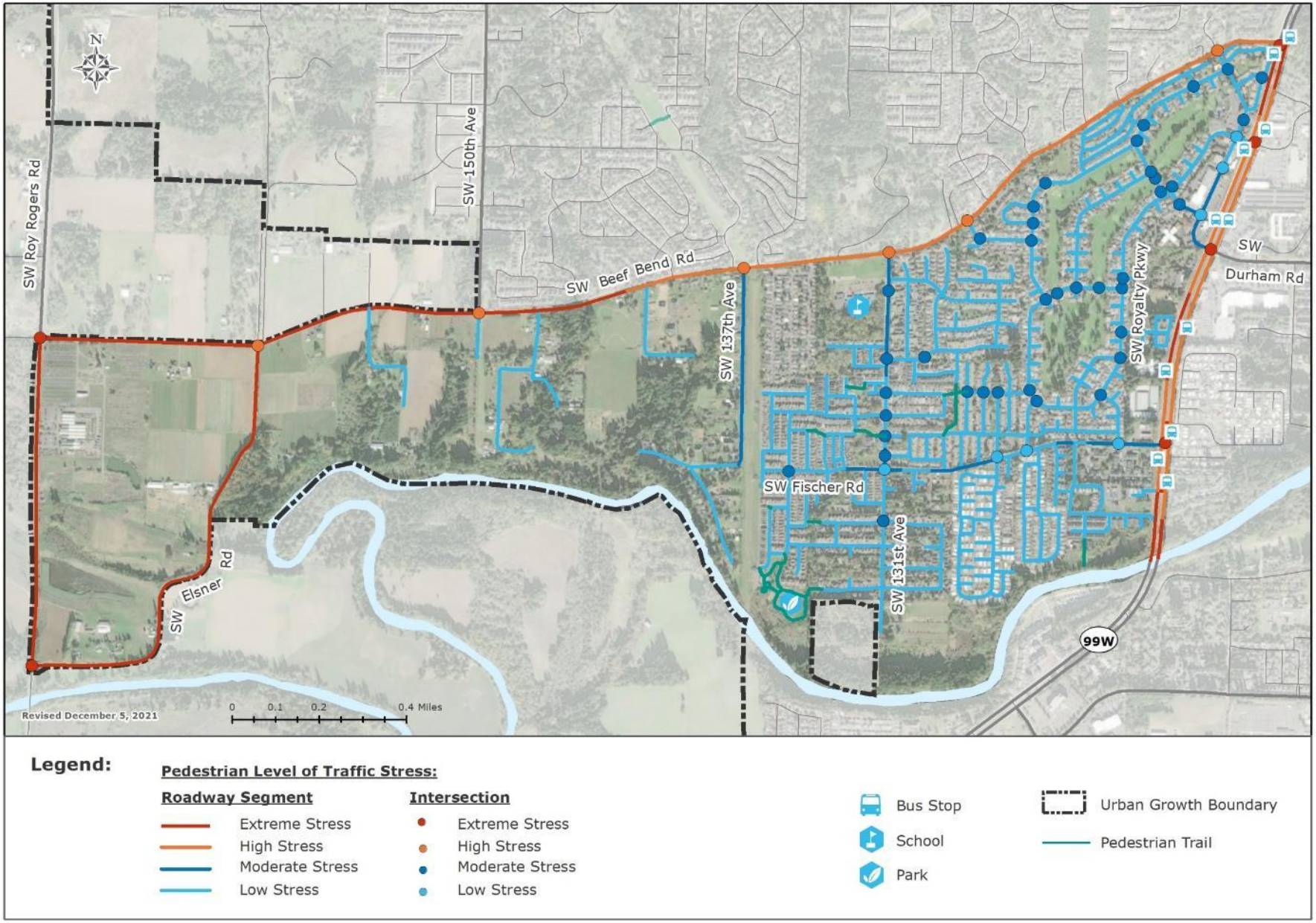
The LTS evaluation generates a ranking (i.e., low, moderate, high, or extreme stress) of the relative safety and comfort of a segment or intersection for pedestrians based on roadway and intersection characteristics (e.g., land use context, number of lanes, travel speed and volume, intersection control, type and width of buffer, and the presence and condition of any bicycle or pedestrian facilities). The LTS rating scale recognizes that as vehicle speeds and volumes increase, enhanced pedestrian facilities are needed to maintain a system that is accessible and comfortable for all users.

Results of the pedestrian LTS evaluation are summarized in Figure 19. A pedestrian walking along roughly 80 percent of streets within the City's planning area will experience a low or moderate level of stress. This is generally representative of the many low volume and speed streets. Extreme or high level of stress is experienced along 20 percent of streets, mainly those with the highest speeds and traffic volumes. This includes OR 99W, SW Beef Bend Road, SW Roy Rogers Road and SW Elsner Road. These are major multimodal streets (i.e., streets with a Multimodal Area or Major Pedestrian route designation) that are important for pedestrian travel, so this TSP places a higher priority for improvement projects along them consistent with the objectives of the respective pedestrian route designations.

As redevelopment and frontage improvements occur through 2040, particularly in the Kingston Terrace area, streets will be built to align with the standards outlined in Chapter 4. These standards require high-quality facilities, and an emphasis on safe, convenient, and comfortable travel in alignment with the multimodal level of traffic stress targets outlined in Chapter 4 to contribute towards a network wide lower stress pedestrian experience.

Equally important is the pedestrian experience while crossing streets. These locations are often when a pedestrian experiences some of the highest amount of stress and delay, particularly along major streets with high travel speeds and traffic volumes. Sixty-two intersections within the City's planning area were evaluated, with the results shown in Figure 19 (i.e., these included the 54 locations with marked crosswalks, as well as eight additional intersections without crosswalks along SW Roy Rogers Road, SW Beef Bend Road and SW Fischer Road). Not surprisingly, all intersections along the busiest streets (i.e., OR 99W, SW Roy Rogers Road and SW Beef Bend Road) have a pedestrian stress level of extreme or high, while the remaining 42 intersections have a low or moderate level of stress for pedestrians. As noted earlier in this TSP, 43 targeted locations are identified for enhanced or improved crossings (see Figure 39 and Table 13 in Chapter 5).

FIGURE 19: PEDESTRIAN LEVEL OF TRAFFIC STRESS



BIKING NETWORK

Bicycling is important for both transportation and recreation in the King City planning area. This includes people who bike to work and school, recreation, or running errands. Riding bicycles also plays a key role in the transportation system's ability to support healthy and active lifestyles and provide a viable alternative to the automobile. While walking tends to be a competitive choice for trips under half a mile, bicycling tends to be suited for longer trips of three miles or longer. King City's relatively compact size makes biking a great choice for many trips, with local jobs and housing typically in bikeable proximity.

This TSP includes projects to provide continuous bicycle connections between all key destinations that are essential for safe and attractive non-motorized travel options. It includes bicycle infrastructure that appeals to a wider range of people, both in age and ability. Many people want to bike, but they find riding near traffic in standard bike lanes stressful and unpleasant. This TSP includes a bicycle network of streets with Major Bicycle route designation facility standards designed to minimize interactions between people on bikes and car traffic (see Chapter 4 for more information). The network is designed so that everyone is within a quarter mile of one.

The bicycle network in the City's planning area, shown in Figure 20, is summarized in the following sections and is composed of bike lanes, roadway shoulders, shared roadways, and bicycle paths.

BIKE FACILITIES

The King City planning area has 5 miles of bike lanes along OR 99W, SW 131st Avenue, and SW Fischer Road and a shoulder bikeway along the segment of SW Roy Rogers Road between SW Beef Bend Road and SW Elsner Road. Most of the bike lanes are five feet wide and adjacent to the vehicle travel way, although two short segments of OR 99W include enhanced bike facilities in the form of buffered bike lanes. These widths and facility types do not align with the standards in this TSP for preferred bike facilities along these Major Bicycle routes (see Chapter 4 for more information), although additional improvements along them are largely hindered by existing development.

This TSP identifies over 6 miles of enhanced bike facilities within the planning area (see Figure 39 and Table 13 in Chapter 5). In addition, it also includes over 1.5 miles of conventional bike lanes to complete the network.

Most local streets in the City's planning area have slow speeds and few vehicles on them. When vehicular volumes and speeds are low, most people feel most comfortable bicycling in the shared roadway as they are able to maintain steady paths and riding speeds with limited pressure to move over for passing motor vehicles. Sometimes signs and pavement markings are added to these routes and the intersections with busy streets may be modified to make them easier to cross (e.g., adding all-way stop control or restricting vehicle movements). The planning area does not currently have any shared street improvements, but this TSP includes over 5.7 miles of shared street improvements along existing streets and about one mile along new streets (see Figure 39 and Table 13 in Chapter 5). Most of these corridors are located within the current City limits in areas

where existing development limits the build out of bike lanes, although some are along new streets in the Kingston Terrace area where low vehicular volumes and speeds are expected.

BICYCLE PATHS

The bike network is further knit together by using new and existing shared use paths and accessways. Shared use paths are well suited for citywide bicycle travel and can be separated or adjacent to the streets right-of-way and provide linear park facilities for bicycle travel. Accessways provide shortcuts for people biking connecting a street to another street, a park, trail, or a major destination, like a school or shopping area. Any shared use path or accessway open to bicycle travel should have minimum paved surface of 10 feet to allow for shared pedestrian and bicycle travel.

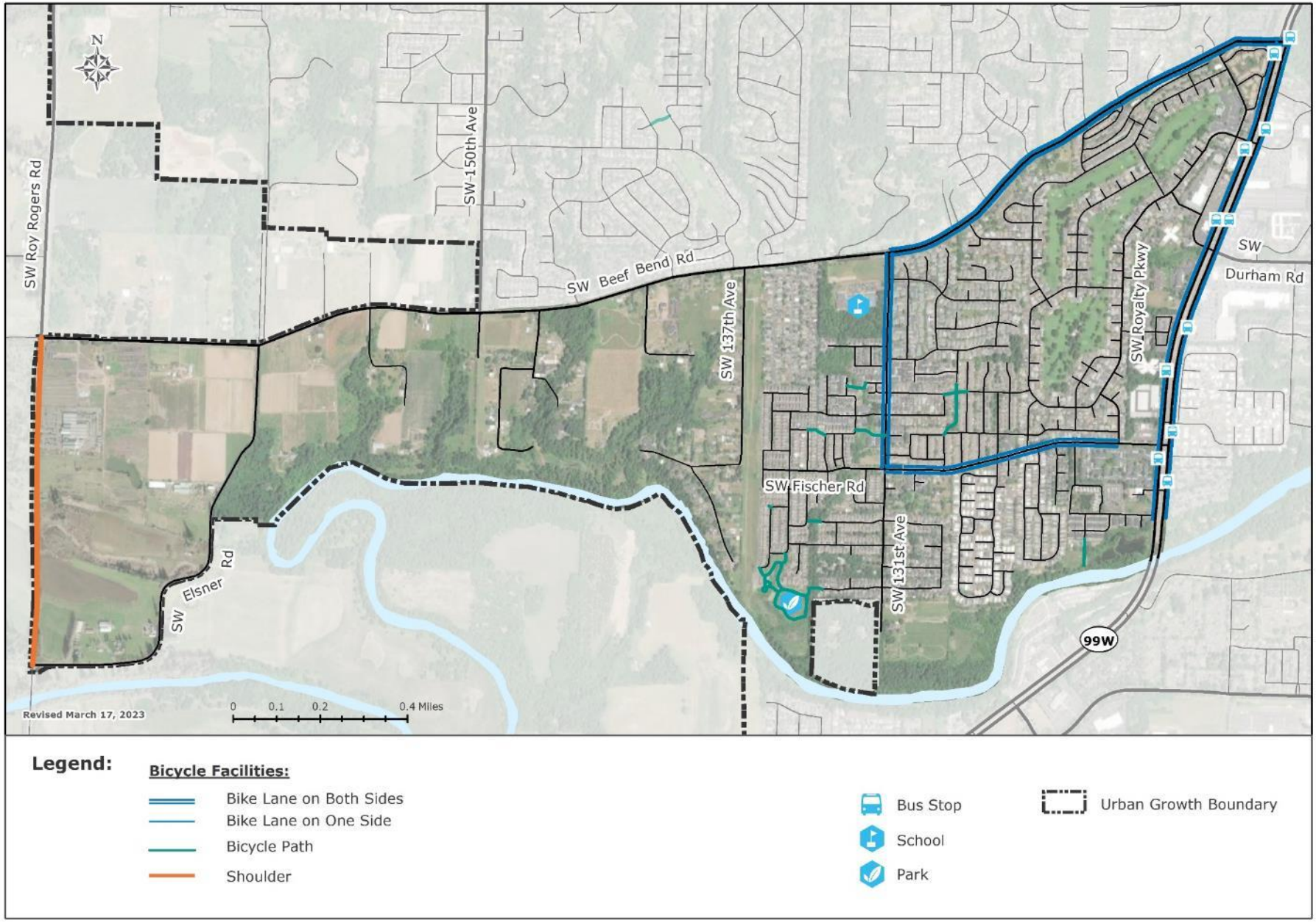
There is currently about one mile of trails or accessways in the City's planning area, including within King City Community Park and scattered throughout the residential neighborhoods. Many of these occur between two disconnected streets. This TSP encourages connected and continuous street connections, but they are not always possible due to a variety of circumstances (see Chapter 4 for more information). For this reason, this TSP requires bicycle accessways at spacing of no more than 530 feet along all streets, ensuring a bicyclist never has to travel more than 265 feet out of direction to access the next street (see Chapter 4 for more information). This standard may be met with public streets or accessways on public easements or rights-of-way.

In developing this TSP, pathways that will improve travel in the City were identified. This plan identifies nearly 5 miles of separated shared use paths, and about 7 miles of street adjacent shared-use paths to be built through 2040 (see Figure 39 and Table 13 in Chapter 5).

BICYCLE PARKING

End-of-trip bicycle facilities are a fundamental component of a bicycle network. Lack of safe and secure facilities for either short-term or long-term parking can be an obstacle to promoting bicycle riding. Short-term parking accommodates visitors, customers, and others expecting to depart within two hours. It requires a standard rack, appropriate location and placement, and weather protection. Long-term parking accommodates employees, students, residents, commuters, and others who park for more than two hours. This parking requires a secure, weather-protected manner and location. Short-term bicycle parking is available throughout King City, including at King City Community Park, Deer Creek Elementary School and within the King City Town Center. Bicycle parking is required with new multi-family residential, commercial, and institutional development in the City.

FIGURE 20: BICYCLE FACILITIES



BICYCLE FACILITY GAPS

Of the 28 miles of potential bikeways along streets with a Major Bicycle or Neighborhood Bicycle route designation in the City's planning area today (shown in Figure 27 in Chapter 4), currently 6 miles of them have bike facilities, and 22 miles or about 79 percent do not have bike facilities (see Figure 21). The southeast part of the planning area (i.e., east of SW 131st Avenue and south of SW Fischer Road) has the highest share of bikeways complete at 55 percent, largely due to the segment of SW Fischer Road with bike lanes.

Bikeways along streets with a Major Bicycle route designation are just over 35 percent complete citywide, but roughly 50 percent complete within the current City limits. Many of the bikeway gaps along these streets in the Kingston Terrace area will be completed once projects within this TSP are completed with new development. This TSP also includes projects to complete the bicycle facility gaps or improve existing bike facilities along streets within the current City limits (see Figure 39 and Table 13 in Chapter 5).

Bicycle Facility Coverage Near Transit

Two to three miles is typically an accepted distance for gauging a transit stop's bikeable area. This distance is loosely based on the amount people that are willing to bike to transit. Given this distance covers most of the City's planning area, a more modest distance of one-half mile was used to identify bicycle facility coverage nearest transit stops. Transit access coverage is estimated based on the actual street network surrounding the stops as-the-crow-flies.

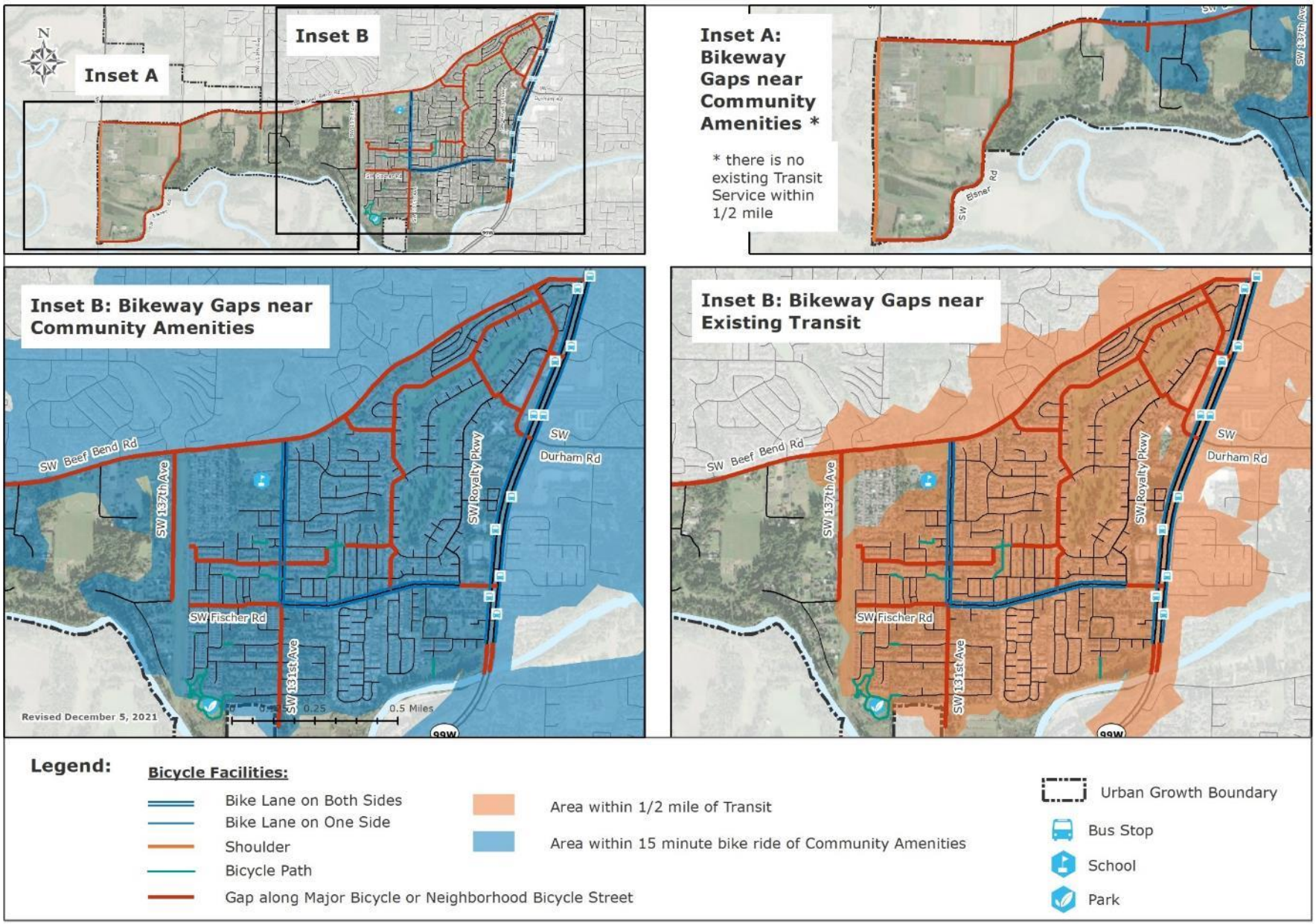
Of the streets within one-half mile of existing transit service, about 14 of the total 19 street miles lack any type of bike facility (or 77 percent of the street miles). About 4 miles of these bikeway gaps are along streets with a Major Bicycle route designation, including portions of OR 99W, SW Beef Bend Road and SW Fischer Road. This TSP includes projects to complete these bikeway gaps (see Figure 39 and Table 13 in Chapter 5).

Bike Facility Coverage Near Community Amenities

Bike facility gaps near community amenities were also evaluated, including the King City Town Center, King City Community Park and Deer Creek Elementary (see the Appendix for the location of these destinations). Using a biking time of 15-minutes to and from these community amenities (based on average biking speeds and comfortable biking distances), a GIS network analysis feature was used to create 15-minute bike sheds around these locations based on the actual street network.

The TSP identified about 18 miles of bikeway gaps within the 15-minute bike sheds of these community amenities, or about 80 percent of all potential bikeways in these areas (see Figure 21). Most of these bikeway gaps are near Deer Creek Elementary along SW Beef Bend Road. Several streets with a neighborhood bicycle route designation also have incomplete bikeways near the King City Town Center and King City Community Park. Again, this TSP includes projects to complete these gaps.

FIGURE 21: BICYCLE FACILITY GAPS NEAR EXISTING TRANSIT AND COMMUNITY AMENITIES



BICYCLE LEVEL OF TRAFFIC STRESS

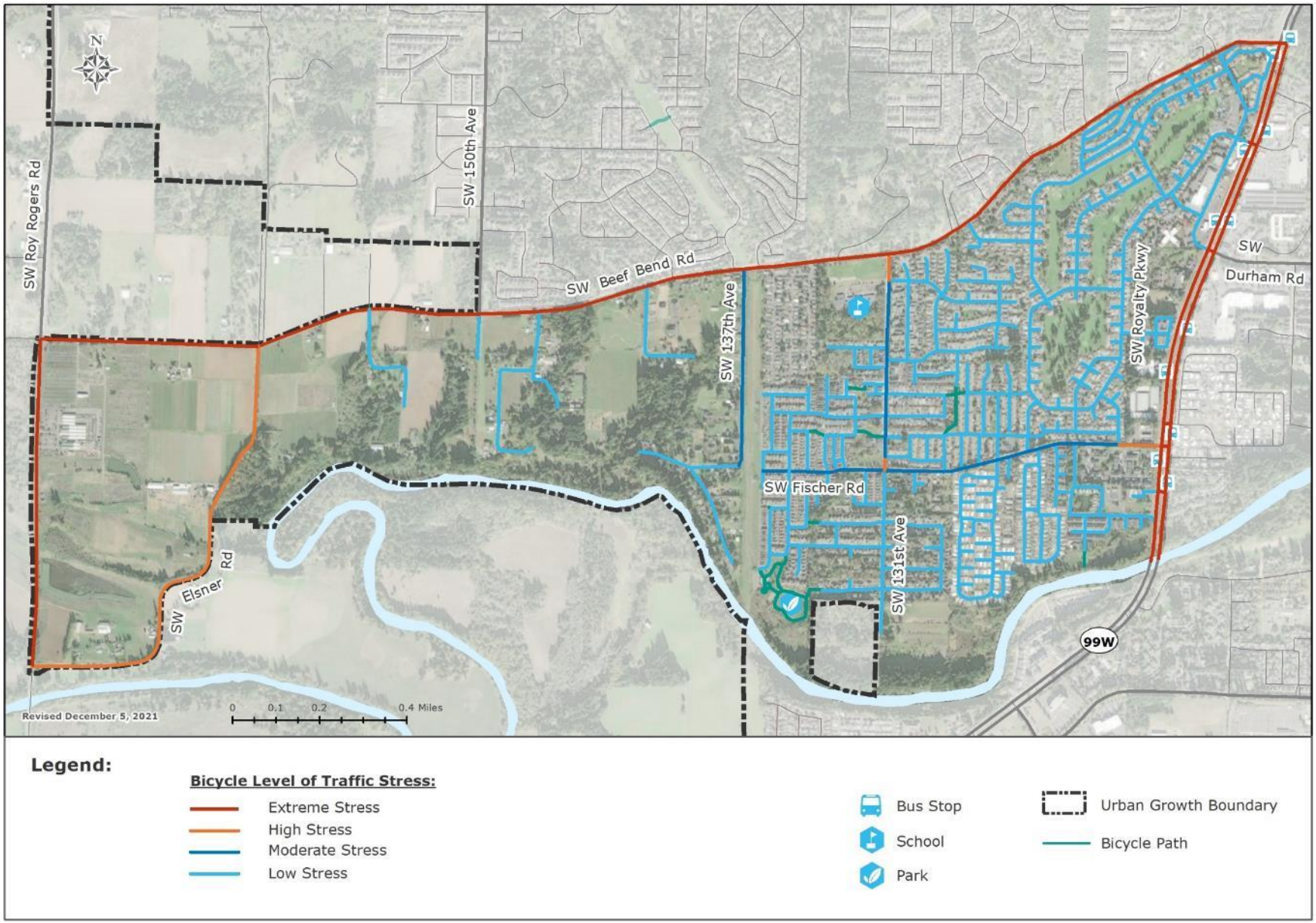
The bicycle level of traffic stress (LTS) evaluation provides a metric to understand a cyclist's perception of the safety and comfort of the transportation network. This method was used to understand key gaps and barriers to biking to be addressed through targeted improvements.

The LTS evaluation generates a ranking (i.e., low, moderate, high, or extreme stress) of the relative safety and comfort of a segment or intersection for bicyclists based on roadway and intersection characteristics (e.g., land use context, number of lanes, travel speed and volume, intersection control, type and width of buffer, and the presence and condition of any bicycle or pedestrian facilities). The LTS rating scale recognizes that as vehicle speeds and volumes increase, enhanced bicycle facilities are needed to maintain a system that is accessible and comfortable for all users.

Results of the bicycle LTS evaluation are summarized in Figure 22. A bicyclist riding along roughly 78 percent of the streets within the City's planning area will experience a low or moderate level of stress. This is generally representative of the many low volume and speed local streets, which are reasonably comfortable for bicycling today. In contrast, an extreme or high level of stress is experienced along 22 percent of streets, mainly arterial and collector streets with the highest speeds and traffic volumes. This includes the extent of OR 99W, SW Beef Bend Road, SW Roy Rogers Road, and SW Elsner Road, and short segments of SW Fischer Road and SW 131st Avenue. These streets include a Major Bicycle route designation and are important for bicycle travel, so this TSP places a higher priority for improvement projects along them consistent with the objectives of the respective bicycle route designations.

As redevelopment and frontage improvements occur through 2040, particularly in the Kingston Terrace area, streets will be built to align with the standards outlined in Chapter 4. These standards require high-quality facilities, and an emphasis on safe, convenient, and comfortable travel, and align with the multimodal level of traffic stress targets outlined in Chapter 4 to contribute towards a lower stress bicycle experience throughout the network.

FIGURE 22: BICYCLING LEVEL OF TRAFFIC STRESS



TRANSIT

Transit service is provided in King City via three fixed bus routes (see Figure 23), a deviated route service, and an Americans with Disabilities Act (ADA) paratransit service. A park-and-ride facility, which is also served by the fixed bus routes, is located along SW Bull Mountain Road, just west of the OR 99W intersection. All TriMet buses are equipped with either a boarding ramp or a lift to allow wheelchair access and include bicycle racks. Riders are permitted to load their bicycle inside the bus only if there's room in one of the designated bike spaces.

TriMet transit service at a glance in King City:

- 11 bus stops on OR 99W
- 4 stops have shelters
- 500 total average weekday on/off

FIXED BUS ROUTES

TriMet provides transit service in King City via two fixed bus routes on 99W connecting the City with Downtown Portland, Tigard, and Sherwood. Transit riders can transfer to other TriMet routes at the Tigard Transit Center and within Downtown Portland. The TriMet bus routes include:

- TriMet Route 93 (Tigard/Sherwood) – service 33 times per day during the week and weekend between 4:30 a.m. and 11:30 p.m. headed north and 6:00 a.m. to 1:00 a.m. headed south.
- TriMet Route 94 (Pacific Hwy/Sherwood) – service 17 times per day during the week between 5:40 a.m. and 7:00 p.m. headed north and 7:30 a.m. and 8:30 p.m. headed south. There is no service on the weekends.

TriMet plans to combine these two routes into a single Route 94-Pacific Hwy/Sherwood, and Route 93-Tigard/Sherwood will terminate. This new route will provide better mid-day service between Sherwood and Portland, and additional trips will be added between Sherwood and Portland on weekdays. On weekends and holidays, Line 94 will run between Tigard Transit Center and Sherwood about every 30 minutes.

TriMet also plans to extend Route 36-South Shore Boulevard from the Tualatin Park & Ride to King City via 72nd Avenue and Durham Road to improve east-west connections between Lake Oswego, Tualatin, Tigard, and King City, and add trips.

The King City Town Center is a potential location for a transit hub for riders (see Figure 23). A portion of the King City Plaza parking lot could be repurposed for the facility and could offer riders a spot to connect to all bus routes that serve the City. This is currently envisioned in the King City Town Center Plan and Implementation Strategy, and TriMet's SW Service Enhancement Plan.

Bus Stops

TriMet has 11 bus stops along OR 99W serving these routes near the SW Beef Bend Road, SW Royalty Parkway, SW Durham Road, SW King James Place, and SW Fischer Road intersections. Each of the bus stops are signed, but many lack benches or shelter, and the SW King James Place southbound stop lacks a sidewalk. A summary of the stops is provided below, with pedestrian and bike facility gaps and street crossing shortfalls near these stops summarized earlier in this chapter.

- **SW Beef Bend Road intersection northbound.** This stop has 19 average weekday ons/offs. It includes a sidewalk connection, bench, and lighting at the stop. It lacks a shelter.
- **SW Beef Bend Road intersection southbound.** This stop has 17 average weekday ons/offs. It includes a sidewalk connection north to the SW Beef Bend Road intersection, but not to the south of the stop. It lacks a shelter, bench, and lighting at the stop.
- **SW Royalty Parkway intersection northbound.** This stop has 60 average weekday ons/offs. It includes a sidewalk connection, shelter, bench, and lighting at the stop.
- **SW Royalty Parkway intersection southbound.** This stop has 60 average weekday ons/offs. It includes a sidewalk connection, and lighting. It lacks a shelter and bench.
- **SW 116th Avenue-Durham Road intersection northbound.** This stop has 64 average weekday ons/offs. It includes a sidewalk connection, shelter, bench, and lighting at the stop.
- **SW 116th Avenue-Durham Road intersection southbound.** This stop has 90 average weekday ons/offs. It includes a sidewalk connection, shelter, bench, and lighting at the stop.
- **SW King James Place northbound.** This stop has 20 average weekday ons/offs. It includes a sidewalk connection, bench, and lighting at the stop. It lacks a shelter.
- **SW King James Place southbound.** This stop has 7 average weekday ons/offs. It offers lighting at the stop, but lacks a sidewalk connection, shelter, and bench.
- **SW Fischer Road northbound.** This stop has 73 average weekday ons/offs. It includes a sidewalk connection, shelter, bench, and lighting at the stop.
- **SW Fischer Road southbound.** This stop has 77 average weekday ons/offs. It includes a sidewalk connection, but lacks a shelter, bench, and lighting at the stop.
- **Commons Apartments northbound.** This stop has 13 average weekday ons/offs. It includes a sidewalk connection and bench, but lacks a shelter, and lighting at the stop.

This TSP includes projects to enhancing existing bus stops along OR 99W and improve pedestrian and bicycle access, including new and/or improved street crossings (see Figure 39 and Table 13 in Chapter 5).

Paratransit Service

TriMet's LIFT paratransit service provides public transportation to persons with disabilities who are unable to use regular fixed route buses. Curb to curb paratransit service, in wheelchair lift equipped minibuses, is available generally between 4:30 a.m. and 1:00 a.m. seven days a week.

Yamhill County Transit

Yamhill County Transit also provides a fixed bus route that connects McMinnville to Tigard (Route 44), with stops in King City at the SW Durham Road and SW Fischer Road intersections. It runs nine times per day during the week between the hours of 5:10 a.m. and 7:20 p.m. headed north and 7:50 a.m. and 8:45 p.m. headed south. On Saturday service runs from 7:50 a.m. to 6:05 p.m. headed north and 9:20 a.m. to 7:45 p.m. headed south.

DEVIATED ROUTE SERVICE

Ride Connection also provides deviated route service (buses that run on a route and schedule) via the King City Shuttle. This local service runs Monday through Friday from 9 a.m. - 4 p.m., along a route that connects the King City Town Center with the neighborhoods to the west. This service is free and open to the public (although there is a suggested donation), and transit riders are able to schedule an off-route pick-up or drop-off within ½ mile of the route.

POTENTIAL TRANSIT EXPANSION

As growth occurs within the City's planning area, opportunities to extend transit service into Kingston Terrace will need to be considered. A potential approach to the expanding transit circulation into Kingston Terrace is shown in Figure 23. The SW River Terrace Boulevard extension, SW Elsner Road, and the SW Fischer Road extension would serve as primary pedestrian and bicycle paths to the proposed bus service, where bus-bulb outs could be constructed into the on-street parking lanes for bus stops. Wide on-street sidewalks and shared-use paths will connect transit users from these facilities to other key destinations.

A few options to expand bus service include:

- A route modification to extend the Ride Connection King City Shuttle west from the SW King George Drive/SW Prince Albert Street intersection to SW Beef Bend Road. The route could travel west on SW Beef Bend Road and turn south onto the SW River Terrace Boulevard extension, before returning via SW Elsner Road and the SW Fischer Road extension.
- A route modification allowing TriMet buses to enter the King City Town Center at the SW Royalty Parkway intersection and exit at the SW 116th Avenue intersection, or vice versa. A potential bus-stop at the transit hub east of the SW Queen Elizabeth Avenue and SW 116th Avenue intersection.
- A potential new route along the SW Roy Rogers Road and/or SW River Terrace Boulevard corridor.

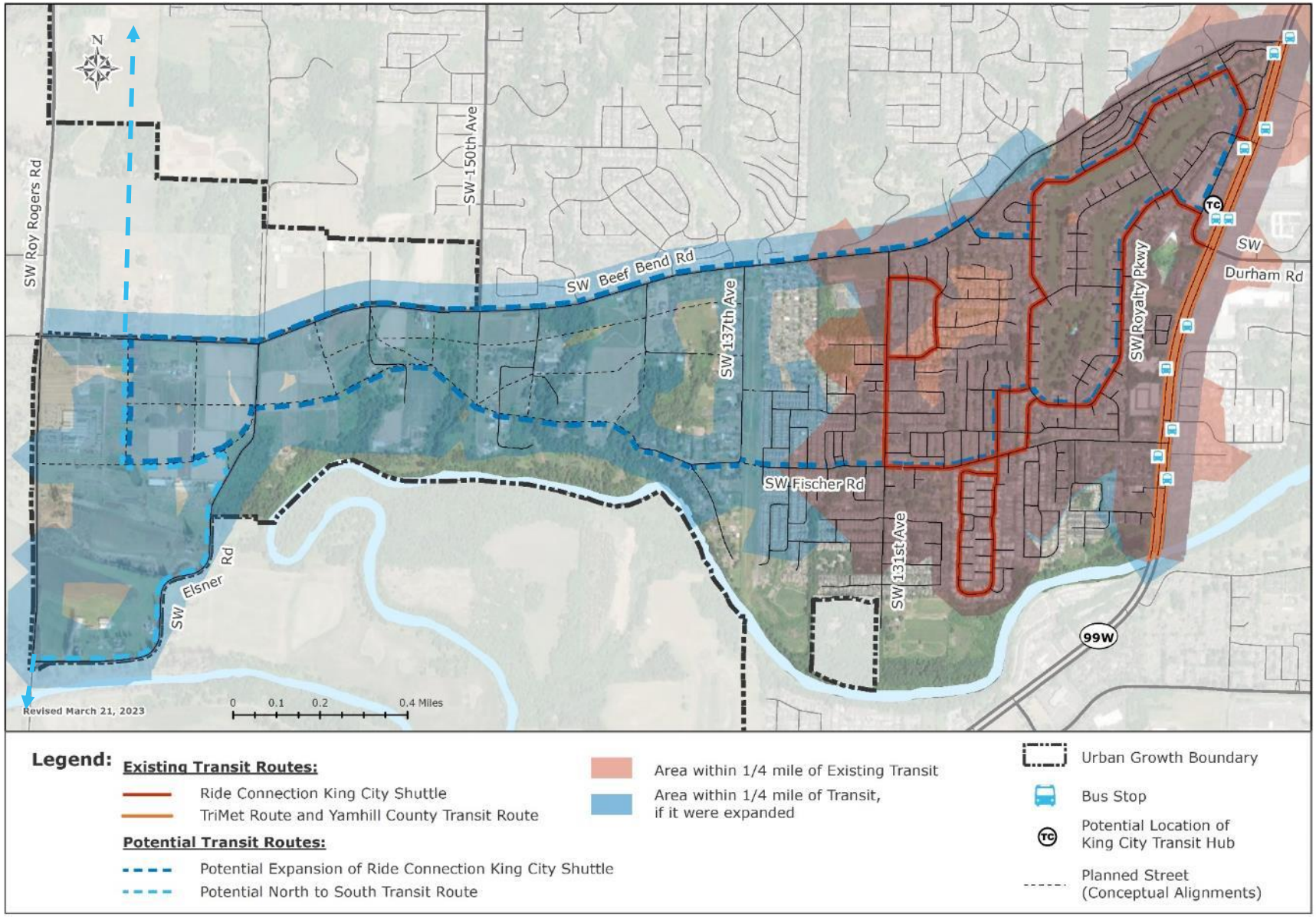
The Transit route designation (see Chapter 4) was applied to all streets along the suggested routes to ensure that adequate right-of-way, travel lane widths, and necessary infrastructure (e.g., shelter, signage) is implemented to support ridership and bus access.

ACCESS TO TRANSIT

The TSP prioritizes transit access and identifies the number and percent of households within 1/4 mile of the bus stops along the TriMet routes that currently run along OR 99W and areas of the planning area within 1/4 mile of the King City Shuttle Route. Figure 23 displays this analysis. Currently about 13 percent of the total households in the planning area have access to TriMet routes. These households are located near OR 99W in east portion of the planning area. About 77 percent of households in the current City limits have access to the King City Shuttle Route, including most households east of SW 131st Avenue and north of SW Fischer Road. No households in Kingston Terrace have transit access, although the area currently only represents a small portion of total households in the planning area.

A similar evaluation was done using the potential transit expansion routes into Kingston Terrace that were summarized earlier in this section. This evaluation also used the 2040 household growth assumptions for the planning area (summarized earlier in this chapter) and future street extensions (see Figure 39 and Table 13 in Chapter 5) to identify all households within 1/4 mile of the bus service. The analysis found that nearly all households in 2040 would be within 1/4 mile of the bus service, as shown in Figure 23. Only a few gaps exist at the far west and east ends of Kingston Terrace.

FIGURE 23: TRANSIT ACCESS FOR EXISTING AND POTENTIAL TRANSIT ROUTES



Note: Routes west of 137th under supplemental review as part of the Kingston Terrace Master Plan.

CHAPTER 4.

Facility and Performance Standards

King City applies transportation standards and regulations to the construction of new transportation facilities and to the operation of all facilities to ensure they are designed appropriately, and the system functions as intended. These standards enable consistent future actions that reflect the goals and objectives of the City.

STREET JURISDICTION

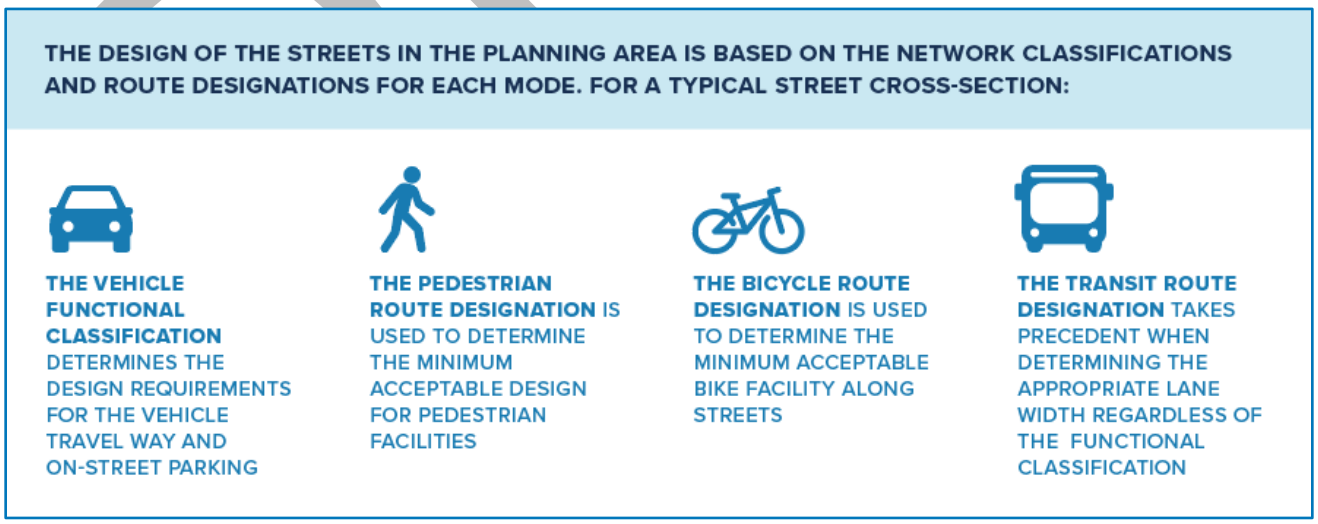
Roadway ownership and maintenance responsibilities depend on the roadway authority. In addition, required design and operation standards for each street and intersection vary by agency. Streets in the planning area are under the jurisdiction of King City, Washington County, or ODOT. OR 99W is and will remain under ODOT jurisdiction. According to the County's TSP, streets that are expected to be under the long-term jurisdiction of Washington County include SW Roy Rogers Road and SW Beef Bend Road. All other existing or planned streets are assumed under the jurisdiction of King City. This includes portions of SW Fischer Road, SW Elsner Road, and other streets in Kingston Terrace currently under County jurisdiction that are assumed to become City streets as the area is incorporated.

NETWORK CLASSIFICATIONS AND ROUTE DESIGNATIONS

All streets in the TSP planning area include classifications and route designations to help support the movement of all people and help to ensure the transportation system is comfortable, convenient, safe and well connected for all users. These include functional classifications for vehicle travel and route designations for pedestrian, bicycle, and transit travel. The modal classifications and route designations combine to determine the minimum acceptable facility type and design requirements of different elements for each mode (see Figure 24).

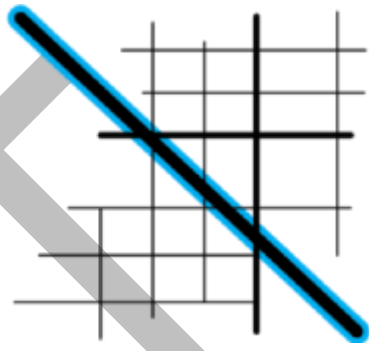
Although guidance is provided for the City's preferred classification and route designations along OR 99W, SW Roy Rogers Road, and SW Beef Bend Road, these streets are under state or Washington County jurisdiction and subject to the classifications of these agencies.

FIGURE 24: NETWORK CLASSIFICATIONS AND ROUTE DESIGNATIONS



VEHICLE FUNCTIONAL CLASSIFICATIONS

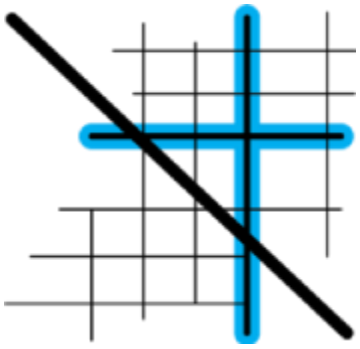
Functional classification for streets helps support the movement of vehicles and is an important tool for managing the roadway network. The street functional classification system recognizes that individual streets do not act independently of one another but instead form a network that serves travel needs on a regional, citywide, neighborhood, and local level. By designating the management and design requirements for each roadway classification, this hierarchal system supports a network of streets that perform as desired.



The street functional classification system for roadways in the City's planning area is described below. From highest to lowest intended use, the classifications are Arterial, Collector, Neighborhood Route, and Local Streets. For a street cross-section, the functional classification determines the travel lane width, median/center turn lane needs, and on-street parking requirements.

Arterial Street

Arterial Streets are primarily intended to serve regional and citywide traffic movement. Arterials provide the primary connection to other Arterial Streets or Collector Streets. They are typically spaced about one mile apart to assure accessibility and reduce the occurrence of through traffic using collectors or local streets in lieu of a well-placed arterial street. Where an Arterial Street intersects with a Neighborhood or Local Street, access management and/or turn restrictions may be employed to reduce traffic delay, while not adversely impacting safety and convenience for other modes. They often serve high volumes of traffic (>10,000 daily vehicles) over long distances and minimize direct access to adjacent land to support the safe and efficient movement of people and goods.



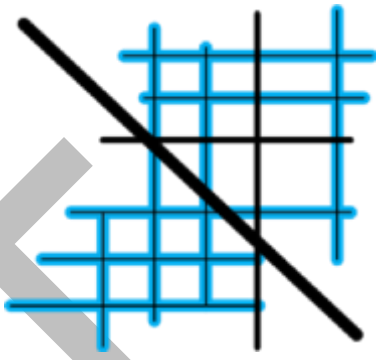
Collector Street

Collector Streets are intended to distribute traffic from Arterials Streets to streets of the same or lower classification. They provide both access and circulation within and between residential and non-residential areas. Collectors differ from arterials in that they provide more of a citywide circulation function, do not require as much access control compared to arterials, and they serve residential neighborhoods, distributing trips from the neighborhood and local street system.

Collectors generally support traffic volumes typically ranging from 5,000 to 10,000 daily vehicles and speeds often managed between 25 mph and 35 mph.

Neighborhood Route

Neighborhood routes provide connectivity between local streets and collectors or arterials. Because neighborhood routes connect local street networks with collector and arterial streets, they generally have more traffic than local streets and are typically used by residents to get into and out of the neighborhood. A neighborhood route is not intended to serve citywide/large area circulation. Neighborhood routes should maintain slow vehicle operating speeds to accommodate safe use by all modes and through vehicle traffic without an origin or destination in the immediate area should be discouraged.



Neighborhood routes generally support traffic volumes ranging from 1,500 to 5,000 daily vehicles, with vehicular speeds typically managed to no more than 25 mph.

Local Street

All streets not classified as Arterial, Collector, or Neighborhood Routes are classified as Local streets. Local streets prioritize providing immediate access to adjacent land and often function as through routes for pedestrians and bicyclists. These streets should be designed to enhance the livability of neighborhoods and can generally accommodate up to 1,500 vehicles per day. A well-connected grid system of relatively short blocks can minimize excessive volumes of motor vehicles, limit out-of-direction travel, and encourage walking and biking. They should be provided at a maximum spacing of 530 feet in most cases. Speeds are not normally posted, with a statutory 25 mph speed limit in effect. Local streets are not intended to support long distance vehicular travel and are often designed to discourage through traffic without an origin or destination in the immediate area.

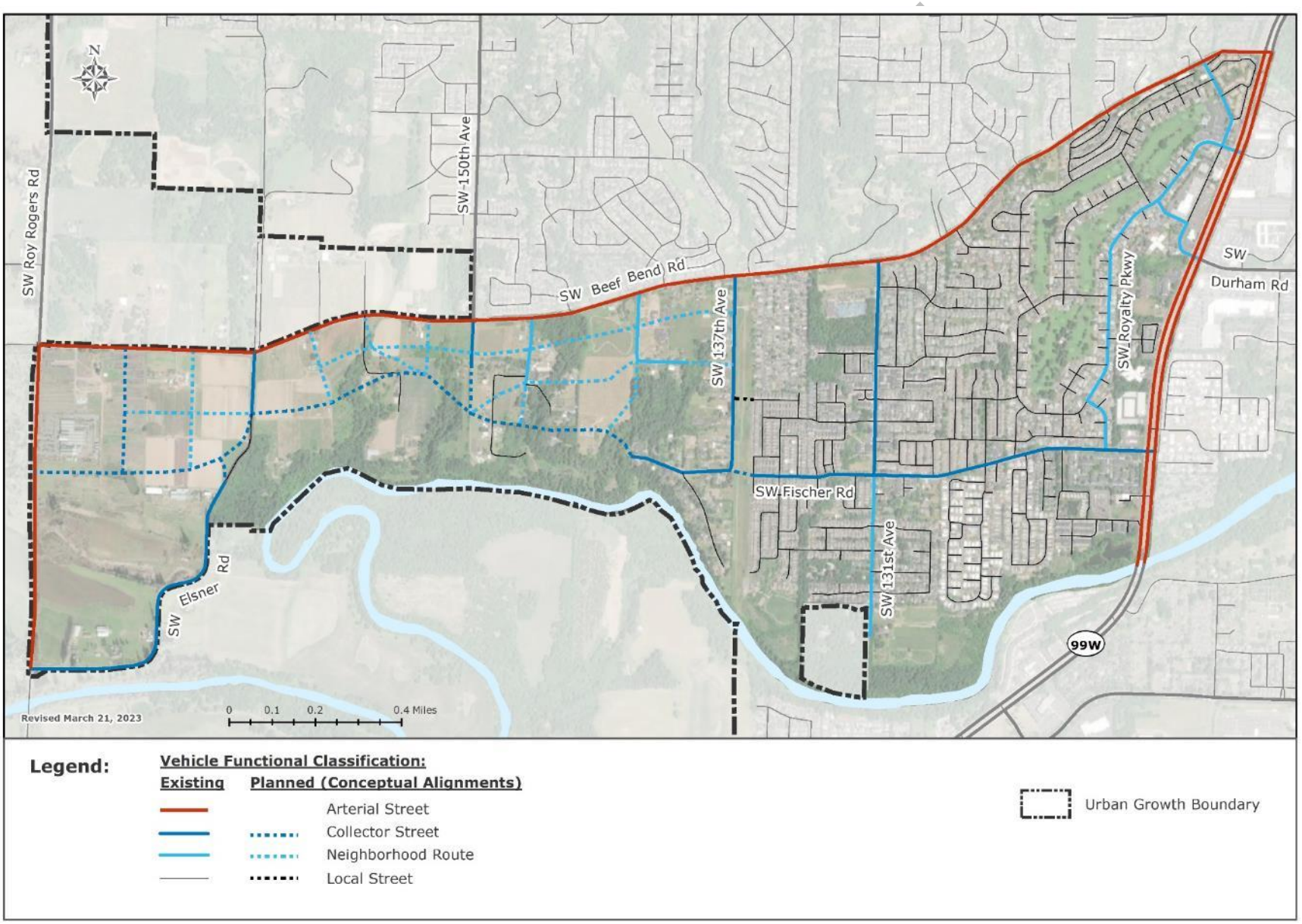
STREET FUNCTIONAL CLASSIFICATION MAP

The functional classification map (Figure 25) shows the designated classification for all roadways in the City's planning area, including new street extensions proposed as part of this plan (see Figure 39 and Table 13 in Chapter 5). These classifications are determined based on the intended function they serve for motor vehicles within the planning area, consistent with the definitions presented earlier in this chapter.

Several streets are shown on Figure 25 as potential street alignments under consideration. This evaluation process will occur through the Kingston Terrace Master Plan, and these alignments do not necessarily reflect an either/or condition. Ultimately the Kingston Terrace Master Plan evaluation process will determine their intended function in the planning area and corresponding street functional classification.

Fischer Road also has a special Minor Arterial designation for its role in the regional transportation system. Since the TSP does not have a Minor Arterial classification, the TSP Collector Street designation in this case is intended to be the same as the Minor Arterial designation in the Regional Transportation Plan.

FIGURE 25: STREET FUNCTIONAL CLASSIFICATIONS



Note: Routes west of 137th under supplemental review as part of the Kingston Terrace Master Plan.

PEDESTRIAN, BICYCLE AND TRANSIT ROUTES

To complement the street functional classifications, routes are identified for pedestrian, bicycle, and transit travel. The designations are used to determine the typical standards that apply to each street for these travel modes.

PEDESTRIAN ROUTE DESIGNATION

The pedestrian routes for streets helps support pedestrian movement and access to adjacent land use. This designation is used to determine the minimum acceptable design for pedestrian facilities along streets, including the width of throughway for pedestrians and furnishings/landscape area. A route designation is applied to a roadway based on the adjacent land use, and level of access and connectivity the route provides for pedestrian movement.

The pedestrian route designations for roadways in the City's planning area are described below. They include Multimodal Area, Major Pedestrian, Neighborhood Pedestrian, and Local Pedestrian, which apply to both existing roadways and new street extensions proposed as part of this plan.

Multimodal Area

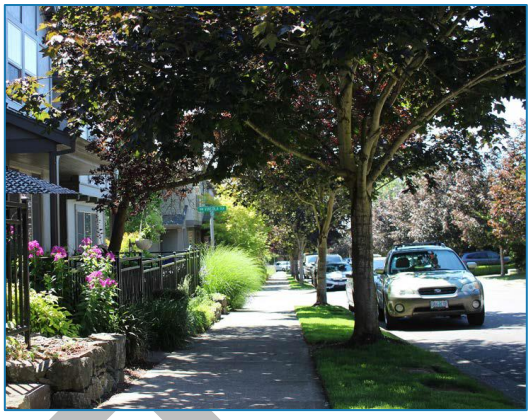
A Multimodal Area reflects the areas where high pedestrian activity is expected or planned. All streets in the Multimodal areas shown on Figure 26 include the Multimodal Area route designation. Non-vehicle movement takes the highest priority in these areas (i.e., wider sidewalks or landscape strips are desired over wider or more travel lanes).

The Multimodal Area route designation differs in commercial and residential areas. While both must include a minimum 8-foot pedestrian throughway, commercial areas include a wider zone along the frontage of adjacent buildings for outdoor seating (i.e., 3 feet in commercial area versus 1 foot in residential area), while residential areas include a wider furnishings/ landscape zone (6 feet in residential area versus 4 feet in commercial area).

Major Pedestrian

A Major Pedestrian route designation applies to corridors linking different parts of the planning area, and those providing access to Multimodal Areas or Transit Corridors. These routes require a minimum 6-foot pedestrian throughway and 6-foot landscape area.

Neighborhood Pedestrian



A Neighborhood Pedestrian route includes those connecting to streets with a Major Pedestrian route designation and those providing access to schools, pedestrian trails, parks, open spaces, and other significant destinations. These routes also include trails or accessways along them that provide off-street shortcuts for people walking between two disconnected routes. These are typically located along streets with a low volume of traffic and requires a minimum 6-foot pedestrian throughway and 4-foot landscape area.

Local Pedestrian

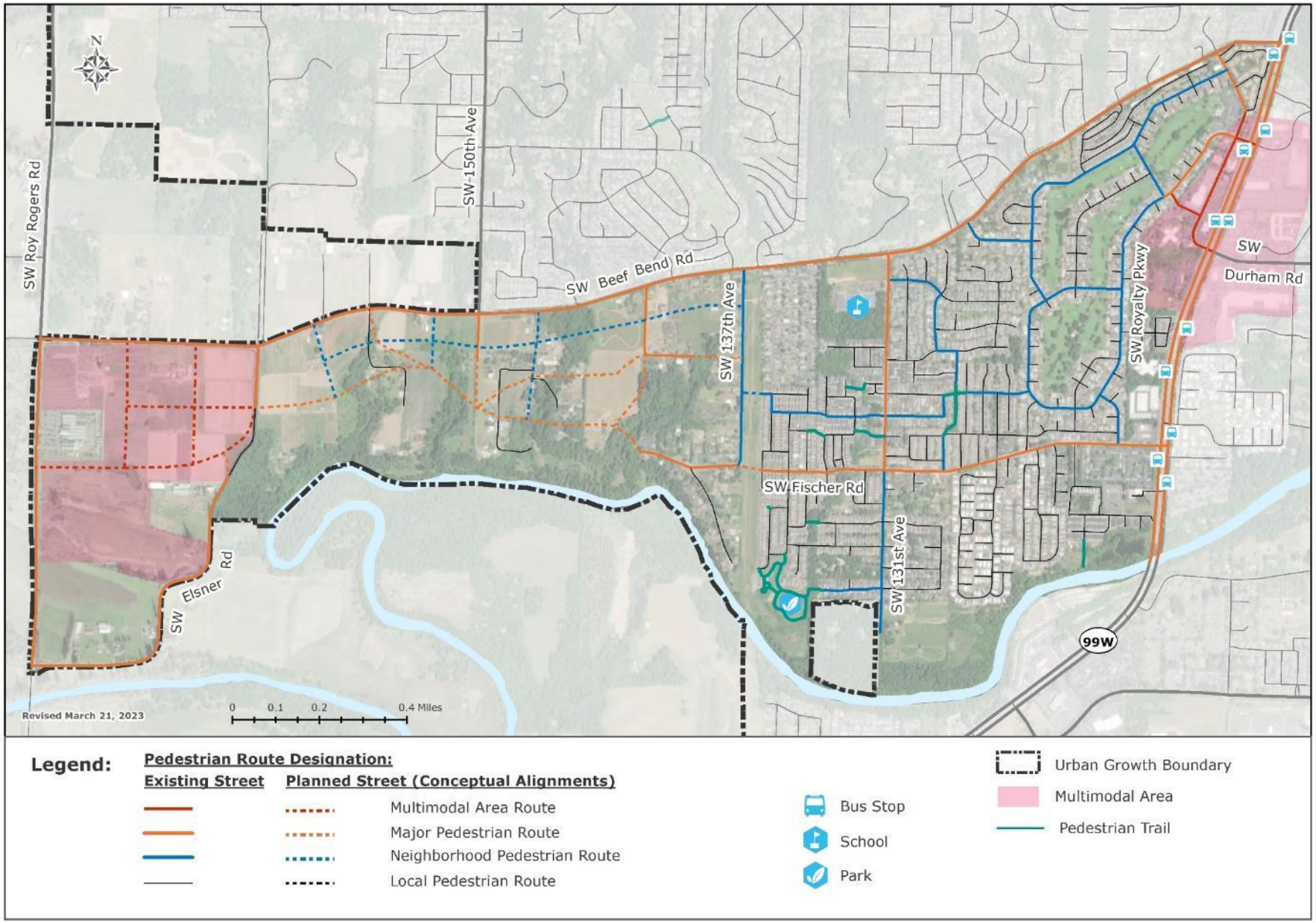
All streets without a Multimodal Area, Major Pedestrian, or Neighborhood Pedestrian route designation are Local Pedestrian routes. Local Pedestrian routes provide local access and circulation for pedestrians and must include a minimum 5-foot pedestrian throughway and 4-foot landscape area.

PEDESTRIAN ROUTE DESIGNATION MAP

Figure 26 shows the pedestrian route designations for all roadways in the City's planning area, including new street extensions proposed as part of this plan (see Figure 39 and Table 13 in Chapter 5). These designations are determined based on the intended function they serve for pedestrians within the planning area, consistent with the definitions presented earlier in this chapter.

Several streets are shown on Figure 26 as potential street alignments under consideration with pedestrian facilities. This evaluation process will occur through the Kingston Terrace Master Plan, and these alignments do not necessarily reflect an either/or condition. Ultimately, the Kingston Terrace Master Plan evaluation process will determine their intended function for pedestrians in the planning area and corresponding pedestrian route designation.

FIGURE 26: PEDESTRIAN ROUTE DESIGNATIONS



Note: Routes west of 137th under supplemental review as part of the Kingston Terrace Master Plan.

BICYCLE ROUTE DESIGNATIONS

The bicycle route designation for streets helps support the movement of people riding bikes. This designation is used to determine the minimum acceptable bike facility design along these streets. A route designation is applied to a roadway based on the existing or expected motor vehicle volumes and travel speeds, and level of access and connectivity the route provides for bicycle movement.

The bicycle route designations for roadways in the City's planning area are described below. They include Major Bicycle, Neighborhood Bicycle, and Local Bicycle, which apply to both existing roadways, anticipated extensions, and new streets.

Major Bicycle

A Major Bicycle Street route applies to corridors linking different parts of the planning area, those providing primary access to Multimodal Areas or Transit Corridors, and those with high motor vehicle traffic volumes or speeds (i.e., traffic volumes over 5,000 per day or travel speeds over 25 miles per hour). These are typically located along Arterial or Collector Streets. The bike facilities should be high quality and emphasize safe, convenient, and comfortable bicycle travel, which are often protected or separate from the vehicle travel way. These routes are typically provided in half mile intervals, so everyone is within one quarter mile of any given point in the planning area.

Neighborhood Bicycle

A Neighborhood Bicycle route includes corridors connecting to streets with a Major Bicycle route designation, and those providing access to schools, bicycle paths, parks, open spaces, and other significant destinations. These routes also include shared-use paths or accessways along them that provide off-street shortcuts for people biking between two disconnected routes. These routes establish direct and convenient bicycle routes and are typically spaced in one quarter mile intervals to provide bicycle facility coverage at shorter intervals than streets with the Major Bicycle route designation. The bike facilities often include buffered or conventional bicycle lanes, or shared roadways with shared lane markings, bike route wayfinding, and traffic volume and speed management.

Local Bicycle

All streets without a Major Bicycle, or Neighborhood Bicycle route designation are Local Bicycle routes. Local Bicycle streets provide local access and circulation for bicyclists and typically include shared roadways (without shared lane markings).

BICYCLE ROUTE DESIGNATION MAP

Figure 27 shows the bicycle route designations for all roadways in the City's planning area, including new street extensions proposed as part of this plan (see Figure 39 and Table 13 in Chapter 5). These designations are determined based on the intended function they serve for bicycles within the planning area, consistent with the definitions presented earlier in this chapter.

Several streets and conceptual bicycle routes are shown in Figure 27 for the Kingston Terrace area. These and other potential route designations and alignments will be evaluated and finalized as part the Kingston Terrace Master Plan, and these alignments do not necessarily reflect an either/or condition. Ultimately the Kingston Terrace Master Plan evaluation process will determine their intended function for bicycles in the planning area and corresponding bicycle route designation.

TRANSIT ROUTE DESIGNATIONS

The transit route designations help maintain a system of streets that support existing and potential future transit routes (i.e., the TSP provides a local circulation bus option for future consideration). Figure 28 shows streets that include the transit route designations, which apply to all current bus routes and along streets in this TSP identified as potential transit routes. The potential future transit routes include portions of SW Beef Bend Road, SW Elsner Road, the future SW River Terrace Boulevard and anticipated east-west connections through Kingston Terrace Master Plan area.

Accommodations for enhancing transit service and stop amenities should be considered and included with any improvement along an existing or future transit street. For routes with existing service, these accommodations include sheltered stops with seating, landing pads, route information, sidewalk connections (i.e., along routes and streets connecting to them), bicycle parking, and lighting. In addition, travel lanes must be maintained to a minimum of 11 feet along streets with a transit route designation.

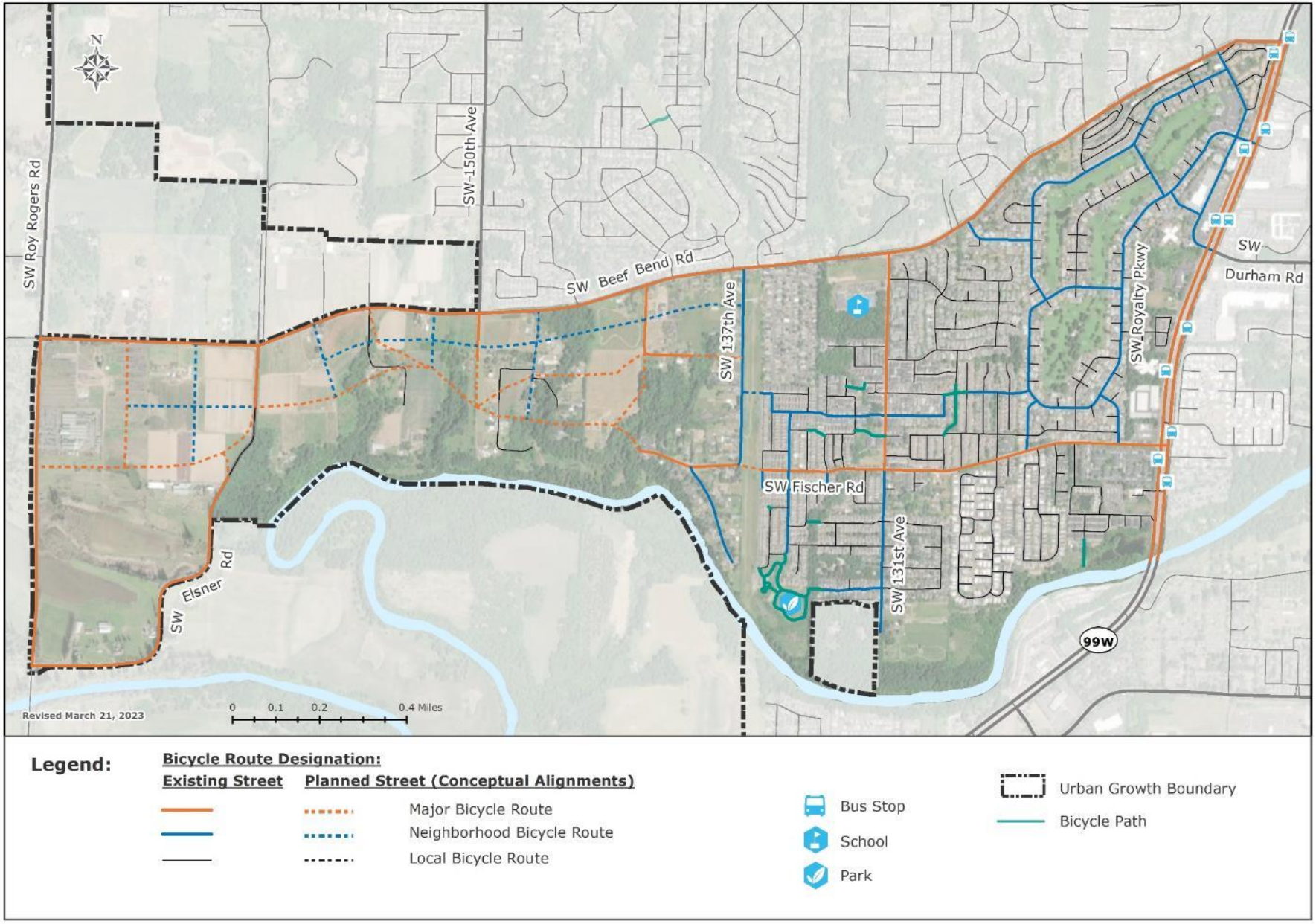
All improvements along transit routes must be coordinated with transit service providers. Generally, bus-bulb outs should be constructed into on-street parking lanes for bus stops, and on-street parking restricted near potential bus-stop locations. Curb extensions may need to be adjusted and parking also may need to be restricted within about 15 feet of corners to allow for buses to maneuver turns along streets with the transit route designation.

TRANSIT ROUTE DESIGNATION MAP

Figure 28 shows the transit route designations for all roadways in the City's planning area, including new street extensions proposed as part of this plan (see Figure 39 and Table 13 in Chapter 5). These designations are determined based on the existing and potential transit routes discussed in Chapter 3.

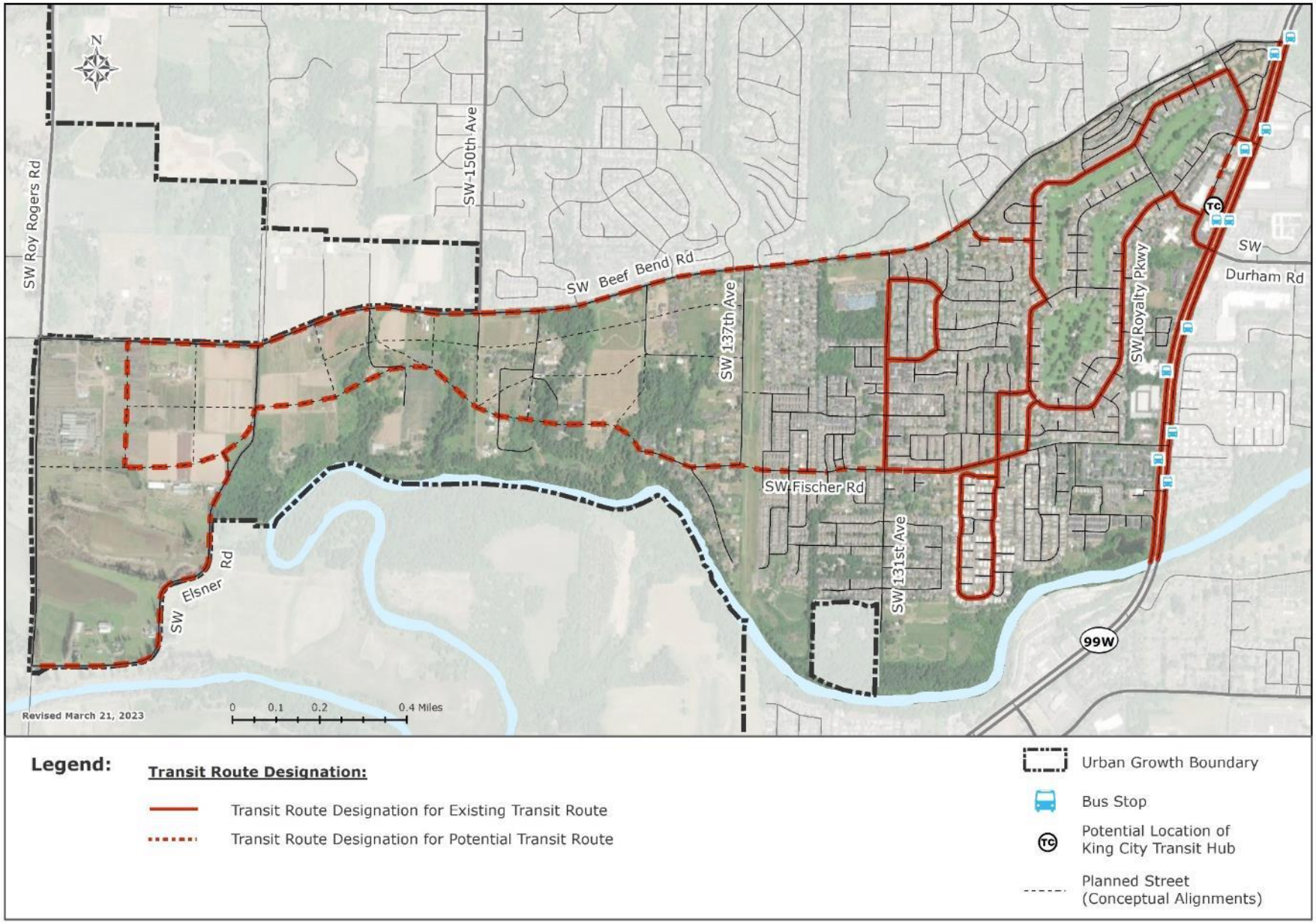
Several streets are shown on Figure 28 as potential street alignments with transit under consideration. These and other east-west neighborhood connections will be further evaluated during the development of the Kingston Terrace Master Plan, and these alignments do not necessarily reflect an either/or condition. Ultimately the Kingston Terrace Master Plan evaluation process will determine their intended function for transit in the planning area and corresponding transit route designation.

FIGURE 27: BICYCLE ROUTE DESIGNATIONS



Note: Routes west of 137th under supplemental review as part of the Kingston Terrace Master Plan.

FIGURE 28: TRANSIT ROUTE DESIGNATIONS



Note: Routes west of 137th under supplemental review as part of the Kingston Terrace Master Plan.

MULTIMODAL NETWORK DESIGN

The design of the streets in the City's planning area is based on the network classifications and route designation for each mode. All streets in the planning area are multimodal and include travel lanes and on-street parking for vehicles, sidewalks for pedestrians, and on-street or separated facilities for bicyclists. Accommodating these modes varies by the functional classification and designations, these can include pedestrian and bicycle route designations, and transit route designations. For a typical street cross-section, the functional classification determines the design requirements for the vehicle travel way and on-street parking, the pedestrian route designation is used to determine the minimum acceptable design for pedestrian facilities, and the bicycle route designation is used to determine the minimum acceptable bike facility along streets. Together, these cross-section standards identify the design characteristics needed to meet the function and demand for each facility type for streets in the City's planning area. Since the actual design of a roadway can vary from segment to segment due to adjacent land uses and demands, this system allows standardization of key characteristics to provide consistency.

The following method shall be used to determine the design of new streets and the reconstruction or improvement of existing streets.

Use the following steps to determine the typical standards that apply to a roadway:

1. Confirm the functional classification, and any pedestrian, bicycle, or transit route designations that apply using Figure 25, Figure 26, Figure 27, and Figure 28.
2. Use Table 3 to determine the typical vehicle travel way and on-street parking requirements, based on the functional classification.
3. Use Table 4 to determine the typical sidewalk requirements, based on the pedestrian route designation.
4. Use Table 5 to determine the typical bike facility requirements, based on the bicycle route designation.
5. Combine the elements to determine the typical cross-section. Examples are provided in Figure 31 through Figure 37.

The typical facilities shown along Arterial streets (i.e., OR 99W, SW Roy Rogers Road, and SW Beef Bend Road) are consistent with ODOT and Washington County standards. OR 99W is under the State's jurisdiction and subject to the design criteria in the Blueprint for Urban Design (BUD). The BUD supplements existing state design manuals and provides enhanced design guidance until a full design manual update can be completed. SW Roy Rogers Road and SW Beef Bend Road will remain under Washington County jurisdiction and are subject to the County Arterial Roadway Standards.

VEHICLE TRAVEL WAY AND PARKING

The vehicle classifications, in addition to the transit route designation, determine the design parameters for the vehicle travel way of each street. This is the throughway for drivers, including cars, buses, and trucks. Table 3 provides the travel lane, median/center turn lane, and parking requirements. The vehicle classification of the street generally determines the number of through lanes, lane widths, and median and left-turn lane requirements. However, the transit route designation takes precedent when determining the appropriate lane width regardless of the vehicle classification. Streets with a transit route designation require a minimum travel lane width of 11 feet to appropriately accommodate buses. Wider lanes (over 11 feet) should only be used for short distances as needed to help buses negotiate right-turns without encroaching into adjacent or opposing travel lanes.

Streets that require a median/center turn lane should include a minimum 6-foot-wide pedestrian refuge at marked crossings, with a preferred width of 8 to 10 feet. Otherwise, the median can be reduced or eliminated at midblock locations, before widening at intersections for left-turn lanes (where required or needed).

TABLE 3: TYPICAL VEHICLE TRAVEL WAY AND ON-STREET PARKING REQUIREMENTS

VEHICLE CLASSIFICATION	ARTERIAL STREET*	COLLECTOR STREET	NEIGHBORHOOD ROUTE	LOCAL STREET
TYPICAL THROUGH LANES	2 to 4	2	2	2
MINIMUM LANE WIDTH (NO TRANSIT ROUTE DESIGNATION)	11-12 ft.	10 ft.	10 ft.	10 ft.
MINIMUM LANE WIDTH (WITH TRANSIT ROUTE DESIGNATION)		11 ft.	11 ft.	11 ft.
MEDIAN/ CENTER TURN LANE	Required 12-14 ft. median/ center turn lane **	Required 11 ft. center turn lane ***	None	None
MINIMUM ON-STREET PARKING WIDTH	None	8 ft.	8 ft.	8 ft.

Notes: * Although guidance is provided for arterial streets, they are under state or Washington County jurisdiction. Values presented in this table are consistent with the ODOT Blueprint for Urban Design (BUD) and the Washington County Arterial Roadway Standards.

** A minimum 8-foot-wide pedestrian refuge should be provided at marked crossings on Arterials, with a preferred width of 10 feet. Otherwise, a median can be reduced or eliminated at midblock locations, before widening at intersections for left-turn lanes (where required or needed).

*** Center left-turn lane required at intersections with Arterials; minimum 6-foot-wide median required where refuge is needed for pedestrian/bicycle street crossings, with a preferred width of 8–10 feet.

SIDEWALKS

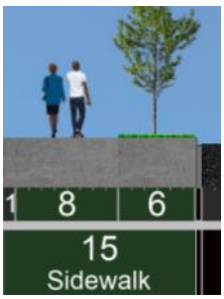
Sidewalks provide for pedestrian movement and access, enhance connectivity, and promote walking. The requirements for pedestrian facilities in the City's planning area promote superior sidewalk design and encourage walking by making it more attractive. The pedestrian route designations determine pedestrian facility design treatments along streets, including the width of the throughway for pedestrians, and the buffer between the vehicle travel way.

The sidewalk encompasses three zones (as shown in Figure 29), including the frontage, pedestrian throughway, and furnishings/ landscape. The minimum configuration for each of these zones is provided in Table 4. Wider widths may be considered as conditions warrant. For example, if a tree requires a wider area, the width of the landscape zone may be increased. Sidewalk facilities constructed on OR 99W are subject to review and approval by ODOT based on guidance from the BUD. Likewise, facilities on SW Roy Rogers Road, SW Elsner Road and SW Beef Bend Road are subject to County review and approval. See the notes under Table 4 for details on the current requirements for both agencies.

FIGURE 29: SIDEWALK ZONES

- The **frontage zone** describes the section where a pedestrian interacts with the adjacent buildings or private property and includes entryways and outdoor seating. This zone is typically between 1 and 3 feet wide in multimodal areas (i.e., to accommodate outdoor seating in commercial areas or building access in residential areas) and ½ foot in other areas, and it may include a concrete or natural surface depending on the adjacent land use. The adjoining development may elect to expand this zone with additional space provided outside of and adjacent to the street right-of-way.
- The **pedestrian throughway zone** is the accessible zone in which pedestrians travel. It includes a minimum eight-foot-wide clear throughway in multimodal areas, six-feet wide clear throughway along streets with a Major Pedestrian and Neighborhood Pedestrian route designation, and five-feet wide clear throughway along Local Pedestrian streets.
- The **furnishings/ landscape zone** is the sidewalk section located between the pedestrian throughway and the curb, and includes street furnishings or landscaping (e.g., benches, lighting, bicycle parking, tree wells, and/or plantings). If adjacent to on-street parking, it should also include a clearance distance between any curbside parking and the street furnishing area or landscape strip (i.e., so vehicles parking, or opening doors do not interfere with street furnishings and/or landscaping). Streets located along a street with a transit route designation should incorporate furnishings to support transit ridership, such as transit shelters and benches, into the furnishings/landscape strip. It should include a minimum width between four and six feet, depending on the pedestrian route designation.

TABLE 4: MINIMUM SIDEWALK CONFIGURATION

PEDESTRIAN ROUTE DESIGNATION	MULTIMODAL AREA		MAJOR PEDESTRIAN	NEIGHBORHOOD PEDESTRIAN	LOCAL PEDESTRIAN
	COMMERCIAL	RESIDENTIAL			
MINIMUM CONFIGURATION *					
FRONTAGE ZONE	3 ft.	1 ft.	0.5 ft.	0.5 ft.	0.5 ft.
PEDESTRIAN THROUGHWAY ZONE	8 ft.	8 ft.	6 ft.	6 ft.	5 ft.
FURNISHINGS/ LANDSCAPE ZONE (INCLUDES CURB) **	4 ft.	6 ft.	6 ft.	4 ft.	4 ft.
TOTAL SIDEWALK WIDTH	15 ft.	15 ft.	12.5 ft.	10.5 ft.	9.5 ft.

Notes: * ODOT design guidance from the BUD for OR 99W through the planning area requires a minimum 1-foot frontage zone, 5-8 foot pedestrian throughway zone and 0-5 foot buffer zone, for a total sidewalk width of 6-14 feet. A 5-foot pedestrian throughway requires a paved frontage zone and/or a paved buffer zone. Minimum "sidewalk" width is 6-feet. The desired pedestrian throughway and buffer zone widths for OR 99W are subject to review and approval by ODOT. Additional detail is provided in the BUD.

Washington County design standards for Arterial streets require a minimum 1-foot frontage zone, 5-foot pedestrian throughway zone and 4.5-foot buffer zone, for a total minimum sidewalk width of 10.5 feet.

** Furnishings/ Landscape zone may be reduced to the minimum buffer widths shown in Table 6 when protected bike facilities (i.e., cycle track) are located between the sidewalk and the vehicle travel way.

BICYCLE FACILITIES

Streets should be safe and comfortable for bicyclists of all ages and abilities to encourage ridership. Building high quality bicycle infrastructure can help the city work towards achieving transportation Goals and Objectives, including improved safety and public health, reduced congestion, and more equitable access.

The typical bicycle facilities shown in Table 5 for each bicycle route designation are determined based on a street's design and motor vehicle traffic conditions (i.e., expected vehicle speeds and volumes). When bike facilities are routed along the lowest speed and volume streets (i.e., streets with a Local Bicycle route designation), shared streets are typical. When the bike facilities are routed on busier or faster streets (i.e., streets with a Major Bicycle or Neighborhood Bicycle route designation), enhanced facilities, which are buffered or protected from the vehicle travel way, are typical. These may be separated from the vehicle travel way by a painted buffer and include vertical or horizonal protection, like bollards, planter boxes, curbs, or parked cars. These facilities include buffered bike lanes, cycle tracks, or shared-use paths.

IN GENERAL, STREETS WITH MOTOR VEHICLE VOLUMES OVER 1,500 PER DAY SHOULD INCLUDE CONVENTIONAL BIKE LANES AT A MINIMUM. WHEN DAILY MOTOR VEHICLE VOLUMES EXCEED 3,000, BUFFERED BIKE LANES ARE DESIRED, WITH PROTECTED BICYCLE FACILITIES DESIRED WHEN MOTOR VEHICLE VOLUMES EXCEED 6,000 PER DAY. IN ANY CASE, IF MOTOR VEHICLE TRAVEL SPEEDS EXCEED 30 MILES PER HOUR, BUFFERED OR PROTECTED BICYCLE FACILITIES ARE DESIRED.

Table 6 shows bicycle facility options and configurations for the minimum facilities shown in Table 5. In general, facilities that are protected or separated from the vehicle travel way include a 12-foot two-way or 6-foot one-way cycle track, 12-foot shared use path, or 8-foot buffered bike lanes. Non-separated bike lanes should be a minimum of 6-feet wide, while shared streets should include shared lane markings, with vehicle speed and volume management. Bikeway facilities constructed on OR 99W are subject to review and approval by ODOT based on guidance from the BUD. Likewise, facilities on SW Roy Rogers Road and SW Beef Bend Road are subject to County review and approval. See the notes under Table 5 for details on the current requirements for both agencies.

TABLE 5: MINIMUM BICYCLE FACILITIES

BICYCLE ROUTE DESIGNATION	MAJOR BICYCLE	NEIGHBORHOOD BICYCLE	LOCAL BICYCLE
MINIMUM BIKE FACILITY (UNCONSTRAINED CONDITIONS) **	Protected bicycle facilities separated from the vehicle travel way *	Buffered bicycle lanes *	Shared Streets (without shared lane markings) *
ACCEPTABLE BIKE FACILITY (CONSTRAINED CONDITIONS***)	Buffered bicycle lanes *	Conventional bicycle lanes or shared streets (with shared lane markings) *	N/A

Notes: * See Table 6 for options and configurations for the bicycle facility type shown.

** ODOT design guidance from the BUD for OR 99W through the planning area includes a separated bicycle facility as the preferred option (i.e., shared use paths, sidewalk level separated bicycle lanes, or buffered bicycle lanes with vertical delineation in the buffer zone). The second-tier option includes on-street bike lanes, with a buffer preferred. Minimum width for the separated bike lane is 7-8 feet (6 feet with raised buffer), minimum width for an on-street bike lane is 6 feet (5 feet allowed with buffer), and the minimum buffer width is 2-5 feet. The desired facilities and widths for OR 99W are subject to review and approval by ODOT. Additional detail is provided in the BUD.

Washington County design standards for Arterial streets require a 6-foot bike lane or paved shoulder.

*** Any modification of a standard bike facility requires justification of any constraints and approval of an acceptable deviation prior to construction.

TABLE 6: BICYCLE FACILITY OPTIONS AND TYPICAL CONFIGURATIONS

BICYCLE FACILITY TYPE	TYPICAL CONFIGURATION	TYPICAL DESIGN PARAMETERS
TWO-WAY CYCLE TRACK (PROTECTED FACILITY SEPARATED FROM THE VEHICLE TRAVEL WAY)		**Option:** At sidewalk grade **Minimum width:** 12 ft. **Minimum buffer:** 3 ft. from vehicle travel way; 4 ft. from sidewalk
		**Option:** At roadway grade **Minimum width:** 12 ft. **Minimum buffer:** 4 ft. from vehicle travel way; 0 ft. from sidewalk

BICYCLE FACILITY TYPE	TYPICAL CONFIGURATION	TYPICAL DESIGN PARAMETERS
ONE-WAY CYCLE TRACK (PROTECTED FACILITY SEPARATED FROM THE VEHICLE TRAVEL WAY)		**Option:** At sidewalk grade **Minimum width:** 6 ft. **Minimum buffer:** 3 ft. from vehicle travel way; 4 ft. from sidewalk
		**Option:** At roadway grade **Minimum width:** 6 ft. **Minimum buffer:** 4 ft. from vehicle travel way; 0 ft. from sidewalk
SHARED USE PATH (PROTECTED FACILITY SEPARATED FROM THE VEHICLE TRAVEL WAY)		**Minimum width:** 12 ft. **Minimum shoulder:** 2 ft. on each side **Minimum buffer:** 6 ft. from vehicle travel way
BUFFERED BIKE LANES		**Minimum width:** 8 ft. (5 ft. bike lane with 3 ft. buffer)
CONVENTIONAL BIKE LANES		**Minimum width**: 6 ft.
SHARED STREET		**Minimum treatments:** Shared lane markings, with vehicle speed and volume management. **Roadway Context:** Motor vehicle volumes must be under 1,500 per day, and speeds under 25 miles per hour.

SEPARATED PEDESTRIAN AND BICYCLE FACILITIES

Some pedestrian and bicycle facilities may be separated from the right-of-way of a street, and include pedestrian trails, pedestrian, and bicycle accessway paths, and shared use paths. These facilities serve a variety of recreational, and transportation needs for pedestrians and bicyclists.

PEDESTRIAN TRAIL

Pedestrian trails offer recreational opportunities for pedestrians and are typically located in parks or natural areas. They should include a minimum width of 5 feet (see Figure 30) and may include a hard or soft surface.

ACCESSWAY PATH

Accessways provide short path segments between disconnected streets or localized recreational walking and biking opportunities. The King City Municipal Code currently restricts motorized or mechanical devices (e.g., electric scooters, golf carts) from using any public sidewalk, pathway or other byway designated for pedestrian use, but does not restrict the usage along pathways designated for both pedestrian and bicycle travel. Therefore, to allow for use of these devices, the accessway path must be on public easements or rights-of-way and have minimum paved surface of 10 feet, with a 1-foot shoulder on each side, and 12 feet of right-of-way. For low use segments, an accessway can be as narrow as 8 feet wide, with a 1-foot shoulder on each side and a total right-of-way of 10 feet.

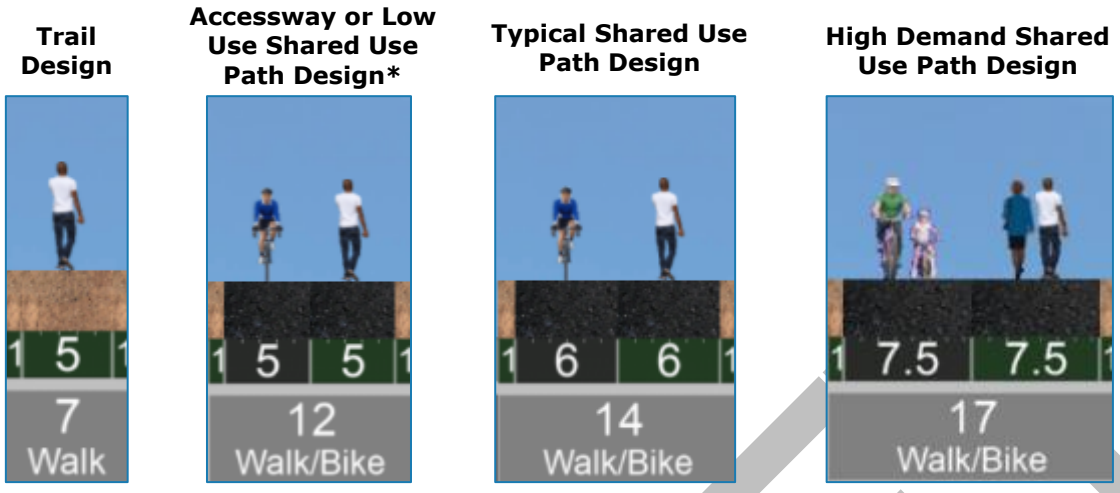
Narrower widths with a minimum paved surface of 5 feet, with a 1-foot shoulder on each side, and 7 feet of right-of-way are acceptable for an accessway serving pedestrian access only (i.e., no bicycles or motorized or mechanical devices).

SHARED USE PATH

Shared-use paths provide longer distance off-roadway facilities for walking and biking. Depending on their location, they can serve both recreational and citywide circulation needs. Shared-use path designs vary in surface types and widths. Hard surfaces are generally better for bicycle travel. Widths need to provide ample space for both walking and biking and should be able to accommodate maintenance vehicles.

Again, to allow for both pedestrian and bicycle travel, which includes devices such as electric scooters and golf carts, a shared-use path should typically be at least 12 feet wide, with a 1-foot shoulder on each side, and 14 feet of right-of-way (see Figure 30). In areas with significant walking or biking demand (e.g., regional shared use paths), that path should be 15 feet wide, with a 1-foot shoulder on each side and a total right-of-way of 17 feet (see Figure 30), while in areas with a low amount of walking or biking demand, the path can be 10 feet wide, with a 1-foot shoulder on each side and a total right-of-way of 12 feet (see Figure 30). For short segments, a low use shared use path can be as narrow as 8 feet wide, with a 1-foot shoulder on each side and a total right-of-way of 10 feet.

FIGURE 30: SEPARATED PEDESTRIAN AND BICYCLE FACILITY DESIGNS



Note: * For short segments, a low use accessway or shared use path can be as narrow as 8 feet wide, with a 1-foot shoulder on each side and a total right-of-way of 10 feet.

TYPICAL STREET CROSS-SECTIONS

As detailed earlier in this chapter, the functional classification determines the design requirements for the vehicle travel way and on-street parking, the pedestrian route designation is used to determine the minimum acceptable design for pedestrian facilities, and the bicycle route designation is used to determine the minimum acceptable bike facility along streets. However, the transit route designation takes precedent when determining the appropriate lane width regardless of the vehicle functional classification. Together, these standards determine the typical cross-section for streets in the City's planning area. Several typical cross-sections examples have been highlighted below in Figure 31 to Figure 37. Because the vehicle travel lane widths and on-street parking requirements are identical for all City Collector streets, Neighborhood Routes, and Local streets (i.e., two 10-foot travel lanes and two 8-foot on-street parking stalls), the cross-section of these facilities vary only by the route designations. For example, a City Collector street with Major Pedestrian and Major Bicycle route designations will be identical to a City Neighborhood Route with the same route designations.

FIGURE 31: TYPICAL CITY COLLECTOR, NEIGHBORHOOD ROUTE, AND LOCAL STREET CROSS-SECTION WITH MULTIMODAL AREA (COMMERCIAL) AND MAJOR BICYCLE ROUTE DESIGNATION

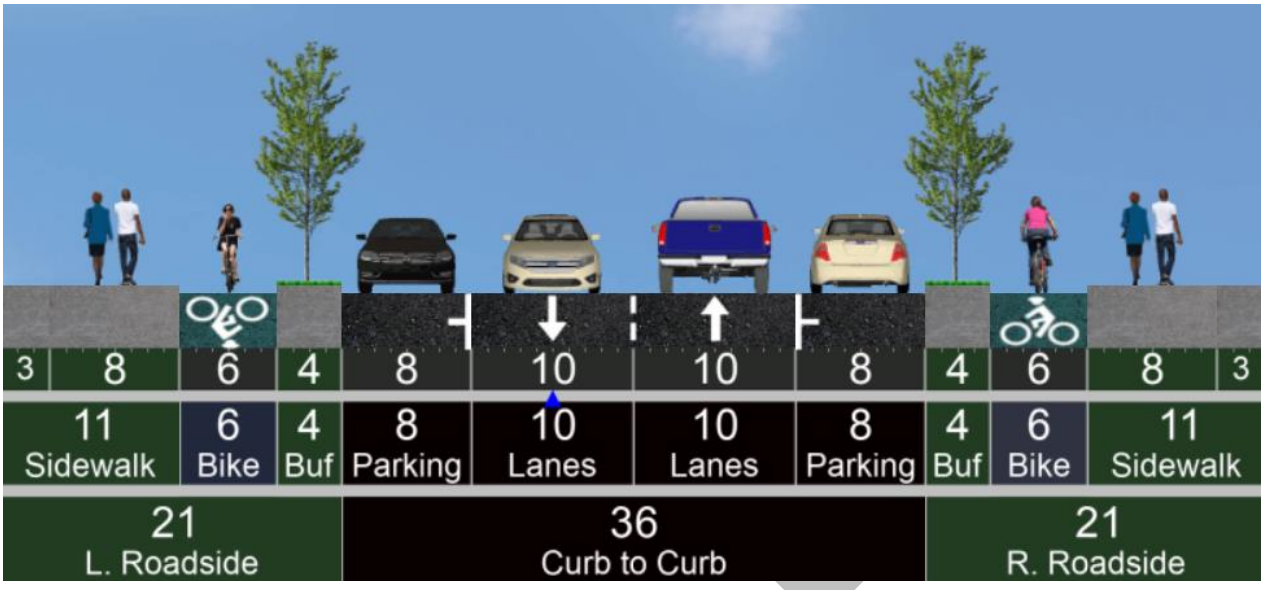


FIGURE 32: TYPICAL CITY COLLECTOR, NEIGHBORHOOD ROUTE, AND LOCAL STREET CROSS-SECTION WITH MULTIMODAL AREA (RESIDENTIAL) AND NEIGHBORHOOD BICYCLE ROUTE DESIGNATION

FIGURE 33: TYPICAL CITY COLLECTOR, NEIGHBORHOOD ROUTE, AND LOCAL STREET CROSS-SECTION MAJOR PEDESTRIAN, MAJOR BICYCLE AND TRANSIT ROUTE DESIGNATION

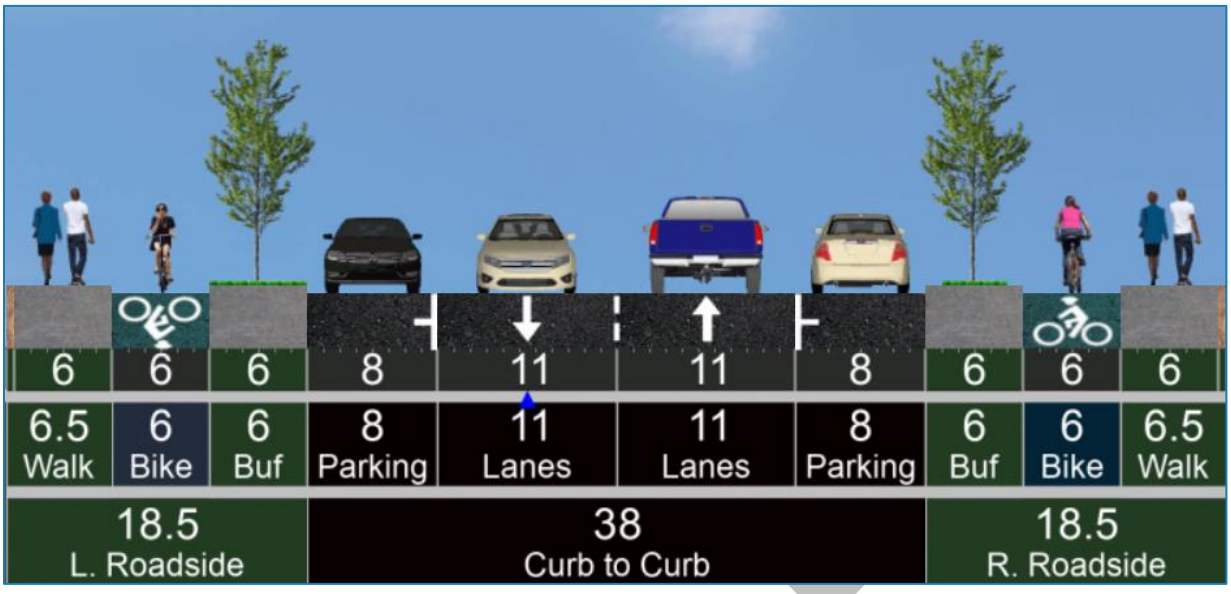


FIGURE 34: TYPICAL CITY COLLECTOR, NEIGHBORHOOD ROUTE, AND LOCAL STREET CROSS-SECTION WITH MAJOR PEDESTRIAN AND MAJOR BICYCLE ROUTE DESIGNATION

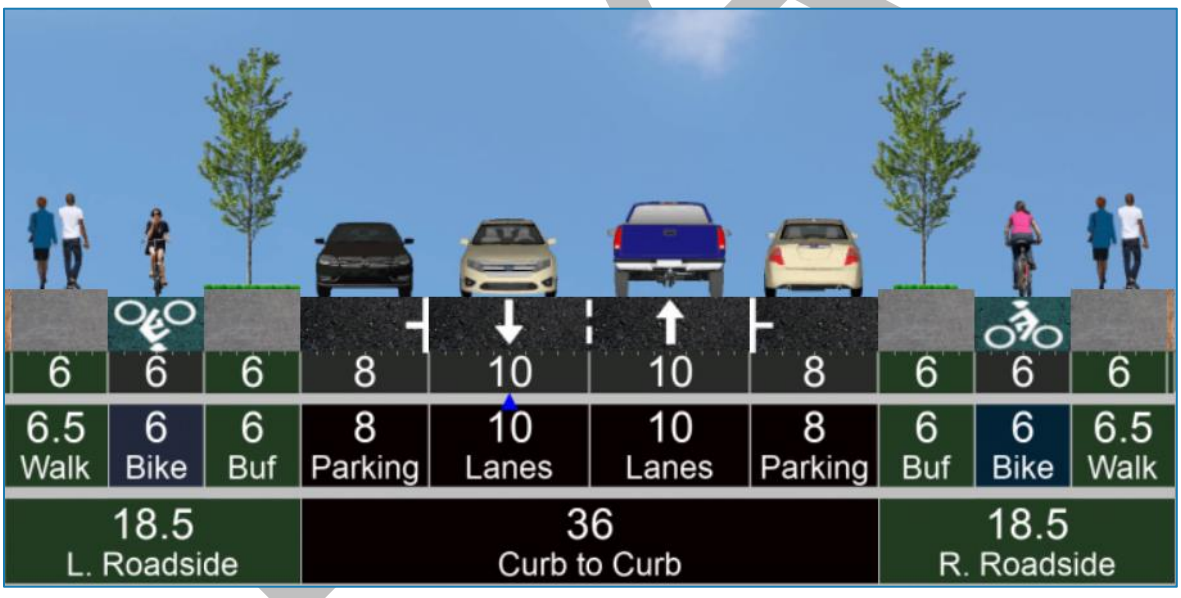


FIGURE 35: TYPICAL CITY COLLECTOR, NEIGHBORHOOD ROUTE, AND LOCAL STREET CROSS-SECTION WITH MAJOR PEDESTRIAN AND NEIGHBORHOOD BICYCLE ROUTE DESIGNATION

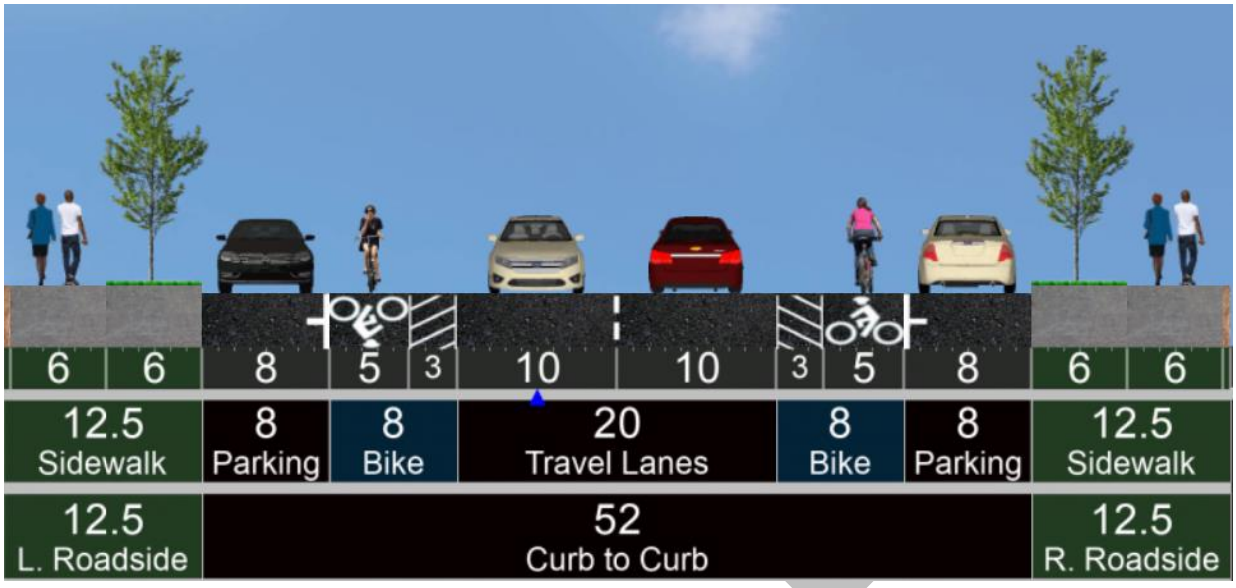


FIGURE 36: TYPICAL CITY COLLECTOR, NEIGHBORHOOD ROUTE, AND LOCAL STREET CROSS-SECTION WITH NEIGHBORHOOD PEDESTRIAN AND NEIGHBORHOOD BICYCLE ROUTE DESIGNATION

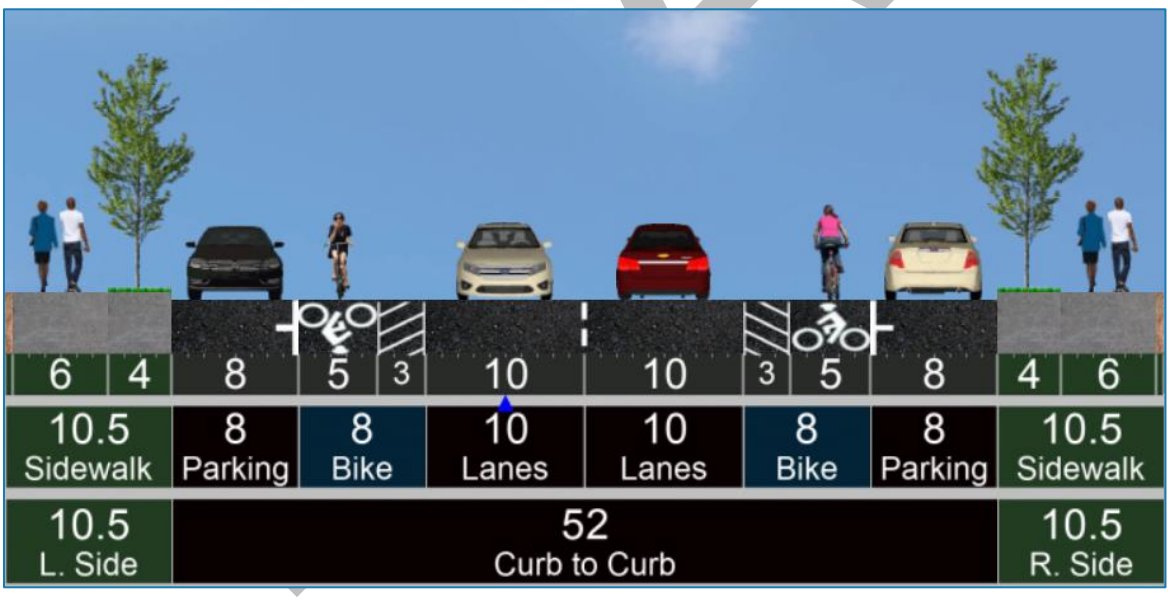
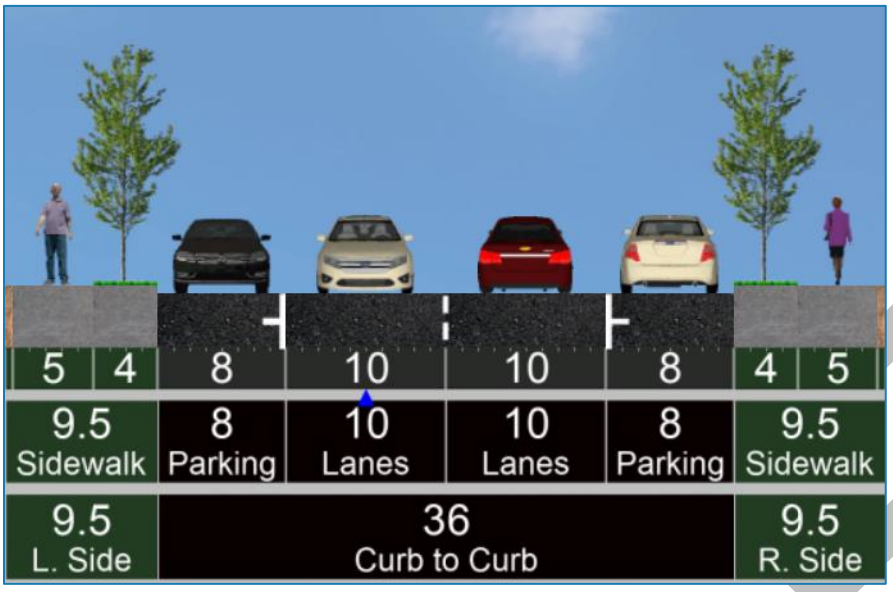


FIGURE 37: TYPICAL CITY COLLECTOR, NEIGHBORHOOD ROUTE, AND LOCAL STREET CROSS-SECTION WITH LOCAL PEDESTRIAN AND LOCAL BICYCLE ROUTE DESIGNATION



CONSTRAINED STREET CROSS-SECTIONS

The typical designs are intended to be implemented in newly developing or redeveloping areas of the City's planning area, where constrained conditions do not limit the ability to construct the typical cross-section. A variety of physical and natural constraints may prevent adherence to the multimodal network design requirements in this chapter. Typical design constraints include:

- Infill sites
- Innovative designs (e.g., roundabouts)
- Reallocation of right-of-way between modes (e.g., narrow travel lanes to accommodate wider bike lanes)
- Severe constraints presented by topography, environmental, or other resources present
- Existing developments and/or buildings that make it extremely difficult or impossible to meet the standards

A deviation to the street standards may be requested from the City Engineer or City Engineer's designee with justification of constraints to consider a constrained cross-section or other adjustments. Guidance for determining an acceptable minimum street cross-section is summarized in Table 7. The guidance shows the order in which cross-section elements should be reduced to acceptable minimum standards based on the designated pedestrian or bicycle routes shown in this chapter. The minimum acceptable sidewalk configuration is shown in Table 8, while the minimum acceptable bike facility is shown in Table 5 earlier in this chapter.

TABLE 7: PROCESS FOR DETERMINING STREET CROSS-SECTIONS IN CONSTRAINED CONDITIONS

ANY NON-ARTERIAL[1] STREET FUNCTIONAL CLASSIFICATION WITH:	STEP 1	STEP 2	STEP 3	STEP 4
EQUAL PEDESTRIAN AND BICYCLE ROUTE DESIGNATIONS [2]	Eliminate on-street parking on one or both sides	Reduce sidewalk frontage zone to acceptable width	Implement acceptable bike facility	Reduce the furnishings/ landscape zone or pedestrian throughway to acceptable width
HIGHER PEDESTRIAN VS. BICYCLE ROUTE DESIGNATION [3]	Eliminate on-street parking on one or both sides	Implement acceptable bike facility	Reduce sidewalk frontage zone to acceptable width	Reduce the furnishings/ landscape zone or pedestrian throughway to acceptable width
HIGHER BICYCLE VS. PEDESTRIAN ROUTE DESIGNATION [4]	Eliminate on-street parking on one or both sides	Reduce sidewalk frontage zone to acceptable width	Reduce the furnishings/ landscape zone or pedestrian throughway to acceptable width	Implement acceptable bike facility

Notes:

1. The cross-section for OR 99W is subject to review and approval by ODOT. Additional detail is provided in the BUD. The cross-sections for SW Roy Rogers Road and SW Beef Bend Road are subject to review and approval by Washington County.
2. Includes Multimodal Area/Major Pedestrian vs. Major Bicycle route, Neighborhood Pedestrian vs. Neighborhood Bicycle route, or Local Pedestrian vs. Local Bicycle route.
3. Includes Multimodal Area/Major Pedestrian vs. Neighborhood or Local Bicycle route, or Neighborhood Pedestrian vs. Local Bicycle route.
4. Includes Major Bicycle vs. Neighborhood or Local Pedestrian route, or Neighborhood Bicycle vs. Local Pedestrian route.

TABLE 8: CONSTRAINED ACCEPTABLE SIDEWALK CONFIGURATION

PEDESTRIAN ROUTE DESIGNATION	MULTIMODAL AREA		MAJOR PEDESTRIAN	NEIGHBORHOOD PEDESTRIAN	LOCAL PEDESTRIAN
	COMMERCIAL	RESIDENTIAL			
ACCEPTABLE FRONTAGE	0.5 ft.	0.5 ft.	0.5 ft.	0.5 ft.	0.5 ft.
ACCEPTABLE PEDESTRIAN THROUGHWAY	8 ft.	8 ft.	6 ft.	6 ft.	5 ft.
ACCEPTABLE FURNISHINGS/ LANDSCAPE (INCLUDES CURB)	4 ft.	4 ft.	4 ft.	0.5 ft.	0.5 ft.

PERFORMANCE STANDARDS

Performance standards are applied to the operation and design of transportation facilities to ensure that the network functions as intended. In King City, this includes performance standards for vehicles, pedestrians, bicyclists, and overall system connectivity.

VEHICLE CONGESTION THRESHOLDS

Mobility targets for streets and intersections in King City provide a metric for assessing the impacts of new development on the existing transportation system and for identifying where capacity improvements may be needed. They are the basis for requiring improvements needed to sustain the transportation system as growth and development occur. Two methods used to gauge operational conditions for motor vehicles include volume-to-capacity (v/c) ratios and level of service (LOS).

- Volume-to-capacity (v/c) ratio: A v/c ratio is a decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00 (generally above 0.70), congestion noticeably increases, and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays.

- Level of service (LOS): LOS is a "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay is excessive and demand exceeds capacity, typically resulting in long queues and delays.

This TSP includes new performance standards for motor vehicles. A v/c ratio of 0.99 applies to City streets and intersections during the highest one-hour period of the day[4]. At signalized, all-way stop, and roundabout controlled intersections, this standard is applied to the intersection. At two-way stop and yield controlled intersections, this standard is applied to all intersection approaches serving more than 20 vehicles during the peak hour. Mobility standards do not apply to approaches at stop-controlled intersections serving 20 vehicles or fewer during the peak hour[5]. This mobility standard allows more flexibility in the tension between larger intersection and street designs that are sometimes needed to accommodate peak vehicle demands, and the desire to maintain smaller

[4] The City v/c ratio performance standard is consistent with the Metro Regional Transportation Plan and Washington County targets that apply to SW Roy Rogers Road and SW Beef Bend Road.

[5] When a low number of vehicles approach a stop-controlled intersection (i.e., 20 or fewer), particularly at those with high volumes on the uncontrolled major street, long delays for vehicles often result during peak periods. This can cause the intersection to operate with a peak hour v/c ratio that exceeds the adopted intersection mobility standard and can necessitate the need to expand the intersection. Therefore, stop controlled approaches with a low volume of traffic are commonly excluded from agency mobility standards.

designs that encourage slower vehicle speeds and tend to be more accommodating to pedestrian and bicycle users.

MULTIMODAL LEVEL OF TRAFFIC STRESS TARGETS

Pedestrian and bicycle level of traffic stress (LTS) evaluations provide a metric to understand a multimodal user's perception of the safety and comfort of the transportation network. This method can be used to understand key gaps and barriers to walking and bicycling which can then be addressed through targeted improvements.

The LTS evaluation generates a ranking between 1 and 4 of the relative safety and comfort of a segment or intersection for bicyclists or pedestrians based on roadway and intersection characteristics (e.g., land use context, number of lanes, travel speed and volume, intersection control, type and width of buffer, and the presence and condition of any bicycle or pedestrian facilities). The LTS rating scale recognizes that as vehicle speeds and volumes increase, enhanced pedestrian and bicycle facilities are needed to maintain a system that is accessible and comfortable for all users. The following summarizes the LTS rankings:

- Low Stress (LTS 1) – represents little traffic stress and requires less attention, so is suitable for all cyclists or pedestrians of all ages and abilities. Traffic speeds are low (i.e., 25 mph) and there is no more than one lane in each direction. Intersections are easily crossed by children and adults. Typical locations include residential local streets, separated bike paths/cycle tracks, and sidewalks/shared use paths with a buffer between vehicles and cyclists or pedestrians.
- Moderate Stress (LTS 2) – represents little traffic stress but requires more attention than can be expected of young children and is more suitable for teen and adult pedestrians or cyclists with adequate bike handling skills. Traffic speeds are slightly higher (i.e., up to 35 mph), but speed differentials are still low, and roadways can be up to three lanes wide. Intersections are not difficult to cross for most teenagers and adults. Typical locations include collector-level streets with bike lanes or a central business district. Sidewalks are generally in good condition with limited impediments for mobility device users (i.e., adequate sidewalk widths and ramps in most locations).
- High Stress (LTS 3) – represents moderate stress and is suitable only for the most observant adult cyclists or pedestrians. Traffic speeds are moderate (i.e., 35 to 40 mph) but can be on roadways up to five lanes wide, and there can be limited buffers between travel lanes and the sidewalk. Intersections are still perceived to be safe by most adults. Typical locations include lower-speed (i.e., 35 mph) arterials with bike lanes or moderate speed (i.e., 40 mph) collectors up to three lanes wide. Select segments of these roadways may be impassable to pedestrians who require a mobility device.
- Extreme Stress (LTS 4) – represents high stress and only marginally suitable for experienced and skilled cyclists or able-bodied adult pedestrians. Traffic speeds are moderate to high (i.e., 40 mph or more) and can be on roadways from two to over five lanes wide with limited or no pedestrian or bicycle facilities. Intersections can be complex, wide, and or high volume/speed that can be perceived as unsafe by adults and are difficult and/or dangerous to cross. Typical locations include high-speed or multilane roadways with narrow or no bike lanes and sidewalks. Roadways without sidewalks are also included in this category.

A low stress (LTS 1) rating is the desired target along streets with a Multimodal Area and Major Pedestrian or Bicycle route designation for newly constructed or reconstructed streets, with a moderate stress (LTS 2) rating acceptable along existing streets. All streets with a Neighborhood and Local Pedestrian or Bicycle route designation should target a low to moderate stress (LTS 1 or 2) rating. While it may not be possible to achieve the target rating along all streets due to a variety of factors, these performance targets represent overall guidance in monitoring the level and quality of facility provided for pedestrian and bicycle travel and working towards the objectives of the respective pedestrian and bicycle route designations.

MULTIMODAL CONNECTIVITY

Transportation facility and access spacing standards include a broad set of techniques that balance the need to provide for efficient, safe, and timely multimodal travel with the ability to allow access to individual destinations. These standards help create a system of direct, continuous, and connected transportation facilities to minimize out-of-direction travel and decrease travel times for all users, while enhancing safety for people walking, biking, and driving by reducing conflict points.

Table 9 identifies maximum and minimum public roadway intersection, minimum private access, and maximum pedestrian and bicycle accessway spacing standards for streets in King City. New streets or redeveloping properties must comply with these standards to the extent practical, as determined by the City Engineer or City Engineer designee. As the opportunity arises through redevelopment, strategies could be implemented along streets or at driveways not complying with these standards, such as shared access points, access restrictions (using a median or channelization islands), or closure of unnecessary access points, as feasible.

All Arterial streets in the planning area are under ODOT or Washington County jurisdiction (i.e., OR 99W, SW Roy Rogers Road and SW Beef Bend Road). See the notes under Table 9 for details on the current access spacing requirements for both agencies. All other existing or planned streets are assumed under the jurisdiction of King City, as noted earlier in this chapter, Washington County assumes streets under their jurisdiction will become City streets as the area is incorporated.

TABLE 9: TRANSPORTATION FACILITY AND ACCESS SPACING STANDARDS

	VEHICLE CLASSIFICATION			
	ARTERIAL STREET *	COLLECTOR STREET	NEIGHBORHOOD STREET	LOCAL STREET
MAXIMUM BLOCK SIZE (PUBLIC STREET TO PUBLIC STREET)		530 ft.	530 ft.	530 ft.
MINIMUM BLOCK SIZE (PUBLIC STREET TO PUBLIC STREET)		265 ft.	265 ft.	150 ft.
MINIMUM DRIVEWAY SPACING (DRIVEWAY TO DRIVEWAY)				
DETACHED RESIDENTIAL AND NON-RESIDENTIAL USES		100 ft.	50 ft.	10 ft.
ATTACHED RESIDENTIAL USES	* See note	50 ft.	10 ft.	5 ft.
MINIMUM FULL-ACCESS DRIVEWAY SETBACK FROM INTERSECTION				
WITH ARTERIAL STREET		50 ft.	50 ft.	25 ft.
WITH NON-ARTERIAL STREET		25 ft.	10 ft.	5 ft.
MAXIMUM DISTANCE BETWEEN PEDESTRIAN/ BICYCLE ACCESSWAYS (PUBLIC STREET TO ACCESSWAY OR ACCESSWAY TO ACCESSWAY) **		330 ft.	330 ft.	330 ft.

Note: All distances measured from the edge of adjacent approaches. All properties are allowed one driveway, which must take access from the lowest classified street.

* All Arterial streets in the planning area are under ODOT or Washington County jurisdiction. OR 99W is subject to access spacing guidelines in the Oregon Highway Plan and the Blueprint for Urban Design. OR 99W requires 800 feet of spacing between accesses, with a targeted pedestrian crossing spacing range of 500-1,000 feet.

Current Washington County spacing standards for SW Roy Rogers Road and SW Beef Bend Road restrict direct access to Arterial streets to other Arterial or Collector streets, with spacing of at least 600 feet.

** Mid-block pedestrian and bicycle accessways on public easements or rights-of-way must be provided at spacing of no more than 330 feet if full-street connections cannot be provided, unless the connection is impractical due to topography, natural areas, inadequate sight distance, lack of supporting land use or other factors that may prevent safe connection, as determined by the City Engineer or City Engineer Designee.

Street connectivity must be reviewed with all traffic studies associated with new development in the City's planning area to comply with the Metro Regional Transportation Functional Plan and ensure that the multimodal objectives of the TSP are followed. Applicants of residential or mixed-use developments will be required to provide a proposed street map as part of the development approval process. The street map must include the following as required by Metro[6]:

[6] Metro Regional Transportation Functional Plan, 3.08.110.E.

- Provide full street connections with spacing of no more than 530 feet between connections (see Table 9), except when prevented by barriers except if prevented by barriers such as topography, natural areas, pre-existing development, or easements.

- If full street connections are prevented, provides bike and pedestrian accessways with spacing of no more than 330 feet (see Table 9), except when prevented by barriers.

- Limit use of cul-de-sacs and other closed-end street systems to situations where barriers prevent full street connections or to locations where pedestrian/bike accessways are to be provided at 330 feet intervals.

- Include no cul-de-sacs and other closed-end street longer than 200 feet or having no more than 25 dwelling units. All cul-de-sacs must provide pedestrian/bike accessways at the end to allow for connectivity, except when prevented by barriers.

TRANSPORTATION IMPACT STUDY (TIS) GUIDELINES

Transportation impact studies (TIS) implement Sections 660-012-0045(2)(b) and -0045(2)(e) of the State Transportation Planning Rule (TPR), which require the City to adopt performance standards and a process to apply conditions to land use proposals in order to minimize impacts on and protect transportation facilities.

The preparation of the TIS report is the responsibility of the landowner or applicant and must be completed by a qualified professional engineer. King City assumes no liability for any costs or time delays (either direct or inconsequential) associated with the TIS report preparation and review. All TIS reports shall be reviewed by the City Engineer or City Engineer Designee. It is the responsibility of the applicant to coordinate with ODOT or Washington County for any potential impacts to their facilities.

A TIS may be required to be submitted to the City with a land use application at the request of the City Engineer or City Engineer Designee or if the proposal is expected to involve one (1) or more of the following:

1. Changes in land use designation or zoning designation that will generate more vehicle trip ends.
2. Projected increase in trip generation of 10 or more trips during either the AM or PM peak hour, or more than 100 daily trips.
3. Potential impacts to intersection operations.
4. Potential impacts to residential areas or local roadways, including any non-residential development that will generate traffic through a residential zone.
5. Potential impacts to pedestrian and bicycle routes, including, but not limited to school routes and multimodal roadway improvements identified in the TSP.
6. The location of an existing or proposed access driveway does not meet minimum spacing or sight distance requirements or is located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard.
7. A change in internal traffic patterns that may cause safety concerns.

STREET CROSSINGS

Streets with high traffic volumes and/or speeds and in areas with trail crossings, or nearby transit stops, residential uses, schools, parks, shopping, and employment destinations generally require enhanced street crossings with treatments, such as marked crosswalks, high visibility crossings, and curb extensions to improve safety and convenience. Crossing locations with higher volumes of pedestrians (either observed or projected) are also candidate locations for rectangular rapid flashing beacons or pedestrian hybrid beacons, which increase the visibility of the crossing for drivers.

Crossing opportunities along City streets should also align, where practical, with the transportation facility spacing standards shown in earlier in this chapter to ensure pedestrian and bicycle accessways are connected and continuous across streets. Exceptions include where the connection is impractical due to topography, inadequate sight distance, high vehicle travel speeds, lack of supporting land use, or other factors that may prevent safe crossing, as determined by the City Engineer or City Engineer Designee.

All crossings on OR 99W require review and approval by ODOT and should generally be provided every 500 to 1,000 feet[7] where practical. Crossings along SW Roy Rogers Road, SW Elsner Road, and SW Beef Bend Road require review and approval by Washington County and must comply with the Washington County mid-block crossing policy[8].

Locations of enhanced pedestrian and bicycle crossing treatments along City streets should be determined using the National Cooperative Highway Research Program (NCHRP) Report 562, Improving Pedestrian Safety at Unsignalized Intersections[9]. These guidelines for pedestrian and bicycle crossing treatments are based on vehicle speed on the major street, pedestrian crossing distance, peak hour pedestrian volume, peak hour vehicle volume, and local parameters such as motorist compliance, pedestrian walking speed, and pedestrian start-up and clearance time. NCHRP Report 562 includes worksheets for inputting the variables above and identifying the appropriate treatment type. These guidelines should be reviewed with all traffic studies for any potential street crossing associated with new development in the City's planning area. Table 10 summarizes potential crossing treatments at intersections and mid-block locations for pedestrians and bicyclists.

[7] Table 3-9 of the ODOT Blueprint for Urban Design, based on Commercial Corridor design context.

[8] R&O 10-107, Approval Process for New Pedestrian Crossings at Midblock and Uncontrolled Intersections. Each proposed crossing would have to be evaluated based on existing and planned roadway characteristics, observed speeds and volumes, pedestrian trip generators, proximity of existing traffic signals, sight distance, topography, and other considerations. At-grade crossings are not permitted within 300 feet of an existing signalized intersection.

[9] http://www.trb.org/Publications/Blurbs/157723.aspx

TABLE 10: CROSSING TREATMENTS FOR PEDESTRIANS AND BICYCLISTS

CROSSING TREATMENTS		CROSSING LOCATION	
		Intersection	Midblock
RECTANGULAR FLASHING BEACON (RRFB)			✓
CONVENTIONAL CROSSWALK		✓	✓
BULB OUT		✓	
MEDIAN REFUGE		✓	✓
INTERSECTION CROSSING MARKINGS		✓	
BIKE BOXES		✓	
TWO STAGE QUEUE BOXES		✓	

VOLUME AND SPEED MANAGEMENT TOOLS

Volume and speed management refers to street design techniques that slow traffic and make streets safer and more pleasant for pedestrian and bicycle users and adjoining land uses without significantly changing their vehicle capacity. These design techniques encourage a more inviting environment for pedestrians and bicyclists, particularly along streets designed for shared bicycle travel.

Table 11 shows common traffic calming applications and suggests which devices may be appropriate for streets in the King City planning area. Volume and speed management measures must balance vehicle speeds and volumes with the mobility and circulation needs of service providers, such as emergency responders. Any traffic calming project should include coordination with emergency service providers to ensure the project does not impede response times. Any measures on OR 99W require review and approval by ODOT, and measures along SW Roy Rogers Road, SW Elsner Road, and SW Beef Bend Road require review and approval by Washington County.

Volume and speed management influences driver behavior through physical and psychological means, by using one or more of the following:

- **Horizontal impediments** designed to make a driver turn the wheel and reduce the sight lines of unending pavement, which usually results in slower speeds. Examples include chicanes, roundabouts, and mini roundabouts.
- **Road narrowing** via striping, parking, or curb to reduce the drive lane widths, which slightly lower speeds. These treatments have the additional benefit of shortening pedestrian crossings, which lead to a safer multi-modal environment. Examples include curb extensions or bulbouts, or mid-block pedestrian refuge islands.
- **Closing the through road partially or fully** to disrupt travel patterns. These treatments alone may not change vehicle speeds but are effective at lowering volumes along certain streets.

TABLE 11: VOLUME AND SPEED MANAGEMENT TOOLS

TOOLS *		USE BY VEHICLE FUNCTIONAL CLASSIFICATION			IMPACT	
		Arterial Street	Collector Street	Neighborhood Route or Local Street	Speed Reduction	Traffic Diversion
NARROWING TRAVEL LANES		✓	✓	✓	✓	
PLACING BUILDINGS, ON-STREET PARKING, AND LANDSCAPING CLOSER TO THE STREET		✓	✓	✓	✓	
CURB EXTENSIONS OR BULBOUTS		✓	✓	✓	✓	
ROUNDABOUTS		✓	✓	✓	✓	
MINI-ROUNDABOUTS			✓	✓	✓	
MEDIANS AND PEDESTRIAN ISLANDS		✓	✓	✓	✓	

TOOLS *		USE BY VEHICLE FUNCTIONAL CLASSIFICATION			IMPACT	
		Arterial Street	Collector Street	Neighborhood Route or Local Street	Speed Reduction	Traffic Diversion
PAVEMENT TEXTURE		✓	✓	✓	✓	
RAISED INTERSECTION OR CROSSWALK				✓	✓	✓
CHOKER				✓	✓	✓
CHICANES				✓	✓	✓
DIVERTERS (WITH EMERGENCY VEHICLE PASS-THROUGH)			✓	✓	✓	✓

Note: * Any traffic calming project should include coordination with emergency service providers to ensure the project does not impede response times. Any measures on OR 99W require review and approval by ODOT, and measures along SW Roy Rogers Road and SW Beef Bend Road require review and approval by Washington County.

CHAPTER 5.

Projects and Priorities

This chapter describes the transportation system improvement projects identified to address the system needs discussed in Chapter 3.

PROCESS FOR DEVELOPING PROJECTS

The project team developed the recommended transportation solutions using guidance provided by the project goals and with input from three main sources:

- Stakeholders (via committee meetings, in-person events, online open houses, and project website comments and mail-in survey responses)
- Previous Plans (such as the 2018 King City Urban Reserve Area 6D Concept Plan, the ongoing Kingston Terrace Master Plan, and the King City Town Center Plan and Implementation Strategy)
- Independent Project Team Evaluation (Existing and Future Transportation Conditions and Needs Evaluation)

The full list of projects in this TSP are referred to as Aspirational Projects. Aspirational projects include all identified projects for improving the transportation network along major streets in the City's planning area, regardless of their priority or their likelihood to be funded. This TSP focuses on streets in the planning area with a vehicle functional classification of Neighborhood Route or higher, and with a pedestrian or bicycle route designation of Neighborhood or higher. Additional improvements will occur with private development in the City's planning area, including the build out of the local street network consistent with the standards in Chapter 4.

The TSP planning process screens candidate projects to set aside those that may not be feasible due to environmental or existing development limitations. The remaining projects are a combination of new and previous ideas for the transportation system that seek to address the gaps and deficiencies in the City.

PROJECT FUNDING

Each project was reviewed to consider how it might be funded during the next 20 years. In general, the primary funding agency was assumed to be the current or future facility owner, as they are responsible to oversee construction and long-term maintenance. All projects were assigned a primary funding agency which include King City, Washington County, Metro, and ODOT. In some cases, funding partnerships were identified for projects that were expected to provide mutual benefits between agencies or where there were opportunities to accelerate projects to completion. Each project was also assigned an assumed funding source, which included the County Transportation Development Tax, New Development, City/State revenue (i.e., State Highway Trust Fund, County Vehicle Registration Fees, etc.) or partner agency funds (i.e., Regional, TriMet). It is important to note that these funding assumptions do not obligate any agency to commit to these projects or fund them in this manner.

This TSP presents the high priority City projects that are constrained to a level of funding that is expected to be available for the next 20 years. In addition, the TSP identifies priority projects that the City could use to inform its decisions for applying the Washington County Transportation

Development Tax (TDT) revenues it receives[10]. While there may be other partnering opportunities with ODOT, Metro, and TriMet, these decisions are ultimately up to those agencies. Private development projects will likely be built in coordination with land use actions and future development in the planning area, especially in Kingston Terrace. While projects related to property development or re-development may occur within the TSP planning horizon, no funding was assumed from current City revenue sources since these projects will not be needed until the adjoining development occurs. If the City chooses to implement a local system development charge for transportation in the future, much of the private development share will likely be included in that fee.

Approximately $3.7 million is estimated to be available for locally funded improvements over the next 20 years. About $15 million of the total project costs are assumed to be City responsibility (see Table 12). This TSP has identified about $85 million worth of needed investments along TDT eligible facilities. Revenue from the County TDT will be expected to provide $29.8 million for eligible projects over the next 20 years. The TSP has also identified projects estimated at around $52 million for other partner agencies, and around $93 million that is assumed to be funded through private development as a condition of approval, although only $27 million in funding was assumed from private development as a conservative approach. Refer to the Financial Feasibility Assessment Report in the Appendix for more information on the expected transportation revenue and expenditures.

TABLE 12: ASPIRATIONAL PROJECT FUNDING (2023 DOLLARS)

FUNDING SOURCE	TOTAL FUNDING NEED	EXPECTED FUNDING AVAILABLE THROUGH 2040
KING CITY	$15,340,000	$3,705,000
WASHINGTON COUNTY TDT	$84,940,000	$29,830,000
PARTNER AGENCY	$52,470,000	*
PRIVATE DEVELOPMENT	$93,250,000	$27,000,000**
Total	**$246,000,000**	**$60,535,000**

Notes: * While there may be partnering opportunities with other agencies to jointly fund projects, these decisions are ultimately up to those agencies.

** This is assumed to be funded through private development as a condition of approval or through a future local system development charge for transportation.

[10] The only roadways currently authorized in the planning area to receive TDT funds include SW Roy Rogers Road, SW Beef Bend Road, SW Fischer Road and SW 131st Avenue. This TSP assumes that the TDT list will be modified in the future to also include projects along SW Elsner Road and the SW Fischer Road extension.

ASPIRATIONAL PROJECTS

The full aspirational list includes 91 projects totaling $246 million in total investments (see Figure 38). For the purposes of cost estimates, project design elements are identified, however, the actual design elements for any project are subject to change and will ultimately be determined through a preliminary and final design process and are subject to City, ODOT, Washington County, and/or other partner agency approval. The Aspirational projects were assigned to one of several categories:

- **Multi-Modal Street Improvement** – these projects will improve or construct new multi-modal streets throughout the planning area, each with facilities for motorists, pedestrians, and bicyclists. A total of 23 projects are identified that, as of 2023, will cost an estimated $150 million to complete.
- **Intersection Improvement** – these projects will improve safety and mobility at intersections throughout the planning area. A total of 19 projects were identified to construct new or improve existing intersections that, as of 2023, will cost an estimated $38 million to complete.
- **Pedestrian/ Bike Improvement** – these projects include stand-alone sidewalk, path and roadway crossing improvements, and an integrated network of bicycle lanes, marked on-street routes and shared-use paths to facilitate safe and convenient travel citywide. A total of 45 pedestrian and bicycle projects were identified that, as of 2023, will cost an estimated $52 million to complete.
- **Transit Enhancement** – these projects will enhance the quality and convenience for transit passengers. Three transit projects were identified that, as of 2023, will cost an estimated $6 million.
- **Demand/ System Management** – this will encourage more efficient usage of the transportation system. One project was identified that, as of 2023, will cost an estimated $50,000.

FIGURE 38: LEVEL OF INVESTMENT BY MODE OF TRAVEL

PRIORITIZING ASPIRATIONAL PROJECTS

Unless the City expands its funding options, many of the Aspirational projects identified are not reasonably likely to be funded by 2040 (as shown in Table 13). For this reason, projects from the Aspirational list were evaluated and ranked using a set of measurable evaluation criteria that reflect how well they achieve the transportation goals and objectives described in Chapter 2. The prioritization score was calculated for each project using the criteria associated with each TSP goal.

The projects were initially scored on the seven criteria from 1 (low) to 10 (high). The criteria were weighted equally, resulting in overall possible scores ranging from 7 to 70. An evaluation ranking of "high" was assigned for projects with the highest total scores, "medium" for the middle one-third of project scores, and "low" for projects with the lowest total scores. The methodology for calculating the scores for each criterion can be found in the Transportation Performance Measures and Project Prioritization Framework in the Appendix.

The final priority ranks listed in Table 13 were used to divide projects from the Aspirational project list into two improvement packages, referred to as Financially Constrained and Unconstrained. The project priority rankings do not create an obligation to construct projects in any order and it is recognized that these priorities may change over time. The City of King City will use the priorities listed in this TSP to guide investment decisions but will also regularly reassess local priorities to leverage new opportunities and reflect evolving community interests.

The City is not required to implement projects identified on the Financially Constrained list first. Priorities may change over time and unexpected opportunities may arise to fund particular projects. The City is free to pursue any of these opportunities at any time.

The purpose of the Financially Constrained project list is to establish reasonable expectations for the level of improvements that will occur and give the City initial direction on where funds should be allocated. During the short-term, most of the City's investments will occur within the current City limits. As annexation occurs over time, other projects will have the potential to be funded by the City or through private development as a condition of approval.

FINANCIALLY CONSTRAINED PROJECTS

While all TSP projects will be beneficial, the Financially Constrained projects are the most valued, in terms of how they meet critical needs and how well they work to deliver on community goals. Projects in this group have a total construction budget that is similar to the reasonably available funding over the planning horizon, meaning the $3.7 million likely to be available through existing City funding sources, $29.8 million from the County TDT and $27 million from private development. The projects included in the Financially Constrained list (shown in Table 13 and Figure 39) were recommended within several different priority horizons, based on the project evaluation score:

- **Tier 1:** Projects recommended for implementation within 1 to 5 years.
- **Tier 2:** Projects recommended for implementation within 5 to 10 years.
- **Tier 3:** Projects likely to be implemented beyond 10 years.

UNCONSTRAINED PROJECTS

Unconstrained projects are those remaining from the Aspirational list that likely will not receive funding by 2040. These projects (shown in Table 13 and Figure 39) are recommended within the following priority horizons, based on the project evaluation score:

- **Unconstrained Tier 1:** Projects with the highest priority for implementation beyond the projects included on the Financially Constrained list, should additional funding become available.
- **Unconstrained Tier 2:** Projects with the next highest priority for implementation beyond the projects included on the Financially Constrained list, should additional funding become available.
- **Unconstrained Tier 3:** The last phase of projects to be implemented, should additional funding become available.

FIGURE 39: ASPIRATIONAL PROJECTS

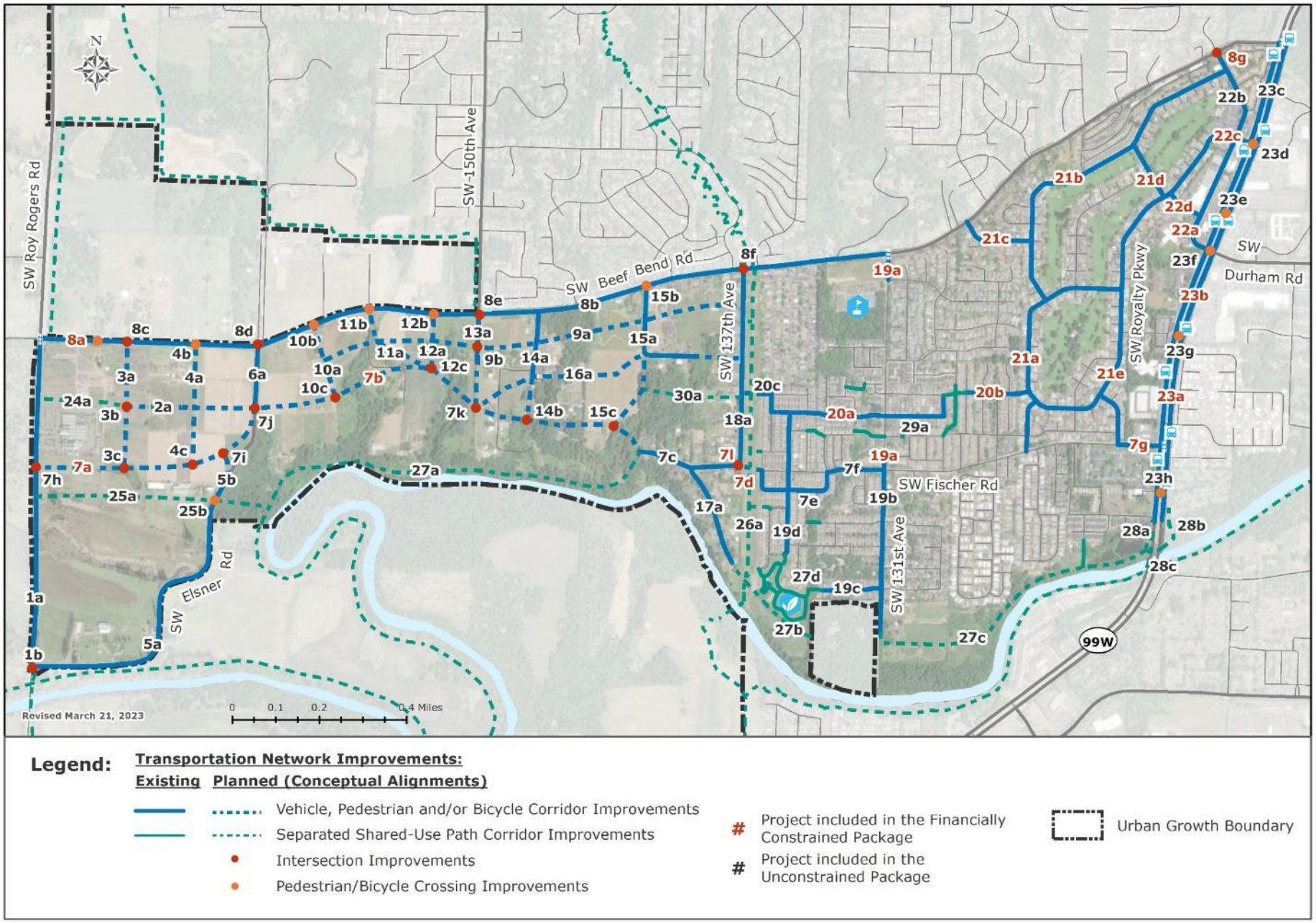


TABLE 13: ASPIRATIONAL PROJECTS

PROJECT ID	PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
1	**SW Roy Rogers Road Corridor (#1) Improvements from SW Elsner Road to SW Beef Bend Road.**							
1a	Widen to five lanes (Arterial Street) with pedestrian (Major Pedestrian route) and bicycle facilities (Major Bicycle route). Cost assumes a shared-use path on the east side.	Washington County	Metro	County Transportation Development Tax/ Regional Funds	$22,450,000	Medium	Unconstrained	Unconstrained Tier 1
1b	Improve the SW Elsner Road intersection. Cost assumes installation of a traffic signal.	Washington County	King City / Tigard	County Transportation Development Tax / New Development	$550,000	Medium	Unconstrained	Unconstrained Tier 2
2	**New Corridor (#2) between SW River Terrace Boulevard Corridor (#3) extension and SW Elsner Road.**							
2a	Construct a Neighborhood Route with pedestrian (Multimodal Area route) and bicycle facilities (Neighborhood Bicycle route). Cost assumes 2-lane street with parking, and sidewalks and on-street bike lanes on each side.	King City		New Development	$5,300,000	Low	Unconstrained	Unconstrained Tier 3
3	**SW River Terrace Boulevard Corridor (#3) extension between SW Beef Bend Road and the SW Fischer Road Corridor (#7) extension.**							
3a	Construct a Collector Street with pedestrian (Multimodal Area route) and bike facilities (Major Bicycle route). Cost assumes a 2-lane street with parking, sidewalks and a one-way cycle track on each side, with 3-lanes provided at the SW Beef Bend intersection.	King City		New Development	$5,050,000	Medium	Unconstrained	Unconstrained Tier 2
3b	Improve the planned Corridor 2 intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$1,100,000	Medium	Unconstrained	Unconstrained Tier 3
3c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$5,450,000	High	Unconstrained	Unconstrained Tier 1
4	**New Corridor (#4) between SW Beef Bend Road and the SW Fischer Road Corridor (#7) extension.**							
4a	Construct a Neighborhood Route with pedestrian (Multimodal Area route) and bicycle facilities (Neighborhood Bicycle route). Cost assumes a 2-lane street with parking and sidewalks on each side, and shared lane markings for bikes, with 3-lanes at the SW Beef Bend intersection.	King City		New Development	$3,050,000	Low	Unconstrained	Unconstrained Tier 3
4b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City	Washington County / Tigard	New Development	$100,000	Medium	Unconstrained	Unconstrained Tier 2

PROJECT ID	PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
4c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$1,100,000	Medium	Unconstrained	Unconstrained Tier 3
5	**SW Elsner Road Corridor (#5) Extension/Improvements from SW Roy Rogers Road to the SW Fischer Road Corridor (#7) extension.**							
5a	Improve to a Collector Street with pedestrian (Major Pedestrian route) and bike facilities (Major Bicycle route) from SW Roy Rogers Road to the South Kingston Terrace Trail crossing (#25b). Cost assumes a 2-lane street with a shared-use path on the west side and left-turn lanes where needed.	Washington County		County Transportation Development Tax	$7,000,000	Medium	Unconstrained	Unconstrained Tier 2
5b	Realign/Improve as a Collector Street with pedestrian (Major Pedestrian route) and bike facilities (Major Bicycle route) from the South Kingston Terrace Trail crossing (#25b) to the SW Fischer Road Corridor (#7) extension. Cost assumes a 2-lane street with sidewalks and a one-way cycle track on each side and left-turn lanes where needed.	Washington County		County Transportation Development Tax	$1,750,000	Medium	Unconstrained	Unconstrained Tier 2
6	**SW Elsner Road Corridor (#6) Improvements from the SW Fischer Road Corridor (#7) extension to SW Beef Bend Road.**							
6a	Improve to a Collector Street with pedestrian (Major Pedestrian route) and bike facilities (Major Bicycle route). Cost assumes a 2-lane street with sidewalks and a one-way cycle track on each side and left-turn lanes where needed.	Washington County		County Transportation Development Tax	$1,550,000	Medium	Unconstrained	Unconstrained Tier 2
7	**SW Fischer Road Corridor (#7) Extension/Improvements from SW Roy Rogers Road to OR 99W.**							
7a	Extend SW Fischer Road as a Collector Street with pedestrian (Multimodal Area route) and bike facilities (Major Bicycle route) from SW Roy Rogers Road to SW Elsner Road (Corridor #6). Cost assumes a 2-lane street with parking, sidewalks, and a one-way cycle track on each side.	Washington County	King City	County Transportation Development Tax / New Development	$10,250,000	Medium	Financially Constrained	Tier 1
7b	Extend/Improve SW Fischer Road as a Collector Street with pedestrian (Major Pedestrian route) and bike facilities (Major Bicycle route) from SW Elsner Road to SW River Lane. Cost assumes a 2-lane street with parking, sidewalks, and a one-way cycle track on each side.	Washington County	King City	County Transportation Development Tax / New Development	$20,600,000	Medium	Financially Constrained	Tier 2
7c	Improve SW River Lane to include pedestrian (Major Pedestrian route) and bike facilities (Major Bicycle route) from SW River Lane to SW 137th Avenue. Cost assumes a 2-lane street, with a shared-use path on the south side.	Washington County	King City	County Transportation Development Tax / New Development	$1,500,000	Medium	Unconstrained	Unconstrained Tier 3
7d	Extend SW Fischer Road as a Collector Street with pedestrian (Major Pedestrian route) and bike facilities (Major Bicycle route) from SW 137th Avenue to SW Cordelia Terrace. Cost assumes a 2-lane street, with a sidewalk on the north side and a shared-use path on the south side.	Washington County	King City	County Transportation Development Tax / New Development	$800,000	Medium	Financially Constrained	Tier 2
7e	Improve SW King Lear Way to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route).	King City		City Funds	$25,000	Medium	Unconstrained	Unconstrained Tier 3

PROJECT ID	PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
7f	Reconfigure SW Fischer Road as a 2-lane street with bike lanes (Major Bicycle route) on each side from SW King Lear Way to SW 131st Avenue.	King City		City Funds	$15,000	Medium	Unconstrained	Unconstrained Tier 3
7g	Reconfigure SW Fischer Road as a 3-lane street with bike lanes (Major Bicycle route) on each side from SW Queen Anne Avenue to OR 99W.	King City	Washington County	City Funds	$350,000	High	Financially Constrained	Tier 1
7h	Improve the SW Roy Rogers Road intersection. Cost assumes installation of a traffic signal.	Washington County	King City	County Transportation Development Tax / New Development	$550,000	High	Unconstrained	Unconstrained Tier 1
7i	Improve the SW Elsner Road (Corridor #5) intersection. Cost assumes installation of a roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$5,450,000	Medium	Unconstrained	Unconstrained Tier 2
7j	Improve the planned Corridor #2 intersection. Cost assumes installation of a roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$5,450,000	Medium	Unconstrained	Unconstrained Tier 2
7k	Improve the SW 150th Avenue intersection. Cost assumes installation of a roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$5,450,000	Medium	Unconstrained	Unconstrained Tier 2
7l	Improve the SW 137th Avenue intersection and provide an enhanced pedestrian/bicycle crossing. Cost assumes installation of a roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$5,450,000	Medium	Financially Constrained	Tier 2
8	**SW Beef Bend Road Corridor (#8) Improvements from SW Roy Rogers Road to OR 99W.**							
8a	Widen to three lanes (Arterial Street), with pedestrian (Major Pedestrian route) and bicycle facilities (Major Bicycle route) between SW Roy Rogers Road and SW 150th Avenue. Cost assumes a sidewalk on the north side and a shared-use path on the south side.	Washington County	Metro	County Transportation Development Tax/ Regional Funds	$15,600,000	High	Financially Constrained	Tier 2
8b	Widen to three lanes (Arterial Street), complete sidewalk gaps (Major Pedestrian route), and add separated/protected bike facilities (Major Bicycle route) between SW 150th Avenue to SW 131st Avenue. Cost assumes a sidewalk on the north side and a shared-use path on the south side.	Washington County	Metro	County Transportation Development Tax/ Regional Funds	$14,900,000	High	Unconstrained	Unconstrained Tier 1
8c	Improve the SW River Terrace Boulevard Corridor (#4) intersection. Cost assumes installation of a traffic signal.	Washington County	King City / Tigard	County Transportation Development Tax / New Development	$550,000	High	Unconstrained	Unconstrained Tier 1

PROJECT ID	PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
8d	Improve the SW Elsner Road intersection. Cost assumes installation of a traffic signal.	Washington County	King City / Tigard	County Transportation Development Tax / New Development	$550,000	High	Unconstrained	Unconstrained Tier 1
8e	Improve the SW 150th Avenue intersection. Cost assumes installation of a traffic signal.	Washington County	King City / Tigard	County Transportation Development Tax / New Development	$550,000	Medium	Unconstrained	Unconstrained Tier 2
8f	Realign SW Colyer Way and SW Peachtree Drive to connect with SW 137th Avenue and provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection. Cost assumes installation of a traffic signal.	Washington County	Metro / King City	Regional Funds/ New Development	$1,400,000	High	Unconstrained	Unconstrained Tier 1
8g	Improve the SW 116th Avenue intersection. Cost assumes restriping the SW 116th Avenue approach to SW Beef Bend Road to include separate left-turn and right-turn lanes and an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City		City Funds	$100,000	High	Financially Constrained	Tier 2
9	**New Corridor (#9) between new Corridor #10 and SW 137th Avenue.**							
9a	Construct a Neighborhood Route with pedestrian (Neighborhood Pedestrian route) and bike facilities (Neighborhood Bicycle route). Cost assumes a 2-lane street with parking, sidewalks on each side and shared lane markings for bikes.	King City		New Development	$17,750,000	Low	Unconstrained	Unconstrained Tier 3
9b	Improve the SW 150th Avenue intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$1,100,000	Low	Unconstrained	Unconstrained Tier 3
10	**New Corridor (#10) between SW Beef Bend Road and the SW Fischer Road Corridor (#7) extension.**							
10a	Construct a Neighborhood Route with pedestrian (Neighborhood Pedestrian route) and bike facilities (Neighborhood Bicycle route). Cost assumes a 2-lane street with parking, sidewalks on each side and shared lane markings for bikes.	King City		New Development	$2,500,000	Low	Unconstrained	Unconstrained Tier 3
10b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City	Washington County / Tigard	New Development	$100,000	Medium	Unconstrained	Unconstrained Tier 2
10c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$100,000	Low	Unconstrained	Unconstrained Tier 3
11	**New Corridor (#11) Improvements from SW Beef Bend Road to the SW Fischer Road Corridor (#7) extension.**							
11a	Construct a Neighborhood Route with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay). Cost assumes a 2-lane street with parking, and sidewalks and on-street bike lanes.	King City		New Development	$4,000,000	Medium	Unconstrained	Unconstrained Tier 2

PROJECT ID	PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
11b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City	Washington County / Tigard	New Development	$100,000	Medium	Unconstrained	Unconstrained Tier 2
12	**New Corridor (#12) between SW Beef Bend Road and south of the SW Fischer Road Corridor (#7) extension.**							
12a	Construct a Neighborhood Route with pedestrian (Neighborhood Pedestrian route) and bike facilities (Neighborhood Bicycle route). Cost assumes a 2-lane street with parking, sidewalks on each side and shared lane markings for bikes.	King City		New Development	$1,800,000	Low	Unconstrained	Unconstrained Tier 3
12b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City	Washington County / Tigard	New Development	$100,000	Low	Unconstrained	Unconstrained Tier 3
12c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$1,100,000	Low	Unconstrained	Unconstrained Tier 3
13	**SW 150th Avenue Corridor (#13) Improvements from SW Beef Bend Road to the SW Fischer Road Corridor (#7) extension.**							
13a	Construct a Collector Street with pedestrian (Major Pedestrian route) and bike facilities (Major Bicycle route). Cost assumes a 2-lane street with parking, a shared-use path on the west side and a sidewalk on the east side, with 3-lanes provided at the SW Beef Bend intersection.	King City		New Development	$3,850,000	Medium	Unconstrained	Unconstrained Tier 2
14	**SW 147th Avenue Corridor (#14) Extension/Improvements from SW Beef Bend Road to the SW Fischer Road Corridor (#7) extension.**							
14a	Construct a Neighborhood Route with pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay). Cost assumes a 2-lane street with parking, sidewalks on each side and shared lane markings for bikes.	King City		New Development	$2,900,000	Low	Unconstrained	Unconstrained Tier 3
14b	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$1,100,000	Low	Unconstrained	Unconstrained Tier 3
15	**SW Myrtle Avenue Corridor (#15) Extension/Improvements from SW Beef Bend Road to the SW Fischer Road Corridor (#7) extension.**							
15a	Construct a Neighborhood Route with pedestrian (Neighborhood Pedestrian route) and bike facilities (Neighborhood Bicycle route) from SW Beef Bend Road to the SW Fischer Road extension. Cost assumes a 2-lane street with parking, and sidewalks and on-street bike lanes.	King City		New Development	$5,450,000	Low	Unconstrained	Unconstrained Tier 3
15b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City	Washington County	New Development	$100,000	Medium	Unconstrained	Unconstrained Tier 2
15c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$1,100,000	Low	Unconstrained	Unconstrained Tier 3

PROJECT ID		PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
16		**New Corridor (#16) between the SW Fischer Road Corridor (#7) extension and SW 137th Avenue.**							
	16a	Construct a Neighborhood Route with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay). Cost assumes a 2-lane street with parking, and sidewalks and on-street bike lanes.	King City		New Development	$1,250,000	Low	Unconstrained	Unconstrained Tier 3
17									
	17a	Improve SW River Lane to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) south of SW Watson.	King City		City Funds	$25,000	Low	Unconstrained	Unconstrained Tier 3
18		**SW 137th Avenue Corridor (#18) Improvements from SW Beef Bend Road to the SW Fischer Road Corridor (#7) extension.**							
	18a	Improve to include pedestrian (Neighborhood Pedestrian route) and bike facilities (Neighborhood Bicycle route). Cost assumes a 2-lane street, a sidewalk on the west side and shared lane markings for bikes, with 3-lanes provided at the SW Beef Bend intersection.	King City		New Development	$1,250,000	Low	Unconstrained	Unconstrained Tier 3
19		**SW 131st Avenue/SW Bedford Street/SW 136th Avenue/SW King Lear Way Bike Route Improvements.**							
	19a	Improve SW 131st Avenue to include a northbound bike lane north of SW Peachvale Street, and southbound bike lane between SW Carmel Street and SW Fischer Road.	King City		City Funds / New Development	$750,000	High	Financially Constrained	Tier 2
	19b	Improve SW 131st Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) south of SW Fischer Road.	King City		City Funds	$40,000	Low	Unconstrained	Unconstrained Tier 3
	19c	Improve SW Bedford Street to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) west of SW 131st Street.	King City		City Funds	$15,000	Low	Unconstrained	Unconstrained Tier 3
	19d	Improve SW 136th Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route).	King City		City Funds	$35,000	Low	Unconstrained	Unconstrained Tier 3
20		**SW Cordelia Terrace to SW King Charles Avenue Improvements.**							
	20a	Improve SW Capulet Lane, SW Romeo Terrace, SW MacBeth Drive and SW Jordan Way to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) between SW Cordelia Terrace and SW Matador Lane.	King City		City Funds	$50,000	Medium	Financially Constrained	Tier 1
	20b	Improve SW Morocco Drive to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) between SW Matador Lane and SW King Charles Avenue.	King City		City Funds	$15,000	High	Financially Constrained	Tier 1
	20c	Extend SW Capulet Lane as a Local Street with pedestrian (Neighborhood Pedestrian route) and bike facilities (Neighborhood Bicycle route). Cost assumes a 2-lane street, with a sidewalk on the north side and a shared-use path on the south side.	King City		City Funds	$400,000	Medium	Unconstrained	Unconstrained Tier 3

PROJECT ID	PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
21	**SW Fischer Road to SW Beef Bend Road Bike Route Improvements.**							
21a	Improve SW 124th Avenue and SW King Charles Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) between SW Fischer Road and SW Royalty Parkway.	King City		City Funds	$65,000	High	Financially Constrained	Tier 2
21b	Improve SW King George Drive to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) between SW King Charles Avenue and SW 116th Avenue.	King City		City Funds	$80,000	High	Financially Constrained	Tier 2
21c	Improve SW Prince Albert Street to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) between SW King George Drive and SW Beef Bend Road.	King City		City Funds	$20,000	High	Financially Constrained	Tier 2
21d	Improve SW Queen Elizabeth Street to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) between SW King George Drive and SW Royalty Parkway.	King City		City Funds	$15,000	High	Financially Constrained	Tier 2
21e	Improve SW Royalty Parkway and SW Queen Anne Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) between SW Queen Elizabeth Street and SW Fischer Road.	King City		City Funds	$70,000	High	Financially Constrained	Tier 2
22	**King City Town Center Improvements from SW Beef Bend Road to OR 99W.**							
22a	Improve SW 116th Avenue to enhance the streetscape, improve ADA compliance and widen existing sidewalks, complete sidewalk gaps (Multimodal Area route) and reconfigure to include bike lanes (Neighborhood Bicycle route) between SW Queen Elizabeth Street and OR 99W.	King City	Private Development	City Funds / New Development	$850,000	High	Financially Constrained	Tier 1
22b	Improve SW 116th Avenue to enhance the streetscape and widen existing sidewalks, improve ADA compliance, complete sidewalk gaps (Multimodal Area route) and include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle route) between SW Queen Elizabeth Street and SW Beef Bend Road. Note a portion of this street segment is currently private.	King City		City Funds	$3,000,000	High	Unconstrained	Unconstrained Tier 1
22c	Improve SW Royalty Parkway to include shared lane markings and route wayfinding for bikes between OR 99W and SW Queen Elizabeth Street.	King City		City Funds	$30,000	High	Financially Constrained	Tier 1
22d	Improve SW Queen Elizabeth Street to enhance the streetscape, improve ADA compliance and widen existing sidewalks and include shared lane markings and route wayfinding for bikes between SW Royalty Parkway and SW 116th Avenue.	King City	Private Development	City Funds / New Development	$800,000	High	Financially Constrained	Tier 1
23	**OR 99W Corridor Plan from SW Beef Bend Road to the Tualatin River.**							
23a	Study the OR 99W Corridor through King City, along with Tigard and other neighboring agencies, to develop a corridor-wide improvement plan to align the highway with the Commercial Corridor context zone from the ODOT Blueprint for Urban Design. Critical focus areas in King City are new, expanded, and improved pedestrian and bicycle crossings, improved access to transit, expanded pedestrian	ODOT	Metro	State/ Regional Funds	$250,000	High	Financially Constrained	Tier 1

PROJECT ID	PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
	facilities and buffer from the vehicle travel way, protected and separated bicycle facilities, and improved traffic flow for vehicles and freight.							
23b	Construct pedestrian facilities and buffer from the vehicle travel way. Cost assumes sidewalks and a buffer on each side between SW Beef Bend Road and SW Royalty Parkway; near SW King James Place; and near SW Versailles Road.	ODOT	Metro	State/ Regional Funds	$3,500,000	High	Financially Constrained	Tier 1
23c	Provide expanded pedestrian facilities and buffer from the vehicle travel way and protected and separated bicycle facilities. Cost assumes widened sidewalks, a one-way cycle track, and a buffer on each side.	ODOT	Metro	State/ Regional Funds	$10,950,000	High	Unconstrained	Unconstrained Tier 1
23d	Improve the pedestrian/bicycle crossing at the SW Royalty Parkway intersection.	ODOT		State Funds	$200,000	High	Unconstrained	Unconstrained Tier 1
23e	Provide a new enhanced pedestrian/bicycle crossing between SW 116th Avenue and SW Royalty Parkway, near the TriMet bus stops.	ODOT		State Funds	$300,000	High	Unconstrained	Unconstrained Tier 1
23f	Improve the pedestrian/bicycle crossing at the SW 116th Avenue and SW Durham Road intersection.	ODOT		State Funds	$200,000	High	Unconstrained	Unconstrained Tier 1
23g	Provide a new enhanced pedestrian/bicycle crossing between SW 116th Avenue and SW Fischer Road, near the SW King James Place intersection.	ODOT		State Funds	$300,000	High	Unconstrained	Unconstrained Tier 1
23h	Provide a new enhanced pedestrian/bicycle crossing between SW Fischer Road and SW Versailles Road, near the fire signal.	ODOT		State Funds	$300,000	High	Unconstrained	Unconstrained Tier 1
24	**North Kingston Terrace Trail from SW Roy Rogers Road to SW River Terrace Boulevard Corridor (#3) extension.**							
24a	Construct a shared-use path for pedestrian and bicycle travel.	King City		New Development	$1,250,000	High	Unconstrained	Unconstrained Tier 1
25	**South Kingston Terrace Trail from SW Roy Rogers Road to the planned Tualatin River Trail.**							
25a	Construct a shared-use path for pedestrian and bicycle travel.	King City		New Development	$3,300,000	Medium	Unconstrained	Unconstrained Tier 2
25b	Provide an enhanced pedestrian/bicycle crossing at the SW Elsner Road intersection.	King City	Washington County	New Development	$100,000	High	Unconstrained	Unconstrained Tier 1
26	**Westside Trail from SW Beef Bend Road to south side of Tualatin River.**							
26a	Construct a shared-use path for pedestrian and bicycle travel. Provide pedestrian and bicycle connections to adjacent streets. Includes a pedestrian and bicycle crossing of the Tualatin River.	Metro	King City	Regional/ City Funds	$5,600,000	Medium	Unconstrained	Unconstrained Tier 2
27	**Tualatin River Trail from SW River Lane to King City Community Park and SW 131st Avenue to OR 99W.**							

PROJECT ID	PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
27a	Construct a shared-use path for pedestrian and bicycle travel from the planned South Kingston Terrace Trail to SW River Lane.	Metro	King City	Regional Funds/ New Development	$7,500,000	Low	Unconstrained	Unconstrained Tier 3
27b	Construct a shared-use path for pedestrian and bicycle travel through King City Community Park to SW River Lane. Provide a future connection to SW 131st Avenue (this segment is currently outside of the Urban Growth Boundary).	Metro	King City	Regional Funds/ City Funds	$1,350,000	Medium	Unconstrained	Unconstrained Tier 2
27c	Construct a shared-use path for pedestrian and bicycle travel from OR 99W to SW 131st Avenue.	Metro	King City	Regional Funds/ City Funds	$4,350,000	High	Unconstrained	Unconstrained Tier 1
27d	Widen the pathway connection between SW Bedford Street and King City Community Park to provide for shared pedestrian and bicycle travel along the planned bike route.	King City		City Funds	$300,000	Low	Unconstrained	Unconstrained Tier 3
28	**OR 99W Connector Trail from OR 99W to south side of Tualatin River.**							
28a	Construct a shared-use path for pedestrian and bicycle travel from the Tualatin River Trail to SW Versailles Road along the west side of OR 99W.	ODOT	Metro	State/ Regional Funds	$350,000	High	Unconstrained	Unconstrained Tier 1
28b	Construct a shared-use path for pedestrian and bicycle travel from the Tualatin River Trail under OR 99W to the fire signal along the east side of OR 99W.	ODOT	Metro	State/ Regional Funds	$800,000	High	Unconstrained	Unconstrained Tier 1
28c	Construct a pedestrian and bicycle crossing of the Tualatin River along the west side of OR 99W.	ODOT	Metro	State/ Regional Funds	$1,800,000	High	Unconstrained	Unconstrained Tier 1
29	**New Shared-Use Path from SW Fitzwilliam Court to SW King Richard Drive.**							
29a	Construct a shared-use path for pedestrian and bicycle travel.	King City		City Funds	$100,000	Low	Unconstrained	Unconstrained Tier 3
30	**New Shared-Use Path from SW 137th Avenue to the SW Myrtle Avenue Corridor (#15) extension.**							
30a	Construct a shared-use path for pedestrian and bicycle travel.	King City		New Development	$1,000,000	Medium	Unconstrained	Unconstrained Tier 2
A	**Transit Service Enhancements**							
A1	Improve transit stop amenities as needed, to include sheltered stops with seating, landing pads, route information, sidewalk connections, bicycle parking and lighting.	TriMet	King City	TriMet / City Funds	$1,000,000	High	Unconstrained	Unconstrained Tier 3
A2	Construct a transit hub in the King City Town Center to offer riders a spot to connect to all bus routes that serve the City.	TriMet	King City	TriMet / City Funds	$5,000,000	High	Unconstrained	Unconstrained Tier 3
A3	Study to evaluate options to extend bus service into Kingston Terrace and ensure necessary infrastructure (e.g., shelter, signage) is implemented to support ridership.	TriMet	King City	TriMet / City Funds	$250,000	High	Financially Constrained	Tier 1
B	**Demand and System Management Enhancements**							

PROJECT ID	PROJECT DESCRIPTION *	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2023 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
B1	Install new bike parking throughout the City. Standard rack parking should be provided in areas where users park for less than two hours. Long-term parking that is secure and weather-protected should be provided in areas where users park for more than two hours.	King City		City Funds	$50,000	High	Financially Constrained	Tier 3

Notes: * For the purposes of cost estimates, project design elements are identified, however, the actual design elements for any project are subject to change and will ultimately be determined through a preliminary and final design process and are subject to City, ODOT, Washington County, and/or other partner agency approval.

CHAPTER 6.

Future Strategies and Considerations

The following chapter summarizes system performance outcomes and provides transportation strategies and policy considerations around providing travel options, preparing for advancements in transportation through technology, and monitoring plan implementation. Some are emerging issues to be monitored, and others are ongoing but need greater emphasis or attention. Addressing these will take the City time to evaluate, and they may require future decisions from the City Council.

Furthermore, it is recognized that there are on-going community issues related to general transportation needs that will continue to evolve after the TSP process and outcomes. These issues are acknowledged in the final section along with a summary of their status and the expected path forward.

SYSTEM PERFORMANCE

This TSP uses system performance measures to support the City's transportation planning and decision-making process, consistent with Metro requirements[11]. The performance measures serve as the link between TSP goals and plan implementation by enabling the City to measure the degree to which the TSP investments support regional and City-wide priorities through 2040. While the performance assessment does not represent the complete picture, it does offer a baseline against which to assess how the policies, investments, and planning decisions made in this plan may affect the future.

The nine TSP performance measures (shown in Table 14) include: 1) Miles Traveled; 2) Mode Share; 3) Multimodal Level of Traffic Stress; 4) Congestion; 5) System Completeness; 6) Access to Jobs; 7) Access to Community Amenities; 8) Access to Transit; and 9) Safety. Each performance measure includes a target to make progress towards through plan implementation (see Table 14). These targets are consistent with regional performance targets in the Metro Regional Transportation Plan and Regional Transportation Functional Plan.

The system performance evaluation process will be used during subsequent TSP updates, which typically occurs every 5 to 10 years, depending on funding availability and evolving citywide and regional transportation needs and priorities. The current TSP system performance assessment highlights changes between current conditions and the 2040 planning horizon for the transportation projects identified in the Aspirational project list (Chapter 5).

[11] Metro Regional Transportation Functional Plan, Section 3.08.230.D, requires local jurisdictions to include performance measures in the TSP for vehicle miles traveled per capita, walking, bicycling and transit mode shares, congestion, freight reliability and safety.

TABLE 14: SYSTEM PERFORMANCE MEASURES, TARGETS AND CONNECTION TO TSP GOALS

SYSTEM PERFORMANCE MEASURE	TSP GOALS: Accessibility and Connectivity	Safety and Security	Healthy People and Environment	Equity	Reliability and Efficiency	Fiscal Responsibility	Collaboration	Expected Outcome through 2040
HOW DO PEOPLE TRAVEL IN THE CITY?								
VEHICLE MILES TRAVELED: System-wide number of miles traveled (total and per capita) within the King City planning area. **Target:** By 2040, reduce vehicle miles traveled per person by 10 percent compared to 2015.	●		●	◒	●	●	◒	➖
MODE SHARE: Percent of non-drive alone trips (walking, bicycling, transit, and shared ride trips) within the King City planning area, and regionally designated Town Centers, Corridors and Neighborhoods. **Target:** By 2040, achieve the Metro regional non-drive alone modal targets for Town Centers and Corridors of 45 to 55 percent, and for Neighborhoods of 40 to 45 percent.	●		●	●	◒	●	◒	➕
HOW EASILY, COMFORTABLY AND DIRECTLY CAN PEOPLE TRAVEL IN THE CITY?								
MULTIMODAL LEVEL OF TRAFFIC STRESS: Locations on the roadway network that operate with an extreme or high multimodal level of traffic stress. **Target:** Decrease the miles of facilities that operate with an extreme or high multimodal level of traffic stress through 2040.	●	●	●	●	◒	◒	◒	➕
CONGESTION: Locations on the roadway network that operate above thresholds for congestion. **Target:** Decrease the amount of congested and severely congested lane miles through 2040.	◒	◒	◒	◒	●		◒	➖
SYSTEM COMPLETENESS: Completeness of sidewalks, bikeways, and trails within the planning area. **Target:** Complete the sidewalk, bikeway and trail networks by 2040.	●	●	●	●	●	◒	◒	➕
ACCESS TO JOBS: Number and percent change of jobs accessible within a reasonable travel time by driving, transit, bicycling, and walking. **Target:** Increase the number of jobs accessible within a reasonable commute.	●	◒	●	◒	◒		◒	➕
ACCESS TO COMMUNITY AMENITIES: Access to community amenities (i.e., education, critical services, parks, open spaces, and natural areas) within a reasonable travel time by transit, bicycling, and walking. **Target:** Increase the number of community amenities accessible.	●	◒	●	◒	◒		◒	➕
ACCESS TO TRANSIT: Number and share of households with access to transit within King City. **Target:** Increase the number of households accessible to transit.	●	◒	●	◒	◒		◒	➕
HOW SAFE IS TRAVEL IN THE CITY?								
SAFETY: Transportation related collisions within King City. **Target:** By 2040 reduce transportation related fatalities and serious injuries for all users by 50 percent.	◒	●		◒	◒	◒	◒	➕

Notes: ● = Measure highly connected with achieving goal ◒ = Measure somewhat connected with achieving goal; ➕ = Plan meets Target ➖ = Plan does not meet Target

PERFORMANCE ASSESSMENT OUTCOMES

The performance assessment results are summarized in the following sections. More information is also provided in the Transportation Performance Measures and Project Prioritization Framework Memorandum and the Existing Conditions and Needs Report included in the Appendix. It should be noted that data and tools available at this time are not sophisticated enough to capture the strategies and efforts around walking, biking, transit, rideshare, and telecommuting that help to move the dial on these measures towards the TSP's expected target.

Data sources used for performance measures are referenced in each measure and include:

- Washington County 2015 and 2040 Westside Focus Area Travel Demand Models (and land use inputs from the land use model)
- Geographic Information System (GIS) Databases
- Field reviews and data confirmation during the year 2020

VEHICLE MILES TRAVELED

Description: This measure is used to identify how the transportation investments impact travel by motor vehicles.

Measure(s): Vehicle miles traveled (VMT) (total, per capita)

Target: By 2040, reduce vehicle miles traveled per person by 10 percent compared to 2015.

Data Source: Travel Demand Models

Findings: The TSP target is not expected to be met. Table 15 shows that in 2015 roughly 1.54 vehicle miles were traveled per day per person, for a total of over 7,900 vehicle miles traveled by all people in the planning area. By 2040, this number is estimated to increase to over 25,000 vehicle miles per day, or roughly 1.81 vehicle miles per person. This represents an 18 percent increase from 2015, meaning that people are driving more, or for longer distances. This is reflective of the high amount of housing growth expected in the planning area and most residents having to travel elsewhere for employment. As noted earlier, the data and tools available at this time are not sophisticated enough to capture the benefits expected from the significant investments the TSP provides towards improving and enhancing the viability of the pedestrian, bicycle, and transit travel modes. As reflected earlier in Table 2, person trips for these modes will be expected to increase at a higher rate through 2040 than single-occupant vehicle trips.

TABLE 15: VEHICLE MILES TRAVELED PER PERSON IN KING CITY PLANNING AREA

PM PEAK HOUR VEHICLE MILES TRAVELED	2015 BASE YEAR	2040 HORIZON YEAR	CHANGE (2015-2040)
KING CITY POPULATION	5,141	14,086	8,945
TOTAL VEHICLE MILES TRAVELED	7,911	25,657	+17,746
VEHICLE MILES TRAVELED PER PERSON	1.54	1.81	+18%

Source: Washington County 2015 and 2040 Westside Focus Area Travel Demand Models; Based on Vehicle miles traveled (VMT) for each trip beginning or ending in a King City planning area Traffic Analysis Zone (TAZ). For per capita calculations these trip distances are divided by the planning area population.

MODE SHARE

Description: This measure is used to identify whether the transportation investments will increase non-drive alone mode share (i.e., walking, bicycling, transit, and shared ride).

Measure(s): Walking, Bicycling, Transit, and Shared Ride usage (total and share)

Target: By 2040, achieve the Metro regional non-drive alone modal targets for Town Centers and Corridors of 45 to 55 percent, and for Neighborhoods of 40 to 45 percent.

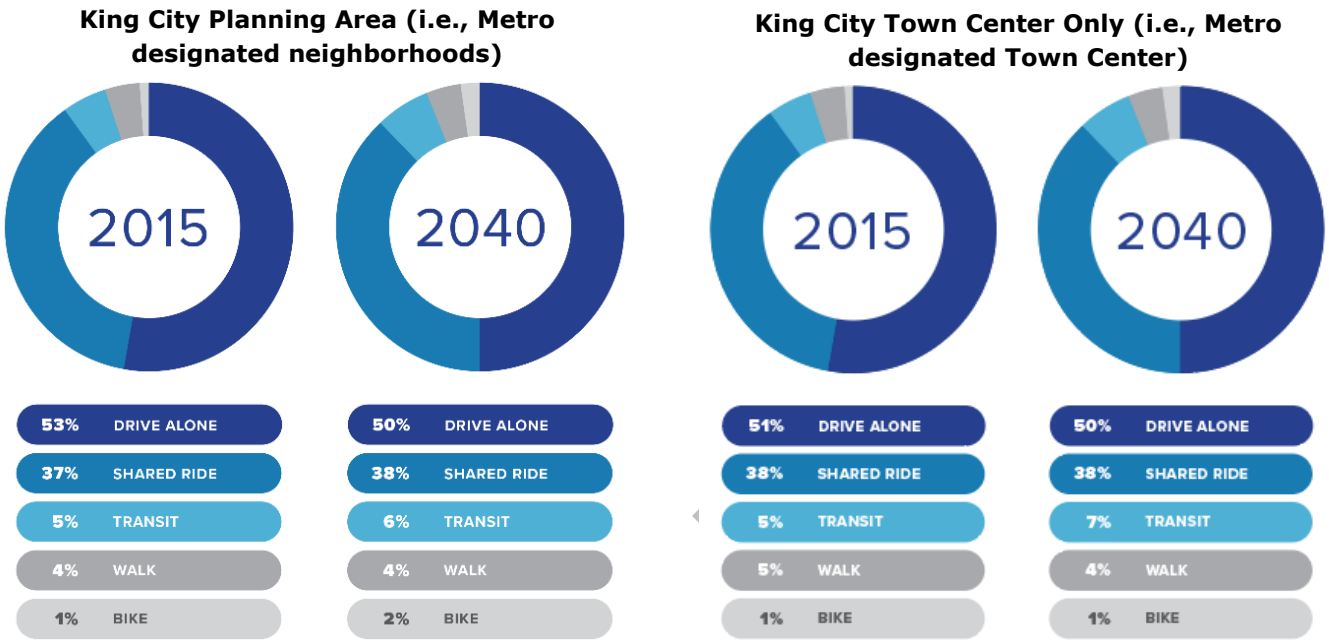
Data Sources: Travel Demand Models

Findings: The TSP non-drive alone modal targets are expected to be met. The travel mode share estimates in 2015 and 2040 for the City's planning area and King City Town Center are summarized in Figure 40. This is based on the person trip information displayed earlier in Table 2 and assumes land develops according to the land use assumptions during an average weekday. Through 2040, the non-single occupant vehicle (SOV) trip share in the planning area is expected to increase about three percent (from 47 to 50 percent). A larger share of trips in the planning area are expected to be made by shared ride, transit, and bike, with the overall share for each of these modes estimated to increase by 1 percent through 2040. Walk trips are estimated to be 4 percent of the overall trip share for both the year 2015 and 2040. The overall share of trips made by transit, walk, or bike during an average weekday is estimated to be 12 percent by 2040, with 88 percent of trips made by drive alone or shared-ride trips.

For the Metro designated King City Town Center along 99W, the non-single occupant vehicle (SOV) trip share is expected to increase about 1 percent (from 49 to 50 percent), as shown in Figure 40. A larger share of trips in the Town Center will be made by transit, with the overall share for this mode estimated to increase by 2 percent through. The overall share of trips made by transit, walk, or bike during an average weekday is estimated to be 12 percent by 2040, with 88 percent of trips made by drive alone or shared-ride trips.

COVID-19 has led to an overall change in travel patterns, and whether those are temporary or permanent remains to be seen as conditions trend back towards more "normal." No data is currently available to predict how current trends might impact long term mode share projections, and it is possible the estimates used for the Portland metropolitan area in the Travel Demand Model could evolve over time based on increases in remote working or other dynamics such as decreases in transit ridership.

FIGURE 40: DAILY TRAVEL MODE SHARE



Source: Washington County 2015 and 2040 Westside Focus Area Travel Demand Models; based on the King City planning area. A trip mode choice analysis step was used to project future mode choice decisions based on the future land use.

MULTIMODAL LEVEL OF TRAFFIC STRESS

Description: Pedestrian and bicycle level of traffic stress (LTS) evaluations provide a quantitative metric to understand a multimodal user's perception of the safety and comfort of the transportation network. This method can be used to understand key gaps and barriers to walking and bicycling which can then be addressed through targeted improvements.

Measure(s): Pedestrian level of traffic stress; Bicycle level of traffic stress

Target: Decrease the miles of facilities that operate with an extreme or high multimodal level of traffic stress through 2040.

Data Sources: GIS; Field confirmation

Findings: The TSP target is expected to be met. Results of the pedestrian LTS evaluation are summarized earlier in Figure 19 and below in Table 16. Extreme or high level of stress is experienced along 22 percent of streets, mainly those with the highest speeds and traffic volumes. This includes the extent of OR 99W, SW Beef Bend Road, SW Roy Rogers Road, and SW Elsner Road.

Results of the bicycle LTS evaluation are summarized earlier in Figure 22 and below in Table 16. An extreme or high level of stress is experienced along 22 percent of streets, mainly arterial and collector streets with the highest speeds and traffic volumes. This includes the extent of OR 99W, SW Beef Bend Road, SW Roy Rogers Road, SW Elsner Road, and short segments of SW Fischer Road and SW 131st Avenue.

As TSP projects are implemented and other redevelopment and frontage improvements occur through 2040, particularly in the Kingston Terrace area, streets will be improved or built to align with the standards outlined in Chapter 4. These standards require high-quality facilities, and an emphasis on safe, convenient, and comfortable travel that will contribute towards a lower stress walking and bicycling experience.

TABLE 16: MULTIMODAL LEVEL OF TRAFFIC STRESS IN KING CITY PLANNING AREA

MULTIMODAL LEVEL OF TRAFFIC STRESS	PEDESTRIAN NETWORK (2020)		BICYCLE NETWORK (2020)	
	Total Miles	Share of total Facility Miles	Total Miles	Share of total Facility Miles
EXTREME STRESS FACILITY MILES	7.40	13%	10.25	18%
HIGH STRESS FACILITY MILES	5.02	9%	2.55	4%
MODERATE STRESS FACILITY MILES	3.13	5%	3.36	6%
LOW STRESS FACILITY MILES	41.93	73%	41.32	72%
TOTAL FACILITY MILES*	57.48	100%	57.48	100%

Source: Based on existing facilities in 2020. GIS database updated with field confirmed current year (2020) pedestrian and bicycle facilities. *Total facility miles include the length of all street segments.

CONGESTION

Description: This measure helps identify the locations along streets that do not meet applicable vehicle congestion thresholds in the weekday pm peak hour.

Measure(s): Locations on the street network that are congested or severely congested[12].

Target: Decrease the amount of congested and severely congested lane miles through 2040[13].

Data Sources: Travel Demand Models

Findings: The TSP target is not expected to be met. The results of the congestion analysis are displayed in Table 17. About 11 lane miles, or about 15 percent of the total street network lane miles in the planning area are expected to be congested by 2040 (i.e., vehicles will experience some minor delay). This represents an increase of 13 percent from 2015. The congested segments are along OR 99W, SW Beef Bend Road, and SW Fischer Road. Of these congested lane miles, about 5 percent are expected to be severely congested by 2040 (i.e., vehicle will experience significant delay), an increase of 5 percent from 2015. The severely congested segments include OR 99W south of SW Durham Road and SW Beef Bend Road near OR 99W.

[12] For this measure, congestion is defined as streets and intersections operating with a v/c ratio between 0.90 and 0.99 during the P.M. peak hour; severe congestion is defined as streets and intersections operating with a v/c ratio of 0.99 or higher during the P.M. peak hour.

[13] This measure also covers the Metro required freight reliability performance measure since roadway delay will directly impact overall delay for trucks.

Increased congestion in these locations will increase travel time and may influence travel decisions (destination and mode) made by travelers. As population and travel continues to grow, there are not sufficient funds/resources to address all congestion from the traditional strategy of adding lanes and capacity to existing facilities. Rather, other strategies such as improved pedestrian and bicycle facilities are included in the TSP to enhance access to all destinations in the planning area.

The TSP does include projects to widen SW Roy Rogers Road to five-lanes, SW Beef Bend Road to three-lanes, and conceptual locations of future Collector and Neighborhood Routes that will help to provide additional travel routes through Kingston Terrace and alleviate some of the local traffic from these major streets (see Figure 39 and Table 13 in Chapter 5). These improvements help reduce the congested lane miles along portions of SW Roy Rogers Road, SW Elsner Road, and SW Beef Bend Road from conditions that would be experienced without them. Another TSP project is a regional study of the OR 99W Corridor through the planning area and neighboring agencies, to develop a corridor-wide improvement plan. This plan will help develop a long-term solution for improved traffic flow for vehicles and freight along the corridor, which accounts for most of the congested lane miles in the planning area.

TABLE 17: VEHICLE CONGESTION IN KING CITY PLANNING AREA

PM PEAK CONGESTED VEHICLE LANE MILES	2015 BASE YEAR		2040 HORIZON YEAR**		CHANGE (2015-2040)
	Total Miles	Share of total Facility Miles	Total Miles	Share of total Facility Miles	
TOTAL LANE MILES*	61.45	100%	70.68	100%	-
TOTAL CONGESTED LANE MILES (SEVERE AND CONGESTED)	1.49	2%	10.82	15%	+13%
SEVERELY CONGESTED MILES (>0.99)	0.00	0%	3.21	5%	+5%
CONGESTED MILES (0.90 <= V/C <= 0.99)	1.49	2%	7.60	10%	+8%

Source: Washington County 2015 and 2040 Westside Focus Area Travel Demand Models. The mileage calculation is based on the length of the modeled network link associated with the point of congestion. It does not include the length of the queuing that may occur as a result of the congested link.

Notes: *Total lanes miles include the length of all street segments, multiplied by the number of lanes, the 2040 horizon year includes 9.22 lane miles of planned street segments.

** The 2040 Horizon Year scenario includes the TSP Aspirational improvements.

SYSTEM COMPLETENESS

Description: This measure evaluates the completeness of the pedestrian and bicycle networks in the King City planning area.

Measure(s): Total miles and percentage of pedestrian, bicycle and trail networks completed; Percentage of pedestrian and bicycle facilities completed within ¼ mile of transit stops**.**

Target: Complete the sidewalk, bikeway, and trail networks by 2040.

Data Sources: GIS; Field confirmation

Findings: The TSP target is expected to be met. As shown in Table 18, sidewalks are about 57 percent complete on all streets in the planning area and 65 percent complete on streets near transit stops. Bikeways are just over 20 percent complete in the planning area, and 23 percent are complete near transit stops.

As TSP projects are implemented and other redevelopment and frontage improvements occur through 2040, particularly in the Kingston Terrace area, streets will be improved or built to align with the standards outlined in Chapter 4. These standards require high-quality sidewalk and bikeway facilities that will continue to work towards completing these networks.

TABLE 18: PEDESTRIAN AND BICYCLE NETWORK COMPLETENESS IN KING CITY PLANNING AREA

FACILITY COMPLETENESS	KING CITY PLANNING AREA	AREA OF KING CITY PLANNING AREA			
		Near all Transit Stops ***	Kingston Terrace	Between Kingston Terrace and King City Town Center	King City Town Center
SIDEWALKS (2020) *					
TOTAL MILES COMPLETE	32.69	27.04	0.55	30.60	1.54
PERCENT COMPLETE	57%	65%	5%	70%	65%
TOTAL MILES COMPLETE ALONG MAJOR PEDESTRIAN STREETS **	8.26	7.23	0.55	6.17	1.54
PERCENT COMPLETE	46%	76%	7%	79%	65%
BIKEWAYS (2020) *					
TOTAL MILES COMPLETE	5.87	4.36	1.50	3.25	1.12
PERCENT COMPLETE	21%	23%	15%	20%	47%
TOTAL MILES COMPLETE ALONG MAJOR BICYCLE STREETS **	5.87	4.36	1.50	3.25	1.12
PERCENT COMPLETE	37%	52%	19%	46%	100%

Notes: * Includes all existing sidewalks or bikeways as of 2020, regardless of quality or compliance with design standards. For sidewalks, it assumes all streets should have sidewalks on both sides; bikeways only include streets with a bicycle route designation of Major Bicycle Street and Neighborhood Bicycle Street.

** Includes streets with a pedestrian route designation of Multimodal Area Street and Major Pedestrian Street, and bicycle route designation of Major Bicycle Street.

*** Includes sidewalks within ¼ and bikeways with ½ mile of existing transit stops.

ACCESS TO JOBS

Description: This measure evaluates the number of jobs accessible by driving, bicycling, walking, and transit in the King City planning area within the specified commute times for each mode.

Measure(s): Number and percentage of jobs reached by driving in 20 minutes; number and percentage of jobs reached by bicycling in 20 minutes (using average biking speed of 10 miles per hour); number and percentage of jobs reached by walking in 15 minutes (using average walking speed of 3 miles per hour); number and percentage of jobs reached by transit (includes potential future transit corridors) in 30 minutes (including beginning and end of trip).

Target: Increase the number of jobs accessible within a reasonable commute.

Data Sources: Travel demand model; GIS

Findings: The TSP target is expected to be met. As shown in Table 19, in 2015 the average household in the King City planning area had access to about 141,000 jobs when driving, 1,000 when using transit, 37,000 via a bike ride, and about 1,700 when walking. Job accessibility by non-driving modes increases in the planning area the further east a household is located, mainly due to the better transit service and shorter distances to nearby employment.

The 2040 scenario includes the TSP Aspirational improvements, in addition to assuming the potential King City Shuttle transit expansion into Kingston Terrace. By 2040, the average household in the planning area is expected to access to about 40,000 more jobs when driving and 250 more jobs when using transit, but slightly fewer jobs when walking or biking. This is largely a result of the high household growth forecasted for Kingston Terrace weighting the citywide average down, with future residents of this area being further than households in other areas of the planning area from nearby employment areas. However, when viewed at the neighborhood level, all households in the planning area will see an increase in jobs accessible by all modes through 2040.

TABLE 19: ACCESS TO JOBS IN KING CITY PLANNING AREA

JOBS ACCESSIBLE (BY AVERAGE HOUSEHOLD)	KING CITY PLANNING AREA	AREA OF KING CITY PLANNING AREA**		
		KINGSTON TERRACE	BETWEEN KINGSTON TERRACE AND KING CITY TOWN CENTER	KING CITY TOWN CENTER
2015 BASE YEAR				
BY MOTOR VEHICLE	141,948	122,058	135,214	159,226
BY TRANSIT	1,048	0	904	1,664
BY BIKING	36,939	6,599	33,606	49,921
BY WALKING	1,779	322	1,348	2,840
2040 HORIZON YEAR*				
BY MOTOR VEHICLE	183,162	168,843	186,889	218,092
BY TRANSIT	1,308	924	1,562	2,751
BY BIKING	33,198	10,189	47,287	69,951
BY WALKING	1,483	660	1,768	3,464
CHANGE (2040-2015)				
BY MOTOR VEHICLE	**+41,214**	**+46,785**	**+51,675**	**+58,866**
BY TRANSIT	**+259**	**+924**	**+658**	**+1,086**
BY BIKING	**-3,741**	**+3,590**	**+13,681**	**+20,030**
BY WALKING	**-297**	**+338**	**+420**	**+624**

Source: The projections and distribution of employment is based on underlying data and assumptions regarding growth for employment in the Washington County 2015 and 2040 Westside Focus Area Travel Demand Models. The projections of travel distances are based on ArcGIS network analysis. Travel times are based on the P.M. peak hour. Household data based on Travel Demand Model land use for the planning area.

Notes: * The 2040 Horizon Year scenario includes the TSP Aspirational improvements, in addition to assuming the potential King City Shuttle transit expansion into Kingston Terrace.

**Kingston Terrace is based on TAZ 1001, Current City limits based on TAZ 1050, 1051 and 1052, and King City Town Center based on TAZ 1050.

ACCESS TO COMMUNITY AMENITIES

Description: This measure evaluates the number of community amenities accessible by bicycling, walking, and transit in the King City planning area within the specified travel times for each mode.

Measure(s): Number and percentage of community amenities reached by bicycling in 15 mins (using average biking speed of 10 miles per hour); Number and percentage of community amenities reached by walking in 10 minutes (using average walking speed of 3 miles per hour); Number and percentage of community amenities reached by transit (includes potential future transit corridors) in 20 mins (including beginning and end of trip).

Target: Increase the number of community amenities accessible.

Data Sources: Travel demand model; GIS

Findings: The TSP target is expected to be met. As shown in Table 20 in 2015 the average household in the King City planning area had access to about 6 community amenities when using transit, 12 when biking and 2 when walking. Access to community amenities increases in the planning area the further east a household is located, mainly due to the better transit service and shorter distances to nearby services in the King City Town Center.

The 2040 scenario assumes the same amenities as the 2015 analysis, but with the planned parks in Kingston Terrace shown on the Conceptual Parks and Trails Map for the URA 6D Concept Plan. It also includes the TSP Aspirational improvements, in addition to assuming the potential King City Shuttle transit expansion into Kingston Terrace. As shown in Table 20, the average household in Kingston Terrace will have access to more services when walking, biking, or using transit due to this assumption. The average household in the planning area will have access to more services when biking or using transit, but not when walking by 2040. This is due to the travel times to the planned parks in Kingston Terrace being outside of the walking distance, but not the biking or transit trip distance for the average household in these areas.

TABLE 20: ACCESS TO COMMUNITY AMENITIES IN KING CITY PLANNING AREA

COMMUNITY AMENITIES ACCESSIBLE (BY AVERAGE HOUSEHOLD) *	KING CITY PLANNING AREA	AREA OF KING CITY PLANNING AREA***		
		Kingston Terrace	Between Kingston Terrace and King City Town Center	King City Town Center
2015 BASE YEAR				
BY TRANSIT	6	0	5	8
BY BIKING	12	1	11	13
BY WALKING	2	0	1	4
**2040 HORIZON YEAR ** **				
BY TRANSIT	8	7	8	12
BY BIKING	14	9	16	16
BY WALKING	2	2	1	4
CHANGE (2040-2015)				
BY TRANSIT	+2	+7	+3	+4
BY BIKING	+2	+8	+5	+3
BY WALKING	0	+2	0	0

Source: The projections of travel distances are based on ArcGIS network analysis. Travel times are based on the P.M. peak hour. Household data based on Travel Demand Model land use for the planning area.

Notes: * Existing community amenities shown in the Appendix. The 2040 Horizon Year scenario also assumes planned parks shown on the Conceptual Parks and Trails Map for the URA 6D Concept Plan.

** The 2040 Horizon Year scenario includes the TSP Aspirational improvements, in addition to assuming the potential King City Shuttle transit expansion into Kingston Terrace.

*** Kingston Terrace is based on TAZ 1001, Current City limits based on TAZ 1050, 1051 and 1052, and King City Town Center based on TAZ 1050.

ACCESS TO TRANSIT

Description: This measure evaluates the number and percent of households with access to transit service.

Measure(s): Number and percent of households within ¼ mile of transit stops[14].

Target: Increase the number of households accessible to transit.

Data Sources: Travel demand model; GIS

Findings: The TSP target is expected to be met. As shown in Table 21 about 13 percent of the total households in the planning area had access to TriMet routes in 2015. These households are located near OR 99W, including within the King City Town Center. About 77 percent of households in the planning area had access to the King City Shuttle Route, including all households in the King City Town Center, and most households east of Kingston Terrace. No households in Kingston Terrace had transit access, although the area represents a small portion of total households in the planning area.

The 2040 scenario includes the TSP Aspirational improvements, in addition to assuming the potential King City Shuttle transit expansion into Kingston Terrace. By 2040, about 6 percent of the total households in the planning area will be expected to have access to TriMet routes, representing about half of the share of 2015. In addition, only about 68 percent of households will be expected to have access to the King City Shuttle Route, down from 77 percent today. However, by 2040, more households in the planning area overall will be within 1/4 mile of transit service, including in Kingston Terrace.

[14] It includes all households within 1/4 mile of the bus stops along the TriMet routes that currently run along OR 99W and areas within 1/4 mile of the King City Shuttle Route.

TABLE 21: ACCESS TO TRANSIT IN KING CITY PLANNING AREA

TRANSIT ACCESS (BY TOTAL HOUSEHOLDS) *	KING CITY PLANNING AREA	AREA OF KING CITY PLANNING AREA**		
		KINGSTON TERRACE	BETWEEN KINGSTON TERRACE AND KING CITY TOWN CENTER	KING CITY TOWN CENTER
2015 BASE YEAR				
HOUSEHOLDS WITHIN 1/4 MILE OF A TRIMET BUS STOP	361	0	71	219
PERCENT OF HOUSEHOLDS	13%	0%	10%	25%
HOUSEHOLDS WITHIN 1/4 MILE OF THE KING CITY SHUTTLE ROUTE	2,201	0	663	874
PERCENT OF HOUSEHOLDS	77%	0%	70%	100%
2040 HORIZON YEAR *				
HOUSEHOLDS WITHIN 1/4 MILE OF A TRIMET BUS STOP	387	0	79	229
PERCENT OF HOUSEHOLDS	6%	0%	10%	25%
HOUSEHOLDS WITHIN 1/4 MILE OF THE KING CITY SHUTTLE ROUTE	4,718	1,650	1,077	915
PERCENT OF HOUSEHOLDS	68%	60%	70%	100%
CHANGE (2040-2015)				
HOUSEHOLDS WITHIN 1/4 MILE OF A TRIMET BUS STOP	+26	0	+8	+10
PERCENT OF HOUSEHOLDS	-7%	0%	0%	0%
HOUSEHOLDS WITHIN 1/4 MILE OF THE KING CITY SHUTTLE ROUTE	+2,518	+1,650	+413	+41
PERCENT OF HOUSEHOLDS	-9%	+60%	0%	0%

Source: The projections of travel distances are based on ArcGIS network analysis. Household data based on Travel Demand Model land use for the planning area.

Notes: * The 2040 Horizon Year scenario includes the TSP Aspirational improvements, in addition to assuming the potential King City Shuttle transit expansion into Kingston Terrace.

** Kingston Terrace is based on TAZ 1001, Current City limits based on TAZ 1050, 1051 and 1052, and King City Town Center based on TAZ 1050.

SAFETY

Description: This measure monitors the safety of travel in the King City planning area over 5-year periods to provide trends related to total vehicle, pedestrian, and bicyclist collisions, fatal and severe injury collisions and total fatalities and severe injuries.

Measure(s): Vehicle, pedestrian, and bicyclist fatal and serious injury crashes (total, per capita and per VMT); Crashes involving a pedestrian, or bicyclist (total, and per capita)**.**

Target: By 2040 reduce transportation related fatalities and serious injuries for all users by 50 percent.

Data Sources: Travel Demand Model; ODOT crash and crash severity data.

Findings: The TSP target is expected to be met. While future crash data is difficult to project, evaluation of recent data provides information on trends. The TSP also includes a range of projects that are expected to make streets safer in the planning area, including enhanced pedestrian and bicycle facilities, and improved street crossings and intersections.

Figure 13, presented earlier in this document, and Table 22 below, show data for the 5-year period between 2014 and 2018, with 384 collisions occurring in the City's planning area. Of these collisions, nine involved a pedestrian, two involved a bicyclist, and 373 involved a vehicle or multiple vehicles. All of the pedestrian collisions occurred along OR 99W, while the bicycle collisions occurred along SW Roy Rogers Road and SW Royalty Parkway. There were three fatalities, all pedestrians, and eight severe injuries, two of which were pedestrians. The fatalities occurred along OR 99W, near the SW Fischer Road intersection, with the pedestrian at fault in two of them, and the vehicle at fault in the third.

TABLE 22: SAFETY IN THE KING CITY PLANNING AREA

	ALL COLLISIONS	COLLISIONS INVOLVING VEHICLE(S) ONLY	COLLISIONS INVOLVING PEDESTRIANS	COLLISIONS INVOLVING BICYCLISTS
TOTAL COLLISIONS (2014 TO 2018)	384	373	9	2
TOTAL COLLISIONS PER CAPITA*	0.075	0.073	0.002	0.000
TOTAL COLLISIONS PER VMT**	0.049	0.047	0.001	0.000
COLLISIONS WITH FATALITIES	3	0	3	0
TOTAL FATALITIES	*3*	*0*	*3*	*0*
COLLISIONS WITH SEVERE INJURIES	8	6	2	0
TOTAL SEVERE INJURIES	*8*	*6*	*2*	*0*

Source: ODOT Crash Analysis and Reporting Unit. Reported collision data from 2014 to 2018 for the King City planning area.

* Per capita calculations are divided by the planning area population of 5,141 for 2015 from the Travel Demand Model.

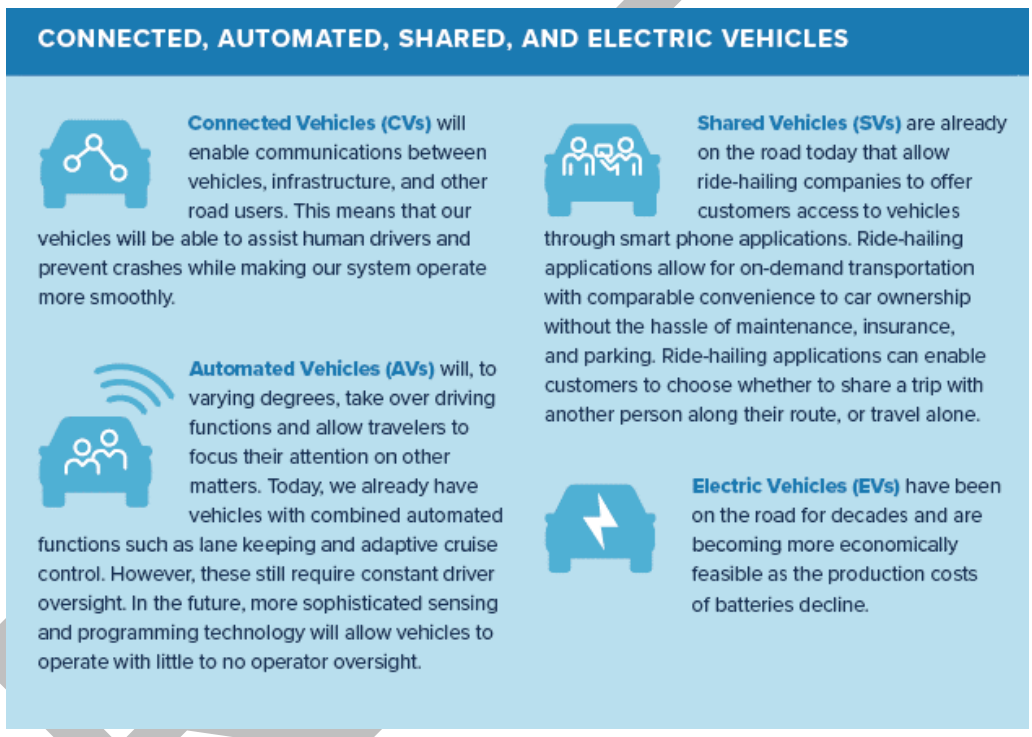
** Based on vehicle miles traveled (VMT) for each trip beginning or ending in a King City planning area Traffic Analysis Zone (TAZ), which is 7,911 in 2015.

PREPARING FOR EMERGING FORMS OF MOBILITY

Emerging technologies will continue to shape to roads, communities, and daily lives for generations. Vehicles are becoming more connected, automated, shared, and electric. This future is highly uncertain, but it will have significant impacts for how the transportation system is planned, designed, built, and utilized. The following sections highlight these emerging forms of mobility.

CONNECTED, AUTOMATED, SHARED, AND ELECTRIC VEHICLES

We do not know the full impacts that connected, automated, shared, and electric (CASE) vehicles will have on the transportation system. A lot depends on how they will be regulated at the federal and state levels. Many of these vehicles will not be exclusive of the others and it is important to think of the host of implications that arise from the combination of these technologies. There are several competing forces that will unfold as CASE vehicles are deployed.



- AVs will provide a more relaxing or productive ride experience and people may have less resistance to longer commutes.
- Shared AVs are projected to have lower fuel and operating costs, making them less expensive on a per mile basis than private vehicle ownership. This may increase demand for auto-based travel in the future.
- CV technology will allow vehicles to operate safely with closer following distance, less unnecessary braking, and better coordinated traffic control. This will increase road capacity in the long run when CVs and AVs comprise most of the public and private fleet of vehicles.
- In the near term, since AVs make up a fraction of the fleet of vehicles, road capacity could decrease as AVs will operate more slowly and cautiously than regular vehicles.
- A new class of traffic – zero-occupant vehicles – will increase traffic congestion. These could include AVs making deliveries or shared AVs circulating around the City and traveling to their next rider.

- Roadways may need to be redesigned or better maintained to accommodate the needs of automated driving systems. For instance, striping may need to be wider and more consistently maintained to ensure the vehicle's sensors can recognize it.

These points raise questions about the degree to which CASE vehicles will impact road capacity, safety, and congestion. The development and use of the technologies should be monitored closely.

Congestion and Road Capacity

It is difficult to plan for the impacts of CASE vehicles on road capacity at this point in their development. Because there is a high potential that ultimately road capacity will be freed up after CASE vehicles are widely adopted, it will also cause a corresponding increase in traffic demand, and we can expect that congestion will continue to persist. However, CASE vehicles provide a much greater opportunity for effective transportation demand management solutions because the expected congestion can be used to encourage use of transit, shared vehicles, and bike share. These modes could all be encouraged through pricing mechanisms that are vastly less expensive to implement than building more road capacity. A variety of pricing mechanisms and alternatives to the State gasoline tax are enabled with CASE technology because these vehicles will be tracked geographically, and by time of day. With time/ location data, transportation system operators will be able to develop pricing mechanisms that reduce congestion at a lower cost than other roadway improvements. Larger cities will be the first to implement these strategies, but King City will follow these developments closely.

Pedestrian and Bicycle Interactions

One of the biggest challenges comes in interactions with pedestrians and bicyclists. There may be pressure to remove pedestrians and bicyclists from the street and into separate spaces, to make it easier for AVs to operate. In the City's planning area, people walking and biking on many low volume and speed streets will have to share the space with motor vehicles for the foreseeable future. Sidewalks and separated bike lanes cannot feasibly be constructed on every street in the planning area. The TSP is also working to make it easier for pedestrians and bicyclists to cross major streets in the planning area by building more enhanced crosswalks and other features. AVs that cannot adjust for pedestrians and bicyclists will result in a City built around AVs, rather than a City built around the people who inhabit it.

Transit

AVs could become cost competitive with transit and reduce transit ridership as riders prefer a more convenient alternative. However, transit will remain the most efficient way to move high volumes of people through constricted urban environments. AVs will not eliminate congestion and as discussed above, could exacerbate it – especially in the early phases of AV adoption. In addition, shared AVs may not serve all sectors of a community so many will still require access to transit to meet their daily needs.

To avoid potential equity and congestion issues, transit agencies need to work together to integrate the use of automated vehicles and transit. Transit needs to adapt to new competition in the

transportation marketplace as well as consider adopting CASE technologies to support transit operations. King City may consider:

- Partnering with ride-hailing companies to provide first and last-mile solutions.
- Working with ride-hailing companies and bike share to integrate payment platforms and enable one button purchase of a suite of transportation options for multimodal trips.
- Using fixed route autonomous shuttles to provide first and last-mile solutions.
- Using on-demand autonomous shuttles to provide first and last-mile solutions.

Parking

Because AVs will be able to park themselves, travelers will elect to get dropped off at their destination while their vehicle finds parking or its next passenger. Shared AVs will have an even greater impact on parking because parking next to the destination will no longer be a priority for the traveling public. This means that parking may be over-supplied in some areas and new opportunities to reconfigure land use will emerge. Outstanding questions related to parking include:

- How does vehicle ownership impact parking behavior?
- What portion of the AV fleet will be shared?
- How far out of the way AVs be able to park while remaining convenient and readily available?

As CASE vehicles are more widely adopted, King City should periodically review its parking standards by:

- Considering revised minimum parking requirements for new developments, especially in areas that are within 1/4 to 1/2 mile of transit.
- Exploring public/private partnerships to fund the installation of electric vehicle charging stations.
- Inventorying parking utilization and identifying areas that could be converted from parking to curbside pick-up and drop-off zones.

Intelligent Transportation Systems

An Intelligent Transportation System (ITS) utilizes technology and innovative services to promote a safer and "smarter" transportation experience where all types of users are better informed and can make more efficient use of the transportation system. King City does not currently own or operate ITS infrastructure, or even traffic signals. It is unlikely the City will invest in ITS, but it will support regional partners on larger scale efforts that would benefit King City residents. Such cooperation could range from agreements to share information and data or allow use of City right-of-way for regional ITS infrastructure.

Curb Space

In addition to parking impacts, the ability to be dropped off at the destination will create more potential for conflicts in the right-of-way between vehicles that are dropping passengers off or

picking them up, vehicles moving through traffic, and vehicles parked on the street. This issue is already occurring in many urban areas with ride-hailing companies, where popular destinations are experiencing significant double-parking issues.

AVs will also be used to deliver packages and food. This may mean that delivery vehicles need to be accommodated in new portions of the right-of-way. For instance, if the AV parks at the curb in a neighborhood and smaller robots are used to deliver packages from door to door, new conflicts will arise between vehicles, pedestrians, robots, and bicyclists.

Package Delivery

AVs will also be used to deliver packages, food, and expanded services. This may mean that delivery vehicles will need to be accommodated in new portions of the right-of-way. For instance, if the AV parks at the curb in a neighborhood and smaller robots are used to deliver packages from door to door, new conflicts will arise between vehicles, pedestrians, and bicyclists.

Electric Vehicle Charging

To accommodate a future where electric vehicles will come to dominate the vehicle fleet, new charging capacity will need to be built. In addition to charging stations, cities, electric utilities, regions, and states will need to work together to create enough electricity to supply the significant increase in demand.

ELECTRIC SCOOTER AND BIKE SHARE

Shared-use fleets of small, fully or partially human-powered vehicles such as bikes, electric bikes (e-bikes) and electric scooters (e-scooters) are forms of micromobility transportation options (see Figure 41). These vehicles are generally rented through a mobile app or kiosk, are picked up and dropped off in the public right-of-way and are meant for short point-to-point trips. These emerging transportation options are convenient and have a low cost and make it easier for people to get around without a personal vehicle.

FIGURE 41: MICROMOBILITY TRANSPORTATION OPTIONS

Image Source: NACTO

Bikes **E-Bikes** **E-Scooters**

Public safety has been a concern in other cities as many riders do not wear helmets or they ride on sidewalks, which creates conflicts with pedestrians. In addition, many riders do not park them properly and leave them in places that obstruct pedestrian pathways.

Oregon law requires a helmet to be worn while riding an e-scooter, and riding bikes and e-scooters on the sidewalk is prohibited by the King City Municipal Code. The only time these may be on the sidewalk is if it is already parked, being parked on the curb or being walked. Both the bike and scooter should be driven with the flow of traffic in a bicycle lane or in the vehicle lane when there is no bike lane. They are also permitted on shared use pathways that are designated for shared pedestrian and bicycle travel (i.e., accessways or shared-use paths with a 10-foot width are acceptable for shared pedestrian and bicycle travel).

The rapid growth in the number of shared micromobility trips and the introduction of e-scooters has required cities to focus new attention on how best to regulate these new services in order to achieve the best public outcomes. Local government has both the authority and the responsibility to protect public health, safety, and welfare, and to ensure safe passage on and govern commerce in the public right-of-way. Cities have taken varied approaches to managing shared micromobility on their streets and chosen to exercise their authority in different ways.

Infrastructure is essential for shared micromobility to succeed as a viable transportation option. Cities must build out bike lane networks that encourage and protect riders. They must also decide where in the right-of-way shared micromobility vehicles should be parked and what locking requirements are appropriate. Some general guidelines include:

- **Parking:** In permitting shared micromobility companies to operate in the public right-of-way, cities must decide where is appropriate for companies and customers to leave their vehicles. Increasingly, cities and operators are striking a balance by encouraging customers to use "corrals" or designated shared micromobility parking zones in high volume or crowded areas, but also allowing users to drop off vehicles in the furniture zone of sidewalks. Designating locations provides cities and operators more control over the start and end location of vehicles, increases predictability for users and non-users alike, and reduces encroachment in the public right-of-way.
- **Provide Safe Place to Ride:** To fully realize the potential of shared micromobility, cities must redesign their streets so that everyone has a safe, low-stress network of places to ride. Poor or inadequate infrastructure leads to increased injuries and fatalities. In places without clearly marked, safe places to ride, riders often report feeling safer riding on the sidewalk.
- **Restrict/Limit Access:** Some cities have areas where shared micromobility services may not operate or where vehicles must move at slower speeds to ensure safety.

GOLF CARTS

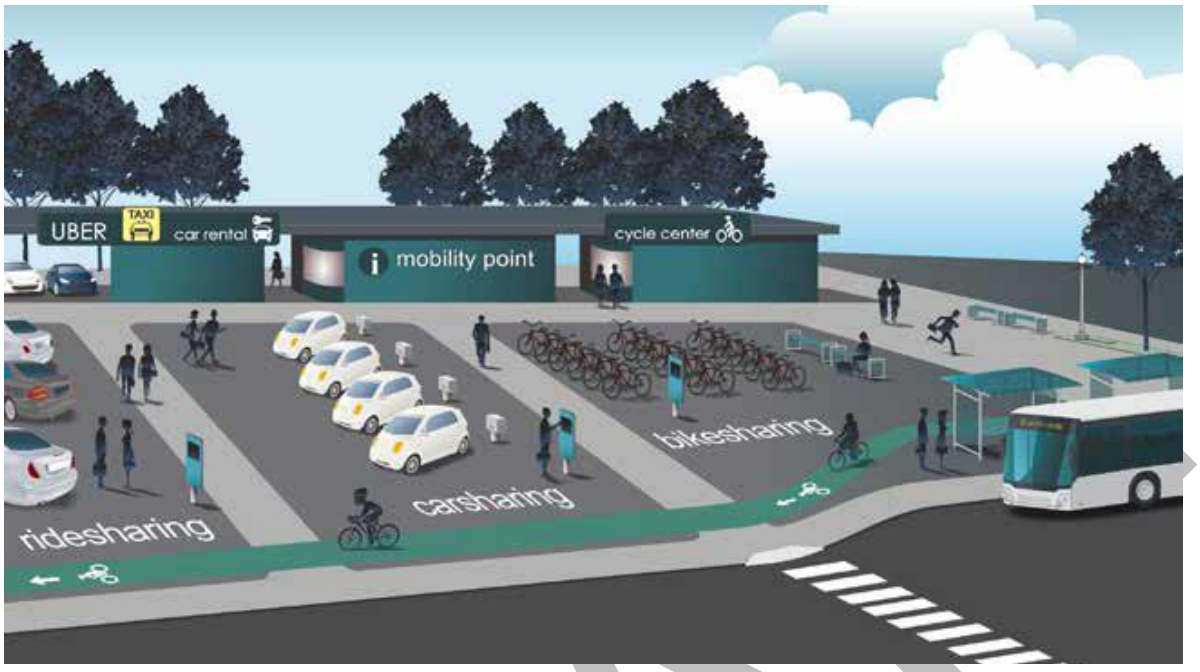
Golf carts are a unique mode for the planning area. They are allowed to travel on City streets, and their usage could continue to increase and be a viable mode as the planning area grows. Golf carts are simple to operate, environmentally friendly, and low cost.

The King City Municipal Code currently restricts motorized or mechanical devices (e.g., electric scooters, golf carts) from using any public sidewalk, pathway or other byway designated for pedestrian use, but does not restrict the usage along pathways designated for both pedestrian and bicycle travel. To allow for safe shared travel between the motorized vehicles, bicyclists, and pedestrians, golf carts should only be permitted on accessways or shared-use paths with a 10-foot width.

MOBILITY HUBS

A mobility hub is a central location that serves as a multimodal connection point for transit, car share, bike share, and ride share stations (see Figure 42). This system can serve as a tool to encourage travelers to take seamless multimodal trips that are well-timed and convenient. Mobility hubs make the most sense in transit centers that are located higher density and mixed-use areas with multimodal supportive infrastructure (e.g., protected bike lanes) to maximize connectivity for first and last-mile solutions. The King City Town Center and future Kingston Terrace Town Center both present opportunities to consider incorporating mobility hub elements.

FIGURE 42: CONCEPTUAL DESIGN EXAMPLE OF A MOBILITY HUB



ON-GOING ISSUES AND AREAS OF EMPHASIS

The City's planning area includes three distinct areas: 1) the existing City limits; 2) developed unincorporated areas; 3) the UGB expansion area, referred to as Kingston Terrace, that is currently being planned for future urban development. The TSP focuses on how to improve the existing transportation system for areas 1 and 2 noted above, and how to create a new system to serve future development in area 3. During the short-term most of the City's investments will occur within or adjacent to the current City limits. As annexation and new development occurs over time, other projects will have the potential to be funded by the City or through private development as a condition of approval, but these will largely be driven by the pace and location of the future annexation and development. The TSP assumes approximately $150 million in new and improved Arterial streets, Collector streets, and Neighborhood Routes with pedestrian and bicycle facilities will be funded by private development as a condition of approval. In addition, private development will be fully responsible for constructing all new Local streets consistent with the standards outlined in Chapter 4.

EAST-WEST CONNECTIVITY IMPROVEMENTS

King City's concept plan identified westward extensions of SW River Lane and SW Fischer Road as the intended location for key multimodal transportation facilities serving the Kingston Terrace area[15]. This area to the south of SW Beef Bend Road represents one of the most critical connectivity gaps for circulation in the planning area, particularly for pedestrian and bicyclists. This

[15] Concept Plan for King City Urban Reserve Area 6D. May 2018.

alignment passes through the Bankston Conservation Easement. Given the unknowns with that alignment, several potential alignments through this area remain under consideration. These potential new east to west streets with pedestrian and bicycle facilities (see Figure 39 shown earlier in Chapter 5) will connect Kingston Terrace with the rest of the planning area at SW 137th Avenue. The subsequent evaluation process will occur through the Kingston Terrace Master Plan, and these alignments do not necessarily reflect an either/or condition. Ultimately, the Kingston Terrace Master Plan evaluation process will determine their intended function for motor vehicles, pedestrians and bicycles in the planning area and corresponding functional classification and route designation.

The intent is to provide a connected network of east to west and north to south streets, and pedestrian and bicycle routes serving Kingston Terrace and linking existing streets to the planning area east of SW 137th Avenue consistent with the standards outlined in Chapter 4. These redundant routes are intended to reduce out of direction travel and distribute traffic and provide emergency services among many different streets rather than concentrating it on one. These new streets will be designed for slow motor vehicle travel speeds between 25 and 30 miles per hour and will include treatments (shown earlier in Table 11) to manage traffic volumes and travel speeds and discourage through travel, while prioritizing pedestrian and bicycle travel with high quality facilities that are convenient and comfortable.

ACTION: Finalize the street alignments and update the corresponding functional classifications and route designations in the TSP.

SW BEEF BEND ROAD

SW Beef Bend Road is an important connection through the King City planning area. At the west end of the corridor, it bisects the Kingston Terrace neighborhood to the south and Tigard's River Terrace South neighborhood to the north. At the east end, it passes Deer Creek Elementary School and serves as a critical travel route for those walking and bicycling between the school, and neighborhoods in King City to the south, and Tigard to the north. Both King City and Tigard envision a redundant network of north to south Collector streets and Neighborhood Routes that intersect SW Beef Bend Road at intervals of approximately 600 feet (see Figure 39 and Table 13 in Chapter 5). Current Washington County spacing standards restrict direct access to SW Beef Bend Road to other Arterial or Collector streets, meaning the planned Neighborhood Routes are not allowed to connect to it. However, both King City and Tigard continue to work with Washington County to reach on overall agreement on the design of SW Beef Bend Road and its intersections to allow for these connections.

The TSP includes projects to widen SW Beef Bend Road to three lanes, with pedestrian and bicycle facilities between SW Roy Rogers Road and SW 131st Avenue. These improvements include sidewalks along the north side and a separated shared-use path on the south side. In addition, enhanced crossings of SW Beef Bend Road are planned at several locations, including at SW 137th Avenue, SW 150th Avenue, SW Elsner Road, and the future SW River Terrace Boulevard intersection (see Figure 39 and Table 13 in Chapter 5).

ACTION: Work with Washington County and city of Tigard to reach on overall agreement on the design of SW Beef Bend Road and its intersections.

OR 99W

Intersections along OR 99W are expected to serve a significant amount of traffic, with over 2,000 vehicles in each direction of OR 99W during the p.m. peak hour by 2040. These intersections were tested with additional turn lanes, but the improvements only had a minimal benefit to vehicular operations and are not recommended. Intersection operations for vehicles can be improved by widening OR 99W, but that requires a significant investment, and all possible options should be more extensively studied to ensure the needs of all users of the corridor are addressed. At nearly all intersections, an additional northbound and southbound travel lane would be required to significantly reduce congestion. A detailed regional corridor study is proposed as part of the Financially Constrained project list (i.e., City funding contribution towards a multi-agency corridor study) to determine what improvements can be made on OR 99W or what improvements can be made on parallel regional facilities to reduce the demand on OR 99W and align the highway with the Commercial Corridor context zone from the ODOT Blueprint for Urban Design. Critical OR 99W focus areas in the planning area include expanded and improved pedestrian and bicycle crossings, improved access to transit, expanded pedestrian facilities and buffer from the vehicle travel way, protected and separated bicycle facilities, and improved traffic flow for vehicles and freight. Various projects in the TSP proposed along the highway through the planning area will likely be further refined in the future corridor study.

The TSP also includes several short-term projects to improve OR 99W, specifically for pedestrians and bicyclists (see Figure 39 and Table 13 in Chapter 5). This includes a Financially Constrained project to construct missing sidewalks and a buffer on each side between SW Beef Bend Road and SW Royalty Parkway; near SW King James Place; and near SW Versailles Road.

ACTION: Work with ODOT and neighboring agencies to advance the regional corridor study for OR 99W.

SUPPLEMENTAL FUNDING OPTIONS

Providing adequate funding for capital investments and on-going maintenance of transportation systems and services is a major challenge. As reported earlier during the TSP process[16], the current funding programs are expected to generate about $33.5 million for transportation system improvements through 2040 (and an additional $93 million that is assumed to be funded through private development as a condition of approval). This was identified as the amount that could fund higher priority projects, which were referred to as Financially Constrained projects. When compared to the full Aspirational list of improvement projects identified in the TSP, which totals $246 million, additional funding options are needed to fund any lower priority projects.

If the City desires to add more funding opportunities, the best candidates are a local transportation system development charge, a transportation utility fee, a local fuel tax, and a short-term property tax levy. Table 23 shows some illustrative examples of possible revenues along with actions required for implementation. The City may wish to establish a system development charge for transportation facilities based on the transportation needs established in the TSP. As an example,

[16] Transportation Financial Feasibility Assessment Report dated June 8, 2021 (see Appendix).

an SDC rate of $9,000 per single-family unit, $5,400 per multi-family unit and $9,400 per peak hour trip for non-residential uses (based on rates used in the Beaverton South Cooper Mountain and Tigard River Terrace areas) would provide the City with approximately $1.8 million annually or $34.0 million through 2040. If an SDC is desired, a rate study would be required to determine appropriate fees based on capacity projects costs, growth potential, and local preferences.

The transportation utility fee is enacted by council resolution and could generate $100,000 annually (or about $2 million through 2040) for each $1 charged per residential unit monthly. Other cities with such fee programs charge between $4 and $10 per month for a residential unit. Applying the high end in the planning area, it would provide about $14 million through 2040.

Another notable option for the planning area is a potential local fuel tax, which will require voter approval to enact. A local fuel tax of three cents per gallon year could generate an additional $190,000 annually or $3.6 million through 2040. The final option listed is a limited property tax levy, which would produce around $550,000 in additional revenue over five years.

TABLE 23: POTENTIAL SUPPLEMENTAL FUNDING OPTIONS

FUNDING OPTION	ALLOWED USE OF FUNDS	ACTION REQUIRED TO IMPLEMENT	EXAMPLE CHARGE	POTENTIAL ADDITIONAL ANNUAL REVENUE
LOCAL TRANSPORTATION SYSTEM DEVELOPMENT CHARGE	Capital improvements	City Council action	$9,000 per single-family unit; $5,400 per multi-family unit; $9,400 per peak hour trip for non-residential	$1.8 million
TRANSPORTATION UTILITY FEE	Capital improvements or maintenance	City Council action	$1 per month for residential units and $.01 per month per square foot for non-residential uses	$100,000
LOCAL FUEL TAX	Capital improvements or maintenance	Voter Approval	Three cents per gallon	$190,000
PROPERTY TAX LEVY	Capital improvements or maintenance	Voter Approval	$0.20 per $1,000 in assessed value (per year, for 5 years)	$550,000

If the City wants to supplement the transportation funding beyond what is currently available to advance lesser priority project improvements, it is recommended to further consider one of the above supplemental options. In addition, the City should work with Washington County to update the Transportation Development Tax project list to include the latest projects along the roadways currently authorized in the planning area to receive TDT funds (i.e., SW Roy Rogers Road, SW Beef Bend Road, SW Fischer Road and SW 131st Avenue). This TSP assumes that the TDT list will be modified in the future to also include projects along SW Elsner Road and the SW Fischer Road extension.

ACTION: Pursue and enact supplemental local transportation funding option. Work with Washington County update Transportation Development Tax project list and

authorized roadway list to include latest projects from the TSP and add SW Elsner Road and the SW Fischer Road extension to the list.

CITY STANDARDS AND REGULATIONS

Chapter 4 of the TSP includes several new and updated transportation standards and regulations. These apply to the construction of new transportation facilities and to the operation of all facilities to ensure they are designed appropriately, and that the system functions as intended. These standards and regulations will need to be added by reference or incorporated into the City's Municipal Code and/or Development Code.

ACTION: Amend City Municipal Code and/or Development Code to:

- Incorporate references to vehicle functional classifications, and pedestrian, bicycle, and transit route designations, consistent with the TSP.
- Incorporate references to minimum street cross-section and facility widths, consistent with the TSP.
- Introduce vehicle mobility standards and pedestrian and bicycle level of traffic stress targets for City streets, consistent with the TSP.
- Incorporate transportation facility and access spacing standards identified in Table 9 of the TSP for City streets.
- Incorporate City transportation impact study trigger guidelines from the TSP, and develop study requirements, including a requirement to review pedestrian crossing treatments using NCHRP Report 562, as documented in Chapter 4.